Oracle® Cloud

Visualizing Data and Building Reports in Oracle Analytics Cloud

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Contents

Preface

Audience i
Related Documents i
Conventions i

Part I Introduction to Visualization and Reporting in Oracle Analytics Cloud

1 Get Started with Visualizing Data and Building Reports (For Content Creators)

About Visualizations and Analyses 1
Accessing Oracle Analytics Cloud 3
- Change Your Own Password 5
- Access Oracle Analytics Community 5

Configure Time Zones (Preview) 6
- About Time Zones (Preview) 6
- Set Your Preferred Time Zone (Preview) 7
- Set the Time Zone for a Dataset (Preview) 10

Find and Explore Your Content 11
- Use the Search Bar to Find Your Content 11
  - Search Options 12
  - Search Tips 13
- Explore Your Content with Navigator 14
  - Access Pages 14
  - Choose a Default Home Page 14

Create and Share Pages 15
- About Pages 15
- Create a Page 16
- Share a Page 18
- Customize the Layout of a Page 18

About Watchlists 20
- Create a Watchlist 20
- Add a Visualization to a Watchlist 21

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Delete a Visualization Card from a Watchlist 22
Share a Watchlist 23
Configure Featured Watchlists 24
Providing Custom Groups of Content 24
What Are Custom Groups? 25
Create and Share Custom Groups of Content 25
Saving Your Content in the Catalog 26
View Content on Mobile Devices 26
Access and Interact with Your Oracle Analytics Content On the Go 26
View and Collaborate on Analytical Charts Using Oracle Analytics Day by Day 27
Explore Data on Mobile Devices Using A Built-in Browser 27

2 Get Started with Visualizing Data (For Consumers)

Accessing Oracle Analytics Cloud As a Consumer 1
Find and Explore Analytics Content That's Been Shared With You 2
Sort, Drill, and Select Data in Visualizations 3
Swap Columns in a Visualization 4
Add a Filter to a Workbook (as a Consumer) 6
About Using the Oracle Analytics AI Assistant as a Consumer 6
Export Workbook Content in Various Formats 6
FAQs for Analytics Consumers 7

Part II Prepare Data

3 Connect to Your Data Using Datasets

Overview to Using Datasets 1
What Are Datasets? 1
About the Dataset Editor 2
Join Diagram Reference 5
About Opening Datasets 6
View Available Connections 7
Data Sources Available for Use in Datasets 8
Create a Dataset from a Connection 9
Add Multiple Connections to a Dataset 11
Add a File to a Dataset Created from a Connection 11
Add a Table to a Dataset Using a SQL Statement 12
Add Metadata for a Dataset Using AI Assistant 13
Design Datasets 14
What Are Quality Insights? 14
Enhance Your Data Using Quality Tiles 18

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About Removing or Restoring Dataset Columns 23
Remove or Restore a Dataset Table's Columns 23
Use Dataset-Level Filters 24
About Dataset-Level Filters 24
Filter Data at the Dataset-Level 27
Filter a Dataset Table 28
Use Role-Based Filters in a Dataset 29
About Role-Based Filters 30
Filter a Dataset Based on an Application Role 32
Example One - Apply a Simple Role-Based Filter in a Workbook 33
Example Two - Apply Multiple Role-Based Filters in a Workbook 35
View a Dataset Table's Original Formatting 39
Changing the Database Connection for Dataset Tables 40
Best Practices for Changing the Database Connection for Dataset Tables 40
Change the Database Connection for a Dataset Table 41
Specify Whether a Dataset Table Is Cached or Live 41
Choosing a Data Access Type for Dataset Tables 44
Use Joins to Build Datasets 45
Understand Dataset Table Joins 45
What Is Preserve Grain? 46
Add Joins Between Dataset Tables 48
Disable Auto Joins in Datasets 49
Add Joins When Table Columns Don't Match 50
Modify or Fix Joins in a Dataset 51
Delete Joins from a Dataset 51
Specify Which Table Determines Grain 52
Include a Dataset Table in Data Source Queries 53
Create Datasets from Data Sources 53
Create a Dataset from a Subject Area in Oracle Fusion Cloud Applications Suite 54
Create a Dataset from an Analysis in Oracle Fusion Cloud Applications Suite 55
Create a Dataset from an Essbase Connection 55
Create a Dataset from an Analysis 56
Create a Dataset from a Local Subject Area 56
Create Datasets from Files 57
About Files for Datasets 57
Create a Dataset from a File Uploaded from Your Computer 58
Create a Dataset from a File Uploaded from Dropbox or Google Drive 58
Add Multiple Files to a Dataset 59
Create a Dataset from a Data Source with REST Endpoints 60
Create a Dataset from OCI Object Storage 61
Create a Dataset from Oracle Enterprise Performance Management (Oracle EPM) 62
Create a Dataset from Google Analytics 64

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Access Your Reporting Content in Microsoft Power BI 68

4 Enrich and Transform Data

Enrich and Transform Your Data 1
Enrich Data Using Enrichment Recommendations 3
Transform Data Using AI Assistant 4
Rename Columns Using AI Assistant 4
Change Column Types using AI Assistant 6
Transform Data Using the Transform Editor 7
Replace Missing or Null Values in a Dataset 8
Transform Data Using Replace 9
Example Replace Transforms Using Regular Expressions 11
Convert Text Columns to Date or Time Columns 12
Adjust the Display Format of a Date or Number Column 13
Create a Bin Column When You Prepare Data 14
Configure Columns Properties in a Dataset 16
Hide a Column in a Dataset 18
Restore a Hidden Column in a Dataset 20
Delete a Column in a Dataset 21
Add Columns to a Dataset 22
Edit the Data Preparation Script 23
Enrich and Transform Reference 24
Transform Reference 24
General Custom Format Strings 26
Data Profiles and Semantic Recommendations 27
Semantic Type Categories 28
Semantic Type Recommendations 28
Recognized Pattern-Based Semantic Types 29
Reference-Based Semantic Types 29
Recommended Enrichments 29
Required Thresholds 30
Custom Knowledge Recommendations 30

5 Create Datasets Using Data Flows

About Data Flows 1
Database Support for Data Flows 2
Working in the Data Flow Designer 3
Working in the Data Flow Designer 4
What Steps Can I Use to Organize and Integrate My Data? 6
Aggregate Functions 9

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Database Analytics Functions 10
Graph Analytics Functions 11
What is a Sequence? 12
Create a Dataset Using a Data Flow 12
Create or Update a Dataset Using a Data Flow 14
Reuse a Data Flow 15
Configure a Data Flow to Read Cached Data 16
Configure Incremental Processing in a Data Flow 16
Specify a New Data Indicator for a Data Source 17
Configure a Data Flow for Incremental Processing 18
Transform Data Using OCI Functions 19
Generate or Update a Dataset at a Specific Time 19
Change When a Data Flow Processes Data 20
Process Data Using a Sequence of Data Flows 20
Manage Your Data Flows 21
About Sharing Data Flows and Sequences 22
Share a Data Flow 24
Share a Sequence 25

6 Manage Datasets

Dataset Type Icons 1
View a List of Datasets and Information About Them 2
Reload a Dataset's Data 2
About Reloading a Dataset's Data 3
Reload Data from the Workbook Editor 3
Reload an Individual Table in a Dataset 4
Reload Tables in a Dataset 5
Reload a Dataset's Files 6
Reload a Dataset's Data Incrementally 7
Overview to Loading Datasets Incrementally 7
Configure a Dataset to Load Incrementally 9
Load Dataset Data Incrementally 11
View a Dataset's Reload History 13
View and Download Log Files for a Dataset Reload Job 14
Work with Dataset Reload Schedules 15
Schedule a Dataset Reload 16
View a Dataset Reload Schedule's Details 16
Modify a Dataset Reload Schedule 17
Delete a Dataset Reload Schedule 17
Rename a Dataset and Change Its Description 18
Inspect a Dataset's Properties 18

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View the Dataset Storage Limit 19
Copy a Dataset's Object ID 19
Certify a Dataset 19
View a Dataset's Data Elements 20
Make Data Available for Oracle Analytics AI Assistant 20
About Indexing a Dataset for Oracle Analytics AI Assistant 21
About Recommended Index Settings 22
Index a Dataset 22
Index a Dataset on Demand 23
Schedule Indexing on a Dataset 23
Make Analytics Content Easier to Search 24
About Making Analytics Content Easier to Search 24
Tips on Using Synonyms for Home Page and AI Assistant Search 24
Specify Synonyms for Dataset Columns 25
Add or Update a Dataset's Permissions 25
Download a Dataset's Source File 26
Duplicate a Dataset 26
Delete a Dataset 26
Enable Knowledge Enrichments for Datasets 27

Part III Visualize Data

7 Build and Manage Workbooks

Begin to Build a Workbook 1
Save a Workbook 2
Save Your Changes Automatically 2
Undo and Redo Edits 3
Save a Workbook to a Shared Catalog Folder 3
Configure How Workbooks Open 4
Open a Workbook in Edit Mode 4
Configure a Workbook to Open in Edit Mode by Default 4
Configure All of Your Workbooks to Open in Edit Mode by Default 5
Configure How Editors Open 5
Manage Datasets Within a Workbook 6
Add Datasets to a Workbook 6
Replace a Dataset in a Workbook 7
Remove a Dataset from a Workbook 8
Modify a Workbook's Datasets 8
Blend Datasets in Workbooks 9
Understand Blending 10

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About Mismatched Values in Blended Data 11
Blend Datasets 13
Tips on Blending Data 14
Change Data Blending in a Visualization 14
Refresh Data in a Workbook 15
About Refreshing a Workbook's Data 15
Refresh a Workbook's Data 15
Use Calculations in Workbooks 16
Get Started with Calculations 16
Tips on Using Calculations 19
Create a Reusable Calculation in a Workbook 21
Create a Group Calculation in a Workbook 22
Create a Folder to Store Calculations in a Workbook 24
Sort Calculations in a Workbook 25
Derived Dates in Workbooks 26
Use Images in Workbooks 27
About Using Images in a Workbook 27
Add an Image as a Canvas Background 29
Add an Image as a Visualization Background 29
Create a Shared Image 30
Compose Expressions 31
Set Workbook Thumbnails 32
Pause Data Queries in a Workbook 32
Open a Custom Workbook Extension 33
Embed a Workbook and Visualizations in a Dashboard 33
Tips on Embedding Workbook Canvases in Dashboards 34

8 Design the Look and Feel of Workbooks

Workbook Themes 1
Create a Workbook Theme 1
Create a Modified Workbook Theme 2
Select an Alternative Workbook Theme 2
Configure Settings for Workbook Themes 2
Configure Settings for Canvas Layout Templates 3
Work with Canvas Properties 3
About Canvas Layout Properties 3
Update Canvas Properties 4
Align Visualizations Using Canvas Grid Guidelines 4
About Brushing Between Visualizations on a Canvas 5
About Synchronizing Visualizations in a Canvas 6
About Canvas Data Refresh Properties 7

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Design Canvas Layouts for Different Screen Sizes 8
About Designing Canvas Layouts to Display on Devices with Different Screen Sizes 8
Design Canvas Layouts to View on Different Devices 10

9 Create and Use Visualizations

Create a Visualization 1
Work with Visualizations on a Canvas 5
Tips on Choosing a Visualization 6
Tips on Editing a Visualization 9
Duplicate a Visualization 12
Copy a Visualization from Another Workbook 13
Copy and Paste a Visualization or Canvas 14
Copy and Paste a Visualization's Data 15
Create a Visualization from Another Visualization 15
Update Common Properties for Multiple Visualizations on a Canvas 16
Copy and Paste Multiple Visualizations on a Canvas 16
Delete Multiple Visualizations on a Canvas 16
Display Multiple Visualizations Equally on a Canvas 16
About Visualization Types 17
Bar Graphs 17
Simple Bar Graphs 17
Stacked Bar Graphs 18
100% Stacked Bar Graphs 19
Combo and Overlay Charts 21
Butterfly Charts 22
Waterfall Charts 22
Boxplots 23
Dashboard Controls and Other Visualization Types 24
Geospacial Graphs 25
Grid Graphs 25
Line Graphs 25
Network Graphs 26
Pie and Treemap Graphs 26
Scatter Graphs 26
Change Visualization Types 27
Add a Language Narrative Visualization 27
About the Language Narrative Visualization 28
Create a Language Narrative Visualization 28
Change Tone for Language Narrative Visualization 29
Change Level of Detail for Language Narrative Visualization 29
Create a Legend Visualization 29

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Gauge Visualizations 32
About Gauge Visualizations 32
Create a Gauge Visualization 33
Add a Target to a Gauge 34
Configure the Properties for a Gauge 35
Create a Set of Gauges 37
Button Bars 38
About Button Bars 38
Create a Button Bar 40
Configure the Properties for a Button Bar 40
Gantt Charts 41
About Gantt Charts 41
Create a Gantt Chart Visualization 42
Add a Second Layer to a Gantt Chart 43
Use Color and Size in a Gantt Chart 44
Add Additional Columns to the Rows in a Gantt Chart 45
Configure the Properties for a Gantt Chart 46
Table and Pivot Visualizations 48
About Tables and Pivots 48
Selecting Data in Tables and Pivots 51
Change Display Names in Tables and Pivots 51
Customize Grand Totals in Tables and Pivots 52
Format Headers in Pivot Visualizations 53
Display Values in Table and Pivot Visualizations as Links 55
Using Knowledge Enrichments in the Workbook Editor 57

10 Design the Look and Feel of Visualizations

Identify Content with Tooltips 1
Choose the Tooltips to Display in a Visualization 2
Customize Visualization Tooltips 2
About Visualization Properties 3
Adjust Visualization Properties 4
Set Visualization Border Properties 4
Set Visualization Shadow Properties 4
Change the Size of Data Points in Visualizations 5
Change the Pattern and the Width of Lines in Graphs 5
Enhance Visualizations with Statistical Analytics 6
Before You Start with Statistical Analytics 6
What Statistical Analytics Can I Add to Visualizations? 8
Add Statistical Analytics to Visualizations 11
Add a Forecast to a Visualization 12

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Add a Reference Line to a Visualization 13
Create a Cluster or Outlier in a Visualization 14
Use Spark Charts to Examine Trends 14
Column Swapping 15
About Column Swapping 15
Enable and Configure Column Swapping for a Visualization 17
Hidden Columns in Visualizations 19
About Hidden Columns in Visualizations 19
Hide a Column in a Visualization 20
Format Numeric Values of Columns 21
Format Numeric Values of Visualizations 22
Set Scale Options for Numbers and Currency Values 22
Set Currency Symbols for Visualizations 22
Apply Color to Visualizations 23
About Color Assignments in Visualizations 23
Access Color Options 24
Change the Visualization Color Palette 24
Assign Colors to Columns 25
Highlight Important Data Events with Conditional Formatting 25
What Can I Do with Conditional Formatting? 26
Manage Conditional Formatting Rules 29
Enable a Conditional Formatting Rule 30
Add Conditional Formatting to a Visualization 30
Add Workbook-level Conditional Formatting Rules 32
Apply Conditional Formatting to Totals and Subtotals 35
Example - Compare a Measure to a Set of Thresholds 37
Example - Compare a Measure to a Target or Goal 39
Example - Compare a Measure to a Complex Expression Value 40
Example - Compare a Measure to a Percentage of a Value 41
Example - Highlight Values with Emojis 42
Example - Highlight Attribute Values 44
Example - Highlight Data by Date 46
Sorting Data in Visualizations 48
About Sorting Data in Visualizations 48
Sort Data in Visualizations 48
Define a Sort Order for a Visualization 50
Create a Custom Error Message for Visualizations with No Data 51
Add Notes to Visualizations 51
Add Notes to a Visualization 52
Connect a Note to Data Points in a Visualization 52
Show or Hide a Note's Data Point Connectors 53
Delete a Note's Data Connectors 53

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Show or Hide a Visualization's Notes 54
Set Visualization Loading Overlay Opacity 55
About the Warning for Data Issues in Visualizations 55

11 Generate Visualizations with Oracle Analytics AI Assistant

About Oracle Analytics AI Assistant 1
Generate Visualizations in a Workbook with Oracle Analytics AI Assistant 3
Generate Visualizations from Your Home Page 3

12 Use AI Agents and the Oracle Analytics AI Assistant to Interact with Data

About Oracle Analytics AI Agents 1
When to Use an Oracle Analytics AI Agent 2
About the Dataset Used in an AI Agent 3
About Supplemental Instructions in an Oracle Analytics AI Agent 4
About Knowledge Documents Used in an Oracle Analytics AI Agent 5
Oracle Analytics Knowledge Document File Considerations 5
Upload a Knowledge Document to an AI Agent 5
Create an Oracle Analytics AI Agent 6
Make an Oracle Analytics AI Agent Available to a Workbook 7
Attach an Oracle Analytics AI Agent to a Workbook 7
Enable an Oracle Analytics AI Agent 7
Modify an Oracle Analytics AI Agent 7
Delete an Oracle Analytics AI Agent 8

13 Filter Data

About Filters 1
Filter Scopes 2
Filter Types 2
How the Number of Datasets Affects Filters 5
Ways to Use Parameters with Filters 5
How Do Filters Limit Each Other? 6
About the Limit Values Settings for Filters 6
Specify Limit Values By for the Filter Bar 8
Specify Limit Values for Workbook and Canvas Filters 9
Specify Limit Values By for Dashboard Filters 9
Specify Limit Values for Visualization Filters 10
Specify Which Filters to Apply to a Visualization 11
Apply a Dashboard Filter to Visualizations on the Canvas 12
Example – Change the Limit Values Setting for a Canvas Filter 12

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Example – Change the Limit Values Setting for a Dashboard Filter 16
Example – Change the Limit Values Setting for a Visualization Filter 19
Filter Properties 26
Dashboard Filter General Properties 26
Dashboard Filter Date/Time Properties 28
Dashboard Filter Control Properties 29
Dashboard and Visualization Filters Properties 30
Filter Personalizations and Workbook States 32
About Filter Personalizations (For Authors) 32
About Filter Personalizations (For Consumers) 33
Create a Custom Workbook State 33
Modify a Custom Workbook State 34
Change the Workbook State 35
Set the Default Workbook State 35
Use the Filter Bar 36
About the Filter Bar 36
Filter Bar Properties 37
Add Workbook and Canvas Filters 38
Display or Hide Selected Values in the Filter Bar 38
Manually Apply Selections in the Filter Bar 39
Convert Canvas Filters to Dashboard Filters 40
Use a Parameter in the Filter Bar 40
Dashboard Filters 41
About Dashboard Filters 41
Add Dashboard Filters 42
Change the Orientation of Dashboard Filters 42
Change the Dashboard Filter Style 43
Use a Parameter as a Dashboard Filter Control 43
Filter and Animate Visualizations Using a Slider Dashboard Filter 44
Visualization Filters 46
About Visualization Filters 46
Add Visualization Filters 46
Use a Visualization as a Filter 47
Filter Groups (Preview) 47
About Filter Groups (Preview) 48
Create a Filter Group (Preview) 49
Specify Limit Values for Filter Groups (Preview) 50
About Shared Filter Groups (Preview) 51
Make a Filter Group Shareable (Preview) 51
Create a Shared Filter Group (Preview) 52
Use a Shared Filter Group (Preview) 52
Modify a Shared Filter Group (Preview) 53

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Selection Steps 53
About Selection Steps in Workbooks 54
How Selection Steps and Filters Differ 54
Selection Steps Action and Operator Reference 58
Add Selection Steps 83
Specify Limit Values for Selection Steps 85
Control Consumer Interactivity for Selection Steps 86
Change the Filter Type 86
Top Bottom N Filters 87
Create a Top Bottom N Filter 87
Example – Use a Top N Filter to Show the Top Attribute Values Based on a Measure 89
Example – Use a Top N Filter to Show the Top Measure Values Based on an Attribute 93
Create an Expression Filter 97
Exclude Selected Filter Values 99
Include Null Filter Values 100
Disable Multi Select for Filters 100
Disable a Filter or Selection Step 101

14 Create and Use Parameters

What Are Parameters? 1
About System Parameters 2
About Parameter Properties 2
About Modifying and Deleting Parameters 4
Create a Parameter 4
Create a Parameter that Uses a Logical SQL Query for a Double Column 6
Create a Parameter with the SQL Expression Data Type 6
Syntax for Referencing Parameters 9
Bind Parameters to Filters 9
About Binding Parameters to Filters 10
Create and Bind a Parameter to a Workbook Filter 10
Create and Bind a Parameter to a Dashboard Filter 11
Create and Bind a Parameter to Exclude Filter Values 11
Create and Bind a Parameter to a Double Column Type Filter 12
Bind an Existing Parameter to a Filter 13
Create and Bind Parameters to a Top Bottom N Filter 13
Use Parameters in Workbooks 17
Use a Parameter to Conditionally Show or Hide a Visualization 17
About Using Parameters to Show or Hide Visualizations 18
Use a Parameter as a Filter to Conditionally Show or Hide a Visualization 20
Use a Parameter in a Visualization's Title 21
Use a Parameter as a Visualization's Axis Label 22

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Use a Parameter in a Tile Visualization's Measure Label 23
Use a Parameter in an Expression Filter 24
Use a Parameter in a Workbook Calculation 25
Use an Analytics Link Data Action to Pass Parameter Values 25
Use a URL Navigation Data Action to Pass Parameter Values 26
Bind a Parameter to a Reference Line or Band 27
Bind a Parameter to a Request Variable 28

15 Understand Your Data Using Insights

Use Auto Insights to Understand Your Data 1
What Are Auto Insights? 1
Use Auto Insights to Get Immediate Insights into Your Data 2
Visualization Types Generated by Auto Insights 3
Interact with Auto Insights to Focus on What You're Interested In 14
Refresh Auto Insights to Include Filters 16
Administration and Limitations 18
Use Explain to Understand Your Data 19
What Is Explain? 20
Quick Start with Explain 20
Use Explain to Get Immediate Descriptive Insights into Your Data 23
Use Explain to Identify the Drivers of Your Selected Column 24
Use Explain to Identify the Most Significant Segments of Records in Your Dataset 26
Use Explain to Identify Anomalies Among Records in Your Dataset 28
Use Contextual Insights to Understand Your Data 28
What Are Contextual Insights? 28
Enable and Configure Contextual Insights for a Visualization 29
Enable Contextual Insights for Consumers 30
Configure Contextual Insights for a Visualization 33
Explore Contextual Insights for a Visualization 35
Understand Visualizations Generated by Contextual Insights 36
Add a Contextual Insights Visualization to a Watchlist 43
Dataset Support and Limitations for Contextual Insights 44

16 Apply Map Backgrounds and Map Layers to Enhance Visualizations

Overview to Using Spatial Data in Visualizations 2
Enhance Visualizations with Map Backgrounds 2
Use Different Map Backgrounds in a Workbook 3
Interpret Data Values with Color and Size in Map Visualizations 3
Download System Map Layer JSON Files 4
Add GeoJSON Custom Map Layers 4

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Update GeoJSON Custom Map Layers 6
Switch to Use Another Map Layer 6
Apply Multiple Data Layers to a Single Map Visualization 6
Apply Reference Layers to Map Visualizations 7
Use Dynamic Line Map Layers to Connect Locations on Map Visualizations 8
About the Dynamic Line Map Layer Type 8
Connect Points on a Map with Dynamic Lines 8
Configure the Properties for Dynamic Lines on a Map 10
Use Vector Map Layers in Map Visualizations 11
Use an Image as a Map Background and Draw Map Layer Shapes on the Image 11
Upload an Image as a Map Background 11
Draw Custom Map Layer Shapes on an Uploaded Image 12
Associate a Dataset with Map Layer Shapes Drawn on an Uploaded Image 13
Assign a Map Layer to a Data Column 13
Auto Focus on Data for a Map Visualization 14
Configure Zoom in Map Visualizations 14
Review Location Matches for a Map Visualization 14
Create Heatmap Layers on a Map Visualization 15
Create Cluster Layers on a Map Visualization 16
Represent Point Data with Custom Icons on a Map 17
Select Points or Area on a Map 18
Represent Line Data Using Size and Color on a Map 18
Make Map Layers and Backgrounds Available to Users 18
Use a Map Background as the Default 19
Add Map Backgrounds 19
Add Google Map Backgrounds 19
Add Baidu Map Backgrounds 19
Add Web Map Service (WMS) Backgrounds 20
Add Tiled Web Map (XYZ) Backgrounds 21
Web Map Background Troubleshooting Tips 22
Add an Outline to Points and Shapes on a Map 22
Add Data Labels to a Map 23

17 Use Data Actions

Create Data Actions to Connect Canvases 1
Create Data Actions to Connect to External URLs from Visualization Canvases 2
About Creating HTTP API Data Actions 3
Create HTTP Data Actions 4
Use Data Actions to Connect to Oracle Analytics Publisher Reports 5
About Creating Data Actions to Connect to Oracle Analytics Publisher Reports 5
Create Data Actions to Connect to Oracle Analytics Publisher Reports 5

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Create Custom Column Names in Data Actions to Pass in Oracle Analytics Publisher Report URLs 6
Invoke Data Actions from Visualization Canvases 7
How Data Actions Affect Filters 9
Tips on Using Data Actions 10
Create Data Actions in Visualizations Embedded in External Containers 13
Execute Data Actions that Contain Embedded Content 15

18 Build a Presentation Flow

What Is a Presentation Flow? 1
What Are Auto and Manual Modes in Present? 2
Manual Mode and How Canvases Synch 2
Switch Between Auto and Manual Modes in Present 4
View Canvas Layout Breakpoints in Present 4
Open the Presentation Flow 5
Specify the Canvases Layout in Present 5
Rearrange the Canvases in Present 5
Duplicate a Canvas in Present 6
Remove a Duplicate Canvas in Present 7
Hide a Canvas in Present 7
Display a Hidden Canvas in Present 8
About Moving or Hiding Visualizations on a Canvas in Present 9
Change a Visualization's Placement on a Canvas in Present 9
Reset a Canvas in Present 9
Set the Workbook Properties in Present 10
Specify Workbook Canvas Navigation in Present 11
Show or Hide the Workbook Header Bar in Present 12
Modify the Workbook Header Title in Present 12
Modify the Workbook Header Color in Present 13
Add an Image to the Workbook Header in Present 14
Show or Hide the Workbook Toolbar in Present 15
Select Workbook Toolbar Options in Present 16
Show or Hide the Zoom Control in Present 17
Specify Workbook Zoom Control Options in Present 18
Change the Workbook Canvases Visualization Alignment in Present 19
Specify the Workbook Layout for the Mobile App in Present 20
Turn Workbook Personalization On or Off in Present 21
Turn On or Off All Workbook and Canvas Actions in Present 22
Show or Hide the Filter Bar in Present 23
Specify Workbook Filter Options in Present 24
Show or Hide Workbook Filters in Present 25

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Specify the Workbook Visualization Actions in Present 26
Hide Inaccessible Data Actions in a Workbook from Consumers in Present 29
Specify Datasets and Subject Areas Available to Consumers in Insights Panel 30
Show or Hide the Insights Panel for Consumers in Present 31
Specify Insights Panel Options for Consumers in Present 32
Specify Workbook Assistant Data Source 34
Set Canvas Properties in Present 35
Specify Canvas Filter Actions in Present 36
Show or Hide Canvas Filters in Present 37
Select Canvas Visualization Toolbar Options in Present 38
Specify Canvas Visualization Menu Options in Present 39
Hide Inaccessible Data Actions on a Canvas from Consumers in Present 41
Show or Hide Canvas Visualizations in Present 43
Show or Hide a Visualization Filter in Present 44
Specify Canvas Zoom Control Options in Present 45
Show or Hide Canvas Notes in Present 45
Preview a Presentation Flow 46

19 Use Oracle Analytics Predictive Models and Oracle Machine Learning Models

What Machine Learning and Artificial Intelligence Services Does Oracle Analytics Support? 1
Create and Use Oracle Analytics Predictive Models 2
What Are Oracle Analytics Predictive Models? 2
How Do I Choose a Predictive Model Algorithm? 3
Train a Predictive Model Using AutoML in Oracle Autonomous AI Lakehouse 6
Create and Train a Predictive Model 7
Data Flow Steps for Training Machine Learning Models 8
Inspect a Predictive Model 9
View a Predictive Model's Details 9
Assess a Predictive Model's Quality 9
What Are a Predictive Model's Related Datasets? 10
Find a Predictive Model's Related Datasets 14
Add a Predictive Model to a Workbook 14
Evaluate Machine Learning Models Using Lift and Gain Charts 15
Overview to Using Lift and Gain Charts 15
Generate Predictive Data for Lift and Gain Charts 17
Evaluate a Machine Learning Model Using a Lift and Gain Chart 17
Use Oracle Machine Learning Models in Oracle Analytics 18
How Can I Use Oracle Machine Learning Models in Oracle Analytics? 19
Register Oracle Machine Learning Models in Oracle Analytics 19
Inspect Registered Oracle Machine Learning Models 20

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View a Registered Model's Details 20
What Are a Registered Model's Views? 20
View a Registered Model's Views List 21
Visualize a Registered Oracle Machine Learning Model's View 22
Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset 22
Perform Similarity Analysis in Oracle Analytics 23
Overview to Performing Similarity Analysis in Oracle Analytics 24
Prerequisites to Performing Similarity Analysis in Oracle Analytics 24
Apply a Similarity Analysis Model to Your Data 24
Interpreting Results from a Similarity Analysis Model 28
Use Oracle Cloud Infrastructure Vision Models in Oracle Analytics 30
Parameter Options for Object Detection, Image Classification, and Text Detection Analysis Models 32
Output Data Generated for Face Detection, Object Detection, Image Classification, and Text Detection Analysis Models 33
Use Oracle Cloud Infrastructure Data Science Models in Oracle Analytics 37
Apply an OCI Data Science Model to a Dataset 37
Use Oracle Cloud Infrastructure Document Understanding Models in Oracle Analytics 39
Overview to Document Classification and Key Value Extraction 39
Prepare Documents to Analyze with an OCI Document Understanding Model 41
Perform Document Classification and Key Value Extraction 43
Parameter Options for OCI Document Understanding Models 46
Output Data Generated for OCI Document Understanding Models 47
Use Oracle Cloud Infrastructure Language Models in Oracle Analytics 49
Apply an OCI Language Model to a Dataset 50
Obfuscate Sensitive Data in a Dataset 52

20 Import, Export, and Share

Import a Workbook File 1
Export Workbook Content in Various Formats 2
Share Your Content 3
Catalog Access Inheritance Rules 5
Share a Workbook 5
Share a Workbook URL with a Specific Canvas Selected 6
Share a Workbook URL with Persisted Filter Values 7
Export a Workbook or Folder as a File 9
Export a Visualization 9
Tips on Exporting Data in CSV Format 10
Post a Visualization or Canvas on Content-Sharing Platforms 11
Delete Links Shared on Content-Sharing Platforms 11
Email a File of a Visualization, Canvas, or Dashboard 12
Print a Visualization, Canvas, or Dashboard 13

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Share Visualizations Using Workbook Email Schedules 14
About Workbook Email Schedules 14
Create a Workbook Email Schedule 16
Create a Bursting Workbook Email Schedule 17
Manage Workbook Email Schedules and Jobs 17

21 Manage Visualization Content

Overview to Managing Content 1
About Accessing the Catalog 2
About Managing Existing Content 3
Creating and Managing New Items 4
Verifying an Item's Location in the Catalog 8
Adding an Alias to Support Legacy References 9
Create a Catalog Folder 9
Move Catalog Folders and Contents 10
Assign Shared Catalog Folder and Workbook Permissions 10
Add or Update a Shared Workbook's Permissions 10
Add or Update Shared Catalog Folder Permissions 11
Workbook Permissions Rules 12
FAQs Managing Data and Machine Learning Items in the Catalog 13
FAQs General Questions 13
FAQs Export Items in DVA Format 15
Using Classic Catalog 19

Part IV Report Data

22 Create Analyses

Typical Workflow to Create Analyses 1
Create Your First Analysis 2
Set Properties for Columns 3
Apply Formatting to Content 4
Format Columns 5
Make Your Analyses Dynamic 6
Add Interactivity to Analyses 6
Make Interactions Available 7
Set Default Formats for Your System 7
Export Content from Analyses and Dashboards 8
Export the Results of Analyses 8
Export Dashboards and Dashboard Pages 8
Tips for Exporting 9

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Edit Formulas or Calculated Measures 9
Edit the Formula for a Column 10
Edit Calculated Measures 11
Set Properties for Analyses 11
Set Your Preferences 12
Advanced Techniques: Import Formatting from Another Analysis 13
About Applying Formatting from Columns 13
About Applying Formatting from Views 13
About Applying Formatting from Containers 13
Import Formatting from a Saved Analysis to a Target Analysis 14
Advanced Techniques: Format with HTML Tags 14
Advanced Techniques: Combine Columns to Display Data Differently 15
Advanced Techniques: Examine the Logical SQL Statements for Analyses 16
Advanced Techniques: Set Caching Options for Your Analysis 17
Advanced Techniques: Reference Stored Values in Variables 17
About Session Variables 17
System Session Variables 18
Non-System Session Variables 18
About Semantic Model (Repository) Variables 18
About Presentation Variables 19
About Request Variables 19
About Global Variables 20
Create Global Variables 20
Syntax for Referencing Variables 21
Session Variables 23
Presentation Variables 23
Semantic Model (Repository) Variables 23
Advanced Techniques: Issue Direct Database Requests 24
Privileges Required for Direct Database Requests 24
Create and Execute Direct Database Requests 24

23 View Data in Different Ways

Typical Workflow to View Data in Different Ways 1
About Views 2
Add Views 4
Edit Views 4
Edit Various Types of Views 5
Edit Table and Pivot Table Views 5
Edit Performance Tile Views 6
Edit Treemap Views 8
Edit Heat Matrix Views 9

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About Heat Matrix Views 10
Edit Trellis Views 11
About the Functions of Trellis Views 13
About Simple Trellis Versus Advanced Trellis 13
Design Considerations for Trellis Views 15
Edit Gauge Views 15
Set Thresholds 17
Edit Map Views 17
About Map Views 18
About Formats and Layers in Map Views 20
Edit Formats and Layers in Map Views 23
Apply Formats to Layers in Map Views 23
Move Around in Map Views 23
Set the Initial View Ports for Map Views 25
Edit Narrative Views 26
Edit Non-Data Views 27
About Column Selector Views 27
About View Selector Views 27
About Filters Views 28
About Selection Steps Views 28
About Static Text Views 28
About Title Views 28
Graph Data in Analyses 28
Edit Graph Views 29
Zoom and Scroll in Graphs 29
Format the Visual Appearance of Graphs 30
Format Graphs Based on Position 31
Format Graphs Based on Columns 31
Rules to Apply Conditional Formats in Graphs 32
Graph Exceptions for Conditional Formatting on Columns 32
Limit Data Displayed in Graphs and Gauges 32
Define Section Sliders in Graphs and Gauges 33
Use Section Sliders in Graphs and Gauges 33
Save Views 33
Rearrange Views 34
Refresh the Results in Views 34
Print Views 35
Change Print Options for Views 35
Preview How Views Are Displayed on Dashboards 36
Remove Views 36
Sort Values in Views 36
Clear Sorts in Views 37

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Drill in Results 38
About Drilling 38
Drill in Tables and Other Views 38
Drill in Graphs 39
Drill in Map Views 40
Resize Rows and Columns in Views 41
Configure to Resize in Views 41
Resize in Views 42
Suppress Null Values in Views 42
Assemble Views for Display 43
Link Views in Master-Detail Relationships 43
Define Master Views 44
Define Detail Views 45
Modify the Layout of Data in Views 46
Add and Rearrange Columns in Views 46
Add Columns to Views 46
Remove Columns from Views 47
Rearrange Columns in Views 47
Set Properties for Sections of Data in Views 47
Add Totals to Tables and Pivot Tables 48
Display Running Sums and Relative Values in Pivot Tables 49
Display Running Sums for Measure Columns in Pivot Tables 49
Display Relative Values for Measure Columns in Pivot Tables 50
About Drop Targets in the Layout Pane 50
About the Types of Drop Targets 51
About the Excluded Drop Target 51
About the Guidelines for Drop Targets for Various Views 52
Drop Target Guidelines for Graphs and Funnel Graphs 52
Drop Target Guidelines for Heat Matrixes 53
Drop Target Guidelines for Trellises 54
Drop Target Guidelines for Treemaps 54
Visualize Data in an Analysis 55

24 Build Dashboards

Typical Workflow to Build Dashboards 1
Create Your First Dashboard 2
Edit Dashboards 3
Add and Delete Pages in Dashboards 3
Add Pages to Dashboards 3
Print Dashboards 4
Add Subpages to Dashboards 4

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Add Content to Dashboard Pages 4
Understand How Dashboard Pages and Oracle Analytics Publisher Reports Interact 5
Configure the Style and Behavior of Dashboards and Pages 6
Change the Properties of Objects Added to Dashboard Pages 9
Make Dashboard Sections Collapsible In Accessibility Mode 9
Delete Objects on Dashboard Pages 10
Delete Dashboard Pages 10
Delete Dashboard Subpages 10
Create and Manage Layouts for Dashboards and Dashboard Pages 11
About Custom Print and Export Layouts 11
Create Custom Layouts 12
Edit, Replace, or Remove Custom Layouts 12
Items Not Supported for Custom Print Layouts in Oracle Analytics Publisher 13
Print Dashboards 13
Organize Dashboard Pages in Briefing Books 13
Add Content to New or Existing Briefing Books 14
Edit the Content of Briefing Books 14
Download Briefing Books 14
Add a List of Briefing Books to a Dashboard Page 15
Save and Restore Dashboard State 15
Save Customizations of Dashboard Pages 16
Apply Saved Customizations 16
Edit Saved Customizations 16
Clear the Current Customization 17
Publish Dashboard Pages 17
Link to Dashboard Pages 17
About Bookmark Links 18
Create Bookmark Links to Dashboard Pages 18

25 Filter and Select Data for Analyses

Typical Workflow to Filter and Select Data 1
About Filters and Selection Steps 1
About Prompted Filters 2
Create Filters for Columns 2
Create Inline and Named Filters 2
Specify Values for Filters 3
Embed an EVALUATE_PREDICATE Function in a Filter 4
Combine and Group Filters 5
Save Inline and Named Filters 5
Edit Filters for Columns 6
Reuse Filters 7

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Use a Saved Analysis as a Filter 8
Advanced Techniques: How Dashboard Prompts and Analysis Prompts Interact 8
Refine Selections of Data 9
Create Selection Steps 9
Edit Selection Steps 10
Save Selection Steps for Reuse 11
Advanced Techniques: Create Condition Steps 11
Manipulate Members with Groups and Calculated Items 13
About Groups and Calculated Items 13
Create Groups and Calculated Items 13
Edit Groups and Calculated Items 15
View Group Contents 15
Save Groups and Calculated Items 16
Reuse a Group or Calculated Item in an Analysis 17
Delete Groups and Calculated Items 18

26 Prompt in Analyses and Dashboards

Typical Workflow to Create Prompts in Analyses and Dashboards 1
Create Prompts 1
Create Column Prompts 2
Create Variable Prompts 3
Override a Selection Step with a Prompt 4
Create Currency Prompts 5
Edit Prompts 6
Add Prompts to Dashboard Pages 6
Add Hidden Prompts to Dashboard Pages 7

27 Make Analyses Interactive

Typical Workflow to Make Analyses Interactive 1
Create Named Actions for Reuse 2
Create Inline Actions 2
Add Actions to Analyses 3
Add Actions to Dashboard Pages 4
Add Actions to Dashboard Pages with Action Links 4
Add Actions to Dashboard Pages with Action Link Menus 4
Edit Named Actions 5
Edit and Delete Action Links in Analyses 5
Edit and Delete Action Links in Dashboard Pages 6
Save Inline Actions in Analyses to the Catalog 7

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Save Inline Actions in Dashboards to the Catalog 7

28 Manage Reporting Content

Typical Workflow to Manage Reporting Content 1
About Naming Restrictions for Items in the Catalog 2
Rename Reporting Content 3
Rename Items 3
Rename Views 3
Search for and Replace Text in Classic Catalog Items 3
Search for and Replace a Simple Catalog Text String 4
About Search and Replace of Multiple Catalog Text Strings 5
JSON File Format to Search for and Replace Text Strings 5
Example JSON File for Searching for and Replacing Text Strings 6
Search for and Replace Multiple Catalog Text Strings 6
Access Favorites Easily 7
Add Content to Your Favorites List 7
Remove Content from Your Favorites List 7
Access Properties 8
Assign Access Permissions 8
Add or Update Item Permissions 9
Add or Update Dashboard Section Permissions 10
Send Email Reports and Track Deliveries 10
Send Email Reports Once, Weekly, or Daily 10
Track the Reports You Distribute By Email or Through Agents 11
View and Edit Recipients for Deliveries 13
Suspend and Resume Deliveries 14
Change the Owner or Time Zone for Deliveries 14
Restore and Enable Delivery Schedules 16
Generate and Download a Deliveries Report (CSV) 17
Automate Business Processes with Agents 19
Create Agents to Deliver Content 19
Schedule an Agent to Deliver Content Directly from an Analysis 21
Disable and Enable the Schedule for an Agent 21
Subscribe to Agents 21
List Agents You Subscribe To or Own 22
Access and Manage Your Alerts 22
Configure Your Devices and Delivery Profile 22
About Devices and Delivery Profiles 22
Configure Your Devices 23
Configure Your Delivery Profiles 24
Assign Ownership of Items in Classic Catalog 24

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Assume Ownership of Items in Classic Catalog 25
About Embedding External Images and Other External Resources in Your Content 25
Access Your Reporting Content in Smart View 26
Perform Advanced Catalog Management in Classic Catalog 26
Download, Install, and Start Oracle Analytics Client Tools 26
Use the Catalog Manager Command Line Interface 28
CLI Example: Find and Replace Catalog Text 28
CLI Example: Unarchive a Catalog Archive 29
CLI Example: Generate a Catalog Report 29

Part V Publish Data

29 Introduction to Pixel-Perfect Publishing

Overview of Pixel-Perfect Reporting 1
Tasks for Report Consumers 1
Set Your Account Preferences 2
About the Catalog 2
Browse the Catalog 2
Search the Catalog 2
Download Desktop Tools 3

30 View Pixel-Perfect Reports

View a Report 1
Configure Pixel-Perfect Reports Using Report Viewer 1
Specify Parameters 2
Search for a Parameter Value 2
Select a Layout 3
Select an Output Type 3
Output Types 3
Perform Actions 4
Actions 5

31 Create Pixel-Perfect Report Jobs

Navigate to the Schedule Report Job Page 1
Set General Options 1
Set Output Options 2
Add Destination Types to Report Output 2
Report Output Destination Types 3
Content Server Destination Type Properties 4

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Add Outputs 5
Define the Schedule for a Job 5
Define a Recurrence Pattern 5
Use Schedule Triggers 7
About Schedule Triggers 7
Enable a Schedule Trigger 8
Configure Notifications 8
Submit and Monitor a Job 9
Create a Job from an Existing Job 9
Create a Bursting Job 9
Advanced Topics 9
Increment Date Parameters 9
Define a Destination File Name Dynamically with a Date Expression 10
Examples 11

32 View and Manage Pixel-Perfect Report Jobs

About the Manage Report Jobs Page 1
Access the Manage Report Jobs Page 1
View Jobs for a Specific Report 2
Search for Report Jobs 2
Set the Time Zone for Viewing Jobs 2
View Job Details 3
Pause Jobs 3
Resume Jobs 3
Delete Jobs 3
Edit Jobs 4

33 View and Manage Pixel-Perfect Report History

View Report Job History and Saved Output 1
View Job History for a Specific Report 2
Search for Report Job History 3
View Details of a Job History 3
Download Data from a Report Job 3
Republish from History in Report Viewer 3
Republish a Report from History 4
Send an Output to a New Destination 4
Monitor Running Jobs 4
Process Stages of Jobs 5
Cancel a Running Job 5
Get Error and Warning Information for Reports 6

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Delete a Job History 6

34 Manage Pixel-Perfect Reports

Overview of Folders 1
Reporting Components Stored in the Catalog 1
Create a Folder or Subfolder 2
Perform Tasks on Catalog Objects 2
Download and Upload Catalog Objects 3
Understand the Impact of Taking Actions on Objects Referenced by Reports 3
Export and Import Catalog Translation Files 3

Part VI Reference

35 Frequently Asked Questions

FAQs to Explore and Report 2
FAQs to Publish Data 8
FAQs to Oracle Analytics Generative AI 9
FAQs about Data Preparation 11

36 Troubleshoot

What Diagnostic Tools Are Available? 1
Troubleshoot General Issues 2
Troubleshoot Issues with Workbooks, Analyses, and Dashboards 5
Troubleshoot Visualization Issues 7

37 Design Tips

Find the SQL_ID for an Oracle Analytics Query 1
Use the IndexCol Function 12
Maintain Initialization Blocks 17
Use Usage Tracking with Initialization Blocks 19
Minimize Impact on Query Performance Due to Network Latency 21
Assign the Aggregation Rule for Report Totals 22
Select the Best Option to Render Dashboards 25
Improve the Time to Display Dashboard Pages with Prompts 26
Configure Timestamps 29
Use Filter Functions Instead of Time Series Functions 31
Tune Performance of Multidimensional Database Queries 37
Tune Performance of Relational Database Queries 44

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Tune Performance with Excluded Columns 45
Improve Results from Oracle Analytics AI Assistant 48

38 Data Preparation Reference

Developer Options 1
Enable Developer Options 2
Data Flow Limits 3
Create a Connection to Your Oracle Cloud Infrastructure Tenancy 3
Integrate Oracle Analytics with Oracle Autonomous AI Lakehouse 23ai Vector Search 4
Make a Similarity Analysis Model Available in Oracle Analytics 4
Integrate Oracle Analytics with Oracle Cloud Infrastructure Functions 6
About Using OCI Functions in Oracle Analytics 7
About Configuring OCI Functions to Use in Oracle Analytics 7
Policies Required to Integrate OCI Functions with Oracle Analytics 10
Typical Workflow for Transforming Data Using OCI Functions 11
Register OCI Functions in Oracle Analytics 12
Integrate Oracle Analytics with Oracle Cloud Infrastructure Data Science 12
Prerequisites for Integrating OCI Data Science Models with Oracle Analytics 13
Policies Required to Integrate OCI Data Science with Oracle Analytics 13
Make an OCI Data Science Model Available in Oracle Analytics 15
Integrate Oracle Analytics with Oracle Cloud Infrastructure Document Understanding 17
Typical Workflow to Integrate Oracle Analytics with OCI Document Understanding 17
Policies Required to Integrate OCI Document Understanding with Oracle Analytics 18
Make a OCI Document Understanding Model Available in Oracle Analytics 19
Integrate Oracle Analytics with Oracle Cloud Infrastructure Language 22
Prerequisites for Integrating OCI Language Models with Oracle Analytics 23
Policies Required to Integrate OCI Language with Oracle Analytics 23
Make an OCI Language Model Available in Oracle Analytics 24
Integrate Oracle Analytics with Oracle Cloud Infrastructure Vision 27
Overview to Integrating Oracle Analytics with Vision 27
Policies Required to Integrate OCI Vision with Oracle Analytics 29
Typical Workflow to Integrate Oracle Analytics with Vision 30
Prerequisites for Images and Videos for Analysis with an OCI Vision Model 30
Prepare Images or Videos for Analysis with an OCI Vision Model 31
Make a Vision Model Available in Oracle Analytics 33

39 Expression Editor Reference

Semantic Model Objects 1
SQL Operators 1
Conditional Expressions 3

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Best Practices for Using CASE Statements in Analyses and Visualizations 4
Functions 6
Analytics Functions 7
Conversion Functions 9
Date Extraction Functions 10
Tips on Using Date Dimensions in Subject Areas 12
Display Functions 13
Evaluate Functions 15
Mathematical Functions 15
Running Aggregate Functions 17
Spatial Functions 18
String Functions 19
Tips on Using LISTAGG in String Functions 22
System Functions 23
Time Series Functions 23
Aggregate Functions 24
Tips on Using Aggregate Functions 28
Date and Time Functions 28
Tips on Using Date Functions 30
Constants 34
Types 34
Variables 34

40 Certification Information

Certification - Supported Browsers 1

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Preface

Learn how to use the service to explore and analyze data by creating workbooks and reports.

Topics:

- Audience
- Related Documents
- Conventions

Audience

This guide is intended for business analysts and business users who use Oracle Analytics Cloud to:

- Create self-service data models (datasets) and use them to create workbooks and data visualizations that reveal compelling stories about their business.
- Create and prepare reports and dashboard pages and share them with business users to quickly analyze and manage activities across their business.

Related Documents

For a list of related documents, go to the Guides tab on Oracle Analytics Cloud Help Center.

http://docs.oracle.com/en/cloud/paas/analytics-cloud/books.html

Conventions

Conventions used in this document are described in this topic.

Text Conventions

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Videos and Images

Your company can use skins and styles to customize the look of the application, dashboards, reports, and other objects. It is possible that the videos and images included in the product documentation look different than the skins and styles your company uses.

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Even if your skins and styles are different than those shown in the videos and images, the product behavior and techniques shown and demonstrated are the same.

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Part I

Introduction to Visualization and Reporting in Oracle Analytics Cloud

This part introduces you to visualizing data and building reports in Oracle Analytics Cloud.

Chapters:

- Get Started with Visualizing Data and Building Reports (For Content Creators)
- Get Started with Visualizing Data (For Consumers)

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1

Get Started with Visualizing Data and Building Reports (For Content Creators)

This topic describes how to get started with visualizing data and building reports.

Tutorial

Topics:

- About Visualizations and Analyses
- Accessing Oracle Analytics Cloud
- Configure Time Zones (Preview)
- Find and Explore Your Content
- Create and Share Pages
- About Watchlists
- Providing Custom Groups of Content
- Saving Your Content in the Catalog
- View Content on Mobile Devices

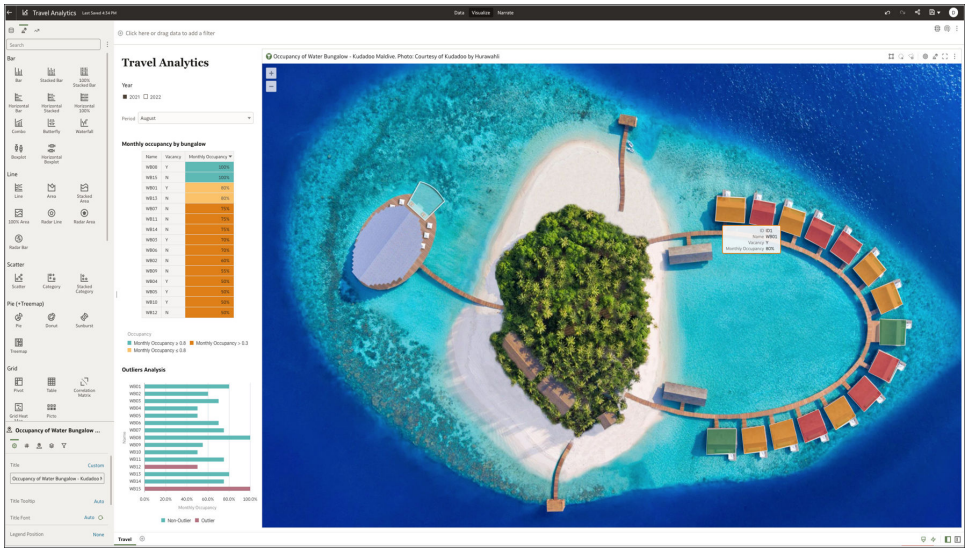
About Visualizations and Analyses

You use visualizations and analyses to find the answers that you need from key business and analytic data displayed in graphical formats.

Visualizations

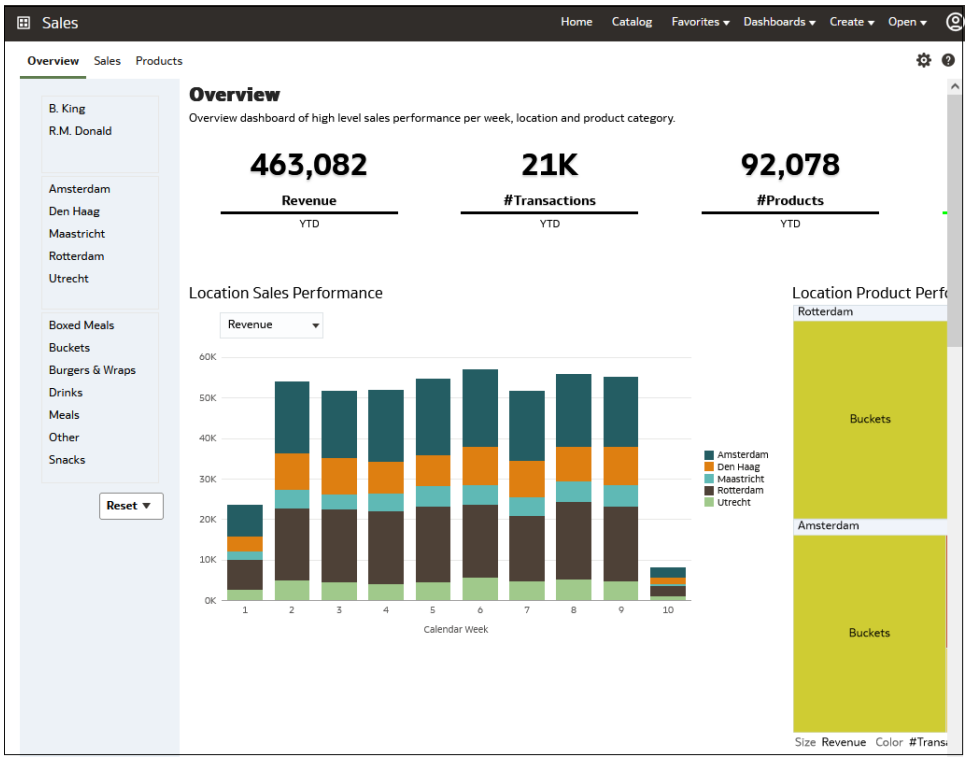
Visualizations enable you to dynamically explore multiple datasets in a graphical way, all within a single interface. You can visualize data from many commonly used data sources. Workbooks enable you to organize and share your visualizations.

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Analyses

Analyses are queries against your organization's data that provides you with answers to your analytical questions. Analyses enable you to explore and interact with information visually in tables, graphs, pivot tables, and other data views. You can also save, organize, and share the results of analyses with others.



Dashboards can include multiple analyses to give you a complete and consistent view of your company’s information across all departments and operational data sources. Dashboards provide you with personalized views of information in the form of one or more pages, with each page identified with a tab at the top. Dashboard pages display anything that you have access

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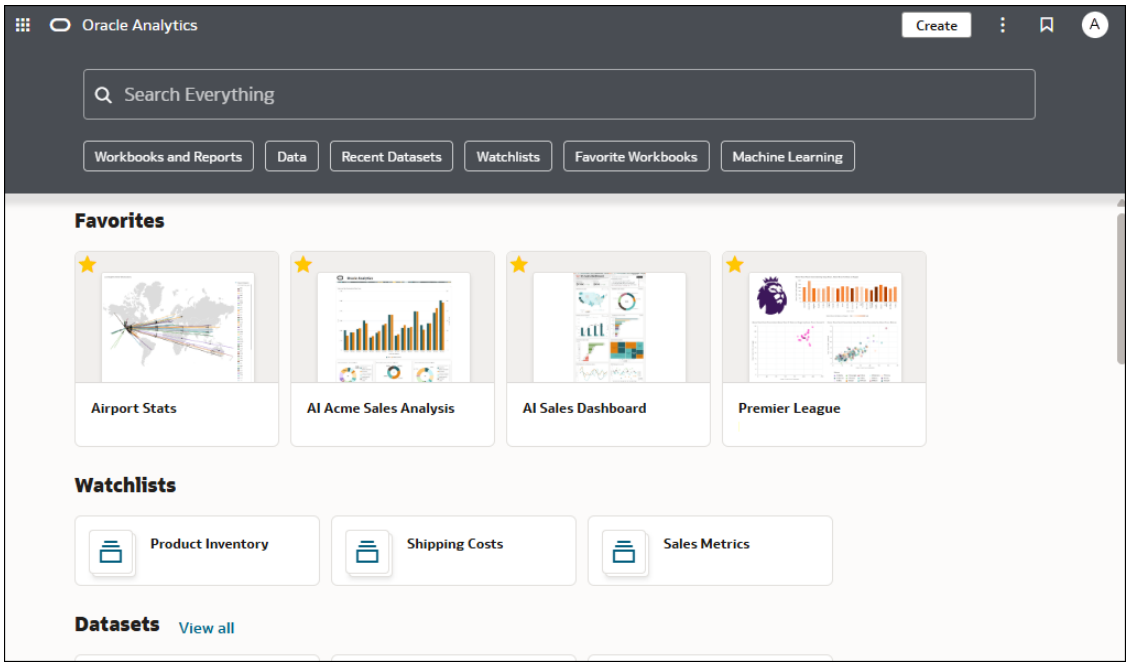
to or that you can open with a web browser including analyses results, images, text, links to websites and documents, and embedded content such as web pages or documents.

When you embed an analysis in a dashboard, the analysis automatically displays the most current data every time you access the dashboard. For example, if you need to see weekly sales performance over a range of products and locations you can run the dashboard to view the most up to date information.

Accessing Oracle Analytics Cloud

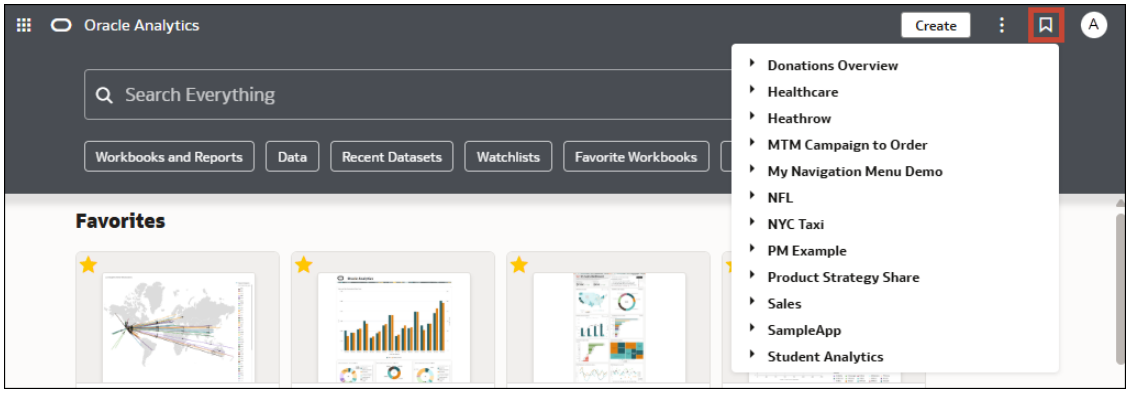
Your "Welcome to Oracle Analytics Cloud" email contains a direct link to the service. Simply click this link and sign in. Alternatively, sign in to Oracle Cloud at `cloud.oracle.com` and then select Oracle Analytics Cloud.

When you sign in for the first time, Oracle Analytics Cloud displays a product tour. At the end of the tour, you see the home page, which has links to all of the features available to you. To dive straight into creating visualizations, see Create a Visualization. Browse the thumbnails that display on the home page, or use the search bar or Navigator to locate your analytics content.

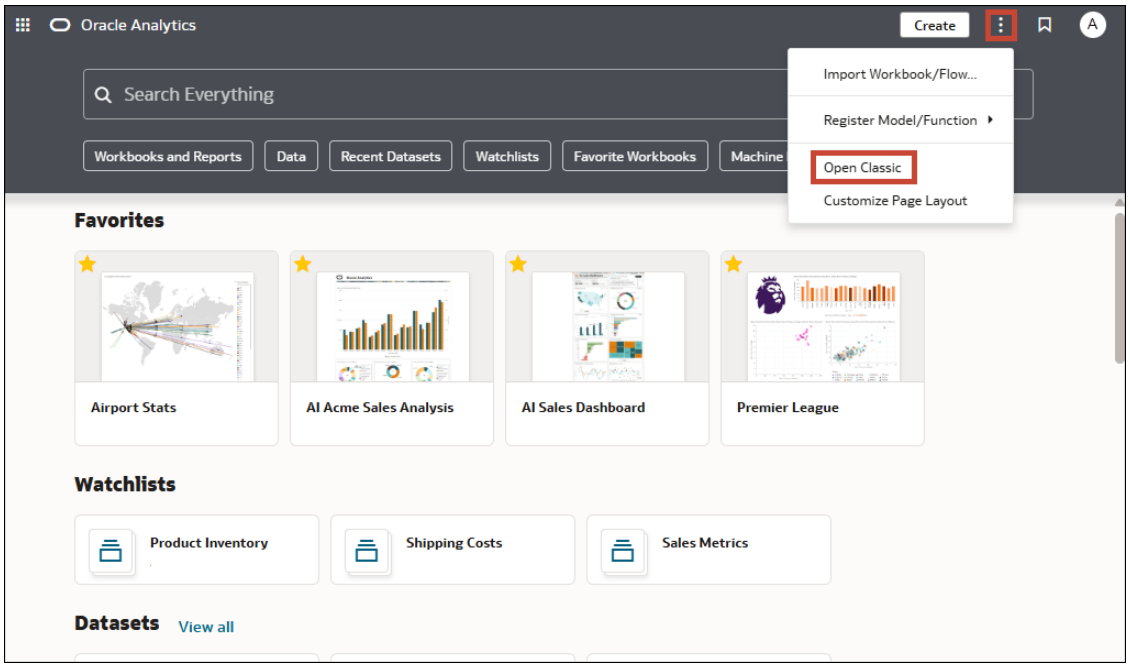


Click the **Navigation Menu** to open links to curated workbooks and dashboards that have been saved in Workbooks or Dashboards subfolders with the **Add to Navigation Menu** option selected.

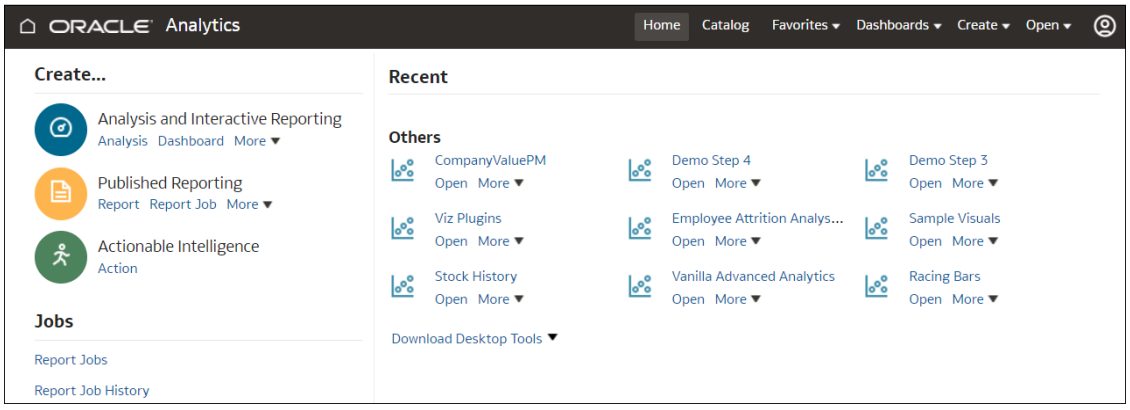
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To work with content for reporting, mobile, actionable intelligence, or pixel-perfect reporting, click the **Page Menu** and select **Open Classic**. Browse the thumbnails that display on the Classic home page or use the search bar to locate analytics content.



The Classic home page opens in a new browser tab or page.

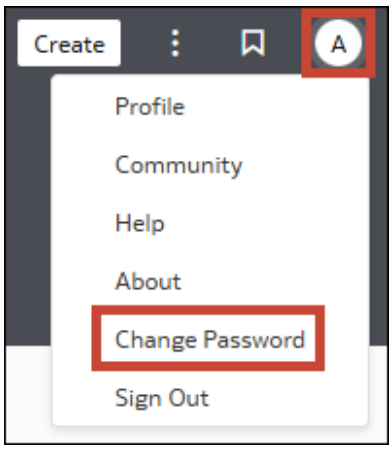


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Change Your Own Password

You can sign in to Oracle Analytics Cloud to change or reset your password. If you forgot the password you use to sign in, you can ask the administrator to reset it.

1. On your home page, click your user name or name badge with your initials.



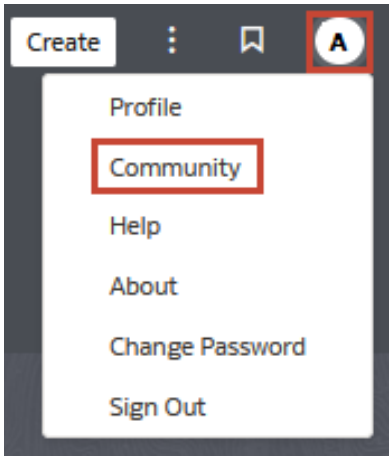
2. Click **Change Password**.
3. Enter your new password twice.
4. Click **Update**.

Access Oracle Analytics Community

You can use the user profile Community menu option to open the Oracle Analytics Community home page.

The Oracle Analytics Community provides an engaging platform for professionals to connect and learn from experts in data, analytics and AI. Through forums, events, and user groups, members can network, share insights, stay updated on industry trends, and get inspired by user-submitted data visualizations. The Oracle Analytics Community also empowers users to submit ideas through the idea labs to directly influence the product feature roadmap.

1. On your home page, click your user name or name badge with your initials.



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2. Click **Community**.

   See https://community.oracle.com/products/oracleanalytics/.

Configure Time Zones (Preview)

Understand and configure your time zones in workbooks in Oracle Analytics. These topics don't apply to analyses or dashboards.

Topics:

- About Time Zones (Preview)
- Set Your Preferred Time Zone (Preview)
- Set the Time Zone for a Dataset (Preview)

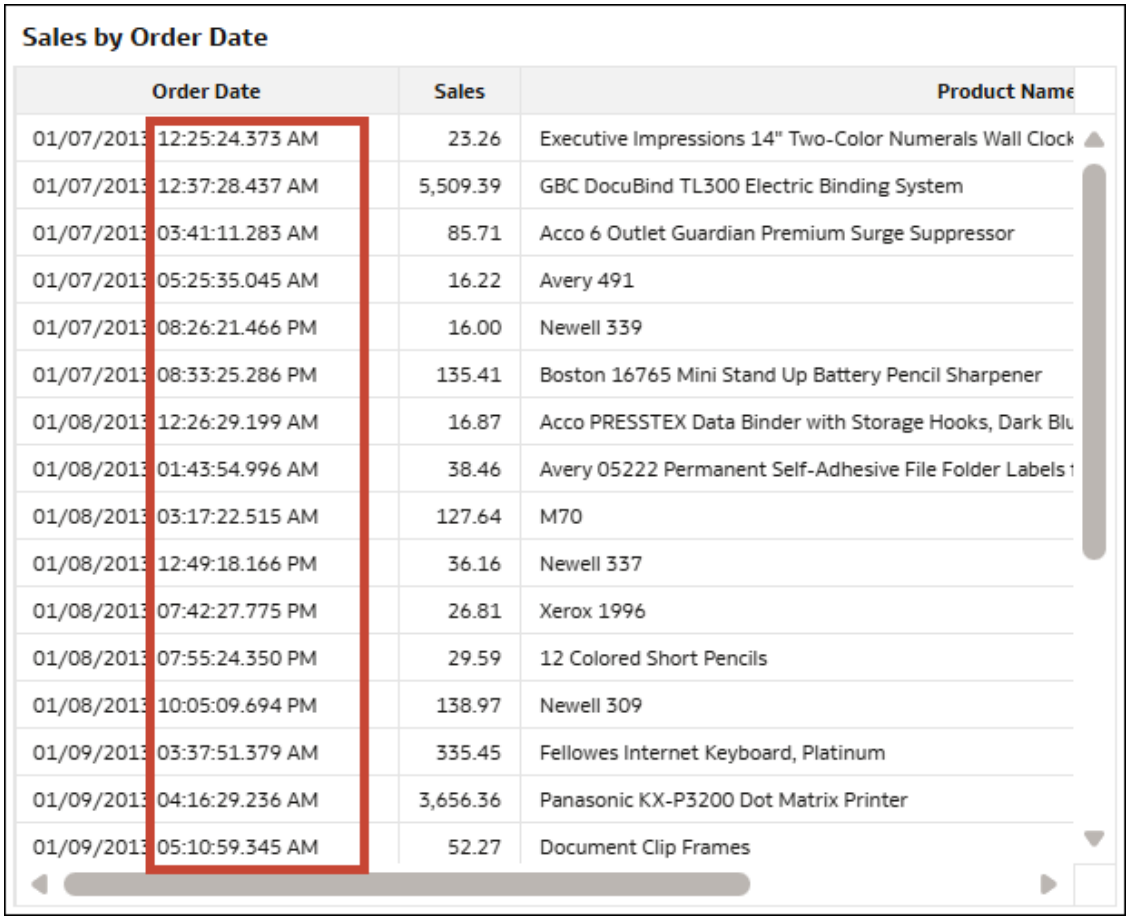
About Time Zones (Preview)

Oracle Analytics provides time zone support for both subject areas and datasets so all users can view the values for columns with a DateTime or timestamp data type in the right time zone in workbooks.

Time zone configuration is available for preview. Ask your administrator to turn on the **Enable Time Zone** option in System Settings. See Preview Options.

For example, suppose you have a table visualization showing the product sales for each order date where the Order Date column has a data type of DateTime. The Order Date values in the table display their timestamp based on how the time zone settings are configured.

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Time zones can be specified for subject areas and datasets, and you can specify your user time zone.

- The time zone for all subject areas is set by your administrator in the Console.
- The time zone for a dataset is set individually by the dataset owner. See Set the Time Zone for a Dataset (Preview).
- You set your preferred time zone in your user profile. See Set Your Preferred Time Zone (Preview).

Administrators can also configure additional time zone system settings in the Console to apply a default time zones to users.

In order for a time zone shift to apply in a workbook, both the time zone of the source data and the time zone you as a user want to view it in must be defined.

Set Your Preferred Time Zone (Preview)

Select your preferred time zone setting in your profile to apply to any workbooks you open.

The option to select your preferred time zone is available for preview. Ask your administrator to turn on the **Enable Time Zone** option in System Settings. See Preview Options.

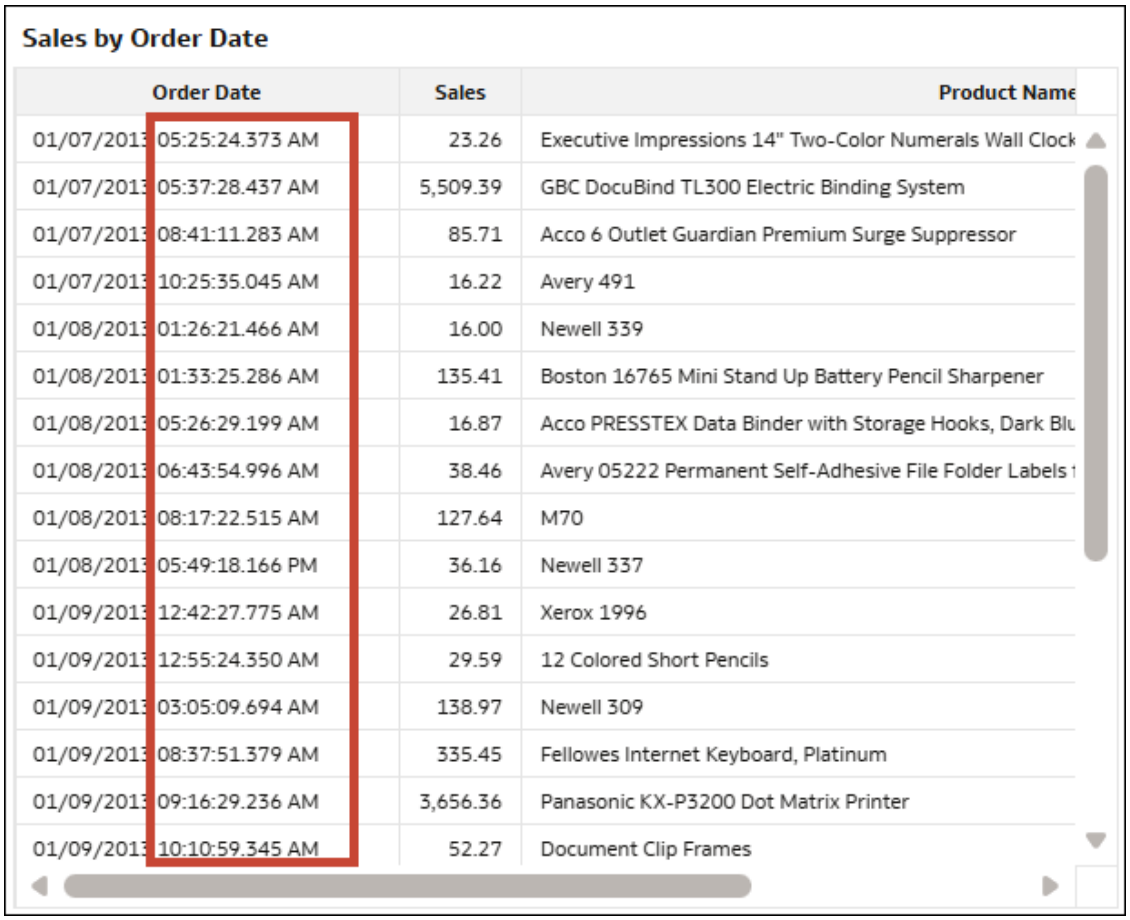
In workbooks, Oracle Analytics displays the values for columns with a DateTime data type based on the time zone configured in your profile settings. This includes any filters and parameters, as well as reference lines used in visualizations.

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In your profile settings, you can choose from the following time zone options:

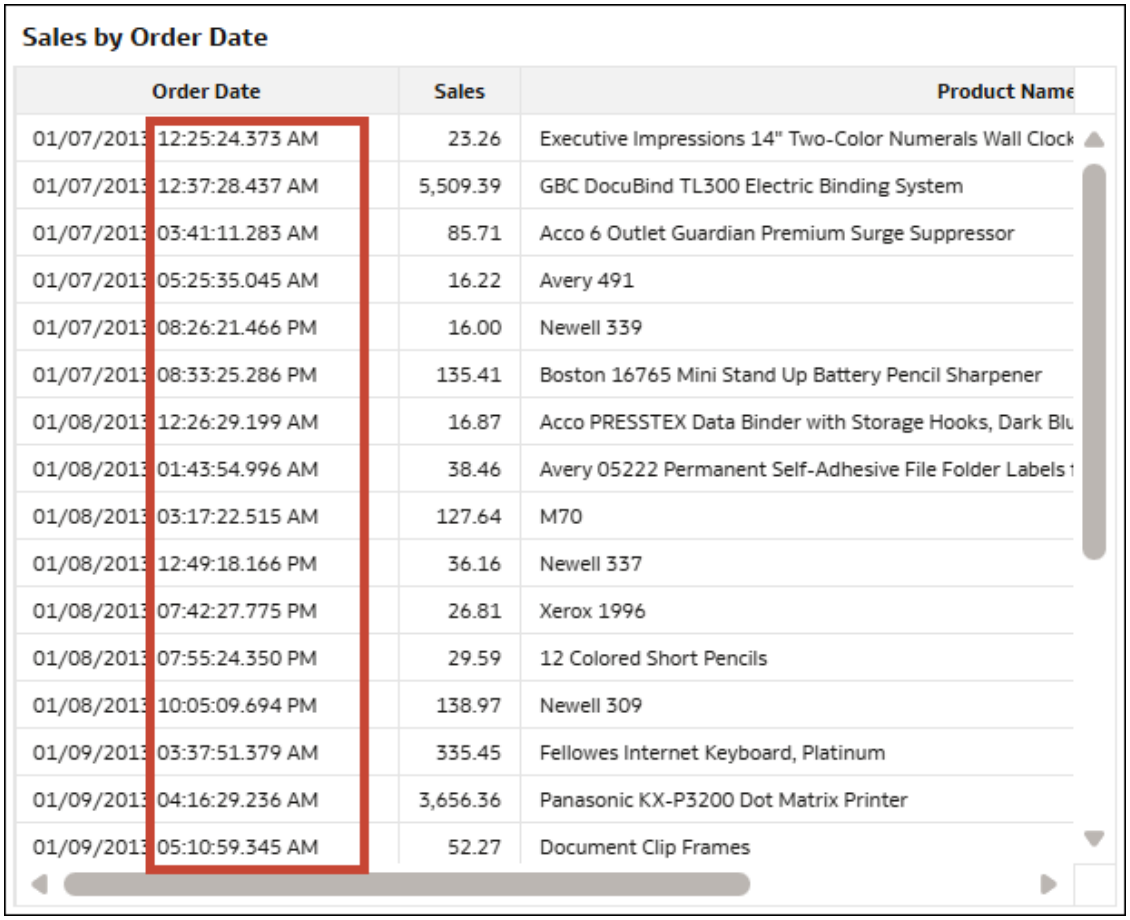
- **None** - Doesn't perform any time zone conversion. This is the default setting.
- **Browser Setting** - Uses the default browser time zone.
- **System Setting** - If your administrator has defined an optional default user time zone, this option lets you use that as your time zone.
- **Specific time zone** - Uses the time zone that you select.

For example, suppose you have a workbook with the same table visualization showing the product sales for each order date. The workbook is using a dataset and the Order Date column has a data type of DateTime. You might decide to keep the default Time Zone setting of **None** in your Profile. This means that no time zone conversion is applied to the Order Date values. The data simply displays the way it's stored in the dataset.

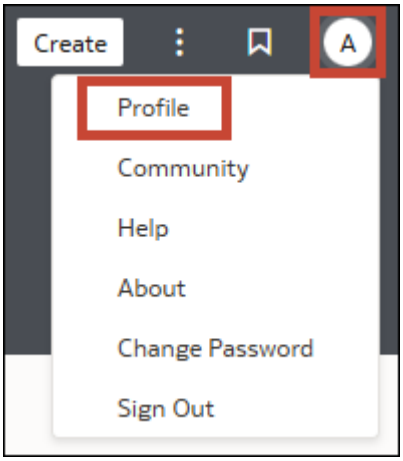


If you decide to change your setting and select **(GMT-03:00) Buenos Aires, Georgetown** as your preferred time zone in your Profile, Oracle Analytics converts the Order Date values to Buenos Aires time. In this example, the source data was in the Cairo time zone (GMT+02:00) so now the values are five hours earlier with the conversion.

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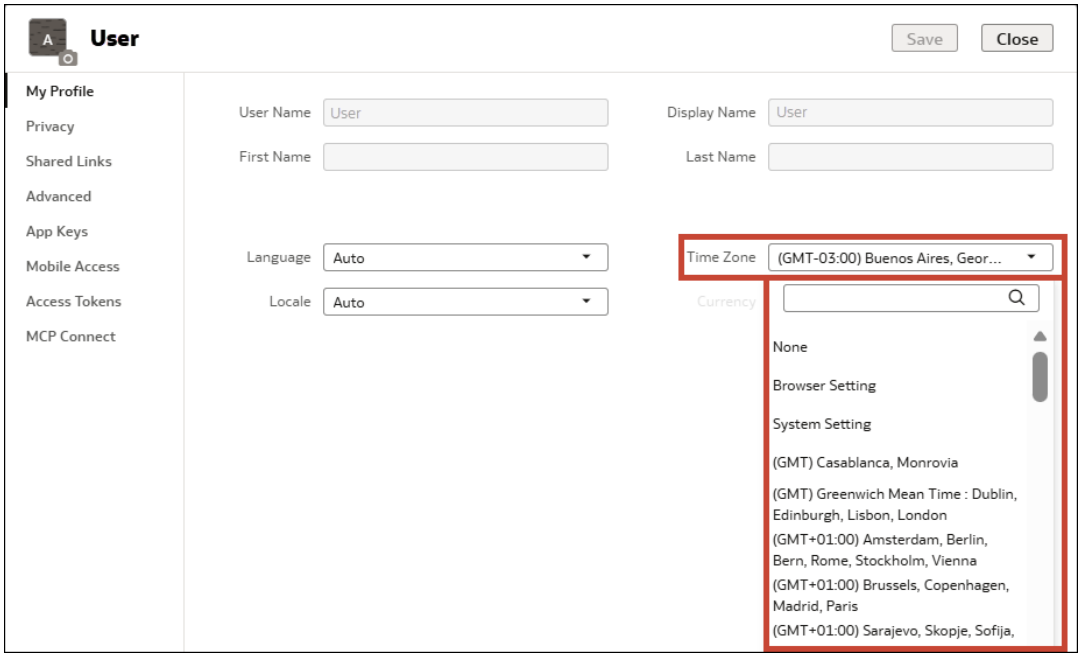


1. On your home page, click your user name or name badge with your initials.



2. Click **Profile**.
3. In My Profile, click **Timezone** and select an option.

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4. Click **Save**, then click **Close**.

Set the Time Zone for a Dataset (Preview)

Specify the time zone to use for a dataset. Setting a time zone for a dataset defines which time zone the source data is in, in other words, what time zone the data was collected in.

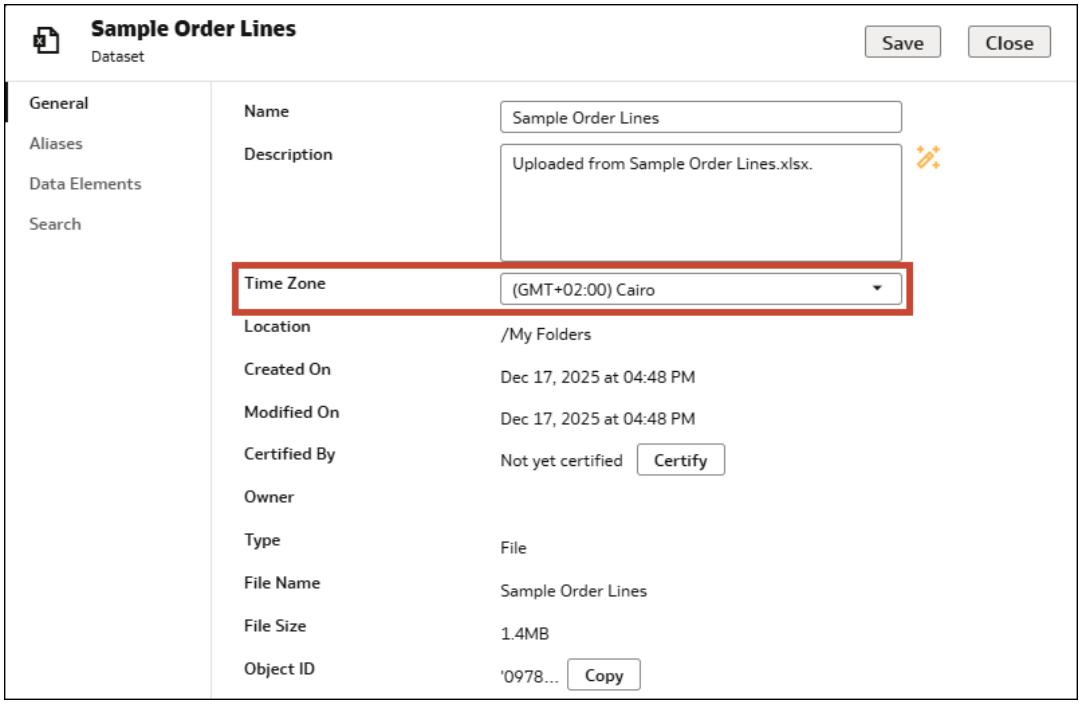
The option to select a time zone for a dataset is available for preview. Ask your administrator to turn on the **Enable Time Zone** option in System Settings. See Preview Options.

You can only set a time zone for datasets that you own. By default, no time zone is selected for a new dataset.

If you specify a time zone for a dataset, when a user views the data in a workbook, Oracle Analytics converts any date time columns based on the time zone setting in the user's profile. For information about setting your preferred time zone, see Set Your Preferred Time Zone (Preview).

1. On your home page, hover over a dataset that you own, click **Actions**, and then click **Inspect**.
2. In the General tab, in the Time Zone row, select a time zone from the drop-down list.

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3. Click **Save**, then click **Close**.

Find and Explore Your Content

On your home page, or any page you have access to, you can use the search bar and Navigator to find and explore your analytics content, such as workbooks, datasets, connections, and data flows.

Topics:

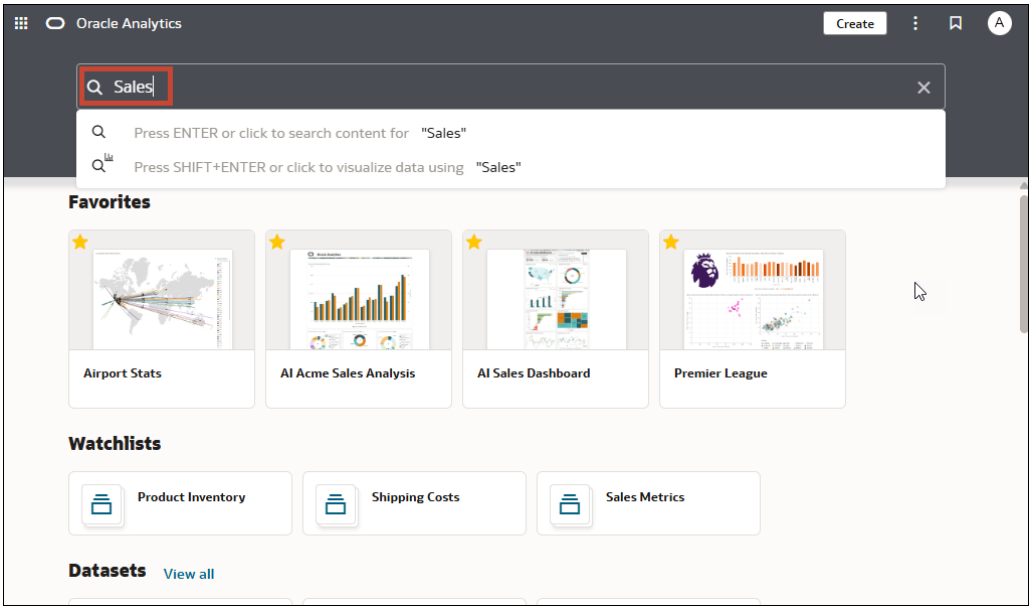
- Use the Search Bar to Find Your Content
- Explore Your Content with Navigator

Use the Search Bar to Find Your Content

Use the search bar to search for the content you're interested in using search terms, content types, and search tags. If you've enabled GenAI services, you can use natural language to search for content and visualizations.

1. On your home page, type in a search term and either press **Enter** to search for content or **Shift + Enter** to visualize data.
   a. Specify the full or partial name of what you're looking for. The search is case-insensitive.

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b. (Browser dependent) Click **Dictate** (if displayed) and speak your search term.

2. Type a question in natural language. For more information, see Generate Visualizations from Your Home Page.
3. If you've enabled GenAI services, ask follow up questions in natural language.
4. To display more information about the artifiacts, click **Enable artifacts detail pane**, then click search results to display more information about the artifacts.

Search Options

You can enter advanced search commands in the search bar to tailor your search results for exact matches, multi-term matches, and field-level matches.

You can combine multiple search terms with commands to narrow or widen your search. For example, `name:(revenue AND Analysis)`. Search commands and search terms are case-insensitive.

Search Command	Description	Example
`AND`	Enter `AND` between search terms to only display content which contains all the search terms. All forms of `AND`, such as, `and`, `&&`, or entering two search terms together, will return the same results.	Revenue `AND` Forecast Revenue `and` Forecast Revenue `&&` Forecast Revenue Forecast
`OR`	Enter `OR` between search terms to display content that contains any of the search terms.	Revenue `OR` Profit Revenue `or` Profit Revenue `||` Profit
`NOT`	After entering a search term, enter `NOT` followed by more search terms to exclude any content from the results which match the search terms entered after the `NOT` command.	Revenue `NOT` Product Revenue `not` Product

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Search Command	Description	Example
?	Enter the question mark (?) character in a search term as a wildcard to signify a single unknown character. This ensures that the search results include content with words matching the known characters from the search term. For example, searching for st?r would include results containing star and stir.	st?r
*	Enter the asterisk (*) character at the end of a partial search term or root word as a wildcard to find all content that contains the partial search term as well as content that contain variations of the root word. For example, searching for employ* would include results for employee, employment, or employer.	Employ*
`name:`	Enter `name:` followed by a search term to search for content where the search term is part of the Name field.	`name:`Revenue Analysis
`description:`	Enter `description:` followed by a search term to search for content where the search term is contained in the Description field of the content.	`description:`template `desc:`template
`owner:`	Enter `owner:` followed by a search term to search for content where the search term is contained in the Owner field of the content.	`owner:`Admin
`columns:`	Enter `columns:` followed by a search term to search for objects that reference columns matching the search term.	`columns:`product
`text:`	Enter `text:` at the beginning of a search followed by a search term to search for content where the search term is contained in any of the content's fields.	`text:`Revenue
`""`	Enclose a search term with double quotation marks to search for content that includes phrases or stop words which match the search term.	"Balance Letter" "Research by analysis"
`\`	Enter the escape character backward slash (\) before each special character (+ - & | ! ( ) { } [ ] ^ " ~ * ? : \) in a search. For example, to search for revenue+city enter `revenue\+city`.	`revenue\+city`

Search Tips

Use these tips to help you find your content.

- **Searching in Non-English Locales** - When you enter criteria in the search field, what displays in the drop-down list of suggestions can differ depending upon your locale setting. For example, if you're using an English locale and enter *sales*, then the drop-down list of suggestions contains items named *sale* and *sales*. However, if you're using a non-English locale such as Korean and type sales, then the drop-down list of suggestions contains only items that are named *sales* and items such as *sale* aren't included in the drop-down list of suggestions.
- **Searching for New Objects and Data** - If you create or save a workbook or create a dataset and then immediately try to search for it, then it's likely that your search results

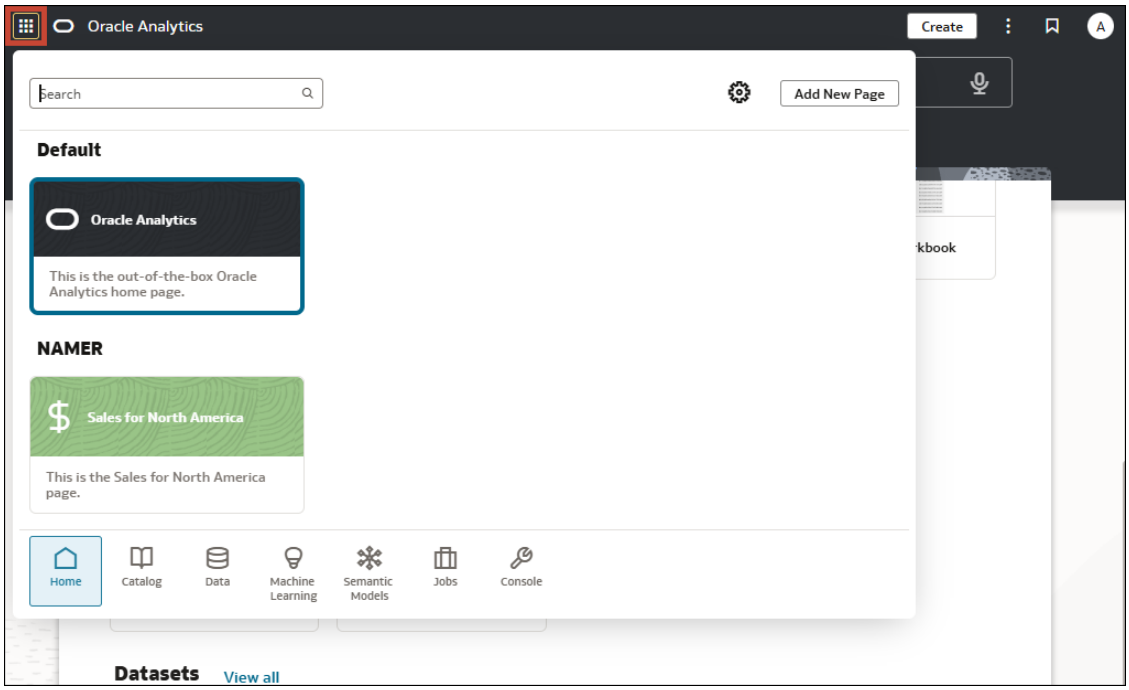
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won't contain matches. If this happens, refresh your browser. If you still can't find the new object or data, then wait a few minutes for the indexing process to run, and retry your search. Users can access only the data they've been given permission to access.

Explore Your Content with Navigator

You can access your analytics content using Navigator from any page.

Navigator provides access to pages that you own or are shared with you and items such as the Catalog, or the Console, depending on your role.



Access Pages

Use Navigator to access all pages that have been shared with you, or that you've created.

For information about creating, sharing, and modifying pages, see Create and Share Pages.

1. On your home page, click **Navigator**.
2. Type the page name into the search bar to find a page, or scroll through the pages that are shared with you.
3. Click a page tile to open the page.

Choose a Default Home Page

Choose a default home page for when you open Oracle Analytics.

A home icon in the top-right corner of a page tile indicates that page is your default home page.

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1. On your home page, click **Navigator**.
2. Hover over the appropriate page tile, click **Actions**, then click **Set as Default Page**.

Create and Share Pages

Create and share pages in Oracle Analytics.

Topics:

- About Pages
- Create a Page
- Share a Page
- Customize the Layout of a Page

About Pages

You can organize content for your users to give them easy access to what they need by creating custom pages. These pages provide an alternative to the ready-to-use Oracle Analytics home page.

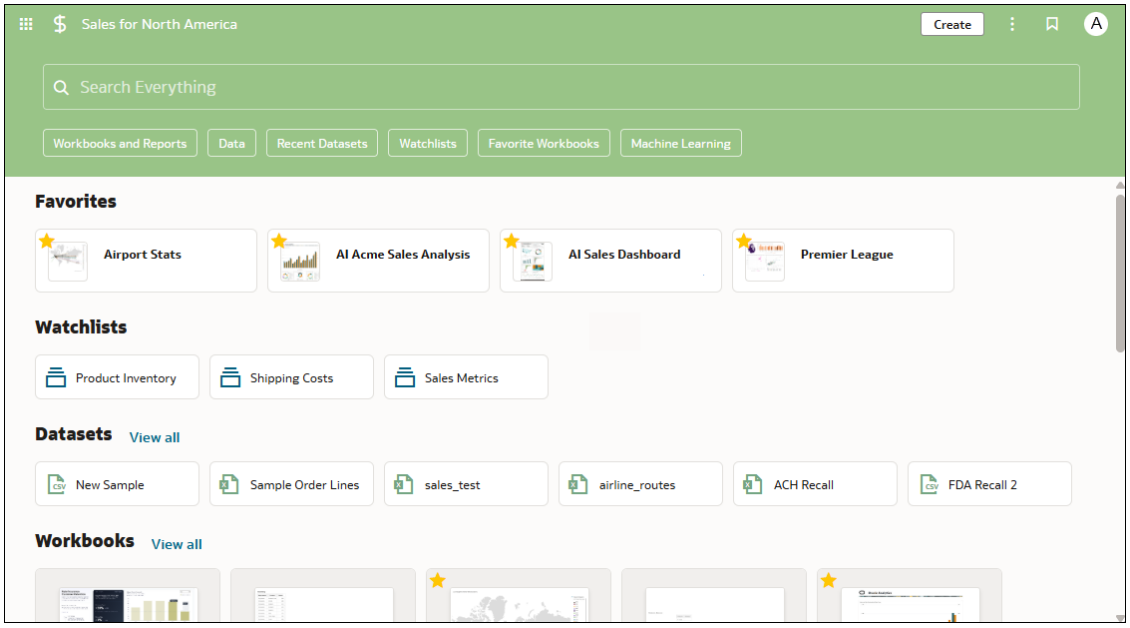
To create a page, you must have the Create and Edit Custom Pages permission.

Different users may need access to different content. When you create a page, you give it a name and customize the look and feel, as well as the layout to suit the needs of your users. You decide which users or groups can access the page and what level of access they have.

Pages that you own or that are shared with you are accessible from **Navigator**, see Access Pages.

Administrators can set default home pages for their users, see Manage Default Home Page Assignments. Users can also set their own, see Choose a Default Home Page.

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This tutorial shows you how to create and share a page. Tutorial

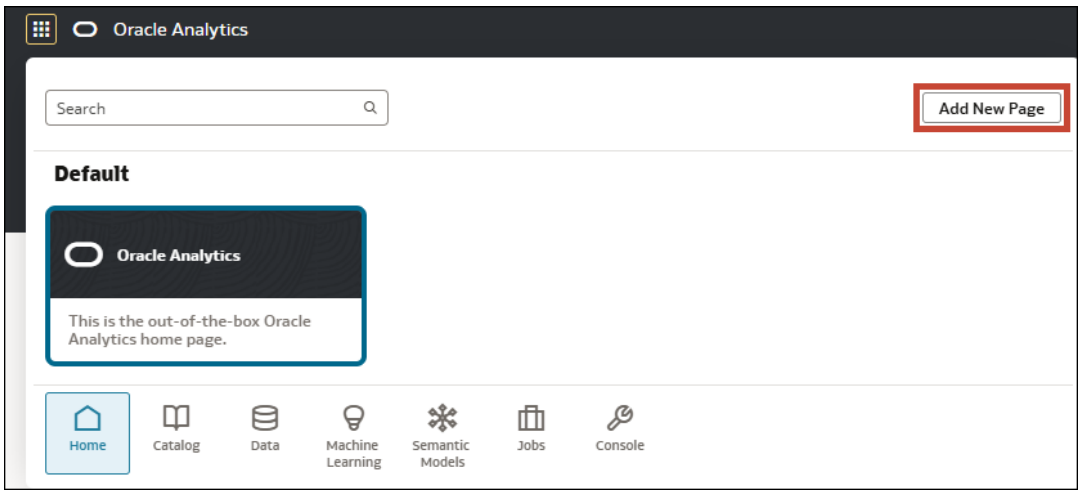
Create a Page

As a content author, you can create alternative home pages to organize analytics content for specific users.

To create a page, you must have the Create and Edit Custom Pages permission.

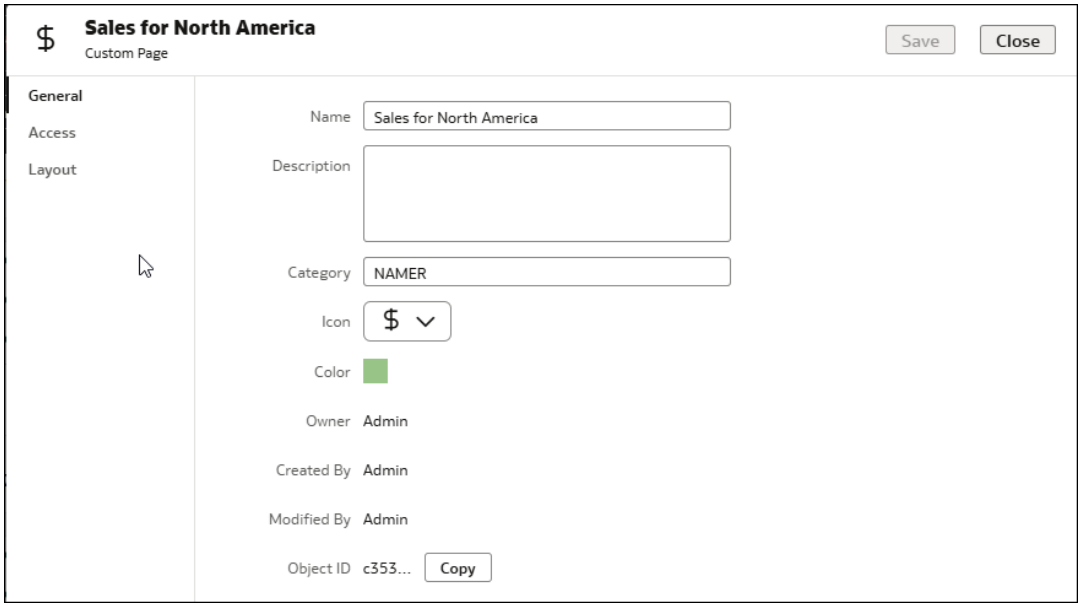
To configure user access and the layout for a page, see Share a Page and Customize the Layout of a Page.

1. Click **Navigator**.
2. Click **Add New Page**.



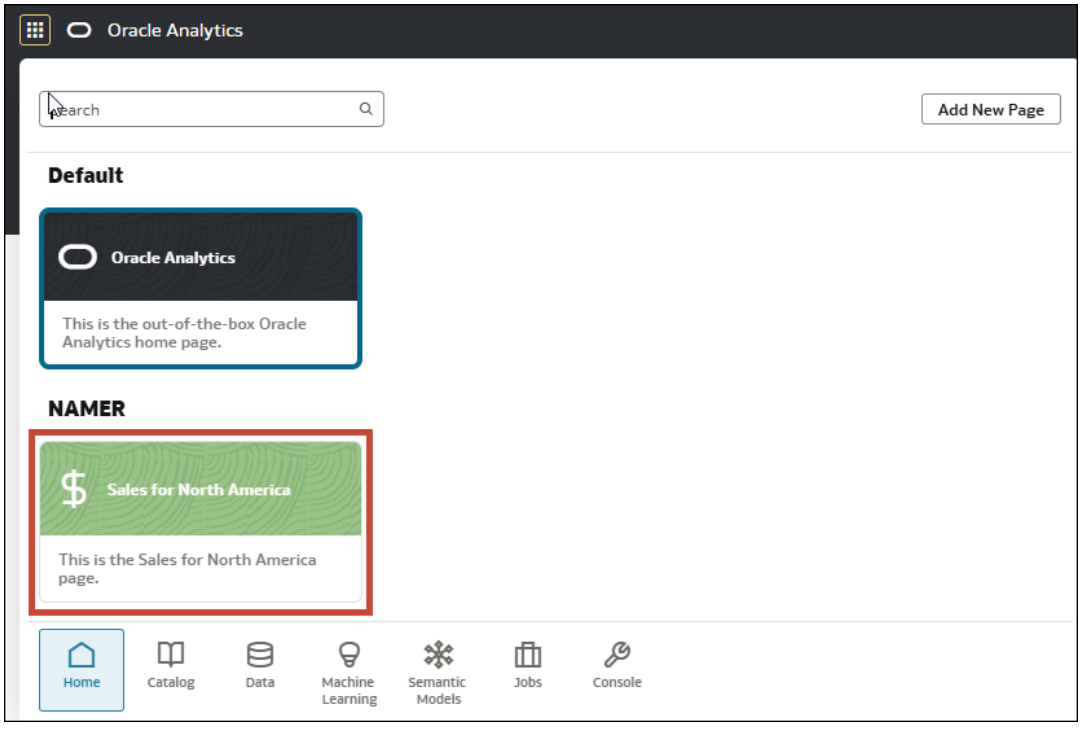
3. In the Custom Page dialog, in the **General** tab, give the page a name.

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4. In **Description**, add a description of the page to display under the page name in the page tile in **Navigator**.
5. In **Category**, select an existing category name or type a new category name to add the page under that heading in **Navigator**.
6. Choose an icon to display beside the page name.
7. Choose a color for the page background.
8. Click **Save**, then click **Close**.

   A new tile for your page displays under the specified category in **Navigator**.



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Share a Page

Control which users have access to a page and what level of access they have for it.

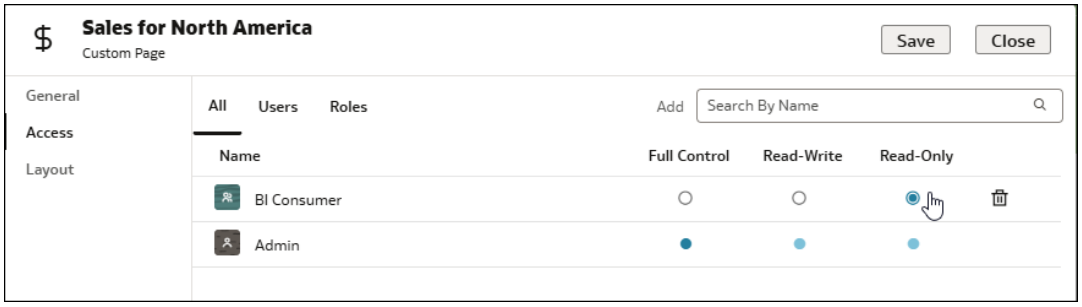
You can control access to any page you create or for which you have Full Control.

You can provide access to individual users, or to application roles so that all users with a specific application role have access.

You can choose from the following three levels of access:

- **Full Control** – Users have full access to modify the General, Access, and Layout tabs. They can also duplicate and delete the page.
- **Read-Write** – Users have full access to modify the General and Layout tabs. They can also duplicate the page. They can't delete the page or see the Access tab.
- **Read-Only** – Users can only view the page information on the General tab.

1. Click **Navigator**.
2. Hover over the tile for the page you want to configure, click **Actions**, then click **Inspect**.
3. Click the **Access** tab.



4. In the **Add** search bar, type a username or an application role and select the name from the drop down.
5. In the table, locate the row for the user or role that you just added and select the access level you want them to have.
6. Click **Save**, then click **Close**.

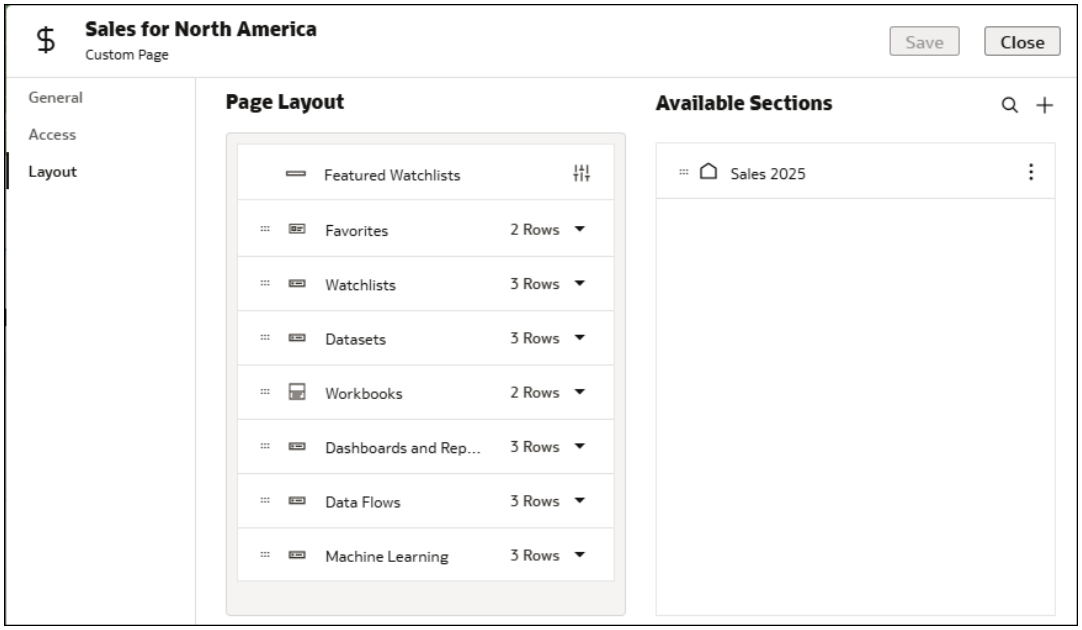
Customize the Layout of a Page

You can configure the order and the display details of the content categories on a page to organize the content and make it easier to find.

You can customize the layout of any page you create or for which you have Full Control. If you have access to the initial Oracle Analytics home page, you can also customize the layout of that page for yourself.

1. Click **Navigator**.
2. Hover over the tile for the page you want to configure, click **Actions**, then click **Inspect**.
3. Click the **Layout** tab.

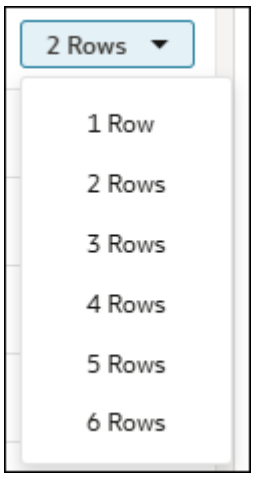
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4. Under **Available Sections**, click and hold the handle , and then drag a custom group row to the Page Layout area to add a custom group to the page.
5. Under **Page Layout**, click and hold the handle , then drag the content category or custom group row to reorder its display sequence on the page.
6. Click the icon representing the content size (small, medium, large, or list) to configure how the individual items in that category or group are displayed on the page.



7. Click the down arrow and select the number of rows to display for a category or group.



8. Click **Save**, then click **Close**.

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About Watchlists

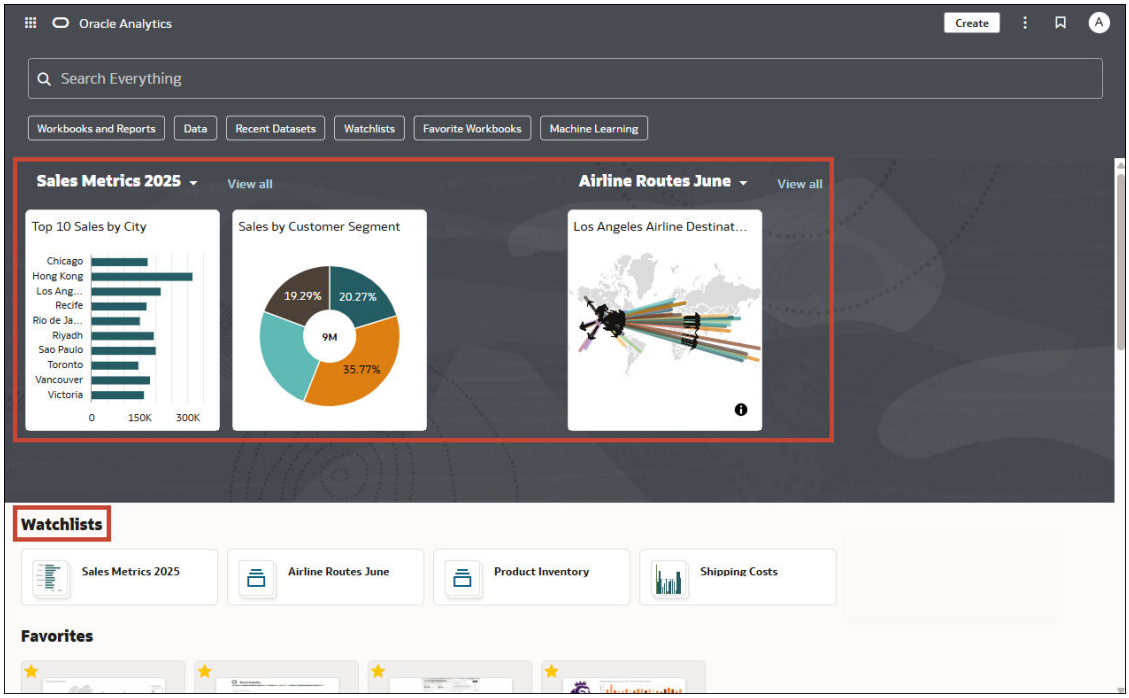
Watchlists provide quick access to visualizations that you access most frequently. When you create watchlists, they're displayed in the Featured Watchlists area and the Watchlists section on the home page.

A watchlist enables you to quickly view the visualizations that matter, without having to search through multiple workbooks to locate those visualizations. Each watchlist displays visualization cards that represent data in a workbook visualization, and you can open a visualization directly from the watchlist.

If you don't have any watchlists on your pages, you can create one. See Create a Watchlist.

You can share any watchlist you've created with other users and roles. See Share a Watchlist.

You can only configure watchlists on the same page that they were created on.



Create a Watchlist

You can create a watchlist by adding visualizations from one or more workbooks.

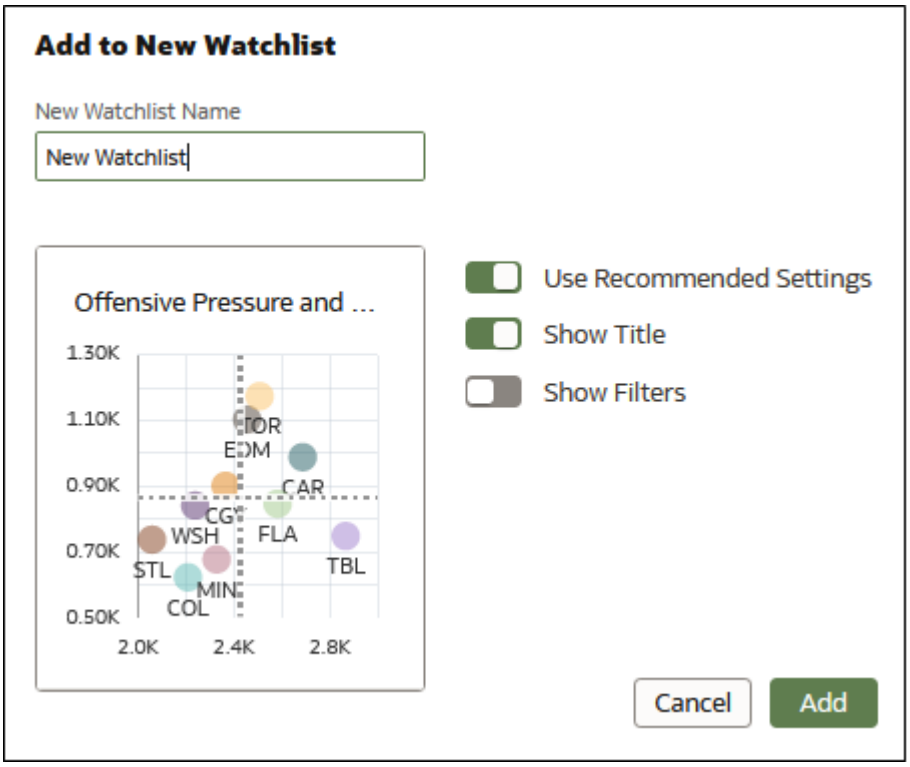
You create watchlists to group together the most popular visualizations and display them as visualization cards. The visualization cards enable users to view and access the data that matters without having to search each time in multiple workbooks.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to enter author mode.
3. Hover over a visualization and click **Add to Watchlist**.

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4. Click **New Watchlist**, enter a new watchlist name, and click **Add**.



Add a Visualization to a Watchlist

You can add visualizations to a watchlist from one or more workbooks.

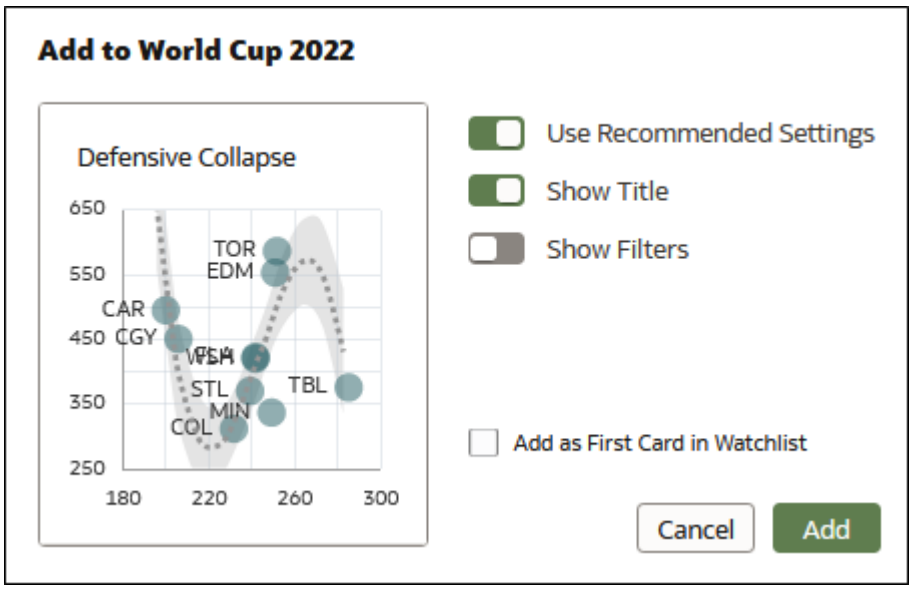
You might want to add useful or favorite visualizations to an existing watchlist. When you add a visualization to a watchlist, it's displayed in the watchlist as a visualization card.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit**.
3. Hover over the visualization that you want to add to a watchlist, and click **Add to Watchlist**.



4. Click an existing watchlist from the list.
5. Click **Add**.

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Delete a Visualization Card from a Watchlist

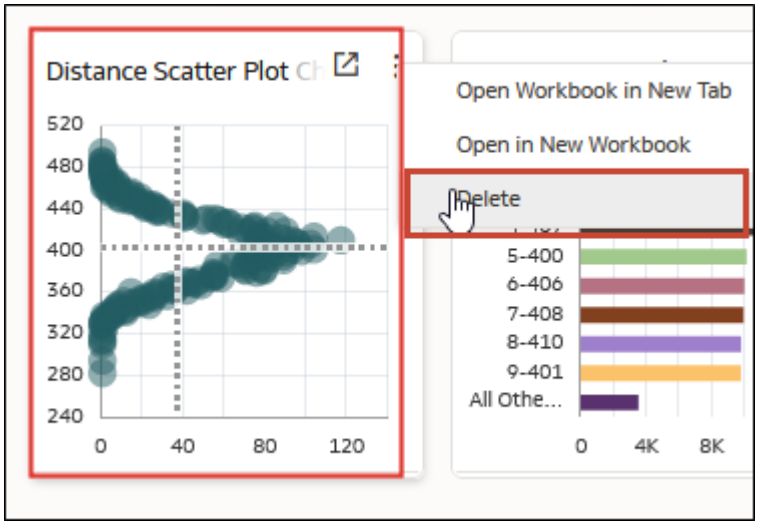
You can remove visualization cards from a watchlist.

1. On your home page, click a watchlist to open it.



2. Click **Actions** for the visualization card that you want to remove from the watchlist and select **Delete**.

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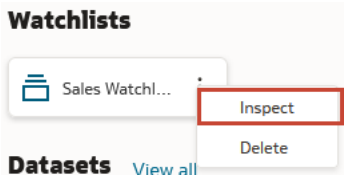


3. Click **Yes** to remove the selected visualization card from the watchlist.

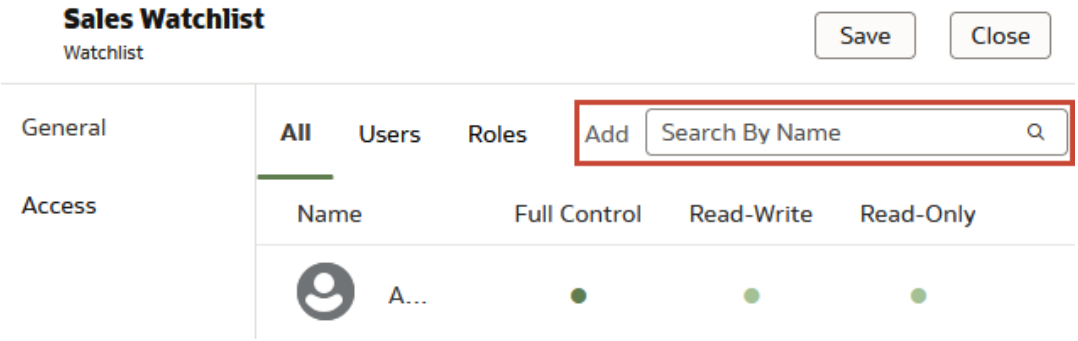
Share a Watchlist

As the owner of a watchlist, you can share the list with others.

1. On your home page, select your watchlist and click **Actions** then **Inspect**.



2. Click **Access**.
3. In **Add**, enter a user name or role and click Search. Click a name or role from the results to share your watchlist.



4. Click the access control level for the user or role. Click **Save**.
5. Review the listed artifacts you're required to share for a user to view the watchlist. Select whether or not to share these artifacts, then click **Apply**.
6. Click **Close**.

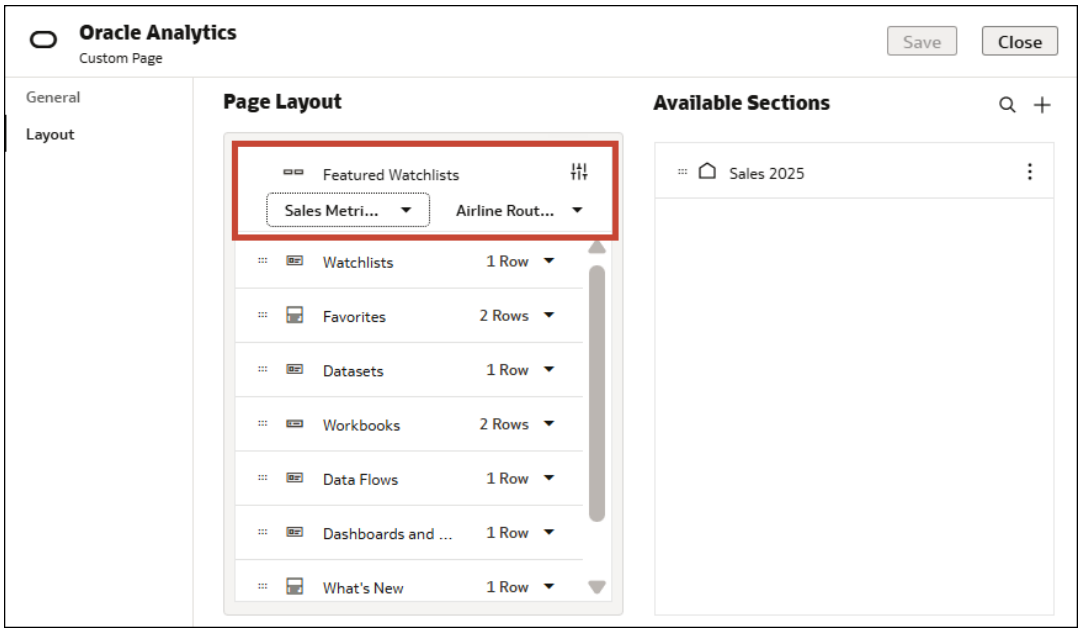
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Configure Featured Watchlists

Customize the Featured Watchlists area on a page to showcase specific watchlists.

You can configure the Featured Watchlists area for your home page and any other pages that you own or have Full Control access to.

1. On your home page, click **Navigator** .
2. Hover over the tile for the page you want to configure Featured Watchlists for, click **Actions**, then click **Inspect**.
3. Click the **Layout** tab.



4. Under **Page Layout**, in the Featured Watchlists row, click the icon representing the content layout , then click One Column or Two Columns to specify how the watchlists are displayed.
5. Click **Select Featured Watchlists** to see the watchlists.
6. Click the arrow beside a watchlist name, then select another watchlist from the list to feature it.
7. Click **Save**, then click **Close**.

Providing Custom Groups of Content

Custom Groups enable you to provide quick access to content that you can share with other users.

Topics:

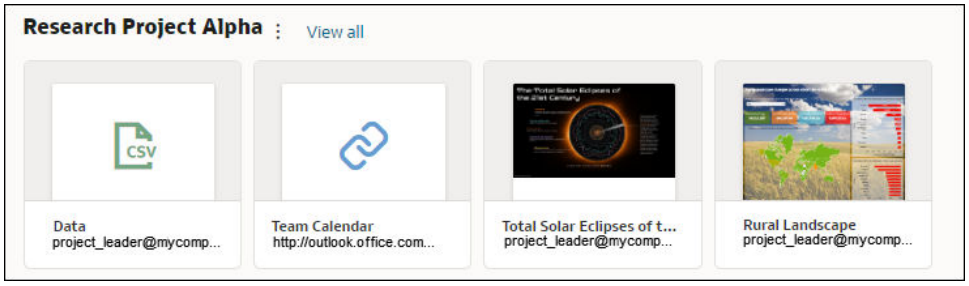
- What Are Custom Groups?
- Create and Share Custom Groups of Content

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What Are Custom Groups?

Custom groups enable you to display your own choice of items grouped together under a custom heading on a page.

For example, you might display a custom group named Research Project Alpha, containing links to data files, workbooks, and a team web calendar.



See Create and Share Custom Groups of Content.

After you've created a custom group, click the Page Menu (⋮) next to the custom group name to access these options:

- **Add Items** - Add links to analytics content such as workbooks, reports, and datasets. You can add multiple items at the same time.
- **Add URL Item** - Add links to useful web pages. For example, you might share a team calendar by specifying `http://example.com/myteamcalendar`. To display the link as an image, click **Thumbnail** and choose a graphic file.
- **Inspect** - Rename the group and review the group owner using the **General** panel, and share it with other users using the **Access** panel.
- **Delete Custom Group** - Remove the custom group.

You can also click **View All** to drill into the group. Here, you can edit the group name and add content links.

Create and Share Custom Groups of Content

As a content author, you create custom groups to provide quick access to content that you can share with other users. For example, if you're collaborating with co-workers you can create and share a custom group containing specific workbooks, watchlists, dashboards, or web pages that you're all interested in.

You can configure how custom groups display on a page. See Customize the Layout of a Page.

1. On your home page, hover over a workbook, dataset, dashboard, or visualization, click **Actions**, select **Add to Custom Group**, and then select **New Custom Group**.
2. Enter a name, and click **Add** to create a custom group.
3. Add another item to your group by hovering over the item on the page, click **Actions**, select **Add to Custom Group**, and select the name of the group to which you want to add the new item, then click **Add**.

   Repeat this step for each item that you want to add to the custom group.

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4. To configure access for users and roles to view, use, or share the group with others, click **Page Menu** (⋮) next to the group name , select **Inspect**, then **Access**, select who has access, then click **Save**.

Saving Your Content in the Catalog

In Oracle Analytics you save analytics content such as workbooks, datasets, connections, machine learning models and so on in the catalog. Here, you can store content in either the My Folders area or the Shared Folders area.

My Folders

Use My Folders for draft or private content. Other analytics users can't access this content.

Shared Folders

Use Shared Folders for content that you want other analytics users to access.

If you create a sub-folder to organize your content, the sub-folder inherits permissions from the parent folder, but you can change the permissions. Typically, content consumers have read access, and content authors and administrators have read-write access.

See Share Your Content.

Item Naming Restrictions

When you save items in the catalog:

- You can't save two items with the same name (case-sensitive) in a folder. For example, you can't have a workbook named "Analyze Vision Data" and a dataset named "Analyze Vision Data" in the same folder.
- You can't use special characters in item names. See About Naming Restrictions for Items in the Catalog.

View Content on Mobile Devices

You can access your analytics content with a mobile device.

To access your content, use one of the mobile apps (recommended), or alternatively you can use the browser on your mobile device. Using a browser you can view all analytics content (dashboards and analyses, workbooks and visualizations) and create workbooks and visualizations using a simplified interface.

Apps Available for Oracle Analytics Cloud

- Oracle Analytics for Android and iOS
- Oracle Analytics Day by Day

Access and Interact with Your Oracle Analytics Content On the Go

You can access and interact with your Oracle Analytics content on the go using the Oracle Analytics for Android and iOS mobile applications.

These applications enable you to:

- Search, open, and interact with your Oracle Analytics content.
- Use the Workbooks section to:

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  - View and interact with your data visualization workbooks from Oracle Analytics.
  - Create workbooks directly from your mobile device.
  - Share workbooks with your colleagues.
- Use the Datasets section to:
  - Upload a data file, such as a spreadsheet, directly from your mobile device.
  - Create a new workbook from the existing Oracle Analytics datasets.
  - Start a dataset and workbook from your favorite apps, including email attachments.
- Find all your classic content and open it in a web browser directly from the app.

The Oracle Analytics for Android and iOS apps are available from the Google Play Store and Apple App Store.

To log into the apps, see:

- How do I sign in? - Android
- How do I sign in? - ios

To use the Oracle Analytics for Android and iOS apps, see the Help system available within the mobile applications.

View and Collaborate on Analytical Charts Using Oracle Analytics Day by Day

Oracle Analytics Day by Day is an innovative app that provides the right analytics at the right time and place. Based on your searches for business data in the app, it learns what you're interested in, when and where you're interested in it, and it displays the data in ready-to-use analytical charts. The app displays the analytical charts as cards.

The Oracle Analytics Day by Day app is available from the Apple App Store and Google Play Store.

To log into the app, see:

- How do I log into the app? (Android)
- How do I log into the app? (iOS)

To use Oracle Analytics Day by Day, see the Help system available within the mobile application.

Explore Data on Mobile Devices Using A Built-in Browser

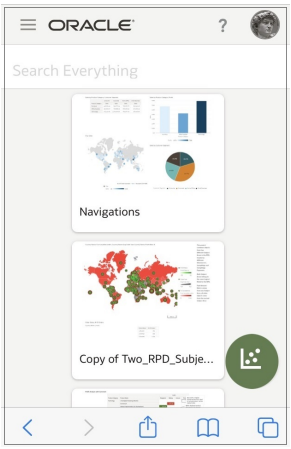
Explore your data at your desk and on the move using the browser in mobile devices on Android, Windows, or Apple operating systems.

> **Note**
>
> Using a mobile device's browser provides limited Oracle Analytics capabilities. For more comprehensive analytics capabilities, use one of the mobile apps available for Oracle Analytics.

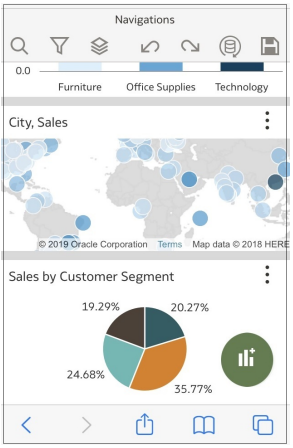
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Using the browser in mobile devices, you can view analytics content (dashboards and analyses, workbooks and visualizations). You can also create workbooks and visualizations using a simplified editor.

- Log into Oracle Analytics to get to your home page.

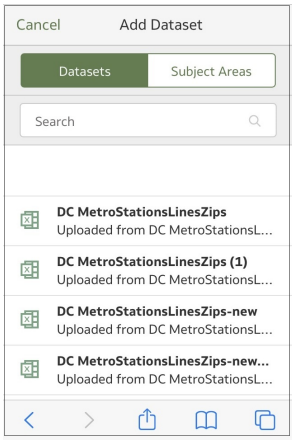


- Tap a workbook or visualization to display the content.



- Tap the add icon  to create a visualization. You see the simplified visualization designer.

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2

Get Started with Visualizing Data (For Consumers)

This topic describes how to get started with accessing analytics content that's been shared with you.

Topics:

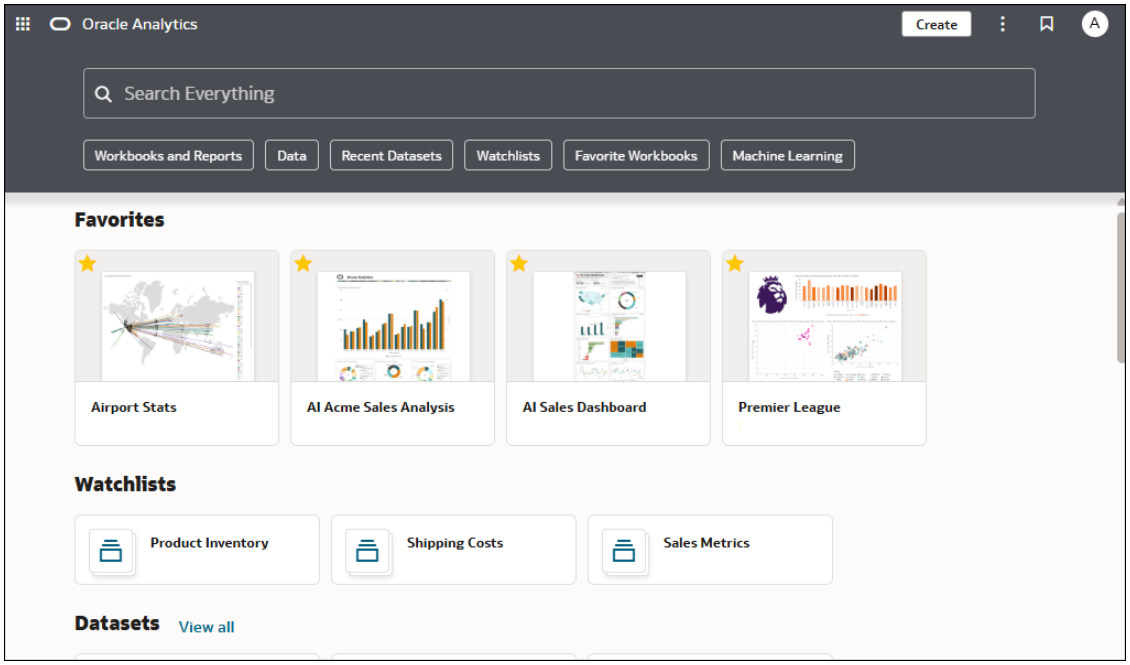
- Accessing Oracle Analytics Cloud As a Consumer
- Find and Explore Analytics Content That's Been Shared With You
- Sort, Drill, and Select Data in Visualizations
- Swap Columns in a Visualization
- Use Contextual Insights to Understand Your data
- Add a Filter to a Workbook (as a Consumer)
- Filter Personalizations and Workbook States
- About Using the Oracle Analytics AI Assistant as a Consumer
- Export Workbook Content in Various Formats
- FAQs for Analytics Consumers

Accessing Oracle Analytics Cloud As a Consumer

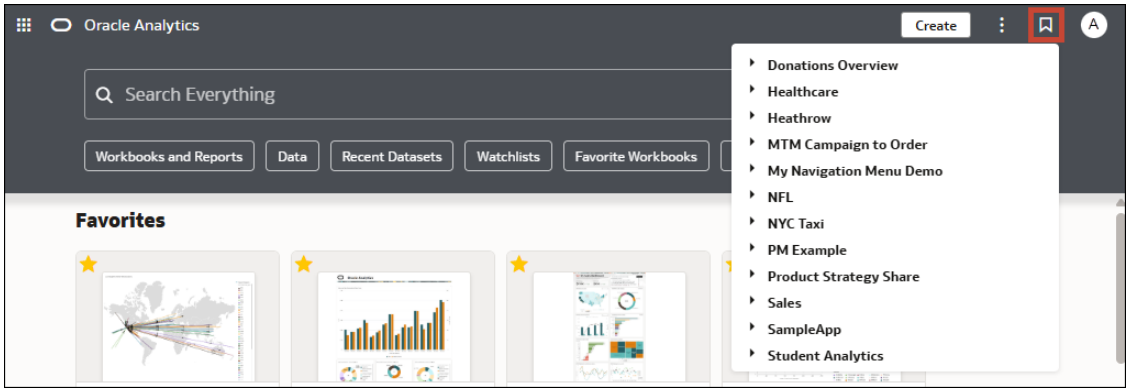
Your "Welcome to Oracle Analytics Cloud" email contains a direct link to the service. Simply click this link and sign in. Alternatively, sign in to Oracle Cloud at `cloud.oracle.com` and then select Oracle Analytics Cloud.

When you sign in for the first time, Oracle Analytics Cloud displays a product tour. At the end of the tour, you see the home page, which has links to all of the features available to you. Browse the thumbnails that display on the home page, or use the search bar or Navigator to locate your analytics content.

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Click the **Navigation Menu** to open links to curated workbooks and dashboards that have been saved in Workbooks or Dashboards subfolders with the **Add to Navigation Menu** option selected.

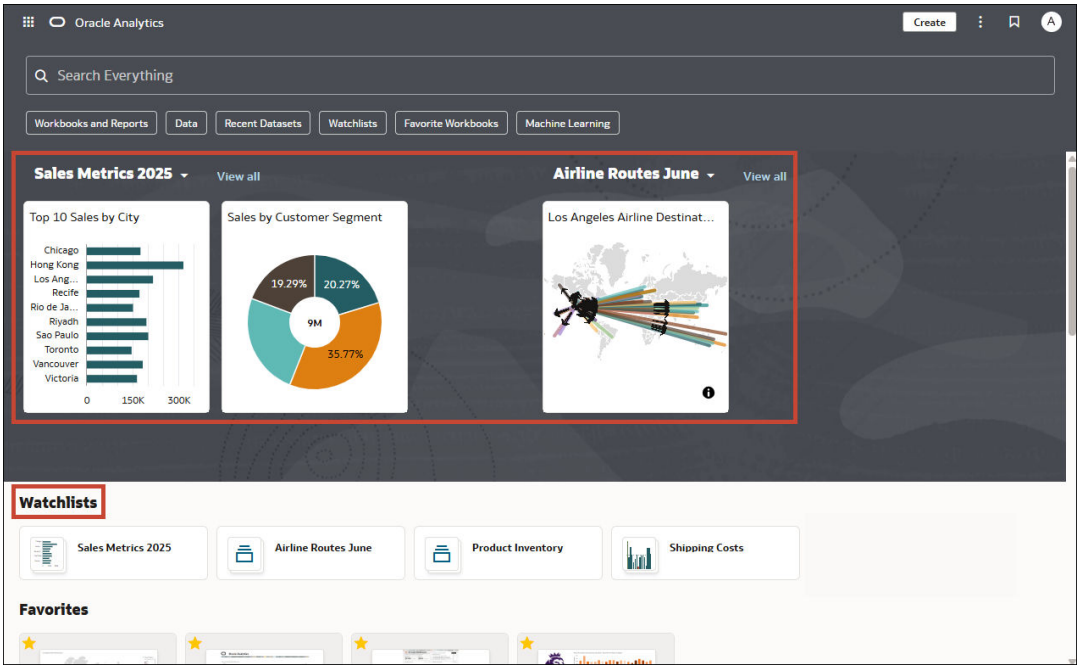


Find and Explore Analytics Content That's Been Shared With You

As a consumer, you have access to pages, workbooks, visualizations, and other analytics content that content authors have shared with you. The home page is where you start in accessing your analytics content.

- Workbooks - These are collections of visualizations that've been shared with you.
- Watchlists - These are named areas in your home page that display cards for visualizations that've been shared with you.

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- Datasets - These are data stores that've been shared with you.

See the following topics for more information about finding and accessing content:

- Use the Search Bar to Find Your Content
- Explore Your Content with Navigator

Sort, Drill, and Select Data in Visualizations

You can narrow your focus to explore certain aspects of your data by sorting, drilling, and selecting data.

LiveLabs Sprint

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select a visualization and click **Menu**.
3. Select one of the following:
   - Click **Sort By** and then select **Custom**, or click **Sort** in the visualization tool bar to display the Sort Order dialog where you can sort one or more attributes in a visualization. You can create and view sorts, define sort attributes, arrange the sort order for multiple sorts, and view and resolve sort conflicts. You can also sort an attribute by a measure column that isn't used in the visualization.
     If the table includes subtotals or contains a dimension, then all column sorts on columns after the subtotal or dimension, are sorted in the subtotal group.

     If you're working with a table view with multiple sorts, then the system always sorts the last column that you sorted first. In some cases where specific values display in the left column, you can't sort the center column. For example, if the left column is Product and the center column is Product Type, then you can't sort the Product Type column. To work around this issue, swap the positions of the columns and try to sort again.
   - Click **Drill** to create a drill to a data element, and to create a drill through hierarchies in data elements, for example you can create a drill to weeks within a quarter. You can

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also create drills using multiple data elements. For example, you can select two separate year members that are columns in a pivot table, and drill into those members to see the details.

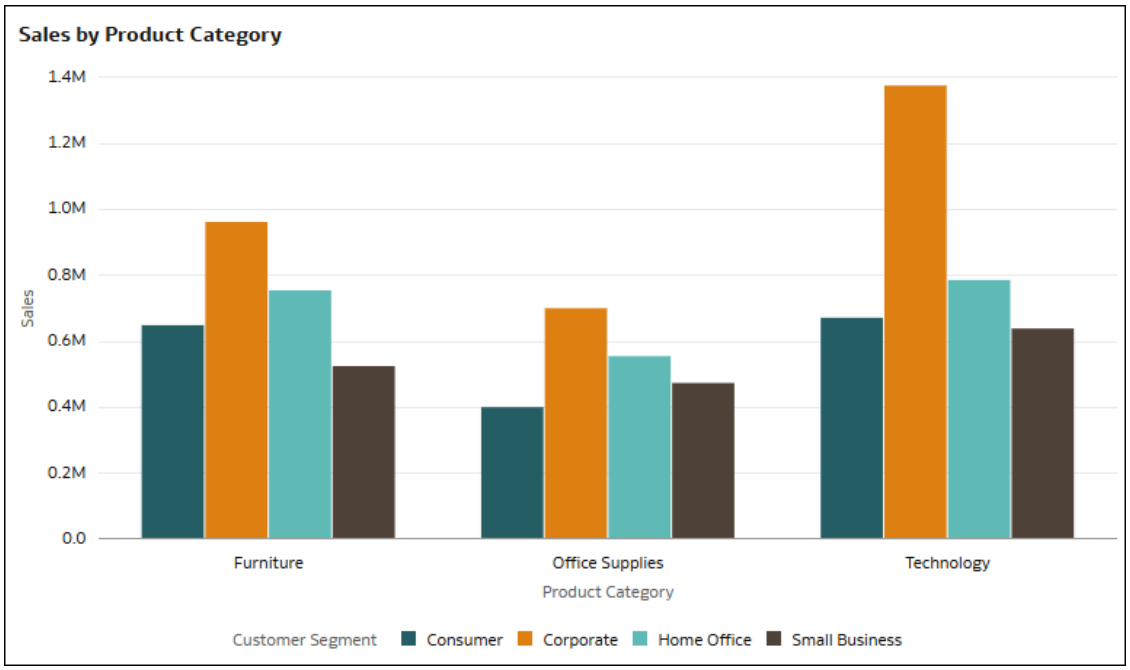
- Click **Drill to [*Attribute Name*]** to directly drill to a specific attribute within a visualization.
- Click **Keep Selected** to keep only the selected members and remove all others from the visualization and its linked visualizations. For example, you can keep only the sales that are generated by a specific sales associate.
- Click **Remove Selected** to remove selected members from the visualization and its linked visualizations. For example, you can remove the Eastern and Western regions from the selection.

Swap Columns in a Visualization

In Oracle Analytics, you can swap the columns used in a visualization to explore the data further and discover insights.

If your content author has enabled column swapping for a visualization that has a vertical axis, horizontal axis, or legend, you can change the columns used for those elements.

For example, you might have a bar graph showing Sales by Product Category, where Product Category is on the horizontal axis and Sales is on the vertical axis. This bar graph also shows the breakdown of Customer Segment for each product category using colors and a legend.

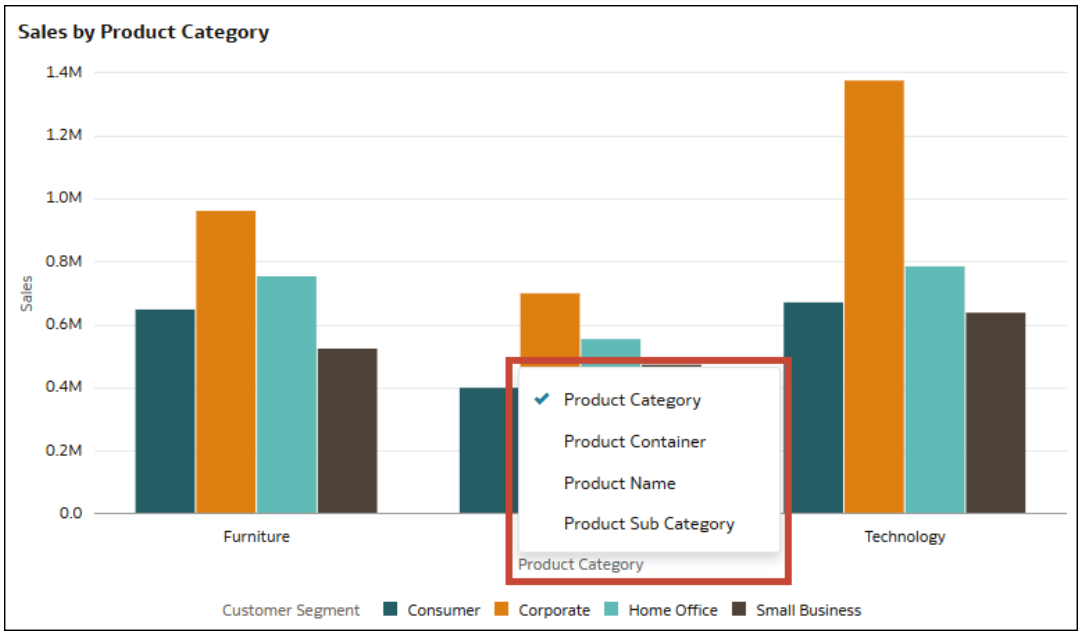


If column swapping is enabled, you can click the column names Sales, Product Category, or Customer Segment in the visualization and select alternate columns from a list curated by the author. This way, you can explore the data in the visualization based on different column configurations.

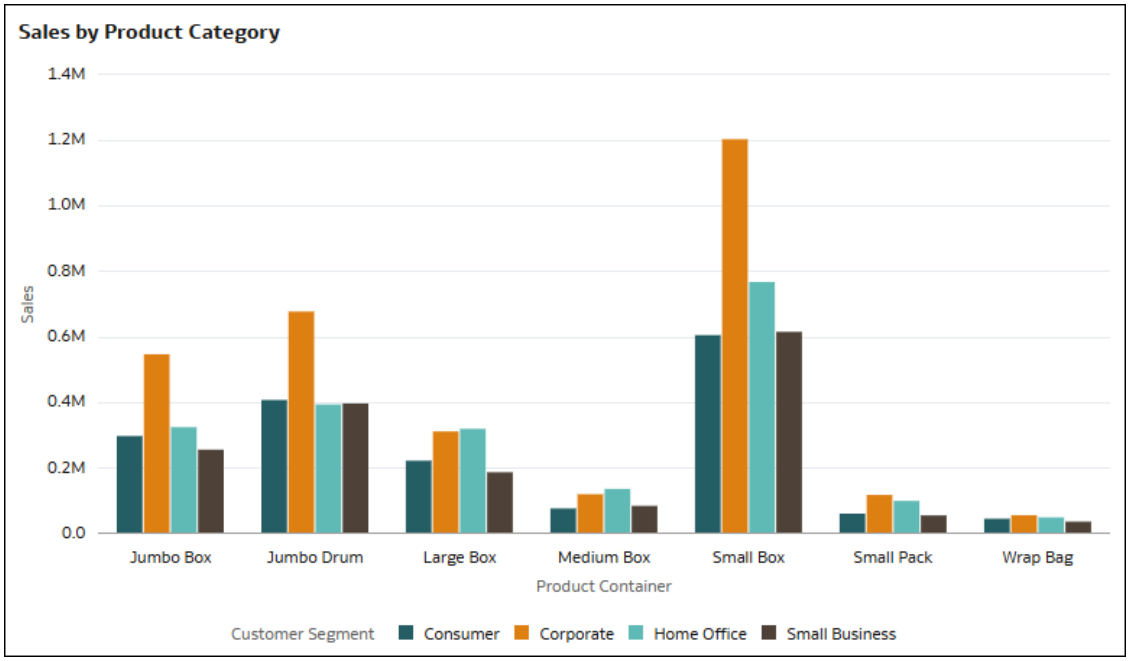
The changes you make to the visualization are only temporary for your session, you can't save them in a workbook state.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In a visualization, click the column name for the vertical axis, horizontal axis, or legend.
3. Select a column from the list of available columns.



The visualization changes to reflect the data based on the column you chose. For example, if you swapped Product Category on the horizontal axis for Product Container, the visualization displays the sales values for the product containers instead of the product categories.



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Add a Filter to a Workbook (as a Consumer)

Add your own filter to focus on a particular area in your data. You can apply filters to all visualizations on a workbook canvas.

1. Hover over the visualization that you'd like to filter.
2. Click + above the visualization (top left).
3. Select a data point (for example, Month) and add the areas you'd like to focus on to the **Selections** list (for example, January, February, and March).

About Using the Oracle Analytics AI Assistant as a Consumer

As a consumer user, you can use the Oracle Analytics AI Assistant in workbooks where it has been enabled by the author.

The Oracle Analytics AI Assistant is an AI-powered tool you prompt with natural language to analyze indexed data, like "Show me sales" or "Profits by city". You can further refine or analyze the results of your query by asking follow-up questions, such as "only show me cities in Europe".

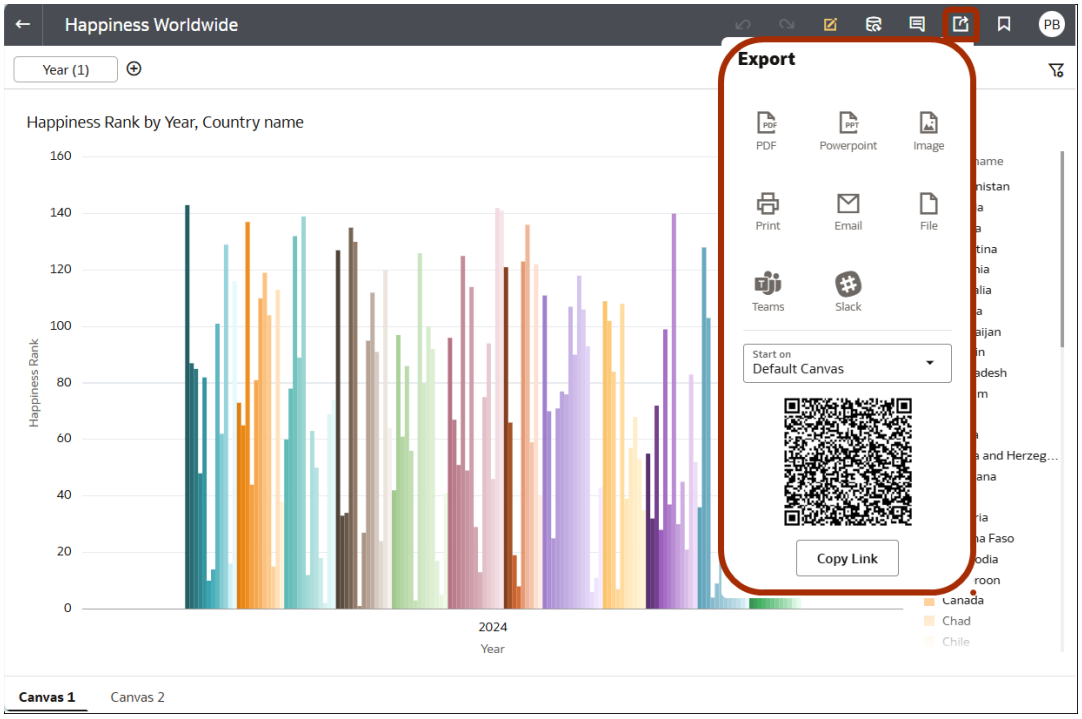
As a consumer user, you have access to the Assistant in workbooks where the author has enabled the Assistant for your use. Authors enable the Assistant for consumer users when they set workbook properties in present. See Specify Insights Panel Options for Consumers in Present.

Export Workbook Content in Various Formats

As a workbook consumer you can export workbook content to various formats, including PDF, Powerpoint, Image, CSV, DVA format, as well as print, email, and collaboration platforms.

1. On the workbook toolbar, click **Export**  .

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2. In the Export dialog, select the format you want.
   - PDF - Export to Portable Document Format.
   - Powerpoint - Export to Microsoft Powerpoint format.
   - Image - Export to PNG format.
   - CSV - Export data to comma-separated values format.
   - Print - Print one or more canvases in the workbook.
   - Email - Send one or more canvases in the workbook in an email.
   - File - Export the workbook in a package (DVA) format, or one of the other formats (you must open the workbook in Edit mode to see this option). You can include data, credentials, and permissions, and optionally password protect the file.
   - Slack - post content to the Slack messaging platform.
   - Teams - post content to the Microsoft Teams messaging platform.
3. Use the pop-up dialog to configure the export type that you selected.
4. Click **Save.**

FAQs for Analytics Consumers

This topic provides answers to frequently asked questions for workbook consumers.

I can't access the workbook options that I need - what should I do?

Contact the workbook owner and ask them to provide you with the options that you need. For example, you might need options to refresh data, print, and share to Slack.

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How do I forward my workbook in an email?

Hover over a visualization, click **Menu** ⋮, then click **Export**  , and select **Email**.

How do I filter my workbook data?

Click one of the filters along the top of a visualization and use the filter dialog to specify the areas you want to focus on. For example, you might click a Month filter and select January, February, and March.

You can also create your own filter by clicking **Add Filter** (**+**) top left above a visualization.

How do I print a workbook?

Click **Export** at the top of the workbook in the right-hand corner, then click **Print**.

How do I print a visualization?

Hover over a visualization, click **Menu** ⋮, then click **Export** , and select **Print**.

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Part II
Prepare Data

This part explains the ways you can prepare data for visualization and analysis.

Chapters:

- Connect to Your Data Using Datasets
- Enrich and Transform Data
- Create Datasets Using Data Flows
- Manage Datasets

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3

Connect to Your Data Using Datasets

Learn how to use datasets to power your data visualization and analysis projects.

Topics:

- Overview to Using Datasets
- Design Datasets
- Use Joins to Build Datasets
- Create Datasets from Data Sources

Overview to Using Datasets

Learn how to use datasets to power your data visualization and analysis projects.

Topics:

- What Are Datasets?
- About Opening Datasets
- View Available Connections
- Data Sources Available for Use in Datasets
- About the Dataset Editor
- Create a Dataset from a Connection
- Add Multiple Connections to a Dataset
- Add a File to a Dataset Created from a Connection
- Add a Table to a Dataset Using a SQL Statement
- Add Metadata for a Dataset Using AI Assistant

What Are Datasets?

Datasets are self-service data models that you build specifically for your data visualization and analysis requirements.

A dataset can be based on one table, spreadsheet, or file. Or a dataset can be a self-service data model that contains multiple tables with relationships defined between the tables.

You can create datasets from data from files that you upload, or SaaS applications, Oracle Analytics reports, and many relational and big data sources that you build connections to. See Data Sources Available for Use in Datasets.

Datasets are subsets of the file or data source's data that you curate and shape to meet your specific analytics and visualization needs. A dataset contains data source connection information, tables, the columns you specify, and the data enrichments and transformations that you apply.

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You can use a dataset in multiple workbooks and in data flows. If you change a dataset, changes affect all workbooks and data flows that use the dataset.

When you create and build a dataset, you can:

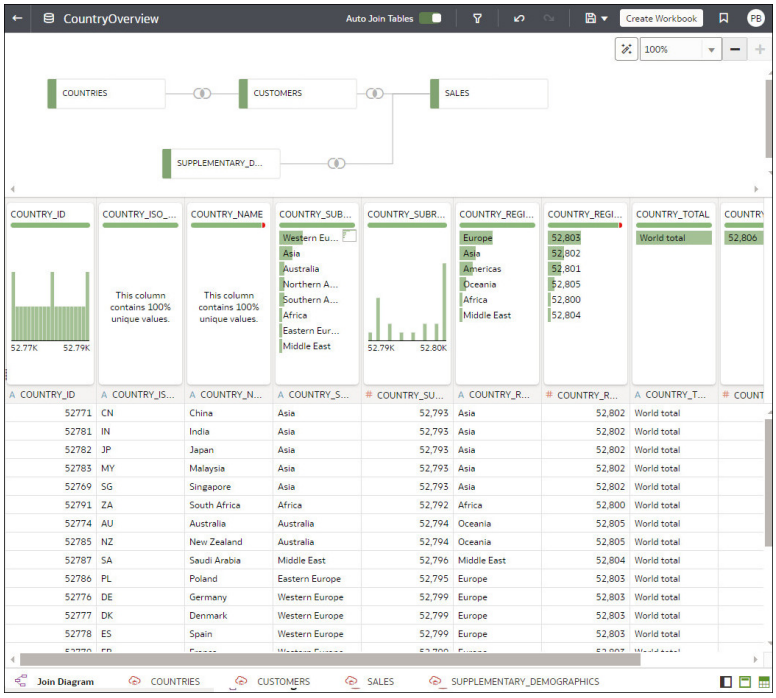
- Choose between many types of connections or spreadsheets.
- Create datasets based on data from multiple tables in a database connection, Oracle data source, or a local subject area. And create datasets based on data from tables in different connections and subject areas. For example, you can build a dataset that includes tables from an Autonomous AI Lakehouse connection, tables from a Spark connection, and tables from a local subject area.
- Specify joins between tables.
- Transform and enrich the columns in the dataset.
- Specify a time zone for the dataset for any DateTime columns to use.

About the Dataset Editor

Use the Dataset editor to create or edit a dataset that includes tables, joins, and enriched data.

When you create a dataset from a local subject area or connection that supports datasets with multiple tables, Oracle Analytics displays the Dataset editor. See Data Sources Available for Use in Datasets.

You can't create datasets with multiple tables from Oracle EPM Cloud, Oracle Essbase, or Google Analytics connections. Use the transform editor for connections that don't support datasets with multiple tables.



Each Dataset editor feature and what you can do with it is explained here:

- **Connections Pane**

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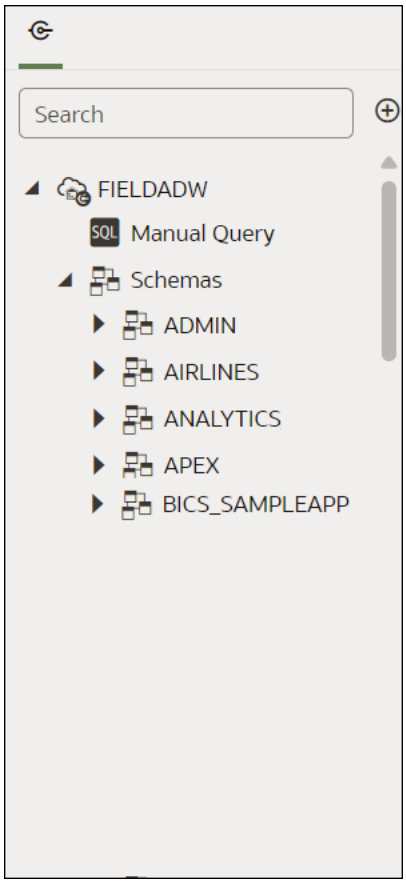
This pane on the Data Panel displays the data source connection's schemas and tables, and uploaded files. To add a table or file from the Connections Pane to the Join Diagram, drag and drop it from the list to the diagram or double-click it. You can add more than one table or file.

Click **Add** to open the Add Connection or Add File dialog where you can select or create another connection or select a file to add to the dataset.

Use **Search** to find a schema, table, or file displayed in the Connections pane.

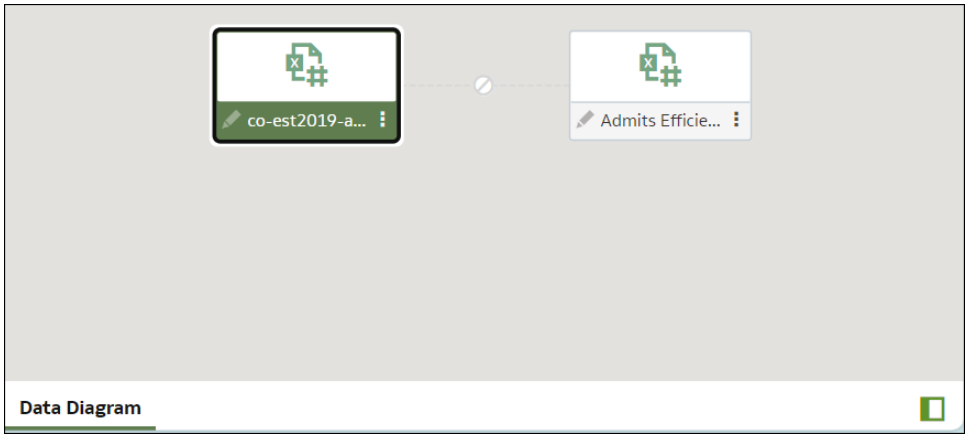
To write a SQL statement to create a table, drag and drop the Manual Query item to the diagram. Then go to the diagram and double-click the Manual Query table to access the SQL editor.

> **Note**
>
> Use Manual Query when a JDBC connection doesn't provide a schema and tables listing.



- **Data Diagram**
  The Data Diagram displays data files in a workbook.

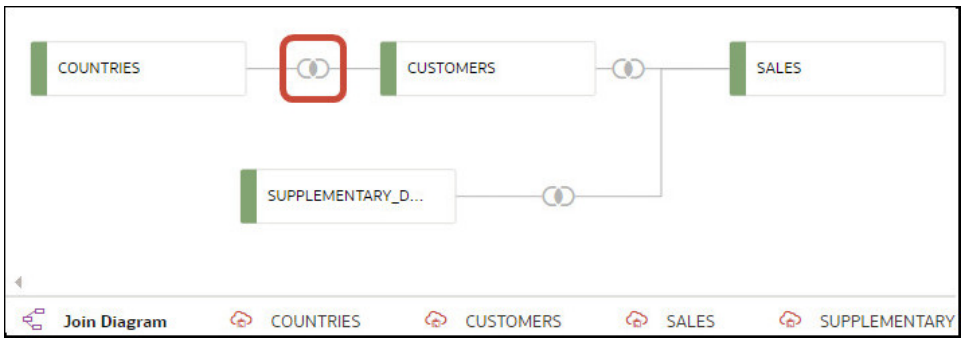
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- **Join Diagram**

  The Join Diagram displays the tables and joins in the dataset. Drag and drop tables to reposition them in the diagram.

  When you select a table, the Preview Data area displays a sample of the table's data. If you double-click a table, then the transform editor is displayed where you transform or enrich the table's data.
  The diagram's join links and icons indicate the relationships between tables. Click on a join to display the Join editor, which enbles you to configure it.

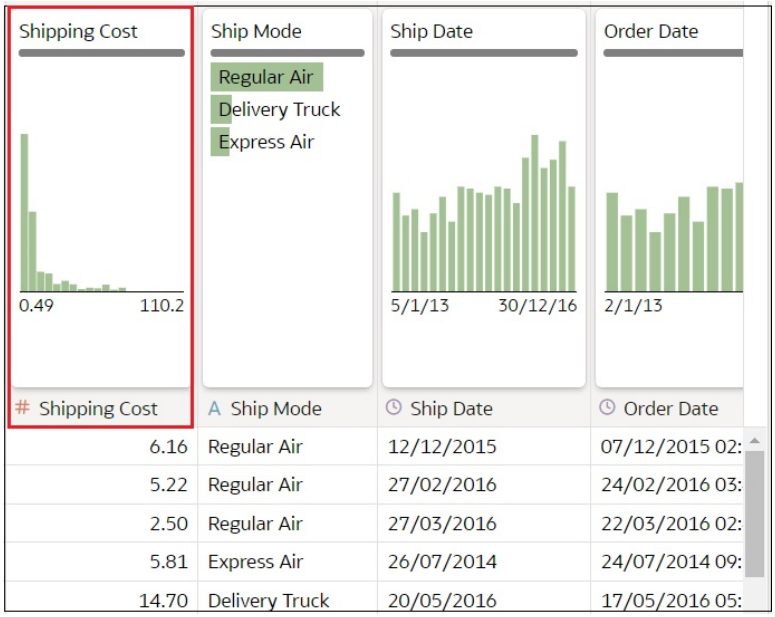


- **Data Preview**

  The data preview area displays a data sample for the table selected in the **Join Diagram**. From the data preview area you can click a column's type attribute to change its type. For example, change the CALENDAR_YEAR column from a measure to an attribute.

  A quality insight tile is displayed for each column, which enables you to view the data distribution as a pictogram and assess the quality of the data using a representative sample. See What Are Quality Insights?

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- **Dataset Table Page Tabs**

  The Dataset editor displays a tab for each table in the dataset. Click a table tab to go to the transform editor to transform or enrich the table's data. The tabs also display at the bottom of the transform editor. Use them to navigate to other tables or back to the Join Diagram.

  You can also drag and drop tabs to reorder tables to make it easy to locate the tables and columns that you use most often in visualizations.



- **Dataset Editor Toggle Buttons**

  These buttons control which parts of the Dataset editor are displayed.



  This button hides or displays the Data Panel:



  This button hides or displays the Quality Tiles:



  This button hides or displays the Preview Data area:



Join Diagram Reference

Use the Join Diagram in the dataset editor to define relationships in your data.

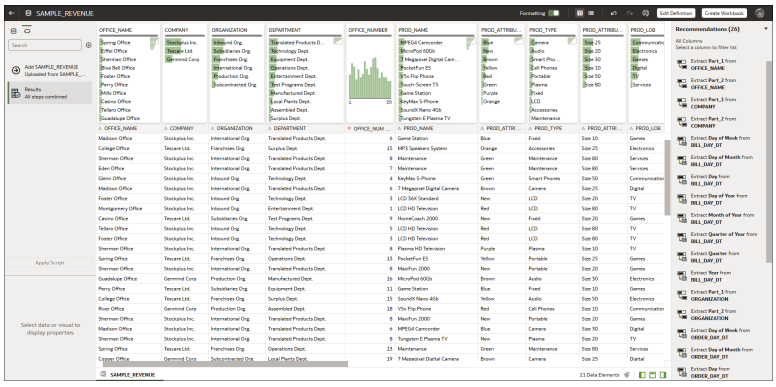
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Option or icon	Use to
 Add	Add a table to the dataset. Select **Add Data** to add file-based data or database tables to the Data Panel. From the Data Panel, drag tables onto the Join Diagram to add data to the dataset. See Add a File to a Dataset Created from a Connection.
 Always Include in Query	Determine whether a table is configured to always be included in queries. See Include a Dataset Table in Data Source Queries.
 Auto Join Tables	Determine whether Oracle Analytics automatically creates relationships between tables when you drag and drop tables onto the Join Diagram. By default Oracle Analytics creates joins where common keys are detected in tables, but in some cases you might want to turn off automatic join creation and manually create table joins.
 Auto Layout Join Diagram	Undo changes you've made to the arrangement of tables and go back to the default diagram layout.
 Drag to join tables	Hover over a table and drag the circle over another table to join them. See Add Joins Between Dataset Tables.
 Hide or display the role-based filter bar	Hide or display the role-based filter bar, which enables you to filter the dataset. See Filter a Dataset Based on an Application Role.
 Preserve Grain	Determine whether a table is configured to include the preserve grain option. See Specify Which Table Determines Grain.

About Opening Datasets

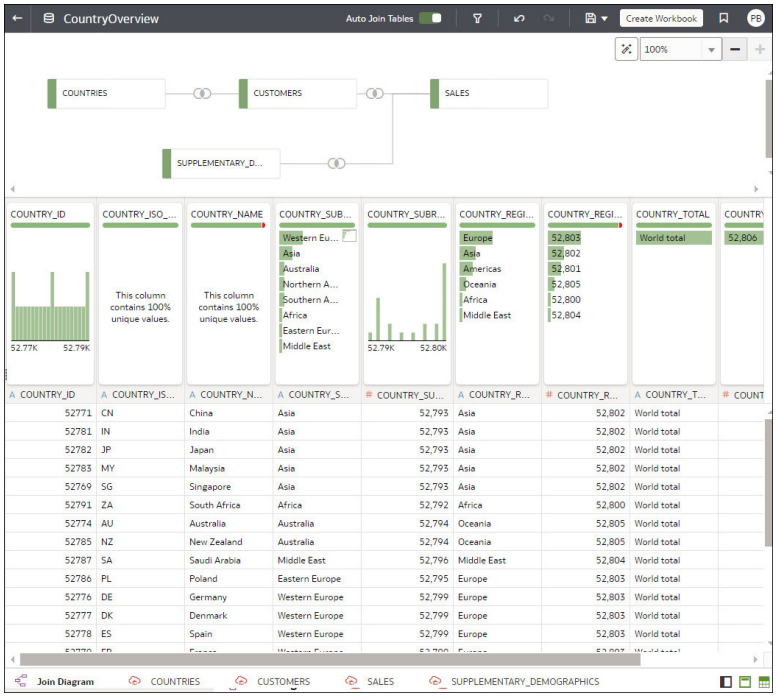
The type of data source a dataset uses determines how you navigate the user interface when you create a new dataset, and when you open an existing dataset by itself or from a workbook.

When you create or open a dataset that uses Oracle EPM Cloud, Oracle Essbase, or Google Analytics, the dataset is displayed in the transform editor.



When you create or open a dataset with multiple tables, the dataset is displayed in the Dataset editor.

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When working in a workbook, use the **Data** tab to view and open the workbook's datasets. The dataset determines which editor Oracle Analytics opens.

- If the dataset is based on Oracle EPM Cloud, Oracle Essbase, or Google Analytics, then the transform editor is opened in a new browser tab.
- If the dataset contains multiple tables, then the Dataset editor is opened in a new browser tab.



View Available Connections

A dataset uses one or more connections to data sources to access and supply data for analysis and visualization.

Your list of connections contains the connections that you built and the connections that you have permission to access and use. View the connections list to determine if the connections that you need to create datasets already exist. You can also use the connections list to access more information about a specific connection and decide if it can supply the data that you need to build a specific dataset, for example, the type of database it connects to and information about its data elements.

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Connections with the **System connections** property selected aren't available for datasets.

> **Note**
>
> You can create datasets with multiple tables from most data sources. Exceptions include Oracle EPM Cloud, Oracle Essbase, or Google Analytics.

If you need to create a connection, see Create a Connection to a Data Source.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Connections** tab to view your connections list.

Data Sources Available for Use in Datasets

Learn which data sources you can use in datasets. You can use most data sources to create datasets that contain multiple tables.

Oracle Data Sources

You can use one of more of these Oracle data source connections to create a dataset containing multiple tables.

- Oracle Analytics Local Subject Areas
- Oracle Fusion Cloud Applications Suite (Use the **Oracle Applications** connection type)
- Oracle Autonomous AI Lakehouse
- Oracle Autonomous AI Transaction Processing
- Oracle Database/Oracle AI Database
- Oracle NetSuite
- Oracle Service Cloud

Other Data Sources

You can use one or more of these data source connections to create a dataset containing multiple tables.

- Amazon EMR
- Amazon Redshift
- Apache Hive
- DB2
- Dropbox
- Files (XLSX, XLS, CSV, and TXT)
- Google Drive
- GreenPlum
- HortonWorks Hive
- IBM BigInsights Hive
- Impala (Cloudera)

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- Informix
- MapR Hive
- Microsoft Azure SQL Database
- MongoDB
- Pivotal HD Hive
- PostgreSQL
- Salesforce
- Snowflake
- Spark
- SQL Server
- Sybase ASE
- Sybase IQ
- MySQL

Data Sources Not Available for Multiple Table Datasets

These data source connections aren't available to create or include in a dataset containing multiple tables.

- Oracle Fusion Cloud Enterprise Performance Management (EPM)
- Oracle Essbase
- Google Analytics

Create a Dataset from a Connection

When you create a dataset, you can add tables from one or more data source connections, add joins, and enrich data.

Video

Tutorial

Before you create the dataset, you can check to see if the data source connections you need already exist. See View Available Connections.

> **Note**
>
> You can create datasets with multiple tables from most data sources. Exceptions include Oracle EPM Cloud, Oracle Essbase, or Google Analytics.

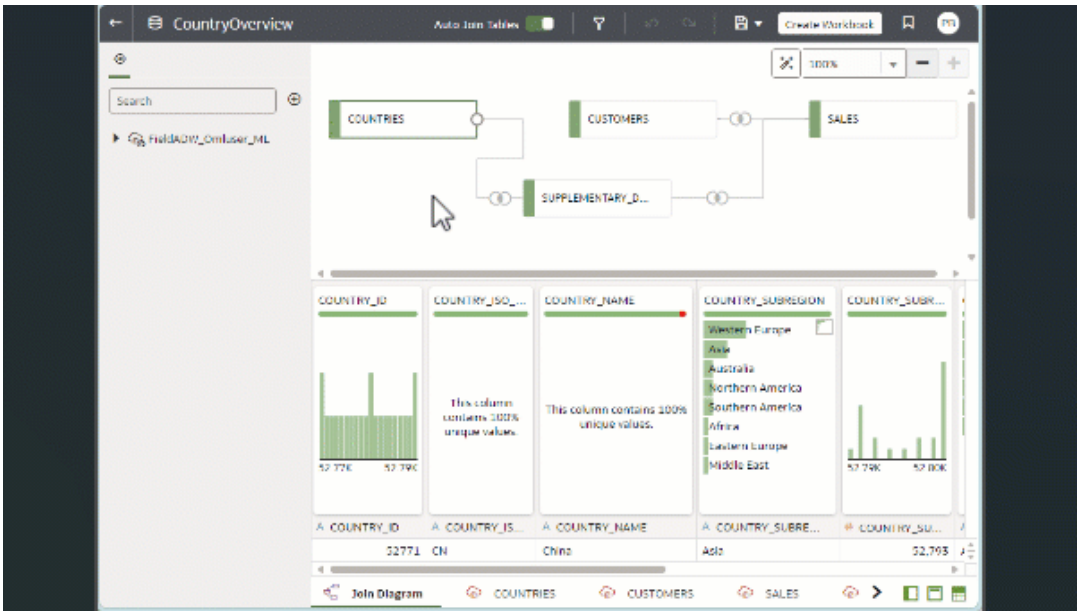
1. On your home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select a connection.
3. In the Dataset editor, go to the **Connections** pane and browse or search for a schema.

   Connections with the **System connections** property selected aren't available for datasets.

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4. Optional: If you want to build the dataset's table joins manually rather than have Oracle Analytics automatically create them, then deselect the **Auto Join Tables** toggle to turn off automatic join creation.
5. Click the schema to view a list of its tables. Drag and drop tables to the **Join Diagram**. If you know the fact table, then add it first before you add dimension tables. The fact table must be the left-most table in the **Join Diagram**.

   By default, the dataset you're building includes any table joins defined in the data source. If no joins exist in the data source then Oracle Analytics identifies and adds joins.
6. Optional: To add data from additional data sources, go to the **Connections** pane, click **Add**, and then click **Add Connection** or **Add File** to select and add another connection or file to the dataset.
7. Optional: If you added another connection or a file, then from the **Connections** pane, click the new connection's schema to open it, and drag and drop tables to the **Join Diagram**.
8. Optional: When you drag and drop a table to the **Join Diagram** from some data sources such as local subject areas or Fusion Applications Suite subject areas, then no columns are displayed. Go to the **Table Page Tabs**, click the subject area table, and use the transform editor to specify which columns to include in the table. Click **OK**.
9. In the **Join Diagram**, inspect, modify, add, or delete joins.
   - To inspect or modify a join, click the join to open the Join editor and inspect or modify the join type and join conditions.
   - To add a join, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
   - To delete a join, hover over the join icon and click **Delete Join**.
10. Click **Save**.
11. Enter a name and click **OK**.
12. To prepare a table's data, go to the tab row at the bottom of the Dataset editor and click the table's tab. Alternatively, from the Join Diagram, double-click the table, or right-click the table and select **Open**.



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13. Use the transform editor to perform any data transformations or enrichments. Click **Save Dataset**.
14. To edit a table's definition such as columns to include or exclude and data access, in the transform editor, click **Edit Definition** and make any changes. Click **OK** and then click **Save Dataset**.

Add Multiple Connections to a Dataset

A dataset can include more than one connection. Adding more connections allows you to access and join all of the tables and data that you need to build your dataset.

A dataset can contain a combination of connections and files. See Add a File to a Dataset Created from a Connection.

Most connections are available for you to add. Exceptions include Oracle EPM Cloud, Oracle Essbase, or Google Analytics.

Before you create the dataset, you can check to see if the data source connections you need already exist. See View Available Connections.

If you drag a subject area or analysis to the **Join Diagram**, then no columns are displayed. You must use the transform editor to specify which columns to include in the subject area's dataset table.

1. On your home page,click **Navigator**  , and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the Connections pane, click **Add**, and click **Add Connection**.
5. In the Add Connection dialog, locate and click a connection to add it to the Connections pane.
6. In the Connections pane, confirm that the connection you selected was added.
7. Click **Save**.

Add a File to a Dataset Created from a Connection

A dataset can contain tables created from files and connections.

Most connections are available for you to add to a dataset. Exceptions include Oracle EPM Cloud, Oracle Essbase, or Google Analytics.

Before you add a connection, you can check to see if the data source connections you need already exist. See View Available Connections.

If you drag a subject area or analysis to the **Join Diagram**, then no columns are displayed. You must use the transform editor to specify which columns to include in the subject area's dataset table.

Before you upload a file, confirm that the file meets these requirements:

- The file is either an Excel spreadsheet in .XLSX or .XLS format, a CSV file, or a TXT file.
- The spreadsheet contains no pivoted data.
- The spreadsheet is structured properly for import and use as a dataset. See About Files for Datasets.

1. On your home page,click **Navigator**  , and then click **Data**.

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2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. Locate the file:
   - If the file you want to add is located on your computer, then in the Connections pane, click **Add**, and click **Add File**.
   - If the file you want to add is located in Dropbox or Google Drive, then in the Connections pane, click **Add**, and then click **Add Connection**.
5. Browse for and select the file that you want to upload.
6. Optional: If you're uploading a CSV or TXT file, then in the **Separated By**, **Thousand Separator**, and **Decimal Separator** fields, confirm or change the default delimiters.

   To specify a custom delimiter, choose Custom in the **Separated By** field and enter the character you want to use as the delimiter. In the CSV or TXT file, a custom delimiter must be one character. The following example uses a pipe (|) as a delimiter: Year|Product|Revenue|Quantity|Target Revenue| Target Quantity.
7. Click **OK** to add the file to the dataset.
8. In the Connections pane, confirm that the file was added.
9. Click **Save**.

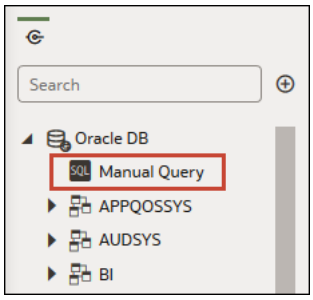
Add a Table to a Dataset Using a SQL Statement

You can write a source-specific SQL SELECT statement to query a connection's data and create a table in a dataset. This manual query option is available for most connection types.

Use the manual query option to create tables when you don't want to use a connection's tables in the dataset but instead want to target specific information. Or use the manual query option when the data source connection doesn't provide a schema listing. The SQL statement you use is determined by the data source connection type.

1. On your home page,click **Navigator** , and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.

   Make sure that you open a dataset that's based on database tables. These are displayed with the database icon .
4. Make sure you're in the Join Diagram before you proceed by selecting the **Join Diagram** tab.
5. In the Data panel, Connections pane, locate and expand the connection that you want to query, and locate the **Manual Query** option.



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6. Drag and drop **Manual Query** to the Join Diagram to create a table shell.
7. Double-click the Manual Query table.
8. Confirm that **Enter SQL** is selected.
9. In the **Statement** field, enter the SQL statement.

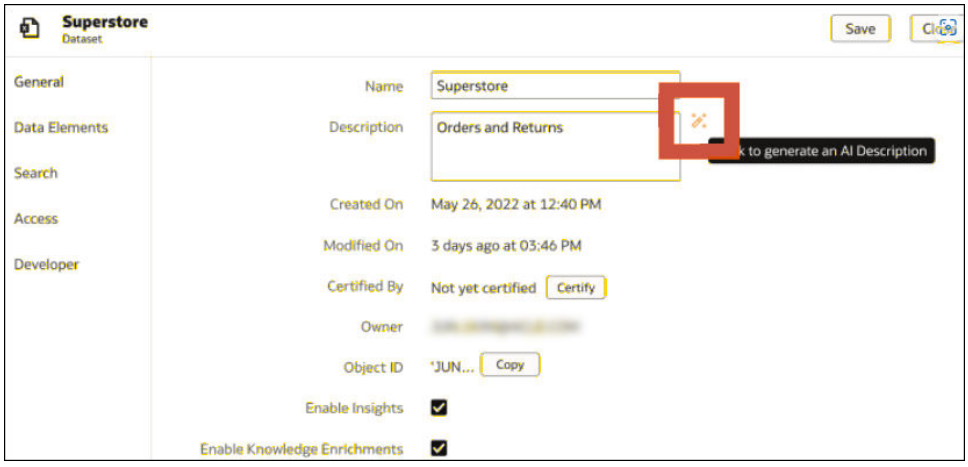
   In the SQL query, specify the alias for the columns when you use aggregate functions such as MAX and MIN to avoid query errors. For example, specify `SELECT MAX(SYS_BOOKING_DATE) <Alias_Name> FROM <table_name>;` instead of using `SELECT MAX(SYS_BOOKING_DATE) FROM <table_name>;`.
10. Optional: Click **Get Preview Data** to verify that you're querying the correct data.
11. Click **OK**.
12. Optional: To modify the SQL statement, go to the **Table Page Tabs**, and select the tab for the table you created. Click **Edit Definition** and use the **Statement** field to edit the SQL statement.

Add Metadata for a Dataset Using AI Assistant

Use Oracle Analytics's AI Assistant to add metadata that optimizes the usability of analytics content. The AI Assistant adds an optimized dataset description that makes the dataset more usable.

Providing the optimized dataset metadata enables analytics users to understand the contents of datasets without having to open them, and minimizes the duplication of content.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to update, click **Actions**, and then click **Inspect**.
4. On the General page, click the wand icon next to the **Description** field.



5. Click **Save**.

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Design Datasets

Learn how to design datasets to power your data visualization and analysis projects.

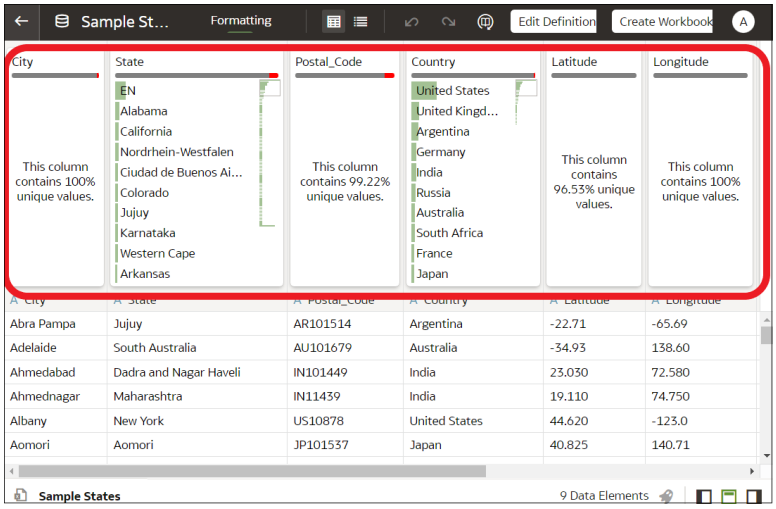
Topics:

- What Are Quality Insights?
- Enhance Your Data Using Quality Tiles
- About Removing or Restoring Dataset Columns
- Remove or Restore a Dataset Table's Columns
- Use Dataset-Level Filters
- Use Role-Based Filters in a Dataset
- View a Dataset Table's Original Formatting
- Change the Database Connection for a Dataset Table
- Specify Whether a Dataset Table Is Cached or Live

What Are Quality Insights?

Oracle Analytics automatically analyzes data quality to help you cleanse and enrich your data.

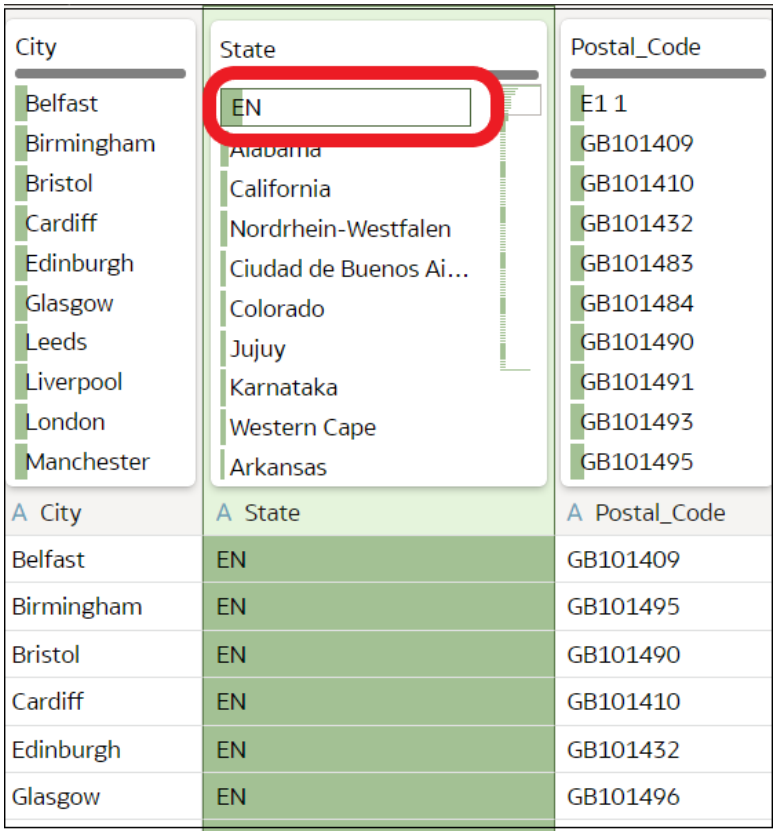
When you edit a table in the join diagram or transform editor, Oracle Analytics analyzes the quality of the data and provides a visual summary known as a quality insight in a tile above each column. Quality insights enable you to explore your data, and use a visual overview of the content to assess and improve data quality. The quality summary is based on a sample of the data, but changes that you make are applied to all of your data. Quality insights display a frequency tile for text or a histogram for dates and numbers.



Quality tiles enable you to:

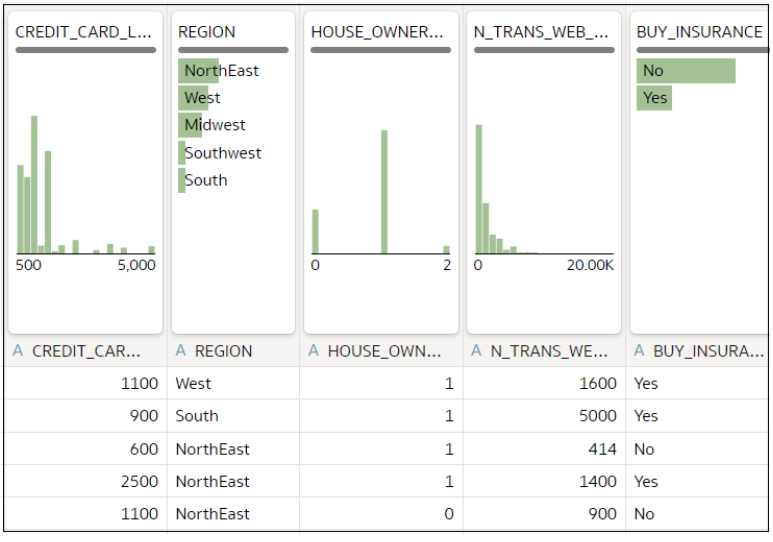
- **Explore** - Explore your data in real time using instant filtering, which enables you to temporarily filter data across all column in the table. You can filter on multiple values at the same time.

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The value being filtered is marked with a green box. Filters aren't added to the data preparation script.

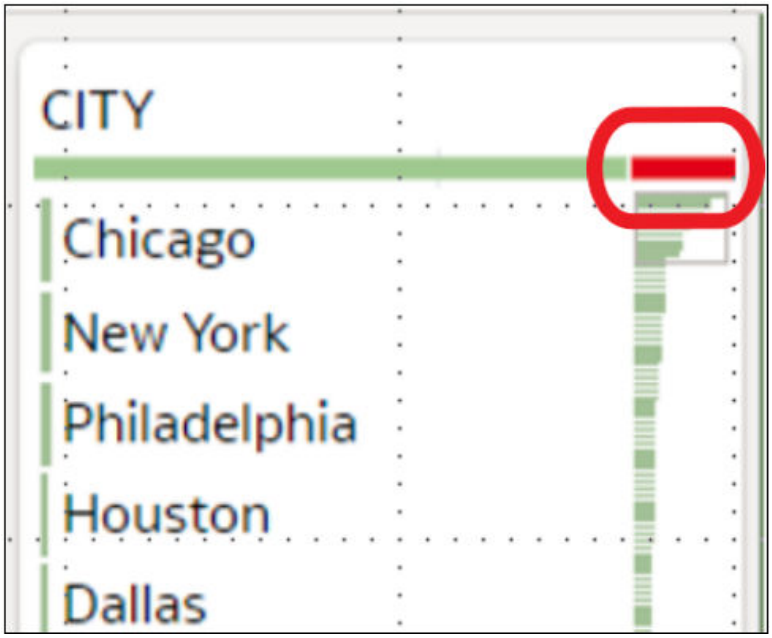
- **Review** - Use the interactive visualizations such as bar charts and histograms to evaluate your data and identify anomalies and outliers.



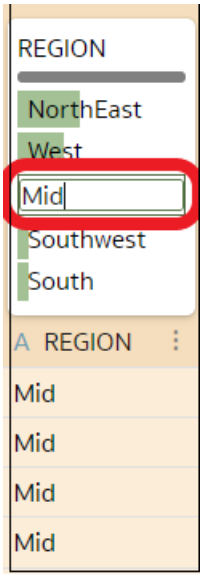
The quality tiles at the top of each column provide an instant assessment of the quality of content in that column based on a deep semantic understanding of the data.

- **Assess** - Hover over the quality bar to see a popup summary showing the percentage of valid and invalid values. Click on areas marked in red to filter on invalid values.

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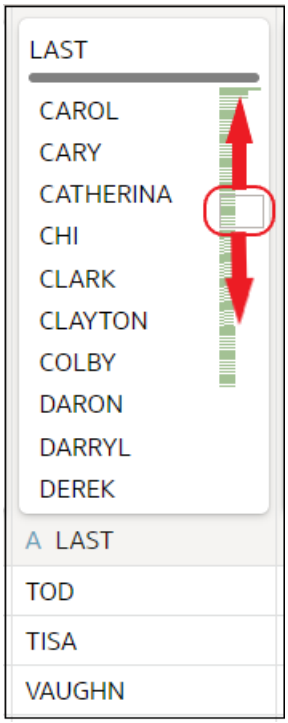


- **Replace or correct** - When you've identified anomalies and outliers, use inline replace to correct values. You get immediate feedback on the improvements to the data quality on the quality bar.

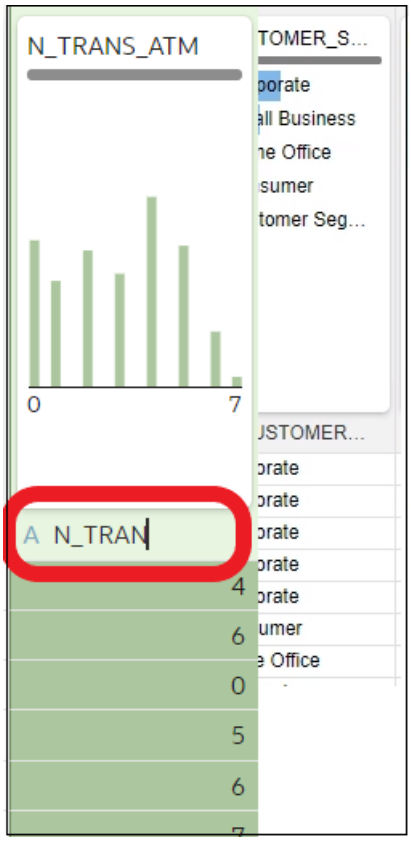


- **Scroll** - Navigate large datasets using the scrollable mini-map.

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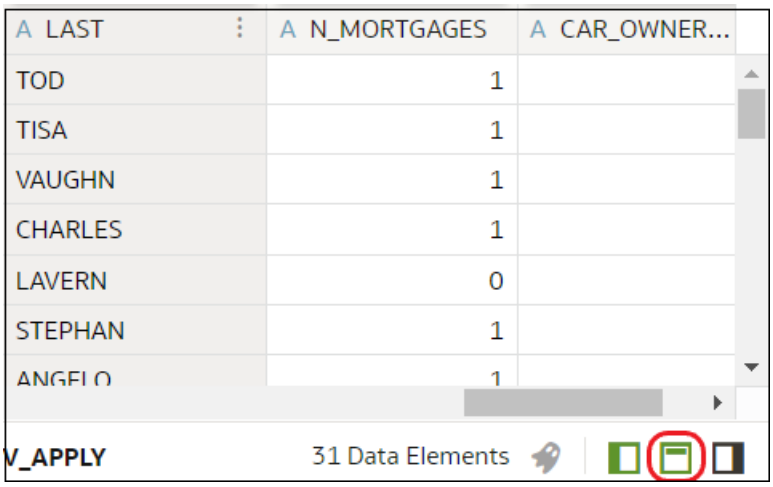


- **Rename columns** - Create more readable column names easily.



Make sure that you toggle the **Quality Tiles** option bottom right to display quality tiles.

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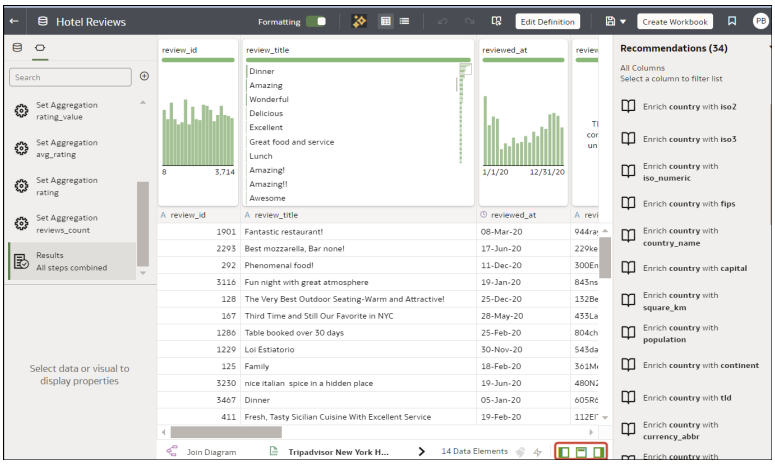


Enhance Your Data Using Quality Tiles

When you edit a dataset in the transform editor, Oracle Analytics displays a quality tile for each data column, which displays a visual summary of data quality and enables you to analyze data quality and enhance your data.

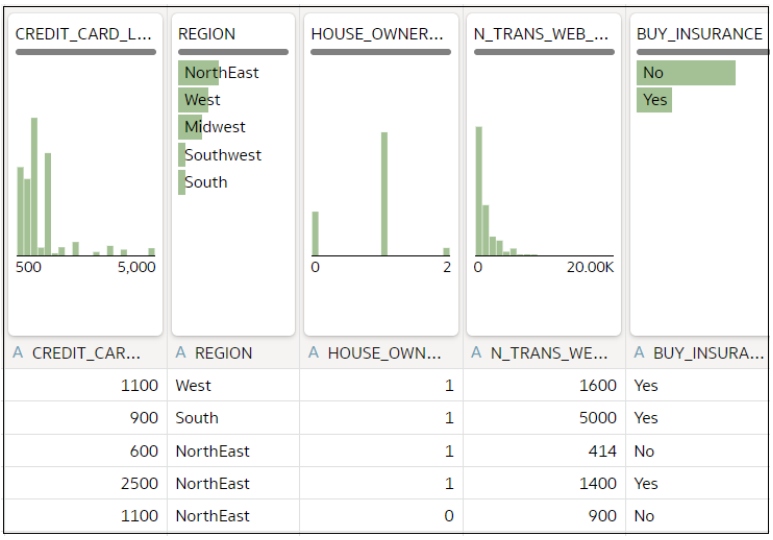
1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.



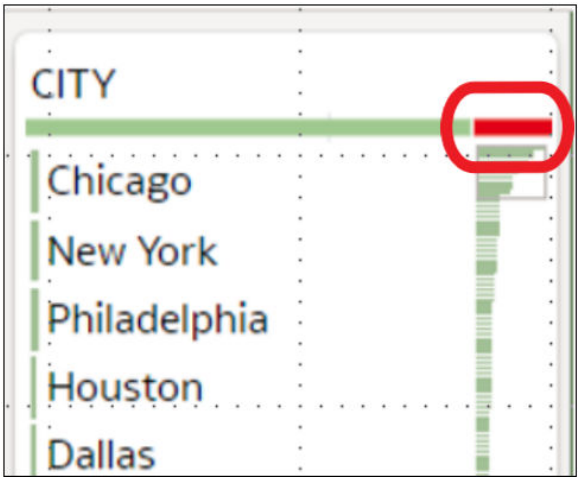
2. Use the quality insights to get an instant assessment of the quality of content in that column based on a deep semantic understanding of the data.

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A CREDIT_CAR...	A REGION	A HOUSE_OWN...	A N_TRANS_WE...	A BUY_INSURA...
1100	West	1	1600	Yes
900	South	1	5000	Yes
600	NorthEast	1	414	No
2500	NorthEast	1	1400	Yes
1100	NorthEast	0	900	No

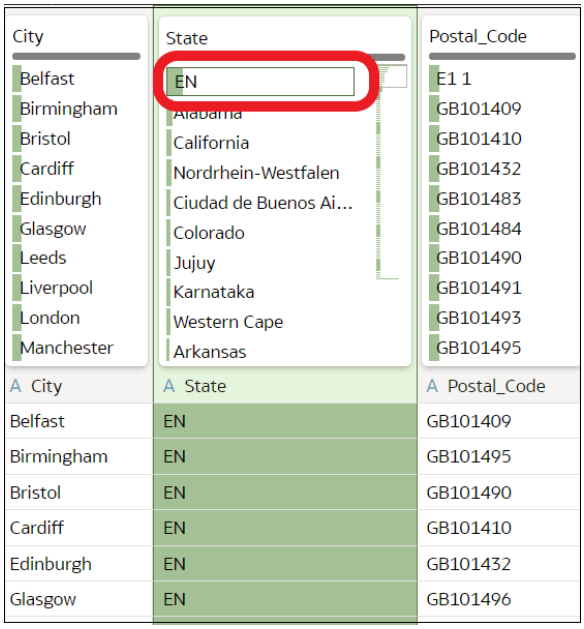
For example, hover over a quality bar to see how many valid and invalid values are in the column. Click on areas marked in red to filter on invalid values.



3. To explore your data by applying a temporary filter, click one or more values to use as a filter.

   Oracle Analytics highlights filter values with a green box. To unfilter a value, click the value again.

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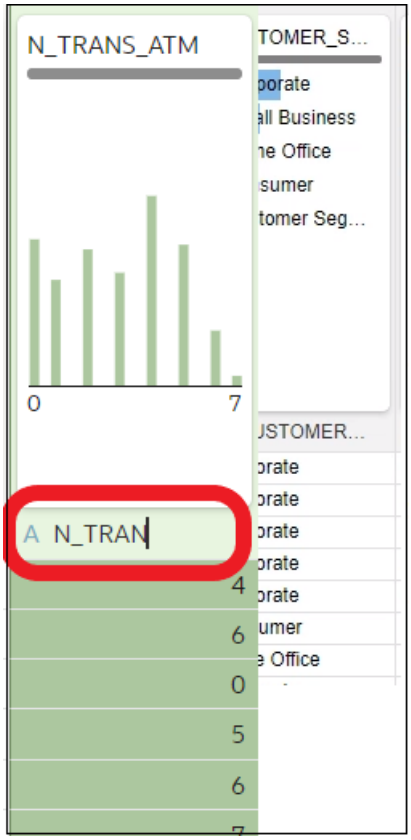


When you filter on values, Oracle Analytics updates all data columns to instantly display only the rows relating to the filter values you selected. If you filter a value nearer the bottom of a long list, you might have to scroll down the list to locate it so that you can deselect the value.

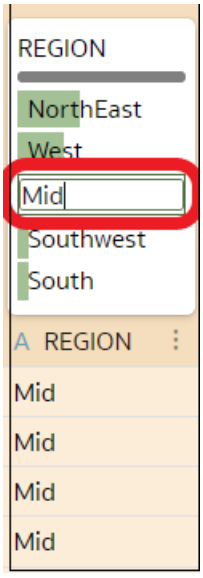
Note: Temporary filters that you apply in quality tiles aren't saved with your data (that is, aren't added to the data preparation script).

4. To rename a column, click the column name to edit the value.

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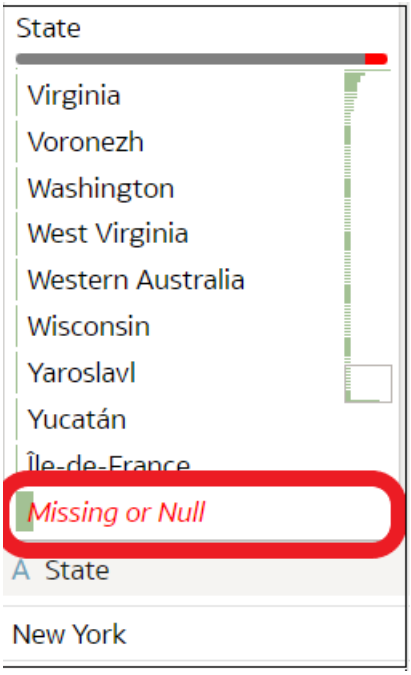
5. To edit values.
   a. In the quality tile, double-click the value you want to change.



   b. Oracle Analytics inserts the value that you specify into every row that contained the original value.
6. To fix null or missing values:
   a. In the quality tile, scroll to the last value in the list.

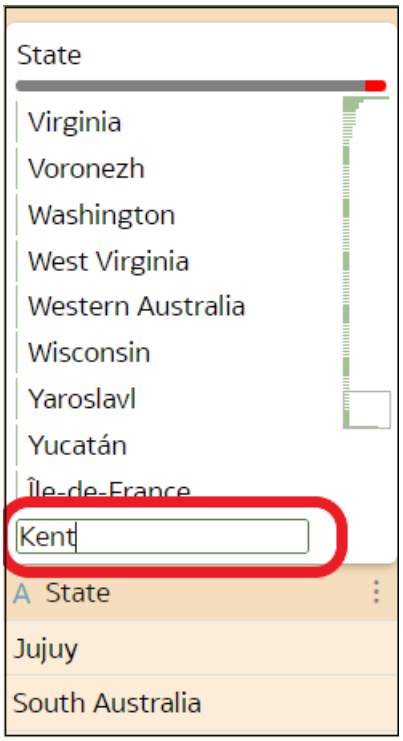
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If your data has missing values, you see **Missing or Null** highlighted in red.



b. Double-click **Missing or Null**, then enter the value you want to use.

Oracle Analytics inserts the value that you specify into every Missing or Null row.



Changes that you apply in the quality insight tiles are added to the data preparation script (except for filters).

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About Removing or Restoring Dataset Columns

Removing columns doesn't permanently delete them from the table, and you can re-add the removed columns as needed for enrichments and transformations, or for inclusion in the visualizations that you create from the dataset.

It's important to understand that removing a column is different than deleting a column from a dataset:

- Use Edit Definition to *remove* a column.
- The transform editor doesn't indicate which columns were removed, and removing a column doesn't add a step to the Preparation Script Panel. To confirm which columns were deleted or to re-add them, go to Edit Definition.
- Use the transform editor to *delete* a column.
- Deleting a column creates a step in the Preparation Script Panel. Remove the step to restore the column.

You can create dataset filters on removed columns.

In some cases profiling and generating quality insights for a table that contains many columns can be time and resource-intensive. If you're working with a table with many columns and want to increase system performance, Oracle recommends that you remove any columns that you don't need before you perform any enrichments or transformations.

See Hide a Column in a Dataset and Remove or Restore a Dataset Table's Columns.

Remove or Restore a Dataset Table's Columns

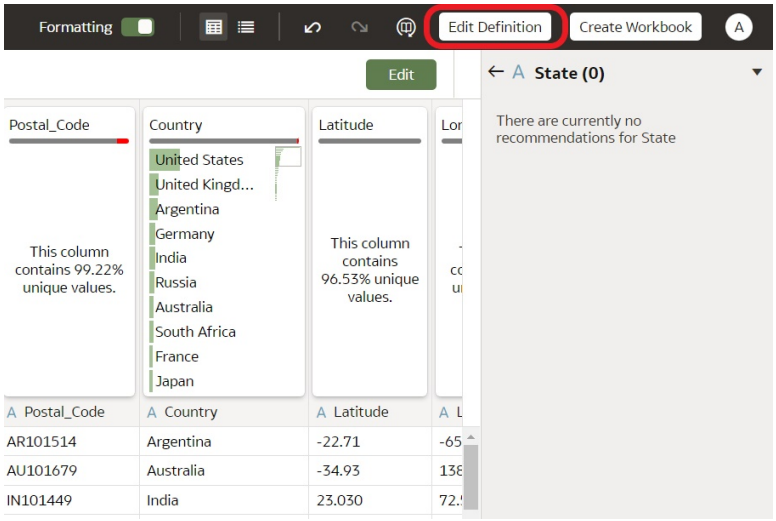
You can remove columns from a dataset table when the dataset doesn't need the columns, and you can restore any removed columns.

See About Removing or Restoring Dataset Columns.

When you remove or restore a column, those changes are displayed in the table's view in the transform editor. Oracle Analytics warns you if the column you've chosen to remove is used in the transform editor's Preparation Script pane. But Oracle Analytics won't warn you if the column you've chosen to remove is used in a workbook or visualization.

1. On your home page, click **Navigator**  , and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** go to the **Table Page Tabs** and click the table that you want to work with.
5. In the transform editor, click **Edit Definition**.

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6. (Optional) To remove columns, either click **Remove All** to remove all columns, or select the columns that you want to remove and click **Remove Selected**.
7. (Optional) To re-add columns, either click **Add All** to add all columns not included in the table, or select the columns that you want to add and click **Add Selected**.
8. Click **OK**.

Use Dataset-Level Filters

This topic describes how you can filter workbook data at the dataset-level.

Topics:

- About Dataset-Level Filters
- Filter Data at the Dataset-Level

About Dataset-Level Filters

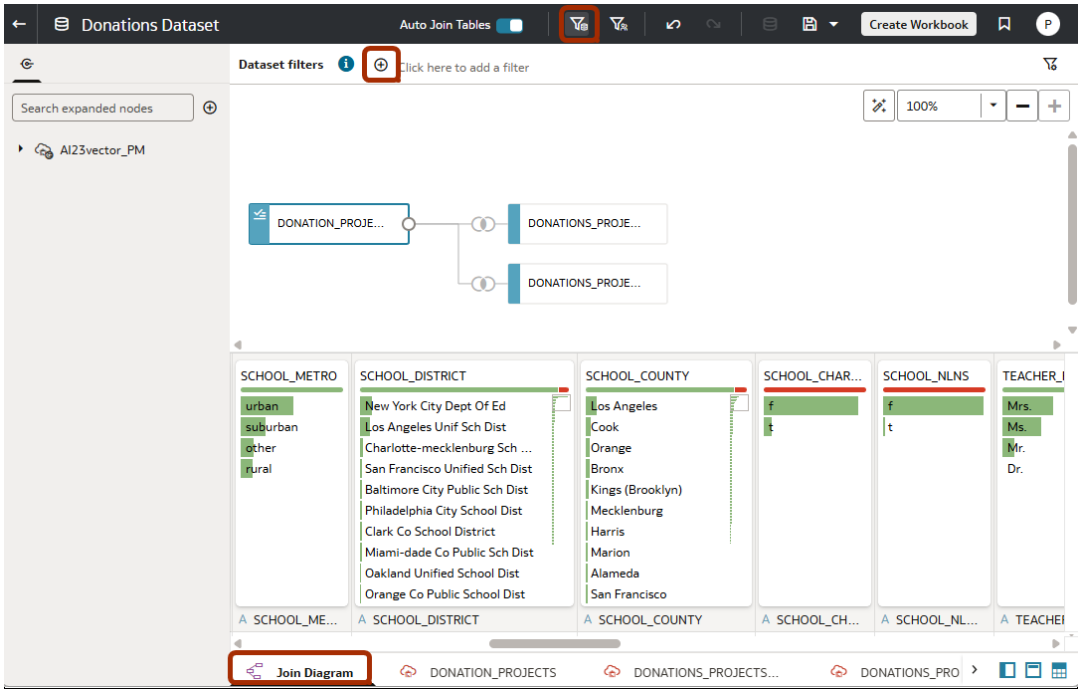
As a dataset owner you can apply filters to one or more tables in a dataset, to enable Oracle Analytics business analysts and users to access only the data they need.

For example you can create a filter on a school state column that only shows data from schools in the State of California in workbooks.

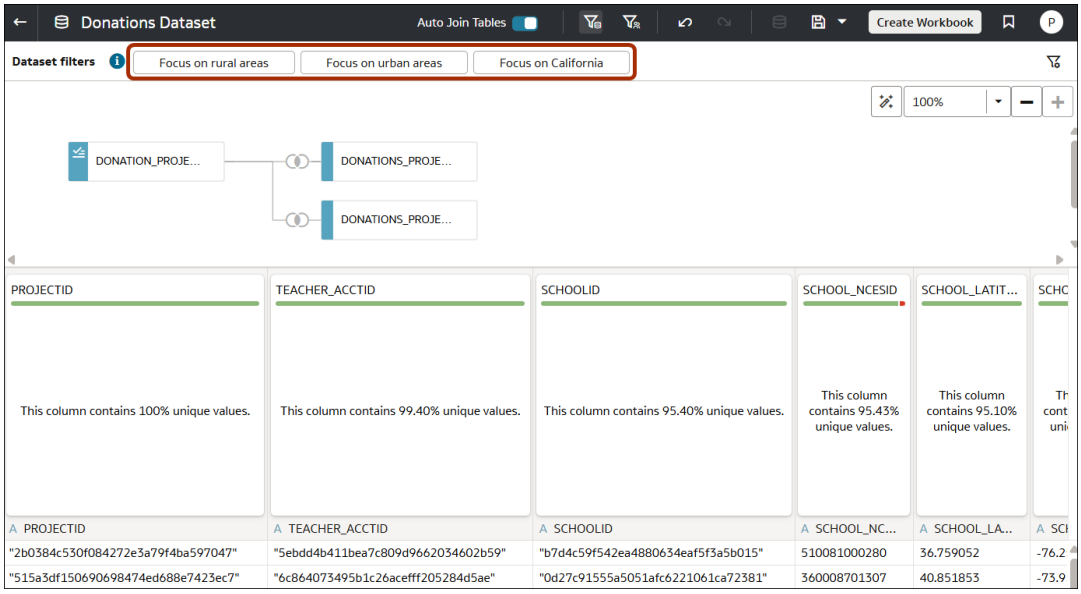
Dataset-Level Filters Overview

- As a dataset owner, you can filter your data at the dataset-level before you or other analysts create workbooks. Start by opening a dataset, and in the join diagram use the dataset filter bar option on the toolbar to display the dataset filter bar.

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- You manage dataset-level filters in the dataset filter bar in the Join Diagram.



- You can apply multiple filters to a dataset at the same time.
- You can filter data on multiple tables and columns. For example, you might apply a filter to a SCHOOLS_METRO column in a SCHOOLS table and to a TOTAL_DONATIONS column in a DONATIONS table using `SCHOOLS.SCHOOLS_METRO='rural' AND DONATIONS.TOTAL_DONATIONS > 10000`.
- You use expressions to specify dataset filters. For example, SCHOOL_METRO='rural'.

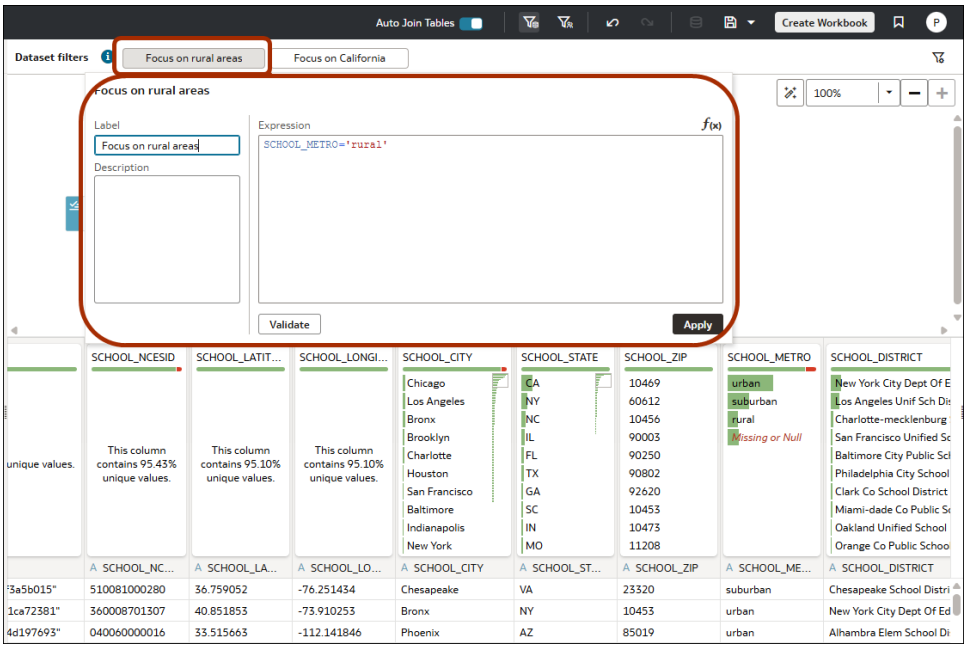
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- When you add dataset filters in the Join Diagram, the preview data shown isn't filtered, but the dataset is filtered when workbook consumers and content authors access the dataset.

Tips on Using Dataset-Level Filters

- To display the the dataset filter bar, in the Join Diagram click the dataset filter bar icon on the toolbar.
- To edit a filter, click a filter tile in the dataset filter bar to display the expression editor.



- To add a filter to a dataset, in the dataset filter bar, click **Add Filter** and use the expression editor to specify filters.

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- To remove a filter from the dataset, right-click the tile in the dataset filter bar and select **Delete**.
- To show filter values in filter tiles, right-click the tile in the dataset filter bar and select **Show Values**.
- Save your filtered dataset before you create workbooks from it.

Filter Data at the Dataset-Level

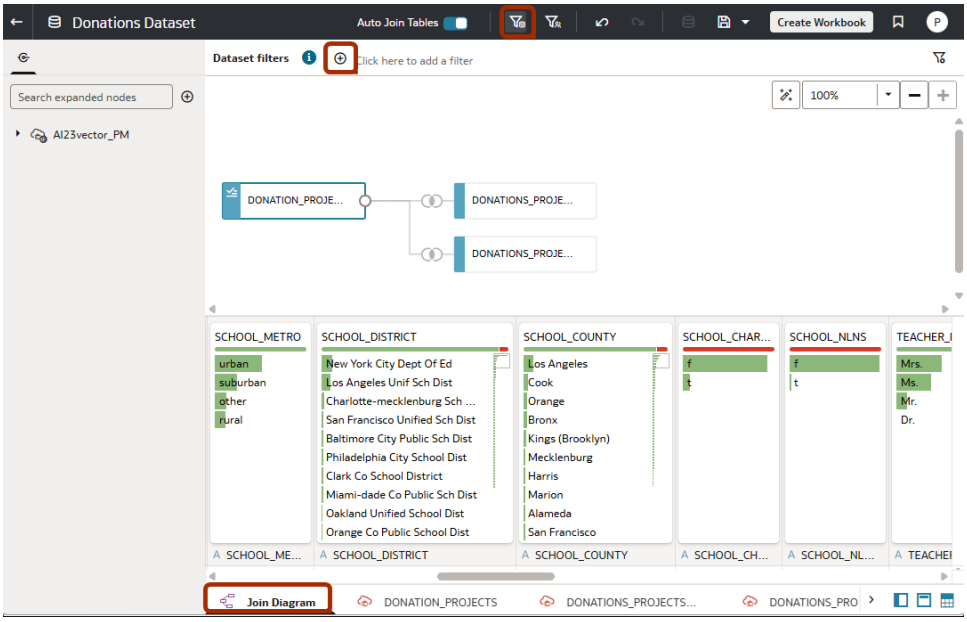
Use these steps to create a filter in the dataset that limits the data available in a workbook.

You can filter data on multiple tables and columns. For example, you might apply a filter to a SCHOOLS_METRO column in a SCHOOLS table and to a TOTAL_DONATIONS column in a DONATIONS table using `SCHOOLS.SCHOOLS_METRO='rural' AND DONATIONS.TOTAL_DONATIONS > 10000`.

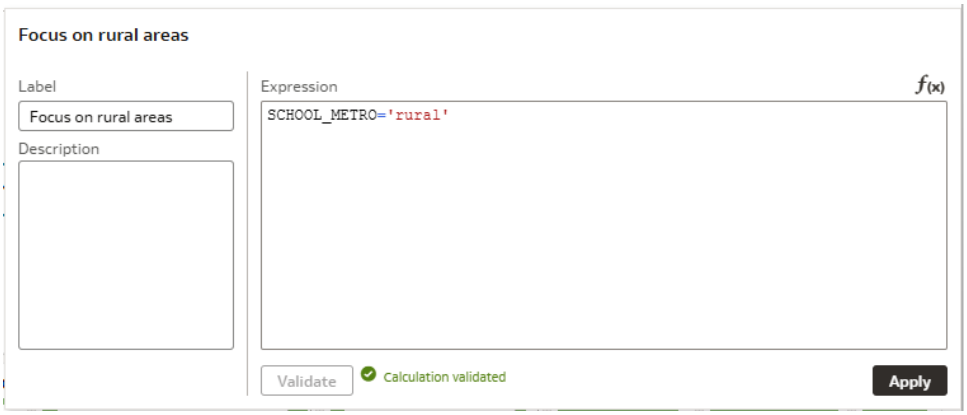
When you apply filters to a dataset, the filters are applied when you create workbooks based on that dataset.

1. On your home page, select a dataset, click **Actions**, and select **Open**.
2. Click the **Join Diagram** tab.
3. Click the dataset filter bar icon on the toolbar. in the dataset filter bar click **Add Filter**.

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4. In the **Expression** box, enter the logical expression that filters the data. using single quotes around data values.



Tip: Start typing a column name to see a popup list of matching columns that you can select. Click ***f(x)*** to display the function picker.

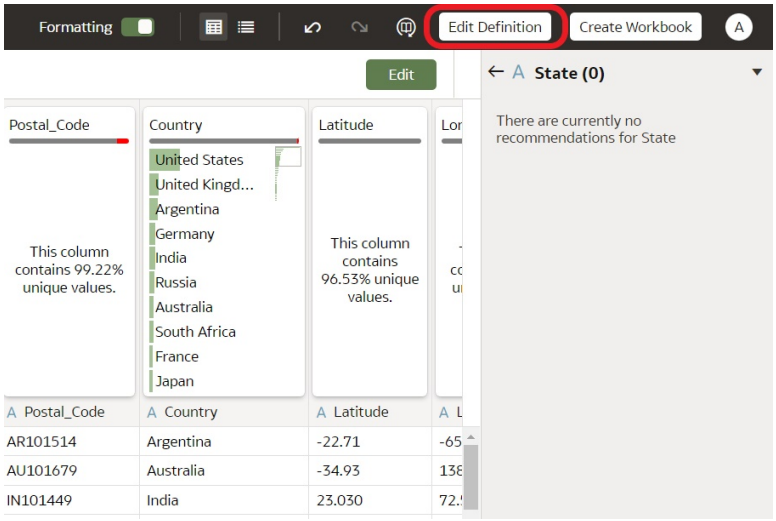
5. Click **Validate** and click **Apply**.

Filter a Dataset Table

Add filters to a dataset table so it contains only the values you need in the dataset.

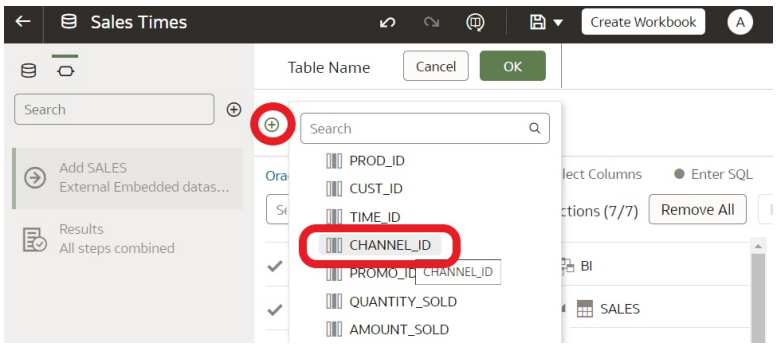
1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. Click **Edit Definition**.

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If the dataset has multiple tables, first click the tab for the table that you want to filter.

5. Click **Add Filter**.
6. Select the column that you want to filter by.



7. Select the filter's values.
8. Click **OK**.

Use Role-Based Filters in a Dataset

This topic describes what you need to know to apply role-based filters to workbooks and visualizations. Filters based on application roles, known as role-based filters, enable business analysts and users to access just the data they need.

Topics:

- About Role-Based Filters
- Filter a Dataset Based on an Application Role
- Example One - Apply a Simple Role-Based Filter in a Workbook
- Example Two - Apply Multiple Role-Based Filters in a Workbook

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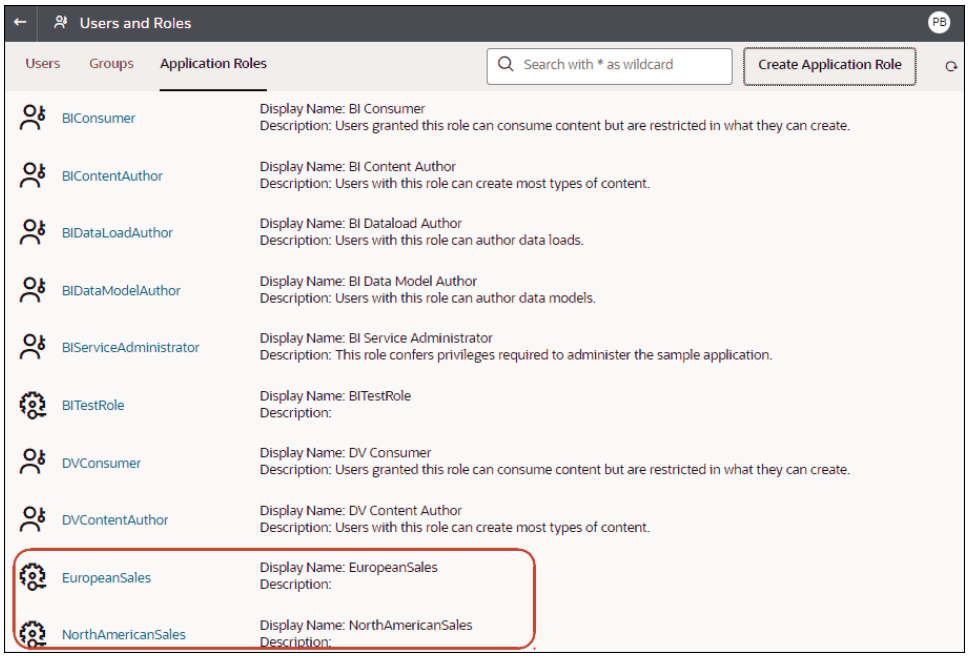
About Role-Based Filters

As a dataset owner, you can apply filters based on application roles, known as role-based filters, to enable Oracle Analytics business analysts and users to access only the data they need.

For example, suppose you want some users to see North American sales data when they open a shared global sales workbook. To accomplish this, you create a custom application role called North American Analyst and then use it to filter the workbook data.

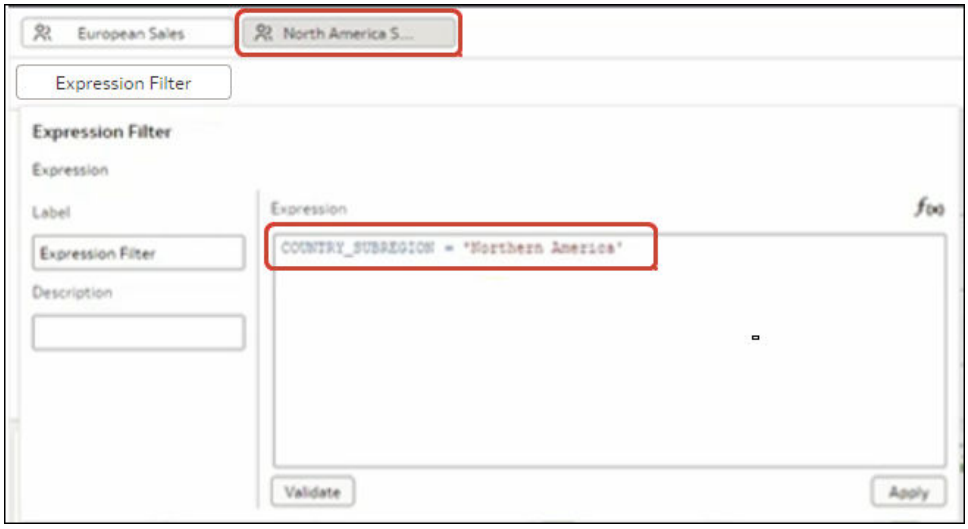
Role-Based Filters Overview

- You can apply multiple role-based filters to a dataset at the same time.
- When you add role-based filters in the Dataset editor, the preview data shown isn't filtered, but the dataset is filtered when workbook consumers access the dataset.
- You can use existing application roles or create your own application roles. For example, to filter a global sales dataset for analysts in Europe and North America you might create application roles *EuropeanSales* and *NorthAmericaSales*.

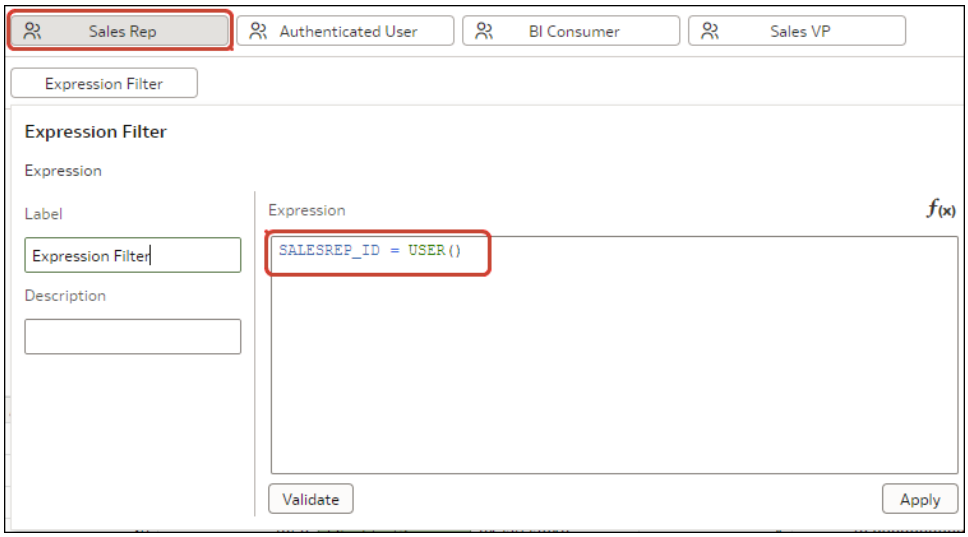


- You use expressions to specify role-based filters. For example, on a *North America Sales* application role you might filter on the COUNTRY_SUBREGION column of a COUNTRIES table using the expression `COUNTRY_SUBREGION = "Northern America"`.

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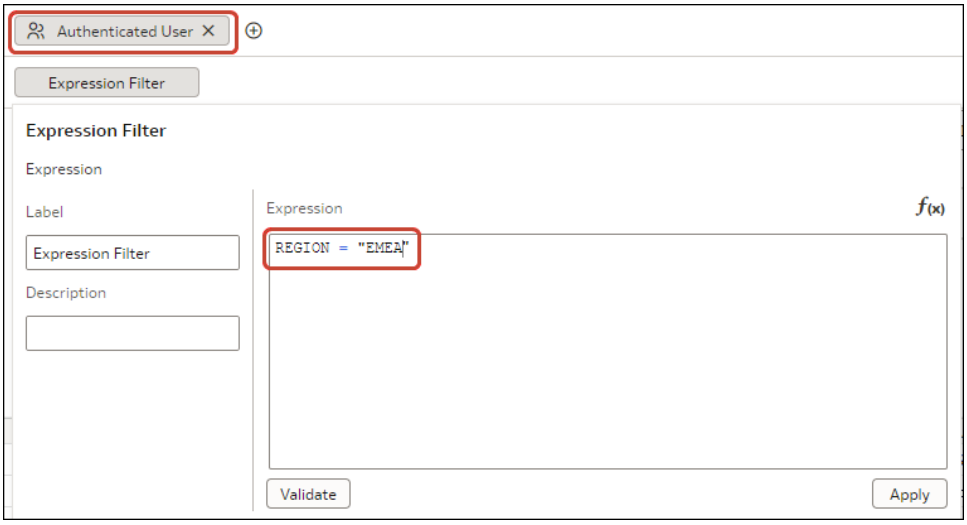
- You can also reference Oracle Analytics system variables in the expression. For example, on a *Sales Rep* application role you might filter on the SALESREP_ID column using the expression `SALESREP_ID = USER()`, where USER () is a system variable that provides the ID of the logged-in user.



Tips on Using Role-based Filters

- To display the the role-based filter bar, in the Join Diagram click the role-based filter bar icon on the toolbar.
- To filter a dataset for all users and roles, add a role-based filter to the *Authenticated User* role. For example, if you want users to only access data for the EMEA region, add the filter expression REGION = "EMEA" to the *Authenticated User* role.

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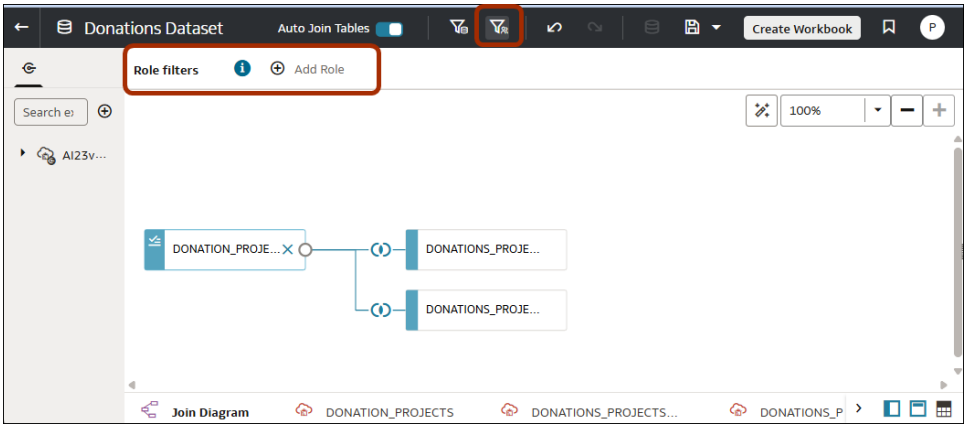
- When you place a role-based filter on a dataset, any user who doesn't have the role(s) specified won't be able to see any data, including the dataset owner. If a dataset owner needs to see the data, add the dataset owner to one of the specified roles. In addition, if users with a super role such as an Admin or the OrgVP need to see all data, create a dummy filter. For example, if you would like the OrgVP to see all data in a region, create an additional filter for the application role of OrgVP and create a filter with the expression 1=1. When a user with OrgVP logs in and creates a workbook, they will be able to see all of the data.

Filter a Dataset Based on an Application Role

Use filters based on Oracle Analytics application roles to allow users to see the data that's applicable to their role.

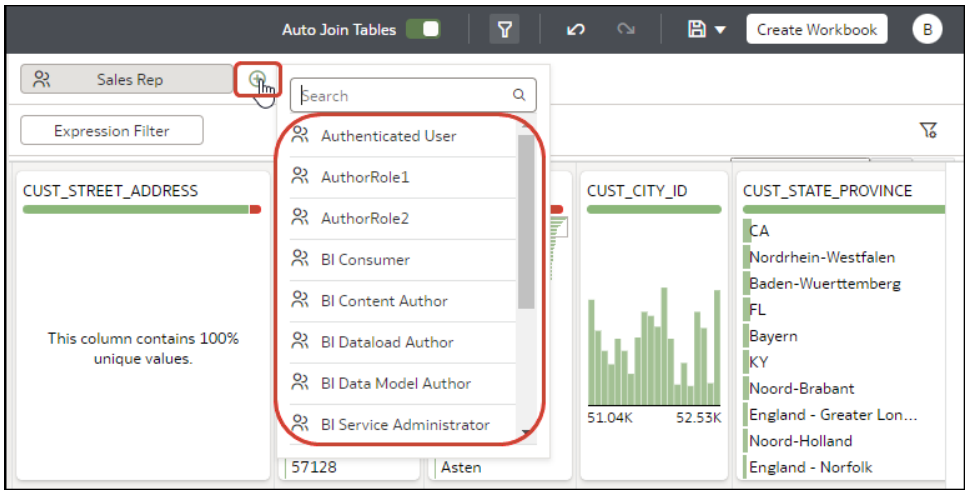
When you've applied application role-based filters to a dataset, add it to a workbook and share the workbook with other business analysts and users. When other users log in to Oracle Analytics and open the workbook, they'll only see data that you've shared with them using role-based filters.

1. On your home page,, select a dataset, click **Actions**, and then select **Open**.
2. In the dataset editor, click **Join Diagram**.
3. Click the **Role-based filter bar** option on the toolbar.

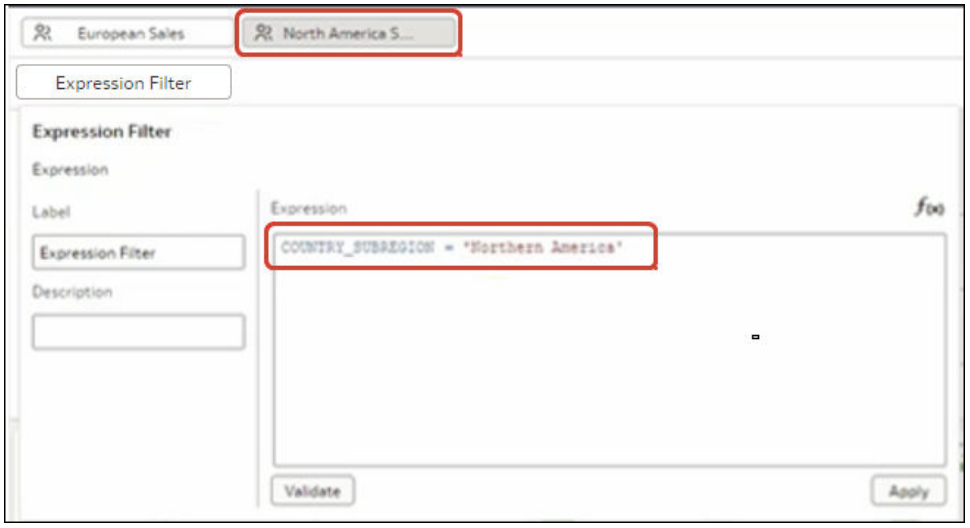


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4. Hover over the role-based filter bar, and click **Add Role** ⊕ to display a list of application roles.



5. In the drop down list, select the application role that you'd like to use to filter the dataset.
6. Right-click the application role and select **Create Filter** to display the Expression Filter editor.
7. Optional: If required, use the **Label** field to change the filter name to something more meaningful.
8. In the **Expression** box, enter the logical expression that filters the data. using single quotes around data values.



9. Click **Validate**, then click **Apply**.

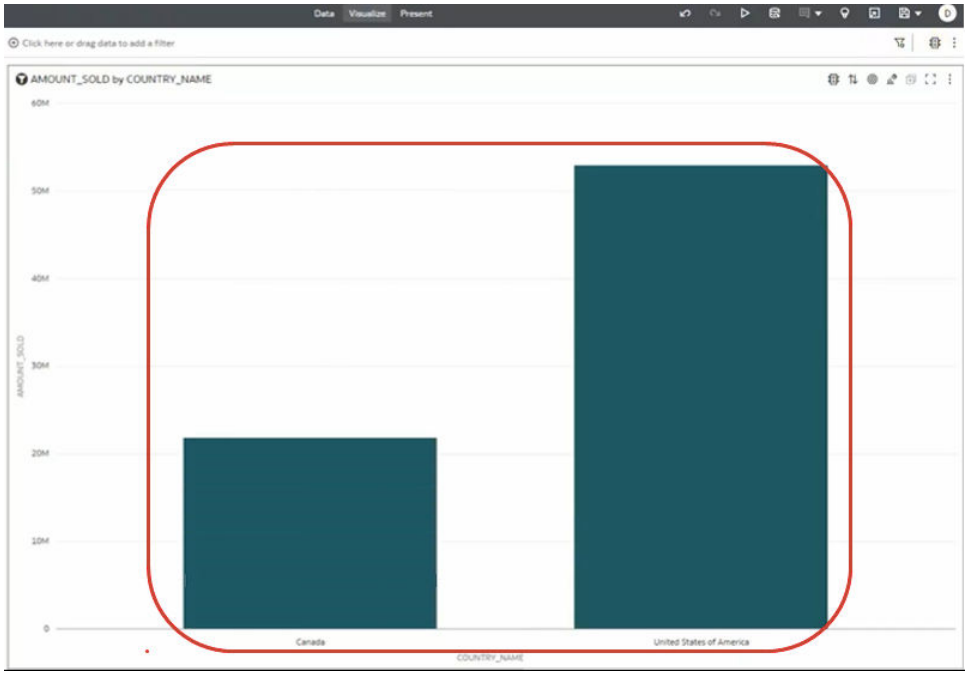
Example One - Apply a Simple Role-Based Filter in a Workbook

This example shows how to filter a dataset so that North American sales representatives can access only North American sales data when opening a shared workbook.

Example report

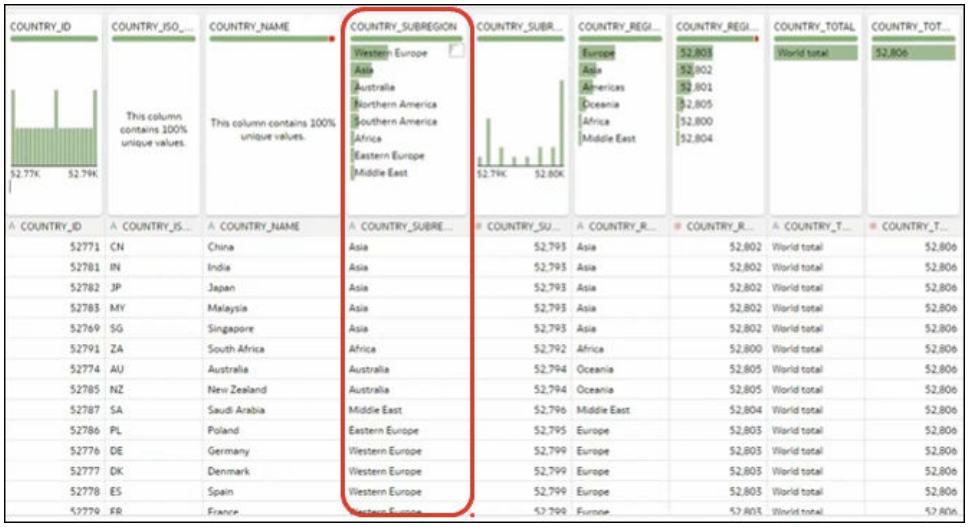
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When North American sales representatives log into Oracle Analytics and open the shared global sales workbook, they only want to see sales data for North America. In this example, sales representative *dvauthoruser* can see sales for North American countries Canada and United States of America.



Example data

The example dataset contains sales data, with the geographical location stored in the `COUNTRY_SUBREGION` column in the COUNTRIES table.



Example users and application roles

- User *dvauthoruser* is assigned the application role *North America Sales*.

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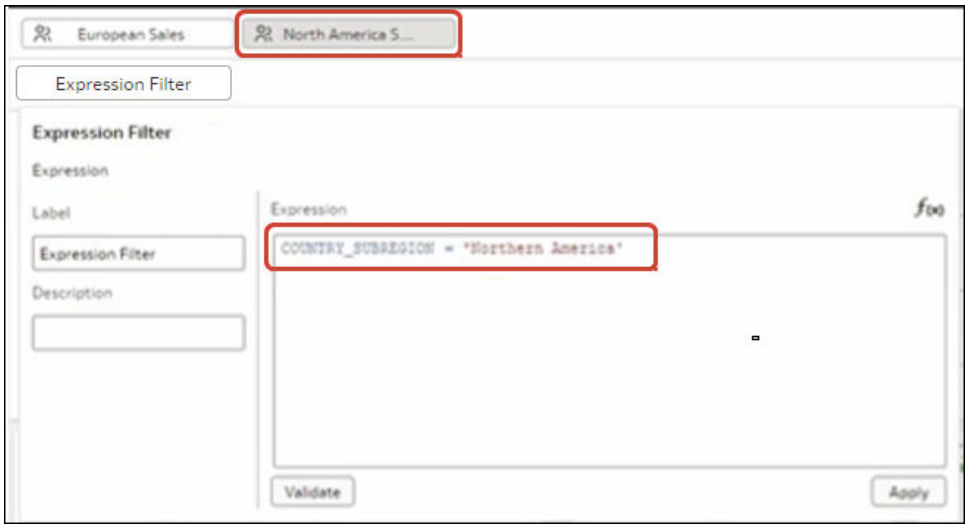
Example dataset access configuration

In the Inspect dialog for the dataset, under Access, then Roles, authenticated users are given Read-Only access.



Example role-based filter

In the dataset editor, the workbook author applies a role-based filter to the *North America Sales* application role with the expression `COUNTRY_SUBREGION = "Northern America"`.



Example Two - Apply Multiple Role-Based Filters in a Workbook

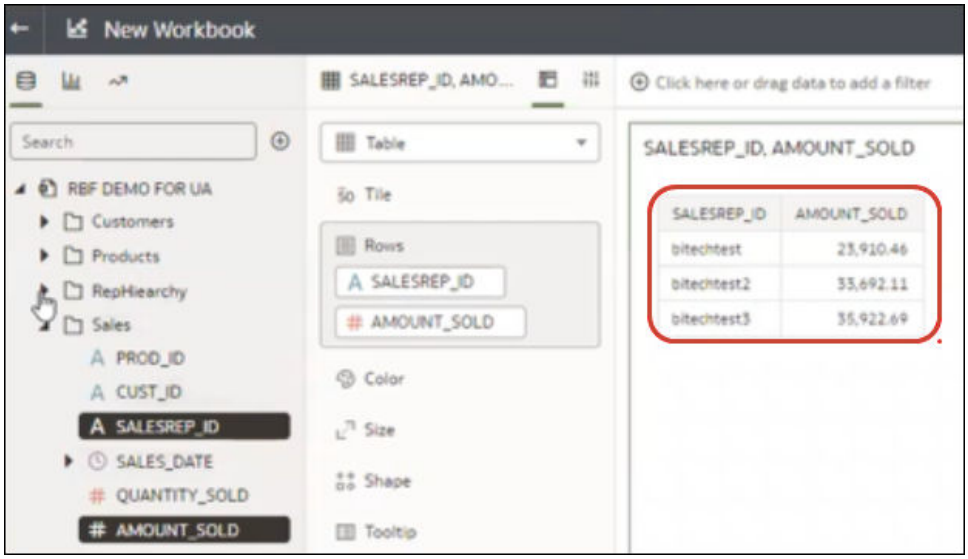
This example shows how sales vice presidents and sales representatives use the same shared workbook to analyze sales data. Vice presidents can see the sales data for every sales representative in their team. Sales representatives can only see their own sales data.

Example report

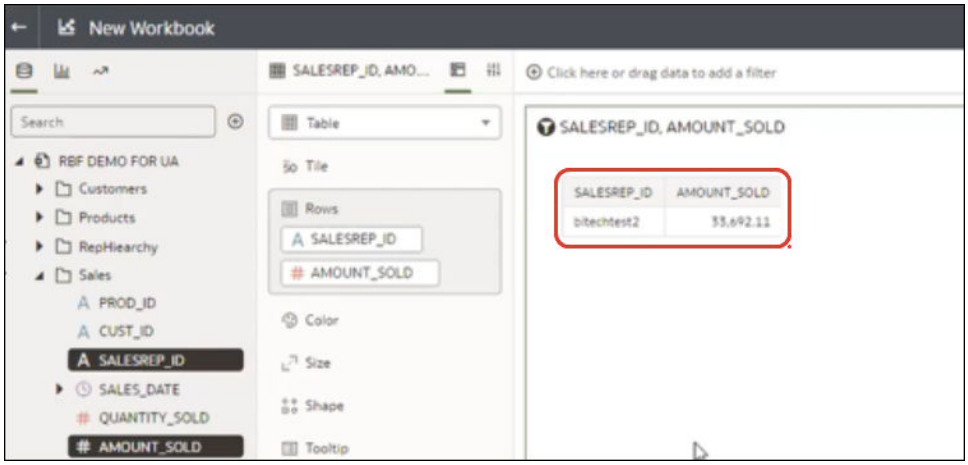
Sales vice presidents or sales representatives can open the same shared workbook and see data appropriate to their application role and user ID.

- When a sales vice president logs into Oracle Analytics and opens the shared sales workbook, they see the sales data for each sales representative in their team. In this example, sales vice president *dvauthoruser* can see a sales summary for sales representatives in their team (*bitechtest*, *bitechtest2*, and *bitechtest3*).

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- When a sales representative logs into Oracle Analytics and opens the shared sales workbook, they only see their own sales data. In this example, sales representative *bitechtest2* can see his or her sales `$33,692.11`.



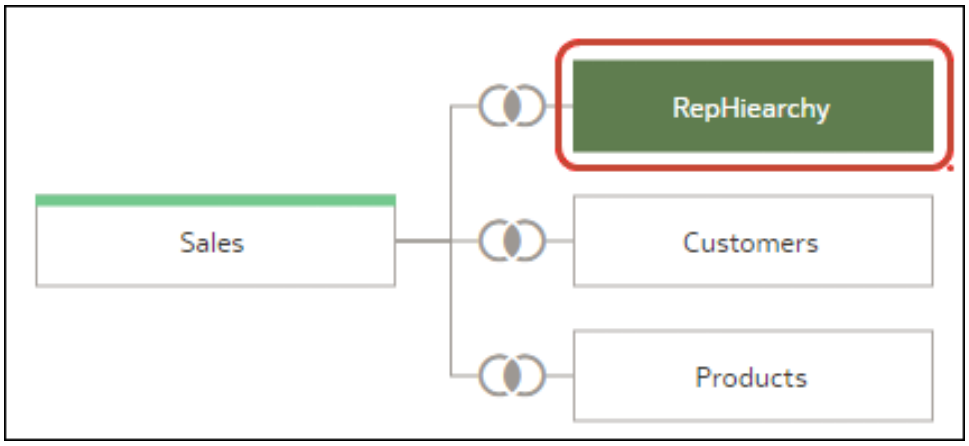
Example data

The example dataset contains sales data, with the sales representative ID in the `SALESREP_ID` column.

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PROD_ID	CUST_ID	SALESREP_ID	SALES_DATE	QUANTITY_...	AMOUNT_SOLD
139	2943	bitechtest2	08/26/2019	1	17.770000000000
34	1025	bitechtest	06/19/2018	1	44.790000000000
118	2365	bitechtest4	09/30/2019	1	8.130000000000
47	3059	bitechtest2	01/27/2019	1	30.080000000000
48	4678	bitechtest5	03/28/2022	1	12.000000000000
134	3829	bitechtest7	08/09/2020	1	23.600000000000
46	680	bitechtest5	06/10/2021	1	24.610000000000
38	33742	bitechtest4	11/23/2019	1	27.780000000000
139	1619	bitechtest6	07/07/2020	1	22.250000000000
45	3633	bitechtest2	07/03/2020	1	48.100000000000
16	2985	bitechtest3	07/07/2021	1	303.330000000000
28	4047	bitechtest3	07/17/2018	1	214.740000000000
31	5576	bitechtest2	12/16/2020	1	8.320000000000
130	8203	bitechtest2	08/30/2018	1	94.490000000000
140	43443	bitechtest5	03/31/2020	1	37.790000000000
132	4435	bitechtest	10/02/2021	1	27.590000000000
132	12005	bitechtest6	05/21/2021	1	23.730000000000
123	9084	bitechtest3	12/26/2019	1	50.790000000000
26	11445	bitechtest3	12/21/2021	1	154.650000000000
126	3927	bitechtest	04/08/2020	1	29.520000000000
24	4960	bitechtest7	06/29/2021	1	64.300000000000

The sales vice president to sales representative hierarchy is implemented using a RepHierarchy table.



The RepHierarchy table relates sales vice presidents to sales representatives in their team:

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A VP_ID	A SALESREP_ID
dvauthoruser	bitechtest
dvauthoruser	bitechtest2
dvauthoruser	bitechtest3
dvauthoruser2	bitechtest4
dvauthoruser2	bitechtest5
dvauthoruser2	bitechtest6
dvauthoruser2	bitechtest7

Example users and application roles

- Users *dvauthoruser* and *dvauthoruser2* are assigned the application role *Sales VP*.
- Users *bitechtest* to *bitechtest7* are assigned the application role *Sales Rep*.

Example dataset access configuration

In the Inspect dialog for the dataset, under Access, then Roles, authenticated users are given Read-Only access.

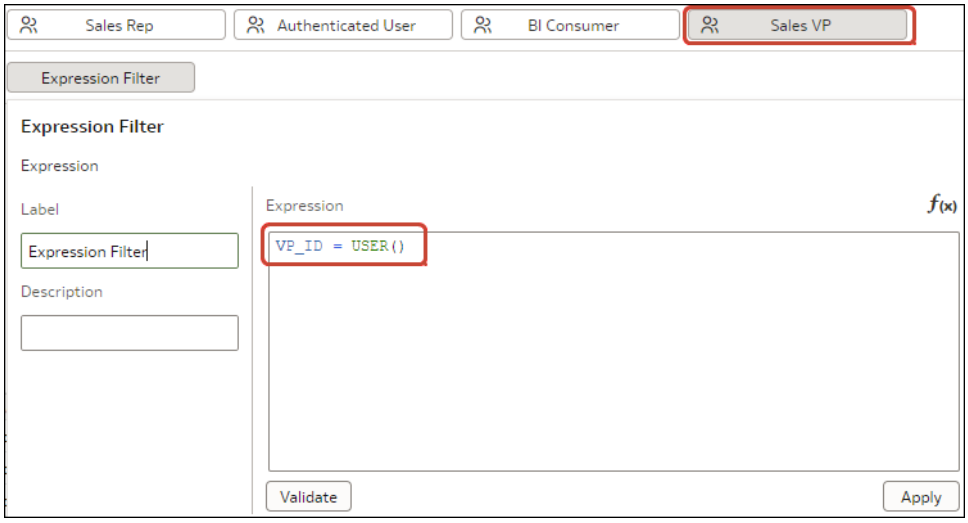


Example role-based filters

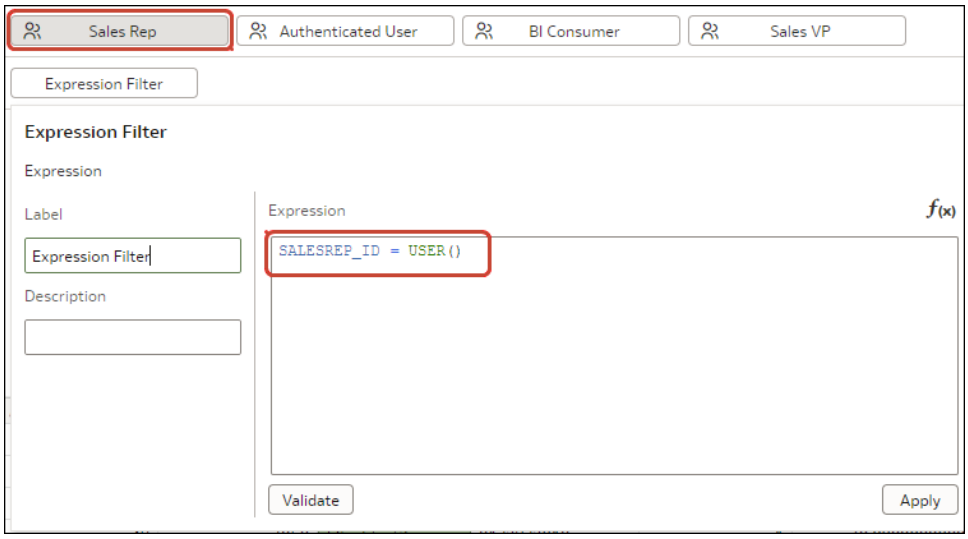
The workbook author applies two role-based filters to the dataset used by the workbook, one for sales vice presidents and one for sales representatives.

- The workbook author applies a role-based filter to the sales vice president 'Sales VP' application role with the expression `SALESVP_ID = USER()`. The argument USER() is a system variable in Oracle Analytics that provides the ID of the logged-in user.

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- The workbook author also applies a role-based filter to the 'Sales Rep' application role with the expression `SALESREP_ID = USER()`.



View a Dataset Table's Original Formatting

By default Oracle Analytics applies formatting to the numbers and dates in the dataset. You can toggle this default formatting off to view numbers and dates as they're formatted in the dataset's data source.

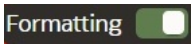
For example, when Oracle Analytics's default formatting is applied, dates are displayed as 06/20/2019. But when default formatting is turned off, then dates are displayed as 2019-06-20.

You can toggle the default formatting off and on, but you can't save the default formatting. To modify a column's formatting, see Adjust the Display Format of a Date or Number Column.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.

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4. In the **Join Diagram** go to the **Table Page Tabs** and click the table that you want to work with.
5. In the transform editor, click the **Formatting** toggle on the tool bar to turn formatting off or on.



Changing the Database Connection for Dataset Tables

Learn how to update the connection details for dataset tables so that they use a different database. For example, you might want to switch from a development database to a production database.

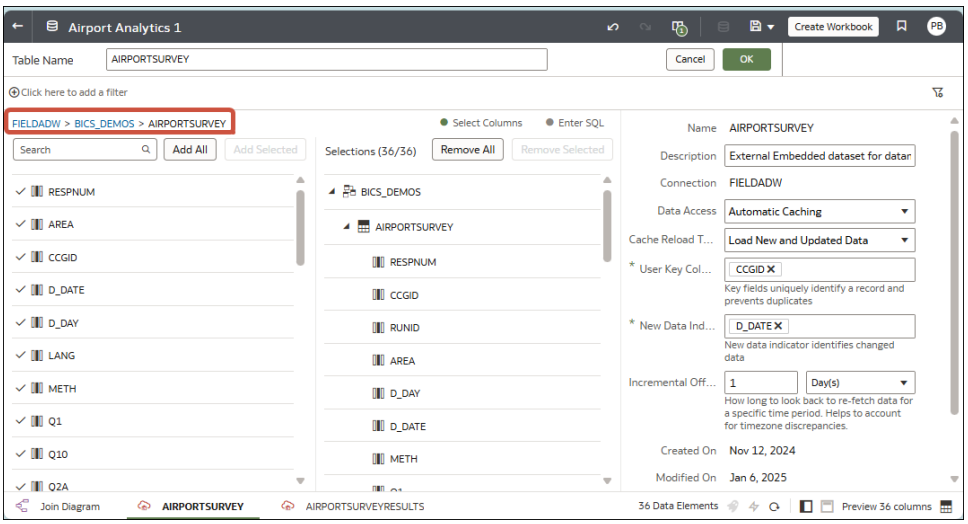
Topics:

- Best Practices for Changing the Database Connection for Dataset Tables
- Change the Database Connection for a Dataset Table

Best Practices for Changing the Database Connection for Dataset Tables

Follow these best practices to get the most seamless transition to a new database.

- Make sure that the new database is the same type as the original database. The Replace Dataset dialog only lists connections with the same connection type.
- Always use the **Validate** option on the Replace Dataset dialog before you switch databases.
- After following the steps in Change the Database Connection for a Dataset Table:
  - Open the dataset, and in the Join Diagram, select each table and click **Edit Definition** to review the table definition and verify the details.
  - If you see an alert about a missing schema, use the schema and table navigator breadcrumbs to reselect the schema and table.



- Test any workbooks using the dataset to verify the results.

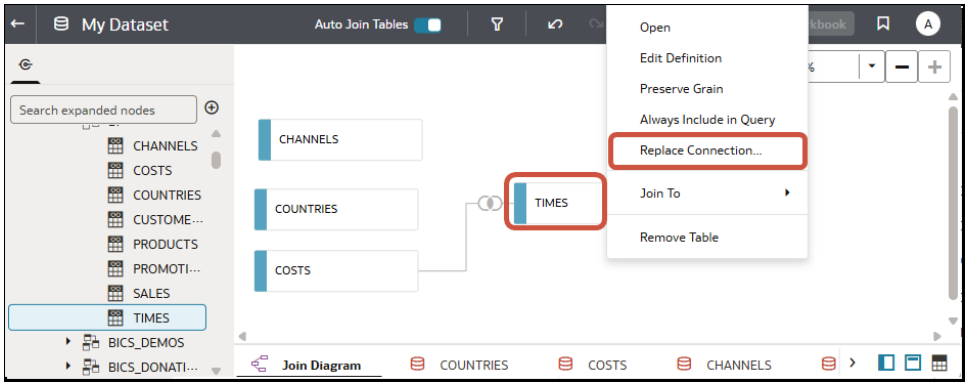
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Change the Database Connection for a Dataset Table

You can update the connection and database schema details for a table in a dataset. For example, you might want to switch from a development database to a production database, or you might have migrated your data to a different database.

Before you start, make sure that you have a connection to an alternative data source of the same type as the original data source.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to update, click **Actions**, and then click **Open**.
4. In the **Join Diagram**, right-click the table that you want to configure, and select **Replace Connection**.



The Replace Connection dialog displays a list of connections available.

5. Select a connection, then click **Validate**.
6. If the new connection validates successfully, then click **Replace**, then **Yes**.

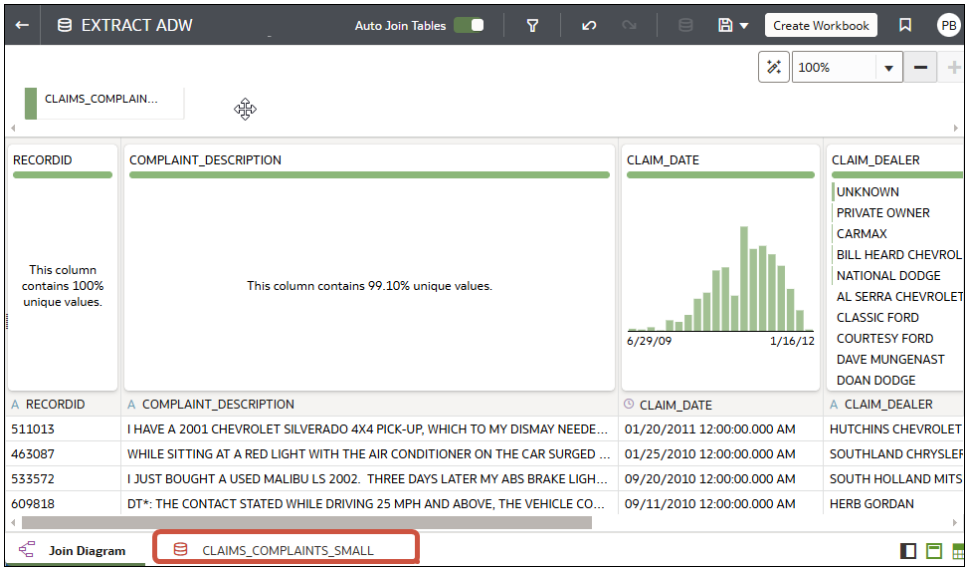
Specify Whether a Dataset Table Is Cached or Live

Configure a dataset table's **Data Access** setting to determine whether data is cached or loaded directly from the data source.

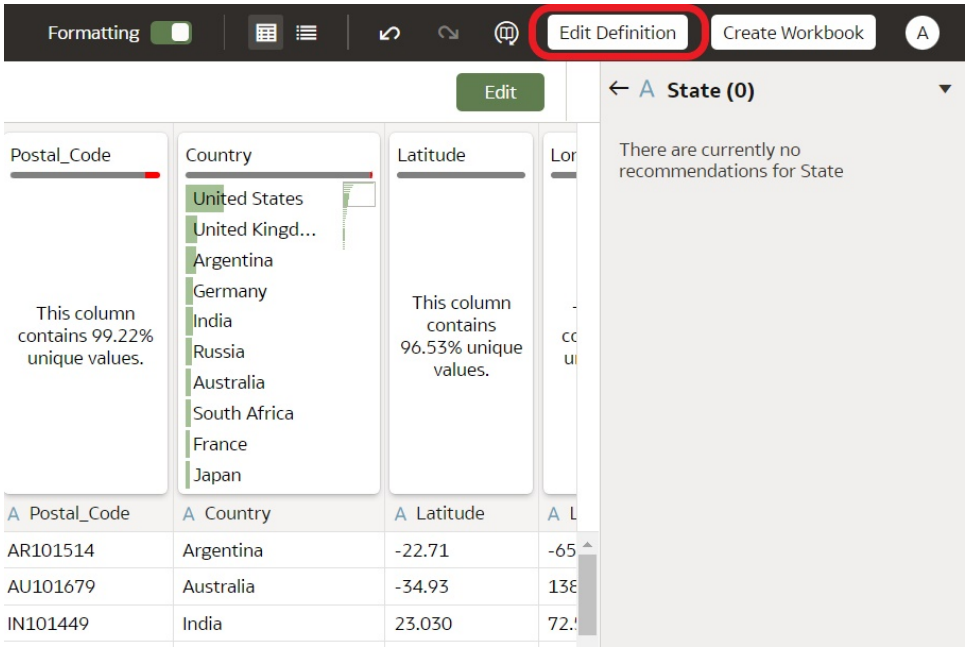
See Choosing a Data Access Type for Dataset Tables.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** go to the table page tabs and click the table that you want to configure.

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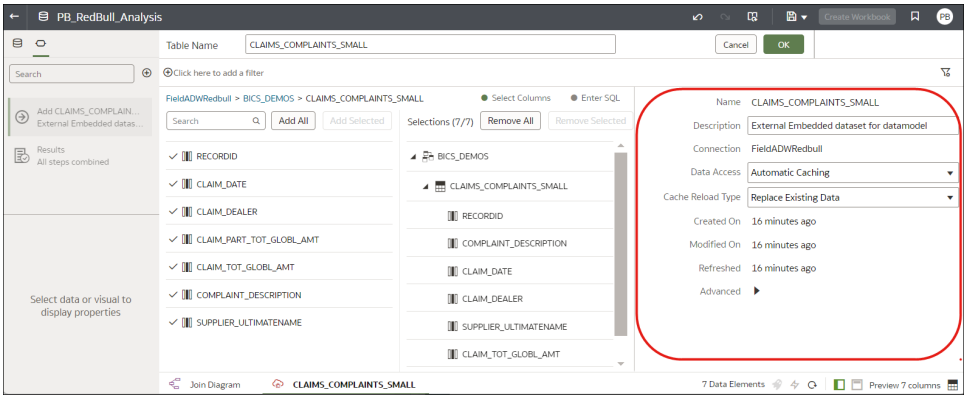


5. In the table editor, click **Edit Definition**.

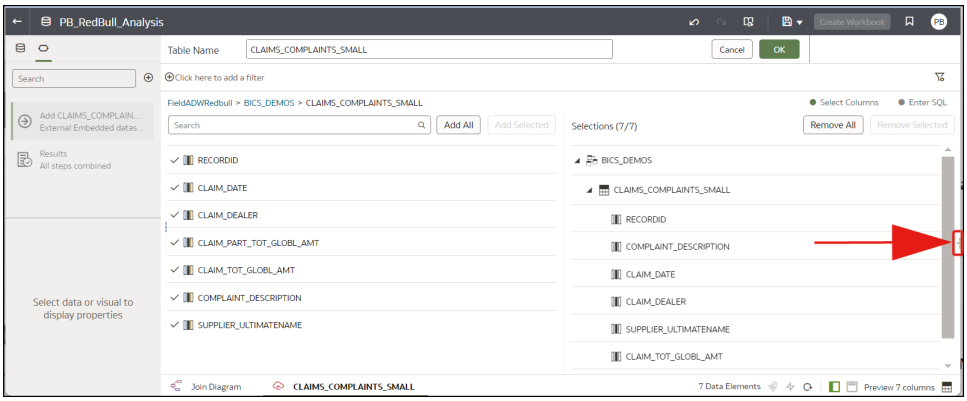


6. Make sure that the data access options are displayed at the right-hand side.

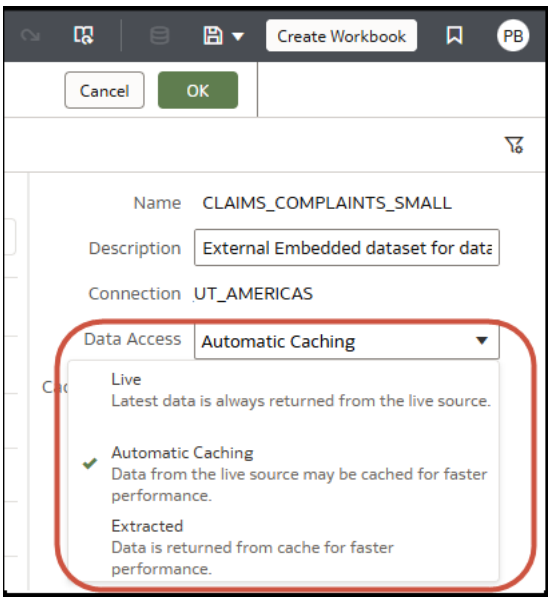
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If the data access options aren't displayed, hover over the center of the right edge of the window to display the **Expand** option, then click **Expand**.



7. In the **Data Access** field, specify how you want the table to access its data.



8. Click **OK**.

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Choosing a Data Access Type for Dataset Tables

You specify the use of cached data or data loaded directly from a data source using Oracle Analytics data access settings.

Tip: For best performance, if you have a dataset with multiple tables, set all tables to access data in the same way. Although you can can configure some tables to use caching and some to use live data, this can affect performance. For example, if the reloading of one table fails, then any tables set to use automatic caching are switched to use live data.

Data Access settings:

Option	When to use	What it does	Other information
Live	You're using a high-performance database such as Oracle Autonomous AI Lakehouse, and you always want to use the latest and freshest data.	A table loads its data directly from the data source.	The source system manages the table's data source queries.
Automatic Caching	You want faster performance when you refresh a table's data from the transform editor or from a workbook. If a dataset load fails, you understand that the data access type switches to **Live** mode.	A table loads its data from the cache where possible. If a dataset load fails or columns are added, data access temporarily switches to Live mode until a new reload is successful.	Selecting this option causes the Reload menu option to display at the table and dataset level. This option is limited to 2GB of data after compression. If the data is larger than 2 GB or if the data takes too long to load, the data is accessed using a live query (if the connection type supports it). If you want to use automatic caching and the data is larger than 2 GB, then add column filters to the table, for example limit a date range to reduce the size of the data.

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Option	When to use	What it does	Other information
Extracted	You want to ensure that in-memory caching of datasets is completed before allowing queries, which provides resilience and consistent performance for workbooks. If a dataset load fails, you understand that workbooks use the last data loaded.	A table always loads its data from the cache (most recent load or previous successful load).	Extracted mode forces the Reload Data operation (on the Inspect dialog) to complete before letting other users use the dataset, which ensures that it's fully cached. In addition, a dataset author can make modifications such as adding a column, and the changes are only visible to users when all of the data is available in the cache. If a dataset reload fails or new columns are added, workbooks use the last data loaded.

Use Joins to Build Datasets

Learn how to define relationships between your data tables using joins.

Topics:

- Understand Dataset Table Joins
- What Is Preserve Grain?
- Add Joins Between Dataset Tables
- Disable Auto Joins in Datasets
- Modify or Fix Joins in a Dataset
- Delete Joins from a Dataset
- Add Joins When Table Columns Don't Match
- Specify Which Table Determines Grain
- Include a Dataset Table in Data Source Queries

Understand Dataset Table Joins

A dataset can have multiple tables. The table joins you add indicate the relationships between the dataset's tables.

Tutorial

By default, when you drag and drop tables to the Join diagram to create a multiple table dataset, any joins that are defined in the data source are automatically created between tables in the dataset. Oracle Analytics also automatically creates joins base on the column name matches it finds between the tables. When defining your dataset, be sure to add the most detailed table first. This is usually the primary table for your analysis. For example, the Sales table. Then add the remaining tables like Products, Customers, Channels, and so on that provide context for your analysis. If you're adding tables from a dataset that is dimensionally

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modeled or a transactional table, then the most detailed table is possibly a fact table with measures.

In some cases you might want to build a dataset's joins manually. For example, if your dataset contains too many matching columns and it's time consuming for you to delete the unnecessary matches. In such cases you can turn off automatic joins for your dataset. See Disable Auto Joins in Datasets.

If you're creating a dataset based on facts and dimensions and if joins already exist in the source tables, then joins are automatically created in the dataset. If you're creating a dataset from multiple connections and schemas, then you manually define the joins between tables. To do this, drag and drop a dimension table onto a fact table and specify the type of join to use and the join columns. You can create a join on more than one column. The columns that you're joining must be attribute columns and have the same data format.

Oracle EPM Cloud, Oracle Essbase, or Google Analytics aren't available for you to add and join to in a dataset that contains multiple tables. When you're working in a workbook and include data from different datasets, for example a dataset containing multiple tables from Oracle Autonomous AI Lakehouse and a dataset containing data from Oracle EPM Cloud, then you use blending to match the columns. See Blend Datasets.

> **Note**
>
> To analyze data based on two star schemas, create a dataset for each star schema, add the datasets to a workbook, and then blend the datasets.

The Join Diagram displays join icons representing the type of joins used between tables and if any joins are incomplete. Join icons are Venn diagram thumbnails that represent the join type.

Icon	Description
	Indicates an inner join. When this icon is selected, it's displayed in blue. An inner join returns rows from the left table that match with the rows from the right table.
	Indicates a left join. When this icon is selected, it's displayed in blue. The left join returns all rows from the left table with the matching rows if available from the right table. If there is no matching row found from the right table, then the left join contains null values for the columns of the right table.
	Indicates a right join. When this icon is selected, it's displayed in blue. The right join returns all rows from the right table with the matching rows if available from the left table. If there is no matching row found from the left table, then the right join contains null values for the columns of the left table.
	Indicates a full outer join. When this icon is selected, it's displayed in blue. The full outer join returns a result set that contains all rows from both left and right tables, with the matching rows from both sides where available. If there is no match, then the missing side has nulls.
	The dashed line indicates an incomplete join. When this icon is selected, it's displayed in blue. When this icon isn't selected, it's displayed in yellow. Click the icon to open the Join editor and assign or fix the join.

What Is Preserve Grain?

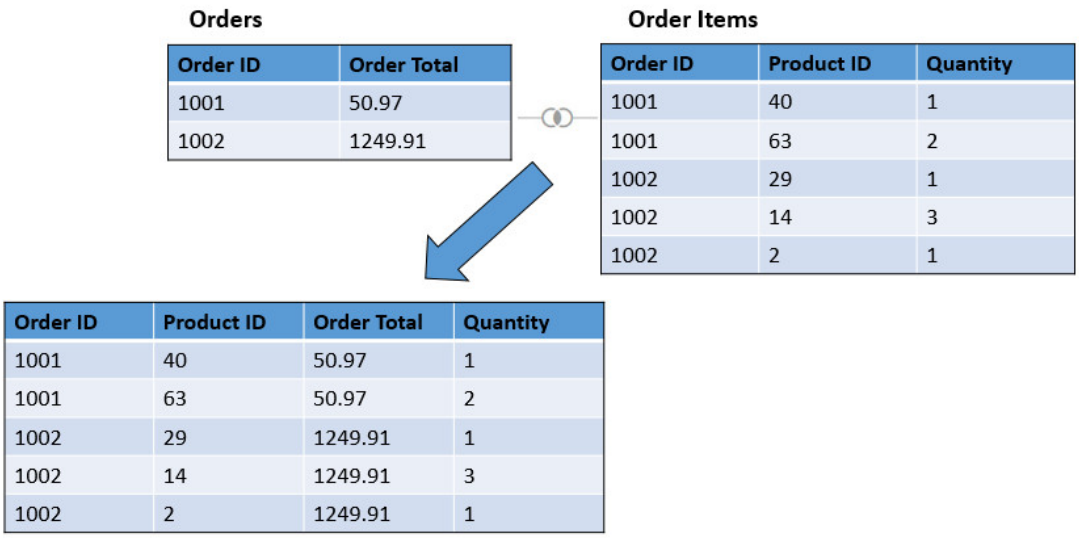
By default a dataset's grain is determined by the table with the lowest grain, but you can use the preserve grain setting to specify which table determines the dataset's grain.

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See Specify Which Table Determines Grain.

You can create a measure in any table in a dataset. However, this can cause the measure on one side of a one-to-many or many-to-many relationship to be duplicated. In cases like this you can set the table on one side of the cardinality to **Preserve Grain** to keep its level of detail.

For example, if you have an Orders table and an Order Items table, join them on the Order ID column, and query them, then the Order Total is duplicated for each order item. This is because the Order Items table has the lower grain.



Orders

Order ID	Order Total
1001	50.97
1002	1249.91

Order Items

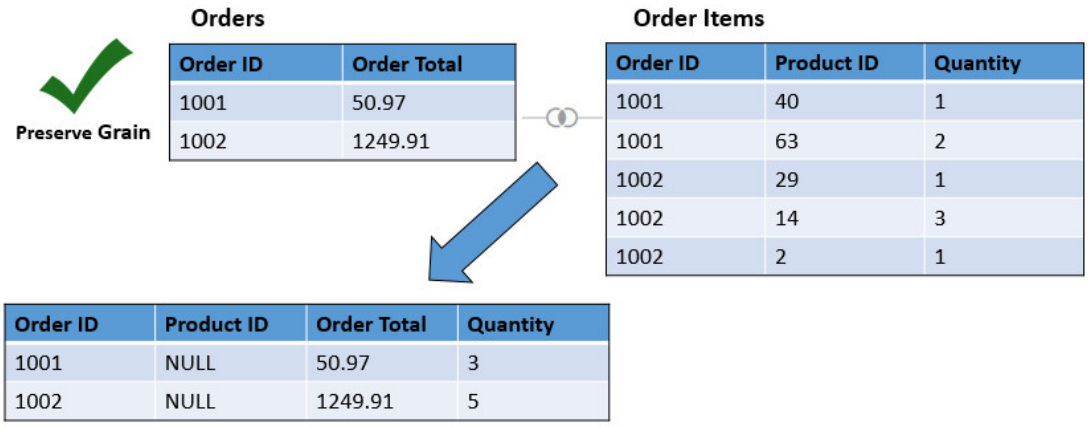
Order ID	Product ID	Quantity
1001	40	1
1001	63	2
1002	29	1
1002	14	3
1002	2	1

Order ID	Product ID	Order Total	Quantity
1001	40	50.97	1
1001	63	50.97	2
1002	29	1249.91	1
1002	14	1249.91	3
1002	2	1249.91	1

However, if you want the query results to show data at the Orders table's level, then in the Dataset Editor's Data Diagram, you set the Orders table to **Preserve Grain**.

> **Note**
>
> In the following example, the Product ID column is NULL because there are multiple values for PRODUCT for each Order. The Values are set to NULL to preserve the grain at the Order level.

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Add Joins Between Dataset Tables

Add joins to indicate relationships between fact tables and dimension tables. For example, to identify a doctor for each patient you might join a table containing doctors' details to a table containing patient details using a common field DOCTOR_ID.

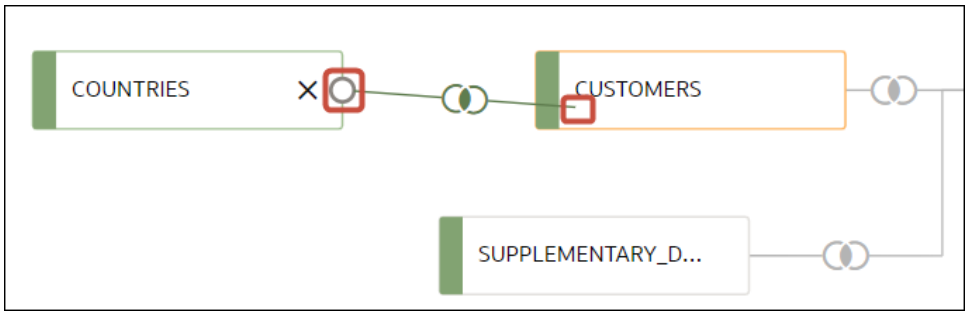
Tutorial

When add tables to a dataset, Oracle Analytics automatically creates joins for related dataset tables based on the column name matches it finds between the tables. However if Oracle Analytics can't detect data relationships or you've turned off the **Auto Join Tables** option, you can manually create joins.

If your dataset table contains deleted columns, then those columns aren't available to use in joins. If your dataset table contains hidden columns, then those columns are available to use in joins. See Hide a Column in a Dataset.

For information about using joins, see Understand Dataset Table Joins.

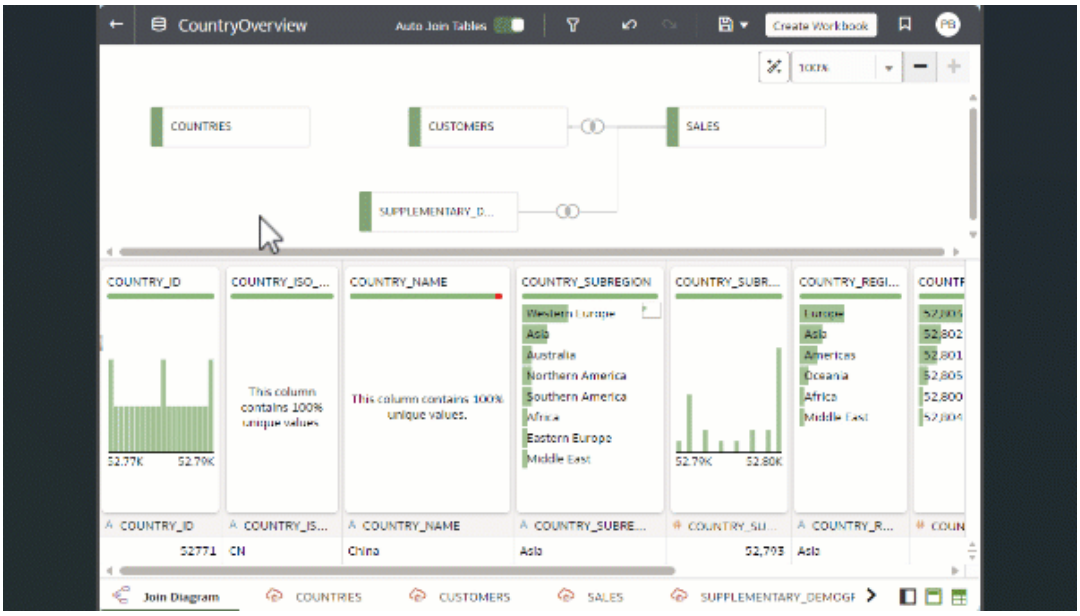
1. On your home page, click **Navigator**, and then click **Data**.
2. Click **Datasets** and locate the dataset that you want to open, click **Actions**, and then click **Open**.
3. In the **Join Diagram** , hover over the first table, click the circle node that's displayed at the right-hand edge, and drag and drop over the target table that you want to join to.



Tip: Don't drag the whole table over another table - this simply rearranges the tables.

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4. In the join dialog, select a join column from each table and a connector type (for example, =, >, <), then click outside the Join panel to close it.



Disable Auto Joins in Datasets

You can use the **Auto Join Tables** toggle button to prevent Oracle Analytics from creating joins when you add tables to your dataset.

By default, when you drag and drop tables to a dataset, any joins defined in the data source are automatically created between the dataset's tables. Oracle Analytics also automatically creates joins based on the column name matches it finds between the tables.

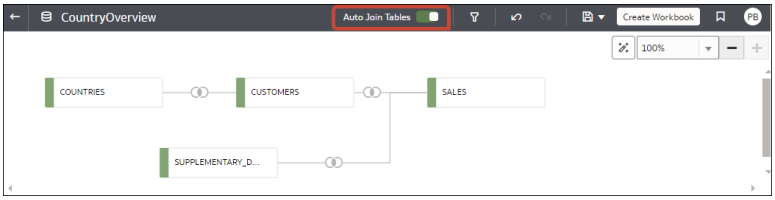
In some cases you might want to build the dataset's joins rather than have Oracle Analytics build joins for you. For example, if your datasets contains too many matching columns and it's time consuming for you to delete the unnecessary matches. In such cases you deselect the **Auto Join Tables** toggle button to turn off automatic joins.

Deselecting **Auto Join Tables** doesn't remove the dataset's existing joins, so you must remove those joins manually.

After you turn off automatic joins and add tables to the dataset, you must manually add joins before you can save the dataset. For information about creating dataset table joins, see Add Joins Between Dataset Tables.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. Click the **Join Diagram** tab.
5. Click **Auto Join Tables** to prevent Oracle Analytics from automatically creating joins for tables you add to the dataset.

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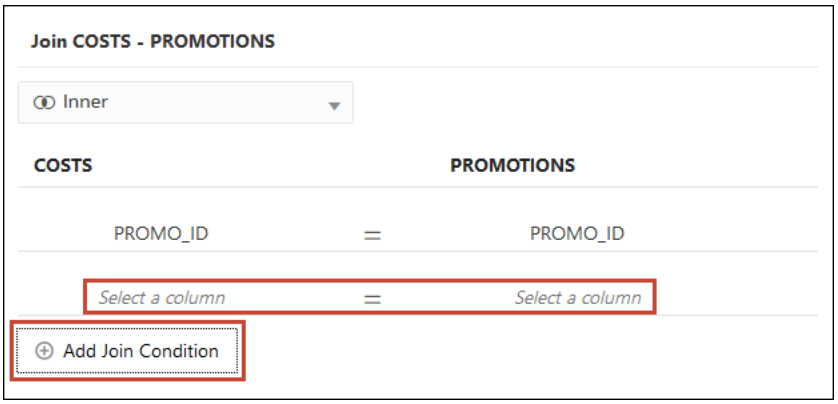
Add Joins When Table Columns Don't Match

If your dataset's column data doesn't match between tables, then you can transform the column's data into the format required to create joins.

Video

Examples of transformations include changing the data type, splitting or concatenating data in the column, or enriching the column data. The list of available transformation menu options for a column depends on the type of data in that column. See Transform Reference.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the table with the column that you want to transform.
5. Right-click the table and select **Open**.
6. In the transform editor, locate the column that you want to transform and click **Options**.
7. From the menu, select a transformation and complete any required fields.
8. Click **Save Dataset** and then click the **Join Diagram** tab.
9. In the Join Diagram, click and hold the table to select it and then drag and drop the selected table onto the target table that you want to join it to.
10. In the **Join Diagram** locate the join that you just added, hover over it, and click it to open the Join dialog.
11. Optional: Click the join type and select a new type. The join type that you select determines the join icon in the Join Diagram.
12. Optional: To add a join condition, click **Add Join Condition** and select a join column for each table.



13. Click **Save**.

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Modify or Fix Joins in a Dataset

You can modify any joins that were automatically added to the dataset and fix any incomplete or broken joins.

> **Note**
>
> Each table in the dataset must be joined to one or more tables.

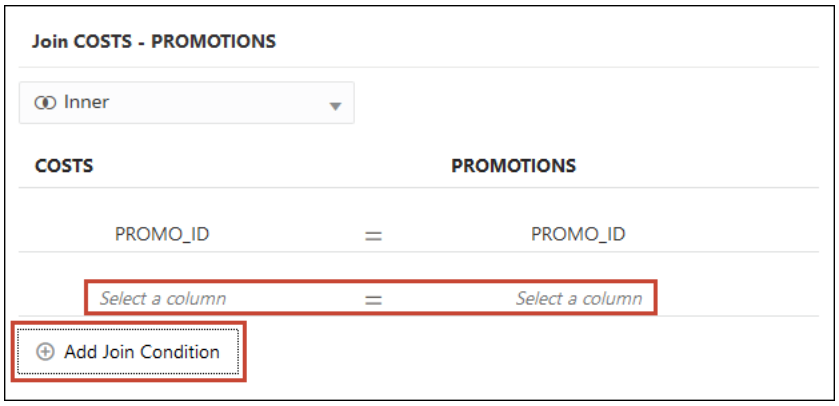
This icon indicates an incomplete join:



For information about using joins, see Understand Dataset Table Joins.

If the columns that you need to create joins aren't listed in the Join dialog, then you can update the columns to make them available for joins. See Add Joins When Table Columns Don't Match.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the join, hover over it, and click it to open the Join dialog.
5. Optional: Click the join type and select a new type. The join type that you select determines the join icon in the Join Diagram.
6. Optional: To modify a join condition, click a table's join column name and pick a different column to join on.
7. Optional: To add another join condition, click **Add Join Condition** and select a join column for each table.



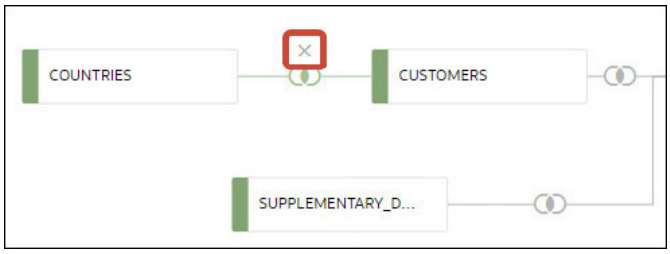
8. Click **Save**.

Delete Joins from a Dataset

You can delete any table join from a dataset.

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1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the join, hover over it, and click **X**.



5. Click **Save**.

Specify Which Table Determines Grain

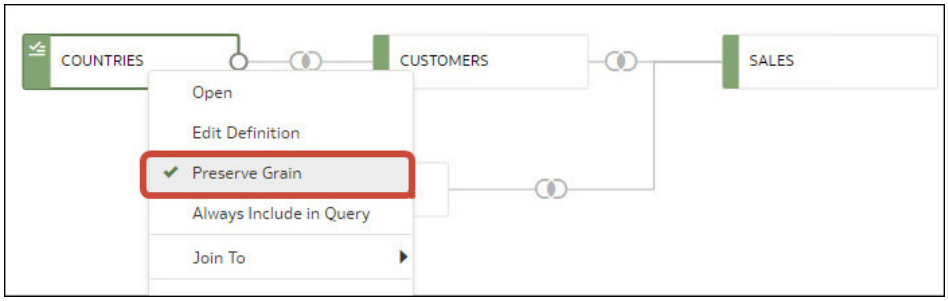
By default the table with the lowest grain determines a dataset's grain, but you can change which dataset table determines grain.

Any table in the dataset can contain a measure. However, this can cause the measure on one side of a one-to-many or many-to-many relationship to be duplicated and produce unexpected query result. In cases like this you can set the table on one side of the cardinality to **Preserve Grain** to keep its level of detail.

For an example of why you'd change a table's grain, see What Is Preserve Grain?

When you set a table to **Preserve Grain**, a green bar is displayed at the top of table in the Join Diagram. This green bar indicates which table's grain the dataset uses.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the table, right-click, and select **Preserve Grain**.



In the join diagram, the table displays a **Preserve Grain** icon.

5. Click **Save Dataset**.

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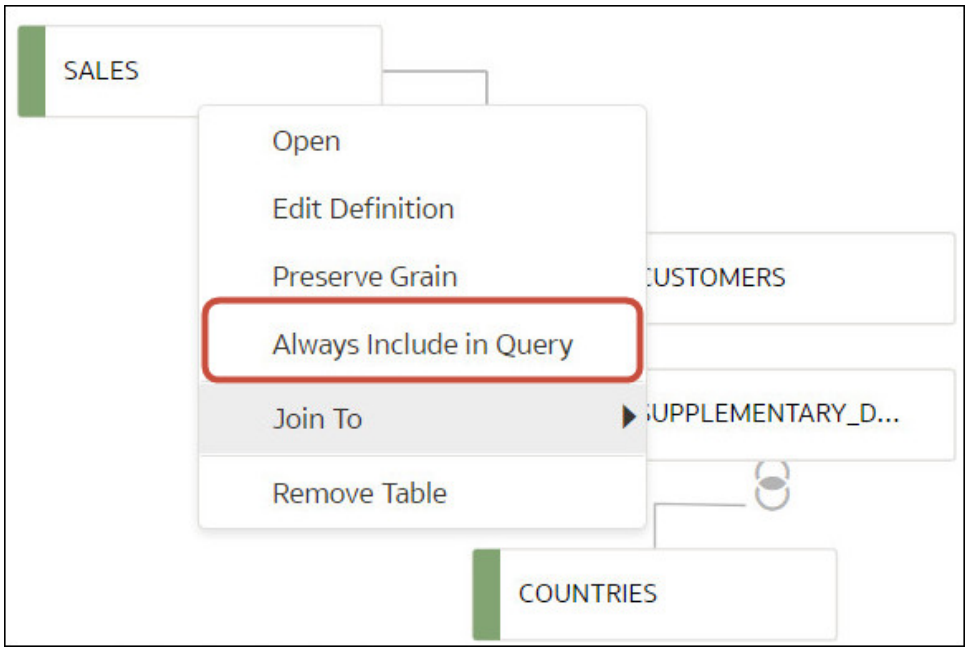
Include a Dataset Table in Data Source Queries

Oracle Analytics generates source-specific optimized queries for each visualization. During this process, a dataset is treated as a data model in that only the tables needed to satisfy a visualization are used in the query.

However, there are scenarios where you may want to use a table in the query even if the table isn't queried in the visualization. In these scenarios, you can set the table to **Always Include in Query**. For example, you may want to see only Sales where a product is associated but the visualization is based on only Customer and Sales. Or you may want to apply a date filter to all visualizations in a workbook.

Oracle Analytics prunes any of the dataset's tables not used in the visualization or not specified to be included in the query.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. In the **Join Diagram** locate the table, right-click, and select **Always Include in Query**.



   In the join diagram, the table displays an **Always Include in Query** icon.
5. Click **Save Dataset**.

Create Datasets from Data Sources

Learn how to create datasets from various data sources, such as files, local subject areas, and database connections.

Topics:

- Create Datasets from Files

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- Create a Dataset from a Subject Area in Oracle Fusion Cloud Applications Suite
- Create a Dataset from an Analysis in Oracle Fusion Cloud Applications Suite
- Create a Dataset from a Local Subject Area
- Create a Dataset from an Analysis
- Create a Dataset from an Essbase Connection
- Create a Dataset from a Data Source with REST Endpoints
- Create a Dataset from OCI Object Storage
- Create a Dataset from Oracle Enterprise Performance Management (Oracle EPM)
- Create a Dataset from Google Analytics
- Access Your Reporting Content in Microsoft Power BI

Create a Dataset from a Subject Area in Oracle Fusion Cloud Applications Suite

You can create a dataset from subject areas stored in an applications in Oracle Fusion Cloud Applications Suite. For example, Oracle Fusion Cloud Financials with Oracle Transactional Business Intelligence.

When you drag and drop a subject area to the **Join Diagram**, by default Oracle Analytics doesn't include any columns in the dataset table. You must specify which columns to include in the table.

Oracle Analytics doesn't automatically join tables created from subject areas. You need to manually join these tables. See Understand Dataset Table Joins.

Don't create or use an Oracle Applications connection to connect to your local Oracle Analytics instance. Using a connection to your instance to create datasets from local subject areas or analyses results in data caching issues and errors in visualizations. Instead, use the Local Subject Area connection type to create a dataset from a subject areas stored in your Oracle Analytics instance. See Create a Dataset from a Local Subject Area.

1. On your home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select a connection to the application you want to analyze.

   Oracle Applications connections have this icon: 
3. In the Dataset editor, go to the **Connections** pane and browse or search for a subject area.
4. Drag and drop one or more subject areas to the **Join Diagram**.
5. To add columns to a table, go to the **Table Page Tabs**, click a subject area table, and use the transform editor to specify which columns to include in the table. Click **OK**.
6. In the **Join Diagram**, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
7. Click **Save Dataset**.
8. Change the default name "New Dataset" displayed top left.

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Create a Dataset from an Analysis in Oracle Fusion Cloud Applications Suite

You can create a dataset based on analyses from applications in Oracle Fusion Cloud Applications Suite. For example, Oracle Fusion Cloud Financials with Oracle Transactional Business Intelligence.

Oracle Analytics doesn't automatically join tables created from analyses. You need to manually join these tables. See Understand Dataset Table Joins.

Don't create or use an Oracle Applications connection to connect to your local Oracle Analytics instance. Using a connection to your instance to create datasets from local subject areas or analyses results in data caching issues and errors in visualizations. Instead, use the Local Subject Area connection type to create a dataset from a analyses stored in your Oracle Analytics instance. See Create a Dataset from an Analysis.

1. On your home page, click **Create** and then click **Dataset**.
2. In the Dataset editor, go to the **Connections** pane and browse or search for an analysis.
3. Drag and drop one or more analysis to the **Join Diagram**.
4. In the **Join Diagram**, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.
5. Click **Save Dataset**.
6. Optional: Change the default name "New Dataset" displayed top left.

Create a Dataset from an Essbase Connection

You can use an Essbase connection to create a dataset.

> **Note**
>
> Essbase connections aren't available to create or include in a dataset with multiple tables.

Datasets that use Oracle Essbase connections aren't available for blending.

Before you create the dataset, confirm that the data source connection you need exists. See View Available Connections.

1. On your home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select the Essbase connection.
3. In the transform editor's Add Dataset step, double-click the Essbase cube that you want to use in the dataset.
4. Optional: Select an **Alias** value.

   If you select an alias value other than the default, then values from the selected alias table are displayed in visualizations that use this Essbase dataset.
5. Click **Add** to save the dataset and go to the transform editor to transform and enrich the dataset's data.

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Create a Dataset from an Analysis

You can create datasets from analyses stored in your Oracle Analytics instance.

Use the Local Subject Area connection option to create datasets from local analyses. Don't create or use an "Oracle Applications" connection to connect to your local Oracle Analytics instance. Using a connection to your local instance results in data caching issues and errors in visualizations.

1. On the Oracle Analytics Home page, click **Page Menu**, then click **Open Classic**.
2. In Classic Home page, click **Catalog** and locate and open the analysis to use to create the dataset. In the Analysis editor, click the **Advanced** tab.
3. In the **SQL Issued** field, select and copy the SQL code.
4. In the Oracle Analytics Home page, click **Create** and then click **Dataset**.
5. In the Create Dataset dialog, select Local Subject Area.
6. In the Connections pane, locate and expand the subject area and locate the **Manual Query** option.
7. Drag and drop **Manual Query** to the Join Diagram to create a table shell.
8. Double-click the Manual Query table.
9. In the Add Dataset page, rename the table and confirm that **Enter Logical SQL** is selected.
10. In the **Statement** field, paste the SQL statement.
11. Click **OK**.
12. Optional: To modify the SQL statement, go to the **Table Page Tabs** and confirm that the tab for the table you created is selected. Click **Edit Definition** to access the Add Dataset page and modify the SQL statement.

Create a Dataset from a Local Subject Area

You can create a dataset from local subject areas stored in your Oracle Analytics instance.

When you drag and drop a subject area to the **Join Diagram**, by default Oracle Analytics doesn't include any columns in the dataset table. You must specify which columns to include in the table.

Oracle Analytics doesn't automatically join tables created from subject areas. You need to manually join these tables. See Understand Dataset Table Joins.

1. On your home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select Local Subject Area.
3. In the Dataset editor, go to the **Connections** pane and browse or search for a local subject area.
4. Drag and drop one or more subject areas to the **Join Diagram**.
5. To add columns to a table, go to the **Table Page Tabs**, click a subject area table, and use the transform editor to specify which columns to include in the table. Click **OK**.
6. In the **Join Diagram**, locate the table that you want to join, hover over it to select it, and then click and drag and drop it on to the table that you want to join it to. Open the Join editor to inspect or update the join type and conditions.

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7. Click **Save**.
8. Enter a name and click **OK**.

Create Datasets from Files

You can create datasets from a range of files, including comma-separated value (*.CSV), text (*.TXT), and spreadsheets.

Topics:

- About Files for Datasets
- Create a Dataset from a File Uploaded from Your Computer
- Create a Dataset from a File Uploaded from Dropbox or Google Drive
- Add Multiple Files to a Dataset

About Files for Datasets

You can create datasets from Microsoft Excel spreadsheets (XLSX and XLS), Google Sheets, comma-separated value (CSV) files, and text (TXT) files.

Size Limits

- The maximum file size you can upload is 250 MB.
- The maximum number of columns for a single sheet is 250.

Uploading Files

- You can upload data from multiple sheets in a spreadsheet file at the same time.
- You can upload and use files from your computer, or from Dropbox or Google Drive data source connections.
- When you upload a file, you can use it only in the dataset that you uploaded it to. Because Oracle Analytics doesn't store an uploaded file, you must upload the file again to include it in another dataset.

Formatting Rules for Excel Spreadsheet and Google Sheets Files

- Tables start in Row 1 and Column 1.
- Tables have a regular layout with no gaps, repeated column names, or inline headings. An example of an inline heading is one that's repeated on every page of a printed report.
- Row 1 contains the unique names of the columns in the table.
- Row 2 and greater contain the data for the table.
- Data in a column is of the same type. For example, don't use a phone number column to hold email addresses.
- Data is at the same granularity.

Character Set Encoding Rules for CSV and TXT Files

- Encode source files using UTF-8.
- Before you edit your files, configure your text editor to use the appropriate font and script (or subset).

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Create a Dataset from a File Uploaded from Your Computer

You can upload spreadsheets from Microsoft Excel or Google Sheets, CSV files, and TXT files from your computer to create a dataset.

Confirm that the file that you want to upload meets these requirements:

- The file is either a Microsoft Excel (.XLSX or .XLS format) or Google Sheets spreadsheet, a CSV file, or a TXT file.
- Spreadsheets shouldn't contains pivoted data.
- Spreadsheets are structured properly for import and use as a dataset. See About Files for Datasets.

1. On your home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, either drag and drop a file to the dialog, or click **Drop data file here or click to browse** to browse your computer for a file to upload.
3. In the Create Dataset Table dialog, use the **Name** field to change the default dataset name if required.
4. If you're uploading a spreadsheet with multiple sheets, click the **Select** list to select a single sheet, or click **All Sheets** to load every sheet.
5. Optional: If you're uploading a CSV or TXT file, use the **Separated By**, **Thousand Separator**, and **Decimal Separator** fields to configure the default delimiters.

   To specify a custom delimiter, choose Custom in the **Separated By** field and enter the character you want to use as the delimiter. In the CSV or TXT file, a custom delimiter must be one character. The following example uses a pipe (|) as a delimiter: Year|Product|Revenue|Quantity|Target Revenue| Target Quantity.
6. Click **OK** to upload the file and create the dataset.

Create a Dataset from a File Uploaded from Dropbox or Google Drive

You can upload spreadsheets from Microsoft Excel or Google Sheets, CSV files, and TXT files from Dropbox or Google Drive and use them to create a dataset.

> **Note**
>
> Files uploaded from Google Analytics aren't available to create or include in a dataset with multiple tables.

Confirm that the file that you want to upload meets these requirements:

- The file is either a Microsoft Excel (.XLSX or .XLS format) or Google Sheets spreadsheet, a CSV file, or a TXT file.
- Spreadsheets shouldn't contains pivoted data.
- Spreadsheets are structured properly for import and use as a dataset. See About Files for Datasets.

1. On your home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, select a connection.
3. Browse for and select the file that you want to upload.

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4. In the Create Dataset Table dialog, use the **Name** field to change the default dataset name if required.
5. If you're uploading a spreadsheet with multiple sheets, click the **Select** list to select a single sheet, or click **All Sheets** to load every sheet.
6. Optional: If you're uploading a CSV or TXT file, use the **Separated By**, **Thousand Separator**, and **Decimal Separator** fields to configure the default delimiters.

   To specify a custom delimiter, choose Custom in the **Separated By** field and enter the character you want to use as the delimiter. In the CSV or TXT file, a custom delimiter must be one character. The following example uses a pipe (|) as a delimiter: Year|Product|Revenue|Quantity|Target Revenue| Target Quantity.
7. Click **OK** to upload the file and create the dataset.

Add Multiple Files to a Dataset

A dataset can include more than one file uploaded from your computer or from Dropbox or Google Drive.

> **Note**
>
> Files uploaded from Google Analytics aren't available to create or include in a dataset with multiple tables.

Before you add a file from a connection, confirm that the connection you need exists. See View Available Connections.

A dataset can contain tables created from files and connections. See Add a File to a Dataset Created from a Connection.

Confirm that the file that you want to upload meets these requirements:

- The file is either a Microsoft Excel (.XLSX or .XLS format) or Google Sheets spreadsheet, a CSV file, or a TXT file.
- The spreadsheet contains no pivoted data.
- The spreadsheet is structured properly for import and use as a dataset. See About Files for Datasets.

Tutorial

1. On your home page, click **Navigator**, then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to open, click **Actions**, and then click **Open**.
4. Locate the file:
   - If the file you want to add is located on your computer, then in the Dataset editor's Connections pane, click **Add**, and click **Add File**.
   - If the file you want to add is located on Dropbox or Google Drive, then in the Dataset editor's Connections pane, click **Add**, and then click **Add Connection**.
5. Browse for and select the file that you want to upload.
6. In the Create Dataset page's **Name** field, provide a name for the dataset table created from the file.

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7. If you're uploading a CSV or TXT file, then in the **Separated By**, **Thousand Separator**, and **Decimal Separator** fields, confirm or change the default delimiters.

   To specify a custom delimiter, choose Custom in the **Separated By** field and enter the character you want to use as the delimiter. In the CSV or TXT file, a custom delimiter must be one character. The following example uses a pipe (|) as a delimiter: Year|Product| Revenue|Quantity|Target Revenue| Target Quantity.

8. Click **OK** to add the file to the dataset.
9. In the Connections pane, confirm that the file was added.
10. Click **Save**.

Create a Dataset from a Data Source with REST Endpoints

You can create a dataset with data accessed via the REST endpoint of a SaaS or PaaS application such as Workday, eBay, or MailChimp.

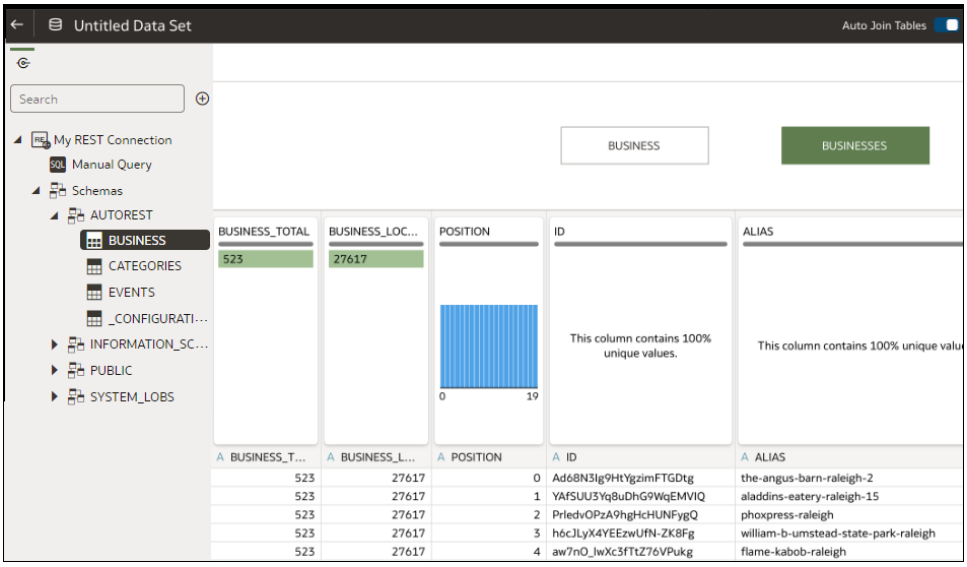
LiveLabs Sprint

Connecting to data via REST endpoints enables you to analyze data from many transactional SaaS or PaaS applications without having to understand the internal format or structure of the data.

1. If you already have a connection to the REST data source you want to analyze, skip to Step 2 .

   If you don't have a connection, create a connection to the REST data source. See Connect to Data From REST Endpoints.

2. On your home page, click **Create** and then click **Dataset**.
3. In the Create Dataset dialog, click a connection to the REST data source.
4. In the Dataset editor, go to the **Connections** pane and navigate to **Schemas**, then **AUTOREST**.



5. Drag and drop one or more tables from the **AUTOREST** schema to the **Join Diagram**.
6. Click **Save Dataset**.

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7. Enter a name and click **OK**.

See Troubleshoot Connection to Data Sources with REST Endpoints.

Create a Dataset from OCI Object Storage

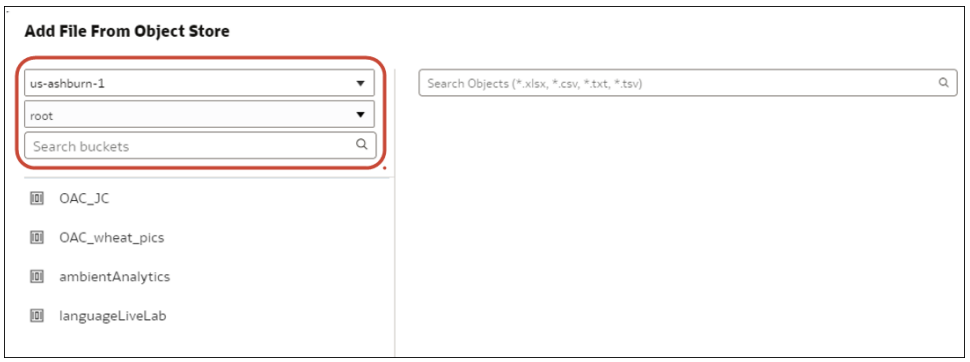
You can create a dataset from data files stored in OCI Object Storage. For example, you might use spreadsheet files (XLSX), comma-separated values (CSV) files or text files (TXT). You can add data from multiple files and use the dataset designer to associate them using joins.

When you've created your dataset, you can configure it to load incrementally. See Configure a Dataset to Load Incrementally.

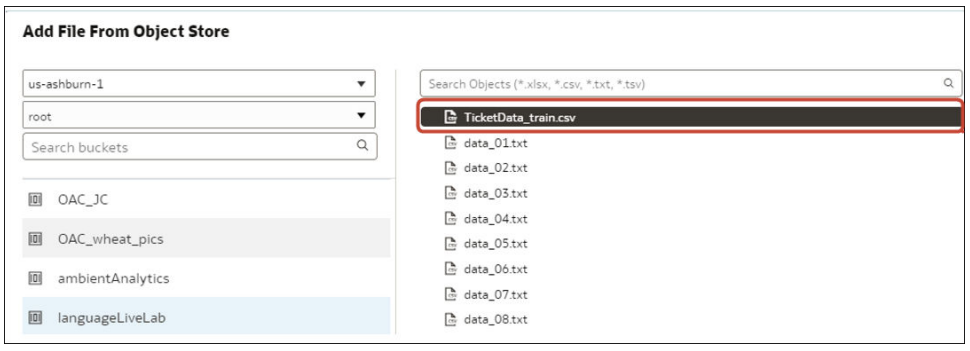
Prerequisites:

- Make sure that your data files are stored in a suitable bucket in OCI Object Storage.
- Connect Oracle Analytics to the OCI tenancy where you files are stored. See Create a Connection to Your Oracle Cloud Infrastructure Tenancy.

1. On your home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, click the connection to your OCI tenancy.
3. Use the drop-down lists to select the region where your OCI tenancy is located, then select the folder and bucket where your data files are stored.



4. Select a data file from the bucket, then click **Add**.



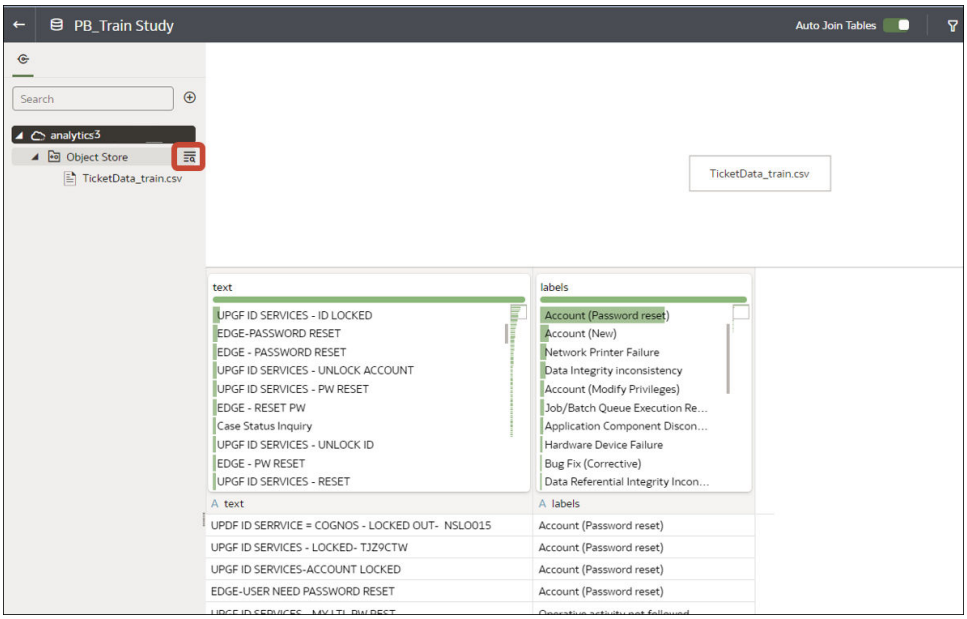
5. At the Create Dataset table from <file name> dialog, click **OK**.

   If required, change the default **Description** or **Separated by** option first.

   The dataset editor shows all of the fields from the data file.
6. Optional: Use the dataset editor to configure your data.

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7. Optional: If you want to add data from additional files to the dataset, in the Join Diagram, click the connection name in the Data Panel, then hover over **Object Store** and click **Search and add file from Object Store** to locate and select additional data files.



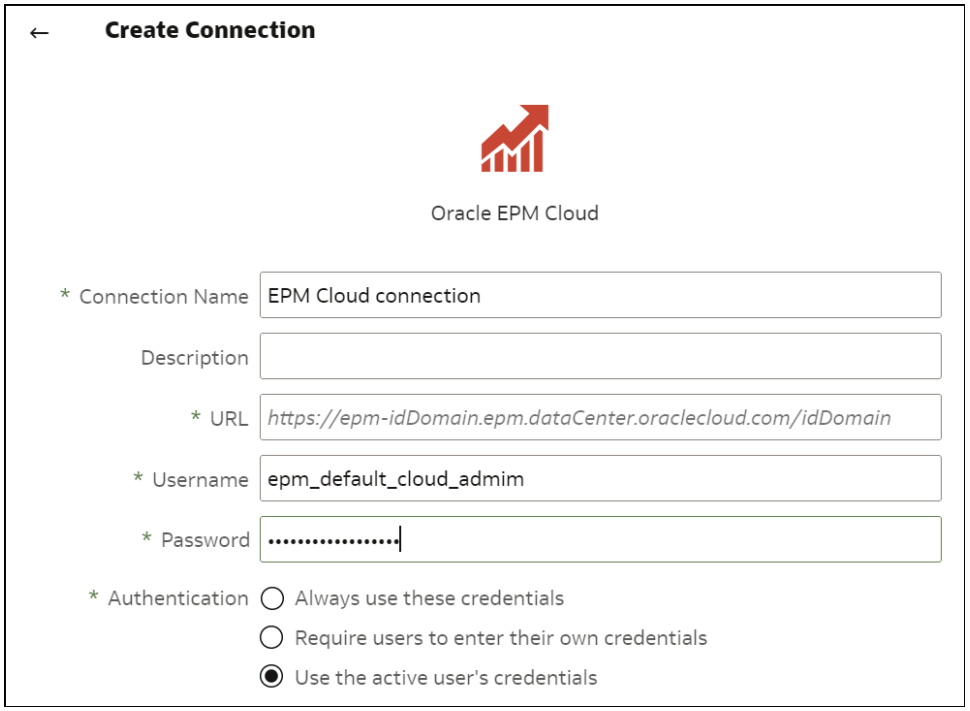
8. Click **Save** and specify a name for the dataset.

Create a Dataset from Oracle Enterprise Performance Management (Oracle EPM)

Connect to an Oracle Enterprise Performance Management (Oracle EPM) application and visualize the data in a workbook. Data is accessed as a live query.

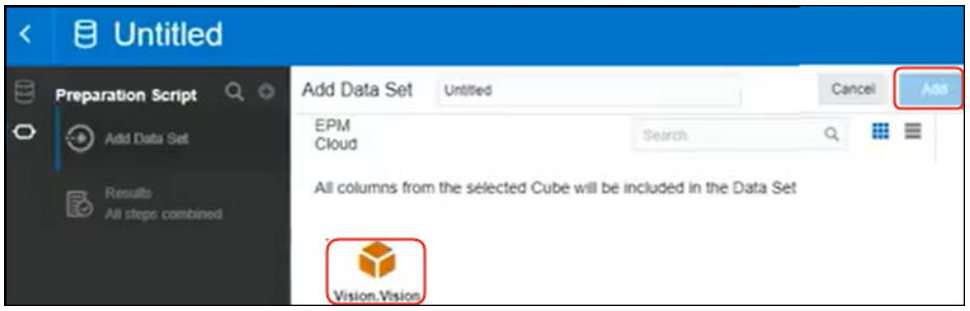
1. In the Oracle Analytics Cloud homepage, click **Create**, then **Connection**, and select **Oracle EPM Cloud**.
2. In the Create Connection dialog, enter connection details for your Cloud EPM Platform application.
   - In **Authentication**, select **Use the active user's credentials**.

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See Connect to Oracle Enterprise Performance Management Cloud.

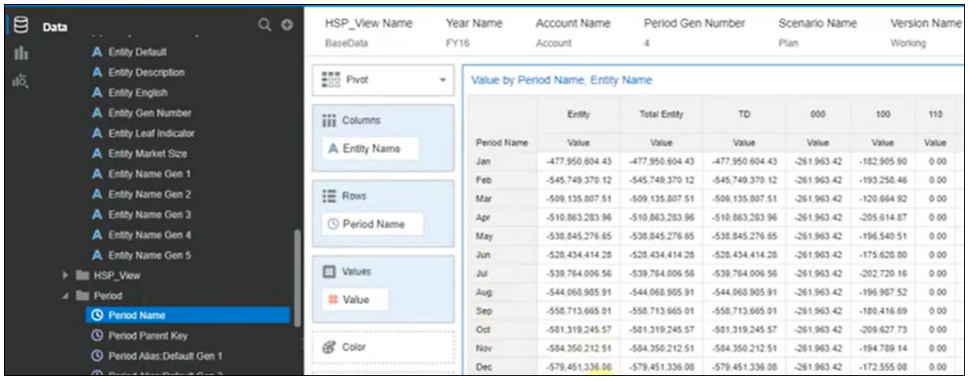
3. From the home page, click Create, then Dataset.
4. At the Create Dataset dialog, select the Oracle EPM connection that you created in Step 2.
5. In the Add Dataset dialog, select the cube to visualize, then click Add.



6. Click Create Workbook, then add the data elements to the design canvas.

   Tip: Use filters to precisely locate the data in your cubes.

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Create a Dataset from Google Analytics

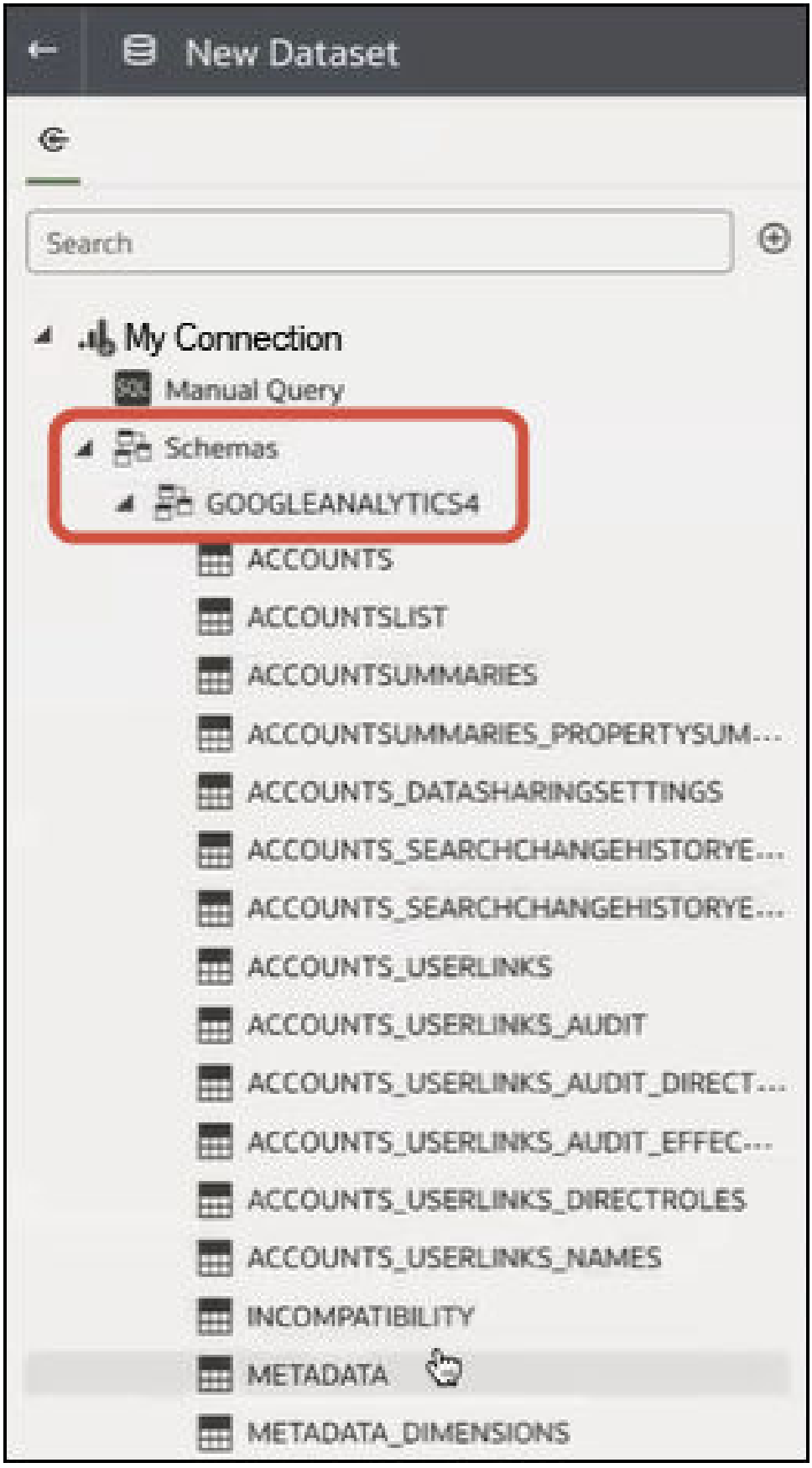
You can create a dataset with data from Google Analytics to report on website usage. For example, you might analyze the number of hits to website landing pages over time.

Creating a dataset based on Google Analytics data enables you to report on website usage over time similar to reporting in Google Analytics.

Before you start, make sure that you have a connection to a Google Analytics data source. See Connect to Google Analytics. By default, connections to Google Analytics expose real time data tables. You can also analyze data in custom tables, for example, to access historical data. See Specifying Google Analytics Custom Tables in a JSON File.

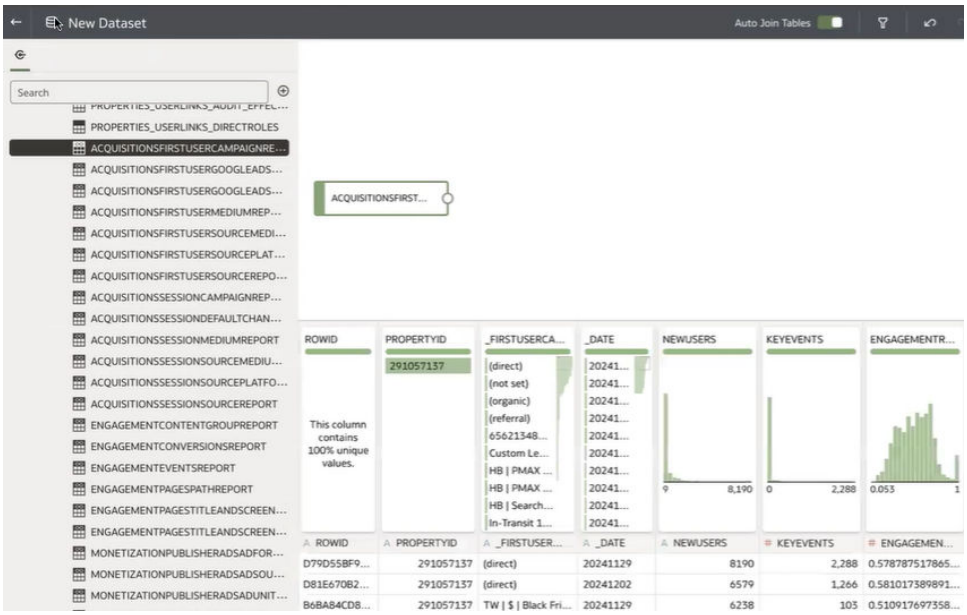
1. On your home page, click **Create** and then click **Dataset**.
2. In the Create Dataset dialog, click a connection to the Google Analytics data source.
3. In the Dataset editor, go to the **Connections** pane and navigate to **Schemas**, then **GOOGLEANALYTICS4**.

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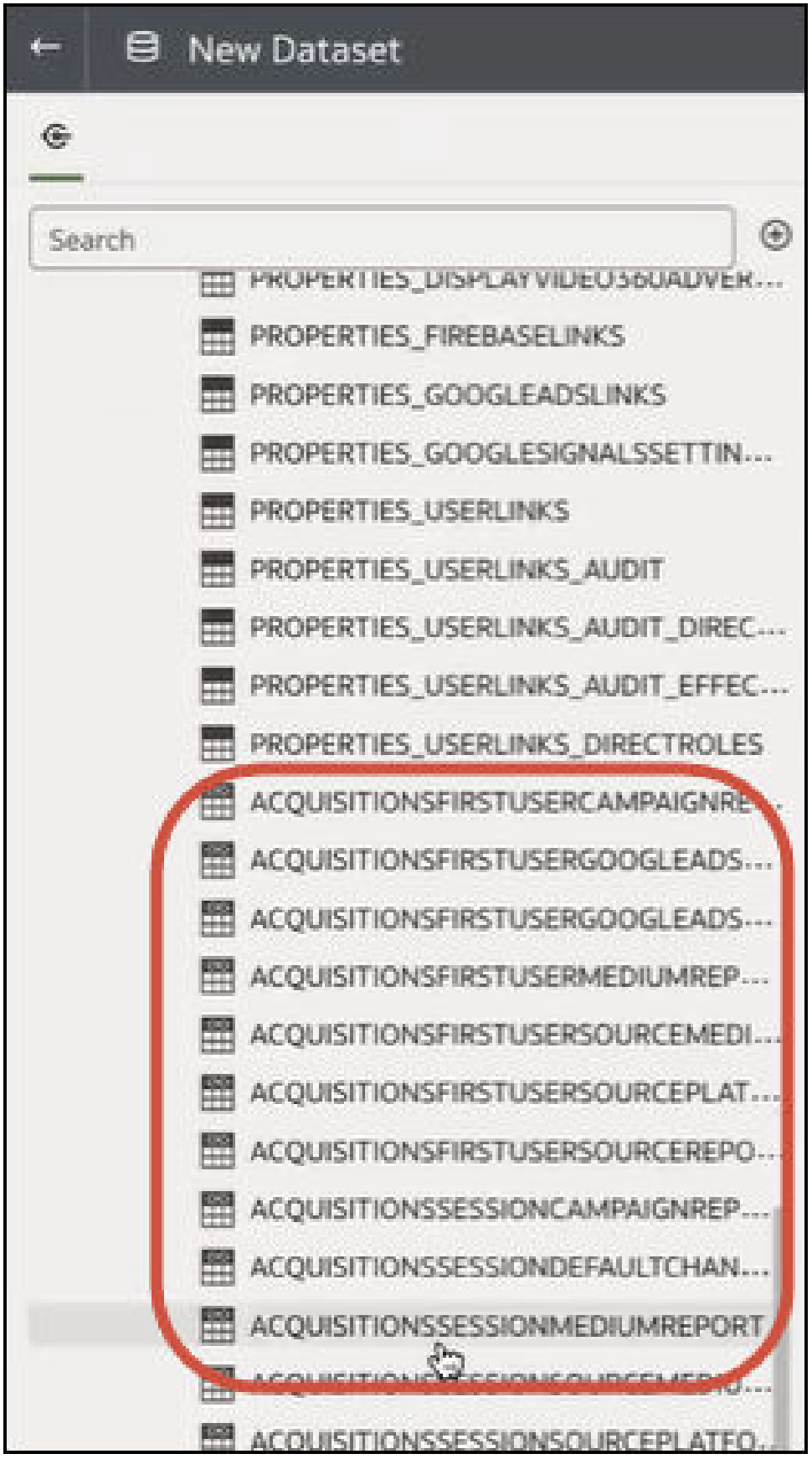
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4. Drag and drop one or more custom tables from the **GOOGLEANALYTICS4** schema to the **Join Diagram**, and build your dataset.



5. To analyze historical data, scroll down to locate and add the historical tables.

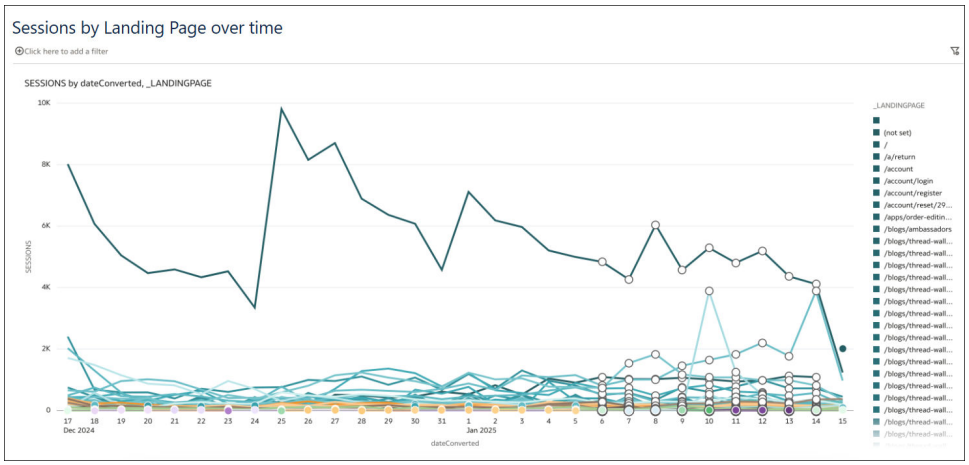
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6. Click **Save Dataset**.
7. Enter a name and click **OK**.

Create a workbook based on the dataset, and visualize the data.



Access Your Reporting Content in Microsoft Power BI

You can connect to Oracle Analytics Cloud from Microsoft Power BI Desktop and visualize Oracle Analytics content.

If you have an established Microsoft Power BI user base, you can leverage the visualization and publishing capabilities offered by Microsoft Power BI Desktop combined with the enterprise modelling capabilities of Oracle Analytics to create powerful insights into your data. See Connect to Oracle Analytics Cloud from Microsoft Power BI.

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4

Enrich and Transform Data

Data preparation involves cleansing, standardizing, and enriching your dataset before you visualize the data.

You enrich and transform data to improve its quality and get it ready to visualize. Better quality data gives you better quality insights.

See also Transform Reference.

Topics:

- Enrich and Transform Your Data
- Enrich Data Using Enrichment Recommendations
- Transform Data Using AI Assistant
- Transform Data Using the Transform Editor
- Transform Data Using Replace
- Replace Missing or Null Values in a Dataset
- Convert Text Columns to Date or Time Columns
- Adjust the Display Format of a Date or Number Column
- Create a Bin Column When You Prepare Data
- Configure Columns Properties in a Dataset
- Hide a Column in a Dataset
- Restore a Hidden Column in a Dataset
- Delete a Column in a Dataset
- Add Columns to a Dataset
- Edit the Data Preparation Script

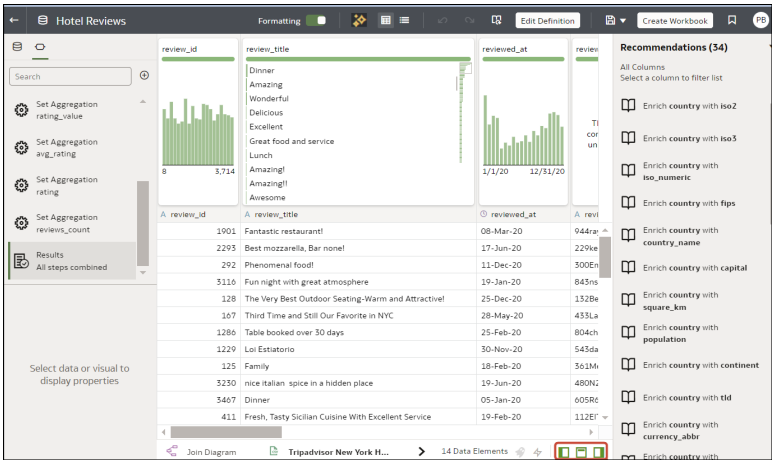
Enrich and Transform Your Data

Before you deploy your visualization workbooks, you typically enrich and transform your data. For example, you might rename data columns, fix cell phone data, or add calculations.

1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.

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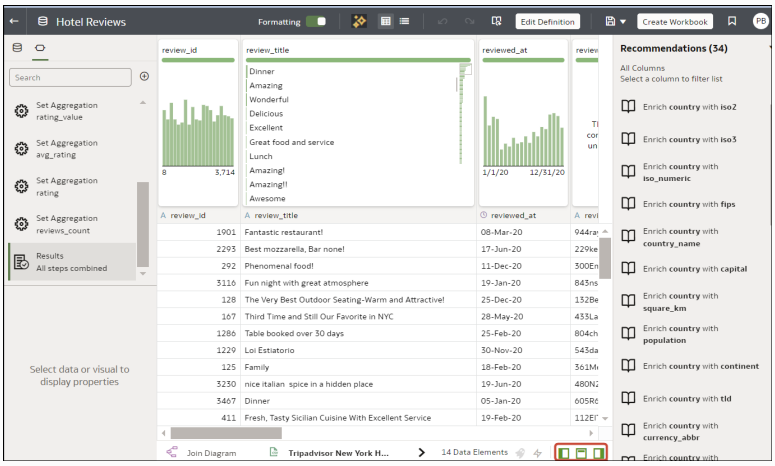


2. Select columns and use the enrich and transform tools to enhance your data.
   - Use the **Recommendations** panel to apply suggested enrichments and transformations.
   - Use the **Options** menu at the top of each column to apply common transformations such as Rename, Uppercase, and Trim.
   - From the **Options** menu at the top of a column, click **Edit** to enhance columns with functions and expressions from the Oracle Analytics functions library. For example, aggregates, strings, expressions, and math functions.
   - Click **Add Preparation Step** in the Data Panel to add a column based on a custom transformation. You can build your column using a wide range of functions and expressions from the Oracle Analytics functions library. For example, aggregates, strings, expressions, and math functions.
   - Use the properties pane at the bottom of the Data Panel to review and change a column's type and aggregation. For example, you might select **Treat As** and change from attribute to measure, or change the default **Aggregation** type from Sum to Average.
   - Use the Quality Insights tile above each column to explore and enrich your data.
   - Use the **Review auto Treat-as recommendations** option () to change the default column type identified by the semantic profiler. For example, if the semantic profiler identifies a column with numeric IDs such as 1078220 as a measure, you can change the column to an attribute.

   When you edit data, a step is automatically added to the Preparation Script pane. A blue dot indicates that a step hasn't been applied.
3. To save your data preparation changes and apply them to your data, click **Save Dataset**.

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> **Note**
>
> Configure your transform editor by displaying the Data Panel, Recommendations Panel, and Quality Insights. Use these toggle options displayed bottom right **Toggle Data Panel** , **Toggle Column Action Panel** , and **Toggle Quality Insights**.



Enrich Data Using Enrichment Recommendations

When you edit a dataset in the transform editor, Oracle Analytics suggests recommendations for enriching your data.

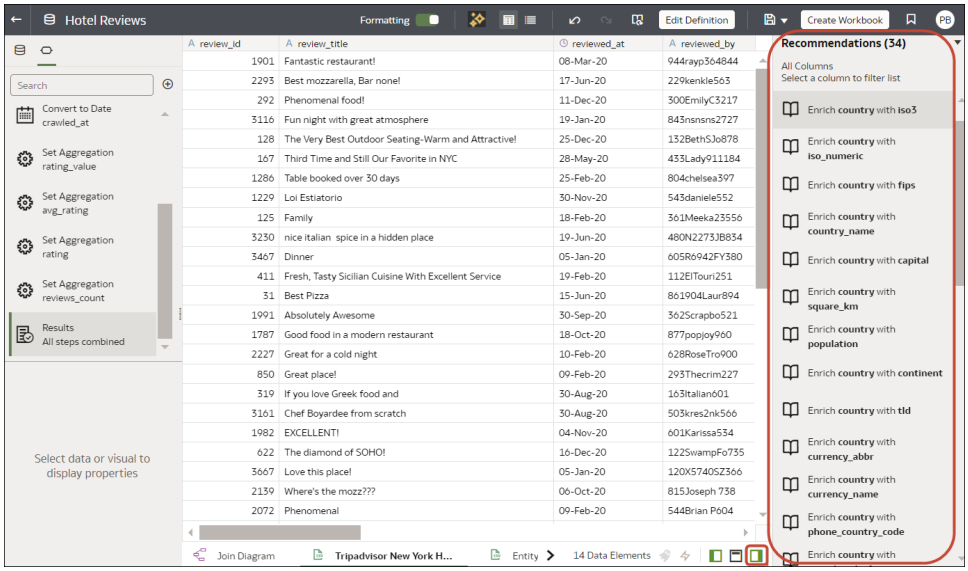
You can upload or open an existing dataset to modify the data using enrichment recommendations. After making the changes to the dataset, you can create a workbook.

If an enrichment recommendation adds information to data such as enhancing a zip code attribute column with the state name, a new column is added to the dataset containing the name of the states associated with the zip codes. When you select a recommendation, the change is added to the Preparation Script and is applied when you save the dataset or apply the preparation script. If you delete or undo the change, the recommendation is displayed once again as an available option in the Recommendations panel.

Enrichment recommendations enable you to enhance your data without requiring data scientist expertise.

1. On your home page, hover over a dataset, click **Actions**, and then click **Open**.
2. In an existing dataset, select a column, review the recommendations list, click a recommendation to add the recommendation.

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3. Click **Save**.

Transform Data Using AI Assistant

In Oracle Analytics, you can use AI Assistant to quickly optimize your metadata. For example, you can rename columns, and change column types.

- To rename columns, see Rename Columns Using AI Assistant.
- To change column types, see Change Column Types using AI Assistant.

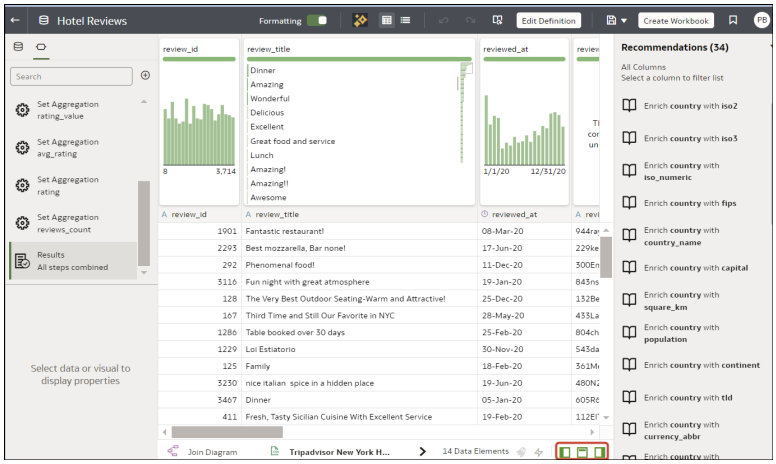
Rename Columns Using AI Assistant

You can use AI Assistant to rename columns. AI Assistant can apply optimal casing, remove underscores, and enhance column names to make it easier for users to infer the type of information contained in columns.

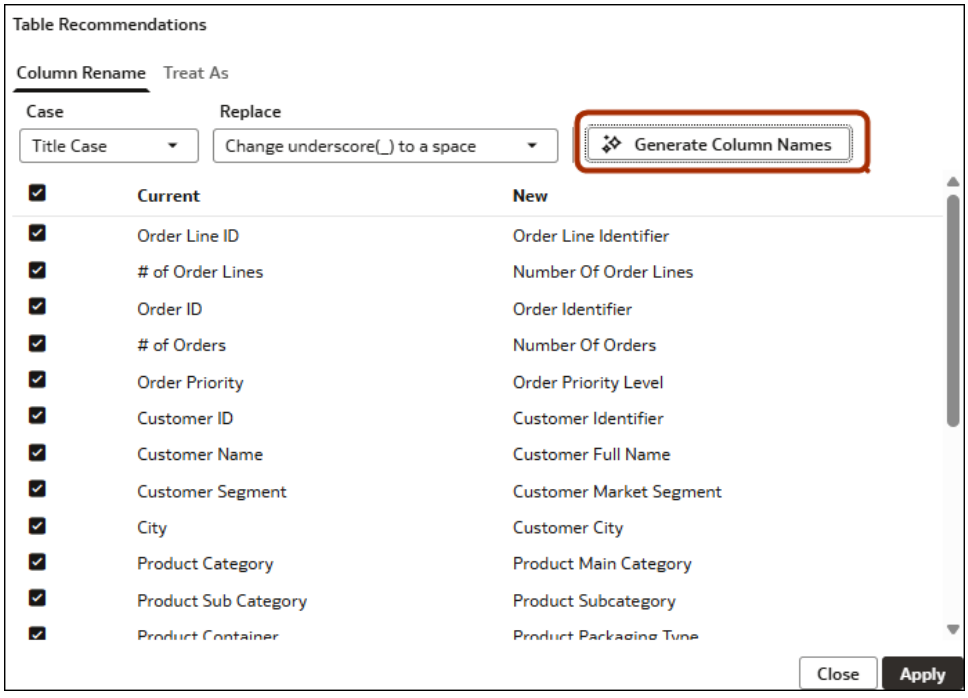
1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.

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2. Click **AI Assistant** .
3. Under **Case**, select the style that you want. For example, lower case, upper case, or title case.
4. Under **Replace**, select the style that you want for underscores and spaces. For example, remove underscores or remove spaces.
5. Optional: If you'd like to further enhance column names using AI Assistant, click **Generate Column Names**.



Use this option if the metadata is cryptic and requires abbreviations to be expanded or column names to be improved. AI Assistant uses a large-language model (LLM) to obtain important metadata and metrics about each column to assist in renaming the columns to a more meaningful and easy-to-understand name for analytics consumers.

6. To accept the new column names, click **Apply**.

   Oracle Analytics adds a step named **Rename Column** to the Preparation Script panel.

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7. To save your data preparation changes and apply them to your data, click **Save Dataset**.

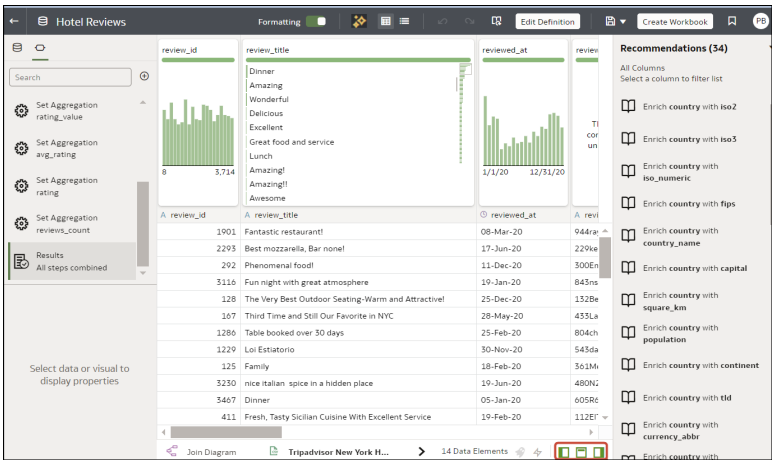
   The changes you make apply to all workbooks using that data source.

Change Column Types using AI Assistant

When you edit a dataset in the transform editor, you can use AI Assistant to change the column type of measures and attributes. For example, if the semantic profiler initially identifies a column with numeric IDs such as 1078220 as a measure, you can change the column to an attribute.

1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

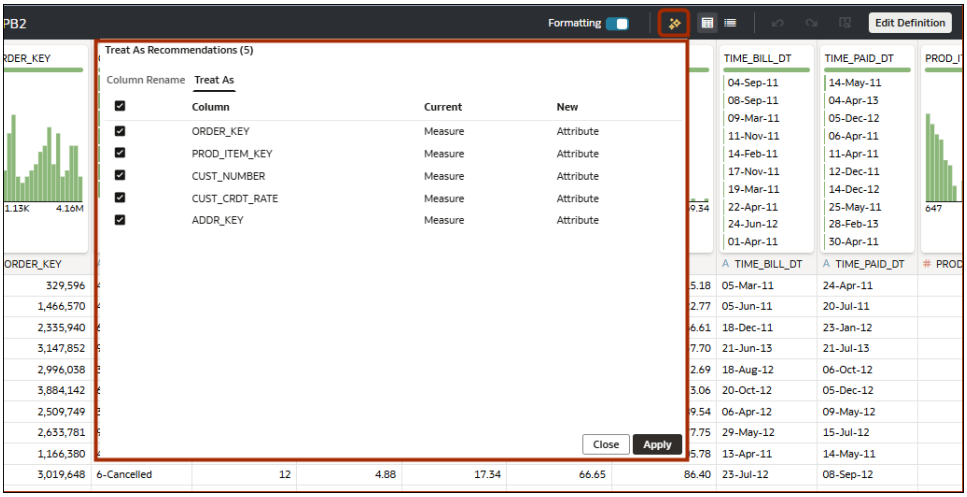
   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.



2. Click **AI Assistant** .

3. Display the **Treat-As** tab.

4. Select columns to change from the type specified under **Current** to the type specified under **New**.



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5. Click **Apply**.

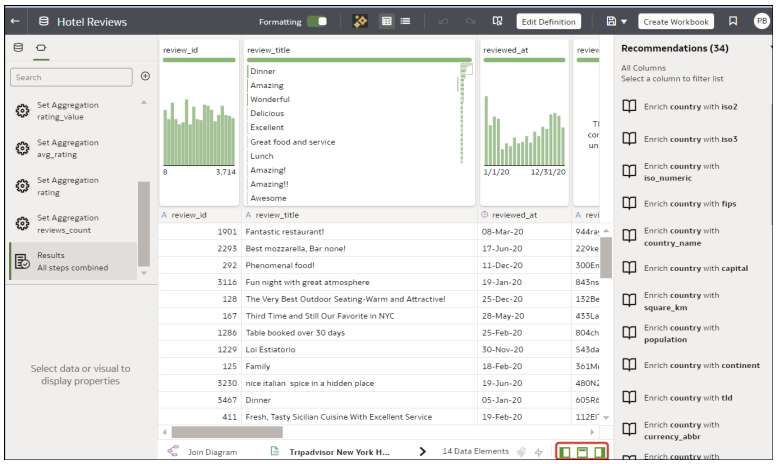
Transform Data Using the Transform Editor

You can use the transform editor to enhance your data. For example, you might convert text to uppercase or trim leading and trailing spaces from data. Transform your data to make it more useful and powerful for content consumers.

If you don't apply the transformation script and close the workbook or the dataset, you lose all the data transform changes you've performed.

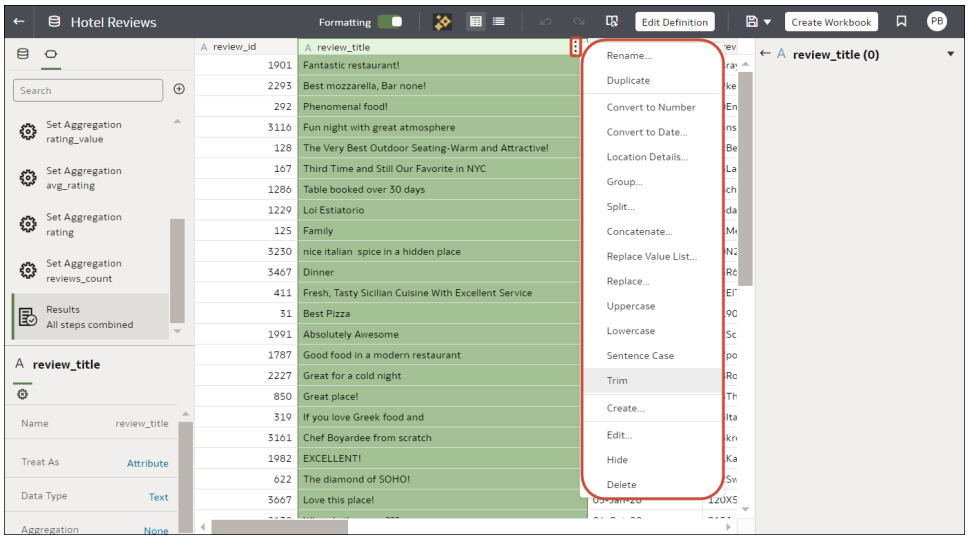
1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.



2. Mouse-over the column you want to transform.

3. Click **Options** (the ellipsis top-right of the data column ⋮), and select a transformation option (for example, **Bin**, **Rename** or **Convert to Text**).



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Oracle Analytics adds a step for the transform option you selected to the **Preparation Script** panel.

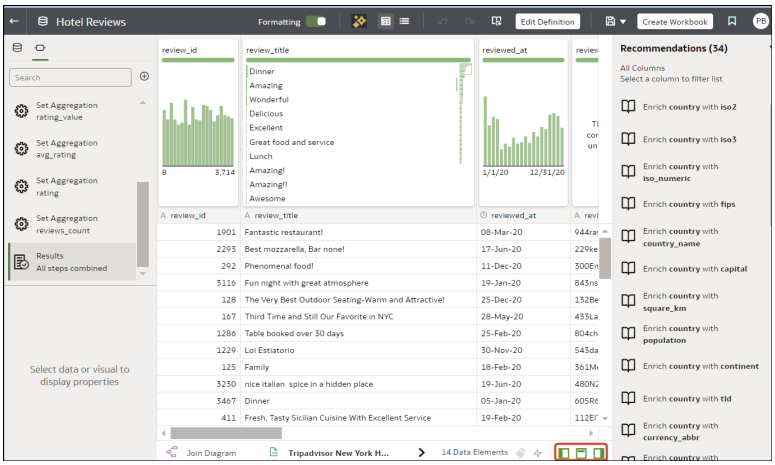
4. To save your data preparation changes and apply them to your data, click **Save Dataset**.

Replace Missing or Null Values in a Dataset

Replace missing or null values in a dataset column to cleanse your data. For example, if values are missing from a Month column, you might change them to January.

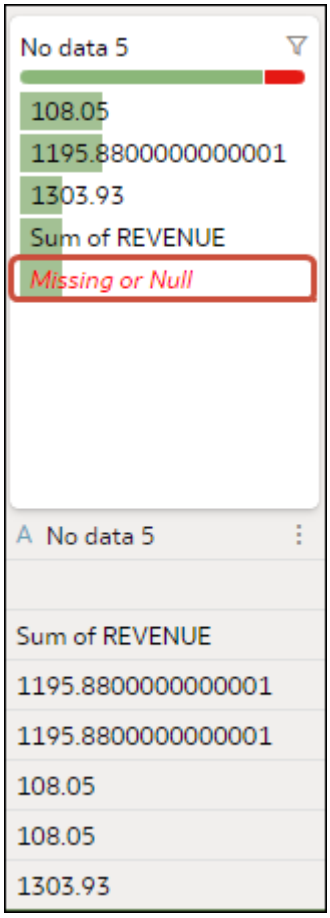
1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.



2. Hover over or select the column that you want to transform.
3. In the quality tile at the top of a column, double-click **Missing or Null**.

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4. Enter a value to replace missing or null values, then press Enter. For example, if values are missing from a Month column, you might enter "January".

   Oracle Analytics adds a step to the left-hand Preparation Script panel.

5. To save your data preparation changes and apply them to your data, click **Save**.

Transform Data Using Replace

Transform data in a column using a simple pattern match or a regular (regex) expression. For example, in a State column, you might change CA to California.

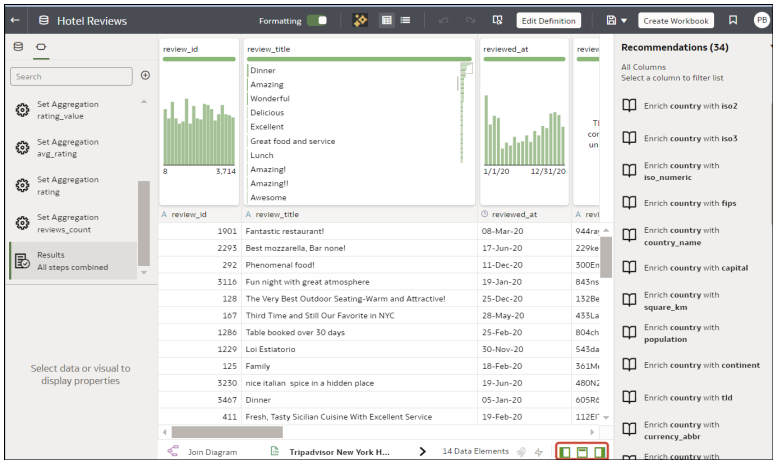
Tutorial

You can use any Perl Compatible Regular Expression (PCRE), which are also referred to as regex expressions. Transforms are applied to every applicable row in a dataset.

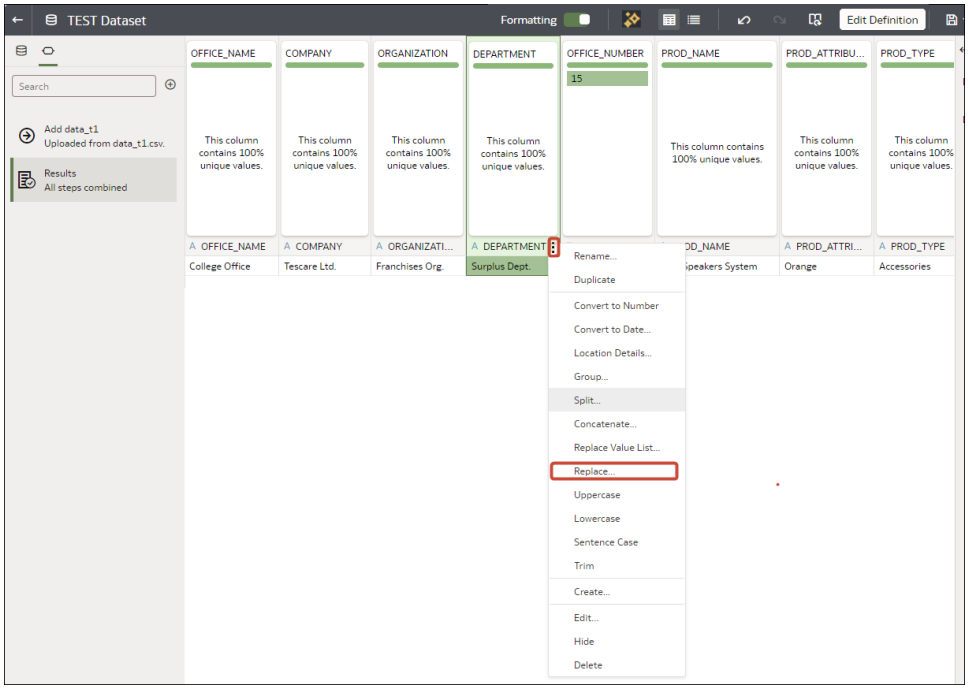
1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.

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2. Hover over or select the text column that you want to transform.
3. Click **Options** at the base of the quality tile, then click **Replace**.



Tip: To replace more than one value at the same time, use the **Replace Value List** option.

4. In the Replace step editor, specify how you'd like to match values. For example:
   - Click **Use regular expression** to match using a complex regular expression (regex).
   - Click **Match entire values only** to change "male" to "M" but not "female" to "feM".
5. In the **String to replace** field and **New string** field, specify the literal text or regular expressions to search and replace (case-sensitive).

   Examples:

   - To change "2553 Bolman Court" to "2553 #Bolman# #Court#", select **Use regular expression**, enter `([A-Za-z]+)` in the **String to replace** field, and enter #$1# in the **New String** field.

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- To change "male" with "M", select **Match entire values only**, enter `male` in the **String to replace** field, and enter `M` in the **New String** field. This changes "male" to "M" but won't change "female" to "feM".

When you complete both fields, you see a preview of the transformed data in the preview pane. Adjust the replace options until you get the transformation you want in the preview pane.

6. Click **Add Step**.

   Oracle Analytics adds a step to the Preparation Script panel.

7. To save your data preparation changes and apply them to your data, click **Save**.

Example Replace Transforms Using Regular Expressions

Here are just a few examples of using regular (regex) expressions to transform data.

In these examples, the Search Expression shows what to enter in the **String to replace** field, and the Replace Value shows what to enter in the **New string** field.

Table 4-1 Example replace transforms

Search Expression	Replace Value	Original Text	Replaced Text	Notes
`@([a-z]+)(?=\.[a-z]{3})`	@example	MichelePFalk@yahoo.com	MichelePFalk@example.com	This example replaces domain details in email addresses.
`^Gray|Grey$`	Silver	Grey Gray Graystone	Silver Silver Graystone	The ^$ characters mean only look for entire string matches. The vertical bar is the regular expression for OR, so in this case the regular expression looks for either "Gray" or "Grey" and replace with "Silver". The string Graystone isn't transformed because the regular expression is looking for entire value matches only.
`\d+`	9999	8398 Park Street 123 Oracle Parkway	9999 Park Street 9999 Oracle Parkway	This regular expression looks for one" \d" or more "+" digits and replaces them with "9999". The replace also works when the original text has only three digits.
`([A-z]+)(\d+)`	$2	UA101654 US829383	101654 829383	This regular expression is looking for one "[A-z]" or more "+" consecutive letters followed by one" \d" or more "+" digits - each of the two expressions is bounded by parentheses, which captures two groups - the first one ([A-z]) and the second one (\d+) - these groups are numbered automatically and can then be used in the replacement by using the dollar sign for the second group, for example, "$2".
`([A-z]+)(\d+)`	Postal Code: $2	UA101654 US829383	Postal Code: 101654 Postal Code: 829383	This example uses the same match expression as the previous example, except that it shows how to insert your own replacement text in addition to a group. Text can be inserted before and after a recalled match group.

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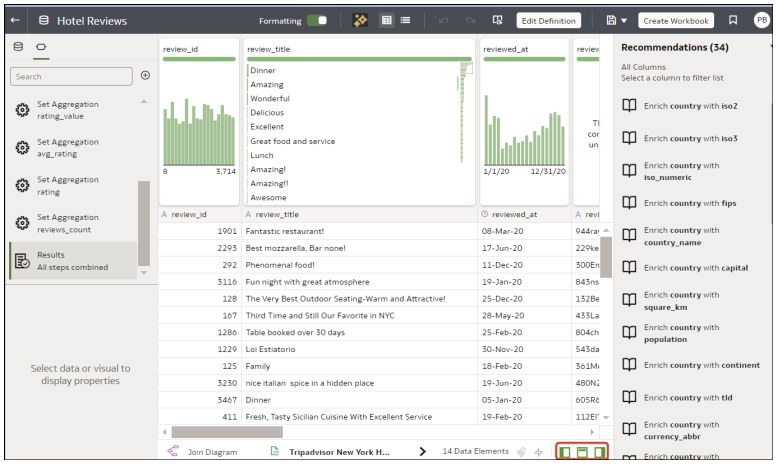
Convert Text Columns to Date or Time Columns

You can convert any text column to a date, time, or timestamp column.

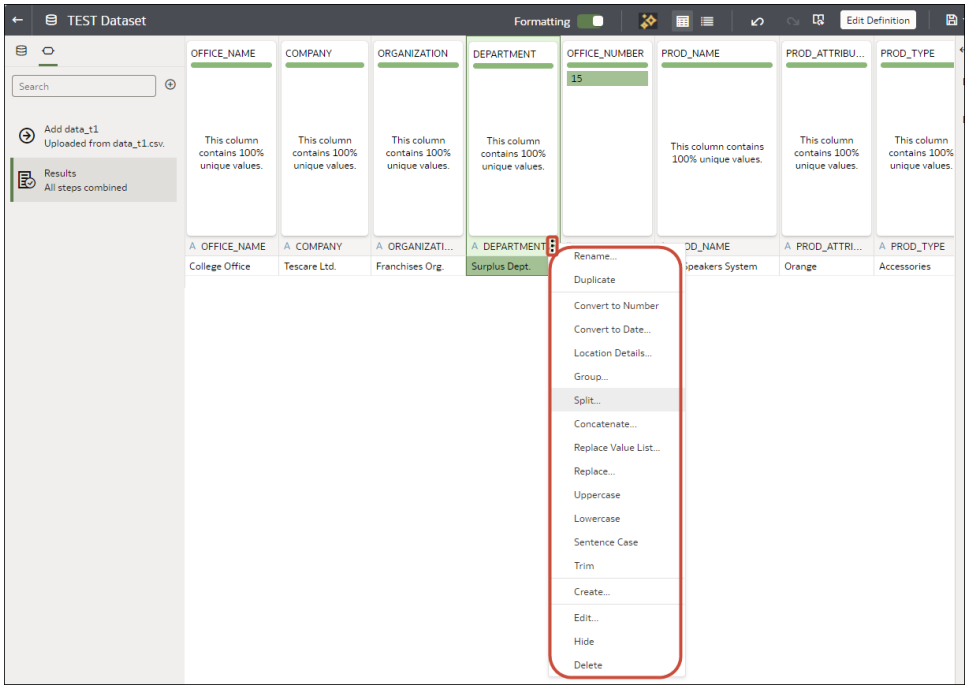
For example, you can convert an attribute text column to a true date column.

1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.



2. Hover over the column that you want to convert.
3. Click ⋮



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4. Select one of the conversion options, for example, **Convert to Number**, or **Convert to Date**.

   Oracle Analytics adds a step to the Preparation Script panel.

5. To save your data preparation changes and apply them to your data, click **Save Dataset**.

   The changes you make apply to all workbooks using that data source.

Adjust the Display Format of a Date or Number Column

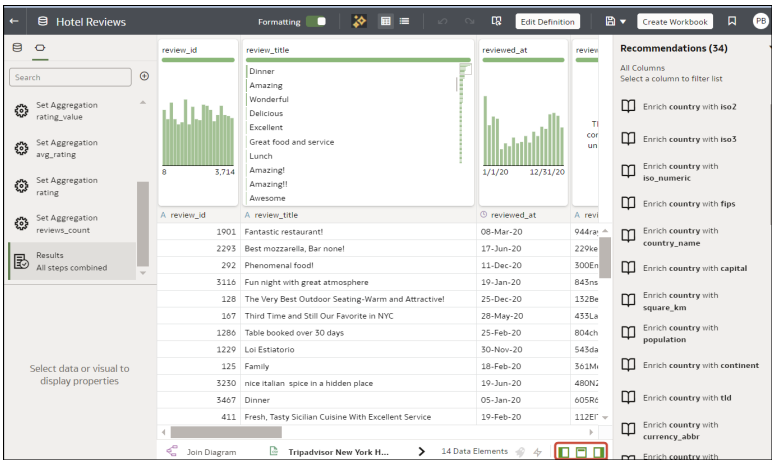
You can adjust the display format and granularity level of a date column or number column.

LiveLabs Sprint

For example, you might want to change the format of a transaction date column from `November 1, 2017` to `2017-11-01`.

1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

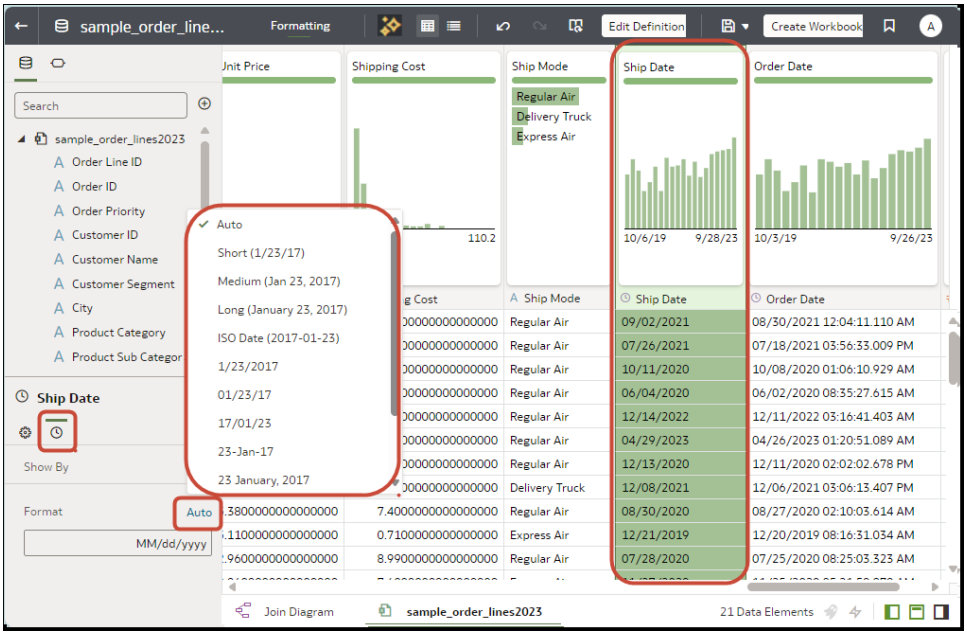
   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.



2. Click the numer or date that you'd like to edit, then in the Data Panel, click **Number Format** (for number columns) or **Date/Time Format** (for date columns).

   The Data panel displays a configuration pane for the selected column.

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3. In the Data Panel, click **Auto** next to **Format** and select an alternative format.
4. Click **Save Dataset**.

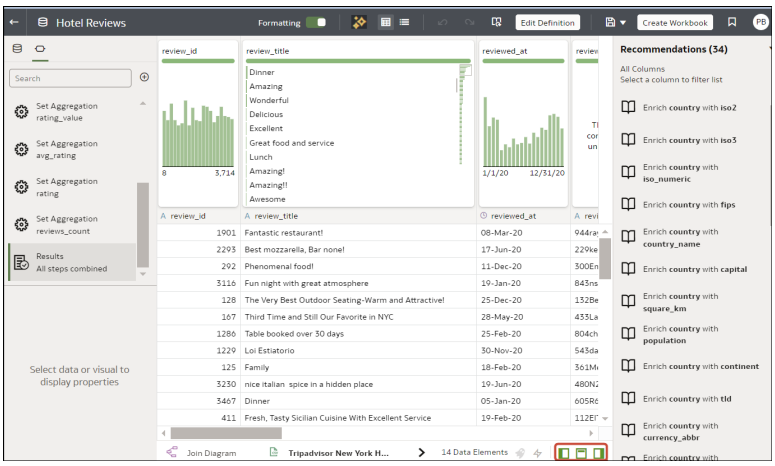
Create a Bin Column When You Prepare Data

Binning a measure creates a new column based on the value of the measure. For example, you might want to assign temperature values into two bin categories for less than or equal to 70 degrees and more than 70 degrees.

You can assign a value to the bin dynamically by creating the number of equal-sized bins or by explicitly specifying the range of values for each bin. You can create a bin column based on a data element.

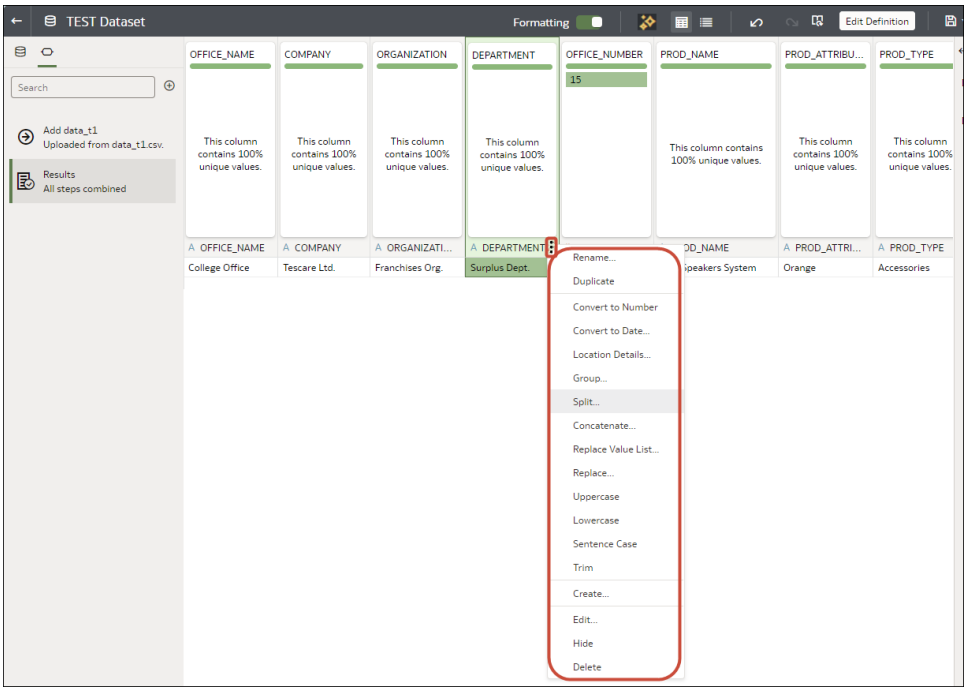
1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.



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2. Select the column that you want to modify.
3. Click **Options** in the column header



4. Select **Bin**.
5. In the Bin step editor, specify the options for the bin column.
   - Enter a number or use the arrows to increment or decrement the number of bins.
   - Based on your selection in the **Method** field, the range and count of the bins are updated.
     - In the **Manual** method, you select the boundary (that is, minimum and maximum) of each bin. You can also change the default name of each bin.
     - In the **Equal Width** method, the boundary of each bin is the same, but the count differs. Based on your selection in the **Bin Labels** field, the bin column labels are updated.
     - In the **Equal Height** method, the height of each bin is the same or very slightly different but the range is equal.
   - If you select the **Equal Width** method, click to select a dimension (that is, an attribute data element) on which to apply the bin.
6. Click **Add Step**.

   Oracle Analytics adds a step to the Preparation Script panel, ready to be applied when you click **Apply Script** or **Save Dataset**.
7. To save your data preparation changes and apply them to your data, click **Save Dataset**.

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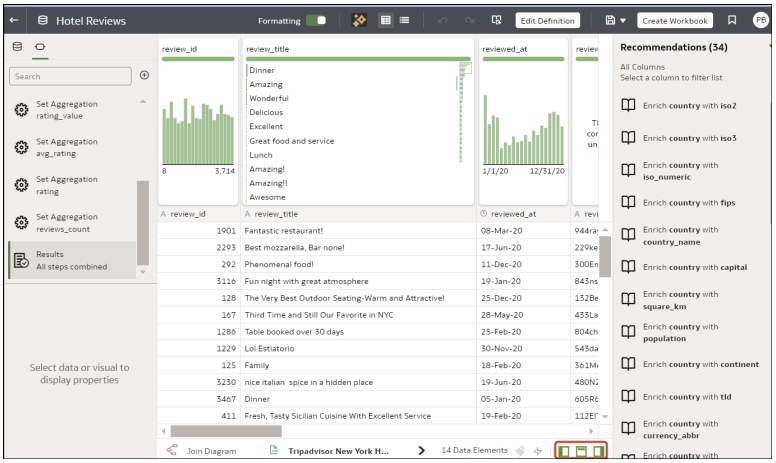
Configure Columns Properties in a Dataset

In the transform editor you can edit the Data Type, Treat As, Aggregation, Hidden, or number format properties of a dataset column. For example, you might configure a number column as currency so that you can create financial reports.

In Data view ( ), you configure the properties of one column at a time. In Metadata view ( ), you can update the properties of multiple columns at the same time. Oracle Analytics adds each property change to the Preparation Script panel. You can select to rollback changes using the Undo command.

1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.

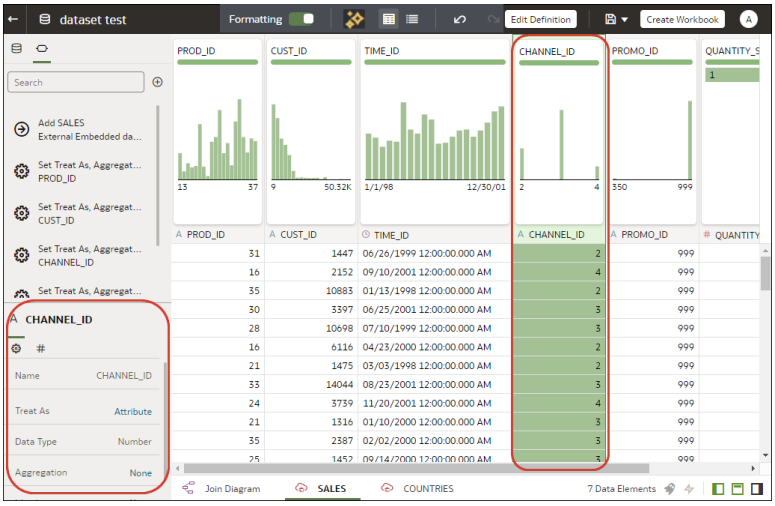


2. To configure the properties of one column:

   a. From the toolbar, click **Data** ( ).

   b. Select a column and use the properties pane at the bottom of the Data Panel to change the properties. For example, use **Number Format** to configure a number column as currency.

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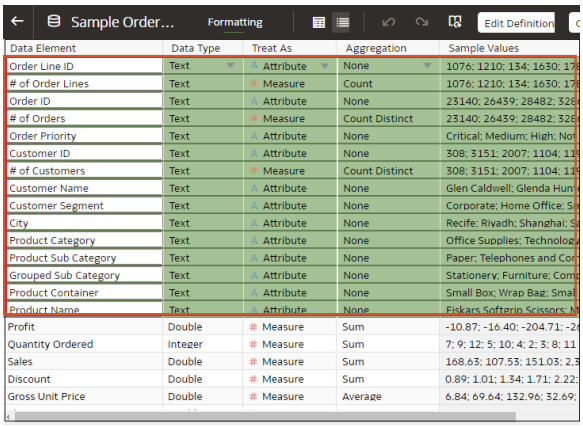
3. To update the **Data Type**, **Treat As**, **Aggregation** or **Hidden** properties of multiple columns at the same time:

   a. From the toolbar, click **Metadata** ( ).

      Dataset columns are listed as **Data Elements**.

   b. Select multiple data elements to configure.

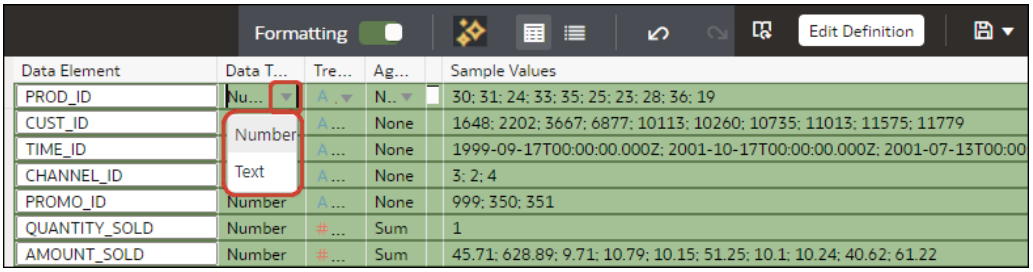
      Oracle Analytics highlights selected data elements and displays an arrow in the first data element that you selected.



   c. Use the properties pane at the bottom of the Data Panel to change the properties. For example, you might set the **Aggregation** property of selected columns to Count.

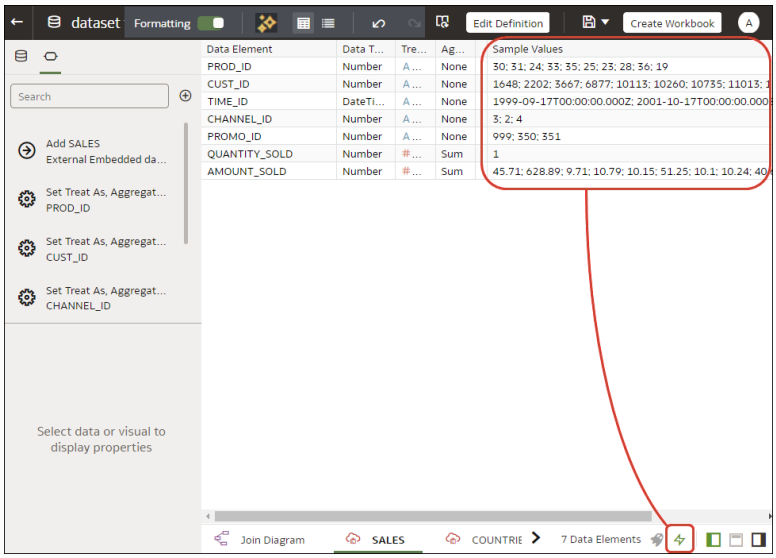
      You can also change properties by clicking the arrow in the first data element selected and selecting a configuration value from the drop-down list.

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Note

You can improve performance in your data preparation by turning off **Use sample data** ( ) to stop generating the sample values displayed in the "Sample Values" column. The **Use sample data** option is displayed at the bottom right of the Metadata View.



Hide a Column in a Dataset

In a dataset you can hide a column so that workbook users can't access that column in any visualization, calculation, or filter that uses the dataset. You can unhide columns if needed.

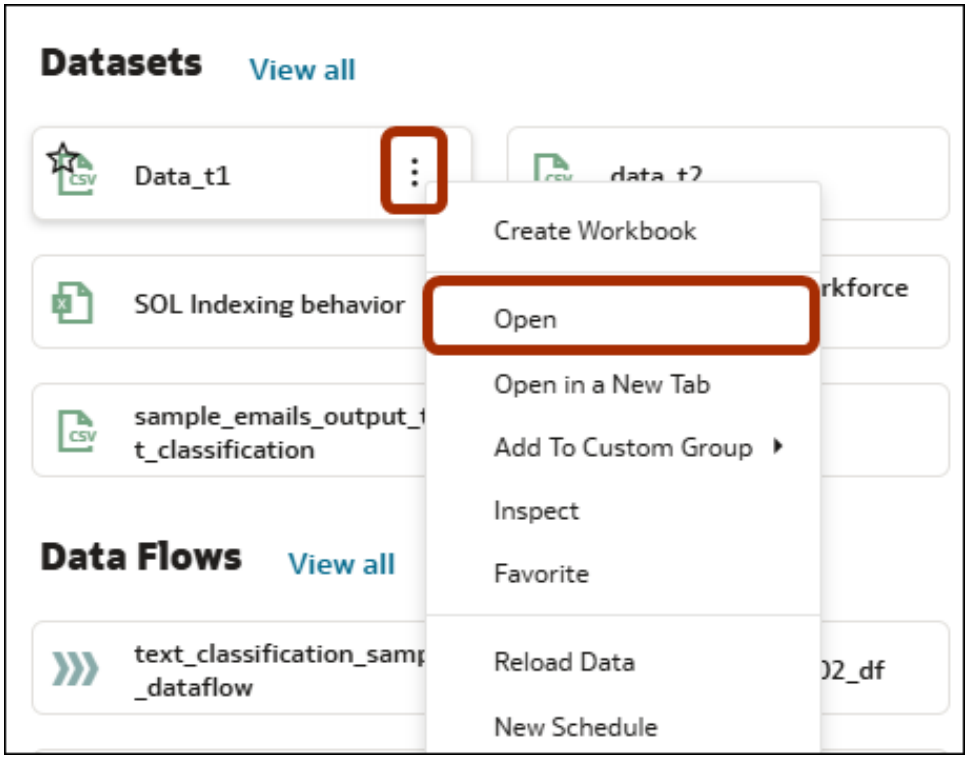
Hiding a column in a dataset enables you to:

- Prevent the use of sensitive, irrelevant, or deprecated data fields.
- Support data governance and, enforce privacy or compliance.

Hidden columns are available for table joins, whereas deleted columns aren't. See Delete a Column in a Dataset.

1. On your home page, hover over a dataset that you own, click **Actions** , and then select **Open**

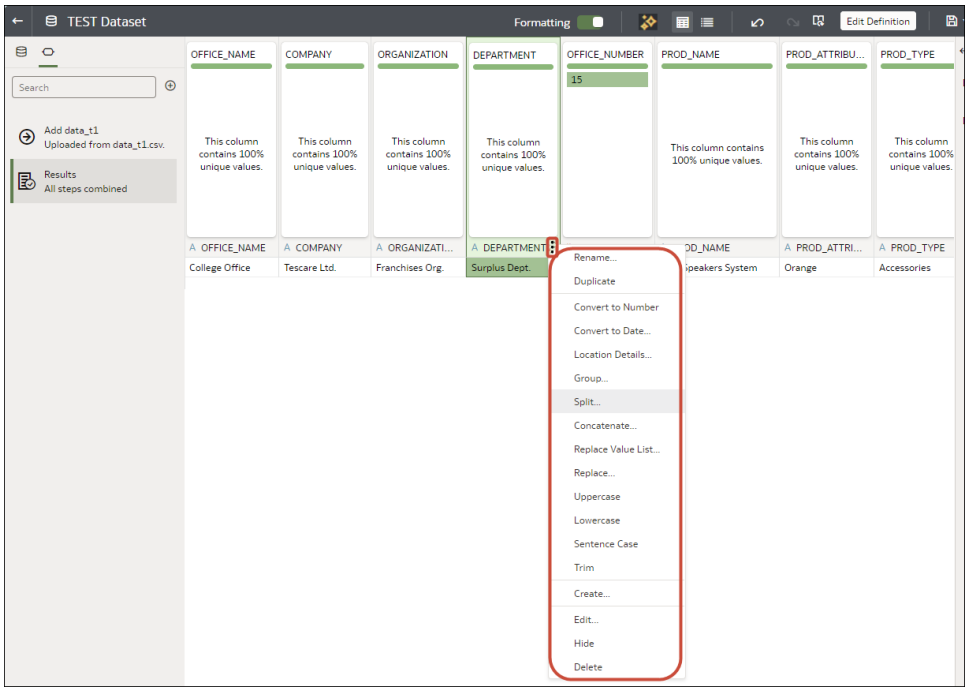
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.

If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.

2. In the transform editor, hover over the column that you want to hide and click **Options** in the column header.



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3. Select **Hide**.

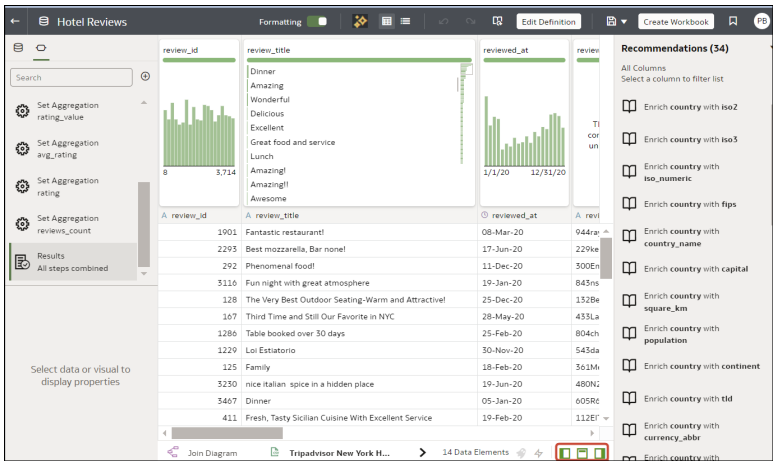
   A new data transform step named Hide Column <*Column name*> is added to the Preparation Script. To undo, delete this step.

Restore a Hidden Column in a Dataset

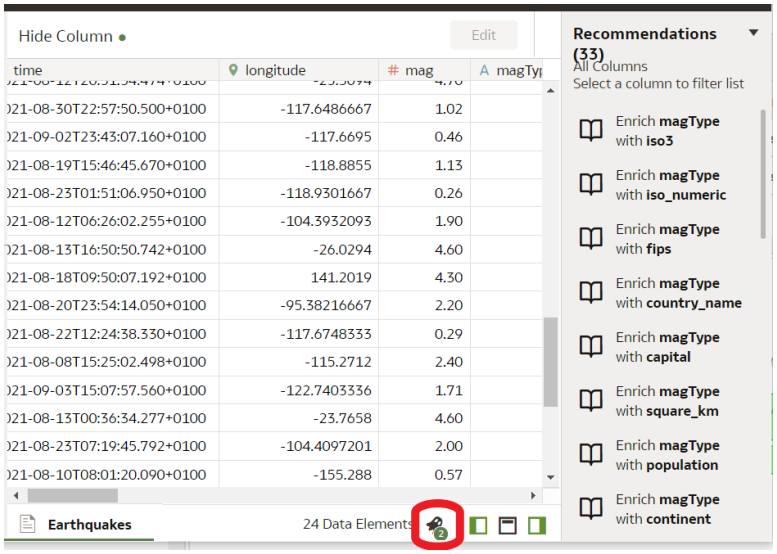
In the transform editor, you can unhide (restore) columns to make them available again to dataset and workbook users.

1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.



2. To restore a hidden column, go to the Preparation Script Panel and delete the Hide Column <*Column name*> step.
3. Optional: To unhide one or more hidden columns, click **Hidden columns** and click **Unhide All**.



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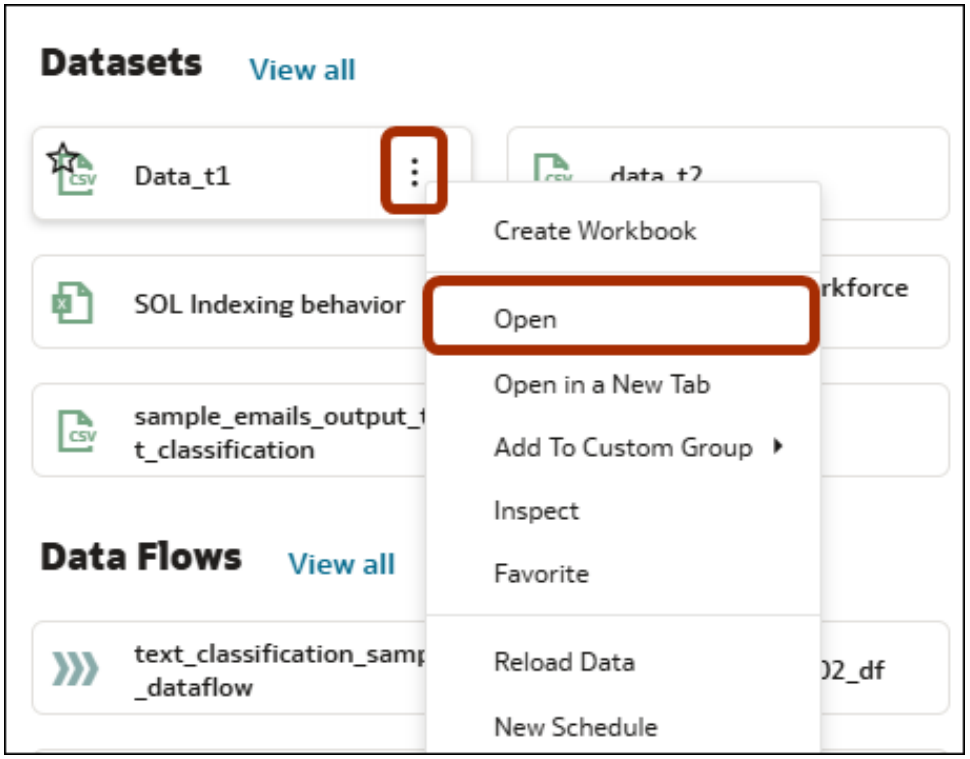
Delete a Column in a Dataset

Delete a column to remove it from the dataset stored in Oracle Analytics.

A deleted column is no longer available to any visualization, calculation, or filter that uses that dataset.

Deleted columns aren't available for table joins, whereas hidden columns are. See Hide a Column in a Dataset.

1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**

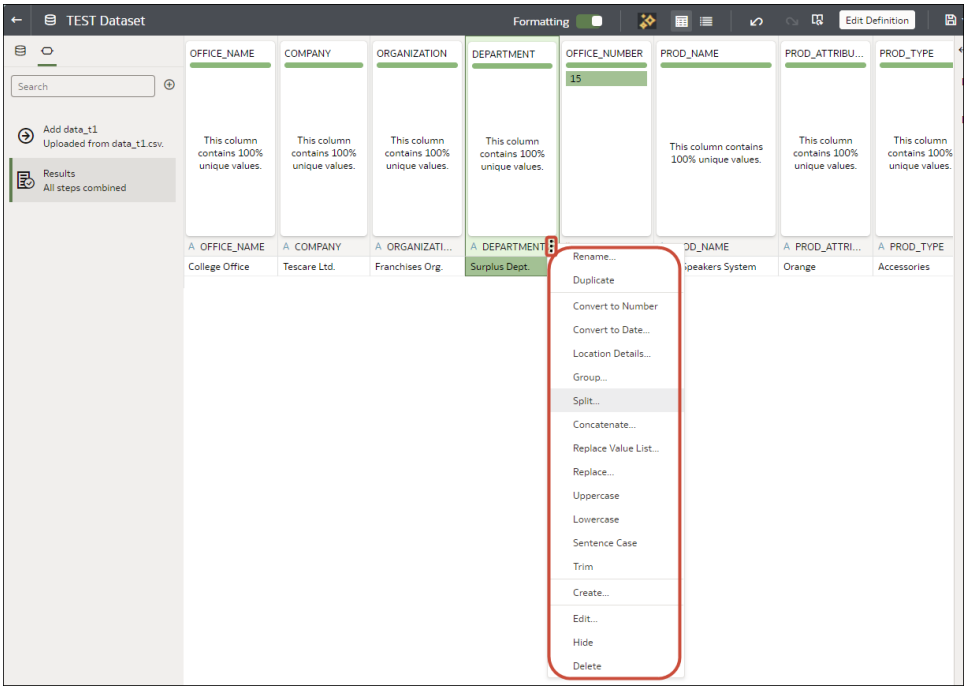


.

If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.

2. In the transform editor, hover over the column that you want to hide and click **Options** in the column header.

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3. Select **Delete**.

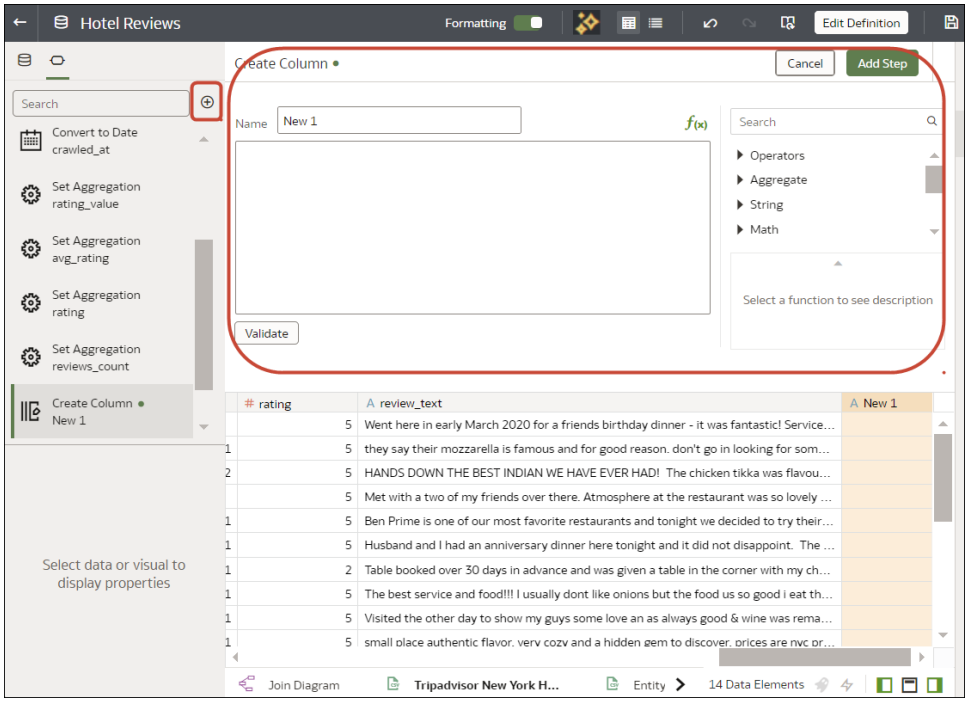
   A new data transform step named Delete Column <*Column name*> is added to the Preparation Script. To undo, delete this step.

Add Columns to a Dataset

You can develop your datasets by adding columns. For example, you might create a new column that concatenates columns ADDRESS_LINE_1, ADDRESS_LINE_2, and ADDRESS_LINE_3.

1. On your home page, hover over the dataset, click **Actions**, and then select **Open**. In the Data Diagram or Join Diagram, right-click a data source and click **Open** to display the transform editor.
2. In the transform editor, click **Add Preparation Step**.

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3. In **Create Column**, enter a **Name** for the column, and in the expression box define an expression to add values to the column. For example, to concatenate values in columns **Category** and **Sub-category**, you might specify: `CONCAT(Category, Sub Category)`.

   Use the **f(x)** function picker to build an expression using operators, mathematical, string, and conversion functions.

4. Click **Validate** and review the new column in the data preview.

5. Click **Add Step**.

   Oracle Analytics adds a step to the Preparation Script panel.

6. To save your data preparation changes and apply them to your data, click **Save**.

Edit the Data Preparation Script

You can edit the data transformation changes added to the Preparation Script. For example, you can edit, preview, or delete transformation steps before you apply them.

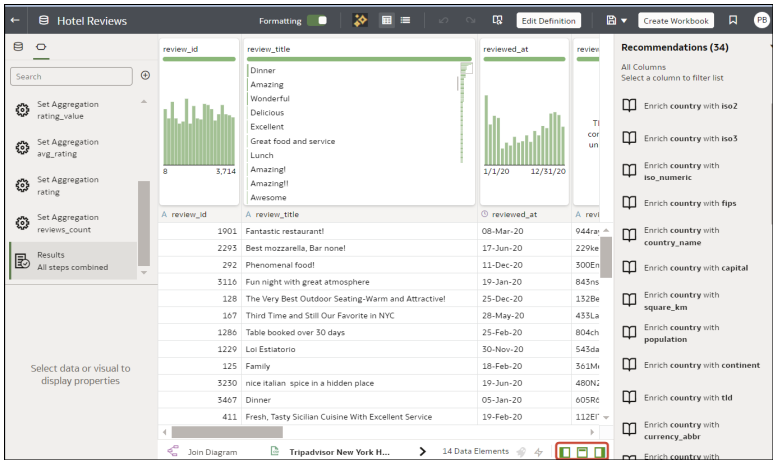
Both before and after you've applied recommended changes displayed in the Column Action Panel, you can edit the data transformation steps. The edit option isn't available for all types of transform steps.

The updates to the columns are applied only to the dataset and not to the visualization. To ensure that you see the most up-to-date data, on the Visualize canvas, click **Refresh Data**.

1. On your home page, hover over a dataset that you own, click **Actions**, and then select **Open**.

   If the dataset contains a single table, you'll see the transform editor. If the dataset contains multiple tables, you'll see the Join Diagram. In the Join Diagram, right-click a data source and click **Open** to display the transform editor.

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2. Select a step in the Preparation Script pane and click **Edit Step**.
3. Select a transform step in the Preparation Script pane and click the pencil icon or **Edit Transform**.

   If a step isn't editable, a message is displayed when you hover over the pencil icon that editing for the transform step has been disabled.
4. In the step editor, update the fields to edit the data transform changes that are applied to the columns.
5. Click **OK** to update the column and close the step editor.
6. To save your data preparation changes and apply them to your data, click **Save**.

Enrich and Transform Reference

Use this reference information to help you enrich and transform your data.

Topics:

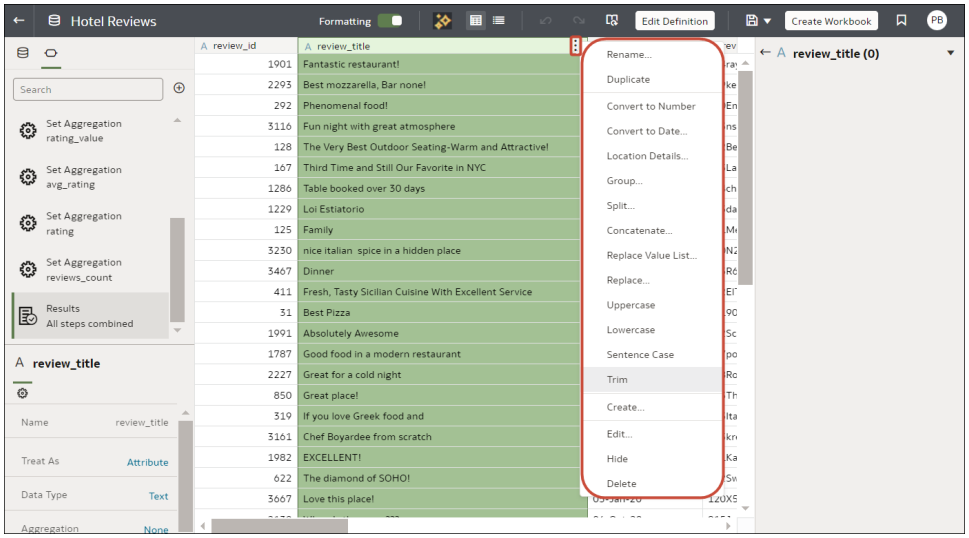
- Transform Reference
- Data Profiles and Semantic Recommendations
- General Custom Format Strings

Transform Reference

Find out about the data transform options that you can access in the transform editor. For example, to categorize racing lap times in a dataset column, you might use the **Bin** option.

To select transform options in the transform editor, open your dataset, then click **Options** (the ellipsis top-right of the data column ⋮), and select an option (for example, **Bin**, **Rename** or **Convert to Text**).

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Option	Description
Bin	Create your own custom groups for number ranges. For example, you can create bins for an Age column with age ranges binned into Pre-Teen, Young Adult, Adult, or Senior based on custom requirements.
Calculate Duration	Calculate the duration between two dates or times. For example, to analyze order delivery times, you might calculate the number of days between ORDER_DATE and DELIVERY_DATE.
Convert to Date	Change the data type of the column to date and deletes any values that aren't dates from the column.
Convert to Number	Change the data type of the column to number, which deletes any values that aren't numbers from the column.
Convert to Text	Change the data type of a column to text.
Create	Create a column based on a function.
Delete	Remove the column from the dataset.
Duplicate	Create a column with identical content of the selected column.
Edit	Change the column details. For example, you can change the name, select another column, or update functions.
Extract Date	Extract a range of date and time information from timestamps. For example, you might extract Year as 2024, Day of the Month as 23, or Hour of the Day as 03 PM.
Group, Conditional Group	Select **Group** to create your own custom groups. For example, you can group States together with custom regions, and you can categorize dollar amounts into groups indicating small, medium, and large.
Hide	Hide the column in visualizations. If you want to see which columns are hidden, click **Hidden columns** (ghost icon) on the page footer. To unhide a single column, remove the Hide step in the Preparation Scipt pane. To unhide all columns click **Hidden columns** (ghost icon) on the page footer and select **Unhide All**.
Log	Calculate the natural logarithm of an expression.
Lowercase	Update the contents of a column with the values all in lowercase letters.
Power	Raise the values of a column to the power that you specify. The default power is 2.
Rename	Change the name of a column.
Replace	Change specific text in the selected column to any value that you specify. For example, you can change all instances of *Mister* to *Mr.*.
Sentence Case	Update the contents of a column to make the first letter of the first word of a sentence uppercase.

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Option	Description
Split	Split a column value into parts. For example, you can split a column called, Name, into first name and last name.
Square Root	Create a column populated with the square root of the value in the column selected.
Update Description	Add a user-friendly description for the selected column that's displayed in the Tile visualization when you add this column to a canvas.
Uppercase	Update the contents of a column with the values in all uppercase letters.

General Custom Format Strings

You can use general custom format strings to create custom time or date formats.

The table shows the general custom format strings and the results that they display. These allow the display of date and time fields in the user's locale.

General Format String	Result
[FMT:dateShort]	Formats the date in the locale's short date format. You can also type `[FMT:date]`.
[FMT:dateLong]	Formats the date in the locale's long date format.
[FMT:dateInput]	Formats the date in a format acceptable for input back into the system.
[FMT:time]	Formats the time in the locale's time format.
[FMT:timeHourMin]	Formats the time in the locale's time format but omits the seconds.
[FMT:timeInput]	Formats the time in a format acceptable for input back into the system.
[FMT:timeInputHourMin]	Formats the time in a format acceptable for input back into the system, but omits the seconds.
[FMT:timeStampShort]	Equivalent to typing `[FMT:dateShort] [FMT:time]`. Formats the date in the locale's short date format and the time in the locale's time format. You can also type `[FMT:timeStamp]`.
[FMT:timeStampLong]	Equivalent to typing `[FMT:dateLong] [FMT:time]`. Formats the date in the locale's long date format and the time in the locale's time format.
[FMT:timeStampInput]	Equivalent to `[FMT:dateInput] [FMT:timeInput]`. Formats the date and the time in a format acceptable for input back into the system.
[FMT:timeHour]	Formats the hour field only in the locale's format, such as 8 PM.
YY or yy	Displays the last two digits of the year, for example `11` for 2011.
YYY or yyy	Displays the last three digits of the year, for example, `011` for 2011.
YYYY or yyyy	Displays the four-digit year, for example, `2011`.
M	Displays the numeric month, for example, `2` for February.
MM	Displays the numeric month, padded to the left with zero for single-digit months, for example, `02` for February.
MMM	Displays the abbreviated name of the month in the user's locale, for example, `Feb`.
MMMM	Displays the full name of the month in the user's locale, for example, `February`.
D or d	Displays the day of the month, for example, `1`.
DD or dd	Displays the day of the month, padded to the left with zero for single-digit days, for example, `01`.

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General Format String	Result
DDD or ddd	Displays the abbreviated name of the day of the week in the user's locale, for example, `Thu` for Thursday.
DDDD or dddd	Displays the full name of the day of the week in the user's locale, for example, `Thursday`.
DDDDD or ddddd	Displays the first letter of the name of the day of the week in the user's locale, for example, `T` for Thursday.
r	Displays the day of year, for example, 1.
rr	Displays the day of year, padded to the left with zero for single-digit day of year, for example, 01.
rrr	Displays the day of year, padded to the left with zero for single-digit day of year, for example, 001.
w	Displays the week of year, for example, 1.
ww	Displays the week of year, padded to the left with zero for single-digit weeks, for example, 01.
q	Displays the quarter of year, for example, 4.
h	Displays the hour in 12-hour time, for example `2`.
H	Displays the hour in 24-hour time, for example, `23`.
hh	Displays the hour in 12-hour time, padded to the left with zero for single-digit hours, for example, `01`.
HH	Displays the hour in 24-hour time, padded to the left with zero for single digit hours, for example, `23`.
m	Displays the minute, for example, `7`.
mm	Displays the minute, padded to the left with zero for single-digit minutes, for example, `07`.
s	Displays the second, for example, `2`. You can also include decimals in the string, such as s.# or s.00 (where # means an optional digit, and 0 means a required digit).
ss	Displays the second, padded to the left with zero for single-digit seconds, for example, `02`. You can also include decimals in the string, such as ss.# or ss.00 (where # means an optional digit, and 0 means a required digit).
S	Displays the millisecond, for example, 2.
SS	Displays the millisecond, padded to the left with zero for single-digit milliseconds, for example, 02.
SSS	Displays the millisecond, padded to the left with zero for single-digit milliseconds, for example, 002.
tt	Displays the abbreviation for ante meridiem or post meridiem in the user's locale, for example, `pm`.
gg	Displays the era in the user's locale.

Data Profiles and Semantic Recommendations

When you create a dataset, Oracle Analytics performs column-level profiling to produce a set of semantic recommendations to repair or enrich your data. When you create workbooks, you

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can also include knowledge enrichments in your visualizations by adding them from the Data Panel.

> **Note**
>
> Knowledge enrichments are usually enabled by default, but workbook editors can enable or disable them for datasets that they own or have editing privileges for. Oracle Analytics doesn't automatically provide enrichment recommendations for datasets generated from a data flow. In this case, the dataset owner or administrator must first enable the knowledge enrichments option for the dataset. See Enable Knowledge Enrichments for Datasets.

These recommendations are based on the system automatically detecting a specific semantic type during the profile step. For example, datasets based on local subject areas are profiled using a simple Top N sample.

There are categories of semantic types such as geographic locations identified by city names, recognizable patterns as in credit cards, email addresses and social security numbers, dates, and recurring patterns. You can also create your own custom semantic types.

Topics:

- Semantic Type Categories
- Semantic Type Recommendations
- Recognized Pattern-Based Semantic Types
- Reference-Based Semantic Types
- Recommended Enrichments
- Required Thresholds
- Custom Knowledge Recommendations

Semantic Type Categories

Profiling is applied to various semantic types.

Semantic type categories are profiled to identify:

- Geographic locations such as city names.
- Patterns such as those found with credit cards numbers or email addresses.
- Recurring patterns such as hyphenated phrase data.

Semantic Type Recommendations

Recommendations to repair, enhance, or enrich the dataset, are determined by the type of data.

Examples of semantic type recommendations:

- **Enrichments** - Adding a new column to your data that corresponds to a specific detected type, such as a geographic location. For example, adding population data for a city.

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- **Column Concatenations** - When two columns are detected in the dataset, one containing first names and the other containing last names, the system recommends concatenating the names into a single column. For example, a *first_name_last_name* column.
- **Semantic Extractions** - When a semantic type is composed of subtypes, for example a *us_phone* number that includes an area code, the system recommends extracting the subtype into its own column.
- **Part Extraction** - When a generic pattern separator is detected in the data, the system recommends extracting parts of that pattern. For example if the system detects a repeating hyphenation in the data, it recommends extracting the parts into separate columns to potentially make the data more useful for analysis.
- **Date Extractions** - When dates are detected, the system recommends extracting parts of the date that might augment the analysis of the data. For example, you might extract the day of week from an invoice or purchase date.
- **Full and Partial Obfuscation/Masking/Delete** - When sensitive fields are detected such as a credit card number, the system recommends a full or partial masking of the column, or even removal.

Recognized Pattern-Based Semantic Types

Semantic types are identified based on patterns found in your data.

Recommendations are provided for these semantic types:

- Dates (in more than 30 formats)
- US Social Security Numbers (SSN)
- Credit Card Numbers
- Credit Card Attributes (CVV and Expiration Date)
- Email Addresses
- North American Plan Phone Numbers
- US Addresses

Reference-Based Semantic Types

Recognition of semantic types is determined by loaded reference knowledge provided with the service.

Reference-based recommendations are provided for these semantic types:

- Country names
- Country codes
- State names (Provinces)
- State codes
- County names (Jurisdictions)
- City names (Localized Names)
- Zip codes

Recommended Enrichments

Recommended enrichments are based on the semantic types.

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Enrichments are determined based on the geographic location hierarchy:

- Country
- Province (State)
- Jurisdiction (County)
- Longitude
- Latitude
- Population
- Elevation (in Meters)
- Time zone
- ISO country codes
- Federal Information Processing Series (FIPS)
- Country name
- Capital
- Continent
- GeoNames ID
- Languages spoken
- Phone country code
- Postal code format
- Postal code pattern
- Phone country code
- Currency name
- Currency abbreviation
- Geographic top-level domain (GeoLTD)
- Square KM

Required Thresholds

The profiling process uses specific thresholds to decide about specific semantic types.

As a general rule, 85% of the data values in the column must meet the criteria for a single semantic type in order for Oracle Analytics to determine the classification. For example, a column with 70% first names and 30% “other” doesn't meet the threshold requirements and therefore no recommendations are made.

Custom Knowledge Recommendations

Use custom knowledge recommendations to augment the Oracle Analytics system knowledge. Custom knowledge enables the Oracle Analytics semantic profiler to identify more business-specific semantic types and make more relevant and governed enrichment recommendations. For example, you might add a custom knowledge reference that classifies prescription medication into USP drug categories Analgesics or Opioid.

Tutorial

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Ask your administrator to upload custom knowledge files to Oracle Analytics. When you enrich datasets, Oracle Analytics presents enrichment recommendations based on this semantic data. When you create workbooks, you can also include knowledge enrichments in your visualizations by adding them from the Data Panel.

Creating Your Own Custom Knowledge Files

You can create your own semantic files. Follow these guidelines:

- Create a data file in CSV or Microsoft Excel (XLSX) format. The maximum file size you can upload is 250 MB.
- Populate the first column with the key and the other columns with the enrichment values. For example, here the keys are in the "Date" column and the enrichment values are in the "Fiscal Year" column, which enables you analyze data by fiscal year:

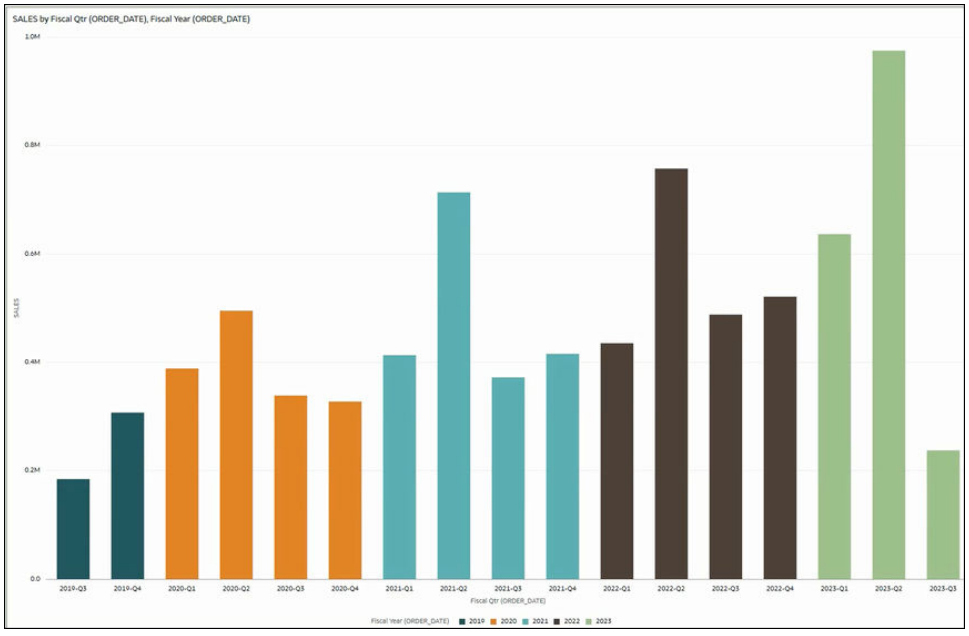
```
Date,Fiscal_Year
2022-07-01,2023
2022-10-15,2023
2023-01-01,2023
2023-04-30,2023
2023-07-01,2024
```

Ask your administrator to upload your custom knowledge file to Oracle Analytics.

Example - Integrate Business Timeframes into Your Data

This example illustrates how you can add business timeframes into sales data and enable the analysis of sales by fiscal year if the original dataset doesn't contain fiscal data.

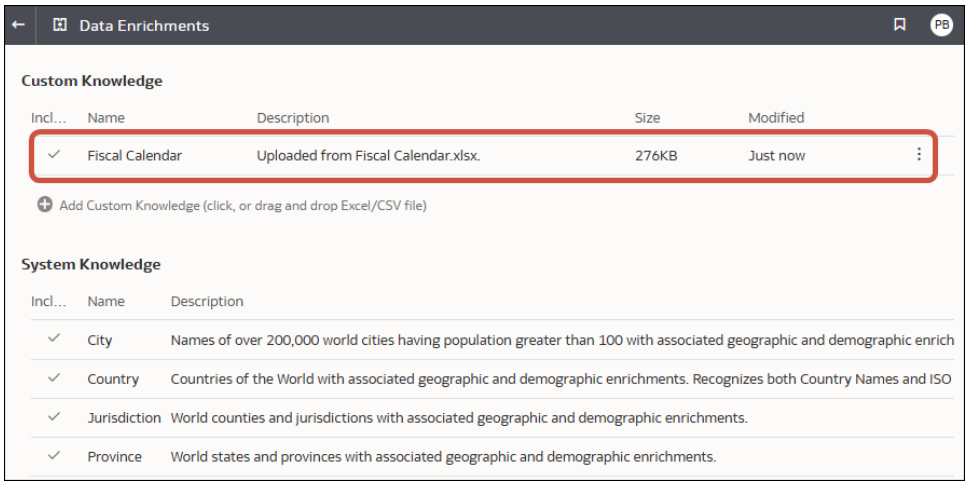
The example visualization shows sales by quarter in years 2019, 2020, 2021, 2022, and 2023, where each year is represented in a different color. You don't have fiscal data in your source sales data, so you deploy additional custom knowledge to add fiscal data to your dataset.



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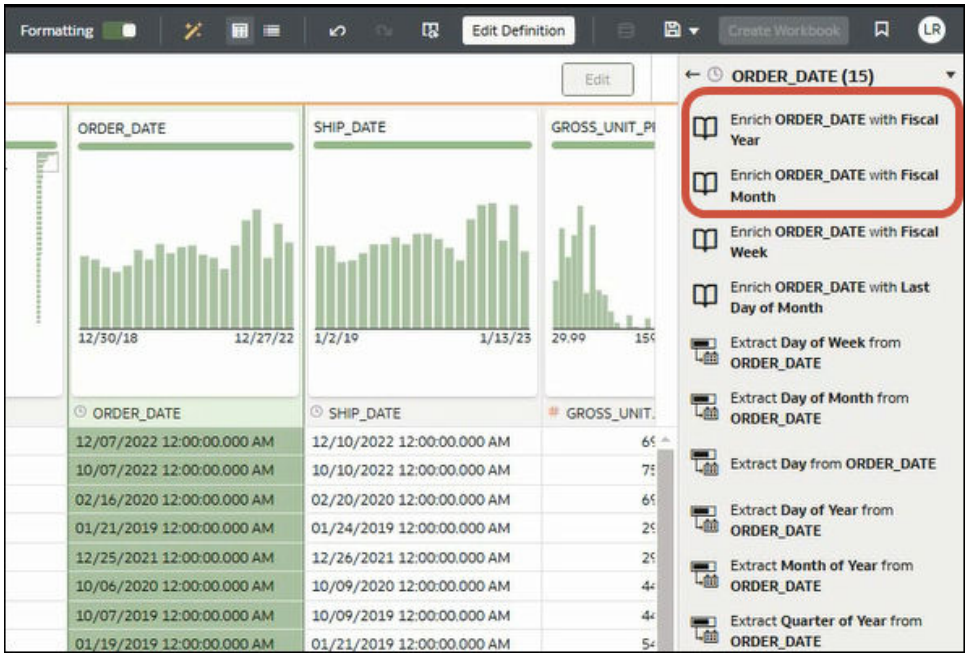
A1 | Date

	A	B	C	D	E	F
1	Date	Fiscal Year	Fiscal Qtr	Fiscal Month	Fiscal Week	Last Day of Month
2	01/01/2015	2015	2015-Q3	2015-01	2015 Week 01	01/31/2015
3	01/02/2015	2015	2015-Q3	2015-01	2015 Week 01	01/31/2015
4	01/03/2015	2015	2015-Q3	2015-01	2015 Week 01	01/31/2015
5	01/04/2015	2015	2015-Q3	2015-01	2015 Week 01	01/31/2015
6	01/05/2015	2015	2015-Q3	2015-01	2015 Week 02	01/31/2015
7	01/06/2015	2015	2015-Q3	2015-01	2015 Week 02	01/31/2015
8	01/07/2015	2015	2015-Q3	2015-01	2015 Week 02	01/31/2015
9	01/08/2015	2015	2015-Q3	2015-01	2015 Week 02	01/31/2015
10	01/09/2015	2015	2015-Q3	2015-01	2015 Week 02	01/31/2015
11	01/10/2015	2015	2015-Q3	2015-01	2015 Week 02	01/31/2015
12	01/11/2015	2015	2015-Q3	2015-01	2015 Week 02	01/31/2015
13	01/12/2015	2015	2015-Q3	2015-01	2015 Week 03	01/31/2015
14	01/13/2015	2015	2015-Q3	2015-01	2015 Week 03	01/31/2015
15	01/14/2015	2015	2015-Q3	2015-01	2015 Week 03	01/31/2015
16	01/15/2015	2015	2015-Q3	2015-01	2015 Week 03	01/31/2015
17	01/16/2015	2015	2015-Q3	2015-01	2015 Week 03	01/31/2015
18	01/17/2015	2015	2015-Q3	2015-01	2015 Week 03	01/31/2015
19	01/18/2015	2015	2015-Q3	2015-01	2015 Week 03	01/31/2015
20	01/19/2015	2015	2015-Q3	2015-01	2015 Week 04	01/31/2015
21	01/20/2015	2015	2015-Q3	2015-01	2015 Week 04	01/31/2015
22	01/21/2015	2015	2015-Q3	2015-01	2015 Week 04	01/31/2015
23	01/22/2015	2015	2015-Q3	2015-01	2015 Week 04	01/31/2015
24	01/23/2015	2015	2015-Q3	2015-01	2015 Week 04	01/31/2015

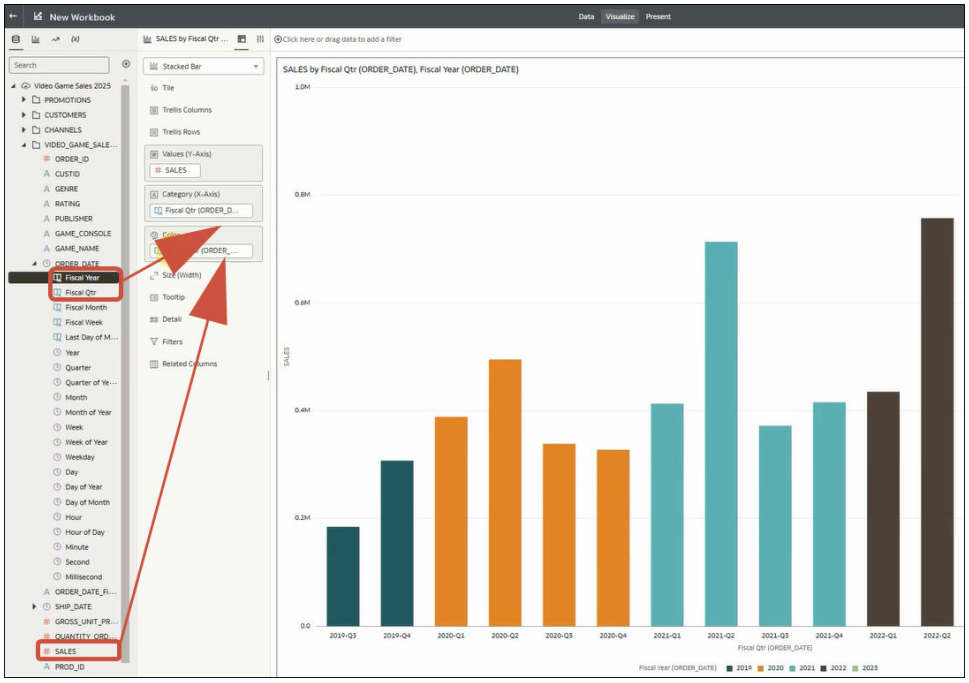


Enrich ORDER_DATE WITH Fiscal YearEnrich ORDER_DATE with Fiscal Month

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Fiscal YearFiscal QtrSalesNoteFiscal YearFiscal QtrORDER_DATE



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5

Create Datasets Using Data Flows

Use data flows to combine, organize, and integrate data into datasets.

Video

Use data flows to manipulate your data visually without requiring manual coding skills.

Topics:

- About Data Flows
- Working in the Data Flow Designer
- What Steps Can I Use to Organize and Integrate My Data?
- What is a Sequence?
- Create a Dataset Using a Data Flow
- Create or Update a Dataset Using a Data Flow
- Reuse a Data Flow
- Configure a Data Flow to Read Cached Data
- Configure Incremental Processing in a Data Flow
- Transform Data Using OCI Functions
- Generate or Update a Dataset at a Specific Time
- Change When a Data Flow Processes Data
- Process Data Using a Sequence of Data Flows
- Manage Your Data Flows
- About Sharing Data Flows and Sequences
- Share a Data Flow
- Share a Sequence

About Data Flows

Data flows enable you to organize and integrate your data to produce curated datasets that your users can visualize.

Use data flows to manipulate your data visually without requiring manual coding skills.

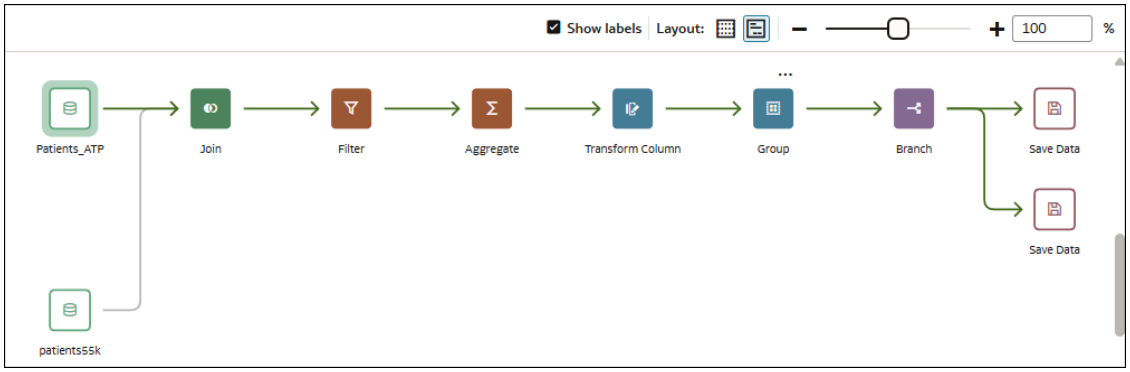
For example, you might use a data flow to:

- Create a dataset.
- Combine data from different sources.
- Aggregate data.
- Train machine learning models or apply a predictive machine learning model to your data.

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- Perform object detection, image classification, or text detection using artificial intelligence via the OCI Vision service.

You create data flows in the data flow design pane.



To build a data flow, you add steps. Each step performs a specific function, for example, add data, join tables, merge columns, or transform data. Use the data flow editor to add and configure your steps. Each step is validated when you add or change it. When you've configured your data flow, you execute it to create or update a dataset.

When you add your own columns or transform data, you can use a wide range of SQL operators (for example, BETWEEN, LIKE, IN), conditional expressions (for example, CASE), and functions (for example, Avg, Median, Percentile).

Updating Datasets Generated by Data Flows

You can rerun data flows to keep your datasets up-to-date.

> **Note**
>
> When you rerun a data flow, any transformations applied directly to the output dataset outside of the data flow are lost. The dataset is recreated from scratch.

Data Flow Limits

If you're processing large amounts of data, note that there're data flow limits. See Data Flow Limits.

Database Support for Data Flows

With data flows you can curate data from datasets and subject areas.

You can execute data flows individually or in a sequence. You can include multiple data sources in a data flow and specify how to join them.

Use the **Add Data** step to add data to a data flow, and use the **Save Data** step to save output data from a data flow.

You can save the output data from a data flow in either a dataset or in one of the supported database types. If you save data to a database, you can transform the data source by overwriting it with data from the data flow. The data source and data flow tables must be in the same database and have the same name. Before you start, create a connection to one of the supported database types.

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> **Note**
>
> You can add data from remote databases connected with Data Gateway. However, you can't save data back to remote databases connected with Data Gateway.

Data Output

You can save output data from data flows to these database types:

- Oracle Autonomous AI Lakehouse
- Oracle Autonomous AI Transaction Processing
- Oracle Database/Oracle AI Database
- Apache Hive
- Hortonworks Hive
- MapR Hive
- Spark

For database version information, see Supported Data Sources.

Data Input

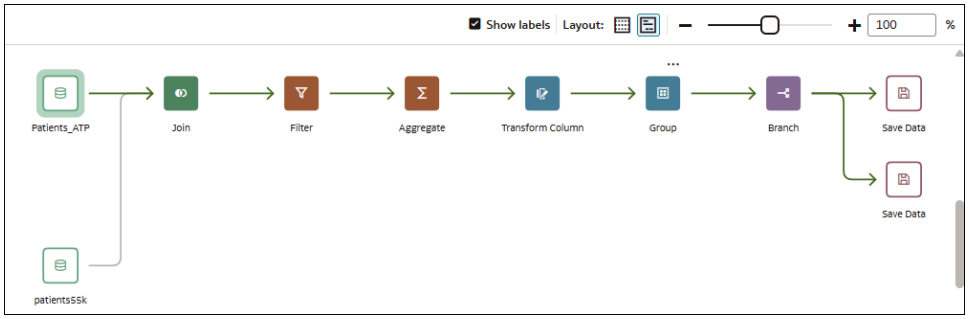
In data flows you can process data from datasets and subject areas. You can't pull data directly from databases - you have to create a dataset from the database table(s) first.

Working in the Data Flow Designer

Data flow designer enables you to curate and transform your data in a graphical design environment.

Working in the data flow designer:

Use data flow designer to organize and configure the data flow steps that transform your data.



Use these features in the data flow designer.

Feature	Icon	Description
Compact layout		Group steps into a smaller view area to reduce scrolling.
Expanded layout		Align input data source steps at the left to improve readbility.

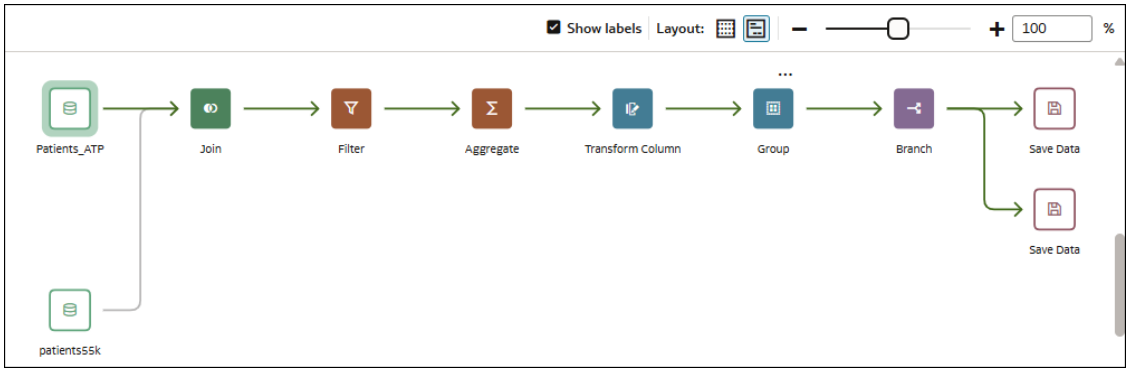
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Feature	Icon	Description
Incomplete join or union		Indicates a data source that isn't joined or unioned. Hover over the blue link icon  to see a suggested join target (dotted line), and click again to complete the join or union (solid line). To remove a connection, right-click the Join step  or Union step  then select **Delete**.
Zoom enhancements		Zoom in and out.

Working in the Data Flow Designer

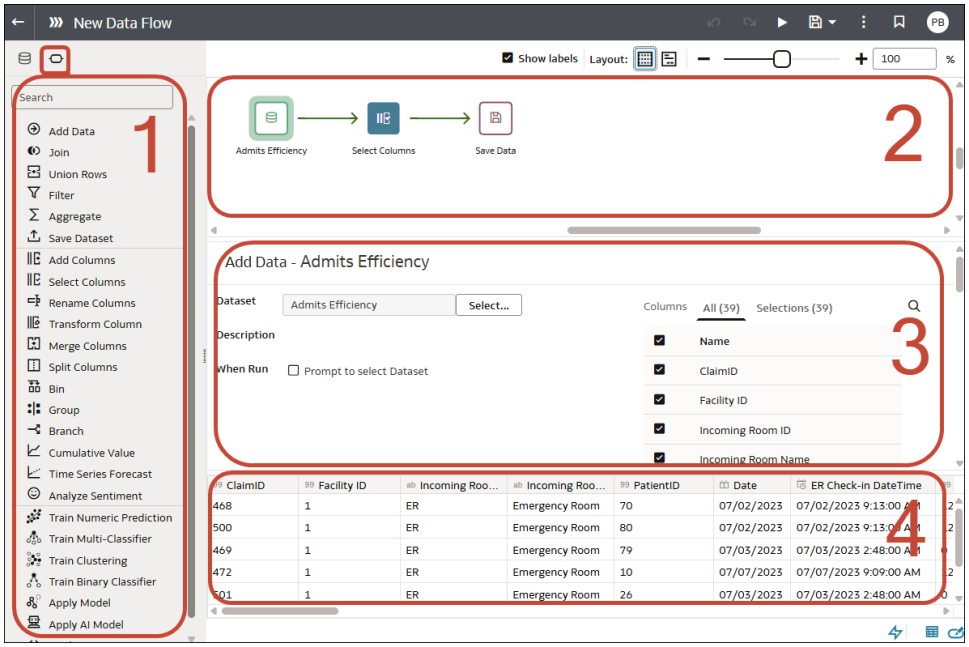
You can prepare your data for analysis by building data flows in the data flow designer. For example, you might transform columns, merge columns, or categorize data into bins. You can also train machine learning models and analyze data by applying trained models to your data. Find out how to use the data flow designer to quickly get started.

The data flow design pane



Areas in the data flow designer

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Area	How to use
1	**Steps selector**. Drag and drop steps from here onto the step editor pane to build your data flow.
2	**Dataflow design pane**. View and edit your data flow design and rearrange steps.
3	**Step configure pane**. Configure the settings for the step you have selected in the dataflow design pane.
4	**Data preview pane**. View a sample of your data, and review the effect of your steps on your data.

Working in the data flow designer:

Feature	Icon	What it does
Compact layout		Group steps into a smaller view area to reduce scrolling.
Data		Display the data pane, where you can drag and drop data columns onto the designer pane.
Data Flow Steps		Display the steps pane, from where you can drag and drop steps onto the designer pane.
Data Preview		Hide or display the Preview data columns pane. The preview updates automatically when you make changes to the data flow (configure this using **Auto apply**).
Expanded layout		Aligns input data source steps at the left to improve readbility.
Incomplete join or union		Indicates a data source that isn't joined or unioned, and displays a suggested join target when you hover-over.
Run data flow		Execute (known as 'run') the data flow.

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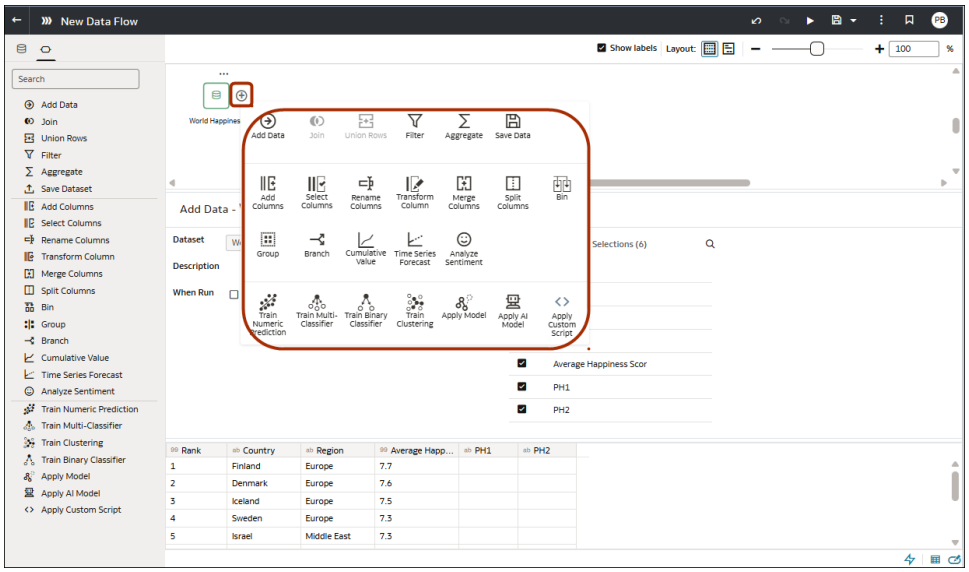
Feature	Icon	What it does
Show available functions /hide functions		Display or hide the expression pick list in the step configure pane for applicable steps (for example, "Add Columns" or "Transform Column").
Step Editor		Hides or displays the Step editor pane.
Toggle auto-refresh		Turn automatic refresh of preview data on or off in the data preview pane.
Zoom enhancements		Zoom in and out in the dataflow design pane.

What Steps Can I Use to Organize and Integrate My Data?

Use these steps in data flows to organize, integrate, and transform your data. For example, you might merge data sources, aggregate data, or perform geo-spatial analysis.

Steps enable you to transform your data visually without requiring coding skills.

Use the data flow editor to add steps to your data flows.



Add Columns

Add custom columns to your target dataset. For example, you might calculate the value of your stock by multiplying the number of units in a `UNITS` column by the sale price in a `RETAIL_PRICE` column (that is, `UNITS` * `RETAIL_PRICE`).

Add Data

Add data sources to your data flow. For example, if you're merging two datasets, you add both datasets to your data flow. See Database Support for Data Flows.

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Aggregate

Create group totals, count records, and concatenate values. For example, sum, count, sum, listagg. See Aggregate Functions.

Analyze Sentiment

Detect sentiment for a given text column (English only). For example, you might analyze customer feedback to determine whether it's positive or negative. Sentiment analysis evaluates text based on words and phrases that indicate a positive, neutral, or negative emotion. Based on the outcome of the analysis, a new column contains Positive, Neutral, or Negative.

Apply AI Model

Analyze data using an artificial intelligence model. For example, you might perform object detection, image classification, or text detection using a model created in the OCI Vision service. See Use Oracle Cloud Infrastructure Vision Models in Oracle Analytics. You can also perform language analysis such as sentiment analysis and language detection using models created in OCI Language Service.

Apply Model

Analyze data by applying a machine learning model from Oracle Machine Learning or OCI Data Science. For example, you might have created a classification model to predict whether emails are spam or not spam. See Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset.

Apply Custom Script

Transform your data using a function, such as one defined in Oracle Cloud Infrastructure (OCI). For example, you might use a function to convert English text into Spanish or German. See Transform Data Using OCI Functions.

AutoML

Use Oracle Autonomous AI Lakehouse's AutoML capability to recommend and train a predictive model for you. The AutoML step analyzes your data, calculates the best algorithm to use, and registers a prediction model in Oracle Analytics. The analytics are computed in the database, not in Oracle Analytics. This step is available in the step selector when you're connected to a dataset based on Oracle Autonomous AI Lakehouse.

See Train a Predictive Model Using AutoML in Oracle Autonomous AI Lakehouse.

 Tutorial

Bin

Assign data values into categories, such as high, low, or medium. For example, you might categorize values for `RISK` into three bins for low, medium, and high.

Branch

Creates multiple outputs from a data flow. For example, if you have sales transactions data based on country, you might save data for United States in the first branch and data for Canada in the second branch.

Cumulative Value

Calculate cumulative totals such as moving aggregate or running aggregate.

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Database Analytics

Perform advanced analysis and data mining analysis. For example, you can detect anomalies, cluster data, sample data, and perform affinity analysis. This step is available in the step selector when you're connected to a dataset based on Oracle database/Oracle AI Database or Oracle Autonomous AI Lakehouse. The analytics are computed in the database, not in Oracle Analytics. See Database Analytics Functions.

Filter

Select only the data that you're interested in. For example, you might create a filter to limit sales revenue data to the years 2025 through 2026.

Graph Analytics

Perform geo-spatial analysis, such as calculating the distance or the number of hops between two vertices. This step is available in the step selector when you're connected to a dataset based on Oracle databaseOracle AI Database or Oracle Autonomous AI Lakehouse. The analytics are computed in the database, not in Oracle Analytics. See Graph Analytics Functions.

Group

Categorize non-numeric data into groups that you define. For example, you might a create group named `Technology` for orders in `Communication` and `Digital` lines of business, and create a group named `Entertainment` for orders in `Games` and `Stream` lines of business.

Join

Combine data from multiple data sources using a database join based on a common column. For example, you might join an `Orders` dataset to a `Customer_orders` dataset using a customer ID field.

Merge

Combine multiple columns into a single column. For example, you might merge the street address, street name, state, and ZIP code columns into one column.

Rename Columns

Change the name of a column to more meaningful. For example, you might change CELL to Contact Cell Number.

Reorder Columns

Change the ordering of columns in the output dataset. For example, you might want to order columns alphabetically based on column name, or order columns based on data type (character, integer, and so on).

Save Data

Specify where to save the data generated by the data flow. You can save the data in a dataset in Oracle Analytics or in a database. You can also specify runtime parameters, or change the default dataset name, and add your own descriptions for output columns. See Database Support for Data Flows.

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Select Columns

Specify which columns to include or exclude in your data flow (the default is to include all data columns).

Split Columns

Extract data from within columns. For example, if a column contains `001011Black`, you might split this data into two separate columns, `001011` and `Black`.

Time Series Forecast

Calculate forecasted values based on historical data. A forecast takes a time column and a target column from a given dataset and calculates forecasted values for the target column.

Train <model type>

Train machine learning models using algorithms for numeric prediction, multi-classification, binary-classification and clustering. See Data Flow Steps for Training Machine Learning Models.

When you've trained a machine learning model, apply it to your data using the **Apply Model** step.

Transform Column

Change the format, structure, or values of data. For example, you might convert text to uppercase, trim leading and trailing spaces from data, or calculate a percentage increase in value.

Union Rows

Merge the rows of two data sources (known as a UNION command in SQL terminology). You can match columns by order or name.

Aggregate Functions

Aggregate functions enable you to calculate summaries of numerical data, and also concatenate string values.

Use the **Aggregate** step in the data flow editor to access various types of summary that you can use to prepare your data.

Function	Description
Average	Calculate the average of values in the column.
Count	Count the number of rows in the column.
Count Distinct	Count the number of unique rows in the column.
List Aggregate	Concatentate all values in the column into one string. For example, if the column contains `New York, New York, Boston, Salem, Buffalo, Buffalo, Albany`, then the generated string is `"New York, New York, Boston, Salem, Buffalo, Buffalo, Albany"`. See .Tips on Using LISTAGG in String Functions.

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Function	Description
List Aggregate Distinct	Concatentate unique values in the column into one string. In other words, ignore duplicate values. For example, if the column contains `New York, New York, Boston, Salem, Buffalo, Buffalo, Albany`, then the generated string is `"New York, Boston, Salem, Buffalo"`. See .Tips on Using LISTAGG in String Functions.
Maximum	Calculate the maximum value in the column.
Minimum	Calculate the minimum value in the column.
Sum	Calculate the sum of values in the column.

Database Analytics Functions

Database analytics functions enable you to perform advanced analysis and data mining analysis, for example, detecting anomalies, clustering data, sampling data, and affinity analysis. To use analytics functions, connect to Oracle Database/Oracle AI Database or Oracle Autonomous AI Database (the analytics are computed in the database, not in Oracle Analytics).

LiveLabs Sprint

To display the **Database Analytics** step in the data flow editor, you must connect to Oracle Database/Oracle AI Database or Oracle Autonomous AI Database.

Function Types	Description
Dynamic Anomaly Detection	Detect anomalies in your input data without a pre-defined model. For example, you might want to highlight unusual financial transactions. When you deploy this function with large datasets, configure the partition columns to maximize performance.
Dynamic Clustering	Cluster your input data without a pre-defined model. For example, you might want to characterize and discover customer segments for marketing purposes. When you deploy this function with large datasets, configure the partition columns to maximize performance.
Frequent Item Set	Discover relationships in your data by identifying sets of items that often appear together. This data mining technique is also known as association rule learning, affinity analysis, or in the retail industry as market basket analysis. If you use frequent item set as a market basket analysis tool, you might find that customers who buy shampoo also buy hair conditioner. This operation is resource intensive and its performance depends on several factors, such as input dataset volume, cardinality of transaction id, and cardinality of Item value column. To avoid potential performance degradation on the database, try with a higher value of minimum support percent (default is 0.25) and gradually reduce it to accommodate more itemsets in your output.
Sampling Data	Selects a random sample percentage of data from a table. You simply specify the percentage of data you want to sample. For example, you might want to randomly sample ten percent of your data.

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Function Types	Description
Text Tokenization	Analyze textual data by breaking it down into distinct words and counting the occurrences of each word. When you run your data flow, Oracle Analytics creates a table in the database named DR$*IndexName*$I, which contains the token text and the token count related details. Use the DR$*IndexName*$I table to create a dataset. • Under **Outputs**, use the **Create** option next to each field to select the columns to index. • Under **Parameters**, then **Text Column**, click **Select a column** to select the field you'd like to break down into separate words. Use the **Reference Column<number>** options to include one or more columns in the output dataset. Use the **Use Special Language Lexer** option to to select specific languages such as Chinese, Danish, Dutch, English, Finnish, German, Norwegian, Japanese, Korean and Swedish for special lexers. See Oracle database documentation for more details on supported languages. The database connection that you use for your data flow requires special database privileges. Check with your administrator that: • Your database account has `grant EXECUTE on CTXSYS.CTX_DDL to schema name`. • You use an Oracle Analytics connection with the same username as the schema where the source table exists. This is best practice to avoid access privilege issues when the data flow runs. • The database table column you're analyzing has no existing CONTEXT index. If there's an existing CONTEXT index on the database table that you're analyzing, remove that index before you run the text tokenization data flow.
Time Series	Time Series is a data mining technique that forecasts target value based on a known history of target values. The input to time series analysis is a sequence of target values. It provides estimates of the target value for each period of a time window that can include up to 30 periods beyond the historical data. The model also computes various statistics that measure the goodness of fit to historical data. These statistics are available as an additional output dataset via a parameter setting. **Note**: The Time Series algorithm is only available from Oracle database version 18c onwards.
Un-pivoting Data	Transpose data that's stored in columns into row format. For example, you might want to transpose multiple columns showing a revenue metric value for each year to a single revenue column with multiple value rows for the year dimension. You simply select the metric columns to transpose and specify a name for the new column.You get a new dataset with fewer columns and more rows.

Note: To use analytic functions, make sure that the administrator has enabled analytics functions (see Console, Advanced System Settings, Performance and Compatibility, Enable Database Analytics Node in Data Flows).

Graph Analytics Functions

Graph analytics enable you to perform geo-spatial analysis. For example, you might calculate the distance or the number of hops between two vertices. To use graph analytics, connect to Oracle Database/Oracle AI Database or Oracle Autonomous AI Lakehouse (the analytics are computed in the database, not in Oracle Analytics).

 LiveLabs Sprint

To display the **Graph Analytics** step in the data flow editor, you must connect to Oracle Database/Oracle AI Database or Oracle Autonomous AI Lakehouse.

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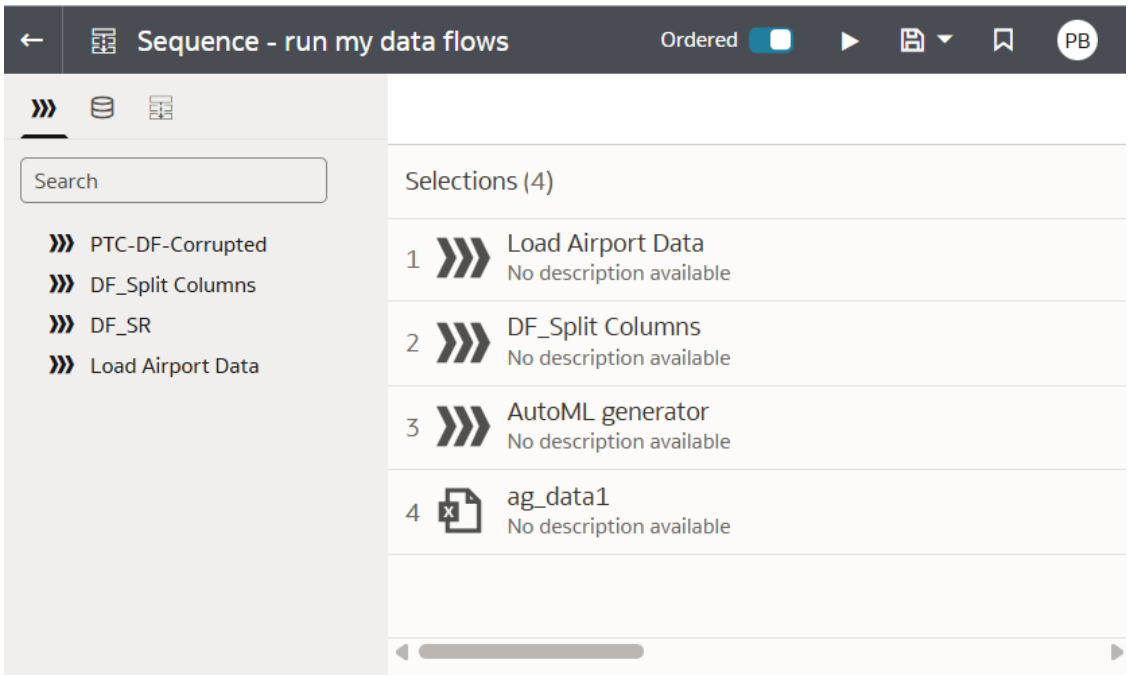
Function Type	Description
Clustering	Finds connected components or clusters in a graph.
Node Ranking	Measure the importance of the nodes in a graph.
Shortest Path	Find the shortest path between two vertices in a graph.
Sub Graph	Find all nodes within a specified number (n) of hops of a given node.

What is a Sequence?

A sequence is a collection of data flows, datasets, or other sequences that you process together.

Sequences enable you to run multiple data flows, datasets, or sequences, as a single transaction. If one of the data flows fails, the entire sequence is rolled back.

This sequence runs three data flows and one dataset.



Create a Dataset Using a Data Flow

Use a data flow to curate data and create a dataset. For example, you might merge two datasets, cleanse the data, and output the results to a new dataset.

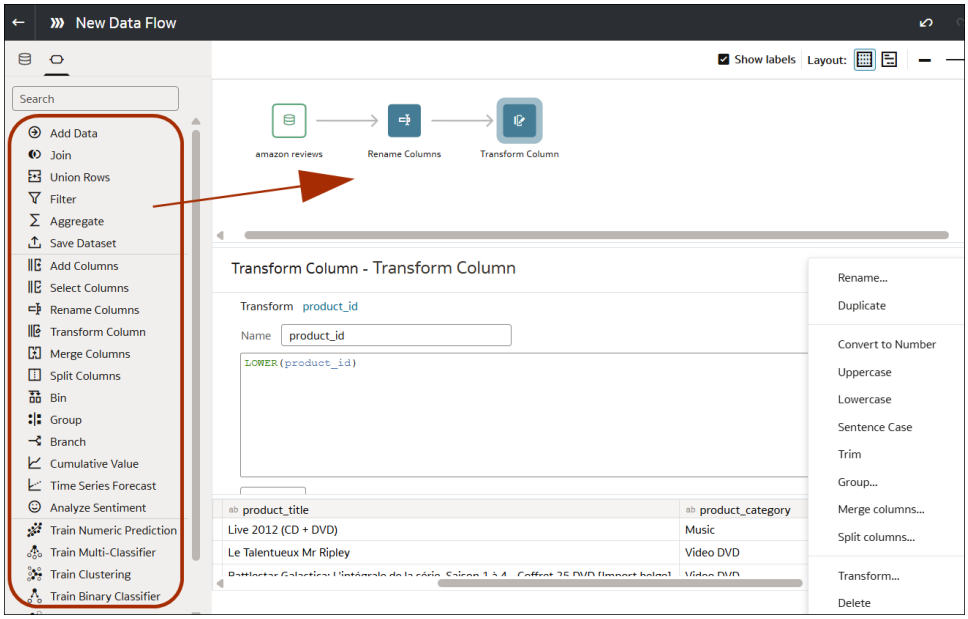
1. On your home page, click **Create** and select **Data Flow**.
2. In the Add Data dialog, select a dataset or subject area, then click **Add**.

   You can add more data sources at any time by clicking **Add Step (+)**, then clicking **Add Data**.

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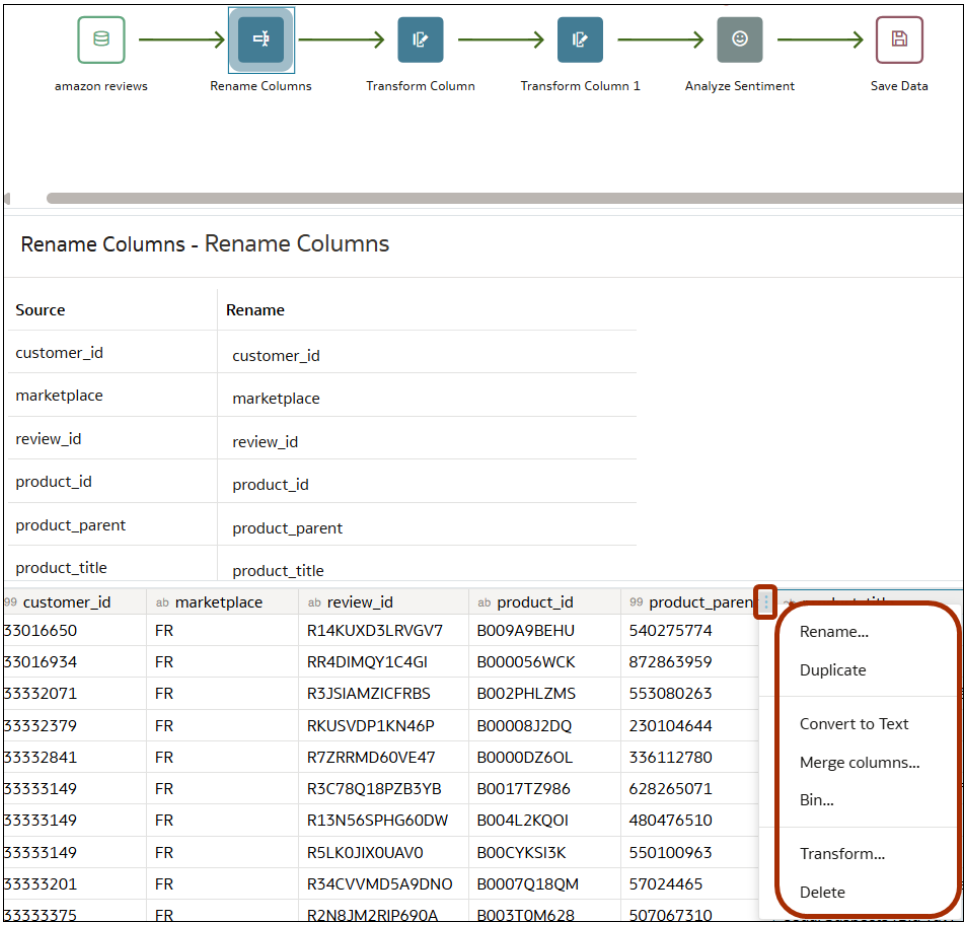
3. Optional: In the Add Data pane, include or exclude columns, or the position of columns. For example, you might want to include Zipcode and position it as the first column in the dataset.
4. Build your data flow:

   For each function that you want to perform, double-click the step name in the Dataflow Steps Pane, then specify the properties in the Step editor pane.



You can also edit your steps using **Options** in the Column headers in the Data Preview pane. For example, you can rename, reformat, merge, or transform columns.

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5. Add a **Save Data** step to the end of your data flow, and change the default dataset name if required.

   The output dataset is saved to the same catalog location as the data flow.

   You can optionally adjust the **Treat As** and **Default Aggregation** column settings, and add column descriptions.

6. Save your data flow.

   You can start processing your data immediately by clicking **Run Data Flow**, or later by locating the dataflow in the Catalog, and using the **Run** right-click option. You can access the generated dataset in the Catalog in the same folder as the data flow.

Create or Update a Dataset Using a Data Flow

Run (that is, execute) a data flow to create or update a dataset.

> **Note**
>
> When you rerun a data flow, any transformations applied directly to the output dataset outside of the data flow are lost. The dataset is recreated from scratch.

1. On your home page, click **Navigator**, then **Data**, then **Data Flows**.

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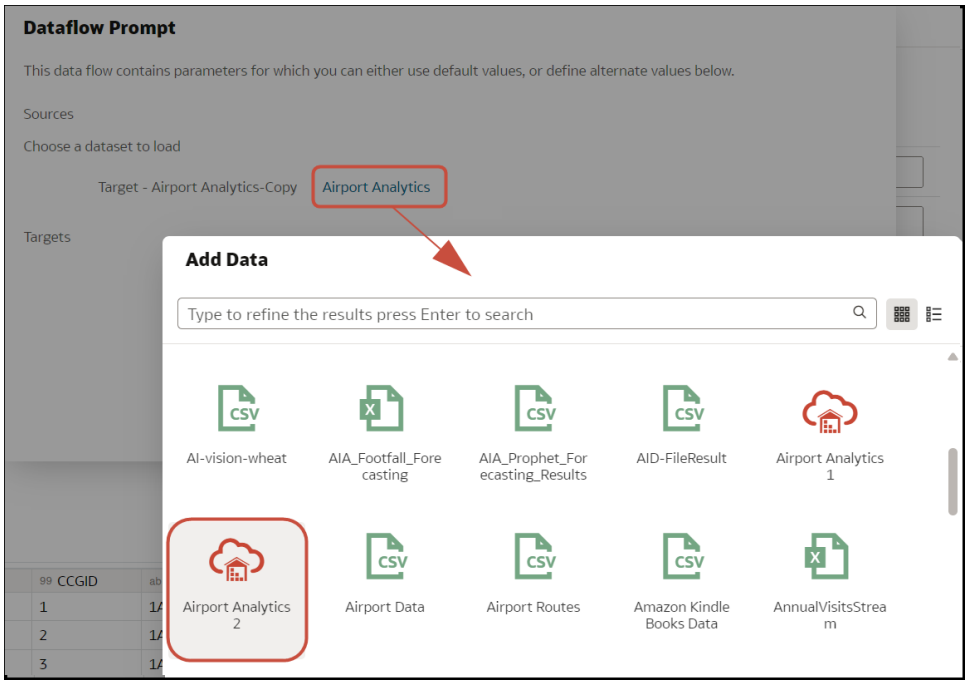
2. Start a data flow.
   - To start a data flow immediately, right-click a data flow and click **Run**.
   - To schedule a data flow to execute at a particular date and time, right-click a data flow in the Catalog, click **New Schedule**, then click **New**, and use the Data Flow dialog to specify a date and time and repeat cycle.

   You can also run a data flow from the data flow editor by clicking **Run Data Flow**.

Reuse a Data Flow

You can configure a data flow to prompt users at runtime to specify a data source or data target, which enables you to reuse the dataflow with different data sources and targets.

In this example, a data flow is configured to prompt the user to specify an input dataset at runtime. At the Dataflow Prompt dialog, the user clicks the prompt *Airport Analytics* to display the Add Data dialog, where they can select a dataset to process.



1. On your home page, click **Navigator**, then **Data**, then **Data Flows**.
2. Open your data flow.
3. To prompt the user to specify an input dataset at runtime:
   - Select the Add Data - <*Name*> step (usually the first node in the data flow), and in the step editor pane select the **When Run Prompt to specify Dataset** option. Then specify a **Prompt** to explain to the user what to do.
4. To prompt the user to specify an output dataset or cube at runtime:
   - For datasets, select the Add Data - <*Name*> step (usually the first node in the data flow), and in the step editor pane select the **When Run Prompt to specify Dataset** option. Then specify a **Prompt** to explain to the user what to do at runtime.

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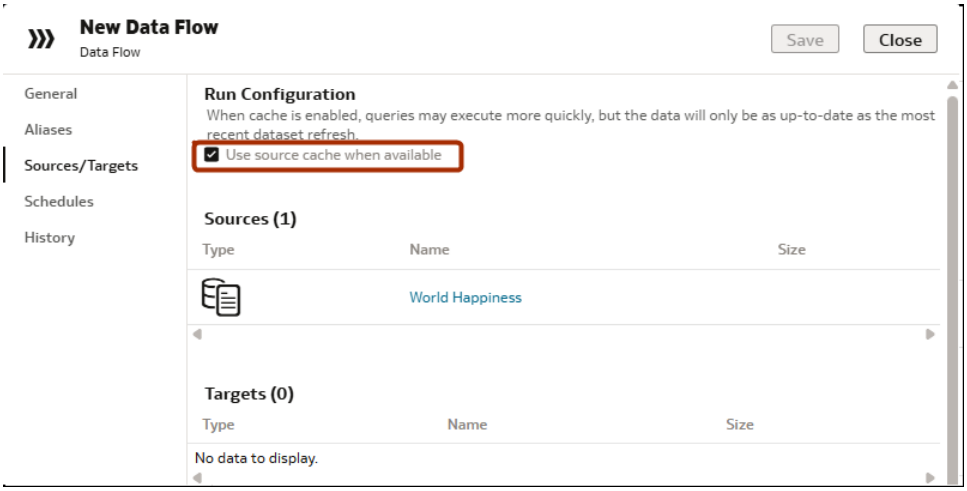
- For Essbase cubes, select the Create Essbase Cube step, and in the step editor pane select the **When Run Prompt to specify Dataset** option. Then provide the **Cube**, **Application**, and **Prompt** values to use at runtime.

Configure a Data Flow to Read Cached Data

You can configure a data flow to read cached data rather than live data, which improves performance and efficiency.

You might run your data flows against cached datasets if your source system is slow or resource-intensive, you want to limit direct queries, or if you need faster query performance. Caching is also suitable for incrementally reloaded datasets. Data flows are configured to read cached data by default. See Specify Whether a Dataset Table Is Cached or Live.

1. On your home page, click **Navigator**, then **Data**, then **Data Flows**.
2. Hover over the data flow, and click **Actions**, then click **Inspect**.
3. Click the **Sources/Targets** tab, then under **Run Configuration** select **Use source cache when available**.



4. Click **Save**.

Configure Incremental Processing in a Data Flow

Configure incremental processing to load only new or updated records from a database. You can deploy incremental processing if your data is sourced from a database (using a database connection).

Incremental processing keeps your data up-to-date, providing better quality insights.

Before you start, create a connection to one of the supported databases, for example Oracle, Oracle Autonomous AI Lakehouse, Apache Hive, Hortonworks Hive, or Map R Hive.

1. Specify a new data indicator in the data source. See Specify a New Data Indicator for a Data Source.
2. Configure a data flow for incremental processing. See Configure a Data Flow for Incremental Processing.

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You can now schedule your data flow to load new data regularly.

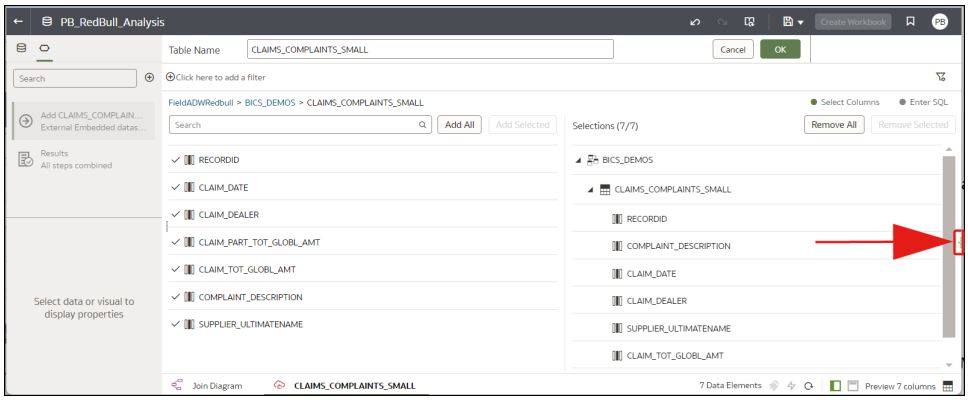
Specify a New Data Indicator for a Data Source

Select the data column to use as the new data indicator in the data source. This indicator determines when new data is detected since the last time the data flow was executed. For example, you might select a timestamp column.

Specifying a New Data Indicator enables you to perform incremental processing when you load data. In other words, each time you load data using a data flow, you only process new data that's been added since the last run.

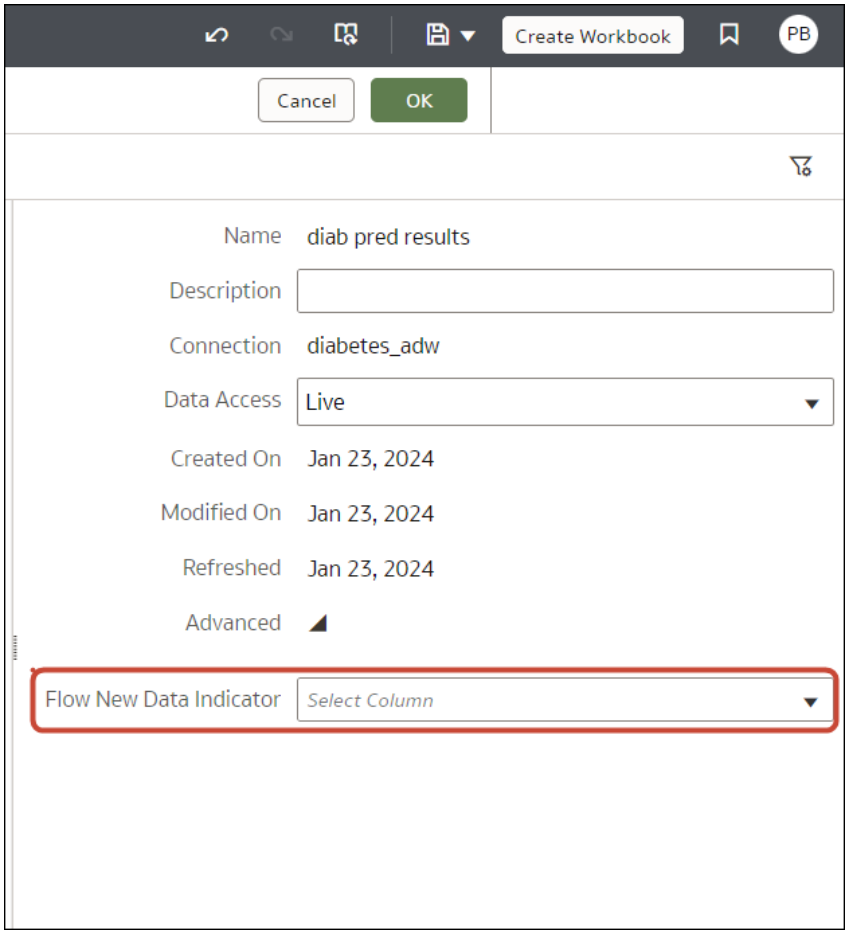
Before you start, create a connection to one of the supported databases, for example Oracle, Oracle Autonomous AI Lakehouse, Apache Hive, Hortonworks Hive, or Map R Hive.

1. On your home page, click **Navigator**, then click **Data**.
2. Hover over a dataset, click **Actions**, then select **Open**.
3. In the **Join Diagram**, double-click the table that includes the incremental identifier you'd like to use.
4. Click **Edit Definition**.
5. If the data access panel isn't displayed, go to the center of the right edge of the window to locate the **Expand** option, then click **Expand**.



You can now view the caching options and the **Flow New Data Indicator** field under **Advanced**.

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6. In the **Flow New Data Indicator** field, select a column to detect when new data is added.
7. Click **OK**.

Configure a Data Flow for Incremental Processing

Apply incremental processing in a data flow to load only new or updated records from a database.

Applying incremental processing in a data flow enables you to load only new data rather than performing a full load each time, which is inefficient and costly. In other words, each time you load data using a data flow, you only process new data that's been added since the last run.

Before you start, create a connection to one of the supported databases, for example Oracle, Oracle Autonomous AI Lakehouse, Apache Hive, Hortonworks Hive, or Map R Hive. Then, configure a new data indicator for that database. See Specify a New Data Indicator for a Data Source.

1. Create or open the data flow in which you want to apply incremental processing.
2. In the Data Flow editor select the **Save Data** step to display the Step editor pane.
3. In the **Dataset** field, specify the name of the input dataset specified in the **Add Data** step.
4. At the **Save data to** option select **Database Connection**.
5. Click **Select Connection** and select a connection to one of the supported target databases.

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6. In the **Table** field, specify the name of the target table that you're writing to.
7. In the **When run** option, select **Add new data to existing data**.
8. Click **Save**.

Transform Data Using OCI Functions

Use an OCI function in a data flow to transform data in Oracle Analytics. For example, you might use a function to convert English text into Spanish or German.

Use OCI functions to leverage the power of your OCI resources in Oracle Analytics.

Before you start, you need to make the OCI functions available in Oracle Analytics. See Integrate Oracle Analytics with Oracle Cloud Infrastructure Functions.

1. On your home page, click **Create** then click **Data Flow**.
2. In the Add Dataset dialog, select a dataset or subject area to transform, then click **Add**.
3. Optional: In the Add Data pane, configure your data. For example, include or exclude columns, or rename columns.
4. Click **Add a step (+)**, then click **Apply Custom Script** to display the Select Custom Script dialog.
5. Select a function then click **OK** to display the Apply Custom Script dialog.
6. Use the **Outputs** and **Parameters** options and the inline guidance to configure your function.

   For example, if the function counts words in a text column, you might use **Output** to specify the name of the generated column that will contain the word count, and **Parameters** to select the name of the text column that you want to analyze.
7. Add a **Save Data** step to the end of your data flow and specify the name of the output dataset or database table.
8. Save your data flow.

   You can start processing your data immediately by clicking **Run Data Flow**, or later by locating the dataflow in the Catalog, and using the **Run** right-click option. You can access the generated dataset in the Catalog in the same folder as the data flow.

Generate or Update a Dataset at a Specific Time

You can schedule data flows to generate or update datasets once or regularly at a specific time.

Schedule data updates to keep your data up-to-date, providing better quality insights.

1. On your home page, click **Navigator**  , then click **Data**, then click **Data Flows**.
2. Hover over a data flow, click **Actions**, then click **New schedule**.
3. In the Schedule dialog, specify the name, start date, start time, and repeat details.
   - **Repeat** - If you choose a weekly, monthly, or yearly repeat, the data flow executes on the next day and time that matches your selections, not on the date specified in the **Start** field. For example, if you create a schedule to run a data flow regularly on the first day of each month starting on 8/15/25, the first execution will start on 9/01/25.
4. If you've added parameters to the data flow, in the Parameters section, specify other values.

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- In the Source field, click the source dataset. In the Add Dataset dialog, select a new dataset and click **Add**.
- In the Targets field, change the dataset name.

5. Click **OK**.

Change When a Data Flow Processes Data

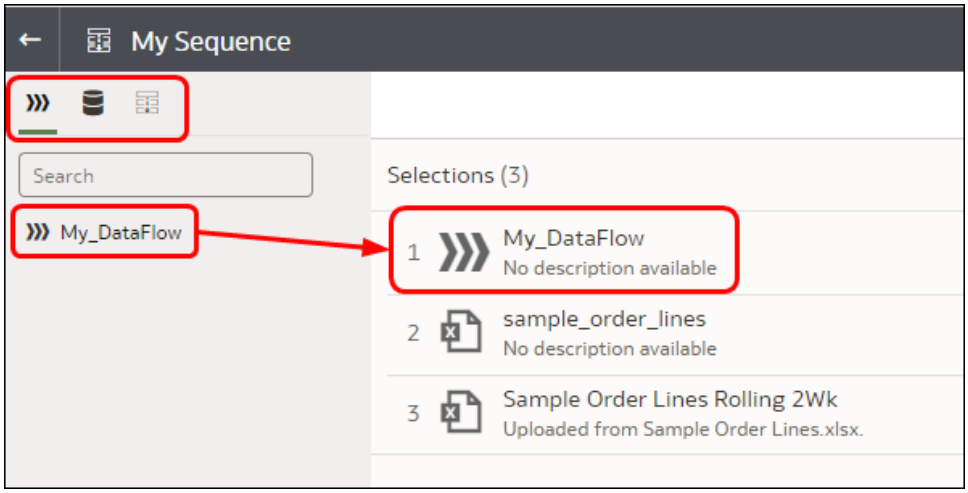
You can change when your scheduled data flows process your data.

1. On your home page, click **Navigator**, then click **Data**, then click **Data Flows**.
2. Hover over the data flow for which you've added a scheduled task.
3. Click **Actions**, then select **Inspect**.
4. In the data flow inspector dialog, click the **Schedules** tab, then select a scheduled task.
5. Check and modify the properties such as name, start date, start time, and frequency.
6. Click **Save**, then click **Close**.

Process Data Using a Sequence of Data Flows

A sequence is collection of data flows, datasets, or other sequences that you process together. They're useful when you want to run multiple data flows, datasets, or sequences, as a single transaction.

1. On your home page, click **Create** and select **Sequence**.
2. Click the default sequence name "New Sequence" top left, and change to a meaningful name, for example "My Sequence".
3. Add the items you want to process using the **Data Flows**, **Datasets**, and **Sequences** tabs to show items for selection.



- To add data flows, click **Data Flows**, then drag and drop one or more data flows to the **Selections** pane.
- To add datasets, click **Datasets**, then drag and drop one or more datasets to the **Selections** pane.

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- To add other sequences, click **Sequences**, then drag and drop one or more sequences to the **Selections** pane.

4. Arrange the items in the sequence.
   - If you want to override the default order in which Oracle Analytics processes items, select the **Ordered** option and drag and drop items to change the order (numbered 1,2,3 and so on).
     If the **Ordered** option is deselected (the default setting), this triggers auto-dependency detection. Oracle Analytics takes into consideration inputs and outputs for each sequence item to determine the execution order, and executes items in parallel where necessary.
   - To remove items, hover over an item and click the ellipsis at the right-hand side, then click **Remove**.
5. Click **Save**.
6. Start the sequence.
   - To start the sequence immediately, click **Execute Sequence** in the sequence editor.
   - To start the sequence later, from your home page, click **Navigator**, then click **Data**, then **Sequence**. Right-click a sequence, then click **Run**.
   - To schedule a sequence to execute at a particular date and time, from your home page, click **Navigator**, then click **Data**, then **Sequence**. Right-click a sequence, then click **New Schedule**, then click **New**, and use the Schedule dialog to specify a date and time and repeat cycle.
7. Manage the sequence process.
   - To manage a sequence being processed, from your home page, click **Navigator**, then **Jobs**.
   - To manage scheduled sequences, from your home page, click **Navigator**, then **Jobs**, then **Schedules**.

> **Note**
>
> Sequences don't process copies of a data flow. When a sequence processes a data flow, copies of that data flow are ignored. If this happens, you see updates in the sequence logs accessed via the **History** tab on the Inspect panel.

Manage Your Data Flows

Manage your data flows on the Data Flows page. For example, you might schedule when you process your data, or export a data flow so that you can migrate it to a different Oracle Analytics instance.

Manage your data flows so keep your data up-to-date, giving you better quality insights.

1. On your home page, click **Navigator**, then **Data**, then **Data Flows**.
2. Hover over a data flow, click **Actions**, and use these options:
   - Use **Run** to create or update your data using the data flow.
   - Use **Open/Open in a New Tab** to edit the data flow.

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- Use **New schedule** to create or update your data regularly.
- Use **Inspect** to view general information about the data flow, such as the source and target data, when the flow was last executed, scheduled executions, and execution history. You can also use the **Access** tab to share data flows that you own.
- Use **Export** to export a data flow with its dependent data and credentials as a .DVA file to the download folder of your machine. Use the export and import options to migrate data flows from one system to another or back up your data flows. When you export data flows, you can select what to include in the export file. For example, enable **Include Permissions** to include access permissions so that shared connections continue to work when you import the data flow. To import a data flow that you've downloaded, on the Data Flows page, click **Page Menu**, then click **Import Workbook/ Flow**. Follow the on-screen instructions to select a local .DVA file to import. When you import the data flow, select **Import Permissions (if available)** to include access permissions so that shared connections continue to work.
- Use **Delete** to remove the data flow from your system (there's no undo).

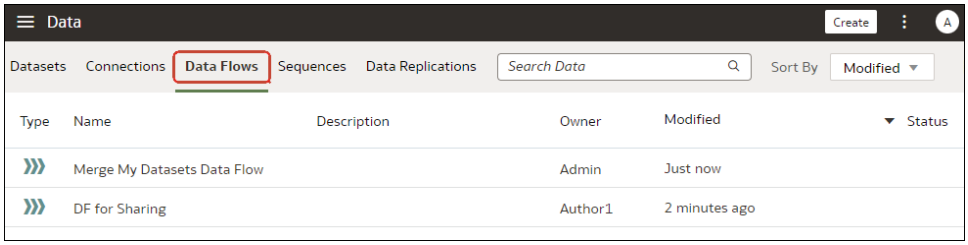
About Sharing Data Flows and Sequences

Users can share data flows and sequences with other Oracle Analytics users, who can then use them to prepare data.

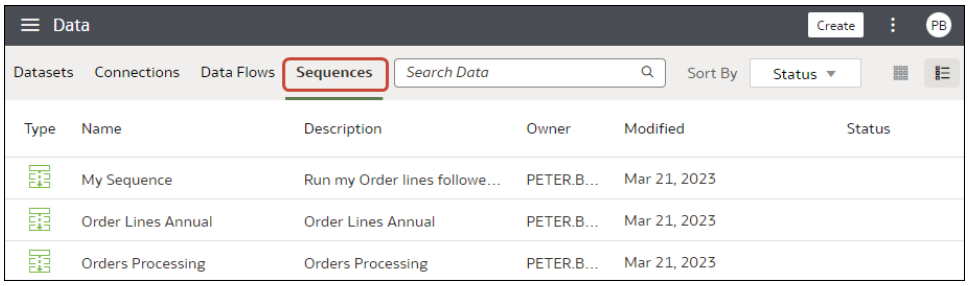
Sharing data flows and sequences enables you to collaborate on data preparation projects and reuse Oracle Analytics assets and resources.

About Sharing Data Flows and Sequences

- If you own a data flow, users that you share the data flow with can see it on the Data Flow tab of their Data page.



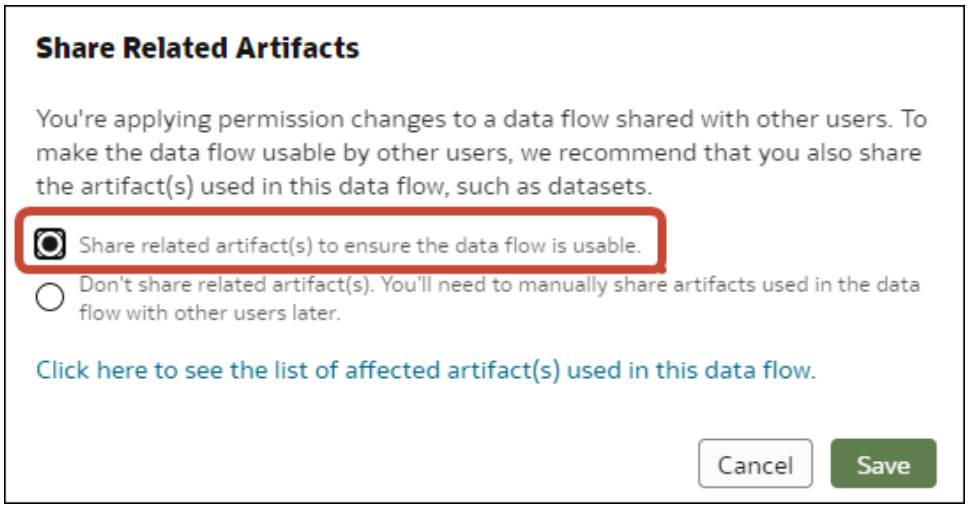
- If you own a sequence, users that you share the sequence with can see it on the Sequences tab of their Data page.



- When you share data flows or sequences, you're given the option to also share datasets and connections (known as artifacts) used in them. If you select **Share related artifact(s) to ensure the data flow is usable**, users that you share with get read-only access to input

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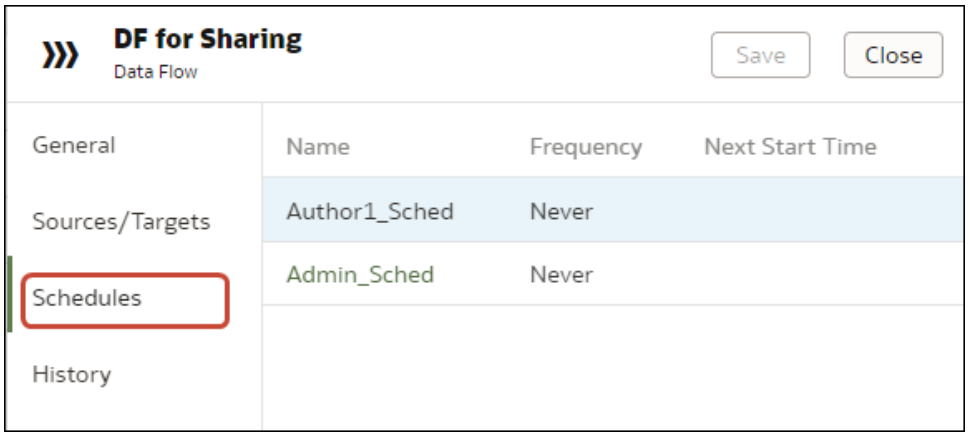
datasets and full-control access to output artifacts, as well as access to other data flow components. If you select **Don't share related artifact(s)**, you have to manually give users or roles read and write access to the data flow components.



- Users who you share data flows or sequences with can't subsequently re-share them with other users, because they don't have the full-control privileges required to share artifacts. In this scenario, you have to manually give users or roles read and write access to input datasets using the Access tab on the Inspect dialog for a dataset.

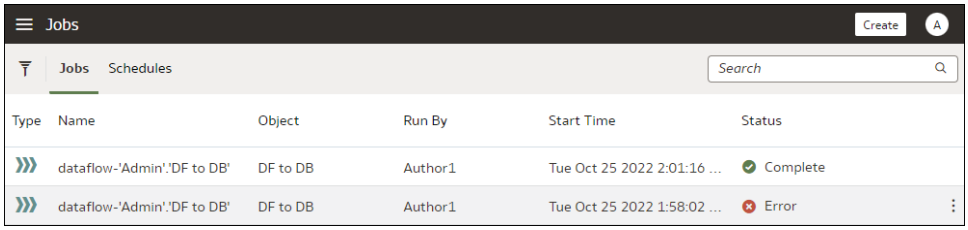
About Scheduling Data Flows and Sequences

- Only the user who creates a schedule can see that schedule in the Inspect dialog. Users with administration permissions can see all schedules in the Jobs page.



- On the Jobs and Schedules tabs in the Jobs page, administrators can see all jobs and schedules. Content authors can only see jobs and schedules if they were the last user to edit that schedule. Scheduled jobs will run as the user who added or last edited the schedule.

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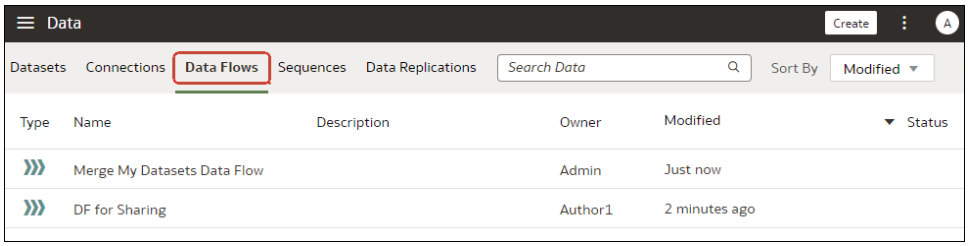


Share a Data Flow

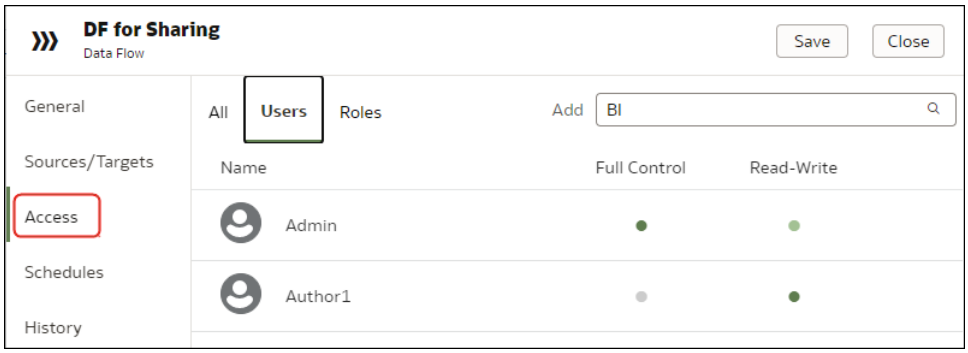
Share a data flow with other Oracle Analytics users so that they can use it to prepare data.

Share data flows to enable other users to collaborate on data preparation projects and reuse Oracle Analytics assets and resources.

1. On your home page, click **Navigator**, then **Data**, then **Data Flows**.

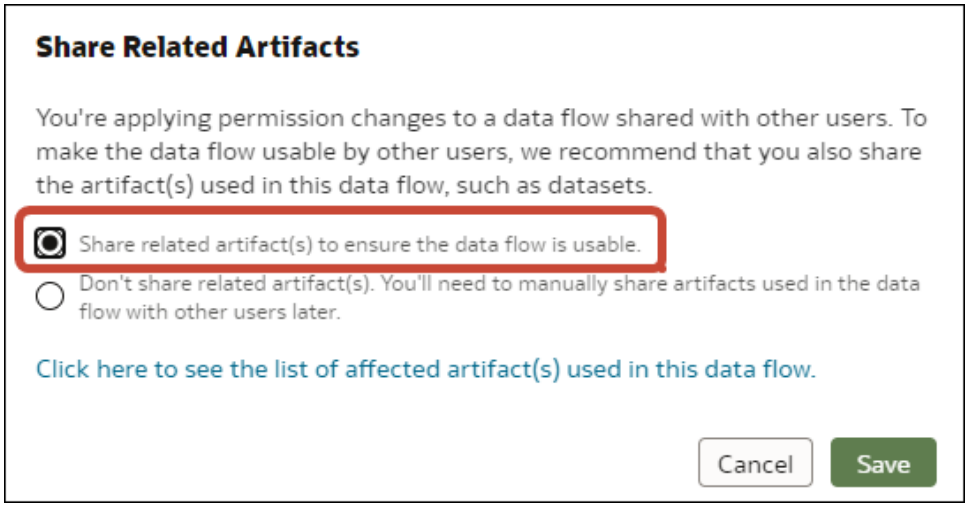


2. Right-click the data flow that you want to share, and click **Inspect**.



3. Click **Access**.
4. To share with another user, click **User**, search for and select the user name, then select either **Full Control** or **Read-Write**.
5. To share with all users with a particular role (BI Content Author), click **Role**, search for and select the role name, then select either **Full Control** or **Read-Write**.
6. Click **Save**.
7. Click **Share related artifact(s) to ensure the data flow is usable**.

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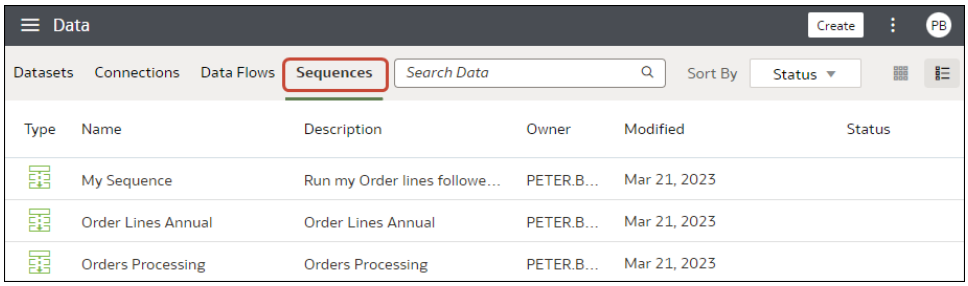
Users with whom you've shared a data flow can access it from the Data Flows page when they next log in. Make sure that users also have access to connections and datasets used by shared data flows.

Share a Sequence

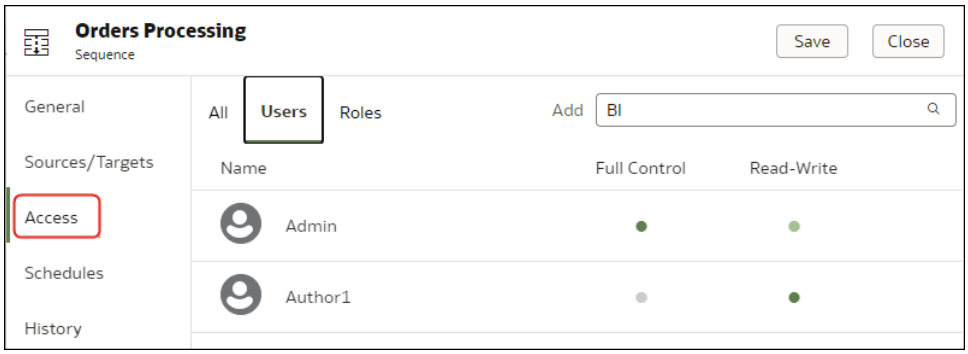
Share a sequence with other Oracle Analytics users so that they can use it to prepare data.

Share sequences to enable other users to collaborate with colleagues and reuse Oracle Analytics assets and resources. See What is a Sequence?.

1. On your home page, click **Navigator**, then **Data**, then **Sequences**.

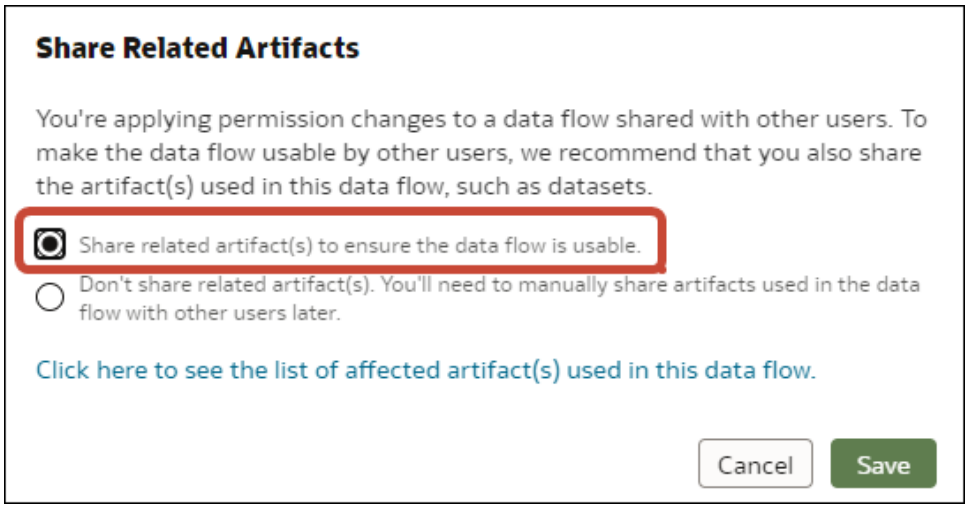


2. Right-click the sequence you want to share, and click **Inspect**.



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3. Click **Access**.
4. To share with another user, click **User**, search for and select the user name, then select either **Full Control** or **Read-Write**.
5. To share with all users with a particular role (BI Content Author), click **Role**, search for and select the role name, then select either **Full Control** or **Read-Write**.
6. Click **Save**.
7. Click **Share related artefact(s) to ensure the sequence is usable**.



Users with whom you've shared a sequence can access it from the Sequences page when they next log in. Make sure that users also have access to data flows, connections, and datasets used by shared sequences.

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6

Manage Datasets

Learn how to manage your datasets in Oracle Analytics.

Topics:

- Dataset Type Icons
- View a List of Datasets and Information About Them
- Reload a Dataset's Data
- Work with Dataset Reload Schedules
- Inspect a Dataset's Properties
- View the Dataset Storage Limit
- Rename a Dataset and Change Its Description
- Copy a Dataset's Object ID
- Certify a Dataset
- View a Dataset's Data Elements
- Make Data Available for Oracle Analytics AI Assistant
- Make Analytics Content Easier to Search
- Add or Update a Dataset's Permissions
- Download a Dataset's Source File
- Duplicate a Dataset
- Delete a Dataset
- Enable Knowledge Enrichments for Datasets

Dataset Type Icons

A dataset's icon helps you identifiy the connection type or file it uses to source its data.

Dataset type icons are displayed in the list of datasets that you created or have been given permission to use. See View a List of Datasets and Information About Them.

Dataset Icon	Description
	Dataset uses two or more database connections. For example, Oracle Database and Oracle Analytics Warehouse.
	Dataset uses one database connection.
	Dataset uses an XLXS or XLS file.
	Dataset uses a CSV or TXT file.
	A local subject area that you can use like a dataset to create a workbook. Local subject areas are located in your instance's Classic home page.

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Dataset Icon	Description
	Dataset uses an Oracle Applications connection type. The Oracle Applications connection type can connect to: • Oracle Fusion Cloud Applications Suite (for example, Oracle Fusion Cloud Financials) • On-premises Oracle BI Enterprise Edition deployments (if patched to an appropriate level) • Another Oracle Analytics service

View a List of Datasets and Information About Them

You can access, browse, sort, or search a list of datasets. From the dataset list, you can choose any available dataset to use in a workbook.

Your permissions determine which datasets are displayed in the list and the actions that you can perform on a dataset (Open, Reload Data, or Download File).

You can use the dataset list to find information about a specific dataset, for example which data source connection it uses, when it was created and last modified, and the name, data type, and aggregation of each dataset column.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Optional: Enter a term in the **Search** field to search the list for a specific dataset.
4. To check a dataset's details, click **Actions** and then click **Inspect**.
5. Optional: Click the General tab to find information about the dataset, such as the connection used to create it and the database type that the dataset gets its data from.
6. Optional: Click the Data Elements tab to find information that can help you decide if the dataset contains the data that you need for your workbook.

Reload a Dataset's Data

Keep your analytics content up-to-date by reloading dataset data when it's been updated.

LiveLabs Sprint

Topics:

- About Reloading a Dataset's Data
- Reload Data from the Workbook Editor
- Reload an Individual Table in a Dataset
- Reload Tables in a Dataset
- Reload a Dataset's Files
- Reload a Dataset's Data Incrementally
- View a Dataset's Reload History
- View and Download Log Files for a Dataset Reload Job

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About Reloading a Dataset's Data

You can reload data in a dataset to keep it up-to-date.

Reloading data ensures that workbooks and visualizations contain current data. The most current data is displayed in workbooks and visualizations after the dataset reload is complete and you refresh the workbooks. See Refresh a Workbook's Data.

How you reload a dataset depends on how the data is sourced.

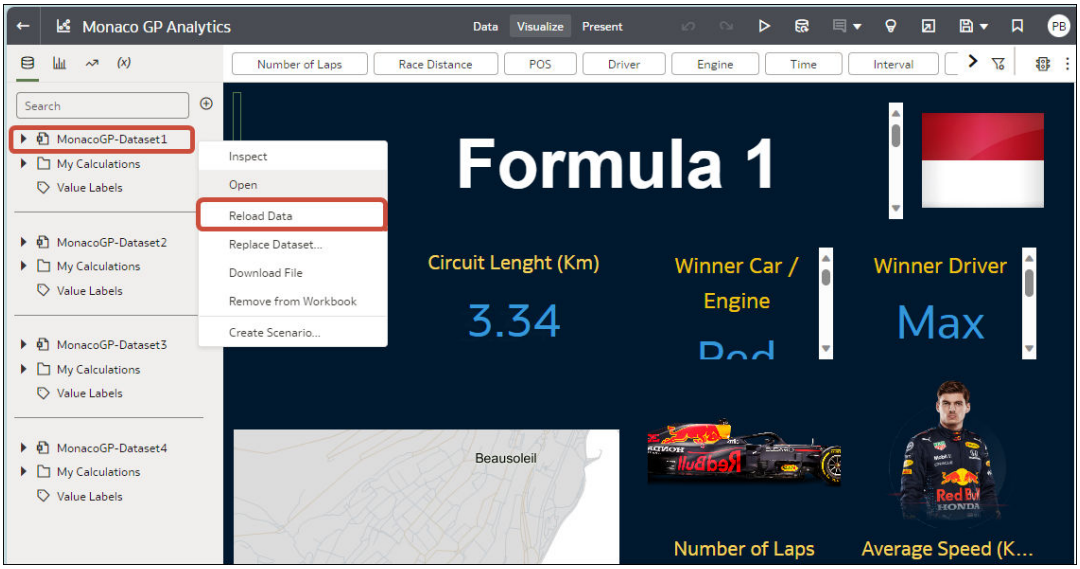
Dataset Source Type	How You Reload Data
Data from databases that support incremental loading	You can reload dataset data incrementally if the dataset uses a data source that supports this. Incremental loading only loads new or updated data. See Reload a Dataset's Data Incrementally.
Data from external connections	When you reload data for a dataset with an external connection, the dataset's SQL statement is rerun and the current data for the tables with the **Data Access** field set to **Automatic Caching** is loaded into cache. If your dataset contains one or more tables with the Data Access field set to Automatic Caching, then you can use the Data page to reload the tables in the dataset. You can also set up a schedule to reload your dataset's tables as often as once per hour. See Schedule a Dataset Reload.
Data from Excel, CSV, or TXT File	When you reload a Microsoft Excel file (XLSX or XLS), the newer spreadsheet file must contain a sheet with the same name as the original file. And the sheet must contain the same columns that are in the dataset. The data reload fails if the file you load is missing columns. When you reload a CSV or TXT file, it must contain the same columns that are in the dataset. A reload will fail if the file you load is missing columns. To reload a dataset that uses one file as its source, use the **Data**.
Data from Oracle Fusion Cloud Applications Suite	You can reload data and metadata for Fusion Applications Suite data sources. If the Fusion Applications Suite data source uses logical SQL, reloading data reruns the dataset's SQL statement.

Reload Data from the Workbook Editor

When you're editing a workbook, you can reload data to update the workbook with the most up-to-date data.

1. On your home page, locate the workbook and click **Open**.
2. Click the **Visualize** tab.
3. On the Data pane, right-click the connection name or dataset name and select **Reload Data**.

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Reload an Individual Table in a Dataset

Use the Dataset editor to reload data for an individual dataset table that uses a connection. Reloading queries the table's data source and loads the current data into cache.

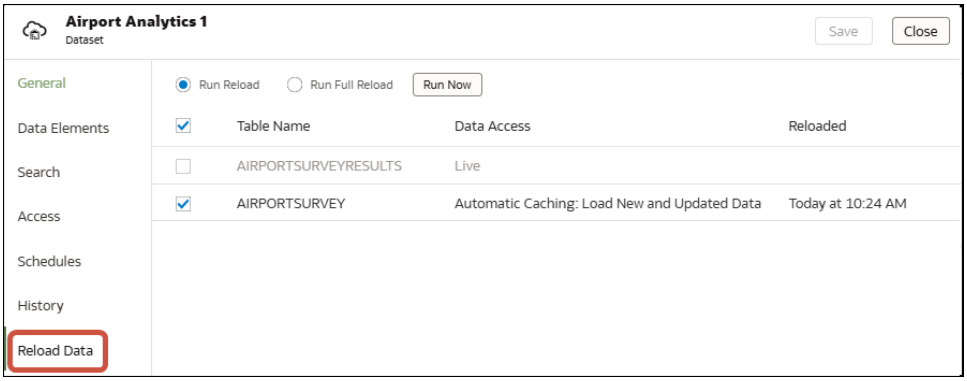
If you want to reload a table that uses a file as its source, then see Reload a Dataset's Files.

The Reload option is available for any dataset table with the **Data Access** field set to **Automatic Caching**.

Typically you reload all of the dataset's tables at the same time so that the data is consistent across all tables. But sometimes it makes sense to reload only one of the dataset's tables. For example, where you know that the data has changed in a fact table but not in any of the dimension tables.

Reloading doesn't update the table's Profile data preview information. To see the most current data in the data preview, re-profile the table after you reload the table.

1. On your home page, click **Data** and then click **Data**.
2. Click the **Datasets** tab.
3. Hover over the dataset that you want to reload, click **Actions**, and then click **Reload Data**.
4. Select the table, then click **Run Now**.



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Reload Tables in a Dataset

Use the Datasets tab to reload data for the dataset's tables that use connections and have the **Data Access** field set to **Automatic Caching**. Reloading queries the tables' data sources and loads the current data into cache.

> **Note**
>
> You can also programmatically reload data for an existing dataset that's based on a connection using the REST API. See Reload data for a dataset in the *REST API for Oracle Analytics Cloud*.

Reloading data ensures that workbooks and visualizations contain current data. The most current data is displayed in workbooks and visualizations after the dataset reload is complete and you refresh the workbooks.

If you want to reload a dataset that contains more than one table and uses files as its source, or if the dataset contains a combination of tables created from connections and files, then see Reload a Dataset's Files.

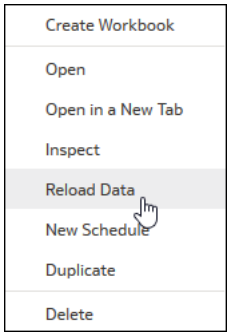
The **Reload Data** option is available for any dataset when the **Data Access** field is set to **Automatic Caching** for one or more table, and when the data source connection includes credentials for one or more table .

Dataset tables with the **Data Access** field set to **Live** aren't included in the reload. See Specify Whether a Dataset Table Is Cached or Live

The user who created or owns the dataset or a user with Read-Write privileges on the dataset and Read-Only privileges on the data source connection can reload the dataset's tables.

You can create and use schedules to run a dataset reload. See Schedule a Dataset Reload.

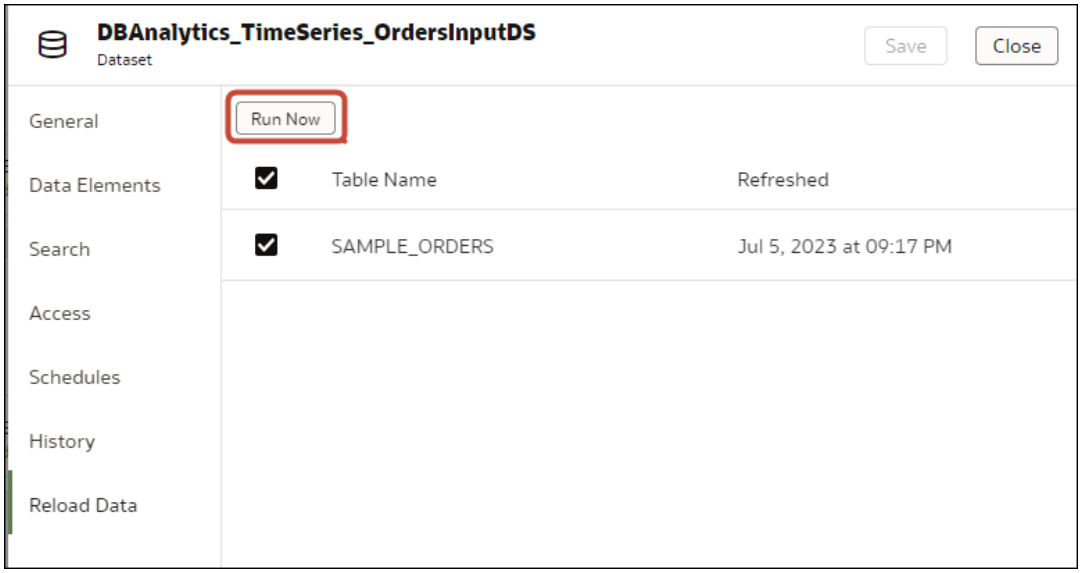
1. On your home page, click **Navigator**, and then click **Data**.
2. Hover over the dataset that you want to reload, click **Actions**, and then click **Reload Data**



.

3. Select the tables that you'd like to reload then click **Run Now**.

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Reload a Dataset's Files

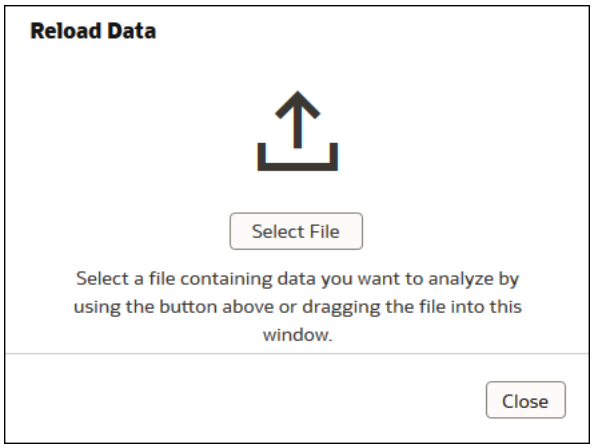
Reload data in a dataset based on a XLSX, XLS, CSV, or TXT file to make sure that you have the most up-to-date workbook content.

Before you start, make sure that the file you upload contains the same columns as the existing dataset.

Reloading a dataset's files ensures that workbooks and visualizations contain current data. The most current data is displayed in workbooks and visualizations after the file reload is complete and you refresh the workbooks.

Reload a dataset's files from your home page

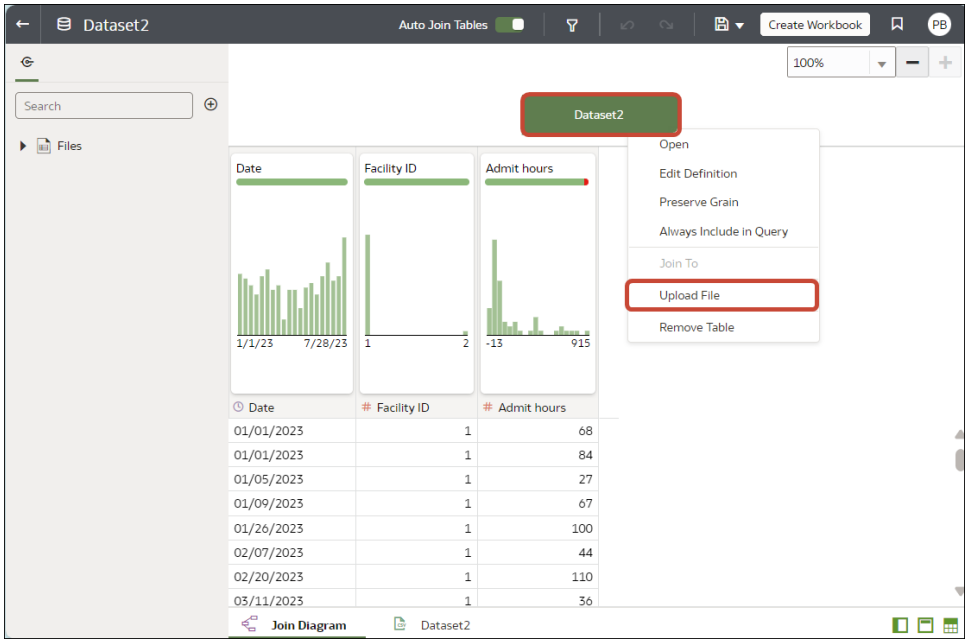
1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Hover over the dataset that you want to reload, click **Actions**, and then click **Reload Data**.
4. In the Upload File dialog, drag and drop the file onto the dialog or click **Select File** to browse for the file.



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5. Click **OK**.

If you're working in the dataset editor, you can reload data by right-clicking the dataset in the Join Diagram and then selecting **Upload File**.



Reload a Dataset's Data Incrementally

Keep your analytics content up-to-date by reloading datasets efficiently when new data is available in the source database.

Topics:

- Overview to Loading Datasets Incrementally
- Configure a Dataset to Load Incrementally
- Load Dataset Data Incrementally

Overview to Loading Datasets Incrementally

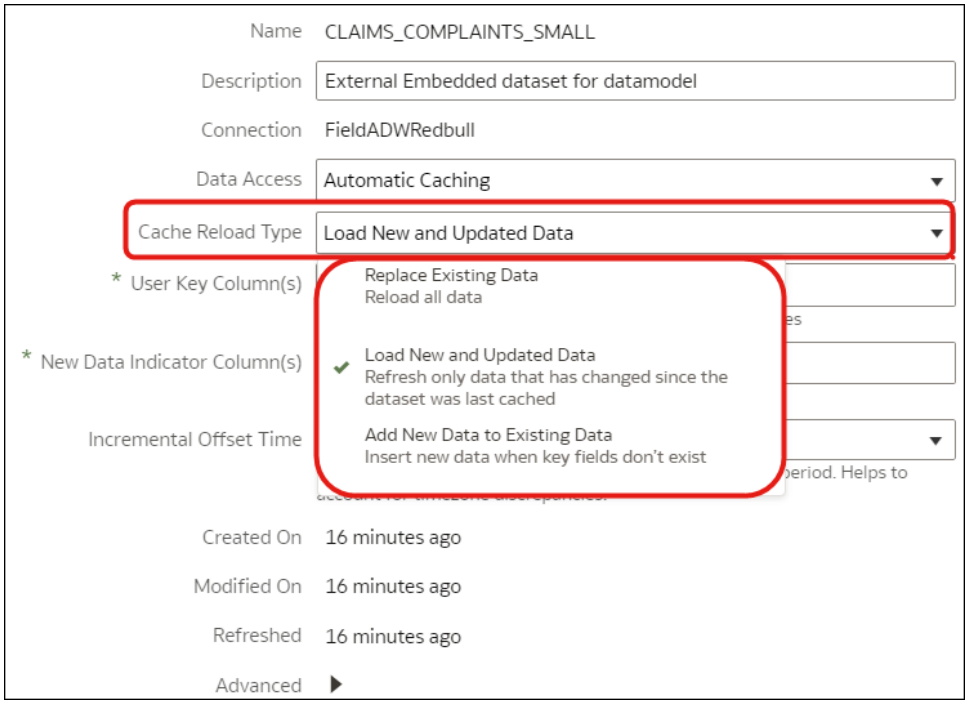
You can keep your workbooks up-to-date by implementing incremental dataset loads.

Reloading data incrementally refreshes data and can minimize processing time.

Where Do I Configure Incremental Loading?

In Oracle Analytics you configure incremental loading for datasets using the **Cache Reload Type** in the data access options.

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What Incremental Load Types Are Supported?

In Oracle Analytics you can:

- Load new records and updates to existing records, known as upsert, using the **Load New and Updated Data** option.
- Load new records only, known as insert, using the **Add New Data to Existing Data** option.

If incremental loading isn't appropriate for you data, then you might choose to reload all data by selecting the **Replace Existing Data** option. For example, if a significant proportion of your data changes regularly, then a full load might be more efficient.

Database Types that Support Incremental Loading for Datasets

- Oracle Database/Oracle AI Database
- Oracle Applications
- Oracle Autonomous AI Lakehouse (ALK)
- Oracle Autonomous AI Transaction Processing (ATP)
- Oracle Cloud Infrastructure Object Storage
- Oracle Talent Management Cloud/Oracle Talent Acquisition Cloud (Taleo)
- DB2
- Informix
- MySQL
- SQL Server
- Sybase ASE and Sybase IQ

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Loading Datasets With Table-level Filters Applied

If a dataset uses a table-filter (for example, `Units > 12`), incremental loads only process new or modified records that continue to meet that filter. If a previously included record is later updated and therefore no longer meets the filter condition, incremental reloads won't pick up that update. In addition, incremental loads don’t handle deletes or updates for records that fall outside of the filter criteria.

Recommended guidance:

- Use Replace Data for a full extract when you need all updates reflected.
- Use dataset filters instead of table filters if you want incremental loads but also want to ensure updates aren’t skipped.
- If table filters are required, perform periodic full reloads.
- Consider using the 'live' data access mode if none of these behaviors are acceptable.

Working With Data in Different Time Zones

If there's a time difference between the timestamps in your data and the default Oracle Analytics timezone (Universal Time Coordinated or UTC), you can specify an offset that takes into account the time difference so that your data loads correctly. For example, if your source system records are in Pacific Time Zone, which is eight hours behind UTC, set the incremental offset time to 8 hours. See Configure a Dataset to Load Incrementally.

Configure a Dataset to Load Incrementally

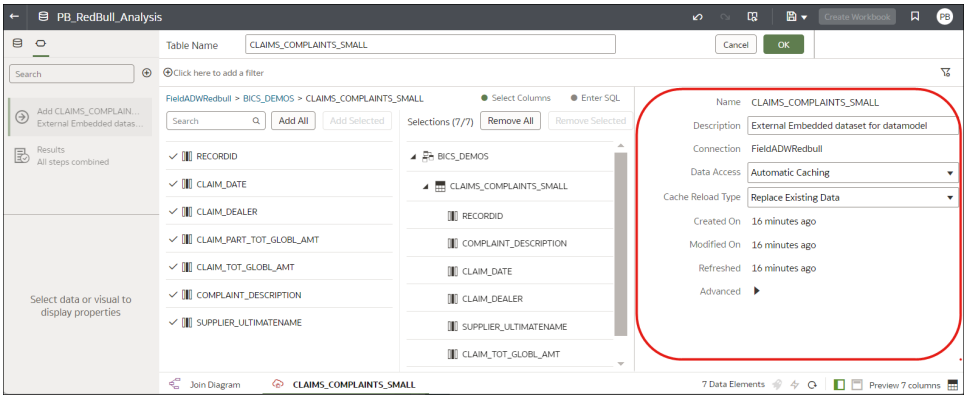
Keep your datasets up-to-date by configuring them to load incrementally. For example, if a source system has new records, load just the new records to your dataset to minimize system traffic and reduce processing time.

If you don't specify a new data indicator column, Oracle Analytics uses the file-modified timestamp to determine when new data is available. After completing this configuring, you can reload the dataset incrementally.

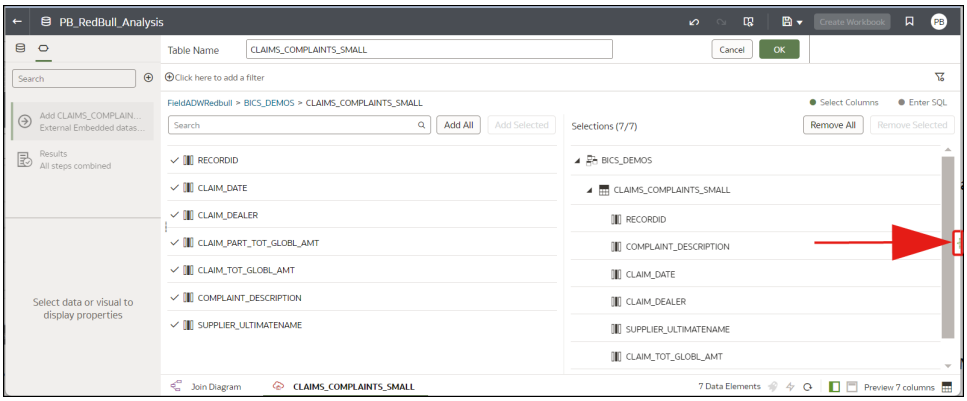
Before you start, make sure that you have a dataset based on a database type that supports incremental loading. See Databases that Support Incremental Reload for Datasets.

1. On your home page, click **Navigator**, then click **Data** and hover over the dataset you'd like to refresh.
2. Click **Actions**, then click **Open**.
3. In the **Join Diagram**, double-click the table you want to refresh.
4. Click **Edit Definition**.
5. Make sure that the data access options are displayed at the right-hand side.

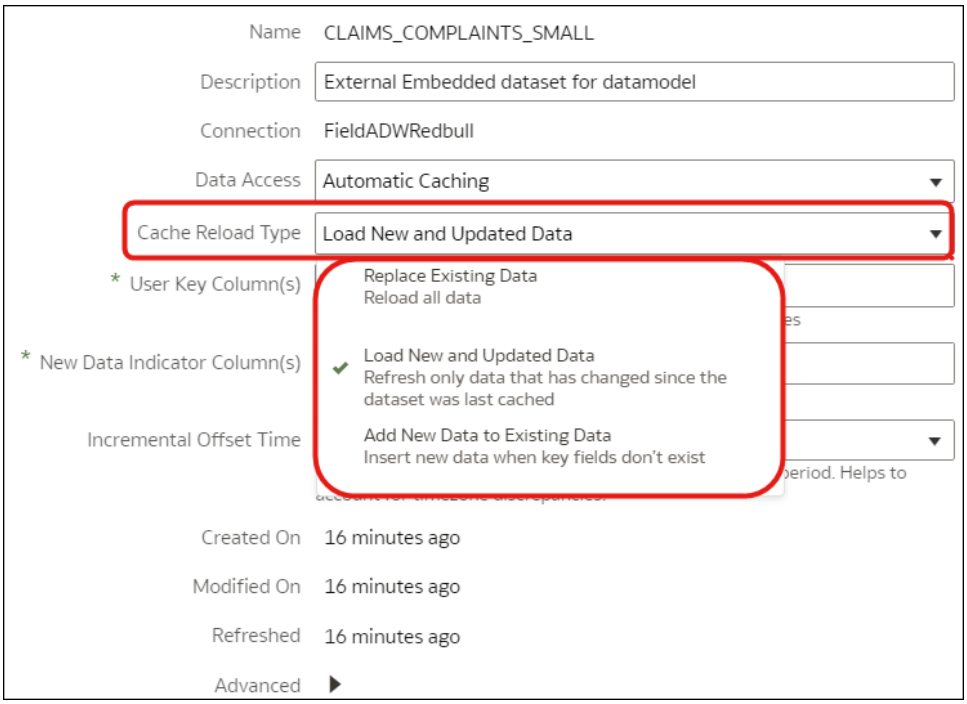
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If the data access options aren't displayed, hover over the center of the right edge of the window to locate the **Expand** option, then click **Expand**.



Use the **Cache Reload Type** options on the data access panel to configure the refresh.



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6. In **Data Access**, select **Automatic Caching**.
7. In **Cache Reload Type**, specify the type of incremental refresh.
   - Select **Load New and Updated Data** (also known as upsert) to load new data when a new record is available or an existing record is updated. For example, you might want to load new transactions as well as changes to existing transactions.
   - Select **Add New Data to Existing Data** (also known as insert) to load new data when a new record is available. For example, you might want to load new transactions only.

   The **Replace Existing Data** option does a full reload of the data.
8. In **User Key Column(s)**, specify the user key columns that identify unique records. Click the field to display available columns and select one or more columns.
9. In **New Data Indicator Column(s)**, specify the column or columns used to detect new or updated data. For example, you might specify a unique transaction ID column to identify new transactions in the data source.

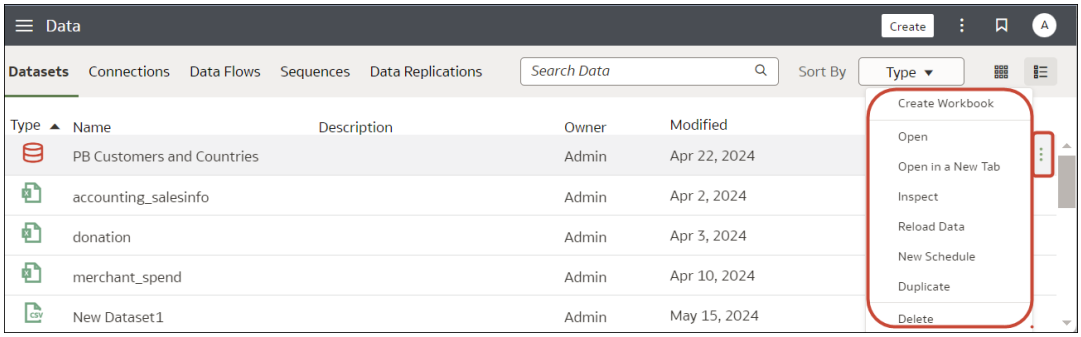
   If you're loading data data from files in Oracle Cloud Infrastructure Object Storage, the **New Data Indicator Column** field isn't displayed because Oracle Analytics uses the file-modified timestamp.
10. In **Incremental Offset Time**, change the default (None) if there's a time difference between the timestamps in your data and the default Oracle Analytics timezone (Universal Time Coordinated or UTC). For example, if your source system records in Pacific Time Zone, which is eight hours behind UTC, set the incremental offset time to 8 hours.
11. Click **OK**.

Load Dataset Data Incrementally

Reload dataset data incrementally to keep workbooks up-to-date. You can load data once or regularly.

Before you start, configure your dataset to load incrementally. See Configure a Dataset to Load Incrementally.

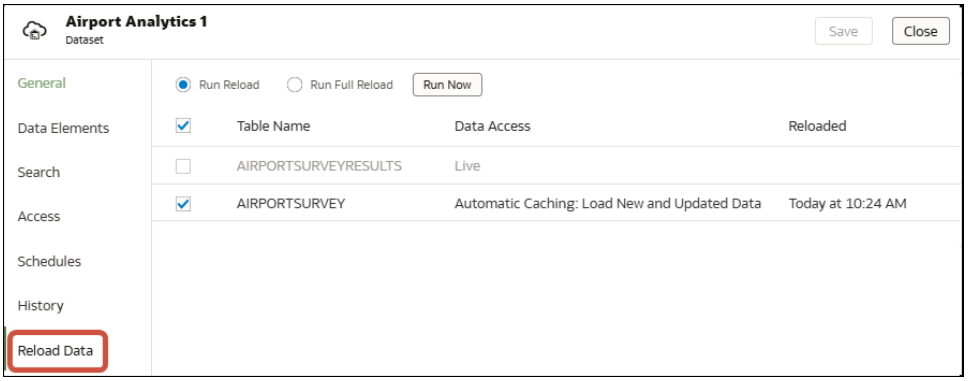
1. On your home page, click **Navigator**, then click **Data** and hover over the dataset you'd like to refresh to display the **Actions** option.



2. To load data once, click **Reload Data**.

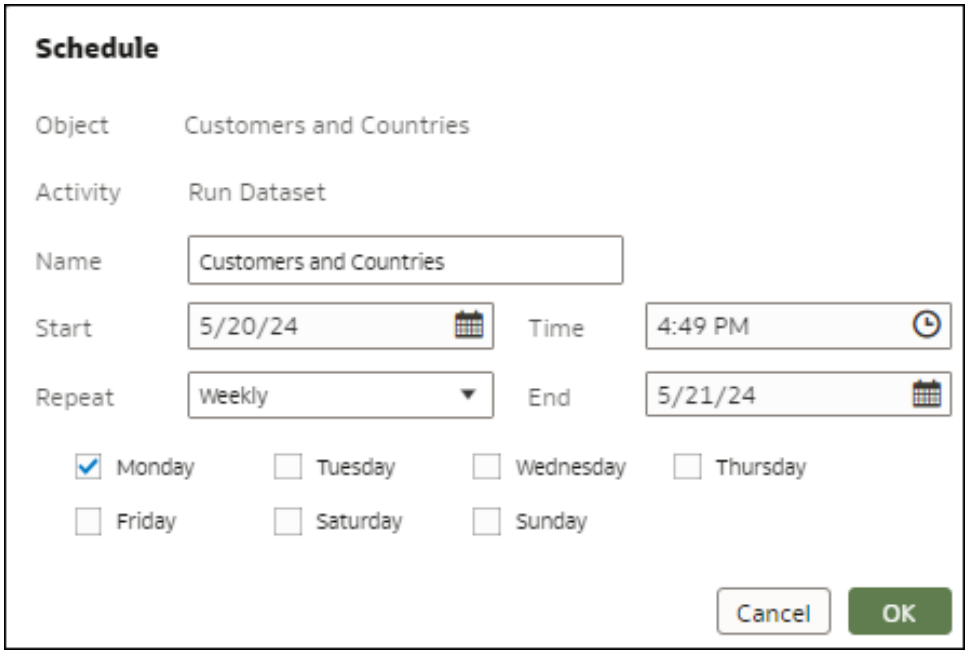
   Click **Run Reload**, then select the tables to reload, then click **Run Now**.

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3. To load data regularly, click **New Schedule**.

   Use the Schedule dialog to specify when you'd like to start the refresh and how regularly to refresh the data, then click **OK**.



Use the Schedules tab on the Inspect dialog to review updates. See View a Dataset's Reload History and View and Download Log Files for a Dataset Reload Job.
If you drill into the task-level details for an incremental load, you'll see that the **Refresh Mode** is set to "Incremental".

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View a Dataset's Reload History

Historical information is generated for dataset reloads at the job level and at the table level.

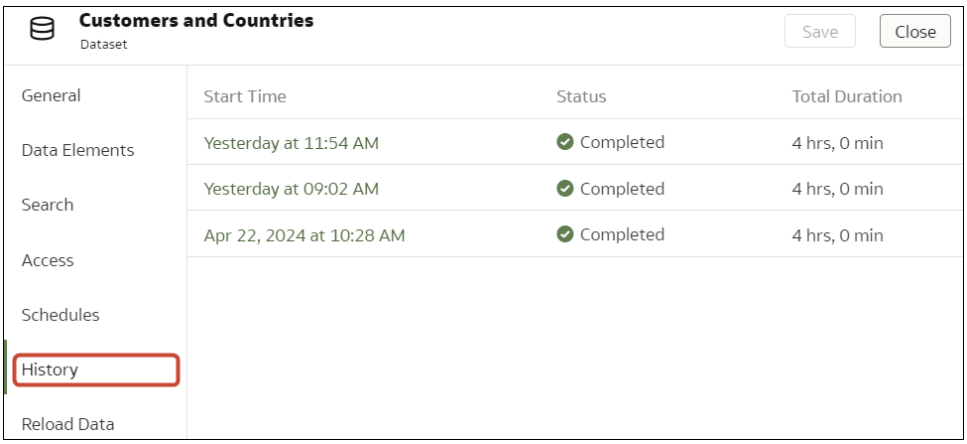
Use a dataset's reload history to find out information such as how the reload was executed (manually or by schedule), job status, start time, end time, and the amount of data reloaded in bytes. You can also drill into information about the job's reloaded tables. For example, the table's source name, reload status, and number of rows.

Oracle Analytics generates historical information when you reload datasets that use connections.

Oracle Analytics doesn't generate historical information and log files when you reload datasets that:

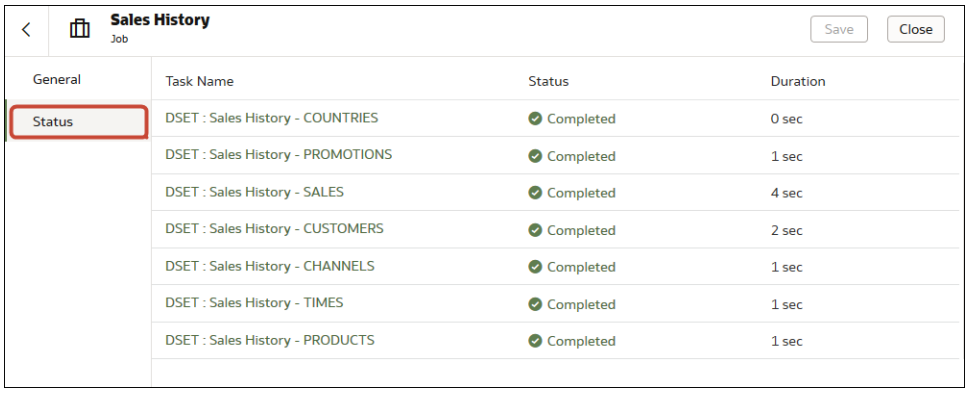
- Use only files.
- Use a connection and a file. Oracle Analytics generates historical information only for a dataset's tables that use a connection.
- Use an Oracle EPM Cloud or Oracle Essbase connection.

1. On your home page, click **Navigator**, and then click **Data**.
2. On the **Datasets** tab, hover over a dataset, then click **Actions**, and then click **Inspect**.
3. Click the **History** tab to see data load jobs that have completed on that dataset.

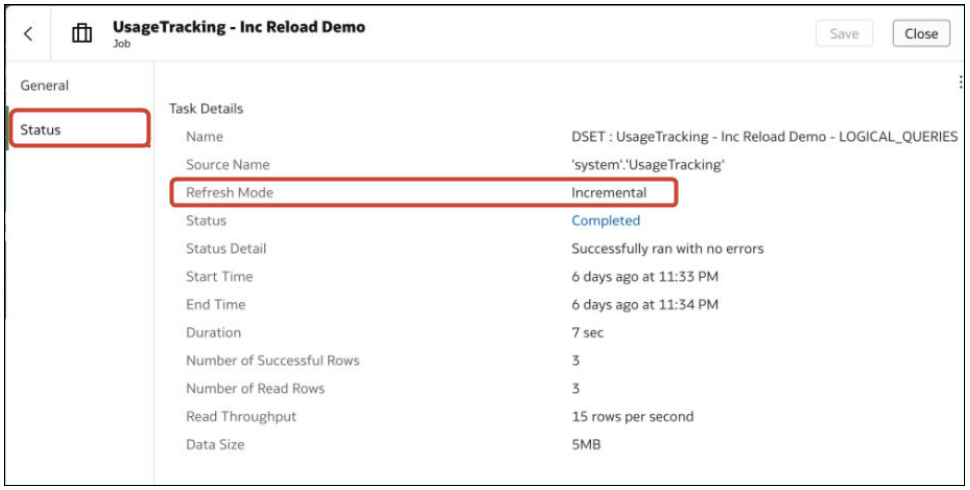


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4. Click a job in the list to display the **General** tab, which provides an overview of the job.
5. Optional: Click the **Status** tab display tasks that were executed as part of the job.



Click a task in the list to display log information for the task. If the load was incremental, you'll see the **Refresh Mode** set to "Incremental".



View and Download Log Files for a Dataset Reload Job

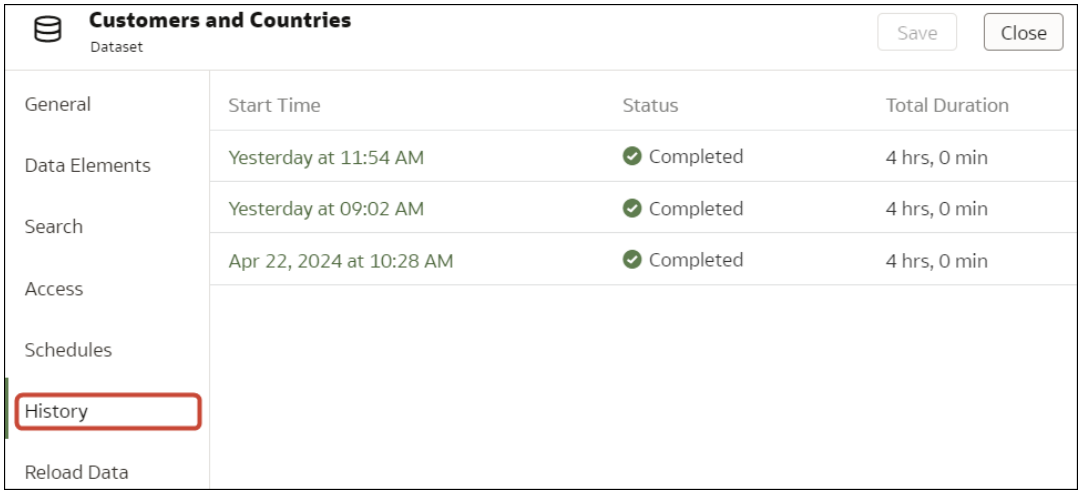
You can review log files for dataset reloads to help you troubleshoot dataset reload issues.

For example, if you have an issue reloading data, the logs can help you determine if it's a problem with your configuration, such as an invalid or outdated password or an issue with too much data. In such cases, the log files contain time stamps for key operations and information on the number of records processed. You can review logs at the job level and at the table level.

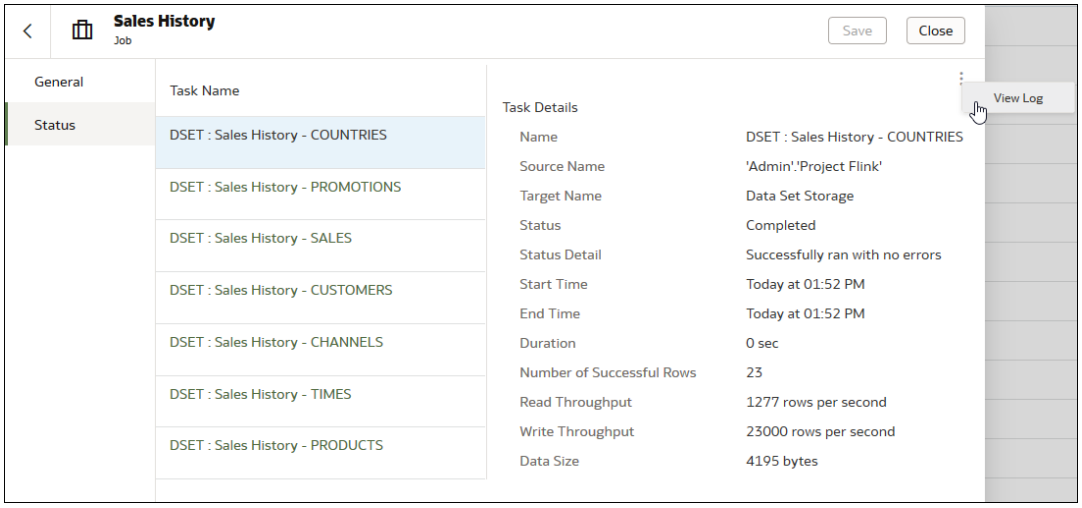
Oracle Analytics generates log files when you reload datasets that use connections. Log files aren't generated if a dataset uses one or more files, or uses an Oracle EPM Cloud or Oracle Essbase connection.

1. On your home page, click **Navigator**, and then click **Data**.
2. On the **Datasets** tab, hover over a dataset, click **Actions**, and then click **Inspect**.
3. Click the **History** tab, then click the job that you want to look at.

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4. In the **General** tab, click **Job details menu** ⋮ in the top right-hand corner and select **View Log** to view the log, or select **Download Logs** to save the logs to a local file area.
5. If the job reloaded more than one table and you want to view log information for a specific table, then click **Status**, then the table's reload task name, then click **Job Task Menu** ⋮ in the top right-hand corner, then click **View Log**.



Work with Dataset Reload Schedules

This topic describes what you need to know to create, modify, and manage dataset reload schedules.

Topics:

- Schedule a Dataset Reload
- View a Dataset Reload Schedule's Details
- Modify a Dataset Reload Schedule
- Delete a Dataset Reload Schedule

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Schedule a Dataset Reload

You can create a one-time or repeating schedule to reload a dataset's data into cache.

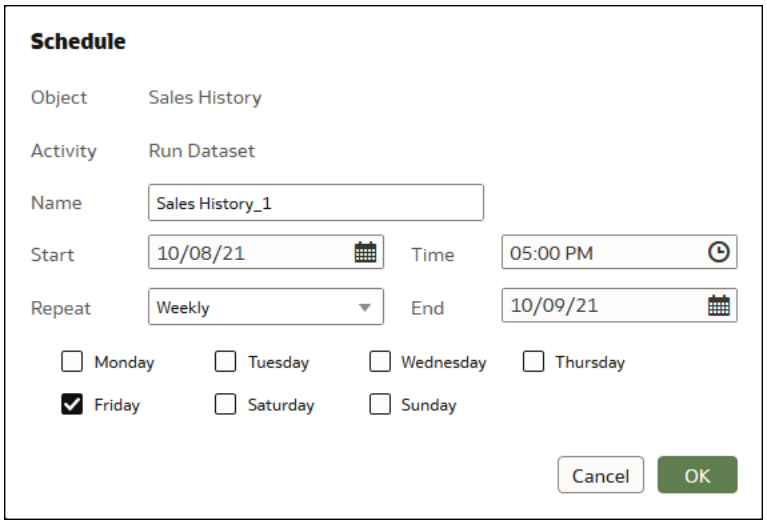
Schedule a dataset reload to make sure that a dataset is automatically reloaded regularly and you don't want to have to remember to reload it manually. Also, you can schedule a dataset reload for a convenient time that doesn't interrupt or confuse workbook authors or consumers.

You can't schedule a reload (that is, the **New Schedule** option doesn't display in the **Actions** ⋮) if:

- A dataset contains only tables that are set to **Live**.
- A dataset uses only files.
- A dataset uses an Oracle EPM Cloud or Oracle Essbase connection.

Dataset tables with the **Data Access** field set to **Live** aren't included in the reload. See Specify Whether a Dataset Table Is Cached or Live.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Hover over the dataset that you want to reload, click **Actions** ⋮, and then click **New Schedule**.



4. Specify when and how often you want the dataset reload to run.
5. Click **OK**.

View a Dataset Reload Schedule's Details

You can view information about a dataset reload's schedule to find out when it last ran and when it will next run. You can also view historical information about the completed reload jobs run by the schedule.

You can access details about the dataset reload schedules that you create. You can't access dataset reload schedules that other users create. Administrators with the BI Service

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Administrator role and users who've been given Read-Write or Full Control permissions to the dataset can access its schedules.

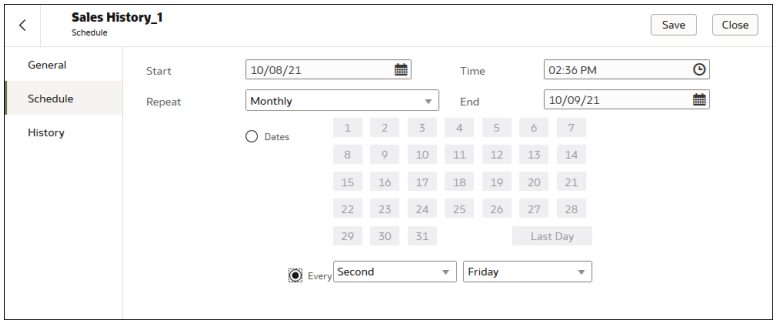
1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want schedule information for, click **Inspect**, and then click **Schedules**.
4. Click the name of a schedule, and in the **Schedule** dialog click the **General** and **Schedule** tabs to view information about the schedule.
5. Optional: Click the **History** tab to view a list of the schedule's completed jobs. Click a job to drill down for more information about it, such as its start time and completion status.
6. Click **OK**.

Modify a Dataset Reload Schedule

You can change the details of a dataset reload schedule. For example, when and how often you want the dataset reload to run.

You can modify the dataset reload schedules that you create. You can't access and modify dataset reload schedules that other users create. Administrators with the BI Service Administrator role and users who've been given Read-Write or Full Control permissions to the dataset can modify its schedules.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to modify schedule information for, click **Inspect**, and then click **Schedules**.
4. Click the name of a schedule, and in the **Schedule** dialog click the **Schedule** tab.



5. Update the schedule details.
6. Click **Save**.

Delete a Dataset Reload Schedule

You can delete a dataset's reload schedule when you no longer need it.

You can delete the dataset reload schedules that you create. You can't access and delete dataset reload schedules that other users create. Administrators with the BI Service Administrator role and users who've been given Read-Write or Full Control permissions to the dataset can delete its schedules.

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After you delete a schedule, you can still view the historical information about the reloads it ran and completed. See View a Dataset's Reload History.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to delete a schedule for, click **Inspect**, and then click **Schedules**.
4. Hover over the name of a schedule and click **Delete**.
5. Click **Close**.

Rename a Dataset and Change Its Description

You can rename and change the description of any dataset that you have Full Control or Read-Write access to.

Renaming a dataset doesn't affect a workbook's reference to the dataset, and any workbooks using the dataset display the new name and continue to work as designed. When you add a dataset to a workbook, the workbook connects to the dataset by the dataset's fixed object ID, which was assigned when the dataset was created and saved, and not by its name. See Copy a Dataset's Object ID.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to rename, click **Actions**, and then click **Inspect**.
4. Click the **General** tab.
5. Go to the **Name** field and rename the dataset.
6. Go to the **Description** field and update the dataset's description.
7. Click **Save**.

Inspect a Dataset's Properties

Access and view information to learn about the dataset, such as when it was created, when it was last modified, if the dataset is indexed for searching, who can access the dataset, and a list of its data elements.

Your permissions determine which of the dataset's properties you can view and update.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to inspect properties for, click **Actions**, and then click **Inspect**.
4. Click the tabs to navigate and inspect the dataset's properties.
5. Click **Close**.

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View the Dataset Storage Limit

As an administrator you can view the amount of dataset storage that's available, and how much has been used.

Your permissions determine which of the dataset's properties you can view and update.

1. On your home page, click **Page Menu** and then click **Dataset Management**.
2. You can view the total amount storage that's used and available, and view the quota and usage for each user.
3. Click **Close**.

Copy a Dataset's Object ID

Each dataset has an assigned, unique, fixed object ID. You can use this ID to help find and troubleshoot Oracle Analytics errors and issues, or search log files.

The dataset's object ID, and not the dataset's name, is used to reference, track, and manage the dataset. In most cases, the object ID is based on the name that you provide when you create the dataset. Updating a dataset's name doesn't update its object ID. See Rename a Dataset and Change Its Description.

1. On your home page, click **Navigator**  , and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that with the ID that you want to copy, click **Actions**, and then click **Inspect**.
4. Click the **General** tab.
5. Go to the **Object ID** field and click the **Copy** button.

Certify a Dataset

When you certify a dataset, you're confirming that the dataset contains accurate, reliable data. When users search for data from the Home page, certified data is ranked high in the search results.

> **Note**
>
> A file-based dataset must be indexed and certified before the users you shared the dataset with can use it to build visualizations from their home page. See Index a Dataset and Generate Visualizations from Your Home Page.

You can certify datasets if you're a member of an Administrator role and have Full Control or Read-Write access to the dataset.

For best search results only certify the datasets with data that users need to find. Certifying all datasets yields too many search results. Oracle recommends that you first certify the minimum number of datasets and then certify additional datasets only as needed.

1. On your home page, click **Navigator**  , and then click **Data**.

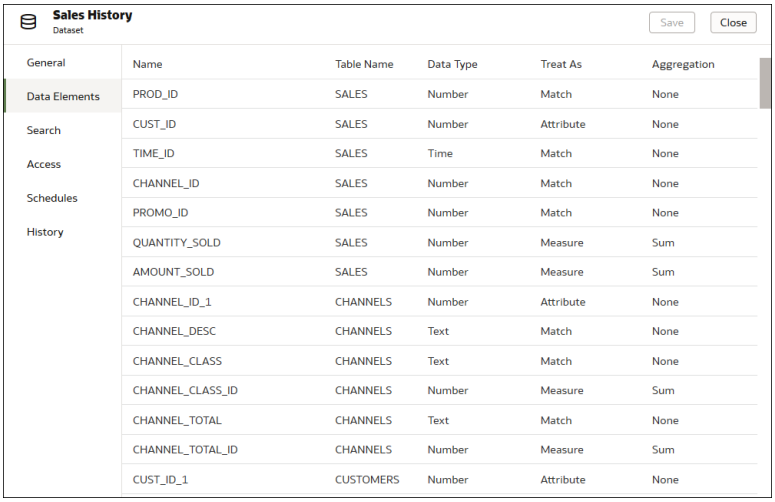
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2. Click the **Datasets** tab.
3. Locate the dataset that you want to certify, click **Actions**, and then click **Inspect**.
4. Click the **General** tab.
5. Go to the **Certified By** field and click the **Certify** button.
6. Click **Save**.

View a Dataset's Data Elements

The data elements list contains information such as data element name, data type, and aggregation. You can use information about data elements to determine if the dataset contains data that you want to visualize and analyze.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to view data elements for, click **Actions**, and then click **Inspect**.
4. Click the **Data Elements** tab.



Make Data Available for Oracle Analytics AI Assistant

This topic describes what you need to know to index a dataset to include its data in Oracle Analytics AI Assistant visualizations.

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Topics:

- About Indexing a Dataset for Oracle Analytics AI Assistant
- About Recommended Index Settings
- Index a Dataset
- Index a Dataset on Demand
- Schedule Indexing on a Dataset

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About Indexing a Dataset for Oracle Analytics AI Assistant

You must index a dataset so that its data is included in Oracle Analytics AI Assistant.

> **Note**
>
> The AI Assistant is available in all regions in the OC1 realm. For more information, see About Regions and Availability Domains.
> If you don't see the Assistant option, you might not have the required permissions. Contact your administrator to request the Use Assistant in Workbooks permission. See Grant or Revoke Permissions for Application Roles.

You can index any dataset that you have Full Control or Read-Write access to. When you index dataset, you specify if you want to index all or some of a dataset's attributes by names, or by names and values, and which language to index the dataset in. You also select whether the indexed data is available for the home page search, within workbooks, or both.

> **Note**
>
> A file-based dataset must be indexed before you or users you shared the dataset with can use it to build visualizations from a home page. See Generate Visualizations from Your Home Page and Certify a Dataset.
> File-based dataset indexes are refreshed when you manually reload the data, or on a schedule you determine. See Index a Dataset on Demand.

By default, the dataset is indexed whenever its data is refreshed so that the most current data is available when you search from your home page. Your data is automatically refreshed any time a user saves changes to the dataset. Alternatively, you can add a schedule to indicate when and how often a dataset is indexed, or you can index a dataset on demand.

You use the **Search** tab on the **Inspect** page of your dataset to enable indexing based on files or data sources. Administrators can use the **Data Model** pane on the Console's Search Index page to control which subject areas are indexed. See Configure Search Indexing.

Assistant requests are always processed within a secure OCI environment. However, your Assistant request may be routed to another OCI region for processing.

Oracle Analytics leverages foundation models deployed through Oracle Cloud Infrastructure's Generative AI Service. These models are used in their native state without fine-tuning or model customization. We do not use your data to train our models and achieve our results through careful prompt engineering.

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> **Note**
>
> The Oracle Analytics AI Assistant uses a Large Language Model (LLM) when processing your questions. As a result, it may generate responses based on patterns in data rather than factual accuracy. Always verify the results and consult your primary data sources before making critical decisions based on results generated by the Assistant. Oracle recommends you avoid providing any personally identifying information as part of your natural language prompts, as the text is sent exactly as written to the LLM.

About Recommended Index Settings

Recommended index settings are applied automatically to Search indexes after you select an Index Dataset For option.

Index settings are automatically determined based on cardinality and the data types of attributes in the dataset. Once the recommended index settings are applied, you can modify them individually. After you've changed any attribute settings, you can click the **Use Recommended Index Settings** button at any time to restore the system recommended index settings.

Index a Dataset

You must index a dataset to make its data attributes available to Oracle Analytics AI Assistant within workbooks or from your home page. You can index all or some of the dataset's attributes and apply synonyms to make the attributes easier to search.

You can create a schedule to specify when and how often you want a dataset to be indexed. See Schedule Indexing on a Dataset.

1. On your home page, or Data page, select a dataset.
2. Hover over a dataset, then click **Actions**, then **Inspect**.
3. Click the **Search** tab.
4. Click the **Index Dataset For** dropdown and select an option.
5. Click **Index**, select an option for indexing the data elements.
6. Select **Use Recommended Index Settings** to let the system determine your index settings.
7. Click the **Languages** field and select the language you want to use to produce the dataset's index.
8. Click **Save**.
9. Click **Run Now** to index your dataset immediately.
10. Click **Refresh**

    to check the completion status of the index.

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Index a Dataset on Demand

You can choose to index your dataset immediately to ensure features using your dataset are using the most current version.

For information about enabling and setting up a dataset for indexing, see Index a Dataset.

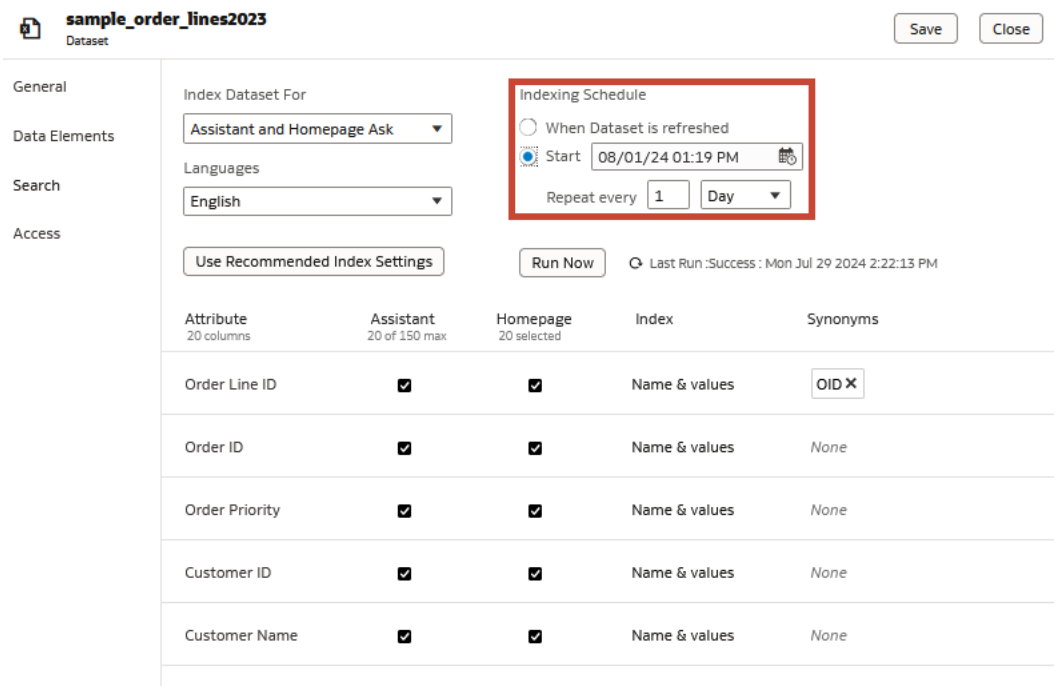
1. On your home page, or Data page, select a dataset.
2. Hover over a dataset, then click **Actions**, then **Inspect**.
3. Click **Search**.
4. Click **Run Now** to index the dataset.

Schedule Indexing on a Dataset

You can schedule when and how often a dataset is indexed. Scheduling the index ensures that data used by features like Oracle Analytics Assistant is kept up to date.

For information about enabling and setting up a dataset for indexing, see Index a Dataset.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to add an indexing schedule to, click **Actions**, and then click **Inspect**.
4. Click the **Search** tab.
5. In the Indexing Schedule section, click **Start** and then click the **Select Date Time** button.



6. In the dropdown calendar, select the first date you want to refresh the dataset. At the bottom of the dropdown calendar, click the time stamp and specify what time you want indexing to run.

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7. Use the **Repeat every** field and frequency dropdown to select how often you want the schedule to run.
8. Click **Save**.

Make Analytics Content Easier to Search

Content authors can specify synonyms for datasets to help users search for content from their home page. For example, you might enable users to search on Sales, Revenue, or Income to locate data in a dataset column SALES_AMT.

Topics:

- About Making Analytics Content Easier to Search
- Tips on Using Synonyms for Home Page and AI Assistant Search
- Specify Synonyms for Dataset Columns

About Making Analytics Content Easier to Search

Content authors make analytics content easier to search from a home page by specifying synonyms for columns in datasets.

For example, to make it easier for users to find data in a column named Yield, you might specify *revenue* and *income* as synonyms. From their home page, users then can locate data in a column named Yield by entering revenue or income as a search term.

You can create and edit synonyms if you own a dataset or a dataset has been shared with you with read-write access.

You specify synonyms for dataset columns on the Search page of the Inspect dialog for datasets.

Synonyms you specify will be remembered by the system, and it will recommend previously used synonyms for similar attributes when you index different datasets.

To learn how to create and assign synonyms properly, see Tips on Using Synonyms for Home Page and AI Assistant Search.

Tips on Using Synonyms for Home Page and AI Assistant Search

Use the following tips to help you create and assign data column synonyms.

If you own or have read-write access to a dataset, you can assign synonyms to its columns from the dataset's Search settings. See Specify Synonyms for Dataset Columns.

If you're an Administrator, you can assign synonyms to a data model from the Console's Search Index specifications. See Specify Synonyms.

If you're a business user, you can use the CSV file provided by an Administrator to assign synonyms to a data model. After you've finished assigning synonyms, the Administrator imports the CSV file into Oracle Analytics. See Specify Synonyms in an Exported CSV File.

Tips on specifying synonyms for column names:

- Enter one or multiple synonyms. For example, for a Yield column you might specify *revenue* and *income*.

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- When updating a CSV file to add multiple synonyms to a data model column, use a comma to separate the synonyms. For example, *revenue,income*.
- Synonyms can be up to 50 characters.
- You can specify a maximum of 20 synonyms for each column name.
- You can use upper or lowercase when you specify synonyms. The home page and Oracle Analytics AI Assistant search isn't case sensitive.

You can't base synonyms on:

- Analytical functions, for example, sum, AND, OR, NOT, BETWEEN, IN, IS NULL, LIKE, Aggregate At, Aggregate By.
- Analytical terms, for example, null.
- Articles, prepositions, pronouns, and conjunctions that are usually removed before processing natural language (also known as *stop words*). For example, a, an, and, are, as, at, be, but, by.
- Boolean function names, for example, true, false, yes, no.
- Date formats, for example, nn/nnnn, nnnn/nn, nn/nn/nnnn, nnnn/nn/nn where n is an integer.
- Integers, for example, 123 or 123 456.
- Special characters, for example, `!@#$%^&*()+=[]{};\':"\\|,<>/?~.

Specify Synonyms for Dataset Columns

Make analytics content easier to search from your home page by specifying synonyms for columns in your datasets.

1. On your home page, or Data page, select a dataset.
2. Hover over a dataset, then click **Actions**, then **Inspect**.
3. Click **Search**. From the **Index Dataset for** list, select an option.
4. In the **Synonyms** column, enter the terms for the data element row. For example, for a Yield column, you might specify *revenue* and *income* as synonyms.
5. Click **Save**, then click **Run Now**.

Add or Update a Dataset's Permissions

You can assign users and roles and access permissions (Full Control, Read-Write, and Read-Only) to a dataset that you create or administer.

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Assign permissions to users and roles to specify who can access the dataset and what they can do with the dataset. For example, reload data, index the dataset, or download file.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to add permissions to or update permissions for, click **Actions**, and then click **Inspect**.
4. Click the **Access** tab.

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5. Optional: To modify permissions, locate a user or role and click the permission that you want to assign to it.
6. Optional: To delete a user or role, hover over it and click **Delete**.
7. Optional: To add users and roles, click the **Search** field and type the name of the user or role that you want to add. Select the user or role from the search results list to add it, and click the permission that you want to assign it.
8. Click **Save**.

Download a Dataset's Source File

You can download a file from a dataset that contains one table and one source file. You must have access to the dataset to download its source file.

Here are some reasons why you would download a dataset's source file:

- You uploaded the dataset file, but deleted, lost, or misplaced the original file.
- You imported the workbook and need to access the original dataset file.
- You don't have the original dataset file. For example, if another user uploaded the dataset file.
- You need a dataset file that another user uploaded and shared with you.

When you download a dataset's source file, by default the resulting file is the same format as the file used to create the dataset. However, you can change the file type if you choose to save the file.

1. On your home page, click **Navigator**  , and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to download, click **Actions**, and then click **Download File**.
4. When prompted, open or save the file.

Duplicate a Dataset

You can duplicate any dataset that you have access to. Duplicating a dataset and modifying the copy is faster than creating and building a dataset from scratch.

You're the owner of the duplicate dataset. The default name of the duplicate dataset is the copied dataset's name appended with Copy. For example, SAMPLE_REVENUE-Copy. Duplicated datasets retain Search settings.

1. On your home page, click **Navigator**  , and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to duplicate, click **Actions**, and then click **Duplicate**.

Delete a Dataset

Delete a dataset when it's no longer needed or you need to free up space on your system.

You can delete datasets that you have Full Control permissions to.

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> **Note**
>
> Deleting a dataset permanently removes it and breaks any workbooks that use it. When you choose to delete a dataset, Oracle Analytics won't list workbooks that use the dataset. Before you delete a dataset you must be sure that it isn't used in any workbooks.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to delete, click **Actions**, and then click **Delete**.

Enable Knowledge Enrichments for Datasets

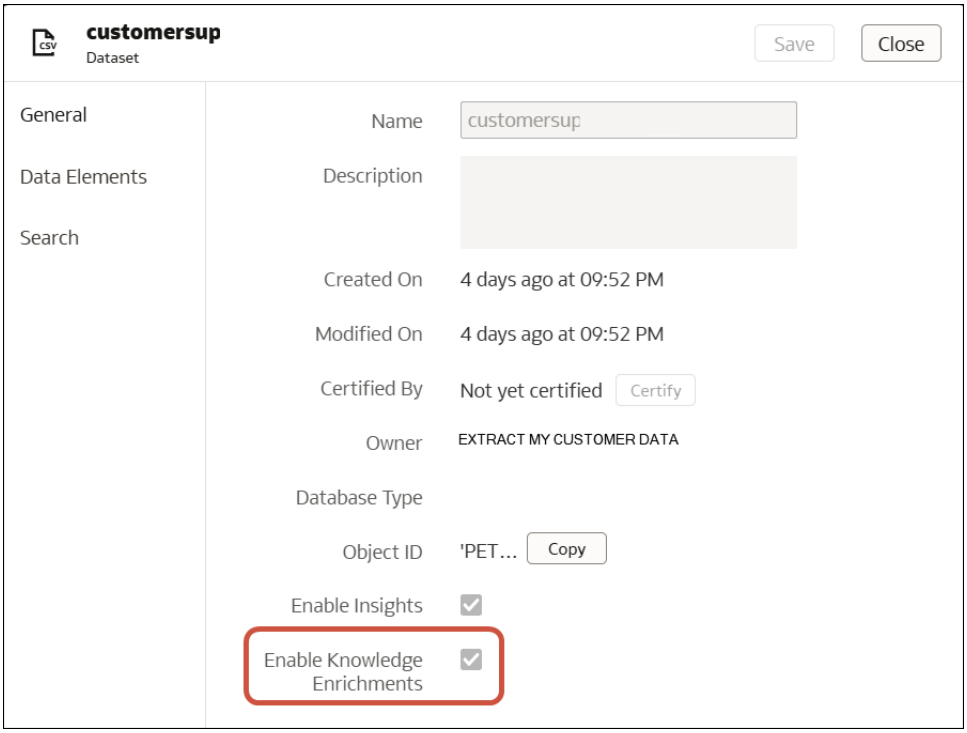
Oracle Analytics profiles datasets and generates knowledge enrichments that enable you to augment your data with data from other sources. For example, if your dataset contains a column with a list of cities, knowledge enrichments might provide information about the location, population, and size of the city.

Knowledge enrichments are usually enabled by default, but workbook editors can enable or disable them for datasets that they own or have editing privileges for.

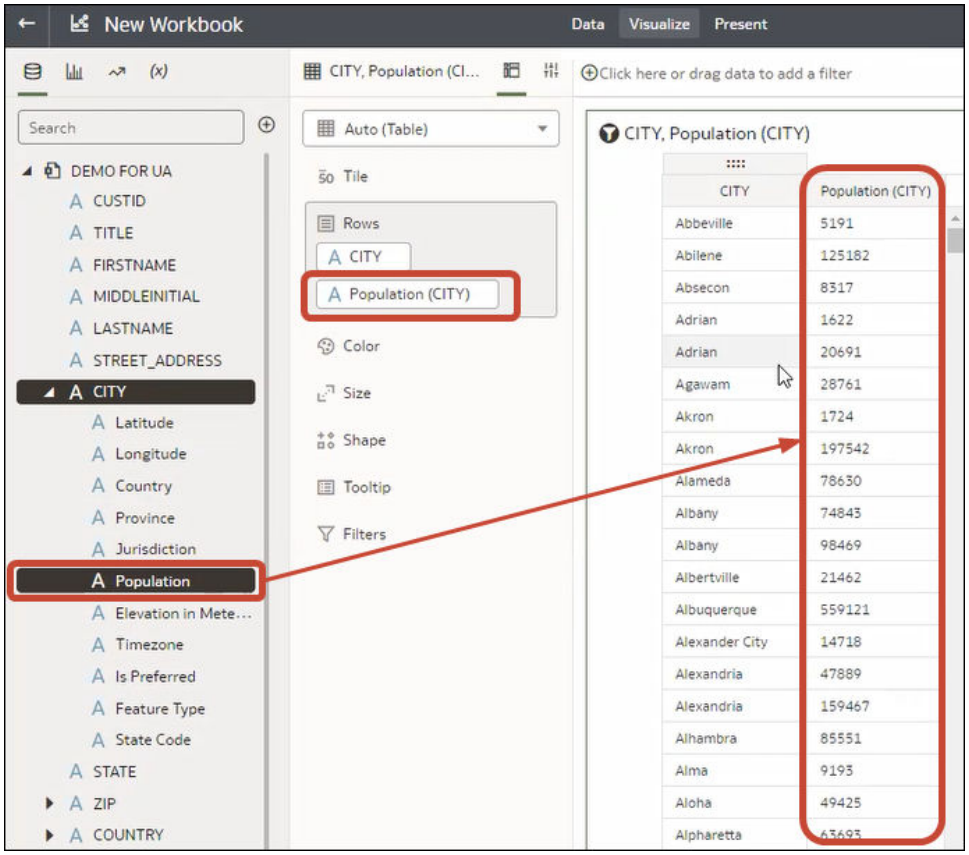
> **Note**
>
> Oracle Analytics doesn't automatically provide enrichment recommendations for datasets generated from a data flow. In this case, the dataset owner or administrator must first enable the knowledge enrichments option for the dataset.

1. On your home page, click **Navigator**, and then click **Data**.
2. Click the **Datasets** tab.
3. Locate the dataset that you want to edit, click **Actions**, and then click **Inspect**.
4. Select **Enable Knowledge Enrichments**.

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Workbook editors can add knowledge enrichments directly from the Data pane to visualizations. In this example, in a dataset with a city column, you can add a population column as an enrichment to the dataset.



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If you aren't able to enable knowledge enrichments for a dataset, ask the administrator to enable knowledge enrichments in workbooks globally.

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Part III
Visualize Data

This part explains how to visualize data.

Video

Topics:

- Build and Manage Workbooks
- Design the Look and Feel of Workbooks
- Create and Use Visualizations
- Design the Look and Feel of Visualizations
- Generate Visualizations with Oracle Analytics AI Assistant
- Use AI Agents and the Oracle Analytics AI Assistant to Interact with Data
- Filter Data
- Create and Use Parameters
- Understand Your Data Using Insights
- Apply Map Backgrounds and Map Layers to Enhance Visualizations
- Use Data Actions
- Build a Presentation Flow
- Use Oracle Analytics Predictive Models and Oracle Machine Learning Models
- Import, Export, and Share

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7

Build and Manage Workbooks

This chapter explains how to create and manage workbooks in Oracle Analytics.

Topics:

- Begin to Build a Workbook
- Save a Workbook
- Configure How Workbooks Open
- Manage Datasets Within a Workbook
- Blend Datasets in Workbooks
- Refresh Data in a Workbook
- Use Calculations in Workbooks
- Derived Dates in Workbooks
- Use Images in Workbooks
- Compose Expressions
- Set Workbook Thumbnails
- Pause Data Queries in a Workbook
- Open a Custom Workbook Extension
- Embed a Workbook and Visualizations in a Dashboard

Begin to Build a Workbook

Create a workbook with one or more data sources and design visualizations.

You create workbooks to store and organize your analytics content, such as graphs and charts.

 Tutorial

See View a List of Datasets and Information About Them.

1. On your home page, click **Create** and click **Workbook**.
2. In the Add Data dialog, search for and click a dataset, then click **Add to Workbook**.
3. Optional: If you want to select a canvas layout template, click **Select a layout**, select the layout, and then click **OK**.

   Oracle provides the ready-to-use layout templates called Filter Left and Filter Top, which are available for all workbooks.
4. In the Data pane, locate and drag and drop data columns onto the Visualize canvas to start building visualizations.
5. Optional: If you modify the canvas layout and want to share the modified canvas layout template with others, right-click the canvas, select **Save as Shared Layout**, enter a name, and then click **Save**.

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As a content author you must have the Create and Edit Shared Layouts permission to create, save, and modify canvas layouts.

When you save a modified canvas layout as shared layout, the layout retains settings previously made for viewing the canvas layout on different screen sizes. See Design Canvas Layouts for Different Screen Sizes.

6. Click **Save**.
   - To share a workbook with others and include it in the home page's **Navigation Menu** as a link, you can save the workbook in the `/Shared Folders/`*first level subfolder* with **Add to Navigation Menu** selected.

> **Note**
>
> Exclude special characters from your workbook name otherwise it won't display in the Navigation Menu. See About Naming Restrictions for Items in the Catalog.

Save a Workbook

Make sure changes to your workbook are saved properly.

Topics:

- Save Your Changes Automatically
- Undo and Redo Edits
- Save a Workbook to a Shared Catalog Folder

Save Your Changes Automatically

You can use the auto save option to save your updates to a visualization workbook in real-time automatically.

If you've already saved your workbook in a specific location, the Save Workbook dialog isn't displayed after you click **Auto Save**.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. From the Save menu, select **Auto Save**.
3. In the Save Workbook dialog, enter the **Name** and optional **Description** to identify your workbook.
4. Select the folder where you want to save your workbook.
5. Click **Save**. Any workbook updates are saved in real-time.

Suppose that two users are updating the same workbook and **Auto Save** is enabled. The **Auto Save** option is automatically disabled when different types of updates are made to the workbook. A message is displayed that states that another user has updated the workbook.

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Undo and Redo Edits

You can quickly undo your last action and then redo it if you change your mind. For example, you can try a different visualization type when you don’t like the one you’ve just selected, or you can go back to where you were before you drilled into the data.

The undo and redo options are useful as you experiment with different visualizations. You can undo all the edits you've made since you last saved a workbook. However, in some cases, you can't undo and then redo an edit. For example, in the Create Dataset page, you've selected an analysis from an Oracle Application data source to use as a dataset in the workbook. In the next step, if you use the undo option to remove the dataset, you can't redo this change.

- To undo or redo an edit, go to the toolbar for the workbook or the dataset and click **Undo Last Edit** or **Redo Last Edit**. You can use these options only if you haven't saved the workbook since making the changes.



- When you’re working on a workbook, click **Menu** on the workbook toolbar and select **Revert to Saved** to undo all the edits you've made since you last saved your workbook. **Revert to Saved** is enabled after you've saved the workbook for the first time. This option is automatically disabled if you select the **Auto Save** option.

Save a Workbook to a Shared Catalog Folder

You can save a workbook to a shared catalog folder when you want individual users or groups of users to access the workbook.

Any user who can create a workbook can also create a shared catalog folder when saving the workbook. If you create a shared catalog folder, then you need to specify which users can access it. A workbook's permissions determine which users can access the workbook. See Assign Shared Catalog Folder and Workbook Permissions.

A workbook contains artifacts, which are stand-alone Oracle Analytics objects that you can include in other workbooks (for example, datasets). Sometimes these artifacts aren't already shared. In such cases, when you add or update a workbook's permissions Oracle Analytics displays the Shared Related Artifact dialog where you can specify if you want to share these artifacts.

Sometimes you might choose to not share the artifacts, such as when you want to review and assign the artifact's permissions manually, or when the user must select a different artifact in the shared workbook (for example, select a different dataset).

1. Create or open a workbook:
   - To create a workbook, on your home page, click **Create**, click **Workbook**, and build the workbook.
   - To open a workbook, on your home page, click **Navigator**, click **Catalog**, and navigate to and open the workbook in edit mode. Modify the workbook.
2. From the Workbook editor, click **Save** or **Save As** to save the workbook.
3. In Save Workbook, click **All**, click **Shared Folders**, and then locate and click the shared catalog folder where you want to save the workbook.
4. Click **Save**.

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5. If the Shared Related Artifact dialog is displayed, then specify if you want to share the artifacts included in the workbook (for example, the workbook's datasets) and click **Apply**.

Configure How Workbooks Open

Oracle Analytics opens workbooks in Viewer mode by default, but as a workbook author, you can configure workbooks to open by default in Edit mode. In addition, you can choose whether Oracle Analytics' editor dialogs open in the existing tab or a new tab.

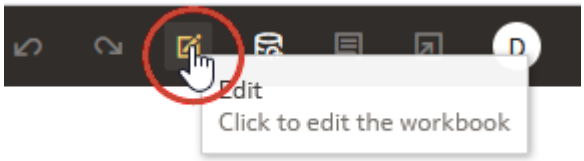
Topics:

- Open a Workbook in Edit Mode
- Configure a Workbook to Open in Edit Mode by Default
- Configure All of Your Workbooks to Open in Edit Mode by Default
- Configure How Editors Open

Open a Workbook in Edit Mode

If you're a workbook author you can change a workbook that you open for viewing into a workbook that you can edit.

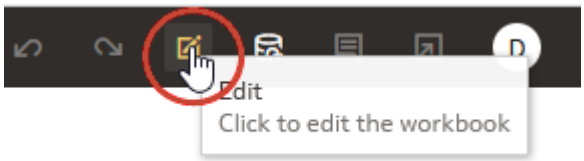
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. If the workbook opens for viewing, then click **Edit**.



Configure a Workbook to Open in Edit Mode by Default

As a workbook author, you can make workbooks that you create open in Edit mode as the default behavior. If workbooks that you don't own are editable, you can make those workbooks open in Edit mode as well.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to open the workbook in edit mode and enable the display of workbook properties.



3. Click the workbook **Menu** and select **Workbook Properties**.
4. In the **Open as a Viewer** field, click **Off** for the workbook to open in edit mode by default.

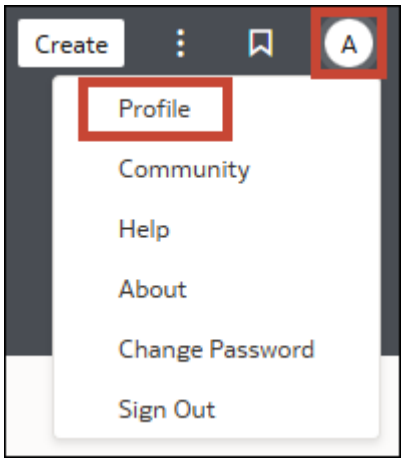
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5. Click **OK**.
6. Click **Go back**, then click **Save**.

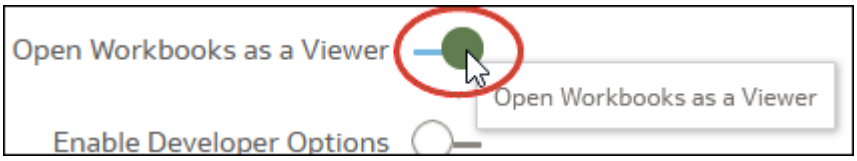
Configure All of Your Workbooks to Open in Edit Mode by Default

This task is for workbook authors. All of your workbooks open in Viewer mode by default, but you can change this behavior so that all of your workbooks open in Edit mode by default.

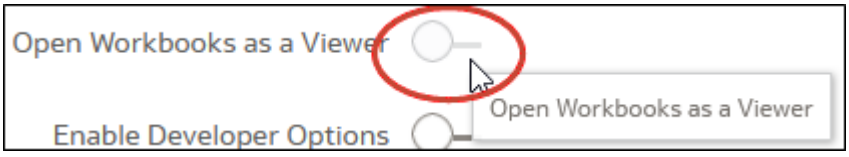
1. On your home page, click your user name or name badge with your initials, then click **Profile**.



2. Click **Advanced**, and then click the **Open Workbooks as a Viewer** toggle.
   - **Open Workbooks as a Viewer** toggle ON (green circle) - All of your workbooks open in Viewer mode by default.



   - **Open Workbooks as a Viewer** toggle OFF (white circle) - All of your workbooks open in Edit mode by default.



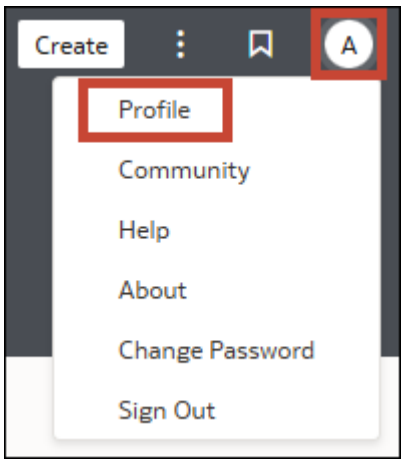
3. Click **Close**.

Configure How Editors Open

As a workbook author, you can configure the default behavior for how Oracle Analytics opens content editor dialogs, either in the existing tab or new in tabs.

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1. On your home page, click your user name or name badge with your initials, then click **Profile**.



2. Click **Advanced**, and then select or deselect the **Open Editors in New Tabs** toggle.
3. Click **Close**.

Manage Datasets Within a Workbook

This topic describes what you need to know to work with a workbook's datasets.

Topics:

- Add Datasets to a Workbook
- Replace a Dataset in a Workbook
- Remove a Dataset from a Workbook
- Modify a Workbook's Datasets

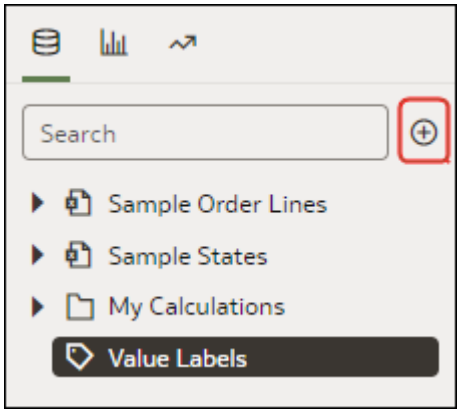
Add Datasets to a Workbook

Your workbook can use more than one dataset.

When you add more than one dataset, Oracle Analytics blends the data. You can check the default blending, or update or add data blending between datasets. See Blend Datasets.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, click **Add**, and select **Add Data**.

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3. Optional: Enter search criteria and click **Enter** to display matching results. See Search Options.

   Tip: When you browse datasets, to see the name of the data model where the data originated, hover over datasets icon (in Grid View) or hover over the column name (in List View).

4. Select a dataset, then click **Add to Workbook**.

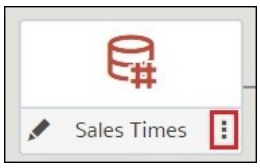
Replace a Dataset in a Workbook

When you replace a dataset, Oracle Analytics suggests how you can re-map the columns from the dataset that you replaced to the replacement dataset. You can accept or update these suggested mappings.

For example, you might replace a workbook's test dataset with a production dataset. Or you can copy a workbook and its visualizations, and then use the duplicate workbook as a template. After you rename the duplicated workbook, you can add a different dataset.

When you replace the dataset, any data mapping that you specify is applied to the workbook. For example, if you map a data element to **None**, the specific data is removed from the workbook's visualizations, calculations, and filters.

1. On your home page, hover over the workbook to use as a template, click **Actions**, and then select **Open**.
2. From the Visualize page, click **Data**.
3. In the Data page, click the **Data Diagram**.
4. Locate the dataset to replace and click **Actions**.



5. Select **Replace Dataset**.
6. In the Replace Dataset dialog, click the replacement dataset. Click **Select**.
7. Review, update, and specify the column mappings for the workbook's visualizations, calculations, and filters.
8. Click **Replace**.

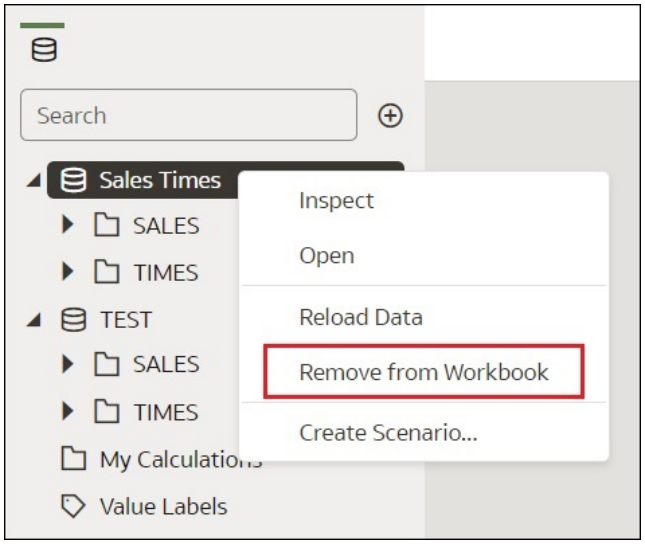
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9. Optional: If you want to add blending between datasets, then in the **Data Diagram**, click between the datasets that you want to blend, and in the Blend Data dialog add column matches.

Remove a Dataset from a Workbook

You can remove a dataset from a workbook. When you do this, you remove all of the dataset's columns from the workbook's visualizations, filters, and calculations.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the **Visualize** canvas, go to the Data pane, right-click the dataset that you want to remove, and select **Remove from Workbook**.



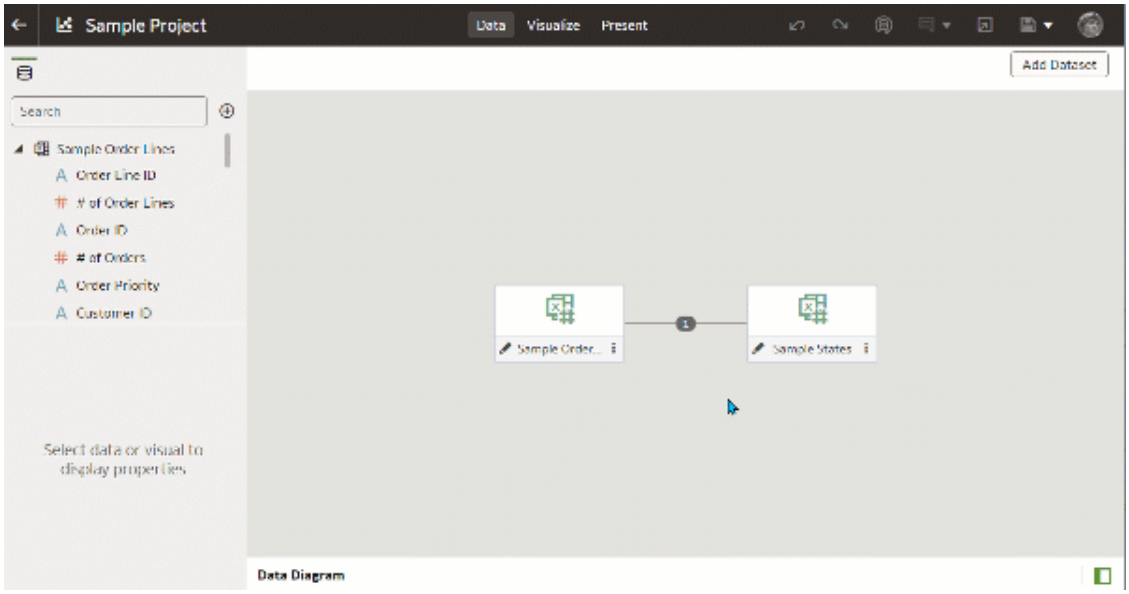
3. Click **Save**.

Modify a Workbook's Datasets

You can use the Workbook Editor's **Data** page to navigate to the Dataset editor or transform editor to view or modify a workbook's datasets.

When you locate a dataset's icon in the data diagram and click **Edit**, a new browser tab opens that contains the editor that you use to view or modify the dataset. The Workbook Editor remains open in its own browser tab and immediately reflects any saved dataset changes.

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> **Note**
>
> A dataset can be used in multiple workbooks and data flows. Modifying a dataset impacts all workbooks and data flows that use the dataset.

See About the Dataset Editor and Enrich and Transform Your Data.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the workbook editor, click **Data** to go to the Data page.
3. In the data diagram, locate the dataset and click its **Open** button.

   The tab that's displayed depends upon the dataset you selected:

   - If the dataset uses an Oracle EPM Cloud, Oracle Essbase, or Google Analytics connection, then the transform editor is opened in a tab.
   - If the dataset uses a connection that supports multiple tables (for example, Oracle Database or Oracle Autonomous AI Lakehouse), then the Dataset Editor is opened in a tab.
4. Optional: If the Dataset editor is displayed, click the tab for the table that you want to view or modify and the transform editor is displayed.
5. Modify and save the dataset.

Blend Datasets in Workbooks

This topic explains blending and how to blend a workbook's datasets.

Topics:

- Understand Blending
- About Mismatched Values in Blended Data
- Blend Datasets

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- Change Data Blending in a Visualization

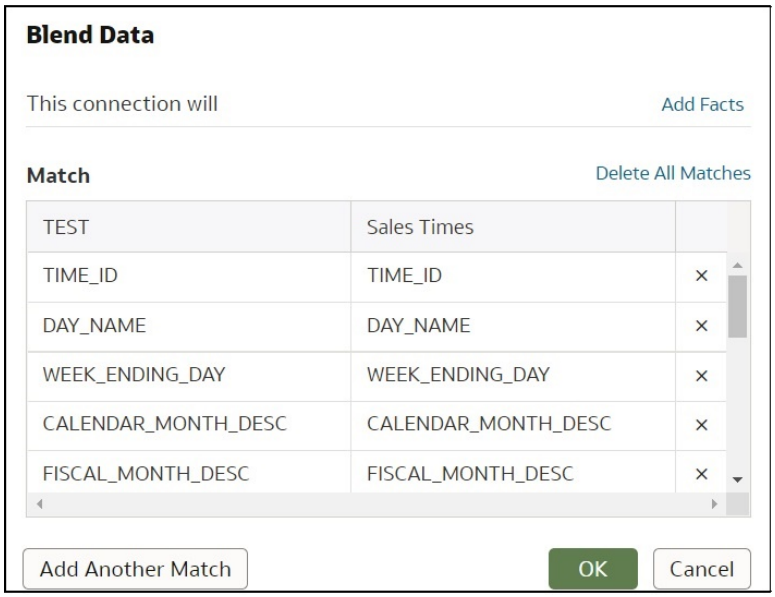
Understand Blending

When you add more than one dataset to a workbook, Oracle Analytics tries to match columns between the datasets that you added. This matching is called blending.

Video

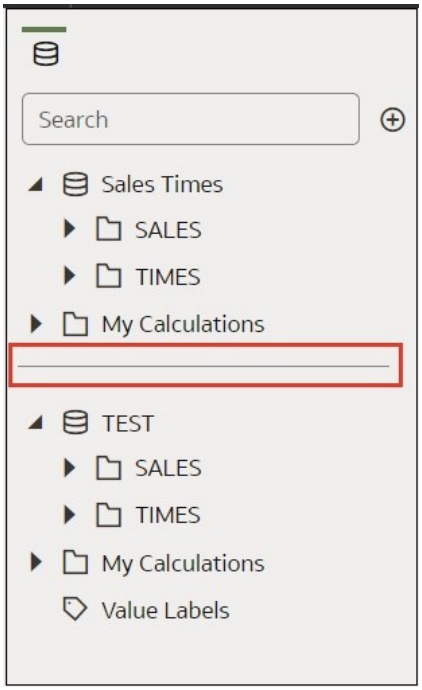
For example, Dataset A might contain new dimensions that extend the attributes of Dataset B. Or Dataset B might contain new facts that you can use alongside the measures that already exist in Dataset A.

Blending automatically matches external dimensions where they share a common name and have a compatible data type with attributes in the existing dataset.



Datasets that aren't blended are divided by a line in the workbook's Data pane.

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There are restrictions between data elements and visualizations when a workbook contains datasets that aren't blended. For example, if your workbook contains two datasets that aren't blended, then you can't include the data elements of one dataset in the filters, visualizations, or calculations of the other dataset.

Blending relationships are stored in the tables and not in the workbook. So any blending matches that you add or remove impact the other datasets that use the same tables.

Datasets that use Oracle Essbase or Oracle EPM Cloud connections aren't available for blending.

Your workbook might contain a dataset that includes tables from different connections and schemas. When a dataset contains multiple tables, the tables will contain joins. See Understand Dataset Table Joins. In your workbook, you can blend datasets that contain multiple tables and joins. For example, you can add and blend datasets with multiple tables when you want your workbook to contain cross fact analysis.

About Mismatched Values in Blended Data

In some cases when the rows of data that you expect to see in a dataset are missing, then you must specify which dataset to use for data blending.

Sometimes rows of data are missing when your workbook includes data from two datasets that contain a mixture of attributes and values, and there are match values in one source that don’t exist in the other.

Suppose we have two datasets (Source A and Source B) with slightly different rows, as shown in the following image. Note that Source A doesn‘t include IN-8 and Source B doesn’t include IN-7.

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T1 - Source A

Inv#	Date	Rev
IN-1	1/1/2015	100.00
IN-2	1/1/2015	200.00
IN-3	1/1/2015	300.00
IN-4	1/2/2015	400.00
IN-5	1/2/2015	500.00
IN-6	1/2/2015	600.00
IN-7	1/3/2016	800.00

T2 - Source B

Inv#	Rep	Bonus
IN-1	Billie	1.00
IN-2	Joe	2.00
IN-3	Kim	3.00
IN-4	Billie	4.00
IN-5	Joe	5.00
IN-6	Kim	6.00
IN-8	Mika	8.00

The following results are displayed if you select the **All Rows** data blending option for Source A and select the **Matching Rows** data blending option for Source B. Because IN-7 doesn't exist in Source B, the results contain null Rep and null Bonus.



T4 - SA All SB Match -- no Mika

Date	Rep	Rev	Bonus
1/1/2015	Billie	100.00	1.00
	Joe	200.00	2.00
	Kim	300.00	3.00
1/2/2015	Billie	400.00	4.00
	Joe	500.00	5.00
	Kim	600.00	6.00
1/3/2016	(null)	800.00	(null)

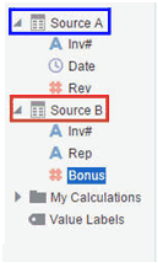
T5 - SA All SB Match -- no Mika

Date	Rev	Bonus
1/1/2015	600.00	6.00
1/2/2015	1,500.00	15.00
1/3/2016	800.00	(null)

T6 - SA All SB Match -- no Mika

Rep	Rev	Bonus
Billie	500.00	5.00
Joe	700.00	7.00
Kim	900.00	9.00
(null)	800.00	(null)

The following results are displayed if you select the **Matching Rows** data blending option for Source A and select the **All Rows** data blending option for Source B. Because IN-8 doesn't exist in Source A, the results contain null Date and null Revenue.



T7 - SA Match SB All -- No 3Jan

Date	Rep	Rev	Bonus
1/1/2015	Billie	100.00	1.00
	Joe	200.00	2.00
	Kim	300.00	3.00
1/2/2015	Billie	400.00	4.00
	Joe	500.00	5.00
	Kim	600.00	6.00
(null)	Mika	(null)	8.00

T8 - SA Match SB All -- No 3Jan

Date	Rev	Bonus
1/1/2015	600.00	6.00
1/2/2015	1,500.00	15.00
(null)	(null)	8.00

T9 - SA Match SB All -- No 3Jan

Rep	Rev	Bonus
Billie	500.00	5.00
Joe	700.00	7.00
Kim	900.00	9.00
Mika	(null)	8.00

The visualization for Source A includes Date as an attribute, and Source B includes Rep as an attribute, and the match column is Inv#. Under dimensional rules, you can't use these attributes with a measure from the opposite table unless you also use the match column.

There are two settings for blending tables that contain both attributes and measures. These are set independently in each visualization based on what columns are used in the visualization. The settings are **All Rows** and **Matching Rows** and they describe which source rows the system uses when returning data to be visualized.

The system automatically assigns data blending according to the following rules:

- If the visualization contains a match column, then the system sets sources with the match column to **All Rows**.

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- If the visualization contains an attribute, then the system sets its source to **All Rows** and sets the other sources to **Matching Rows**.
- If attributes in the visualization come from the same source, then the system sets the source to **All Rows**, and sets the other sources to **Matching Rows**.
- If attributes come from multiple sources, then the system sets the source listed first in the workbook's elements panel to **All Rows** and sets the other sources to **Matching Rows**.

Blend Datasets

If your workbook contains multiple datasets, then you can blend data in one dataset with data in another dataset.

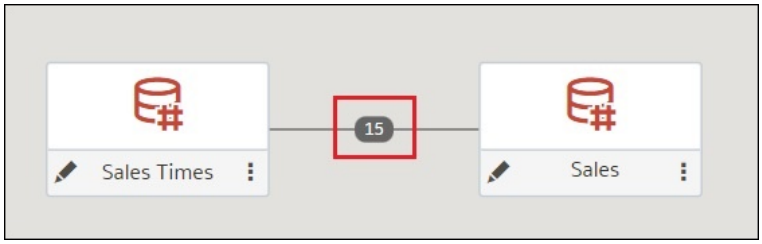
When you add more than one dataset to a workbook, the system tries to find matches for the data that's added. It automatically matches external dimensions where they share a common name and have a compatible data type with attributes in the existing dataset. Blending relationships are stored in the tables and not in the workbook. So any blending matches that you add or remove affects the other datasets that use the same tables.

See Understand Blending.

Datasets that use Oracle Essbase or Oracle EPM Cloud connections aren't available for blending.

> **Note**
>
> Datasets can include tables from different connections and schemas. These datasets use joins, which are defined in the Dataset editor. To reduce or eliminate blending in workbooks, Oracle suggests that whenever possible you create datasets that contain multiple tables and use joins. See Create a Dataset from a Connection.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. To add another dataset to the workbook, click **Data**, and in the Data pane, click **Add** (+), and then **Add Dataset**.
3. In the Add Dataset dialog, select a dataset and click Add to Workbook.
4. In the Data page, go to the **Data Diagram** and locate the datasets to blend.
5. Click the number between the dataset icons.



6. Optional: To change the match for a column, click the name of the column and select a different column.

   If columns have the same name and same data type, then they're recognized as a possible match. You can customize this and specify that one column matches another by

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explicitly selecting it even if its name isn't the same. You can select only those columns with a matching data type.

7. Optional: Click **Add Another Match**, and in the table, select the columns that you want to join.
8. Optional: For a measure that you're uploading for the first time, specify the aggregation type such as *Sum* or *Average*.
9. Click **OK**.

Tips on Blending Data

Here're some tips on getting the best results when blending data.

Avoiding the maximum runtime limit error

If you blend an external dataset with a Oracle Analytics Subject Area and use columns and filters from both sources in the same visualization, Oracle Analytics might timeout.

To avoid a timeout, apply more Subject Area filters reduce the amount of data returned by the query.

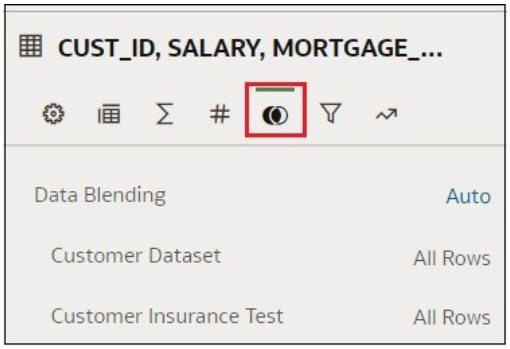
Change Data Blending in a Visualization

You can modify a visualization's properties to override the workbook's data blending settings.

Datasets that use Oracle Essbase or Oracle EPM Cloud connections aren't available for blending.

See Understand Blending.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the workbook, select a visualization, and in the Properties pane click **Datasets**.



3. To change the default blending, click **Data Blending**, and select either **Auto** or **Custom**.

   If you choose **Custom**, you can set the blending to either **All Rows** or **Matching Rows**.

   - You must assign at least one source to **All Rows**.
   - If both sources are **All Rows**, then the system assumes that the tables are purely dimensional.
   - You can't assign both sources to **Matching Rows**.

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Refresh Data in a Workbook

Use the most up-to-date data in your workbook.

Topics:

- About Refreshing a Workbook's Data
- Refresh a Workbook's Data

About Refreshing a Workbook's Data

You should refresh the data in a workbook to ensure that it uses current data.

When you click the **Refresh Data** button for a workbook, it runs the queries for the visualizations on the canvas. How the datasets are configured and the data sources they use determines where the canvases get their refreshed data.

If a dataset table's access mode is set to **Live**, then the table bypasses any presentation caches to fetch new data from the source. If a datasets table's access is set to **Automatic Caching**, then the table re-queries the cached data.

Refreshing data doesn't trigger a data cache reload. Sometimes the cached data is stale, so if you refresh the data and the data isn't the most current, then the datasets may need to be reloaded. See Reload a Dataset's Data.

Oracle recommends that you refresh a workbook's dataset rather than replace it. Replacing a dataset can be destructive. Don’t replace a dataset unless you understand what can happen:

- If the columns and data types don't match between the existing dataset and the new dataset, then replacing a dataset breaks the workbooks that use the existing dataset.
- Any modified or added columns in the existing dataset are lost and workbooks using the dataset are likely to break.

Refresh a Workbook's Data

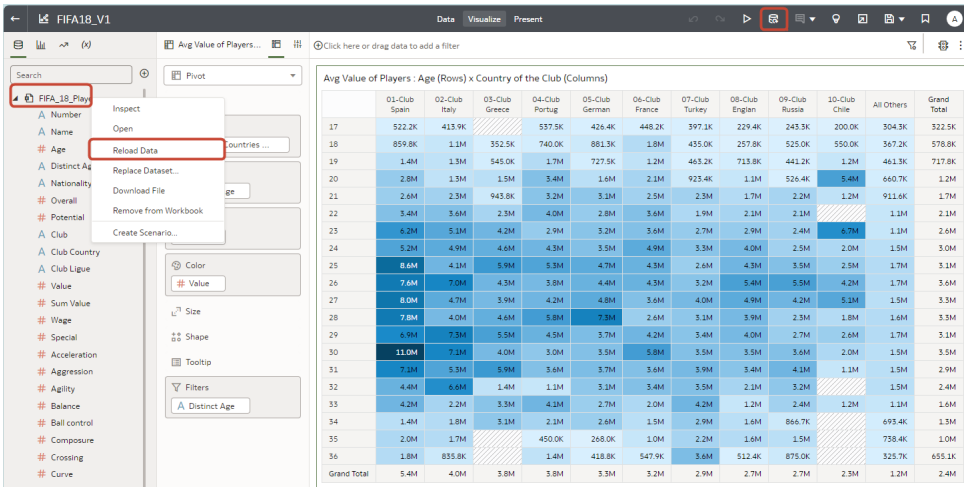
Refresh the data in a workbook to ensure that your visualizations contain the most current data.

See About Refreshing a Workbook's Data.

A user with Administrator privileges can set the **Refresh Data when Canvas Is Opened**, **Auto Refresh Data**, and **Refresh Interval** properties to automatically refresh the canvas' data. See About Canvas Data Refresh Properties.

1. On your home page, hover over a workbook, click **Actions**, and then select **Open**.
2. On the Data pane, right-click the connection name or table name and select **Reload Data**.

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Use Calculations in Workbooks

Find out how to enhance your workbook content using calculations.

Topics:

- Get Started with Calculations
- Tips on Using Calculations
- Create a Reusable Calculation in a Workbook
- Create a Group Calculation in a Workbook
- Create a Folder to Store Calculations in a Workbook
- Sort Calculations in a Workbook

Get Started with Calculations

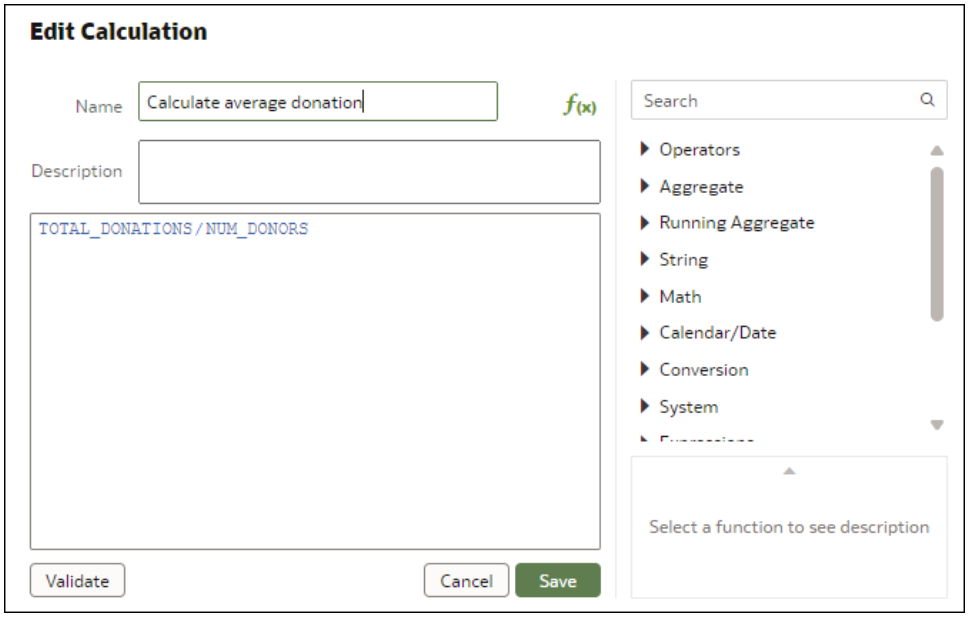
Calculations enable you to create reusable artifacts to enhance your analytics content. For example, you might calculate the a moving average or concatenate two text fields.

With calculations, you can create aggregates, strings, math functions, dates, filters, analytics, and spatial functions. For a full list of supported functions, see Functions.

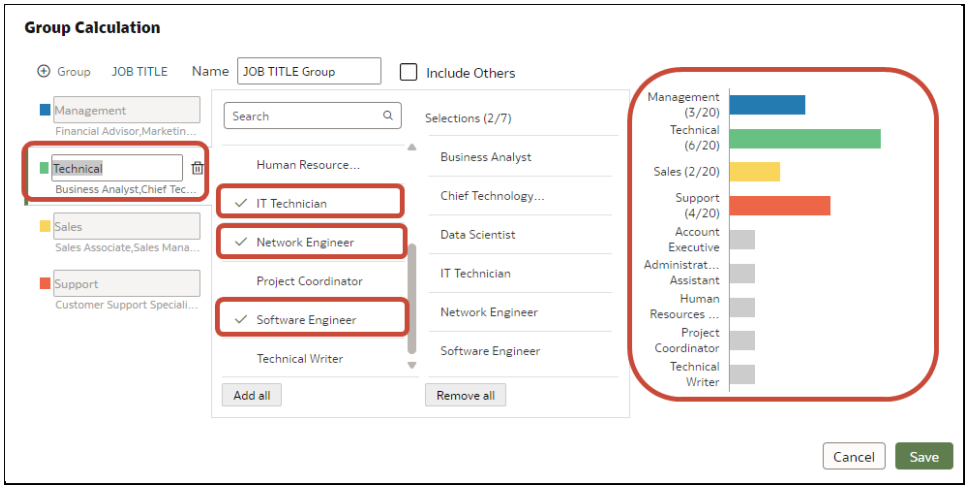
To create a calculation from the workbook editor, in the Data pane or Visualize pane, right-click on My Calculations in the Data pane or click Add (+) at the top of the pane. Then select either **Create Calculation** or **Create Group Calculation**. You can also create a group calculation based on an existing calculation by right-clicking the calculation and selecting **Create Group Calculation**.

- **Calculations** enable you to create data elements based on a wide range of expressions and functions. For example, concatenate text, create clusters or outliers, or calculate median values.

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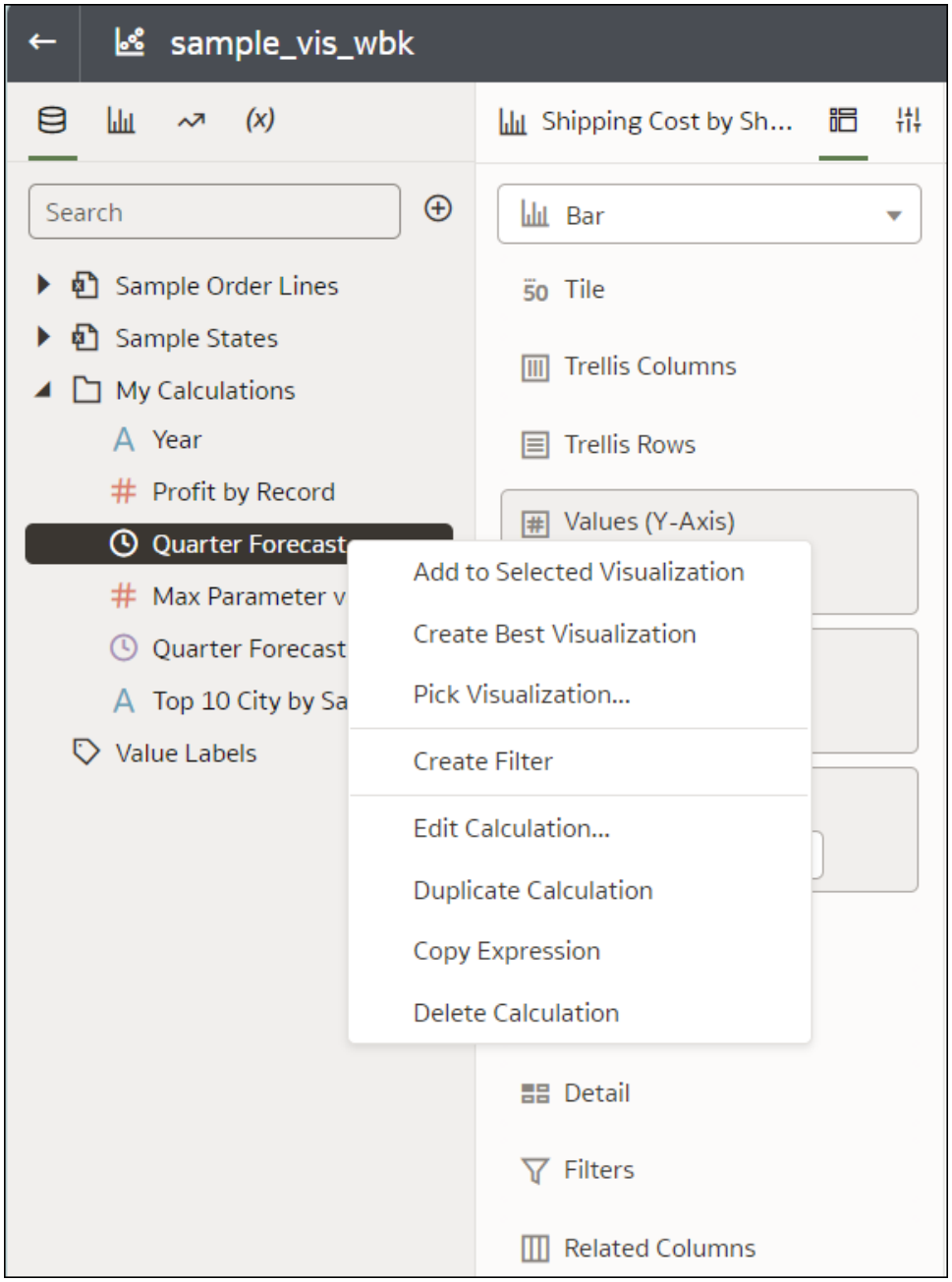
- **Group Calculations** enable you to categorize you data for easier analysis. For example, you might create job categories Management, Sales, Technical, and Support so that you can assign job titles to these categories and report on them.



Working With Calculations

When you create calculations in workbooks, by default they're stored in the My Calculations area of the workbook where you created them.

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You can organize your calculations by creating multiple levels of subfolders in the **My Calculations** area of the Data pane. See Create a Folder to Store Calculations in a Workbook.

Right-click calculations and folders to access these options:

Option	Use this option to
Add to Selected Visualization	Add the calculation to visualizations on the currently displayed canvas.

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Option	Use this option to
Copy Expanded Expression	(Displayed when a calculation references another calculation, known as a nested calculation) Copy the expression that is formed by replacing the referenced calculations with their source expressions recursively. In other words, the nested expressions are copied, replacing the name of the nested calculation.
Copy Expression	Review and copy the underlying SQL code used by the calculation. If the calculation references another calculation, the nested expressions aren't copied.
Create Best Visualization	Let Oracle Analytics create a visualization for you based on the best style for the data that you have.
Create Calculation	Add a calculation to the workbook.
Create Group Calculation	Add a group calculation to the workbook.
Create Filter	Filter the workbook or visualization using the calculation.
Create Folder	Create subfolders under the currently selected folder to organize your calculations. You can then drag and drop existing calculations into the subfolders.
Delete Calculation	Remove the calculation from the workbook.
Delete Folder	Remove a folder from the workbook. You can only delete empty folders.
Duplicate Calculation	Create an editable copy of the calculation.
Edit Calculation	Update the calculation.
Pick Visualization	Add the calculation to the canvas using a visualization style that you select from a list of suitable styles.
Rename Folder	Change the name of a folder.

Adding Comments to Calculations

In Expression Builder you can annotate calculations with comments in block quotes to describe calculation logic, accessibility, change management, history, and so on. For example:

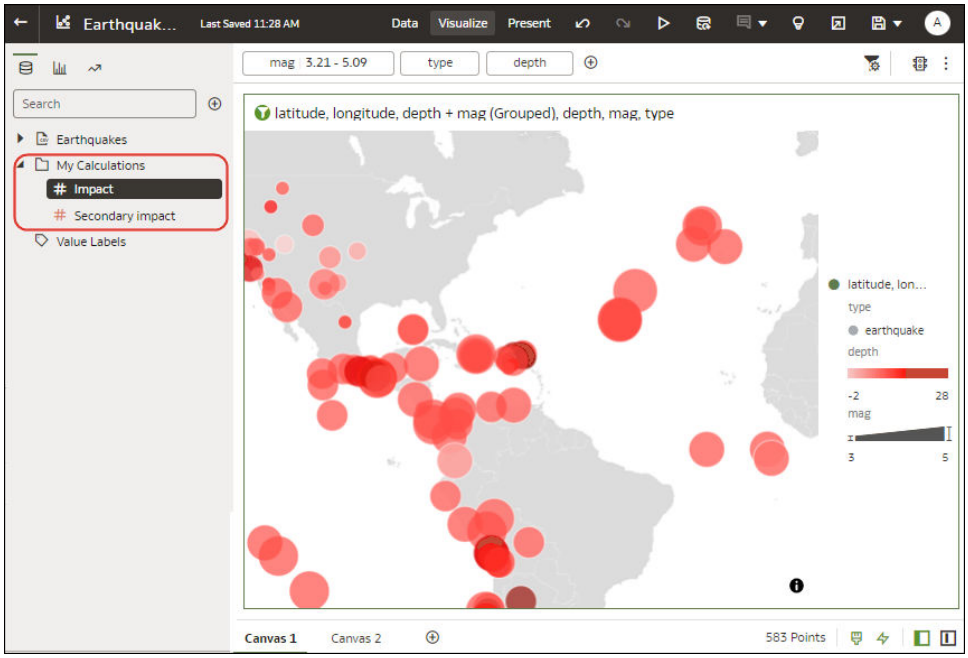
```
Sum( Sales )
/* Comment! */
```

Tips on Using Calculations

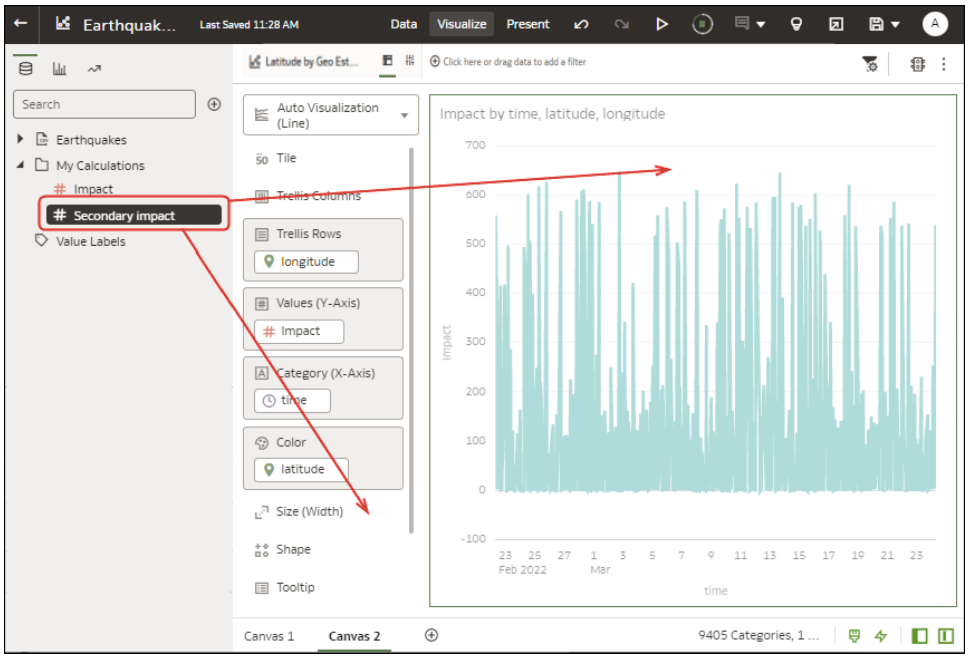
Use these tips to help you create calculations in a workbook.

- Calculations are stored in the **My Calculations** area of the Data pane, where you can reuse them in any visualization in the workbook. For example, if you have data elements for height and width, you might calculate area by multiplying height by width (that is, height * width). You can reuse the area calculation in other visualizations in a workbook. You can also use calculations in other calculations.
- In the workbook editor, review existing calculations in the My Calculations area, and select a calculation to display its attributes in the Data pane.

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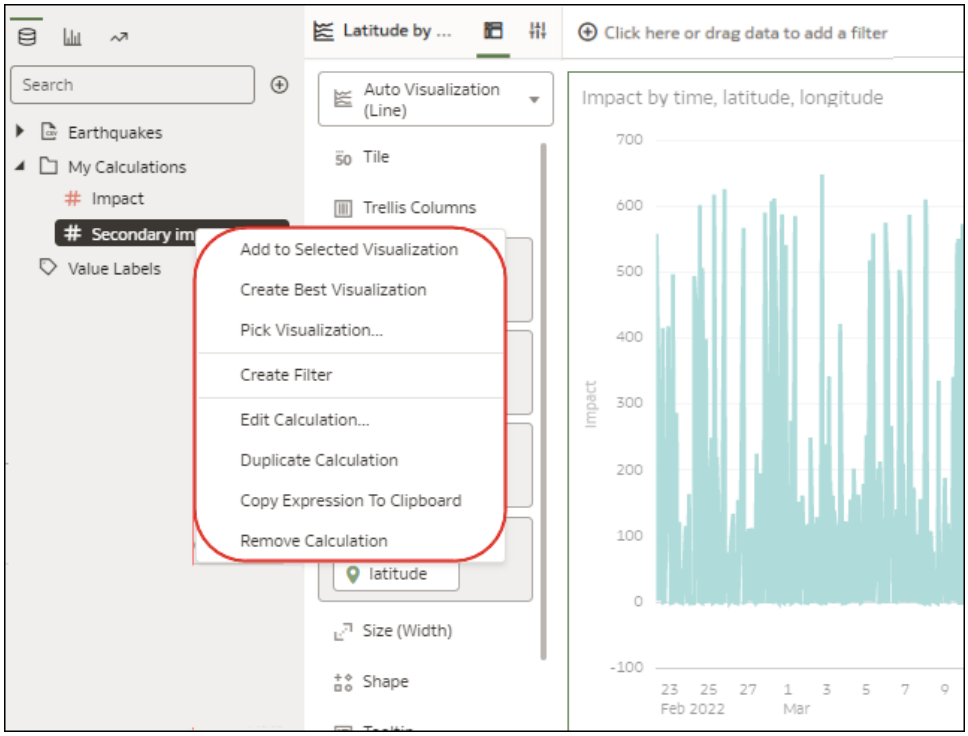


- To add a calculation to a visualization, drag it from the My Calculations area to the visualization or Grammar pane.

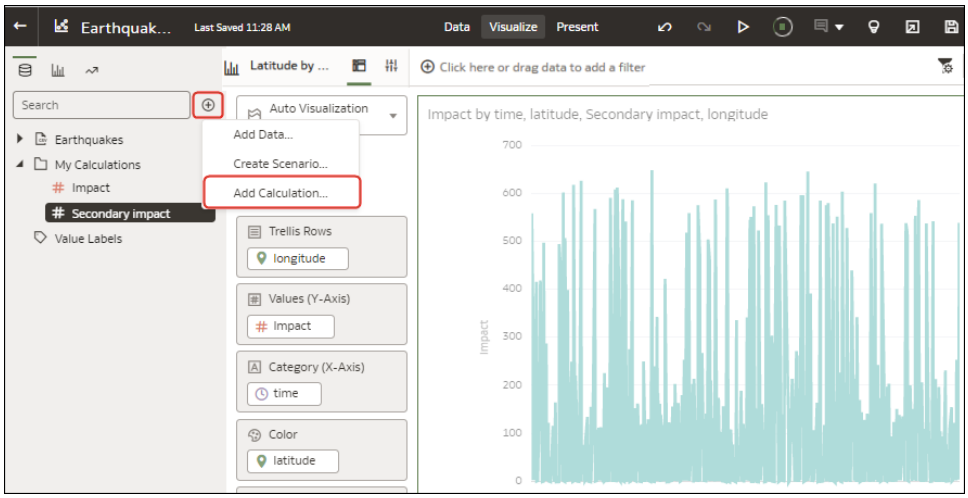


- Right-click a calculation to its editing options. For example, you might add it to the selected visualization, use it to filter your data, or let Oracle Analytics choose the best visualization type for you (that is, **Create Best Visualization**).

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- To calculate a new value to use in your workbook, click **Add**, then **Calculation** to display the New Calculation dialog, where you can specify the details (for example, `height * width`). The new calculation is added to the My Calculations area.



Create a Reusable Calculation in a Workbook

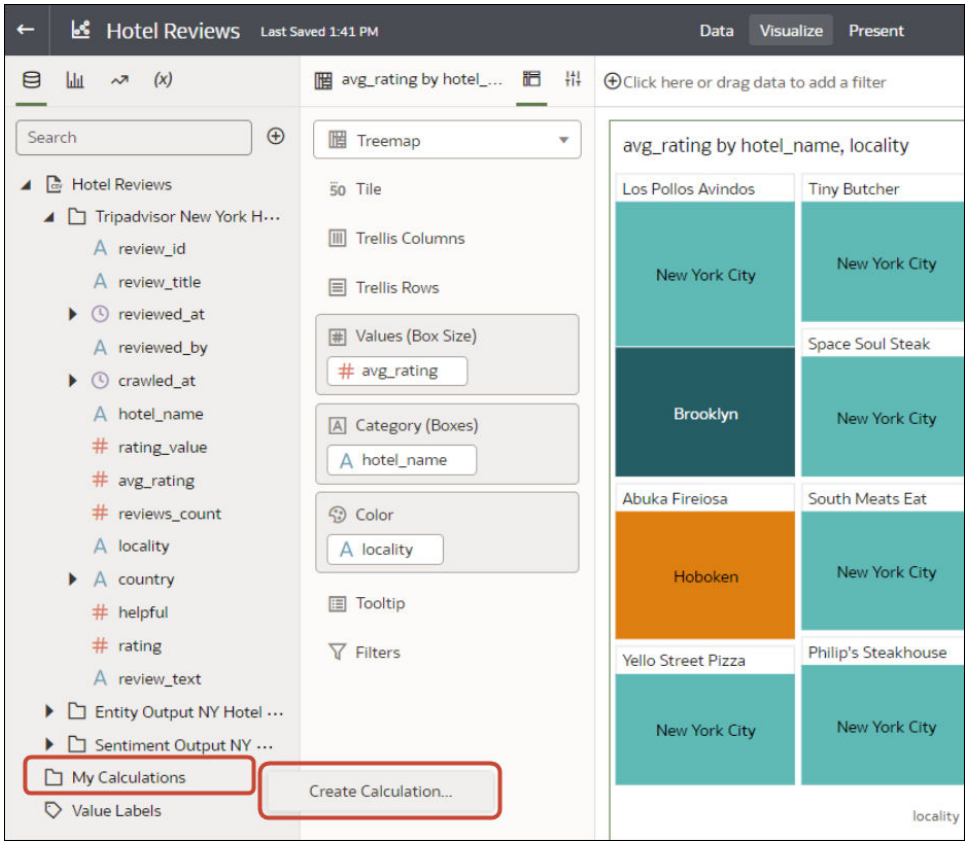
You can create a data element based on a calculation, and then add the data element to your workbook's visualizations. For example, you create a calculation called "SOME_NAME" and use the BIN function to classify AGE values into four buckets: 0 to 20, 21 to 40, 41 to 60, and 60 plus. You then add it to a visualization to group and display the number of product orders.

Calculated data elements are stored in the dataset's My Calculations folder and not in the workbook. Workbooks have a My Calculations folder for each dataset used (whether joined or not-joined). Calculations are available anytime you use the workbook.

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When you're writing a new calculation, you can drag and drop columns from the Data pane into the Expression Editor. You can only drag and drop columns that are joined to the dataset.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, click **Add** ⊕, and select **Create Calculation** to open the New Calculation dialog.



3. Enter a name.
4. Optional: Enter a description that displays in the tooltip when you hover over a calculation.
5. In the expression builder pane, compose and edit an expression.

   Tip: Start typing the name of a data element, function, or calculation to see a popup of the item that you can click to add to your expression.
6. Click **Validate**.
7. Click **Save**.

Create a Group Calculation in a Workbook

Create group calculations in your workbook to categorize you data for easier analysis.

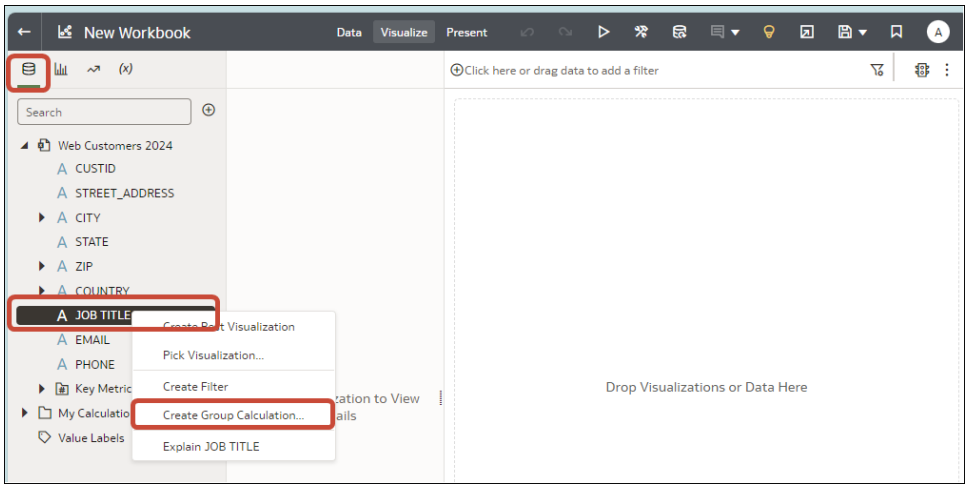
For example, to assign job titles to categories and report on them, you might create a group calculation for the job categories, Management, Sales, Technical, and Support.

Group calculations are stored in the My Calculations area of workbook. Workbooks have a My Calculations folder for each dataset used (whether joined or not-joined).

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

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2. In the Data pane, right-click the attribute on which you want to group data and select **Create Group Calculation**.

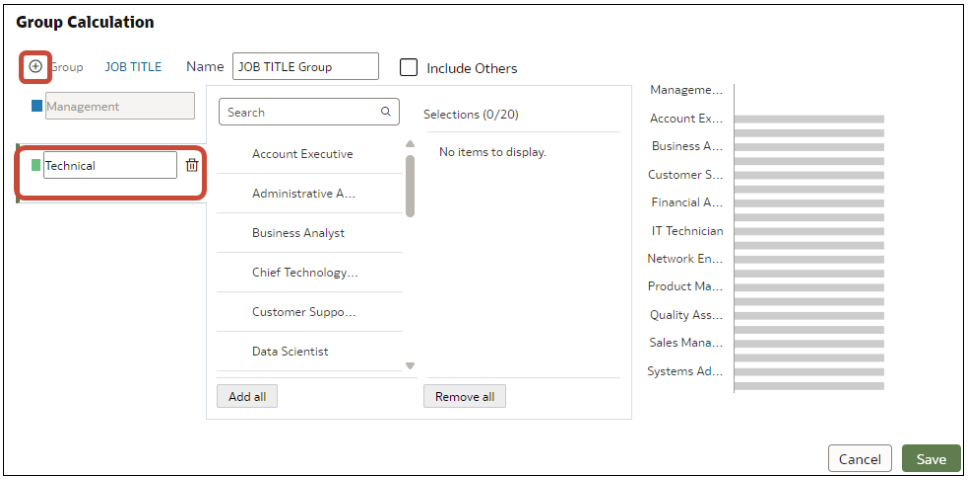


3. In the **Name** field, change the default name to a meaningful name. For example, Job Categories.

4. At the left hand side, under **Group**, add the groups you want to create.

   For example, you might create four groups for job categories Management, Sales, Technical, and Support.

   - Click **+** next to **Group** to add your groups.
   - Enter a meaningful name for each group.

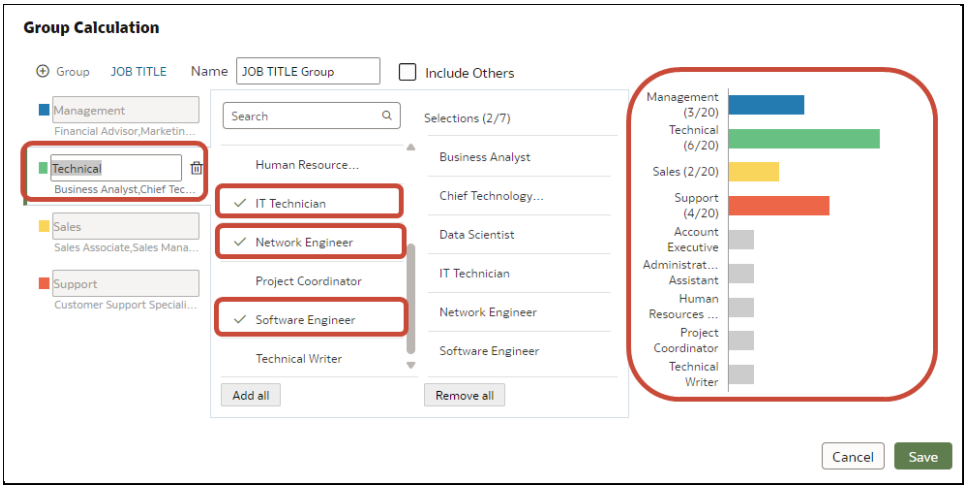


5. Add attributes from the central list to the groups.

   For example, you might select the Technical group and then click job titles such as Software Engineer that apply to the Technical category.

   - First select a group at the left hand side.
   - Click attributes in the central list to add them to the selected group.
     Tip: If there're large number of attributes and only a sub-set are listed, use the **Search** field above to locate attributes to add.
   -

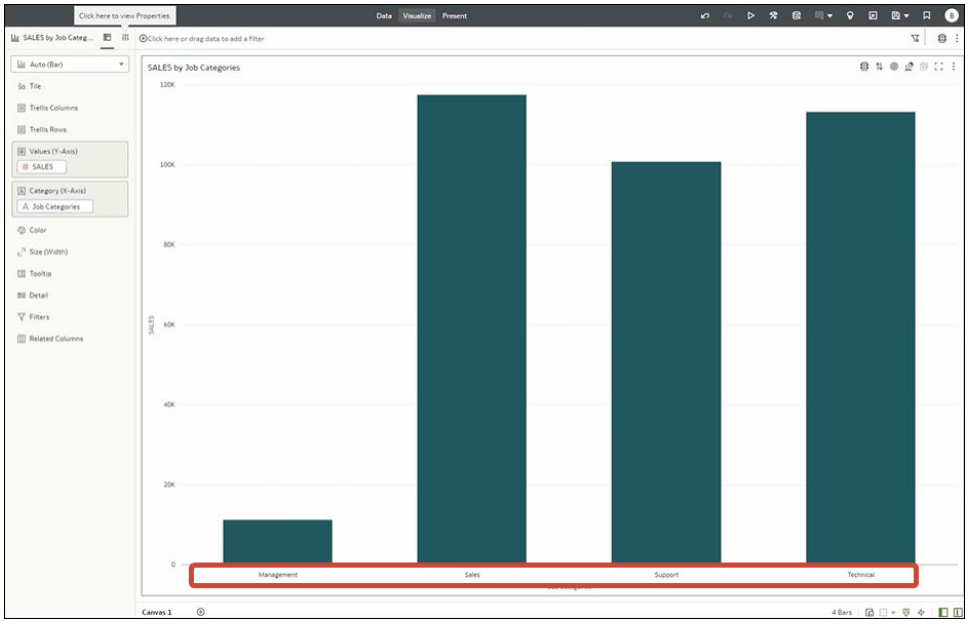
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As you populate the groups, you'll see the histogram at the right hand side update.

6. Click **Save**.

You can now visualize your data by your new groups. For example, you might add Sales and Job Category to a workbook to visualization sales by job category.

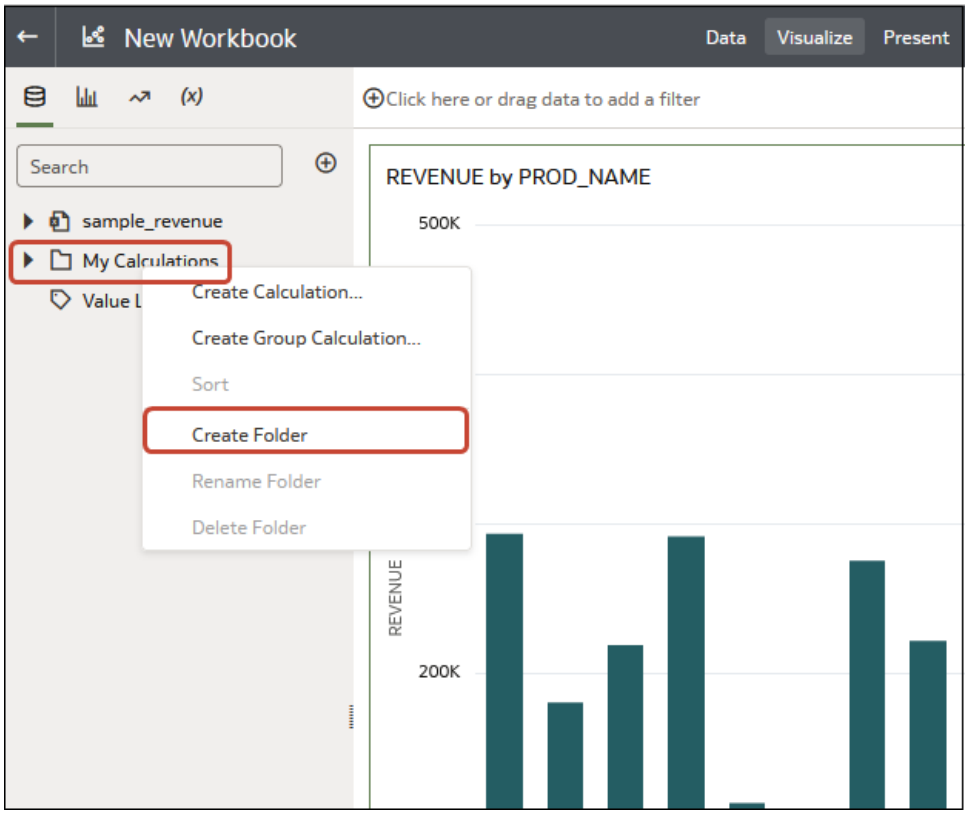


Create a Folder to Store Calculations in a Workbook

In workbooks you can organize your calculations by creating multiple levels of folders in the **My Calculations** area of the Data pane. For example, if you have a large number of calculations in a workbook, arranging them into folders makes them easier to manage. You can also sort folders and calculations.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Display the **Data** pane.
3. Right-click **My Calculations** or an existing folder and select **Create Folder**.

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4. Optional: Change the default folder name to something more meaningful.

You can now organize your folders and calculations. For example, you can:

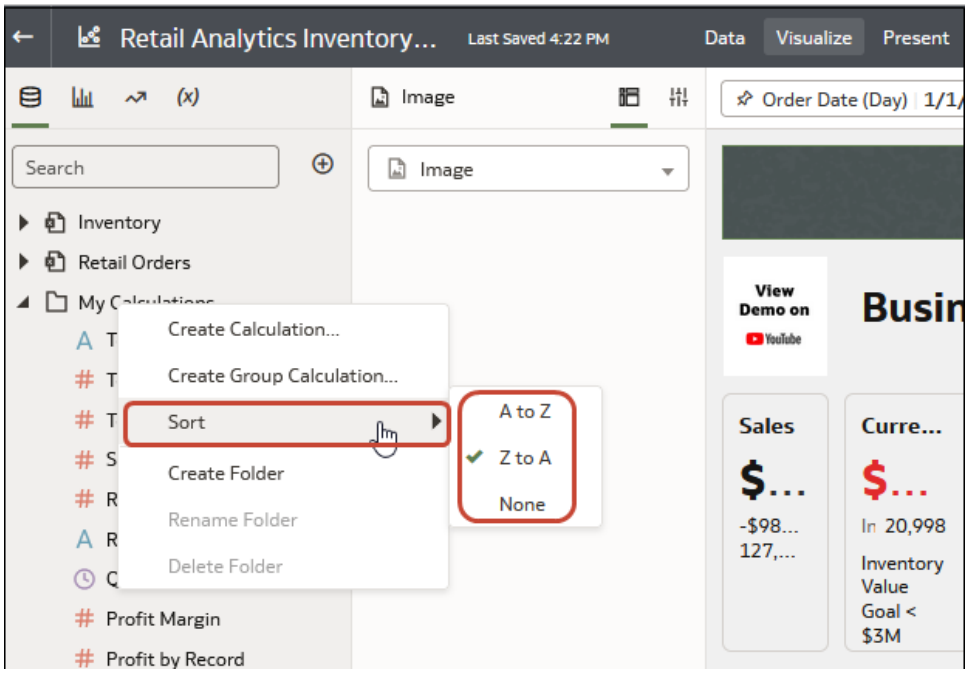
- Drag and drop existing calculations into folders.
- Drag and drop folders into other folders.
- Sort items in the My Calculations folder or sub-folders. Right-click **My Calculations** or a subfolder, then click **Sort** and select a sort option. The sort is applied to new items that you add.

Sort Calculations in a Workbook

In workbooks you can sort your calculations in the **My Calculations** area of the Data pane. For example, if you have a large number of calculations in a workbook, sorting makes them easier to manage.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the **Data** pane, right-click **My Calculations** or sub-folder, select **Sort**, then select an option.

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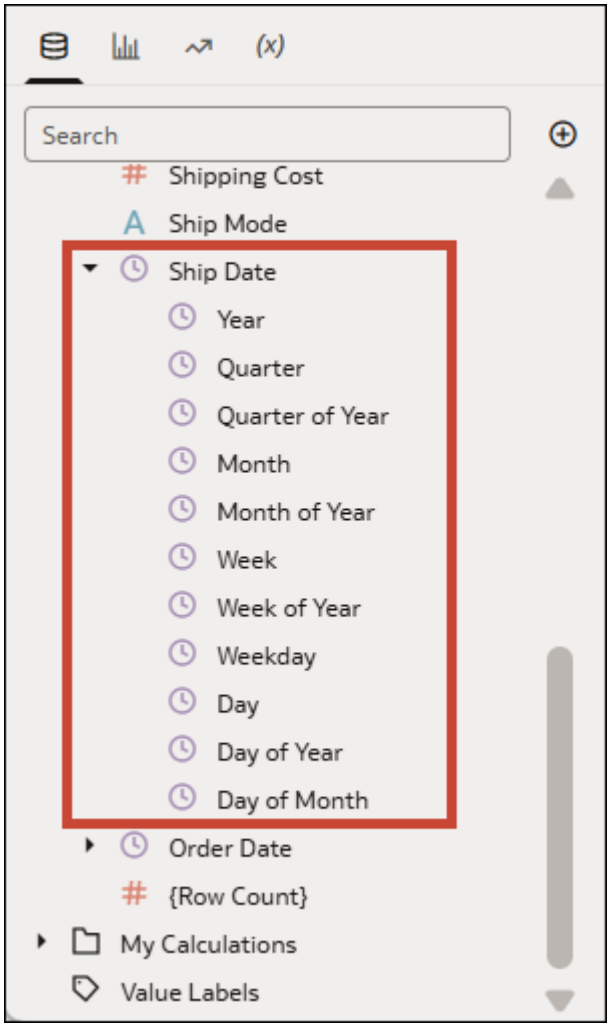
Derived Dates in Workbooks

Oracle Analytics automatically generates derived date columns for any Date, Time, or Timestamp columns in both datasets and subject areas.

Derived dates are columns with different levels of granularity such as Year, Quarter, Month, and Day. They're treated as attributes by default. You can use derived date columns the same as you would any other date or time column.

For example, for a date column called Ship Date, Oracle Analytics provides additional derived date columns such as Year, Quarter, Quarter of Year, Month, Month of Year, and so on, all the way down to days.

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Use Images in Workbooks

The topics in this section explain how to use images in workbooks.

Topics:

- About Using Images in a Workbook
- Add an Image as a Canvas Background
- Add an Image as a Visualization Background
- Create a Shared Image

About Using Images in a Workbook

In Oracle Analytics, you can add and configure images as backgrounds for canvases or individual visualizations so that they enhance your workbook without obscuring the information displayed.

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You can also add an image to the workbook header, see Add an Image to the Workbook Header in Present.

To add an image, you have the following options:

- Upload an image file.
- Specify the image source URL.
- Select a shared image.

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Images uploaded using an image file or an image source URL are saved with the specific working using the image. To share an image with all workbooks, you must upload the image file or source as a shared image. For more information, see Create a Shared Image.

You can configure the following properties for an image:

- **Compress on Upload Quality** - Specify the image compression to optimize quality and file size. The lower the compression, the more pixelated the image appears. The default is 80%.
- **Image Alignment** - Specify the placement of the image on the canvas or visualization.
- **Image Transparency** - Increase the transparency of the image when you want to see other objects on top of it more clearly.
- **Image Aspect Ratio** - Specify whether you want the image width and height to be proportional or not.
  - **Locked** - Makes the image width and height proportional. When you change one, the other changes automatically.
  - **Unlocked** - Lets you specify the image width and height separately.
- **Image Width** and **Image Height** - Specify the width and height of the image.
  - **Original** - Uses the original image size.
  - **Custom** - Lets you specify the width and height
  - **Auto Fit** - Automatically fits the image to the canvas or visualization.

Add an Image as a Canvas Background

Add an image as a canvas background.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Right-click the canvas tab and click **Canvas Properties**.
3. In the Background row, click **Auto**, then select **Custom**.
4. In the Image Source row, click **None**, then select an image source and add the image:
   - **File** – Click the file upload icon then browse for and select the image file.
   - **URL** – Paste the image source's URL into the text field.
   - **Shared Image** – Click the file upload icon and select a shared image.
5. Update the image properties as required.
6. Click **Save**.

Add an Image as a Visualization Background

Add an image as a visualization background.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select the visualization, then click **Properties** and scroll to the Style section of the General tab.
3. In the Background row, click **Auto**, then select **Custom**.
4. In the Image Source row, click **None**, then select an image source and add the image:

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- **File** – Click the file upload icon then browse for and select the image file.
- **URL** – Paste the image source's URL into the text field.
- **Shared Image** – Click the file upload icon and select a shared image.

5. Update the image properties as required.
6. Click **Save**.

Create a Shared Image

Create a shared image so you and other authors can reuse it in different workbooks.

Shared images make it easy to maintain a uniform appearance across workbooks and help ensure everyone uses the right approved images. Creating a shared image for something like a company logo or approved diagram also helps minimize duplication of effort between authors.

You must have the Upload Shared Images permission to create a shared image. Your administrator manages permissions. All authors can select an existing shared image to use in any of their workbooks.

Administrators manage shared images in the Console, see Manage Shared Images.

When you create a shared image, Oracle Analytics automatically provides a Compress on Upload Quality of 80%. You can modify this percentage. The lower the compression, the more pixelated the image appears. Additionally, higher compression may increase the load time for the workbook.

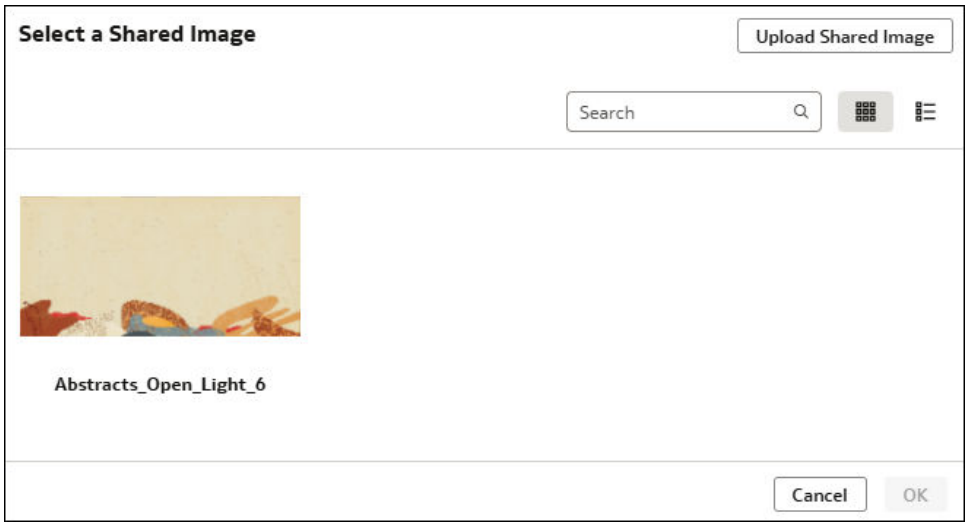
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Navigate to the location in the workbook where you want to add the shared image:
   - To upload a shared image to use as a canvas background, right-click the canvas tab and click **Canvas Properties**.
   - To upload a shared image to use as a visualization background, select the visualization, then click **Properties** and scroll to the Style section of the General tab.
   - To upload a shared image to use in the workbook header, click **Present**, then go to the Header section in the **Workbook** tab.
3. In the Background row, click **Auto**, then select **Custom**.
4. In the Image Source row, click **None** and select **Shared Image**.
5. Click the file upload icon .
6. In the Select a Shared Image dialog, click **Upload Shared Image**.

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7. In the Upload Shared Image dialog, click the file upload icon, then browse for and select the image file.
8. Click **Save**.

The image is now available for you and other authors to select when adding an image using the **Shared Image** option for the workbook header or as a canvas or visualization background.



Compose Expressions

Compose expressions to use in expression filters or in calculations using the Expression window. Expressions that you create for expression filters must be Boolean (that is, they must evaluate to true or false).

While you compose expressions for both expression filters and calculations, the end result is different. A calculation becomes a new data element that you can add to your visualization. An expression filter, on the other hand, appears only in the filter bar and can't be added as a data element to a visualization. You can create an expression filter from a calculation, but you can't create a calculation from an expression filter. See Create Calculated Data Elements and Build Expression Filters.

You can compose an expression in various ways:

- Directly enter text and functions in the Expression window.
- Add data elements from the Data Elements pane (drag and drop, or double-click).

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- Add functions from the function panel (drag and drop, or double-click).

See Expression Editor Reference.

Set Workbook Thumbnails

Data authors can show or hide the thumbnail for an individual workbook on a page. Hiding a workbook thumbnail can be useful for protecting sensitive data from being exposed to users that don't have the same access as the data author.

> **Note**
>
> Your administrator controls whether or not thumbnails are allowed. If thumbnails are disabled, thumbnails never display, that is, this setting is always “Off”. See Security Options.

1. On your home page, hover over a workbook, click **Actions**, and then select **Open**.
2. If the workbook opens for viewing, click **Edit**.
3. Click **Menu** on the workbook toolbar and select **Workbook Properties**.
4. Set **Save thumbnails** to **On** to display a thumbnail for the workbook on the page or **Off** to hide it.
5. Click **OK**.
6. Click **Save**.

Pause Data Queries in a Workbook

You can disable the Auto Apply Data option to pause issuing new queries as you change visualization content in a workbook.

You can quickly configure a visualization without having to wait for data updates after each change.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Visualize**.
3. Click the **Auto Apply Data** button to pause data queries.

   Data queries are temporarily disabled.
4. Make changes to a visualization in the workbook.

   Your changes are displayed but data isn't updated, and a bubble is displayed indicating the number of data requests that have been skipped.
5. Click the bubble if you want to refresh the data now.

   Data queries are still disabled.
6. Click the **Auto Apply Data** button to re-enable data queries.

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Open a Custom Workbook Extension

You can select a workbook extension to expand and enhance your workbook's functionality.

Developers in your company can create custom workbook extensions that provide additional workbook functionality. After your administrator uploads one or more of these custom workbook extensions to Oracle Analytics, the **Custom Workbook Extension** icon displays in the workbook toolbar. Workbook authors or consumers can click this icon to view and select from the list of the available workbook extensions.

Workbook extensions aren't workbook specific. All the workbook extensions that your administrator uploads display from the toolbar.

1. Create or open a workbook.
2. On the workbook toolbar, click **Custom Workbook Extension** .
3. From the list, click an extension to open or run it.

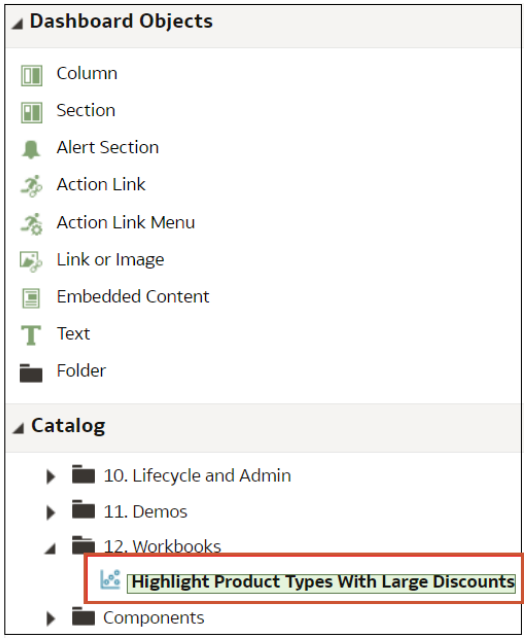
Embed a Workbook and Visualizations in a Dashboard

Embed workbooks in dashboards to share them with analysts.

Before you start, create your workbooks and store them in the catalog. For information about embedding, see Tips on Embedding Workbook Canvases in Dashboards. If your workbook contains more than one canvas, you can choose which canvas you want to display on the dashboard.

1. On your home page, click the **Page Menu**, select **Open Classic**, and then open or create a dashboard to embed the workbook into and save it to Shared Folders.
2. In the dashboard designer **Catalog** pane, navigate to the workbook and drag it onto the dashboard canvas.

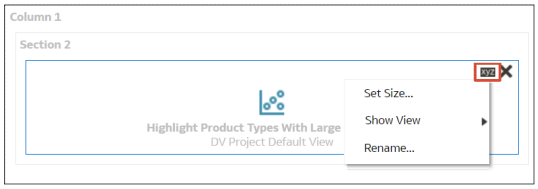
   For example, you might have stored your visualization workbook in the Shared Folders area in a folder named Workbooks.



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3. To modify the display size or specify which canvas to display, click **Properties**.

   By default, the last canvas in the workbook is displayed.



Tips on Embedding Workbook Canvases in Dashboards

Follow these tips to get the best out of embedding content.

Use the supported prompt types

When you embed workbooks in dashboards, you can use these prompt types to control the filters in the workbook. This table lists the supported prompts and operators.

Prompt user inputs	Column Type	Supported operators	Filter type in workbooks
Text field Choice list Check boxes Radio buttons List box	Dimension (non-numeric)	"is in" and "is not in"	List filter
Slider Text field	Fact (numeric)	">=", "<=" and "is between"	Number range filter
Calendar	Date	">=" and "<="	Date range filter

Don't embed workbook canvases to print or share via Delivers:

Note that consumers won't be able to see embedded workbook canvases when they:

- Print dashboard pages.
- Access dashboard pages shared with them using Delivers.

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8

Design the Look and Feel of Workbooks

This chapter explains how to design and customize workbooks in Oracle Analytics.

Topics:

- Workbook Themes
- Configure Settings for Canvas Layout Templates
- Work with Canvas Properties
- Design Canvas Layouts for Different Screen Sizes

Workbook Themes

A workbook theme defines the default style settings that are applied when you create a workbook and its visualizations. You can configure a workbook theme to change various theme style settings for example, color palette, font family, or background color. You can change any of these theme settings to alter the appearance of a workbook and its visualizations.

You must have the permissions, Manage Layouts and Themes, and Create and Edit Shared Themes to create and update workbook themes.

Topics:

- Create a Workbook Theme
- Create a Modified Workbook Theme
- Select an Alternative Workbook Theme
- Configure Settings for Workbook Themes

Create a Workbook Theme

You can create a workbook theme by updating an existing theme and saving it with a new name to share with others. For example, you might want a new workbook theme called Redwood Dark that's based on the Redwood theme, but uses a darker color palette.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the workbook **Menu** and select **Workbook Themes**.
3. If you want to create a workbook theme based on one that's not currently selected, click **Theme**, and select one of the **Shared Themes**. For example select **Redwood**.
4. Click **Workbook styles** to change workbook style settings.
5. Click **Visualization styles** to change visualization style settings.
6. Click **Save as a new shared theme**, enter a name and click **Create**.
7. Click **OK**.

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Create a Modified Workbook Theme

You can update a workbook theme and save it to an automatically-generated modified theme name. For example, if you modify the Redwood theme, the workbook theme name automatically changes to Redwood (modified), and you can then save it using the new name, and including your modifications.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the workbook **Menu** and select **Workbook Themes**.
3. Optional: If you want to select a theme to modify, click **Theme**, and select the theme. For example select **Redwood**.
4. Click **Workbook styles** to modify workbook style settings.
5. Click **Visualization styles** to modify visualization style settings.

   Any changes you make to a visualization in the Properties pane, General tab, take precedence over changes you make here.
6. Click **OK**.

Select an Alternative Workbook Theme

You can select an alternative theme to use in a workbook. For example, you might want to choose a modified theme to replace the current default Redwood theme for a workbook.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the workbook **Menu** and select **Workbook Themes**.
3. Click **Theme**, and select another theme from the list. For example, Redwood (modified).
4. Click **OK**.

Configure Settings for Workbook Themes

You can configure the visibility of a workbook theme, and whether users can update a workbook theme. For example, you might want to hide a particular workbook theme from users when they create or update workbooks.

As a content author you must have the Manage Layouts and Themes, and Create and Edit Shared Themes permissions to configure these settings.

You can configure theme settings:

- **Visible** - Shows or hides a theme when users create a workbook.
- **Set as default** - Displays a theme as the default when users create a workbook.
- **Make Read-write** - Makes a theme readable and writable.
- **Make Read-only** - Makes a theme read-only.

1. On your home page, click **Navigator**  , and then click **Console**.
2. Click **Layouts, Themes and Images**.
3. Click **Themes**, and select or deselect **Visible**.
4. Right-click a theme and select an option.

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Configure Settings for Canvas Layout Templates

You can configure settings for canvas layout templates to determine whether users are able to see and update them when they create workbooks. For example, you might want to hide a particular canvas layout template from users, or prevent users from updating a canvas layout template.

As a content author you must have the Manage Layouts and Themes, and Create and Edit Shared Layouts permissions to configure these settings.

1. On your home page, click **Navigator**, and then click **Console**.
2. Click **Layouts, Themes and Images**, click **Layouts**, and select an option:
   - **Visible** - Select to display a layout template to users.
   - **Visible** - Deselect to hide a layout template from users.
3. Right click a layout template, select an option:
   - **Make Read-write** - Select to make a layout template readable and writable.
   - **Make Read-only** - Select to make a layout template read only.
   - **Delete** - Select to delete a layout template.

Work with Canvas Properties

You can work with canvas properties, such as layout, width, height, synchronizing visualizations on a canvas, and refreshing data.

Topics:

- About Canvas Layout Properties
- Update Canvas Properties
- Align Visualizations Using Canvas Grid Guidelines
- About Brushing Between Visualizations on a Canvas
- About Synchronizing Visualizations in a Canvas
- About Canvas Data Refresh Properties

About Canvas Layout Properties

You can configure the layout, width, and height of visualizations on a canvas.

You configure how visualizations are displayed in a canvas using canvas layout property settings.

Layout

Configures whether visualizations are displayed in the canvas as freeform or auto fit.

- **Auto Fit** - Use to automatically arrange or correctly align visualizations on a canvas when there are multiple visualizations. You can also resize a visualization by dragging its edges to the appropriate dimensions.

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- **Freeform** - Use to rearrange a visualization on the canvas using drag and drop to a space between visualizations where you want to place it. You can also resize a visualization by dragging its edges to the appropriate dimensions.
  The **Order Visualization** option (only available when you use the **Freeform** canvas layout) enables you to use **Bring to Front**, **Bring Forward**, **Send Backward**, or **Send to Back**, to move a visualization on a canvas with multiple visualizations.

Width and Height

Use **Width**, and **Height** settings in conjunction with **Layout** settings to specify the layout size of visualizations in a canvas

- **Screen** - Layout fits in the available screen space.
  Not available when you select **Freeform**.
- **Grow** - Layout automatically grows in height or width to accommodate a visualization at its optimal size.
  For example, if you add multiple visualizations, or rows of visualizations to a canvas, the layout grows so that the added visualizations display at their optimum size.
- **Fixed** - Layout uses the specified size.

For information about designing a canvas layout with visualizations that are conditionally shown or hidden, see Use a Parameter to Conditionally Show or Hide a Visualization.

Update Canvas Properties

You can use the canvas properties dialog to perform many different tasks. For example, add a description to display as a tooltip, change the layout, set brushing, synchronize visualizations, configure canvas refresh settings, and specify the background color and image.

For more information about adding an image as a canvas background, see Use Images in Workbooks.

You can also toggle grid settings and layout positioning options for a canvas. See Align Visualizations Using Canvas Grid Guidelines.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Right-click a canvas tab and click **Canvas Properties**.
3. Update the canvas properties.
4. Click **Save**.

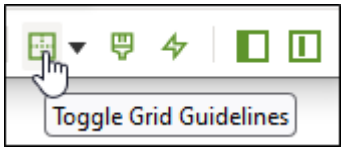
Align Visualizations Using Canvas Grid Guidelines

You can help to control the alignment of visualizations in a canvas using grid guideline settings when the canvas Layout property is set to **Freeform**.

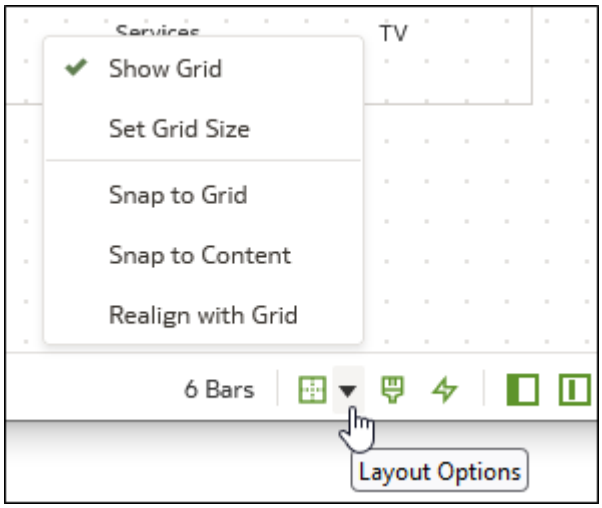
You can use these settings to make it easier to align visualizations using canvas grid guideline settings.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Toggle Grid Guidelines** to display grid guidelines.

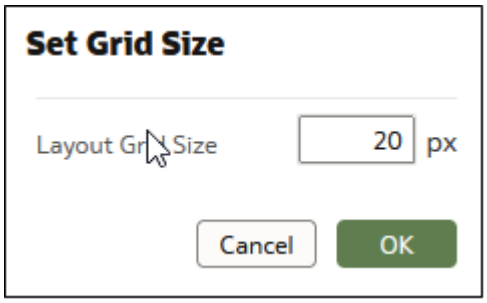
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3. Click **Layout Options**.



4. Click **Set Grid Size** and enter the distance in pixels between the grid guidelines.



5. Click and drag visualizations into the positions that you require them to be in on the canvas.
6. Click **Snap to Grid**, and **Realign with Grid** to automatically realign all of the visualizations in the canvas with their nearest grid guideline.

   Realign with Grid becomes active when you select **Snap to Grid**, and you previously realigned visualizations away from the grid guidelines.

About Brushing Between Visualizations on a Canvas

You can configure brushing on a canvas so that when a user selects data points in a visualization, those datapoints are automatically highlighted in other visualizations.

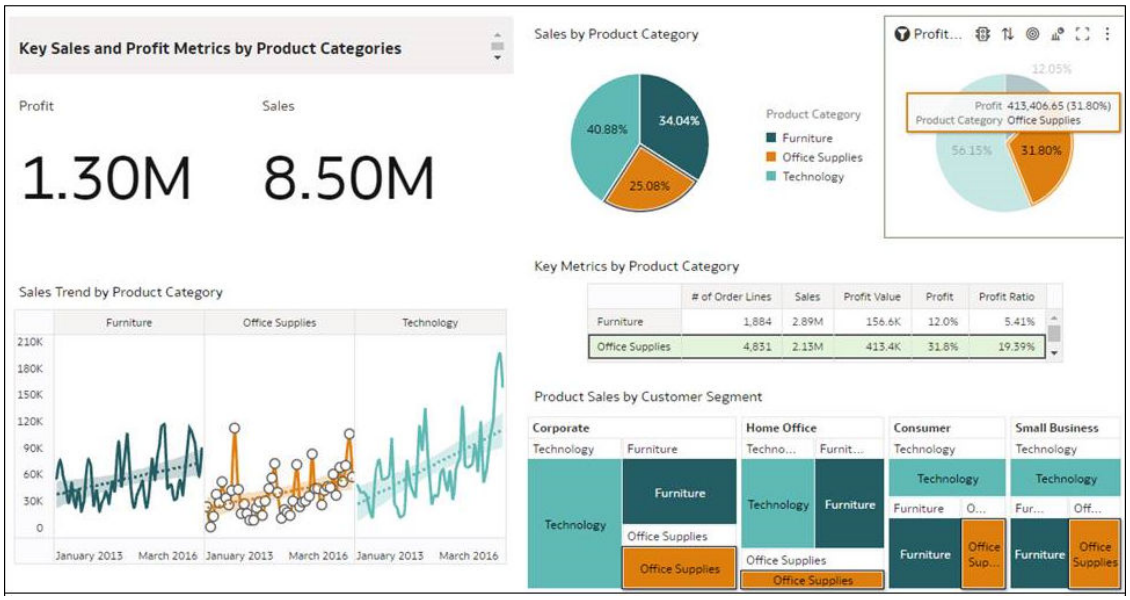
Brushing can only work when visualizations share the same dataset.

You can set the **Brushing** canvas property to be **on** or **off**, for a selected canvas. See Update Canvas Properties.

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- **On** - If you select one or more data points in a visualization, then corresponding data points are highlighted in the other visualizations on the canvas that use the same dataset.
- **Off** - If you select one or more data points in a visualization, then corresponding data points are not highlighted in other visualizations on the canvas.

For example, if you select Office Supplies in the Pie chart and Brushing is set to **On**, then Office Supplies data points are also highlighted in the other visualizations on the canvas.



In tables and pivots, if you select a single cell and brushing is turned on, it acts based on the entire row, not the individual cell.

About Synchronizing Visualizations in a Canvas

You can specify whether or not to synchronize Visualizations in a canvas.

You use the **Synchronize Visualizations** setting to specify how the visualizations on your canvas interact. By default, visualizations are linked for automatic synchronization.

When **Synchronize Visualizations** is set to **On**, and you add or remove data values from a visualization, this automatically adds or removes the values in corresponding visualizations. When **Synchronize Visualizations** is set to **Off**, this unlinks your visualizations and turns off automatic synchronization.

When **Synchronize Visualizations** is **On**, then all filters on the filter bar and actions that create filters, such as drill, apply to:

- All the visualizations in a canvas with a single dataset.
- All the visualizations of joined datasets with multiple datasets.

  If a data element from a dataset is specified as a filter but isn't matched with the joined datasets, then the filter only applies to the visualization of the dataset that it was specified for.

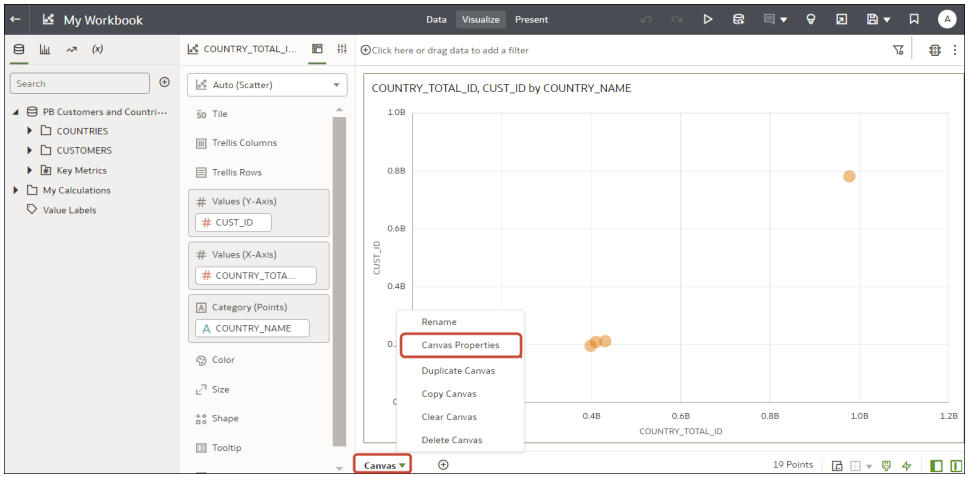
When **Synchronize Visualizations** is set to **Off**, then analytic actions such as Drill affect only the visualization to which you applied the action.

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About Canvas Data Refresh Properties

If you have administration privileges, you can configure canvas data to refresh when you open a canvas, or to refresh automatically at a specified interval.

You configure how canvas data is refreshed using canvas property settings. Click the down-arrow next a canvas name and click **Canvas Properties** to set properties.



Refresh Data when canvas is opened

Configures whether to refresh data when a user opens the canvas.

- **On** - Use to refresh the data when the canvas is opened.
  The client and server caches are cleared every time the canvas is opened, ensuring that you see the current data.
- **Off** - Use to not refresh the data when the canvas is opened.

Auto Refresh Data

Configures whether to automatically refresh the canvas data at specified time intervals.

- **Enabled** - Use to automatically refresh the canvas data using a **Refresh Interval** that you enter.
- **Disabled** - Use to not automatically refresh the canvas data.

Auto start for viewers

Configures whether to start the automatic data refresh when the canvas is opened.

- **On** - Refresh canvas data when the canvas is opened, and then at the specified intervals.
- **Off** - Don't refresh the canvas when the canvas is opened.

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Design Canvas Layouts for Different Screen Sizes

You can design canvas layouts to respond to different sized devices optimizing the content to fit in the browser for each screen size.

Topics:

- About Designing Canvas Layouts to Display on Devices with Different Screen Sizes
- Design Canvas Layouts to View on Different Devices

About Designing Canvas Layouts to Display on Devices with Different Screen Sizes

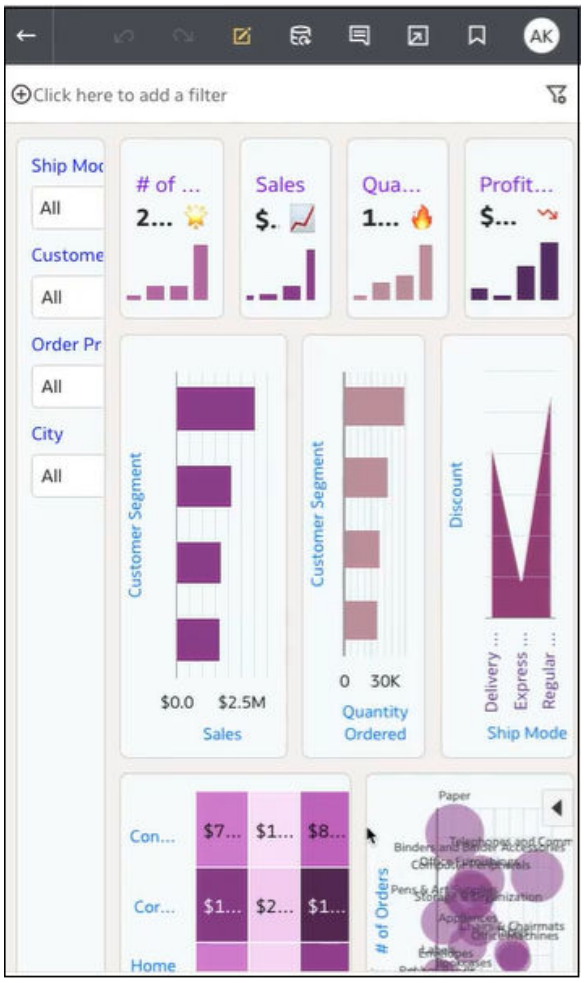
You can design canvas layouts to fit different sized devices optimizing content in the browser, for example on a mobile, a tablet, or a laptop.

Optimize canvas layouts for different screen sizes

When you open a workbook on different sized devices, the canvas screen size scales to the browser screen size using the browser's defaults. Resizing the browser by decreasing its size can impact your ability to see the details in visualizations. For example, the data in a scattergraph, a heatmap, or most of the measure data in a tile visualization may become hard to read, making it impossible to see crucial information.

When you reduce the canvas size in a browser, visualizations can become too small to display data properly.

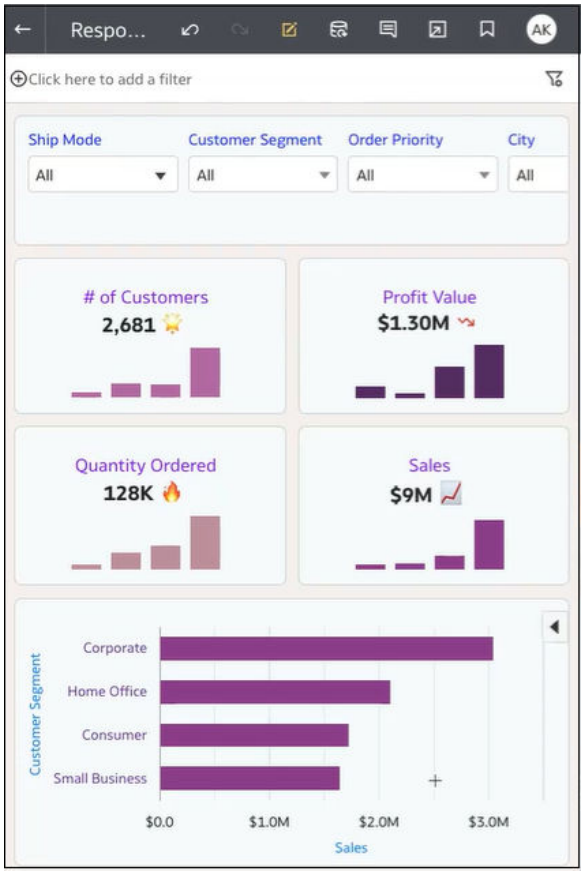
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As an author you can design canvas breakpoints so that when the canvas screen size reduces in size, the rendering of visualizations changes to fit the new screen size. For example, if the available screen size is too small to display a complete visualization, you can rearrange or hide the visualization to work better with the smaller screen size. You specify different canvas screen sizes and layouts using canvas breakpoints, where each breakpoint represents a different arrangement of visualizations displayed for each screen size.

An optimized canvas for a smaller screen size breakpoint contains visualizations that are rearranged to make viewing easier on the smaller device.

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You use a slider to define screen sizes for when consumer users display canvases on different sized devices. For example, you can change how the visualizations display by rearranging their location, size, or visibility on the canvas.

When you add a breakpoint to a canvas, the breakpoint screen size determine how visualizations display when viewed at that screen size. You can reposition, resize, or remove visualizations for a canvas breakpoint to optimize how users see visualizations. You can specify different visualization configurations for each breakpoint, and the differences for each breakpoint are only displayed to the consumer user when the browser screen size resolution matches the breakpoint screen size for which the changes are made.

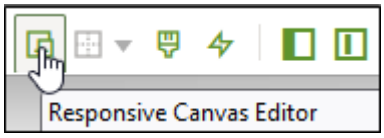
Design Canvas Layouts to View on Different Devices

You can create canvas breakpoints to determine how visualizations display to consumer users on devices with different screen sizes. For example, you can set different breakpoints to optimize viewing on a mobile device browser, a tablet, or a laptop.

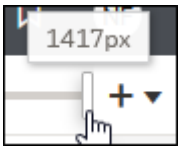
Tutorial

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to display the workbook for editing.
3. Expand the canvas to maximum size and in **Canvas Properties**, set the **Layout** to Autofit, and click **OK**.
4. On the footer click **Responsive Canvas Editor** to open the editor where you can define breakpoints to view the canvas on different devices.

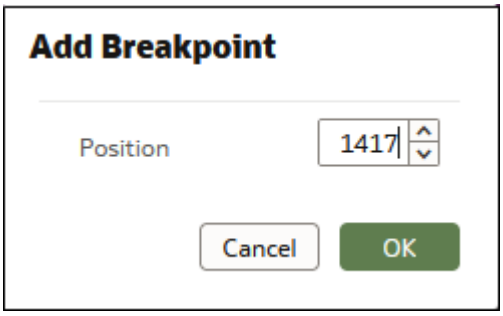
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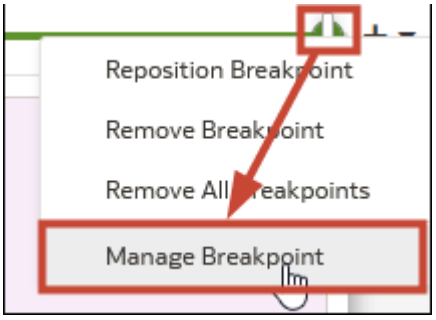
5. Set a canvas breakpoint:
   - **Add a breakpoint at the current slider position** - Click and drag the slider to the value in pixels for the screen size that you want to use for this breakpoint,

     then click **Add Breakpoint** + to add the breakpoint at the current slider location.
   - **Manually enter a value for a breakpoint** - Click **Open the Responsive Canvas Editor Menu**, click **Add Breakpoint** and enter a number in the **Position** field for where you want this breakpoint.

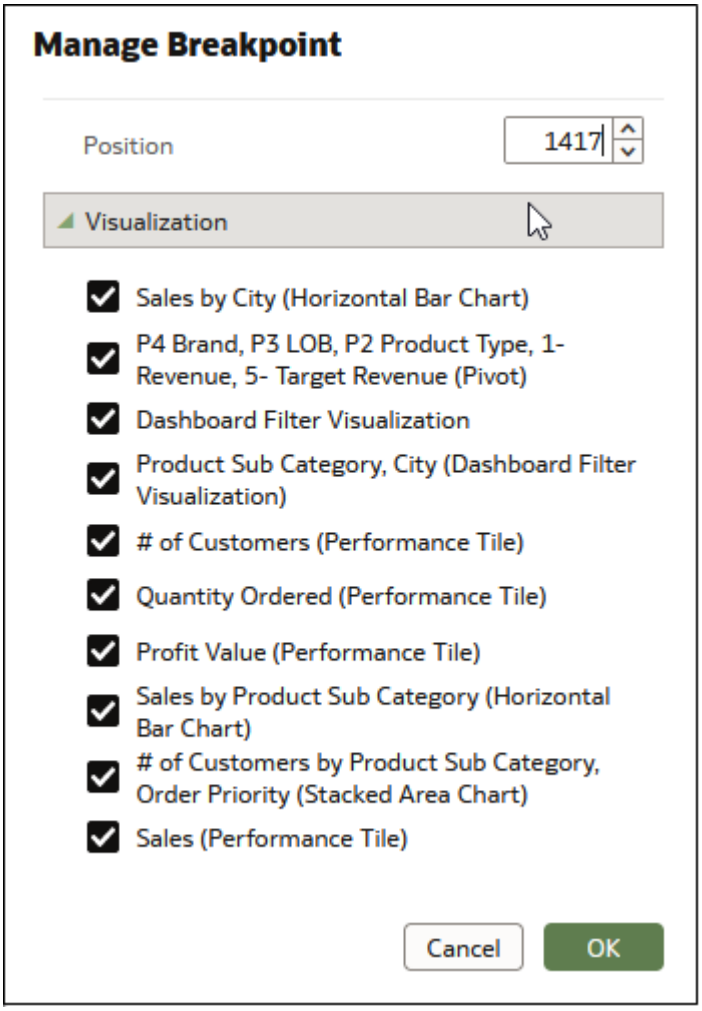
     

6. Repeat the previous step to define additional canvas breakpoints.
7. Include or exclude visualizations for each canvas breakpoint:
   - Right-click the canvas breakpoint that you want to manage () and click **Manage Breakpoint**.

   - Click a visualization from the list to exclude or include in the canvas for this canvas breakpoint, then click **OK**.

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8. Optional: Create a visualization and add it to a breakpoint by selecting data from the Data pane, and adding it to the canvas.

   The new visualization is added to the current breakpoint only, however you can add the visualization to other breakpoints on the canvas by selecting the visualization from the list in the Manage Breakpoint dialog for that breakpoint.

9. Optional: Optimize the display of visualizations for a canvas breakpoint.

   You might want to optimize the content to display on a smaller device, such as a mobile.

   - **Rearrange visualizations** - Click and drag visualizations to a new position.
   - **Optimize visualizations** - Use the Properties pane to hide unnecessary content, such as the title, or the legend.

   When you optimize visualizations for a breakpoint those changes don't apply to other breakpoints in the canvas.

10. Click **Save**.

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9

Create and Use Visualizations

This chapter explains how to create and work with visualizations in Oracle Analytics.

Topics:

- Create a Visualization
- Work with Visualizations on a Canvas
- About Visualization Types
- Change Visualization Types
- Add a Language Narrative Visualization
- Create a Legend Visualization
- Gauge Visualizations
- Button Bars
- Gantt Charts
- Table and Pivot Visualizations
- Using Knowledge Enrichments in the Workbook Editor

Create a Visualization

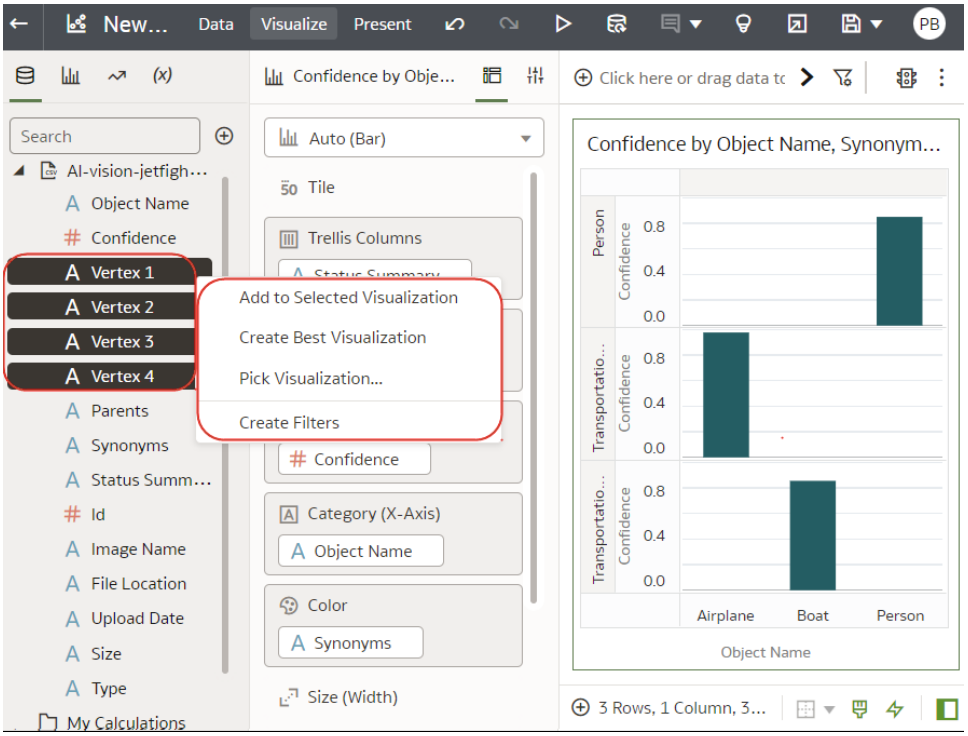
After you've created a workbook and added a dataset to it, you can start creating visualizations on a canvas to visualize and analyze your data.

For information about creating a workbook, see Begin to Build a Workbook.

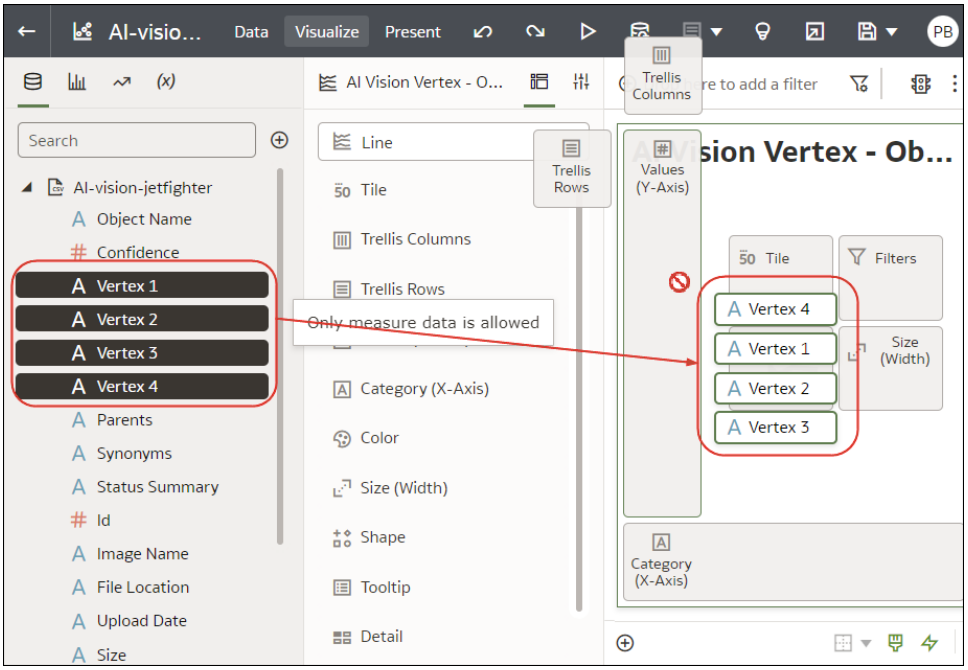
You can select compatible data elements from a dataset and drop them onto the Grammar pane in the Grammar Panel in the Visualize canvas. Based on your selections, visualizations are created on the canvas. The Grammar pane contains sections such as Columns, Rows, Values, and Category.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select the data you want to visualize by selecting one or more data elements in the Data pane in the Data Panel and then use one of the following methods:
    - Right-click, then select **Create Best Visualization** to let Oracle Analytics choose an appropriate visualization for the selected data elements.

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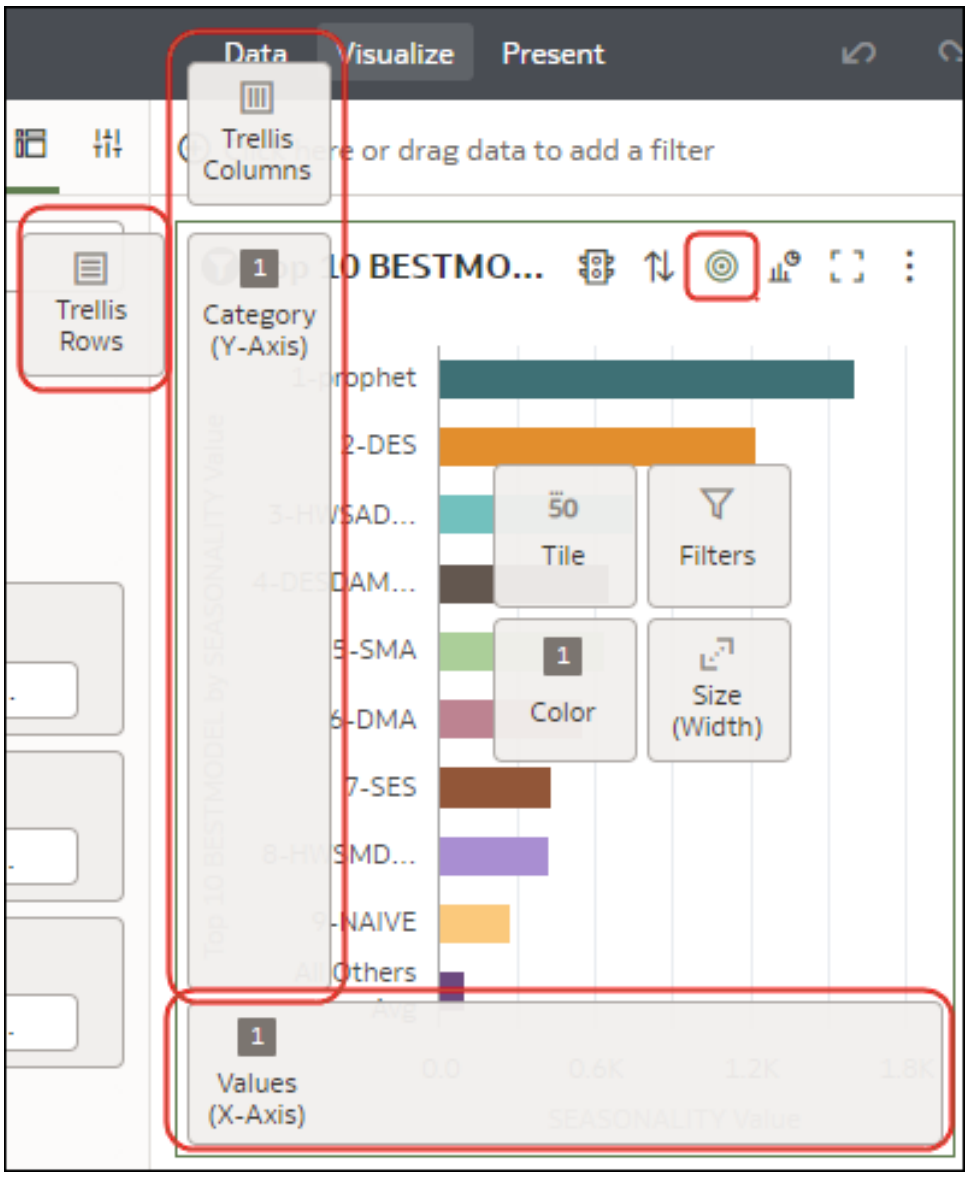
- Right-click, select **Pick Visualization**, and select the visualization type that you want to use (for example, a table or heat map).
- Drag and drop the data elements directly onto the canvas or into the Grammar pane.



Tips on adding data

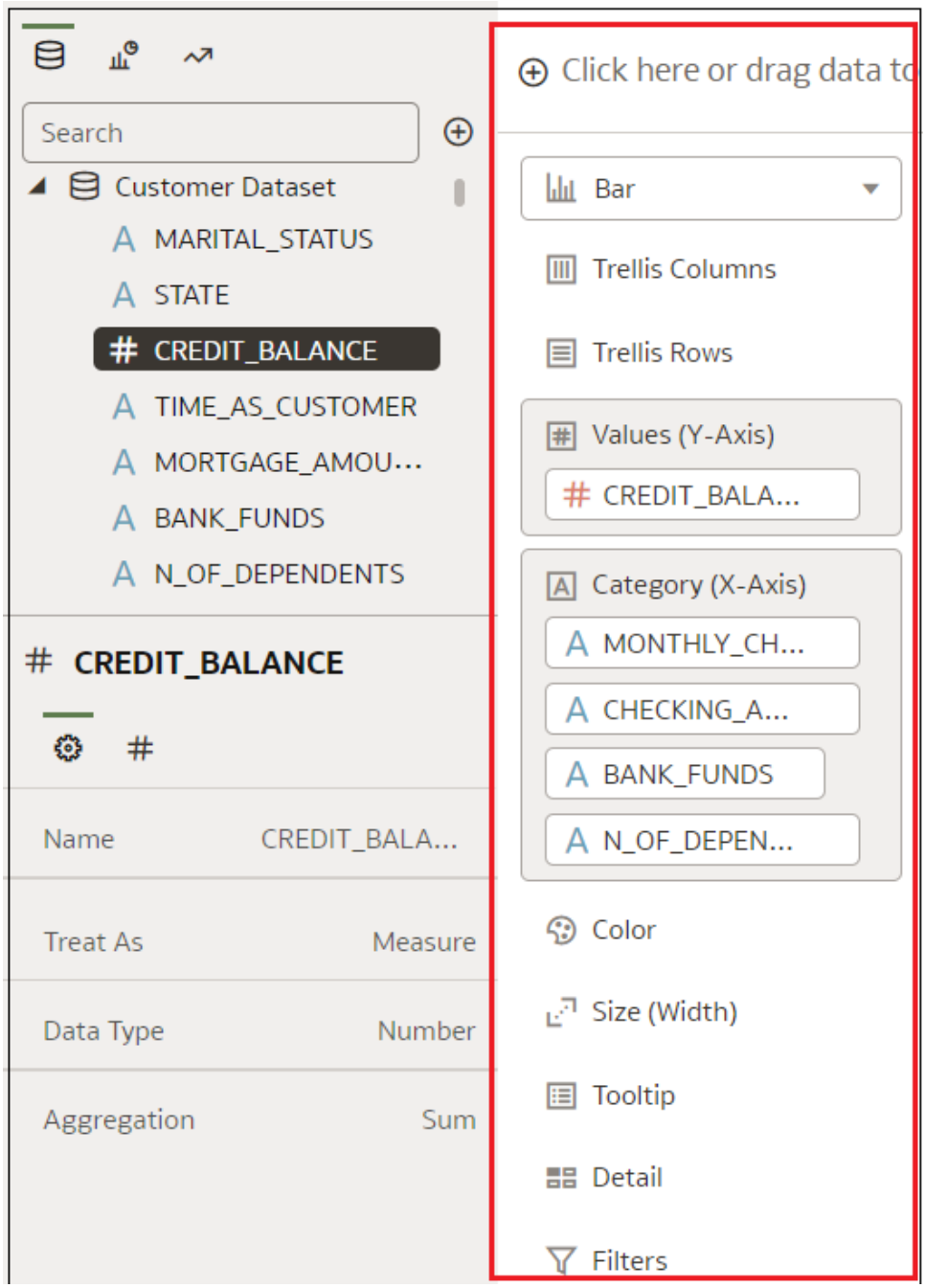
- To help you understand the components of a visualization, hover over it and click **Show Assignments** to annotate the visualization components, for example, the X-Axis and Y-Axis of a chart.

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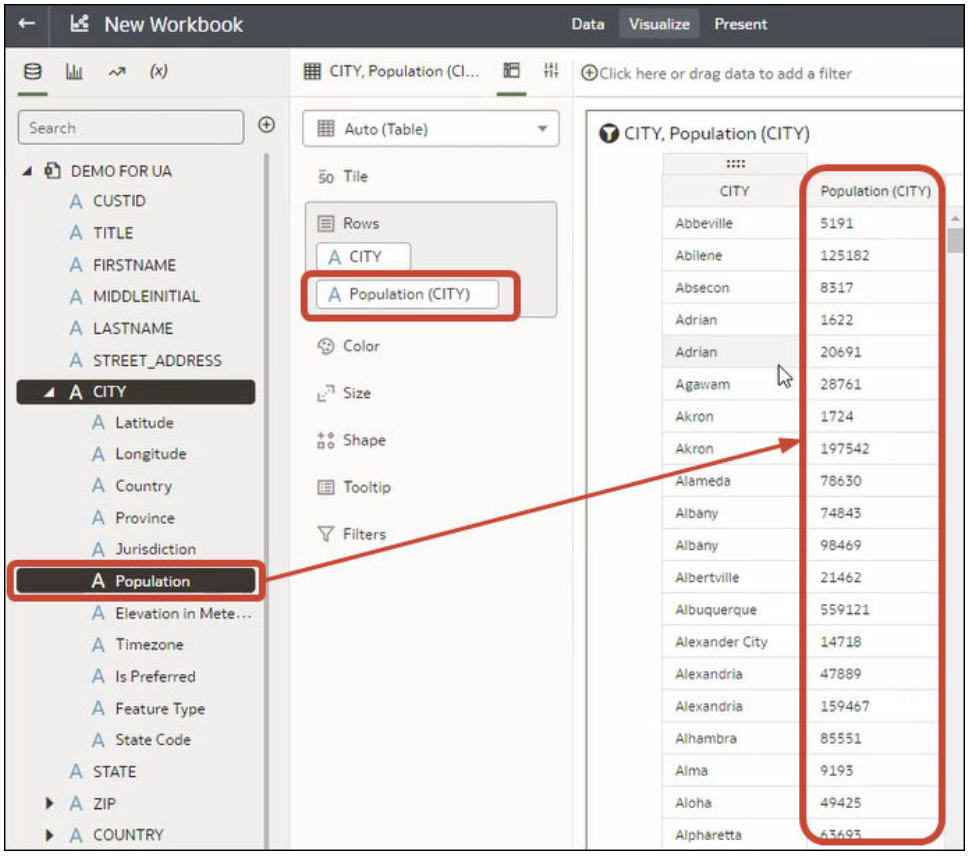
- Use the Grammar pane to configure visualization components (for example, add, remove, re-order).

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- If a dataset is augmented with knowledge enrichments, you'll see knowledge enrichments in the element tree displayed just like regular data elements in the dataset. In this example, the Oracle Analytics administrator has added Population and other city-related data to Oracle Analytics. When you create a workbook based on the CITY dataset, you can add population and other data elements directly to your visualization.

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Work with Visualizations on a Canvas

Manage visualizations effectively on your canvas.

Topics:

- Tips on Choosing a Visualization
- Tips on Editing a Visualization
- Duplicate a Visualization
- Copy a Visualization from Another Workbook
- Copy and Paste a Visualization or Canvas
- Copy and Paste a Visualization's Data
- Create a Visualization from Another Visualization
- Update Common Properties for Multiple Visualizations on a Canvas
- Copy and Paste Multiple Visualizations on a Canvas
- Delete Multiple Visualizations on a Canvas
- Display Multiple Visualizations Equally on a Canvas

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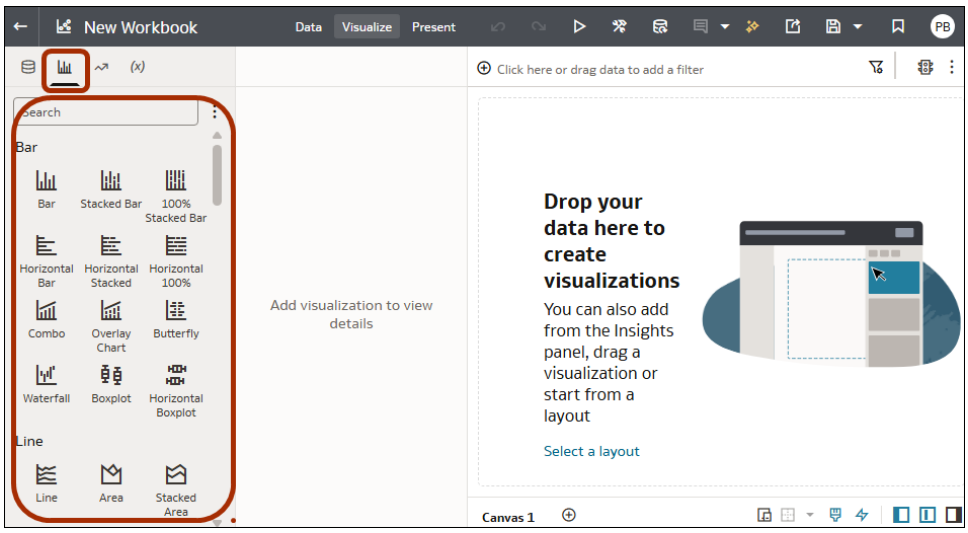
Tips on Choosing a Visualization

Oracle Analytics provides many types of visualization for building workbooks. As a workbook Use this guidance on choosing the best visualization type for your needs.

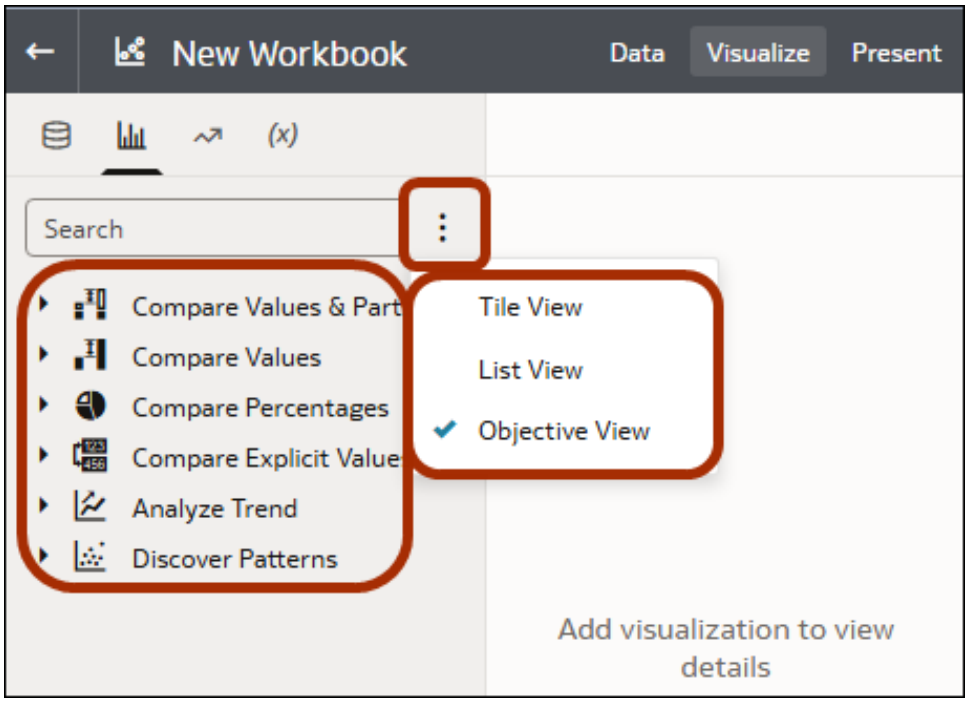
Start in the workbook designer on the Visualize panel.

Here're some ways to select the best visualization:

- On the Data Panel, click **Visualizations** to display visualization types available grouped by category (in **Tile View** by default).

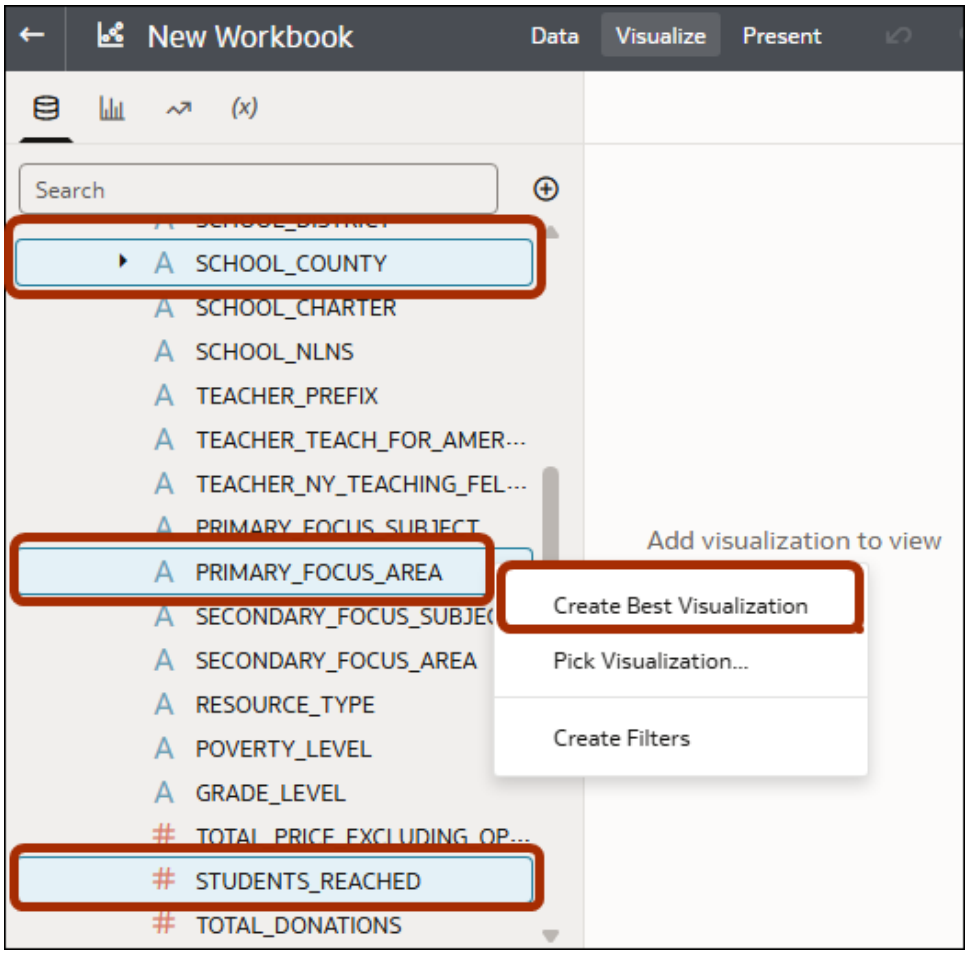


Use the **Menu** to change to **Objective View**, which groups types into function, such as **Compare Values and Parts**, **Analyze Trends**, and **Discover Patterns**.



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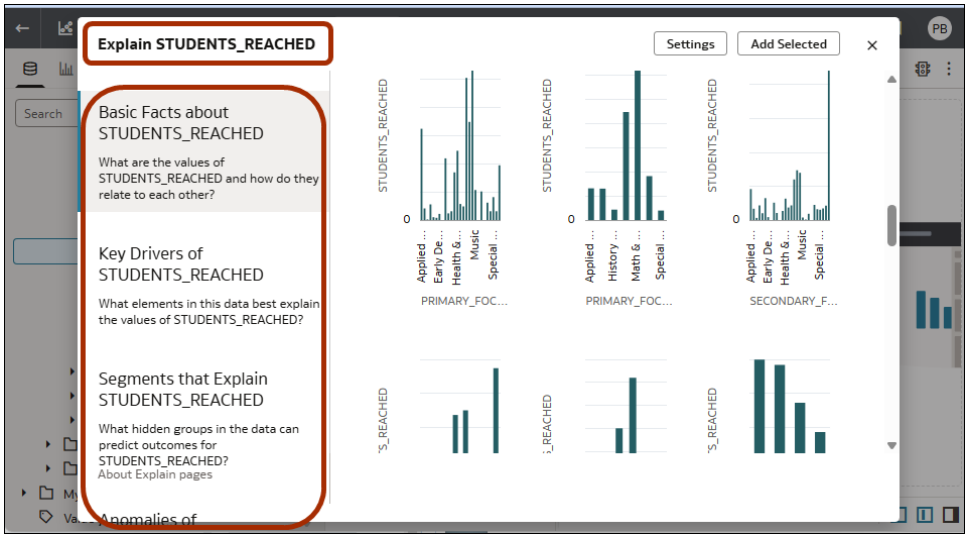
- On the Data Panel, multi-select the attributes and measures you want to analyze, then right-click and select **Create Best Visualization** or drag them onto the canvas. Oracle Analytics adds a visualization to the canvas for you, based on the data you selected.



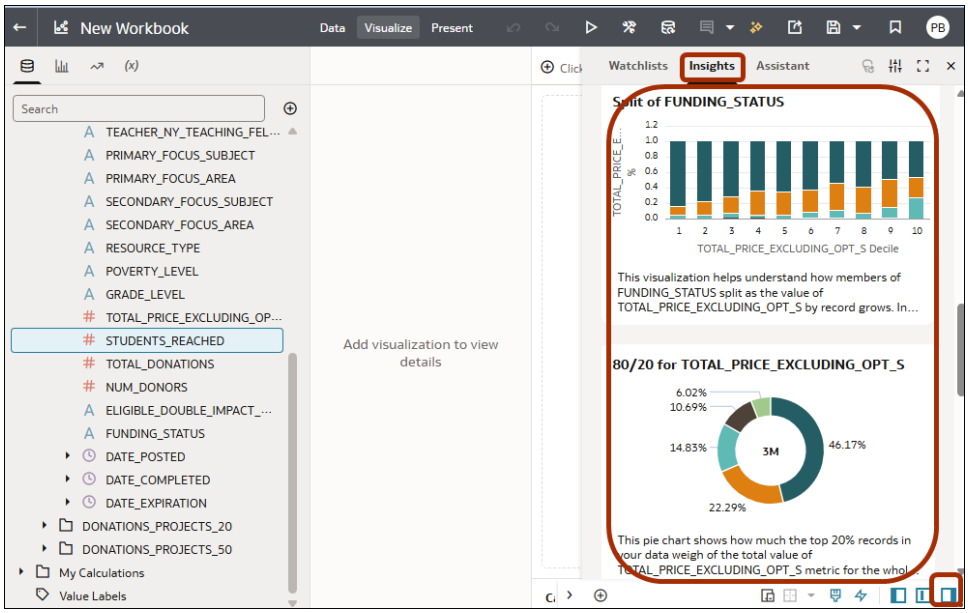
If you're still not sure what type of visualization you need, try one of these:

- On the Data Panel, hover over a single measure, then right-click and select *Explain <measure>*. Oracle Analytics analyzes the measure and creates a number of visualizations for you, based on the categories Basic Facts, Key Drivers, Segments that Explain, and Anomalies. Hover over visualizations you want to use, click **Select for Canvas**, then click **Add Selected** to add them to the canvas.

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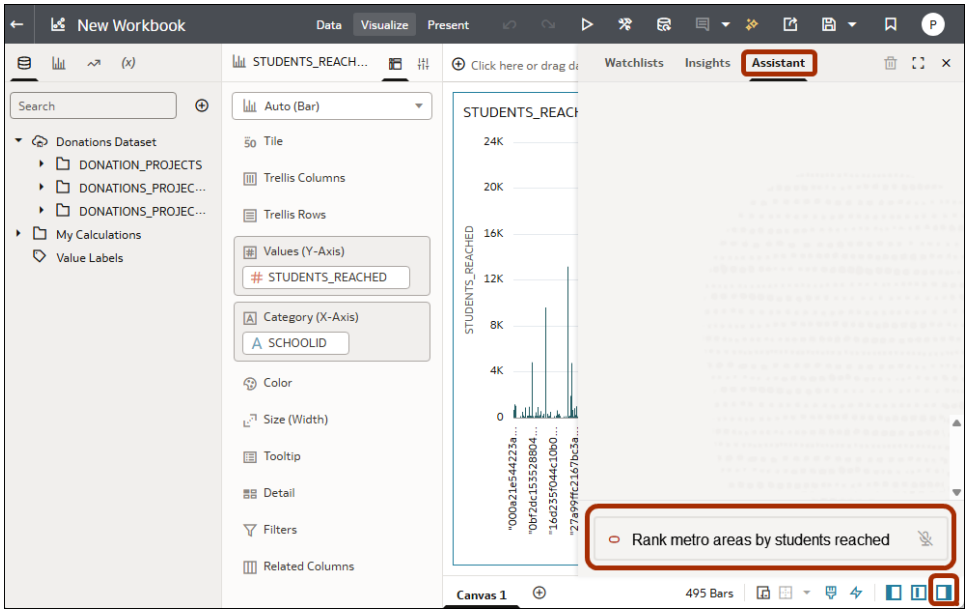


- Use the Insights Panel to view pertinent visualizations that Oracle Analytics suggests. Hover over and click Add Selected to add them to the canvas.



- Use the Assistant panel to type or speak a description of what you want to analyze. Oracle Analytics generates visualizations based on your request.

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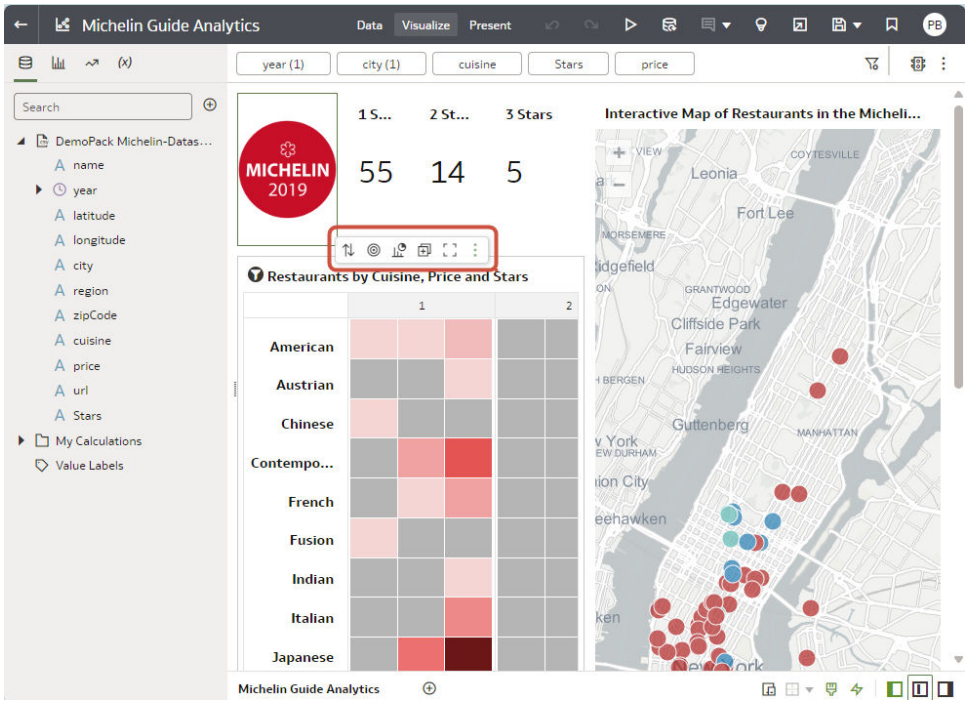


Tips on Editing a Visualization

These tips can help you become more productive when you work with visualizations.

Access visualization options

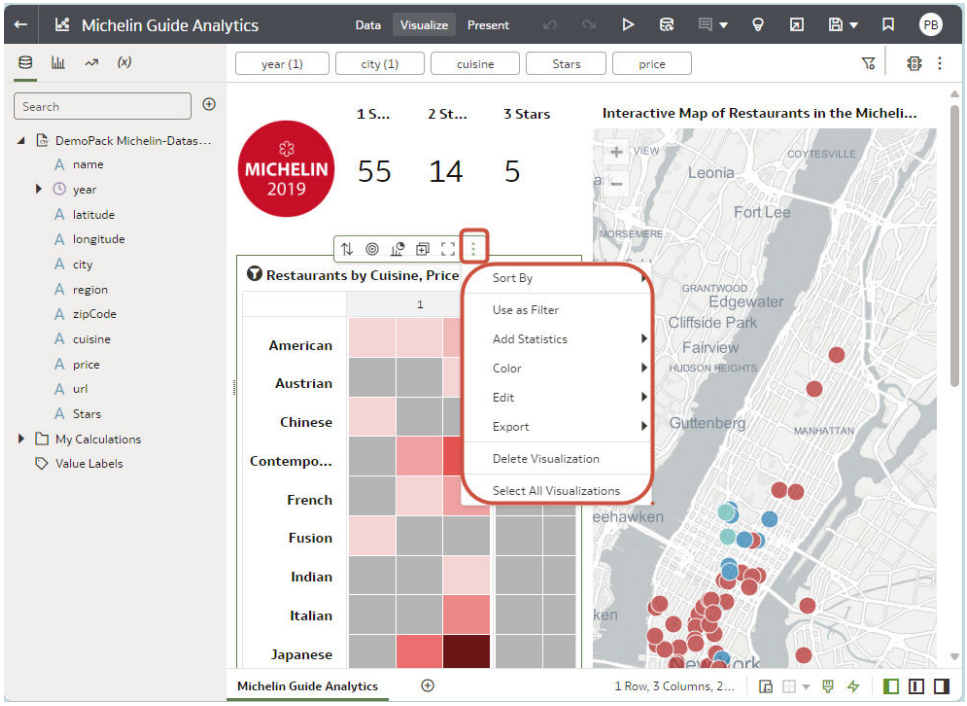
The visualization toolbars provide quick access to formatting and editing options, and a menu (⋮) with additional options.



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Access the visualization menu

Hover over a visualization, and click **Menu** (⋮) to access editing options.



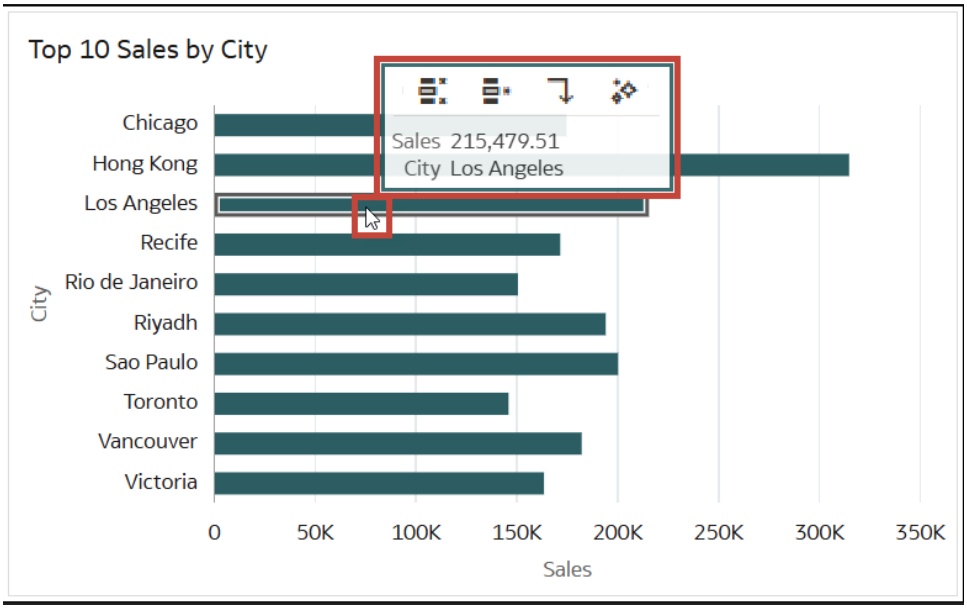
Access the tooltip toolbar for data points

Click one or more data points (use Ctrl + click to multi-select) in a visualization to display navigation options in the tooltip toolbar:

- **Keep Selected** - Filter on the selected values.
- **Remove Selected** - Remove the selected values from the visualization. Click **Undo** to re-display the value.
- **Drill Action Menu** - Drill to a related area of your data.
- **Data Action Menu** - Select action links that the workbook author added. For example, an action link might navigate to a related workbook or display a web page.
- **Explain Selected** - If enabled, access Contextual Insights to compare the selected data points with the rest of the data in the visualization.

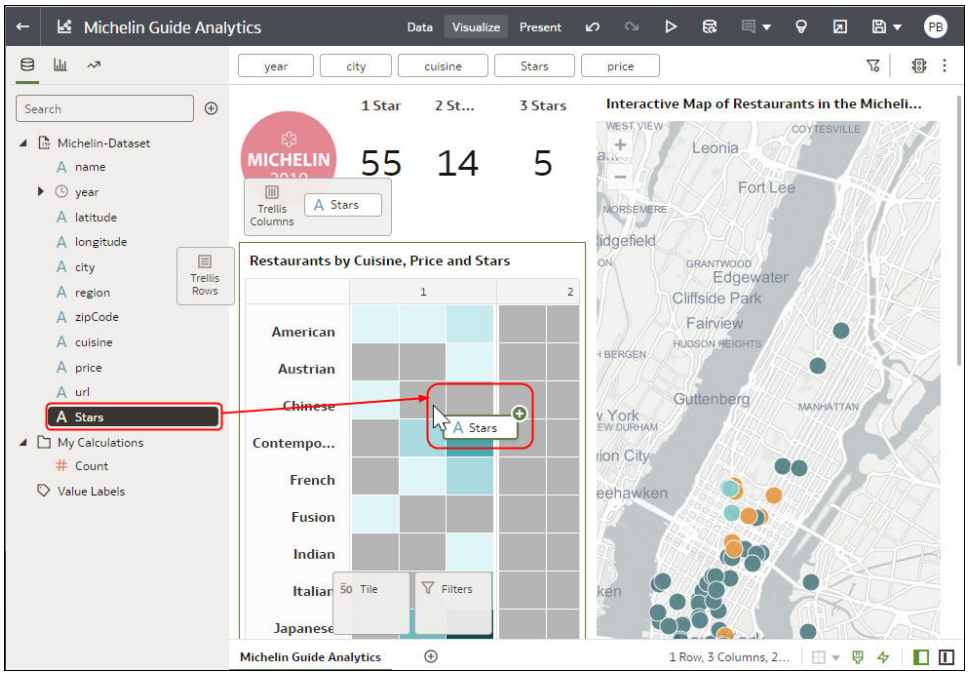
Tip: Right-click data points to access the full menu of options, such as **Sort By** and **Zoom**.

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Add a data element to a visualization

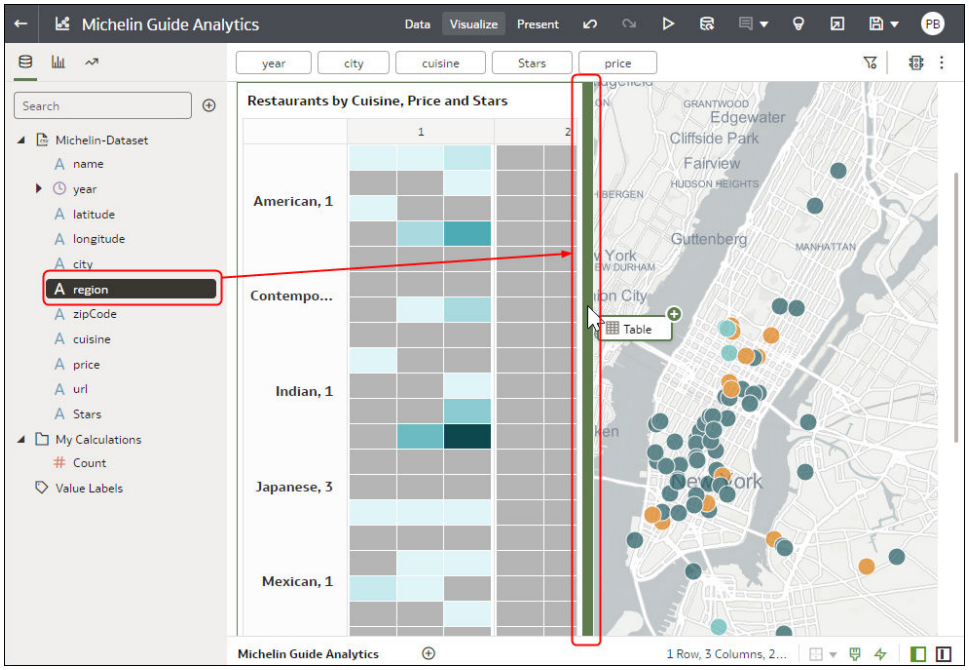
Drag the data element from the Data pane over the visualization until the cursor displays a green cross, indicating a valid drop zone.



Add a data element to a new visualization

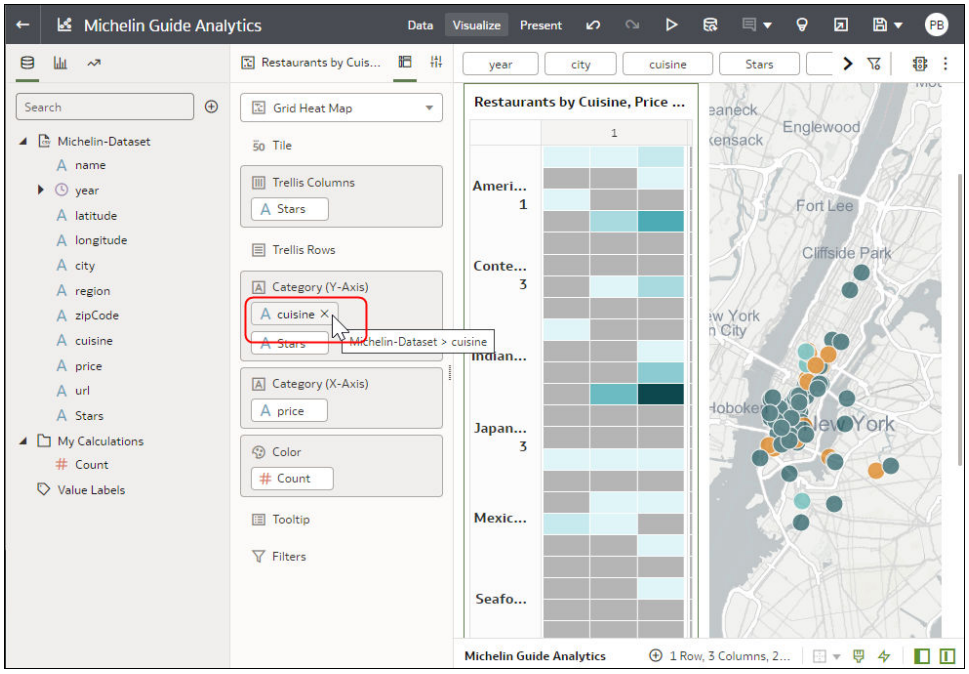
Drag the data element from the Data pane over the visualization until the cursor displays a green bar, indicating a valid drop zone.

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Delete a data element from a visualization

In the Grammar pane, hover over the data element, and click **X** to delete.



Duplicate a Visualization

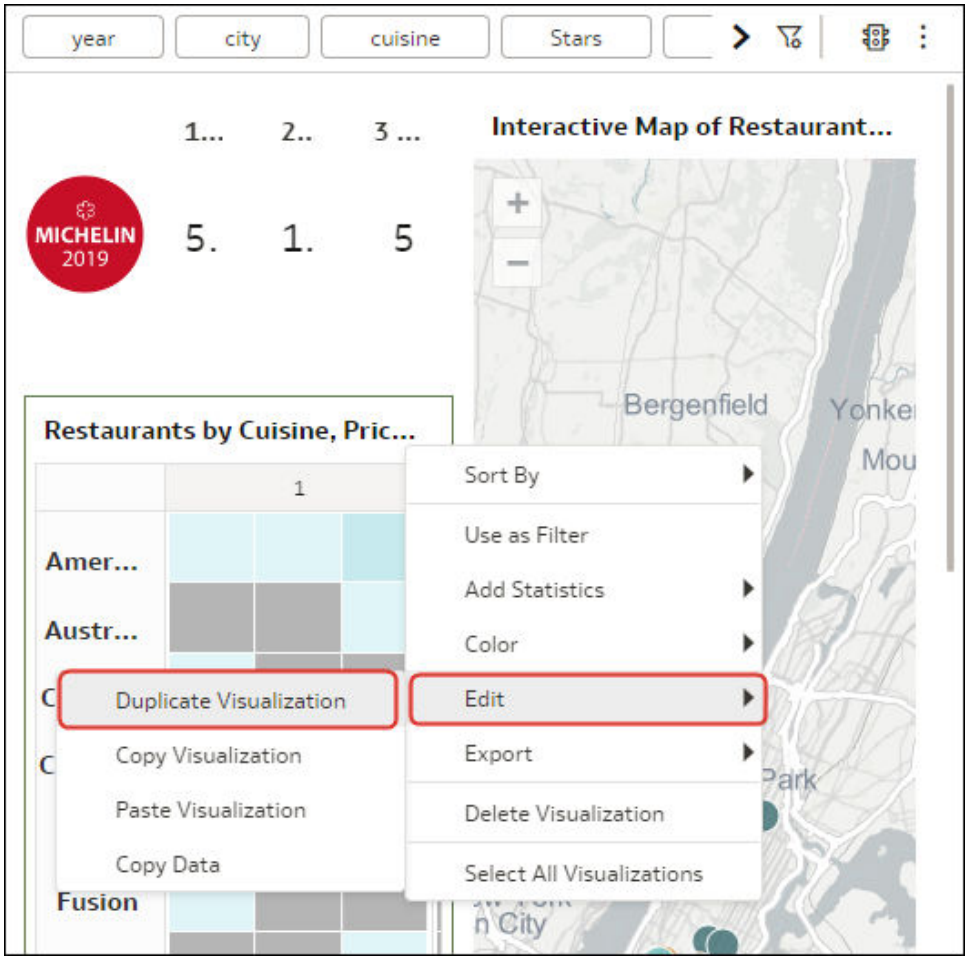
Duplicate a visualization to create a copy that you can edit.

Copying an existing visualization might save you time.

1. Open the workbook containing the visualization you want to copy.

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2. In the Visualize pane, hover over the visualization, click **Menu**, select **Edit**, and then select **Duplicate Visualization**.



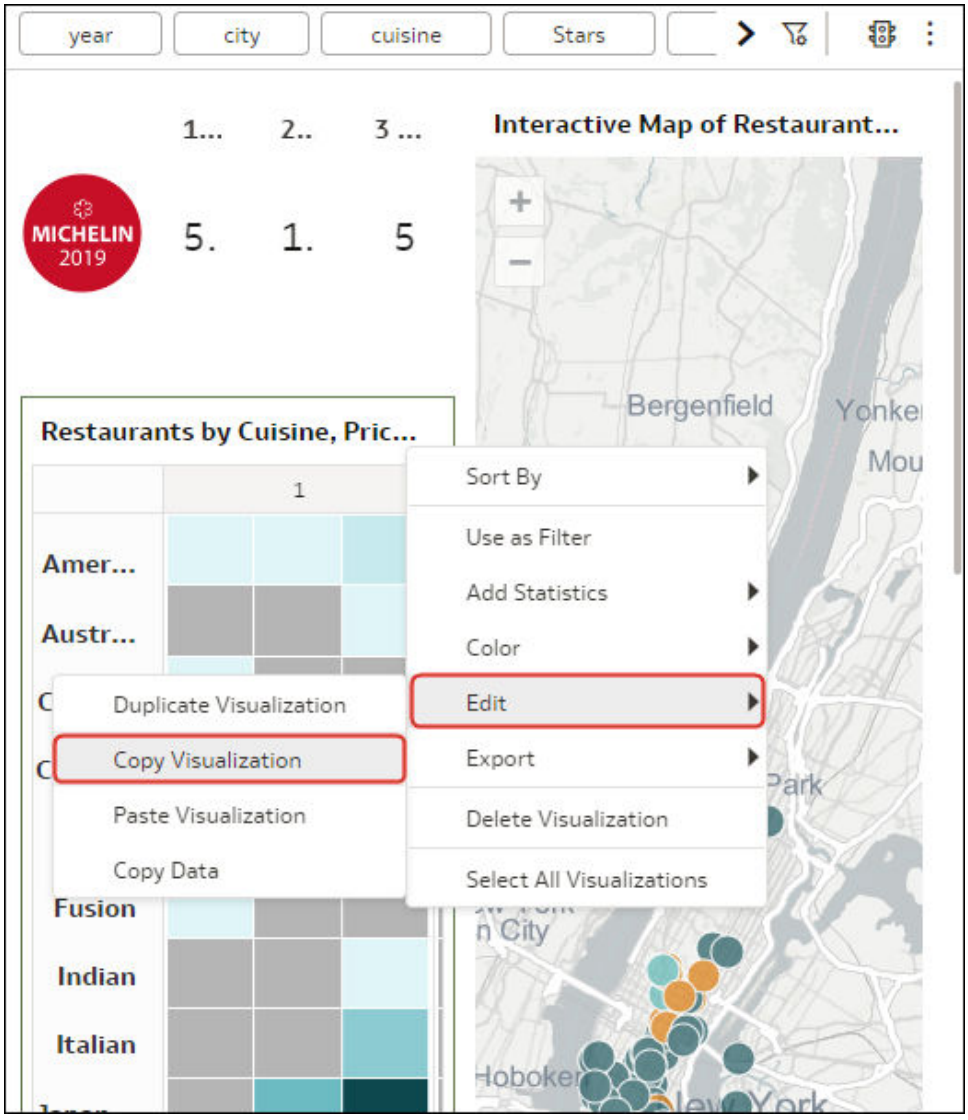
The duplicate visualization displays next to the original visualization.

Copy a Visualization from Another Workbook

Copy a visualization from one workbook and paste it to another to share analytics content. Copying a visualization also copies the dataset used by the visualization.

1. Open the workbook containing the visualization you want to copy.
2. In the Visualize pane, hover over the visualization, click **Menu**, select **Edit**, then select **Copy Visualization**.

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3. Create or open a workbook.
4. In Visualize, right-click the canvas, click **Edit**, and then **Paste Visualization**.

   The dataset used by the visualization is also copied into the workbook.

Copy and Paste a Visualization or Canvas

You can copy and paste a visualization or canvas within the same workbook, to another open workbook, or to another workbook open in a different browser tab.

When you copy a visualization or canvas from one workbook to another, Oracle Analytics does the following:

- Data - The dataset for the pasted visualization or canvas is added to the target workbook. When you open or create the target workbook that you're pasting to, it doesn't need to include the dataset used by the visualization or canvas that you'll copy and paste.
- Filters - The filters in the target workbook and in the pasted visualization or canvas are maintained. You don't need to add the visualization or canvas filters to the target workbook.

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If there's a conflict between the target workbook and the pasted visualization or canvas filters, then the pasted filters won't overwrite the target's filters.

- Color assignments - The color scheme of the target workbook is applied to the pasted visualization or canvas.
- Calculations - If the same calculation name exists in the target workbook, then the pasted calculation is added and renamed.

Use the following steps to copy and paste a visualization or canvas:

1. On your home page, hover over a workbook, click **Actions**, and then select **Open**.
2. In the Visualize canvas, copy a visualization or canvas.
   - To copy a visualization, click its **Menu**, hover over **Edit**, and then click **Copy Visualization**.
   - To copy a canvas, right-click it and click **Copy Canvas**.
3. Navigate to a visualization or canvas and paste the object.
   - To paste a visualization into a canvas that contains visualizations, click an existing visualization's **Menu**, hover over **Edit**, and then click **Paste Visualization**.
   - To paste a visualization into a blank canvas, right-click the canvas bar and select **Add Canvas**. Right-click the new canvas, hover over **Edit**, and then click **Paste Visualization**.
   - To paste a canvas, right-click the canvas bar and then click **Paste Canvas**.

Copy and Paste a Visualization's Data

You can copy all of a visualization's data to the clipboard and then paste the data to an another application, like Word or Excel.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a visualization's **Menu**, hover over **Edit**, and then click **Copy Data**.

   This copies the visualization data to the clipboard.
3. Open a target application and paste in the visualization's data.

Create a Visualization from Another Visualization

You can create a visualization by dragging and dropping columns from one visualization to a new visualization.

Using this method helps you to model a new visualization based on an existing one by selecting columns directly from the existing visualization.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to enter the workbook in author mode.
3. Select the visualization you want to use as the source for creating a visualization.
4. Click **Grammar** at the top of the Grammar Panel to display the Grammar pane.
5. Drag and drop a column in the Grammar pane to the edge between visualizations to create a visualization on the canvas.
6. Select the source visualization and drag and drop more columns to the new visualization.

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Update Common Properties for Multiple Visualizations on a Canvas

You can update common properties for multiple selected visualizations on a canvas.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Visualize canvas, use Ctrl-click to select multiple visualizations on the canvas.
3. In **Common Properties** click the property to change and apply your changes.

   Common property values are displayed when they share the same value for each of the selected visualizations.
4. Click **Save**.

Copy and Paste Multiple Visualizations on a Canvas

You can copy and paste multiple selected visualizations on a canvas.

1. On your home page, hover over a workbook that contains the visualizations you want to copy and paste, click **Actions**, and then select **Open**.
2. In the Visualize canvas, use Ctrl-click to select multiple visualizations on the canvas.
3. To copy the selected visualizations, hover over the selected visualizations, right-click, click **Edit**, and then click **Copy Visualizations**.
4. To paste the copied multiple visualizations, click a canvas location where you want to paste the copied visualizations, right-click and click **Paste Visualizations**.
5. Click **Save**.

Delete Multiple Visualizations on a Canvas

You can delete multiple selected visualizations on a canvas.

1. On your home page, hover over a workbook that contains the visualizations you want to delete, click **Actions**, and then select **Open**.
2. In the Visualize canvas, use Ctrl-click to select multiple visualizations.
3. Right-click, and select **Delete Visualizations**.
4. Click **Save**.

Display Multiple Visualizations Equally on a Canvas

You can select visualizations in a row or in a column to resize the width or height respectively and display equally on a canvas.

1. On your home page, hover over a workbook that contains the visualizations you want to resize, click **Actions**, and then select **Open**.
2. In the Visualize canvas, use Ctrl-click to select a row, or a column of visualizations.

   The canvas **Layout** property must be set to **Auto Fit**.
3. Hover over the selected visualizations and right-click:
   - Choose **Distribute Width** to make the width the same for each visualization selected in the row.

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- Choose **Distribute Height** to make the height the same for each visualization selected in the column.

4. Click **Save**.

About Visualization Types

Oracle Analytics includes many visualization types ready for you to use in almost any data analysis scenario.

- Bar Graphs
- Dashboard Controls and Other Visualization Types
- Geospacial Graphs
- Grid Graphs
- Line Graphs
- Network Graphs
- Pie and Treemap Graphs
- Scatter Graphs

Bar Graphs

Bar graphs are commonly used visualization types. You can use them to compare data across categories, identify outliers, and uncover historical high and low data points.

Topics:

- Simple Bar Graphs
- Stacked Bar Graphs
- 100% Stacked Bar Graphs
- Combo and Overlay Charts
- Butterfly Charts
- Waterfall Charts
- Boxplots
- Gantt Charts

Simple Bar Graphs

The simplest bar graph visualizations available in Oracle Analytics are called Bar and Horizontal Bar .

These visualizations graph data in the form of vertical or horizontal bars where the length of the bars is proportional to the values they represent. They compare groups of data using a measure and a single attribute.

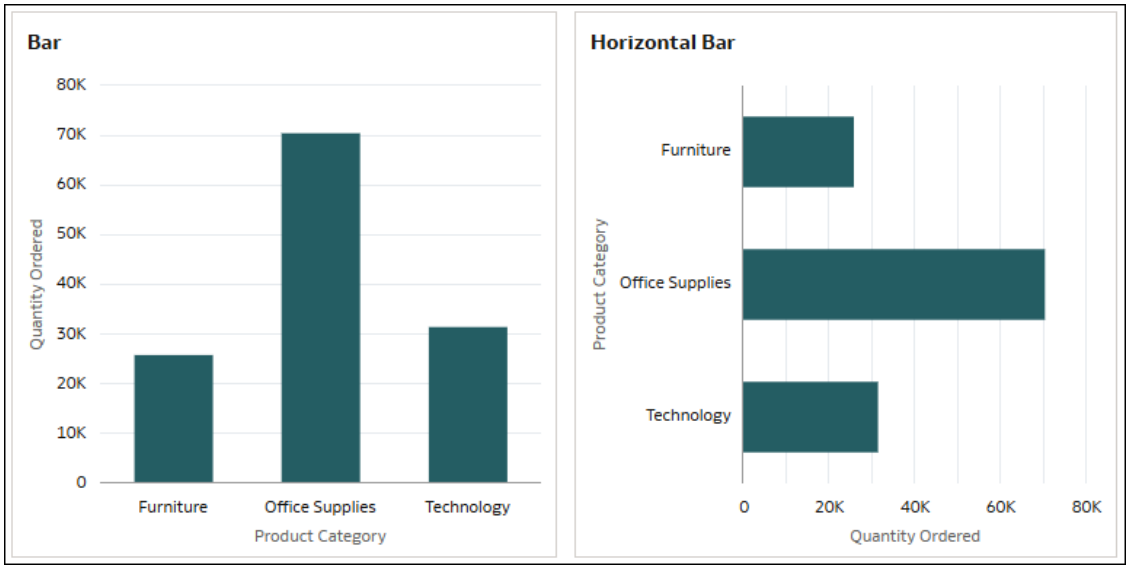
The vertical bar graph is best used to show large changes. A horizontal bar graph can make text labels easier to read than a standard bar graph, particularly if the labels are long.

For example, use a vertical or horizontal bar graph to compare the quantity ordered across the different product subcategories.

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For a vertical bar graph, use a measure such as Quantity Ordered for **Values (Y-Axis)** and an attribute such as Product Category for **Category (X-Axis)**.

For a horizontal bar graph, use Quantity Ordered for **Values (X-Axis)** and Product Category for **Category (Y-Axis)**.



Stacked Bar Graphs

The two basic stacked bar graph visualizations available in Oracle Analytics are called Stacked Bar and Horizontal Stacked .

A stacked bar visualization depicts the bars using two categories instead of one and is best used to show the total sizes of groups. You can create vertical or horizontal stacked bar visualizations.

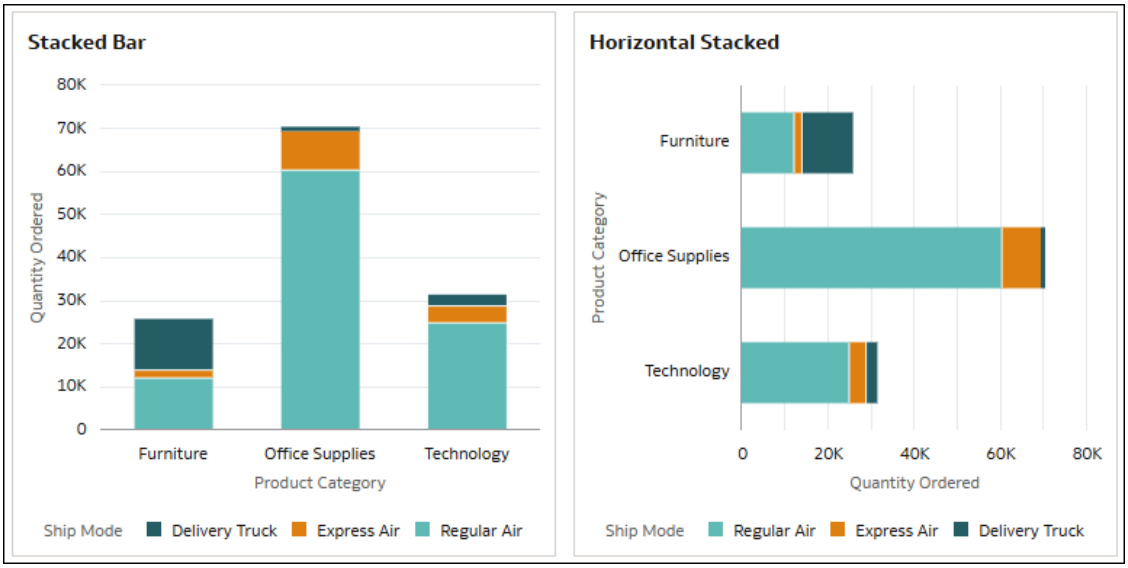
For example, use a stacked bar graph to compare the quantity ordered across the different product categories while also showing the ship modes used.

For a vertical stacked bar graph, use a measure such as Quantity Ordered for **Values (Y-Axis)**, an attribute such as Product Category for **Category (X-Axis)**, and another attribute such as Ship Mode for **Color**.

For a horizontal stacked bar graph, use Quantity Ordered for **Values (X-Axis)**, Product Category for **Category (Y-Axis)**, and Ship Mode for **Color**.

In these examples, the values axes display the numeric values for Quantity Ordered to indicate the absolute value for each product category by the ship modes. The bars show the product categories and the colors within the bars represent the ship modes.

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100% Stacked Bar Graphs

The two 100% stacked bar graph visualizations available in Oracle Analytics are called 100% Stacked Bar and Horizontal 100% Stacked Bar.

A 100% stacked bar visualization spreads the relative data point percentage values to equal the entire bar length. Data containing negative values extends the bar below the baseline of 0%. You can create vertical or horizontal 100% stacked bar visualizations.

This visualization type is sometimes easier to understand than a regular stacked bar where the composition of bars that are small might be difficult to see.

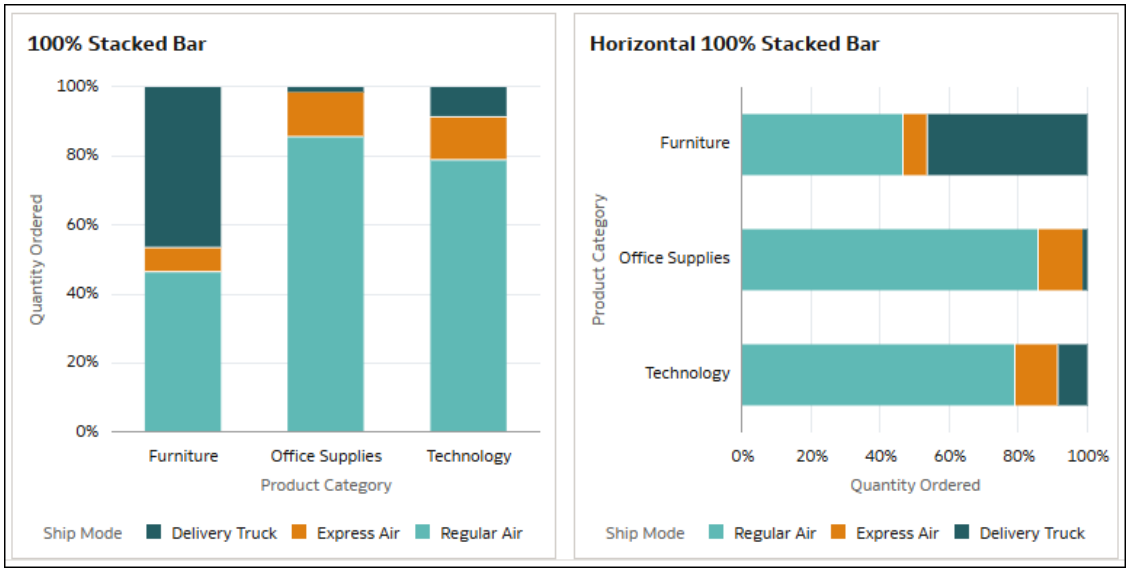
For example, use a 100% stacked bar graph to compare the quantity ordered across the different product categories while also showing the ship mode used.

For a vertical 100% stacked bar, use a measure such as Quantity Ordered for **Values (Y-Axis)**, an attribute such as Product Category for **Category (X-Axis)**, and another attribute such as Ship Mode for **Color**.

For a horizontal 100% stacked bar, use Quantity Ordered for **Values (X-Axis)**, Product Category for **Category (Y-Axis)**, and Ship Mode for **Color**.

In this example, similar to the stacked bar graphs, the bars show the product categories and the colors within the bars represent the ship modes. However, the values axes display percentages from 0 to 100 to indicate the composition of each product category by the ship modes. In the Furniture product category, the Delivery Truck ship mode is 46% of quantity ordered, Express Air is 7%, and Regular Air is 47%.

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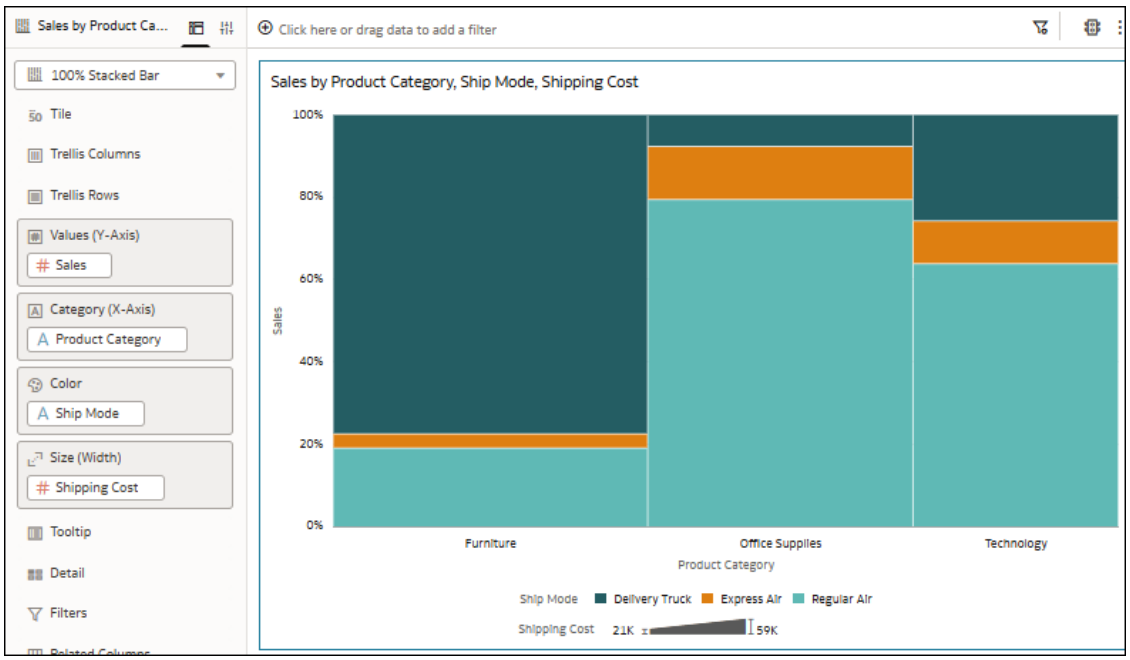


Mekko Charts

In Oracle Analytics, you can also use a 100% stacked bar visualization to create a Mekko chart.

This tutorial shows you how to create a Mekko chart: Tutorial.

For example, take a vertical 100% stacked bar graph comparing the sales and shipping costs across the different product categories and ship modes, and then use the Bar Gap and Bar Size properties to turn it into a Mekko chart. In the Grammar pane, use Sales for **Values (Y-Axis)** and Shipping Cost for **Size (Width)**. Use Product Categories for **Category (X-Axis)** and Ship Mode for **Color**. In the General Properties tab, use the **Bar Gap** property to remove the space between the bars and select the **Apply to Stack** option for the **Bar Size** property to make the segments in each bar the same width.



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Combo and Overlay Charts

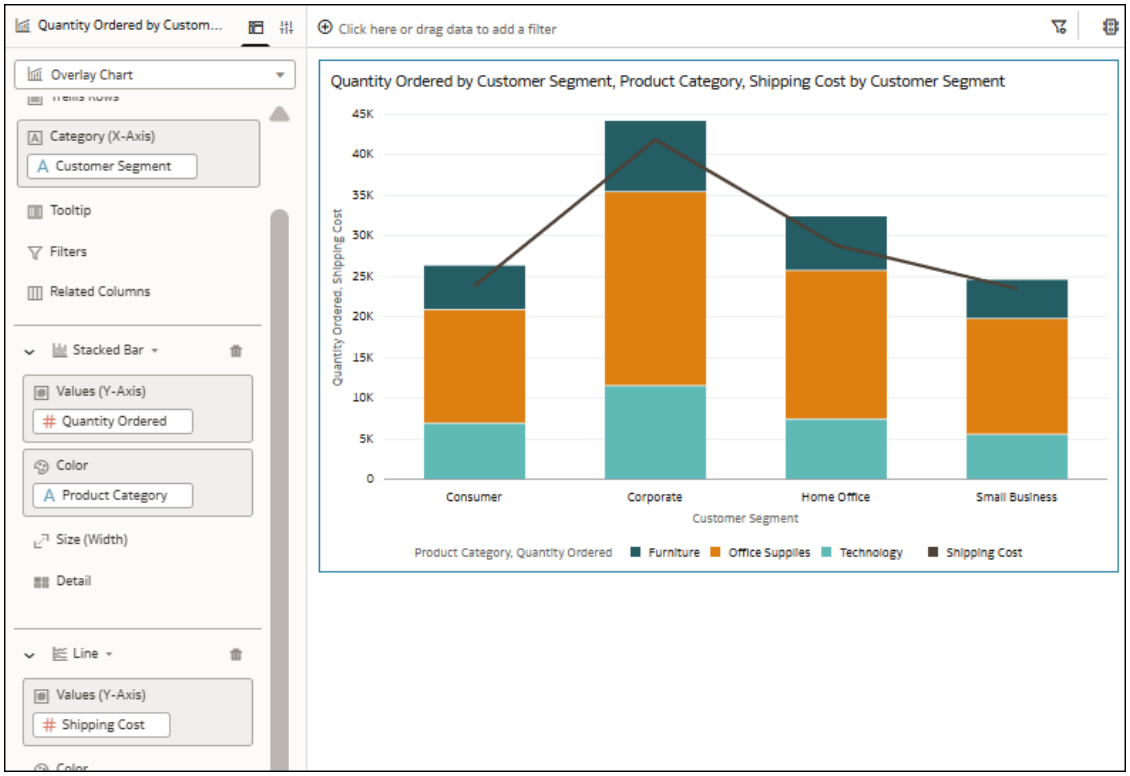
As part of the bar graphs visualization type, Oracle Analytics offers a Combo visualization and an Overlay Chart visualization.

A combo chart displays different types of data in different ways, all within the same graph. In Oracle Analytics, you can use bar, line, area, and scatter graphs in a combo visualization.

An overlay chart enables advanced combination charts with a multi-layer grammar experience. In Oracle Analytics, you can use bar, stacked bar, line, area, category, and stacked category charts. You can configure various properties for the different layers to ensure an overlay chart is clear using the properties in the Data Layers tab of the Properties pane.

For example, create an overlay chart that uses a stacked bar graph to show the quantity ordered across the different customer segments by product category, and a line graph to show the shipping cost.

Use the column Customer Segment for **Category (X-Axis)** which is a common element. Then choose a Stacked Bar visualization for the first layer and use Quantity Ordered for **Values (Y-Axis)** and Product Category for **Color**. Add another layer with a Line visualization and use Shipping Cost for **Values (Y-Axis)**. The visualization shows the stacked bar graph and line graph together as one.



This tutorial shows you how to create an overlay chart using a bar graph and a line graph: Tutorial.

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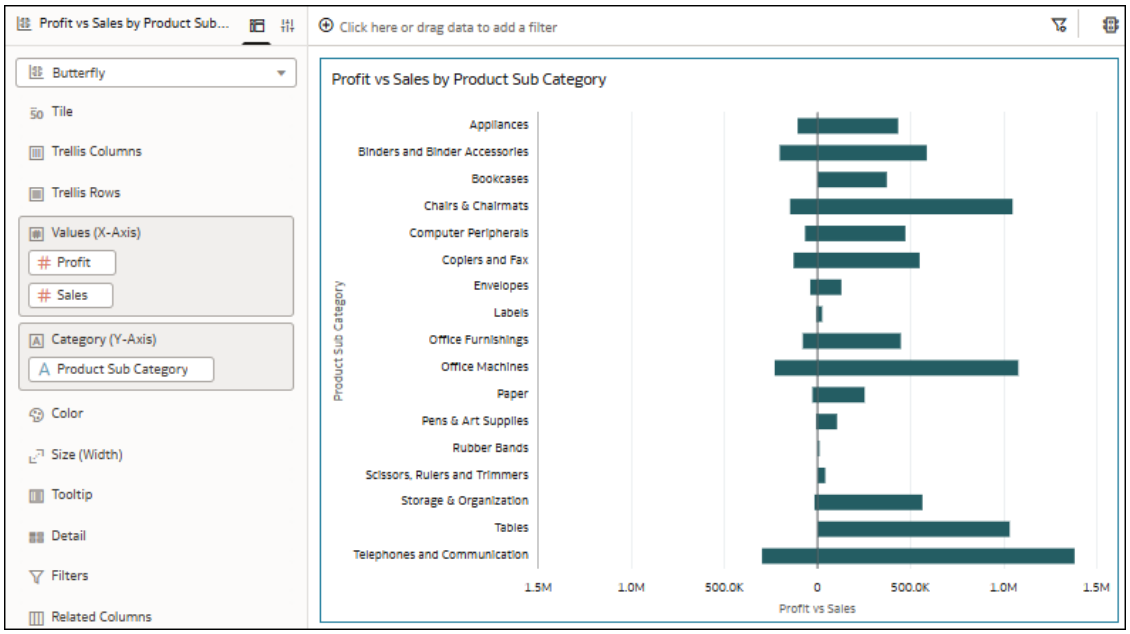
Butterfly Charts

As part of the bar graphs visualization type, Oracle Analytics offers the Butterfly visualization.

A butterfly chart compares two measures side-by-side along a vertical line. The left side of the vertical line represents the first measure on the X-axis and the right side of the vertical line represents the second measure on the X-axis. To compare the measures, you select a common attribute.

For example, use a butterfly chart to compare profit and sales numbers for product subcategories. Use two measures such as Profit and Sales for **Values (X-Axis)** and an attribute such as Product Sub Category for **Category (Y-Axis)**.

In this example, the bars to the left of the vertical line in the visualization represent Profit and the bars to the right represent Sales.



You can configure the scale for the measures on the horizontal axis to use the same or different levels of granularity. Use the **Synchronize Scales** property for the visualization.

Waterfall Charts

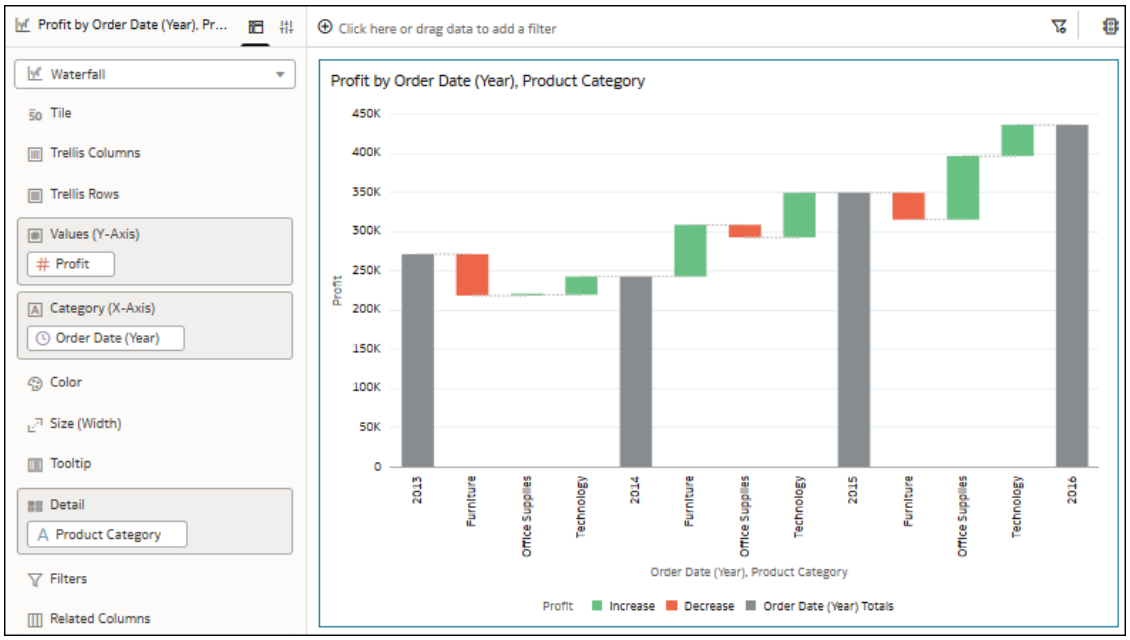
As part of the bar graphs visualization type, Oracle Analytics offers the Waterfall visualization.

A waterfall visualization shows how a value changes over time, uses the X, Y, Z axes to display intermediate values, and is useful in executive presentations.

For example, use a waterfall chart to see the composition of profit over time and how the different product categories contribute to the changes. Use a measure such as Profit for **Values (Y-Axis)**, a date column such as Order Date (Year) for **Category (X-Axis)**, and an attribute such as Product Category for **Detail**.

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In this example, the different colored bars show the increases and decreases in profit for the product categories and the long bars touching the vertical axis show the totals for each year.



Boxplots

The two boxplot visualizations available in Oracle Analytics are called Boxplot and Horizontal Boxplot .

A boxplot visualization depicts groups of numerical data through quartiles and identifies outliers. The box contains the three quartiles in the interquartile range (IQR) and represents the middle 50% of the data, and the dots represent the outliers. The data limit is 10,000 rows.

For example, use a boxplot to see the distribution of cities across sales.

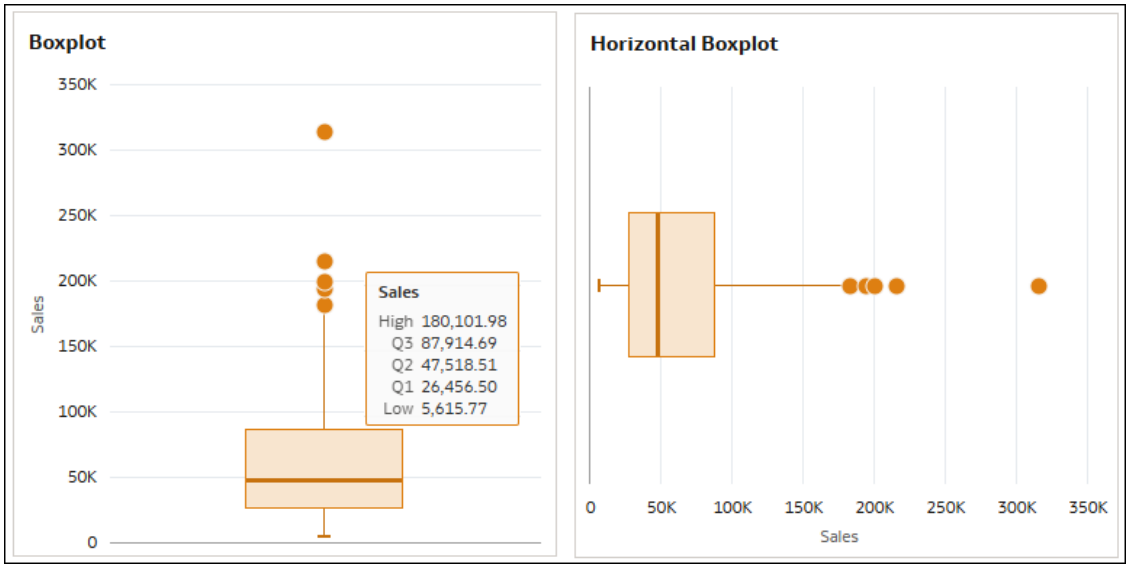
For a vertical boxplot, use a measure such as Sales for **Values (Y-Axis)** and an attribute such as City for **Detail (Box)**.

For a horizontal boxplot, use Sales for **Values (X-Axis)** and City for **Detail (Box)**.

Oracle Analytics calculates the following information which you can see in the tooltip for the box:

- High - The maximum value (Q3 + 1.5*IQR), represented by the end of the vertical line on top of the box (or to the right of the box for horizontal boxplots).
- Q3 - The upper quartile, represented by the top of the box (or the right side of the box for horizontal boxplots).
- Q2 - The median, represented by the line in the middle of the box.
- Q1 - The lower quartile, represented by the bottom of the box (or the left side of the box for horizontal boxplots).
- Low - The minimum value (Q1 - 1.5*IQR), represented by the end of the vertical line below the box (or to the left of the box for horizontal boxplots).

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Dashboard Controls and Other Visualization Types

Use these visualization types to bring your data to life.

Visualization Type	More Information
Button Bar	Enables consumers to use buttons on a canvas to invoke data actions for an app-like experience. See Button Bars.
Dashboard Filters	Enables consumers to use filter controls on a canvas to refine the data they're interested in. See Dashboard Filters.
Gauge	Displays a single metric value in a circular, semi-circular, vertical bar, or horizontal bar format to show how the metric is performing against a target, within a specified range, or in comparison to other metrics. See Gauge Visualizations.
Language Narrative	Provides natural language descriptions of the attributes and measures in your dataset in the form of breakdown or trend. See Add a Language Narrative Visualization.
Legend	Enables content authors to select data elements used in the canvas, and display them as a group of legends in a single visualization. See Create a Legend Visualization.
List	Filters data on the workbook canvas as a list format visualization.
Spacer	Provides a space between visualizations on the workbook canvas; the space can include a line that you format to mark the boundary between visualizations.
Tag Cloud	Displays word-frequency analysis of text data, such as tags and keywords.
Text Box	Provides a contained area to add text to the workbook canvas.
Tile	Provides a composite card style visualization to which you can add up to five measures, and specify the layout and positioning of labels and values for the primary and secondary measures. A tile grammar element is added automatically to the Grammar pane when you create a visualization.
Timeline	Depicts a sequential view of events or objects within a period of time.

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Geospacial Graphs

Geospacial graphs enable you to overlay your data on to a map with support for many common map APIs such as Google Maps, Mapbox, and EZ Map.

Visualization Type	More Information
Image	Uses an uploaded image as a background for maps or other visualizations. See Use Images in Workbooks.
Map	Displays geographically related data in a map format and most used to analyze the distribution or proportion of data in each region.
Multi-layer Map	Based on the Map graph and uses the data layer feature to display multiple data series (different sets of dimensions and metrics) on a single map visualization.
REST Background	Based on the Map graph and uses custom REST APIs to transform data into map backgrounds.

Grid Graphs

Grid graphs use a row and column structure containing data or graphical representations of data and labels identifying the grid's contents.

Visualization Type	More Information
Correlation Matrix	Presents a table containing correlation coefficients between variables.
Grid Heat Map	Plots a main variable across two axis variables as a grid of colored squares.
Picto	Uses icons to visualize an absolute number, or the relative sizes of the different parts of a whole.
Pivot	Similar to a table but summarizes and aggregates groups of data values in columns and rows. See Table and Pivot Visualizations.
Table	Displays data in rows and columns in a tabular format. See Table and Pivot Visualizations.

Line Graphs

Line graphs enable you to connect several distinct data points as a single continuous progression. You can use them to identify changes in one value relative to another.

Visualization Type	More Information
Area	Based on a line chart with the area between the axis and line filled in. These graphs show you the amount of change over time, and are useful for evaluating a total value across a trend.
100% Area	Based on the area graph but with the entire graph filled in to 100%.
Line	Depicts an entire series of values over time in a line format.
Radar Area	Based on the radar line graph but the areas between lines are filled in.
Radar Bar	Based on the radar line graph and presents multivariate data by plotting each variable on an axis and the data as a polygonal shape over all axes.

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Visualization Type	More Information
Radar Line	Displays multivariate data in the form of a two-dimensional chart of three or more quantitative variables represented on an axes starting from the same point.
Stacked Area	Based on the area graph and is useful for tracking not only the total value, but also seeing the breakdown of that total by groups.

Network Graphs

Network graphs illuminate relationships between entities using lines, nodes, or other graphics.

Visualization Type	More Information
Chord Diagram	Represents flows or relationships between entities (many-to-many connections) and identifies where there are commonalities.
Circular Network	Shows how connections happen within a circular flow (based on the network graph).
Network	Illustrates a schematic or network map and its connections.
Parallel Coordinates	Shows a set of points in an n-dimensional space with a backdrop consisting of n parallel lines, typically vertical, and equally spaced.
Sankey	Depicts a flow diagram in which the width of the arrows is proportional to the flow rate.
Tree Diagram	Represents a series of independent events or conditional probabilities in a node tree diagram, where each node represents an event and is associated with the probability of that event.

Pie and Treemap Graphs

Pie graphs show percentages of data as slices of data of a whole circle over a set timeframe and treemap graphs enable you to visualize different segments as smaller rectangles of data within a whole square.

Visualization Type	More Information
Donut	Based on the circular pie graph, but with a hollow center. It's divided into multiple segments in proportion with the related values.
Pie	Presents a circular statistical graphic divided into slices to illustrate numerical proportion.
Sunburst	Displays hierarchical data where each level of the hierarchy is represented by one circle with the innermost circle as the top of the hierarchy.
Treemap	Depicts data grouped and nested in a hierarchical (or tree-based) structure and is useful for quickly identifying patterns.

Scatter Graphs

Scatter graphs enable you to interpret the relationship between multiple variables, if any of the variables are a good predictor of another, or if the variables change on their own. You can make scatter graphs go even further by adding clusters or trend lines.

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Visualization Type	More Information
Category	Shows you a set of vertices (or nodes) connected by links called edges (or arcs), which can also have associated directions.
Scatter	Uses dots to represent values for two numeric variables where the position of each dot on the horizontal and vertical axis indicates values for an individual data point. Scatter plots are good to use if you want to see the relationships between variables.
Stacked Category	Based on the category graph where values are stacked by category.

Change Visualization Types

You can change visualization types to best suit the data you're exploring.

When you create a workbook and add data elements to the canvas, Auto Visualization mode chooses the most appropriate visualization type based on the selected data element. The Auto Visualization mode is on (selected) by default. If you add more data elements, the visualization type is automatically updated, and the best type is selected based on the data elements.

If you want to use a different visualization type, then you need to select it from the visualization type list. When you change the visualization type, Auto Visualization mode is turned off. When the Auto Visualization mode is off (deselected), adding more data elements to the canvas won't change the visualization type automatically.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select a visualization on the canvas, and on the visualization toolbar, click **Change Visualization Type**.
3. Select a visualization type. For example, select Treemap to change the visualization type from Pivot to Treemap.

   When you change the visualization type, the data elements are moved to matching drop target names. If an equivalent drop target doesn't exist for the new visualization type, then the data elements are moved to a Grammar pane section labeled **Unused**. You can then move them to the Grammar pane section you prefer.

Add a Language Narrative Visualization

The language narrative visualization provides insights into your company's data. These insights can be in the form of breakdown or trend.

LiveLabs Sprint

Topics:

- About the Language Narrative Visualization
- Create a Language Narrative Visualization
- Change Tone for Language Narrative Visualization
- Change Level of Detail for Language Narrative Visualization

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About the Language Narrative Visualization

The language narrative visualization creates natural language descriptions of the attributes and measures in your dataset.

The language narrative visualization generates descriptions based on the type of visualization. When you select the language narrative visualization, it selects up to two dimensions and attributes each to use for the description. You can also choose to select the data elements for your language narrative visualization. The following combinations of data elements are supported:

- One measure, one or two time dimensions
- One dimension, one measure, one time dimension
- One or two dimensions, one or two measures

If the total number of data elements used for the language narrative visualization exceeds 10,000, only the first 10,000 data elements are used when generating the description.

You can modify the level of detail of your language narrative. Choosing a lower number for level of detail provides less detail and is helpful if you want the description to only broadly address the observable data. Choosing a higher number provides more detail can give a more granular description of the data. See Change Level of Detail for Language Narrative Visualization.

You can change the tone of the language narrative from the default, factual, to business or casual. See Change Tone for Language Narrative Visualization.

Business and casual tones are available if you have enabled generative AI for the language narrative visualization feature. If you do not have generative AI enabled for this visualization, only the factual tone is available. See Configure Generative AI Services.

Limitations

Language narrative visualizations have the following limitations:

- The text in the visualization can be displayed in English or French. Other languages aren't supported. Oracle Analytics Cloud maps French locales (fr and fr-CA) to the French language, and maps all other locales to English.
- Presentation mode and embedding items such as dashboards aren't supported.
- Data brushing functionality isn't applicable to this visualization type.
- Data actions aren't applicable to this visualization type.

Create a Language Narrative Visualization

Use a language narrative visualization to describe the measures and attributes in a visualization.

If you haven't already created a workbook, you need to create one. See Begin to Build a Workbook.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the **Visualize** pane and double-click **Language Narrative**.
3. Click the **Data** pane and drag data elements to the canvas.
4. Click **Save**.

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Change Tone for Language Narrative Visualization

You can choose a different tone for a language narrative visualization to present the same information for different audiences.

Language narrative visualizations use Factual tone by default and you can always select Factual tone. Business and Casual tone options are only available if you have a Language Narrative visualizations configured to use a generative AI. See Configure Generative AI Services.

1. On your home page, hover over the workbook containing your Language Narrative visualization, click **Actions**, then select **Open**.
2. Click **Edit** to open the workbook in author mode.
3. Select the language narrative visualization you want to change tone for.
4. In the **Properties** tab, click the **Tone** option and select a new tone.
5. Wait for the new language narrative to load and review the content.
6. Click **Save**.

Change Level of Detail for Language Narrative Visualization

You can use a sliding scale to determine how granular the detail is in your language narrative visualization.

The highest number in the level of detail property provides the most description information about the visualization. The lower number provides a minimum amount of information. Don't use the numbers; these values can change.

1. On your home page, hover over the workbook containing your Language Narrative visualization, click **Actions**, then select **Open**.
2. Click **Edit** to open the workbook in author mode.
3. Select the language narrative visualization you want to change tone for.
4. In the **Properties** tab, click the **Level of Detail** option and use the slider to select a new level of detail.
5. Click **Save**.

Create a Legend Visualization

You create a legend visualization to display a single canvas visualization legend for multiple visualizations, eliminating the need to display duplicated legend information in each visualization.

You create a legend visualization by adding data elements to it, and then you hide the legends in the other remaining visualizations to avoid duplication and improve the appearance of the visualizations.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

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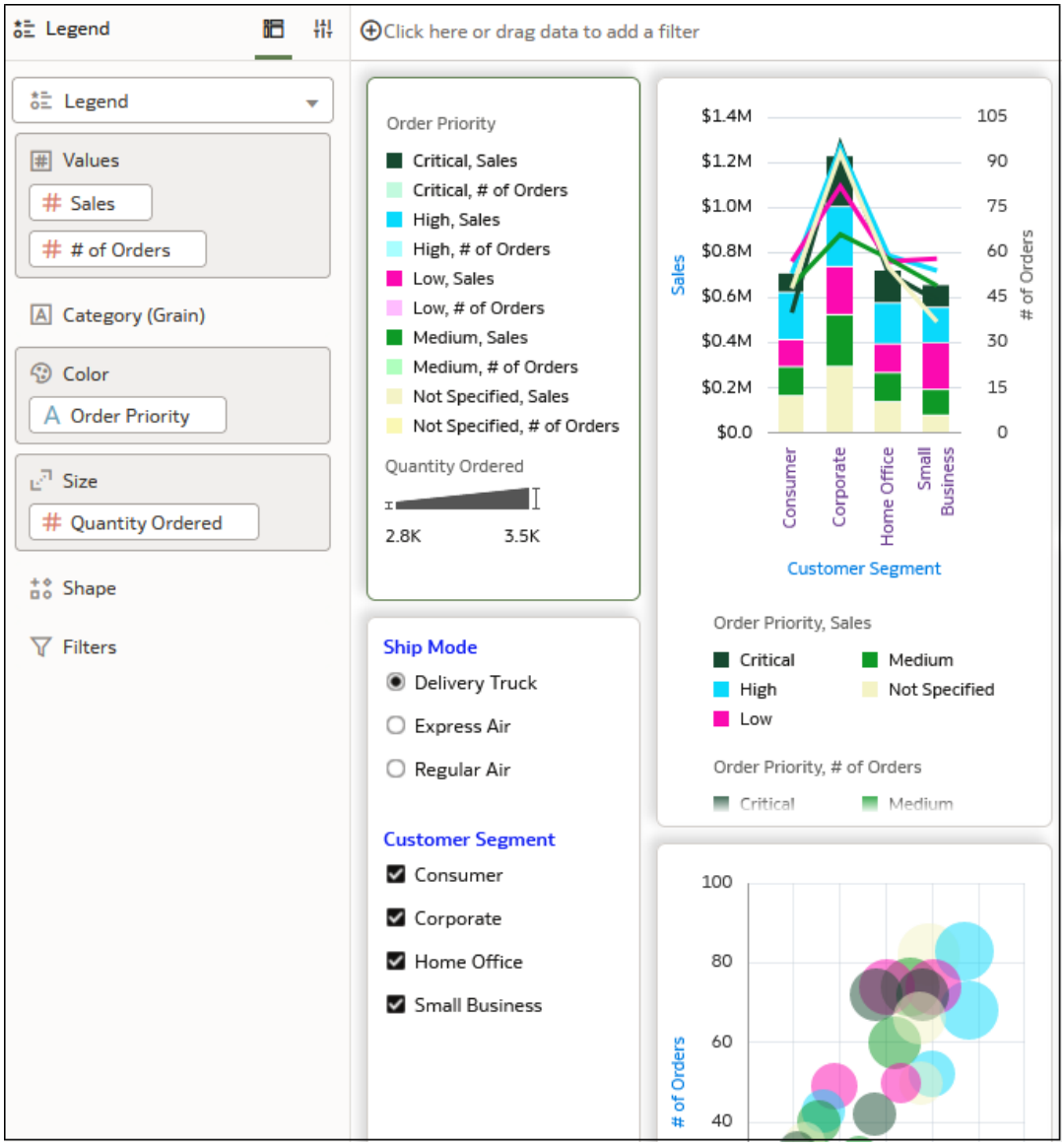


2. Click **Edit**, click **Visualize** and in the Data pane select **Visualizations**.
3. Drag and drop a **Legend** visualization from the **Visualizations** pane onto the canvas.

   You can place the legend on the canvas in the location most appropriate for your workbook
4. Click **Data** then drag and drop data elements that are used in the canvas visualizations, and drop them to appropriate sections in the Grammar pane.

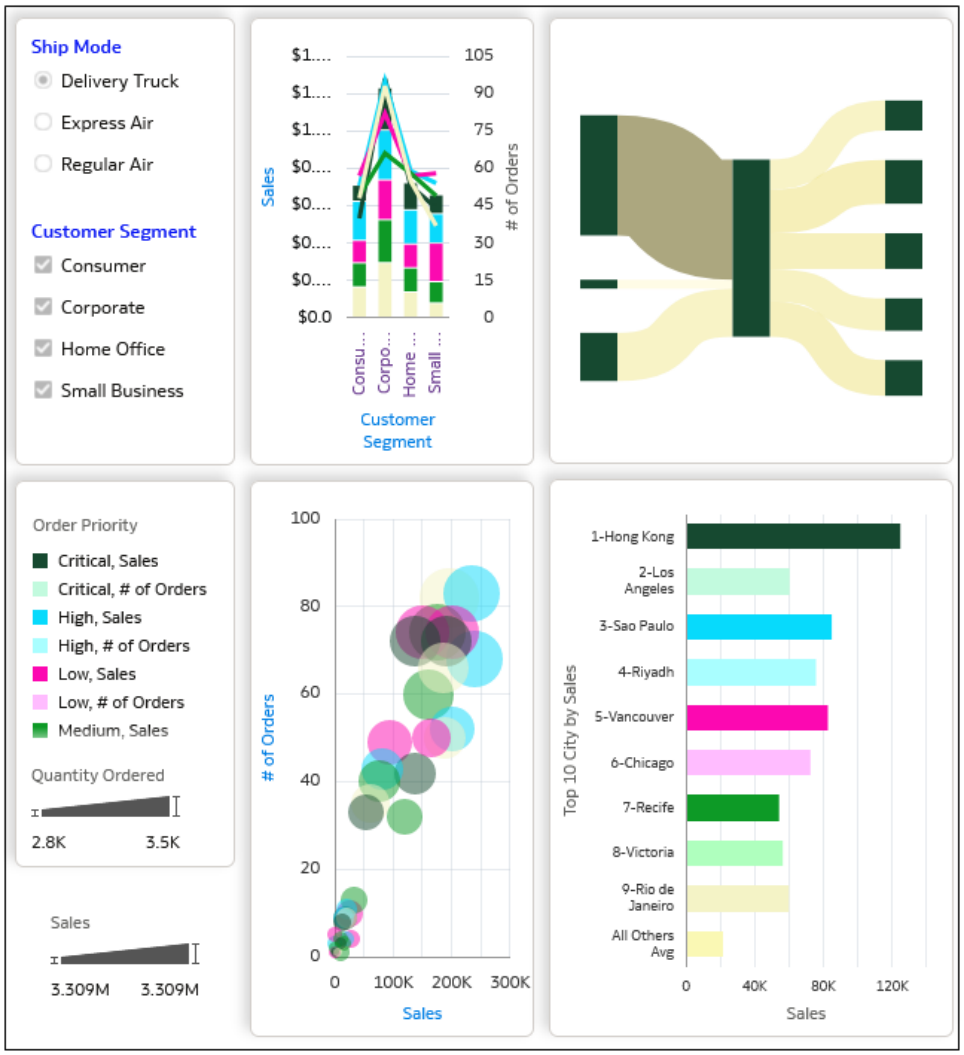
   For example, in the image, **Order Priority** is dragged to **Color** in the Grammar pane, **Sales** and **# of Orders** are dragged to **values** in the Grammar pane, and **Quantity Ordered** is dragged to **Size** in the Grammar pane.

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5. To hide the legends from each visualization, select a visualization and click **Properties**. In the **Legend Position** row, click **Auto** and select **None**. Repeat for each visualization.
6. Click **Save**.

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Gauge Visualizations

This topic describes gauge visualizations and how to create and configure them.

Topics:

- About Gauge Visualizations
- Create a Gauge Visualization
- Add a Target to a Gauge
- Configure the Properties for a Gauge
- Create a Set of Gauges

About Gauge Visualizations

In Oracle Analytics, you can use a gauge visualization to show how a measure or metric performs against a target, within a specified range, or in comparison to other measures.

You can create a gauge visualization with a measure, or you can create multiple gauges as part of a trellis to monitor multiple measures and dimensions. For example, you might want to

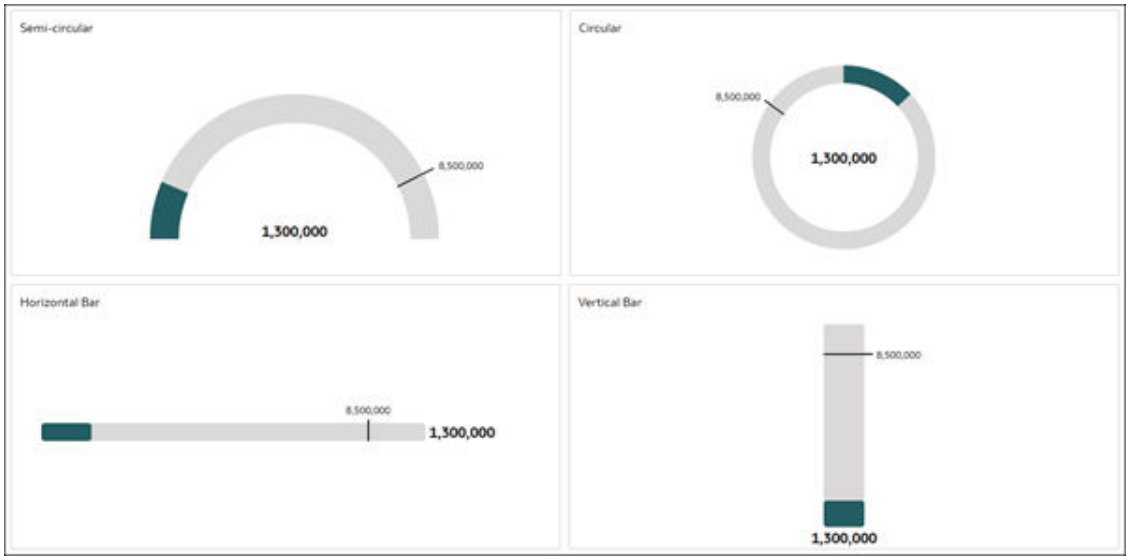
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see how the total value of a measure column like Sales compares to a target value. You could use a set of gauges to monitor the quantity of products ordered for different product categories.

There are four gauge types:

- Semi-circular
- Circular
- Horizontal Bar
- Vertical Bar

For each gauge type, the data is shown as a color within the gauge shape to indicate where the data is within predefined limits.



You can update the gauge visualization properties to show the start and end of the measure's range and customize the formatting, as well as configure the indicator for a target value.

You can use additional measure columns or calculations as start and end values for a range or as a target value to compare your data against. For example, if you want to see how the sales for different shipping modes are performing, you might create a calculation to use as the target sales values for a set of gauges.

This tutorial shows you how to create and customize gauge visualizations. Tutorial

Create a Gauge Visualization

Add a gauge visualization to your workbook.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, select a measure column, right-click, and then click **Pick Visualization**.
3. Click **Gauge** to add a gauge visualization to the canvas.
4. Click **Save**.

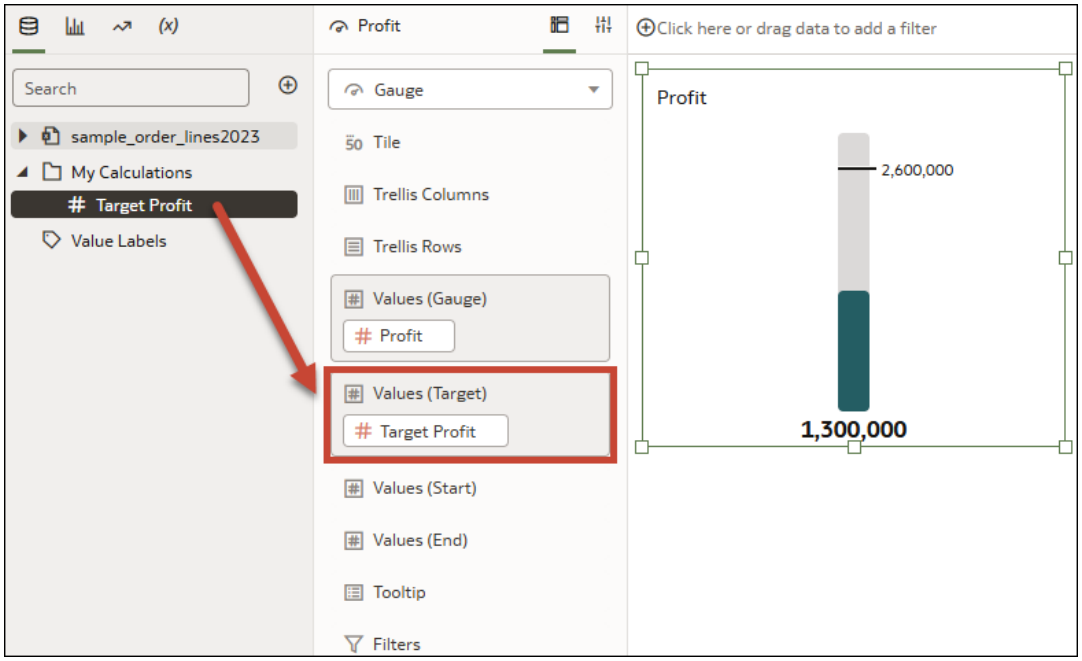
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Add a Target to a Gauge

Add a target value to a gauge so you can see how a measure is performing against a goal.

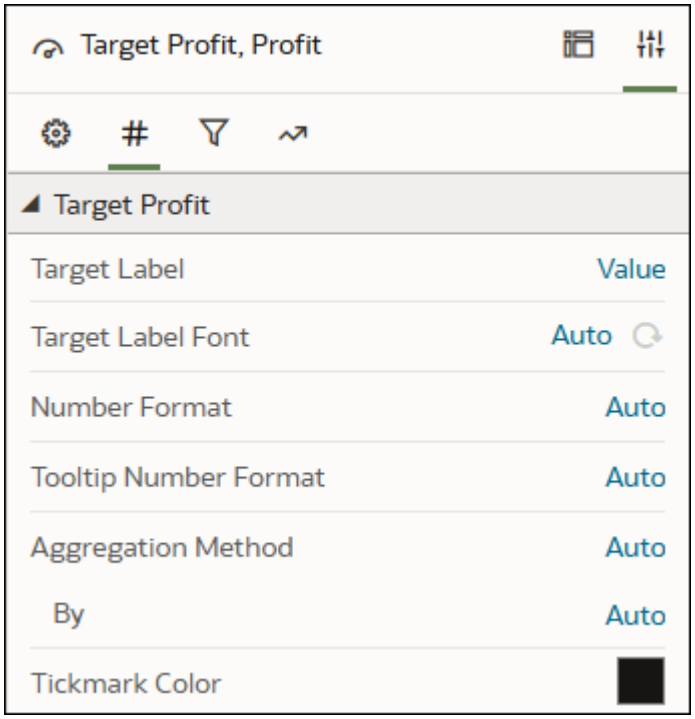
You can select a measure column or create a calculation to generate the target value to use in the gauge visualization.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a gauge visualization to select it.
3. In the **Data** pane, drag an appropriate measure or calculation to **Values (Target)** in the **Grammar** pane.



4. Click **Properties**, click **Values**, then expand the measure or calculation to modify it.

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5. In the Target Label row, click **Value** and select an option.
6. In the Target Label Font row, click **Auto** and configure the font.
7. In the Tickmark Color row, click the color box and select a color.
8. Click **Save**.

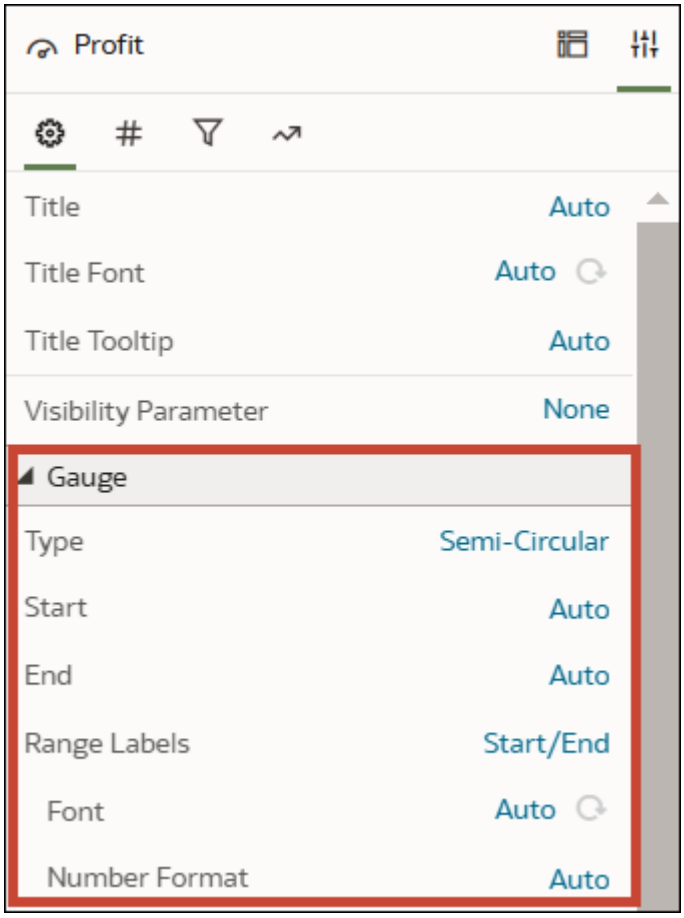
Configure the Properties for a Gauge

Customize a gauge visualization by updating the properties.

When using a Horizontal Bar or Vertical Bar gauge, you can specify the length and thickness of the gauge as well as the position of the range labels. For horizontal bars, you can also specify the position of the values. You can do this from the General tab in the Properties pane.

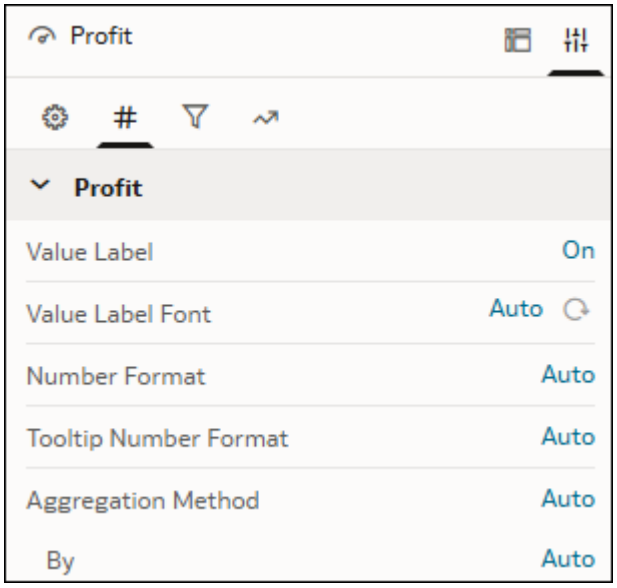
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a gauge visualization to select it.
3. Click **Properties**. Expand the Gauge section.

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4. In the Type row, keep the default semi-circular gauge type or click **Semi-Circular** and select a different option to change the gauge shape:
   - Circular
   - Horizontal Bar
   - Vertical Bar
5. In the Start row, click **Auto**, select **Custom**, and enter a value.
6. In the End row, click **Auto**, select **Custom**, and enter a value.
7. In the Range Labels row, click **None** and select:
   - **Start/End** to show the start and end values that are specified in the Start and End properties.
   - **All** to show range values at equal intervals along the gauge, including the start and end values.
8. Click the **Values** tab and expand the data element that you want to configure.

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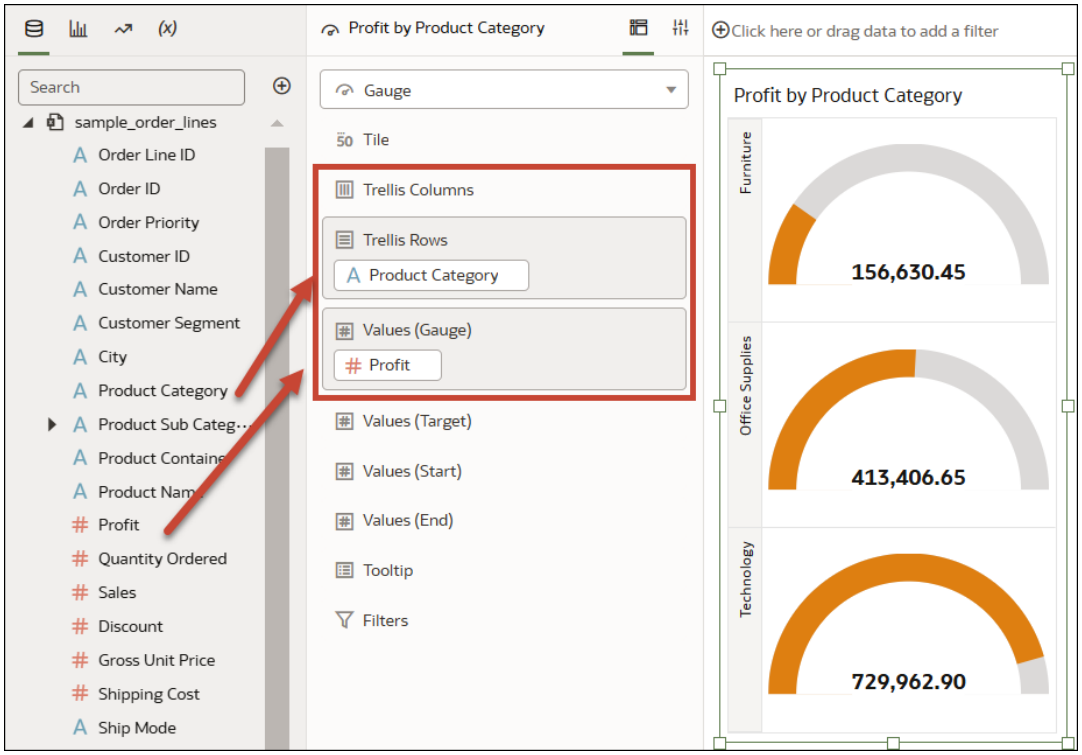
9. Click **Save**.

Create a Set of Gauges

Create a visualization containing multiple gauges to monitor the performance of a measure for multiple dimensions.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Visualizations pane, drag **Gauge** to your canvas.
3. In the Data pane, drag a measure column to **Values (Gauge)** in the **Grammar** pane.
4. In the Data pane, drag an attribute column to **Trellis Columns** or **Trellis Rows** in the **Grammar** pane, depending on the orientation you want.

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5. Click **Save**.

Button Bars

These topics describe how to create and configure button bars with data actions.

Topics:

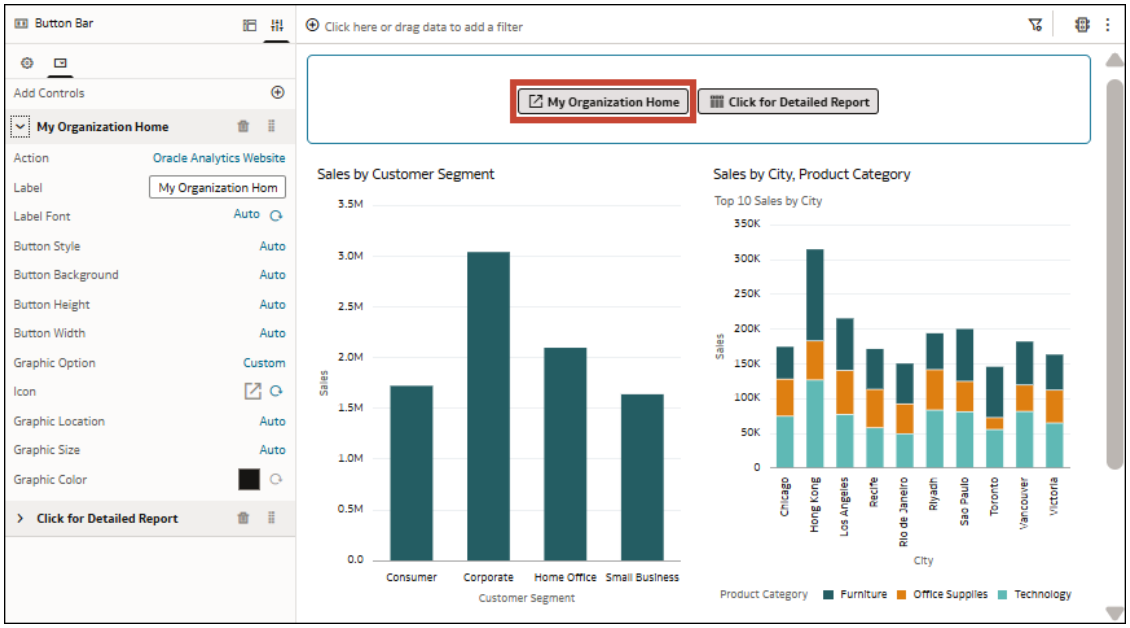
- About Button Bars
- Create a Button Bar
- Configure the Properties for a Button Bar

About Button Bars

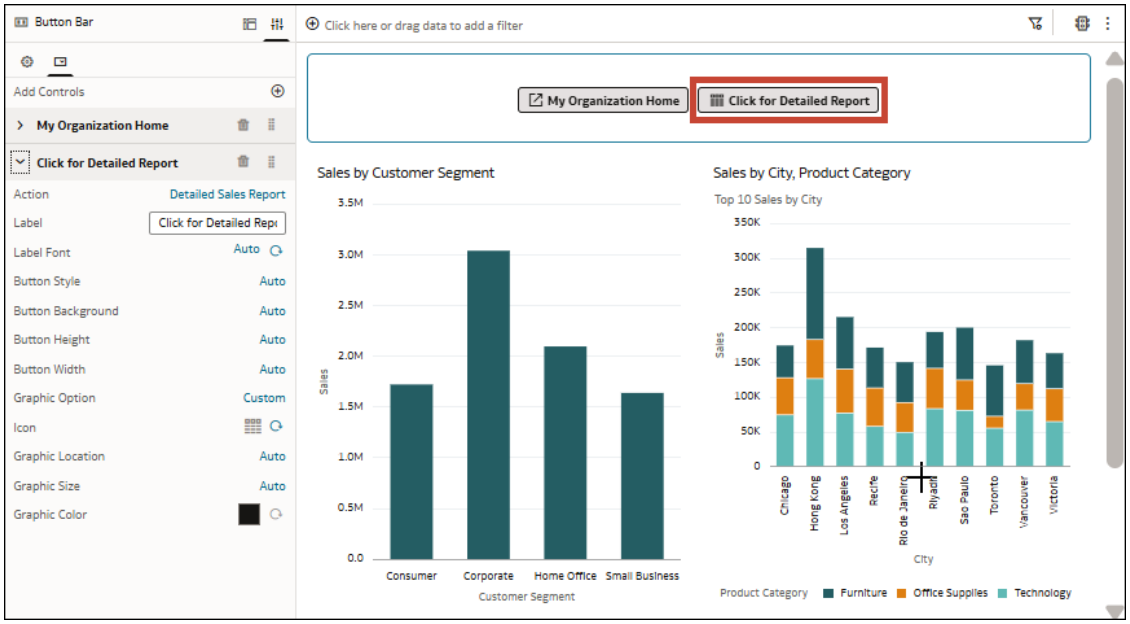
A button bar offers navigation controls on a canvas in the form of buttons. You assign a data action to a button, and when a consumer clicks the button, they invoke the data action. This creates an interactive, more app-like experience.

For example, you might create a button called My Organization Home that uses a data action to connect to an external URL. When consumers click the button, it takes them to your organization's website.

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As another example, you might create a button called Click for Detailed Report that uses a data action to connect to another canvas in the workbook. When consumers click the button, it takes them to a canvas with a pivot visualization with more detailed sales data.



In button bars, you can only use data actions that aren't anchored to any data. This means the **Requires Data** field for the data action must be set to **Off**. See Tips on Using Data Actions.

If a data action is inaccessible to a consumer, and you've hidden inaccessible data actions in Present, nothing happens when the consumer clicks the button control for that data action. See Hide Inaccessible Data Actions in a Workbook from Consumers in Present.

You can also customize the look and feel of the buttons by configuring the button bar properties.

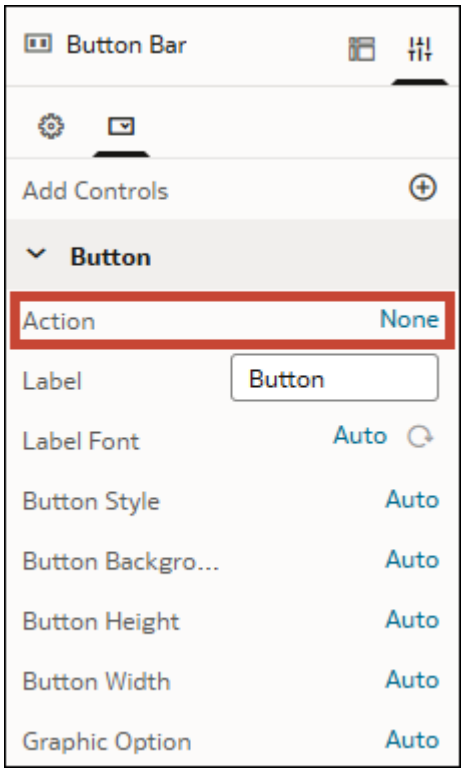
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Create a Button Bar

Use these steps to create a button bar with a data action.

Before you begin, you need to create the data action you want users to invoke using a button. To create a data action for use in a button bar, follow the relevant task in Use Data Actions and set the **Requires Data** row to **Off** .

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, click **Visualizations**, go to Dashboard Controls, and drag **Button Bar** to the canvas.
3. In the Properties pane, in the Controls tab, go to the Action row and click **None**.



4. Select the data action you want to use from the list of available data actions.
5. In the Label row, give your button a meaningful name that consumers will understand.
6. To add additional buttons, click **Add Controls** .
7. Click **Save**.

Configure the Properties for a Button Bar

Customize the look and feel of the buttons in a button bar by updating the properties.

Use the General properties to customize the whole button bar and all the buttons together. For example, you can choose a button style and background to apply to all the buttons. You can also configure the orientation, alignment, and spacing of the buttons along with the other common visualization properties.

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Use the Controls properties to override the General properties and configure individual buttons separately. For example, you can add different icons to your buttons and use a different color for each button.

The following steps highlight some of the button-specific properties you can use.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the button bar visualization to select it.
3. Click **Properties**.
4. In General, in the Button Style row, click **Outlined**, and select a different style to apply to all buttons in the visualization.
5. In the Button Background row, click **Auto**, then click **Custom**.
6. Choose a button color and adjust the transparency.
7. Click **Controls**.
8. Expand the button you want to configure.
9. In the Button Height and Button Width rows, click **Auto**, then click **Custom** and specify the size of the buttons.
10. In the Graphic Option row, click **Auto**, then click **Custom**.
11. Choose an icon to add to the button and adjust its size, location, and color.
12. Click **Save**.

Gantt Charts

These topics describe Gantt chart visualizations and how to create and configure them.

Topics:

- About Gantt Charts
- Create a Gantt Chart Visualization
- Add a Second Layer to a Gantt Chart
- Use Color and Size in a Gantt Chart
- Add Additional Columns to the Rows in a Gantt Chart
- Configure the Properties for a Gantt Chart

About Gantt Charts

In Oracle Analytics, you can use Gantt charts to visualize project or operation schedules and track the progress and duration of tasks or events.

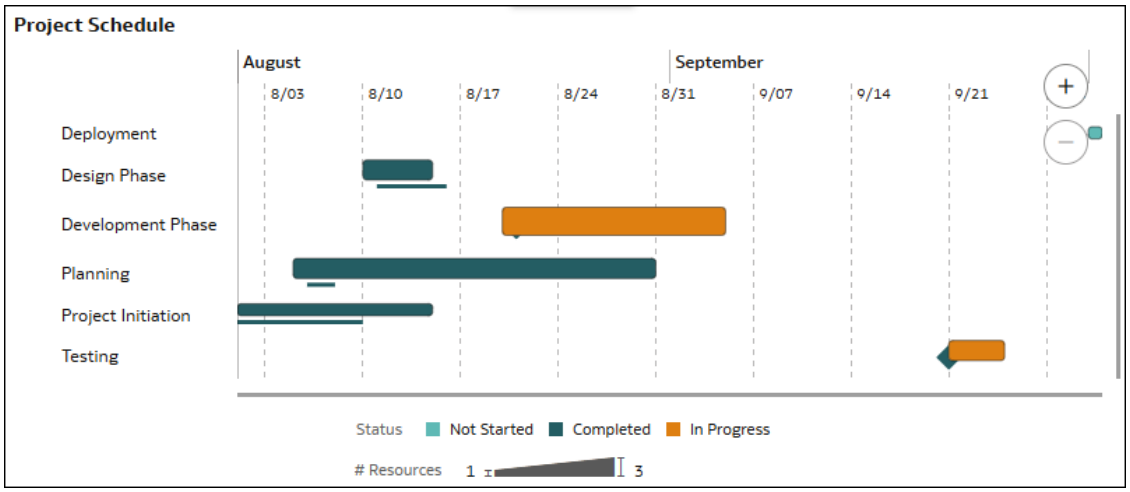
Gantt charts use the vertical axis to list tasks or events and the horizontal axis to display time. Horizontal bars in the chart represent the duration of each task or event. Diamonds represent tasks or events with no end date in the data.

You can display two time ranges, or layers, in a Gantt chart. For example, you might want to compare the planned duration of the tasks in a project with the actual time it took to complete them.

You use additional columns to apply color or size to the bars in the visualization to represent things like task status and complexity, or resources used.

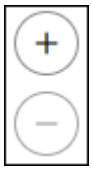
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For example, this Gantt chart shows a project schedule with two layers of tasks. The thicker bars represent the actual task duration while the thinner bars represent the planned duration. The bar color represents the status of the tasks and the height of the bars represents how many resources are used by the tasks. The Testing task displays a diamond because it doesn't have a defined end date.



You can update the visualization properties to change the axis scales, labels, and position as well as configure the grid lines.

To view the data in a Gantt chart more clearly, use the Zoom In and Zoom Out controls on the visualization.



This tutorial shows you how to create and customize Gantt chart visualizations. Tutorial

Create a Gantt Chart Visualization

Add a Gantt chart visualization to your workbook.

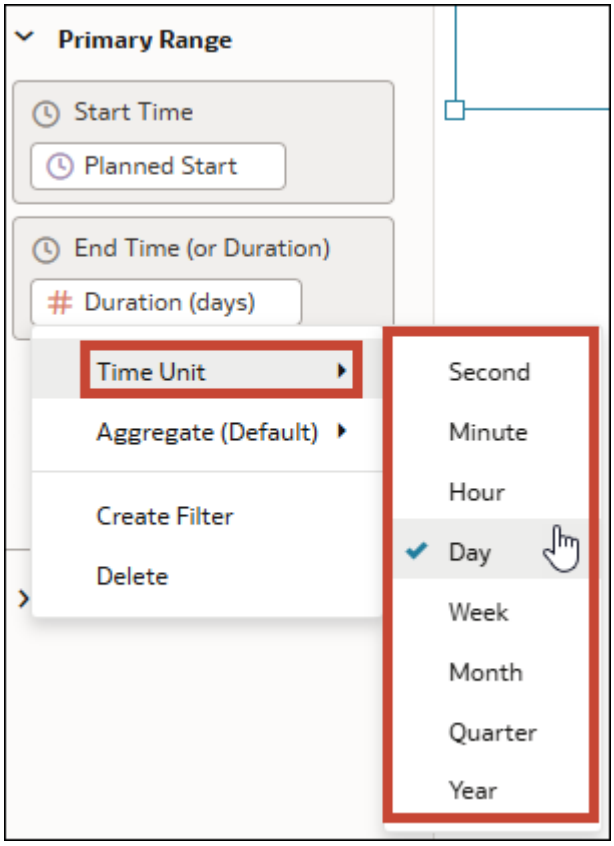
To create a Gantt chart, you need the following columns:

- An attribute column or a date time column representing tasks or events
- A date column representing the start times of the tasks or events
- A date column representing the end times of the tasks or events, or a measure column representing the duration of them.
  If you use a measure column for duration, Oracle Analytics calculates the end date based on the measure and start date values.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, click **Visualizations**. Under Bar, drag **Gantt** to the canvas.

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3. In the Data pane, click **Data** and drag an attribute column to **Category** in the Grammar pane.
4. Drag the appropriate date column to **Start Time** under Primary Range in the Grammar pane.
5. Drag the appropriate date or measure column to **End Time (or Duration)** under Primary Range in the Grammar pane.
6. If you used a measure column representing the duration, click the column name in the Grammar pane to open the menu. Then right-click **Time Unit** and select a unit.



7. Click **Save**.

Add a Second Layer to a Gantt Chart

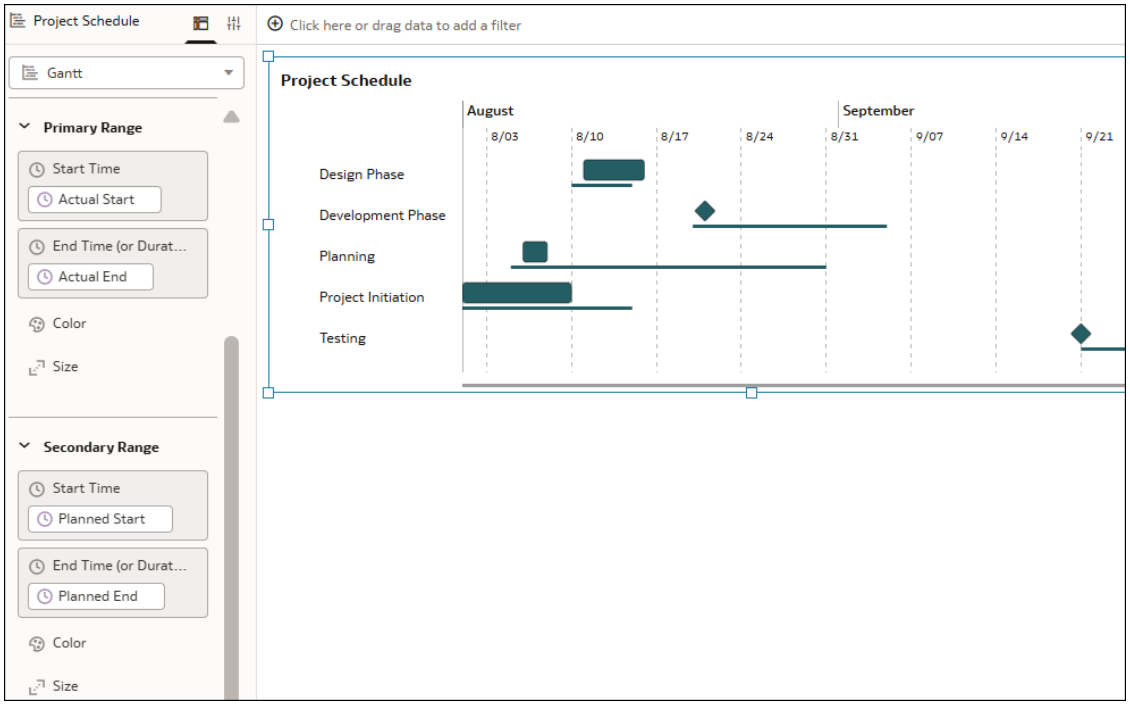
Add a secondary range to a Gantt chart when you want to show two layers of bars.

For example, you might want to compare the actual versus planned task duration for a project.

To add a secondary range, or layer, to your Gantt visualization, you need a separate set of start and end dates (or durations) for the column used in Category. For example, you can use columns called Actual Start and Actual End in the Primary Range layer, and columns called Planned Start and Planned End for the Secondary Range layer.

Oracle Analytics displays the thicker bars for the Primary Range on top and the thinner bars for the Secondary Range underneath.

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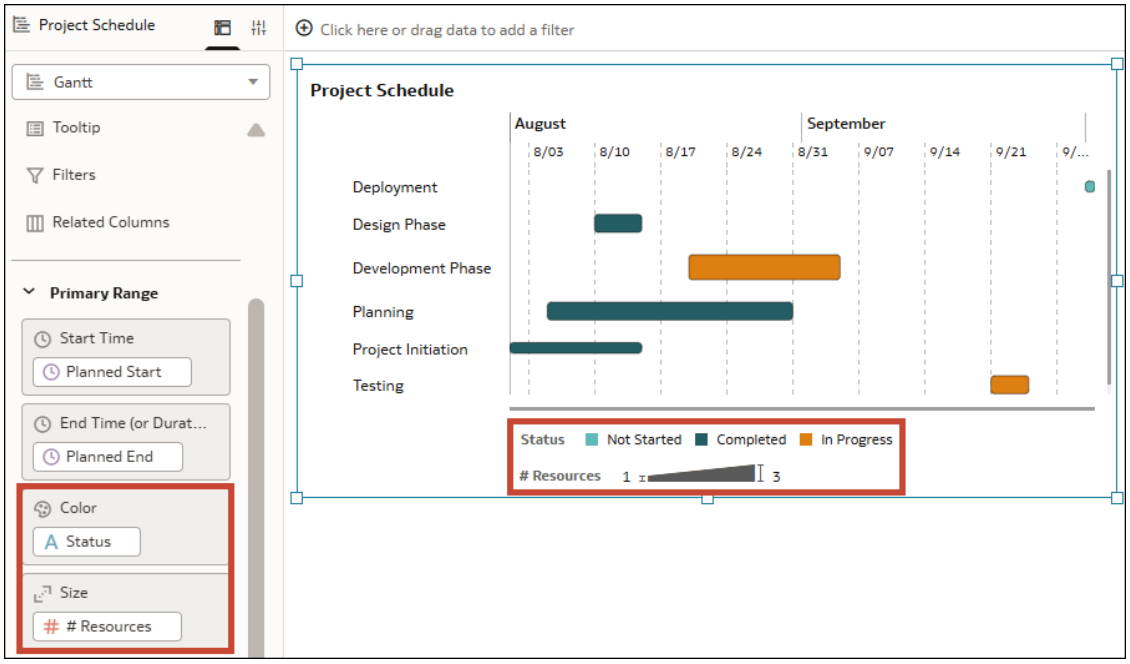
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the Gantt visualization to select it.
3. In the Data pane, drag the appropriate date column to **Start Time** under Secondary Range in the Grammar pane.
4. Drag the appropriate date or measure column to **End Time (or Duration)** under Secondary Range in the Grammar pane.
5. Click **Save**.

Use Color and Size in a Gantt Chart

Add context to your Gantt chart, by adding columns to Color and Size in the Grammar pane. This changes the color and size of the bars in the chart and adds a legend to the visualization to indicate the meaning.

For example, you can use the color of the bars to indicate the status of the tasks using an attribute like Status. And you can use the size of the bars to indicate the number of resources consumed by the events using a measure like Resources.

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You can add columns to Color and Size for both the Primary Range and Secondary Range. You can add multiple columns to Color, but only one to Size.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the Gantt visualization to select it.
3. In the Data pane, drag an appropriate attribute or measure column to **Color** in the Grammar pane.
4. In the Data pane, drag an appropriate measure column to **Size** in the Grammar pane.
5. Click **Save**.

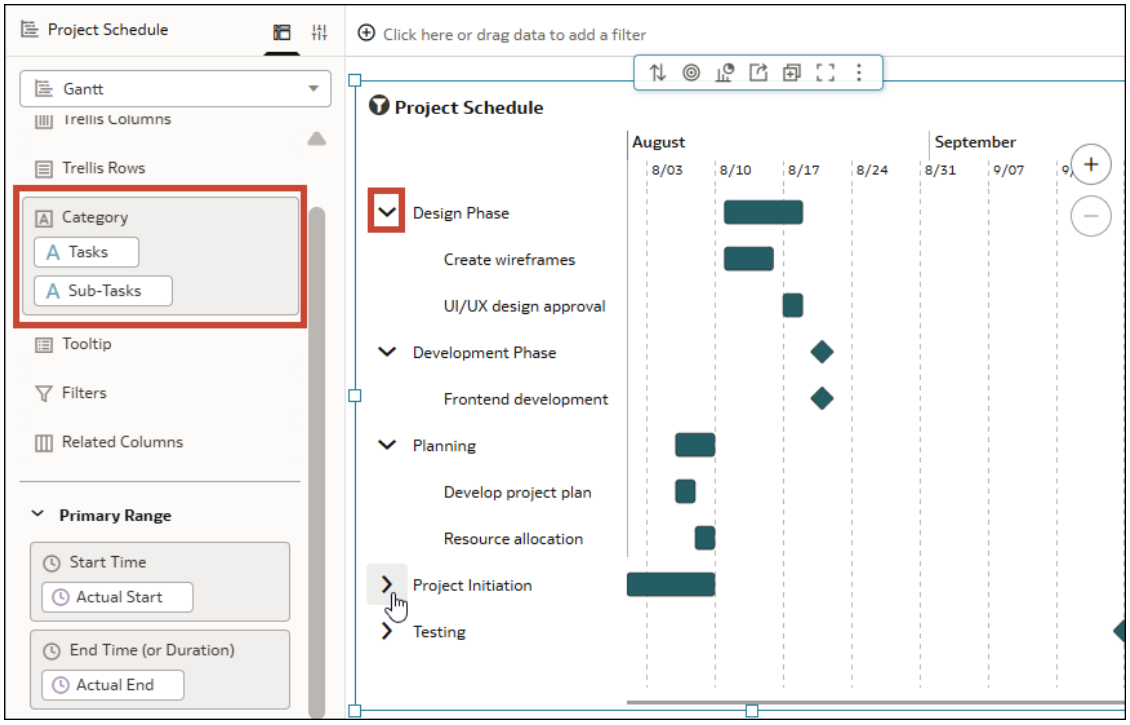
Add Additional Columns to the Rows in a Gantt Chart

Display multiple items in each row of a Gantt chart. For example, you can display tasks and their subtasks.

To show multiple items per row in a Gantt chart you add multiple, hierarchically-related columns to Category in the Grammar pane. The order they appear under Category dictates how they appear in the visualization. You can expand each row item in the vertical axis of the visualization to see the bars for the secondary items.

For example, you might use columns called Tasks and Sub-Tasks in Category. Both Tasks and Sub-Tasks have corresponding Actual Start and Actual End columns. In the visualization, you can expand each task, like Design Phase, in the vertical axis to see the bars for the related subtasks, like Create wireframes and UI/UX design approval.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the Gantt visualization to select it.
3. In the Data pane, click **Data** and drag the related attribute column to **Category** in the Grammar pane below the existing attribute column.
4. In the vertical axis, expand the top-level categories and display the subcategories.
5. Click **Save**.

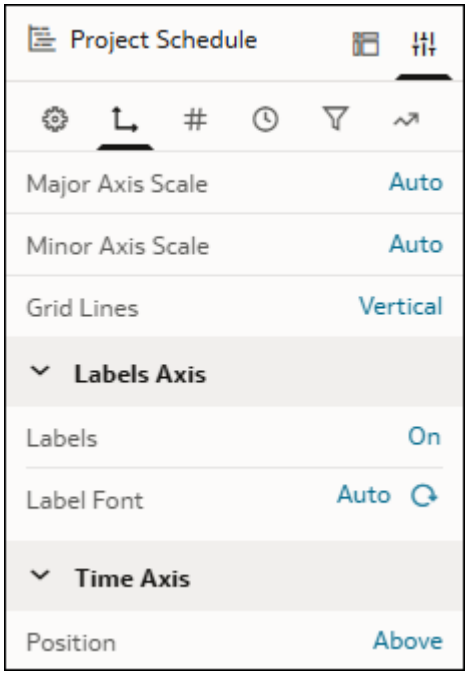
Configure the Properties for a Gantt Chart

Customize a Gantt visualization by updating the properties.

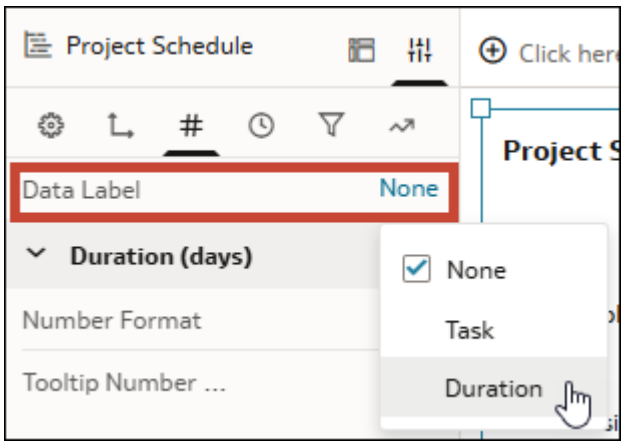
You can modify the level of granularity used for the two time scales on the horizontal axis. You can also configure the position of the horizontal axis, the gridlines for the visualization, and add data labels to the bars.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the Gantt visualization to select it.
3. In the Grammar pane, click **Properties**, then click **Axis**.

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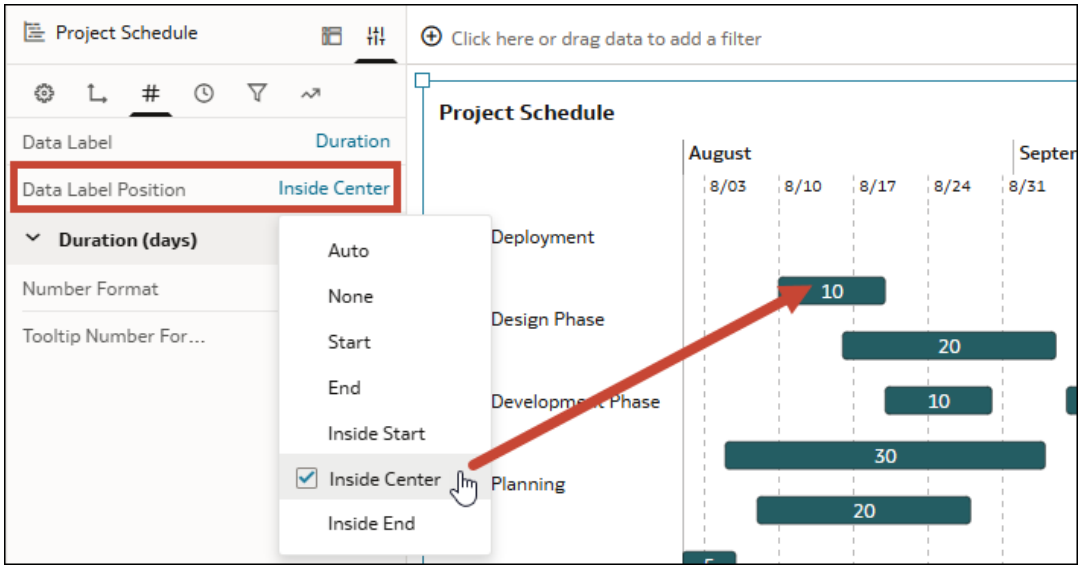


4. In the Major Axis Scale and Minor Axis Scale rows, click **Auto** and choose an appropriate unit of time.
5. In the Grid Lines row, click **Vertical** and choose a configuration.
6. In the Position row under Time Axis, click **Above** to change it to **Below** and move the axis to the top of the visualization.
7. Click **Values**.
8. In the Data Labels row, click **None** and select the column you want to use to add labels to the bars.



9. In the Data Label Position row, click **None** and select where you want the label to appear in relation to the bars.

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10. Click **Save**.

Table and Pivot Visualizations

These topics describe table and pivot visualizations and how to design them.

Topics:

- About Tables and Pivots
- Selecting Data in Tables and Pivots
- Change Display Names in Tables and Pivots
- Customize Grand Totals in Tables and Pivots
- Format Headers in Pivot Visualizations
- Display Values in Table and Pivot Visualizations as Links

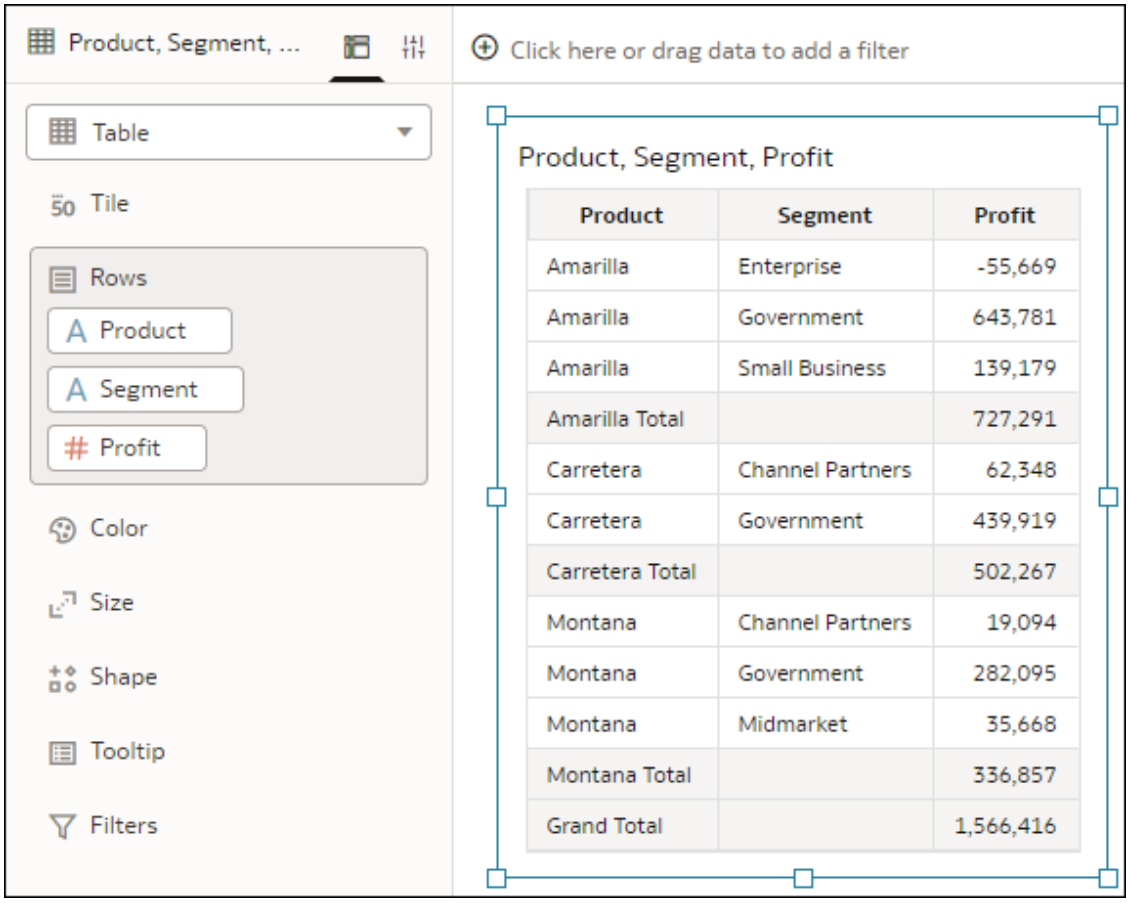
About Tables and Pivots

In Oracle Analytics, you can create table and pivot visualizations to display your data in an organized grid format. You can use them to summarize your data or show it in detail.

A table displays data in rows and columns in a tabular format. A pivot is similar to a table but summarizes and aggregates groups of data values in columns and rows. You can swap the columns and rows in pivots to easily see different summaries of the same data.

For example, you might use a table to show the profit for each product based on customer segment.

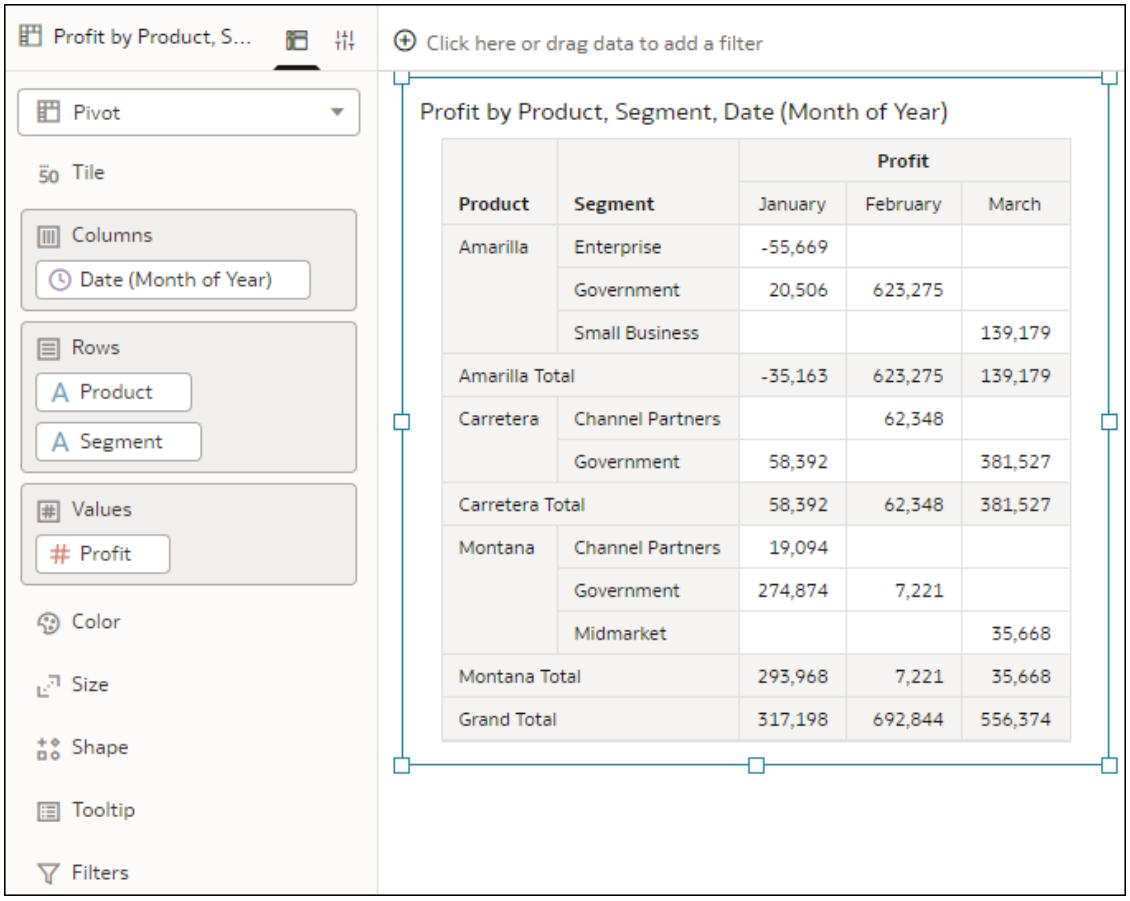
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Product	Segment	Profit
Amarilla	Enterprise	-55,669
Amarilla	Government	643,781
Amarilla	Small Business	139,179
Amarilla Total		727,291
Carretera	Channel Partners	62,348
Carretera	Government	439,919
Carretera Total		502,267
Montana	Channel Partners	19,094
Montana	Government	282,095
Montana	Midmarket	35,668
Montana Total		336,857
Grand Total		1,566,416

You might use a pivot to show the same data and add a time column to break the profit down by month. The pivot provides a clearer summary of each data element with aggregated totals.

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Product	Segment	Profit		
		January	February	March
Amarilla	Enterprise	-55,669		
	Government	20,506	623,275	
	Small Business			139,179
Amarilla Total		-35,163	623,275	139,179
Carretera	Channel Partners		62,348	
	Government	58,392		381,527
Carretera Total		58,392	62,348	381,527
Montana	Channel Partners	19,094		
	Government	274,874	7,221	
	Midmarket			35,668
Montana Total		293,968	7,221	35,668
Grand Total		317,198	692,844	556,374

To swap the columns and rows in a pivot, you can drag the data elements to different drop targets in the Grammar pane, or you can click and drag the handle for a column or row in the visualization to another area of the visualization.

You can customize the look and feel of a table or pivot by configuring the visualization properties. The properties available for these visualization types include options to:

- Configure the font for different cells such as headers, data, and totals
- Configure the header names and totals labels
- Turn available data actions on or off for consumers
- Show or hide grand totals and subtotals
- Configure the number format for measure values

Other useful options when you're working with tables and pivots include:

- Identify Content with Tooltips
- Highlight Important Data Events with Conditional Formatting
- Hide Columns in Visualizations
- Format Numeric Values of Visualizations
- Set Scale Options for Numbers and Currency Values
- Export Workbook Content in Various Formats

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Sorting Data in Tables

If a table visualization includes subtotals or contains a dimension, then all column sorts on columns after the subtotal or dimension, are sorted in the subtotal group.

If you're working with a table view with multiple sorts, then the system always sorts the last column that you sorted first. In some cases where specific values display in the left column, you can't sort the center column. For example, if the left column is Product and the center column is Product Type, then you can't sort the Product Type column. To work around this issue, swap the positions of the columns and try to sort again.

Selecting Data in Tables and Pivots

You can select different pieces of data in table and pivot visualizations depending on the level of granularity you need.

- To select an individual cell, click the cell itself.
- To select a block of cells, click a cell and drag your cursor to the adjacent cells.
- To select multiple cells, use Ctrl+ click as many cells as needed.
- To select a column, click the column header.
- To select a row in a table, click a cell in the row, then use Shift+Space.
- To select a row in a pivot, click the first cell in the row.

When you select one or more cells in a table or pivot, you can right-click to access the full menu of options available for your selection.

For tables, you can use the **Copy Data** option to copy and paste only the data selected. For pivots, you can do this for all data selections except asymmetrically selected cells. If you don't select a row, column, or cell, then the **Copy Data** option functions the same as for other visualization types. See Copy and Paste a Visualization's Data.

Change Display Names in Tables and Pivots

You can customize a visualization column name in tables and pivot tables by entering your own text.

The column name change is only a displayed name change and it does not change the column name in the dataset or in the source data.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit**.
3. In the workbook, select a table or pivot visualization.
4. Click **Properties**. In Properties, click **Edge Labels** .
5. Expand a column. In the **Display Header** row, click **Auto**, and then click **Custom**.
6. Enter the new custom display name for the column.
7. Click **Save**.

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Customize Grand Totals in Tables and Pivots

You can customize the grand totals in table and pivot visualizations to make them more impactful.

When you turn on the grand totals for your visualization, you can change the label by entering your own text.

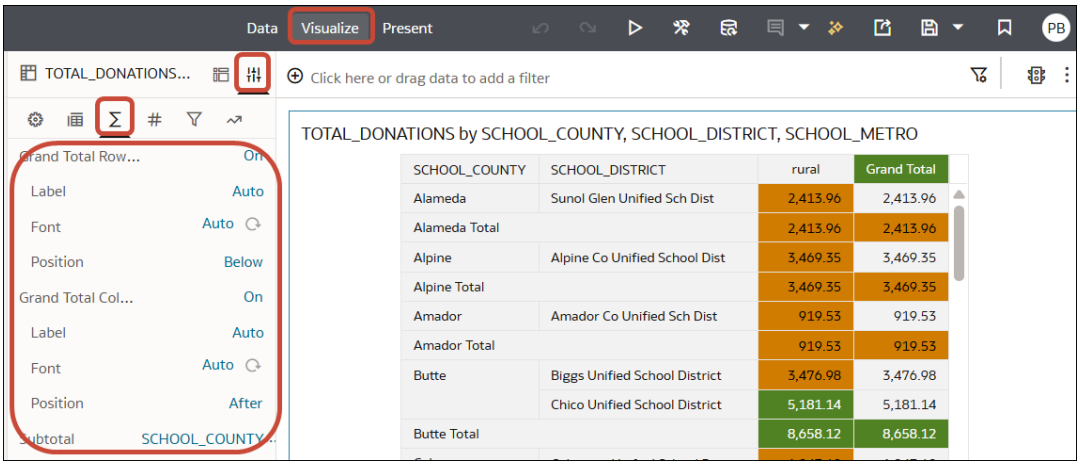
You can also configure the following font properties:

- Font type
- Font size
- Font style
- Font color
- Background color
- Alignment (left, center, right)

For table visualizations, you can use the Freeze property to keep the grand total visible at all times if your table is very large.

For pivot-table visualizations, you can use the Position property to place the grand totals above or below the rows (or before or after the columns) they're totalling.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select your table or pivot visualization.
3. In the Grammar Panel, click **Properties** and click **Totals** Σ.



4. Use the options to configure the label, font, and position of totals
5. Click **Save**.

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Format Headers in Pivot Visualizations

You can format the main headers and the data headers in pivot visualizations to customize the look of your pivot and make it easier to read.

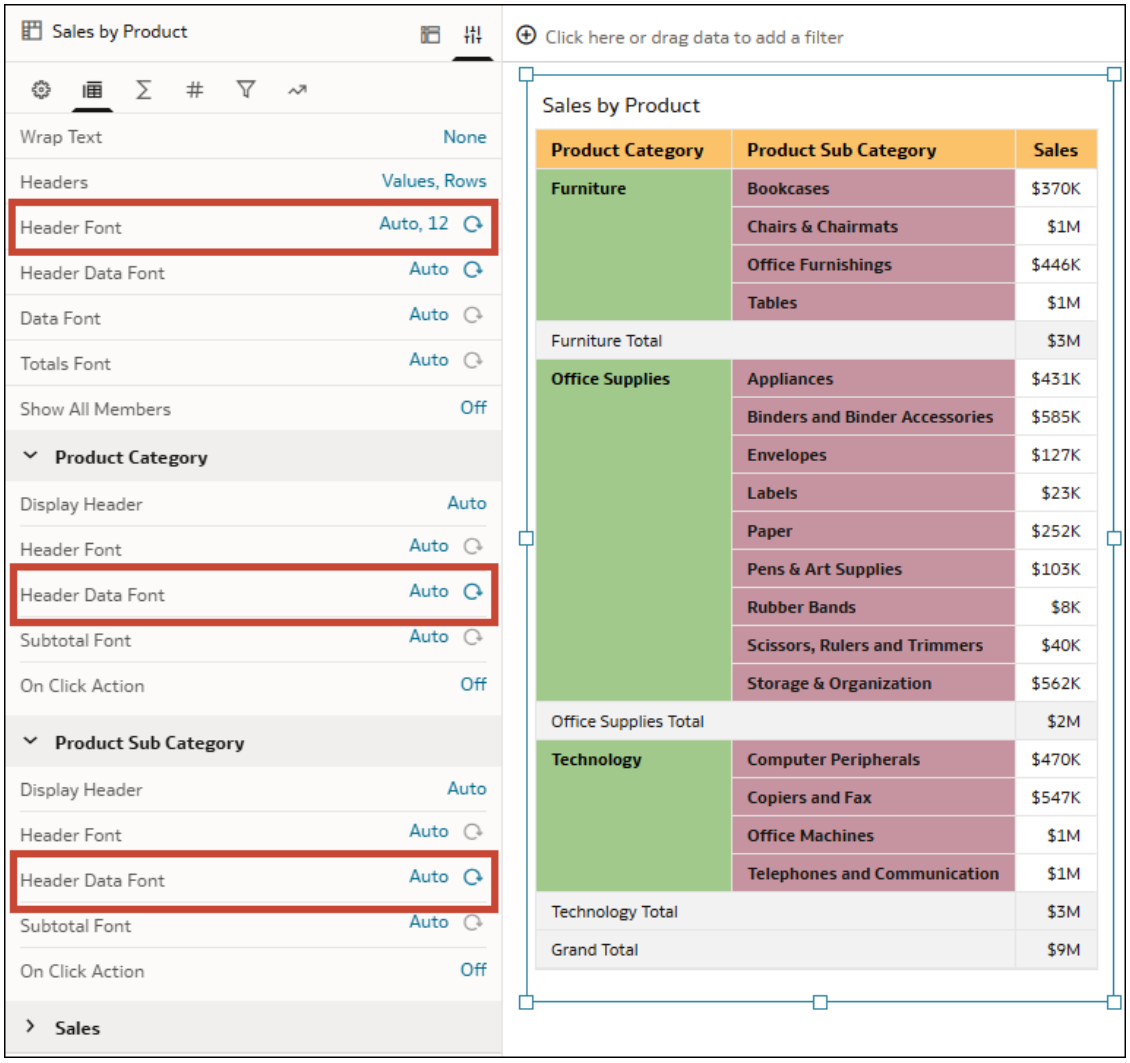
In the Edge Labels tab of the Properties pane, use the top Header Font and Header Data Font rows to change the following for all the main headers and data headers in the visualization:

- Font type
- Font size
- Font style
- Font color
- Background color
- Alignment (left, center, right)

You can also configure those properties for individual data elements to further customize your pivot.

For example, you can use the first Header Font property to configure your main headers to have an orange background using the color #fbc26a and bold, size 12 font. Use the Header Data Font properties under the individual data element sections to configure your data headers to be bold but have a different color background depending on the data element.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the pivot visualization.
3. Click **Properties**, then click **Edge Labels**.
4. In the Header Font row, click **Auto**, then configure the options to customize the main header cells across the top of the pivot.
5. In the Header Data Font row, click **Auto**, then configure the options to customize the data header cells throughout the rest of the pivot.
6. In Edge Labels, click a data element name to expand its properties, then configure the Header Font and Header Data Font rows to override the header appearance for that particular data element.
7. Click **Save**.

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Display Values in Table and Pivot Visualizations as Links

You can configure table or pivot visualizations to display table cell values as links. Consumers can see which values are URLs and then click the values to immediately invoke a data action.

You can display column values as links in tables or pivots to invoke data actions that are anchored to that column. If a data action is anchored to multiple columns, the table or pivot visualization must contain all of the columns used by the data action.

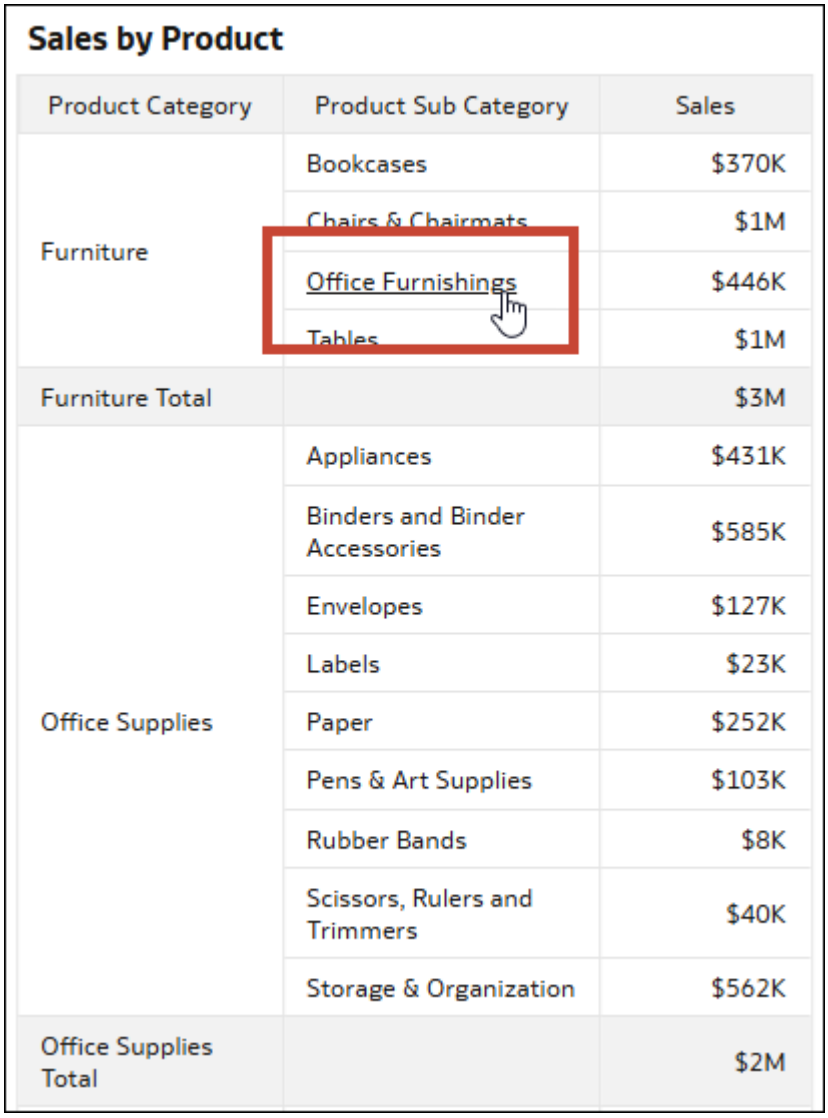
See Create Data Actions to Connect Canvases or Create Data Actions to Connect to External URLs from Visualization Canvases.

If there are data actions defined for a column, you can choose to make one or all available to consumers using the **On Click Action** property:

- **Auto** - Enables all the data actions anchored to the column. If there's more than one, a menu is displayed for the consumer.
- **<Data Action>** - Enables the link for that specific data action. If more than one data action is available, you can select as many as you want to enable.

Consumers can hover over the column values in the visualization to easily see which ones are links, indicated by an underline. They can then click the linked value to directly invoke the data action. If more than one data action is defined and available for a column, consumers can choose which one to invoke from a drop-down list.

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Sales by Product

Product Category	Product Sub Category	Sales
Furniture	Bookcases	$370K
	Chairs & Chairmats	$1M
	Office Furnishings	$446K
	Tables	$1M
Furniture Total		$3M
Office Supplies	Appliances	$431K
	Binders and Binder Accessories	$585K
	Envelopes	$127K
	Labels	$23K
	Paper	$252K
	Pens & Art Supplies	$103K
	Rubber Bands	$8K
	Scissors, Rulers and Trimmers	$40K
	Storage & Organization	$562K
Office Supplies Total		$2M

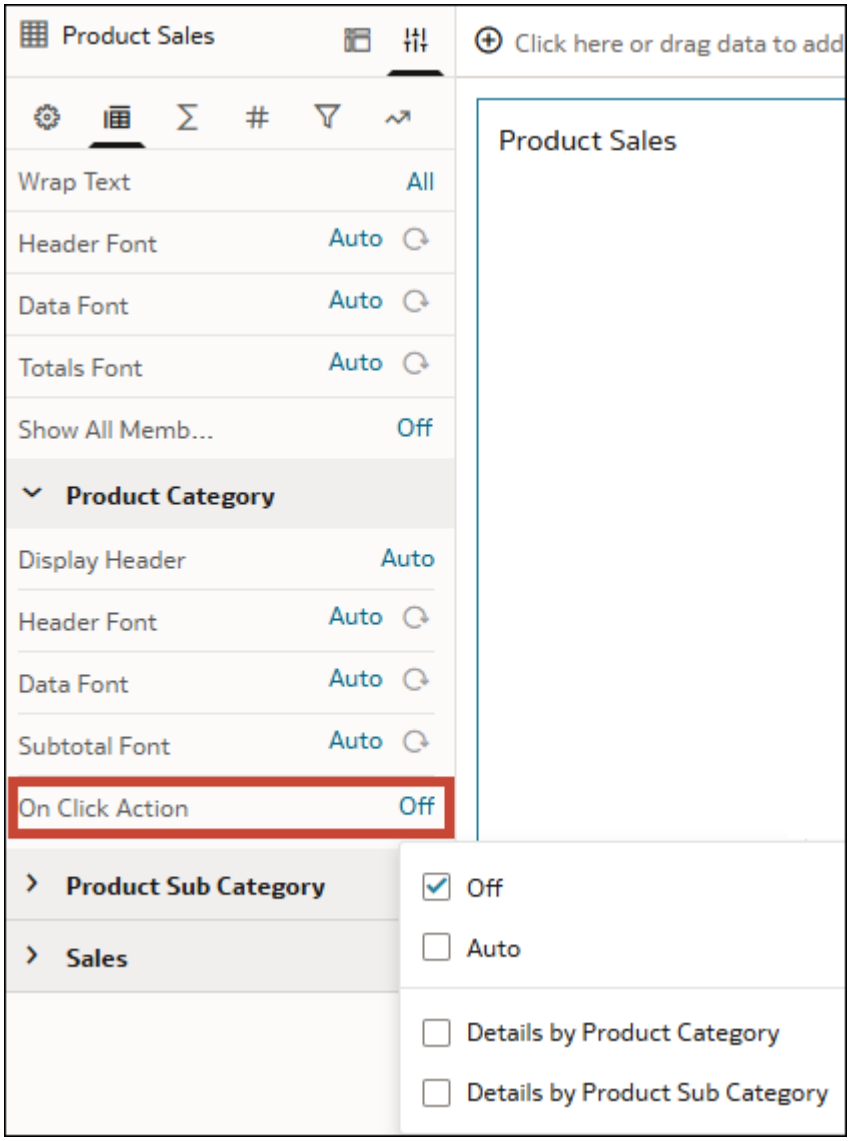
If a data action is inaccessible to a consumer, and you've selected the **Show Accessible Only** setting in Present, they can't see the data action, even if you've made it available using the **On Click Action** property. See Hide Inaccessible Data Actions in a Workbook from Consumers in Present.

This tutorial provides a use case to create data actions and links in a table visualization to navigate to another canvas:

Tutorial

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a table or pivot visualization.
3. Click **Properties**, then click **Edge Labels**, and expand a column that has one or more defined data actions.
4. In the On Click Action row, click **Off** and select from the following options:
   - **Auto**
   - One or more data actions, if available.

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5. Click **Save**.

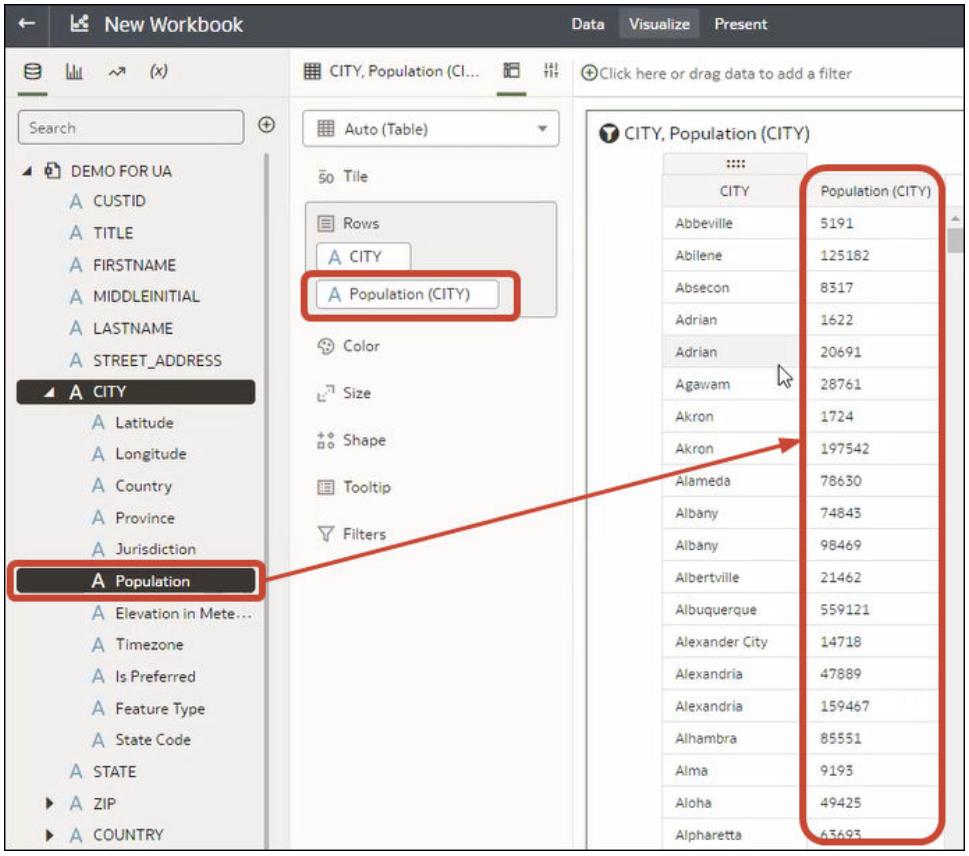
Using Knowledge Enrichments in the Workbook Editor

Knowledge enrichments enable you to augment the data in your visualizations with data from other sources. For example, if you have a list of cities, knowledge enrichments might provide information about population number, size of city, location.

Take advantage of System Knowledge and Custom Knowledge updates in Oracle Analytics directly in the workbook editor to create data-rich visualizations.

In the workbook editor Data pane, you'll see knowledge enrichments in the element tree displayed just like regular data elements in the dataset. In this example, workbook editors can add the knowledge enrichments "Population" and other city-related data to a workbook. When you create a workbook based on the dataset that contains CITY, you can add population and other data elements directly to your visualization.

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Knowledge Enrichments are usually enabled by default, but if you own a dataset or have editing privileges for it, you can enable or disable them. See Enable Knowledge Enrichments for Datasets.

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10

Design the Look and Feel of Visualizations

This chapter explains how to customize and format visualizations in Oracle Analytics.

Topics:

- Identify Content with Tooltips
- About Visualization Properties
- Adjust Visualization Properties
- Enhance Visualizations with Statistical Analytics
- Use Spark Charts to Examine Trends
- Column Swapping
- Hidden Columns in Visualizations
- Format Numeric Values of Columns
- Format Numeric Values of Visualizations
- Set Scale Options for Numbers and Currency Values
- Set Currency Symbols for Visualizations
- Apply Color to Visualizations
- Highlight Important Data Events with Conditional Formatting
- Sorting Data in Visualizations
- Create a Custom Error Message for Visualizations with No Data
- Add Notes to Visualizations
- Set Visualization Loading Overlay Opacity
- About the Warning for Data Issues in Visualizations

Identify Content with Tooltips

Use tooltips to make your visualizations more interactive without cluttering them with too much information.

Topics:

- Choose the Tooltips to Display in a Visualization
- Customize Visualization Tooltips

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Choose the Tooltips to Display in a Visualization

When you hover over a data point in a visualization, a tooltip displays and provides specific information about the data point. You can choose to see all tooltips or only the measures included in the Tooltip section of the Grammar pane.

For example, if you create a simple bar chart visualization that shows revenue for countries in the Americas region, the tooltip displays the region's name, the country's name, and exact revenue amount. If you add Target Revenue to the Tooltip section of the Grammar pane, then the target revenue amount is displayed in the tooltip and the user can easily compare the actual revenues with the target revenues. Set the **Tooltip** field in General in the Properties pane, to **Tooltip Grammar Only** if you want the tool tip to contain only the target revenue amount.

Note: The Tooltip section in the Grammar pane doesn't display for all visualization types.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select a visualization on the canvas.
3. Drag and drop one or more measure columns from the Data pane to the Tooltip section in the Grammar pane.

   Hover the mouse pointer over a data point on the visualization to display the tooltip. Because the **Tooltip** field is set to **All Data** by default, the tooltip contains the data point's values for all columns included in the visualization. The data values for the columns that you added to the Tooltip section are displayed at the bottom of the tooltip.
4. Optional: Use the **Tooltip** field to display only the data values that you want or to turn off the tooltip.
   - If you want the tooltip to display data values for only the columns you dragged to the Tooltip section, then set the **Tooltip** field to **Tooltip Grammar Only**.
   - If you don't want the tooltip to be displayed, then confirm that there are no columns in the Tooltip section and set the **Tooltip** field to **Tool Tip Grammar Only**.

Customize Visualization Tooltips

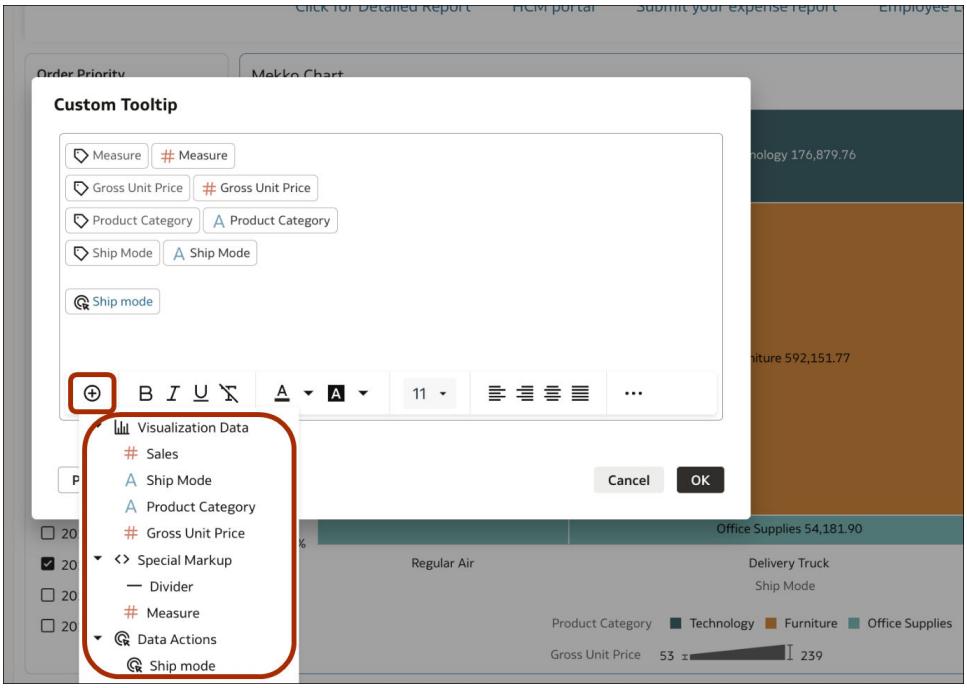
You can customize a visualization's tooltip to change the format of column names and column values, and you can add and format additional columns, parameters, text, and data actions to display to users.

You use a text editor with formatting tools to change the appearance of the text and column values displayed in the tooltip. For example, you could add some descriptive text to a tooltip, and change the appearance of column labels, column values, and any other text in the tooltip. You can also add parameters by using the appropriate syntax, see Syntax for Referencing Parameters.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** and select a visualization on the canvas.
3. Click **Properties**.
4. Go to the **Tooltip** field.
   - Click **All Data** and select **Custom** to customize a tooltip.
   - Click **Custom** or the pencil icon to update a customized tooltip.
5. Enter your tooltip text, and format as required.

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Click **Add data** (**+**) to display a list of columns, mark-up types, or data actions that you can copy into the tooltip.



6. Optional: Click **Preview** to check your updates.
7. Click **OK**.

About Visualization Properties

You can customize the appearance and functionality of a visualization by changing its properties.

The options available in the Properties pane depend on the visualization type.

Property	Icon	Description
Action		Use to add a URL to tiles, images, and text box visualizations.
Advanced		Use to add statistical analytics, bind request variables, enable Contextual Insights, and enable swapping columns.
Axis		Use to display or hide gridlines, to show or hide horizontal (x) and vertical (y) axis labels, and to update and format the axis label text.
Controls		Use with dashboard filters to add and configure filter controls and with button bars to add and configure buttons.
Data Layers		Use with maps and overlay charts to add data layers, and to configure the settings for each data layer.
Date/Time Format		Use with date or time elements, to set display and format properties.
Edge Labels		Use with tables and pivot tables to update the header text for columns, to show or hide headers, to display null values for hierarchies in table columns and in pivot table columns and rows, and to format header text.
Filters		Use to change and format the filter title and selection names.

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Property	Icon	Description
General		Use to modify the title, legend, tooltip, visibility parameter, labels, tile settings, points settings, alignment, style, size, position, and other visualization settings.
Map		Use to control the zoom, the data focus, and to scale and select a background map.
Totals		Use with tables and pivot tables, to position and format totals.
Values		Use to change the display, placement, and format of data labels, and hide and display a Y2 axis.

Adjust Visualization Properties

You can customize how the visualizations in your workbook are displayed to enhance their effectiveness. The tabs and fields displayed under the Properties pane depend on the type of visualization that you're working with.

Topics:

- Set Visualization Border Properties
- Set Visualization Shadow Properties
- Change the Size of Data Points in Visualizations
- Change the Pattern and the Width of Lines in Graphs

Set Visualization Border Properties

You can enhance the appearance of your visualizations by adding a border and specifying various properties such as line width, style, and color.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to open the workbook for editing.
3. In the Visualize canvas, select one or more visualizations to apply border settings to.
4. Click the **General** tab in the Properties pane.
5. In the **Border** field, click **None**, and then define the border settings:
   - Click **Square** or **Round** to create a standard border with square or round edges.
   - Click **Custom** to define your own border color, border width, edge radius, and line style (solid, dashed, or dotted line).
6. Click **Save**.

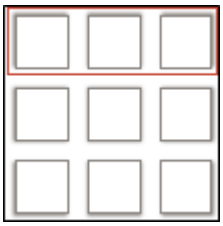
Set Visualization Shadow Properties

You can specify shadow properties for one or more visualizations, including where the shadow appears, and other characteristics including shadow color.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to open the workbook for editing.
3. In the Visualize canvas, select one or more visualizations to apply border settings to.

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4. Click the **General** tab in the Properties pane.
5. Click **Shadow** to display the options, and then define your shadow settings:
   - Click one of the squares to define the position of the shadow (for example, top-left, or top, or top-right).

   - Click **Custom** to select **Shadow Color**, **Horizontal Offset** (the gap to the side before the shadow begins), **Vertical Offset** (the gap above before or below before the shadow begins), **Blur** (how blurred or solid the shadow is), and **Spread** (how far the shadow spreads).
6. Click **Save**.

Change the Size of Data Points in Visualizations

You can specify the size of points for visualizations with points, such as scatter, combo, area, radar, box plot, and line graphs.

You might want to change the size of points to make them easier to view. For example, when points overlap and it's difficult to identify individual points.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit**.
3. Select the visualization with data points.
4. Click **Properties**, and **General** and then expand **Points**.
5. When there's no measure in the Size grammar, click the **Size** row, enter a value to increase or decrease the points size or use the slider.
6. When there's a measure in the Size grammar:
   - To change the minimum points size, in the **Min Size** row, click **Auto**, select **Custom**, and enter a value.
   - To change the maximum points size enter a value in the **Max Size** row.
7. Click **Save**.

Change the Pattern and the Width of Lines in Graphs

You can specify the line pattern and the line width in graphs such as line, area, combo, overlay, radar, reference, trend, or forecast graphs.

You might want to change the appearance of lines in a graph to make them easier to view. For example, you might use a dotted line for Sales to indicate that the Sales line is an estimate.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit**.
3. Select the graph that uses lines.

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4. Click **Properties**.
5. If you want to change the default line pattern and width settings for all lines in this graph, select **General** and then expand **Line**.
   - To change the line pattern from Solid, click **Solid** and select **Dashed** or **Dotted**.
   - To change the line width, click the **Width** field, select a value, or click **Custom** and enter a number for the line width in pixels. For example, enter `2.5px`.
6. If you want to change the line pattern and width to override the default value for a selected measure, select **Value**, and then expand the measure. For example, expand Sales.
   - To change the value of **Line Pattern**, click the current value, click **Auto**, and then select **Solid**, **Dashed**, or **Dotted**.
   - To change the value of **Line Width**, click the current value and select a value, or click **Custom** and enter a number in pixels. For example, enter `2.5px`.
7. Click **Save**.

Enhance Visualizations with Statistical Analytics

Statistical analytics enable you to highlight clusters or outliers, add forecasts, and show trend and reference lines in your workbooks.

Topics:

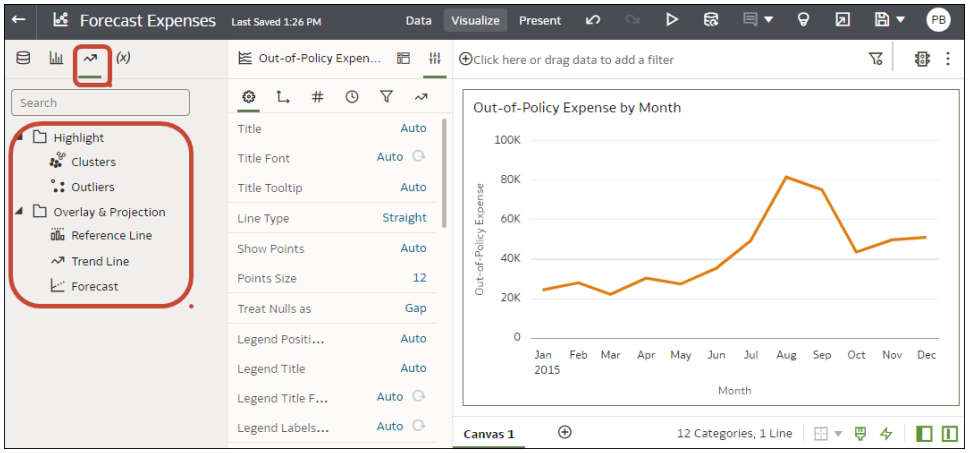
- Before You Start with Statistical Analytics
- What Statistical Analytics Can I Add to Visualizations?
- Add Statistical Analytics to Visualizations
- Add a Forecast to a Visualization
- Add a Reference Line to a Visualization
- Create a Cluster or Outlier in a Visualization

Before You Start with Statistical Analytics

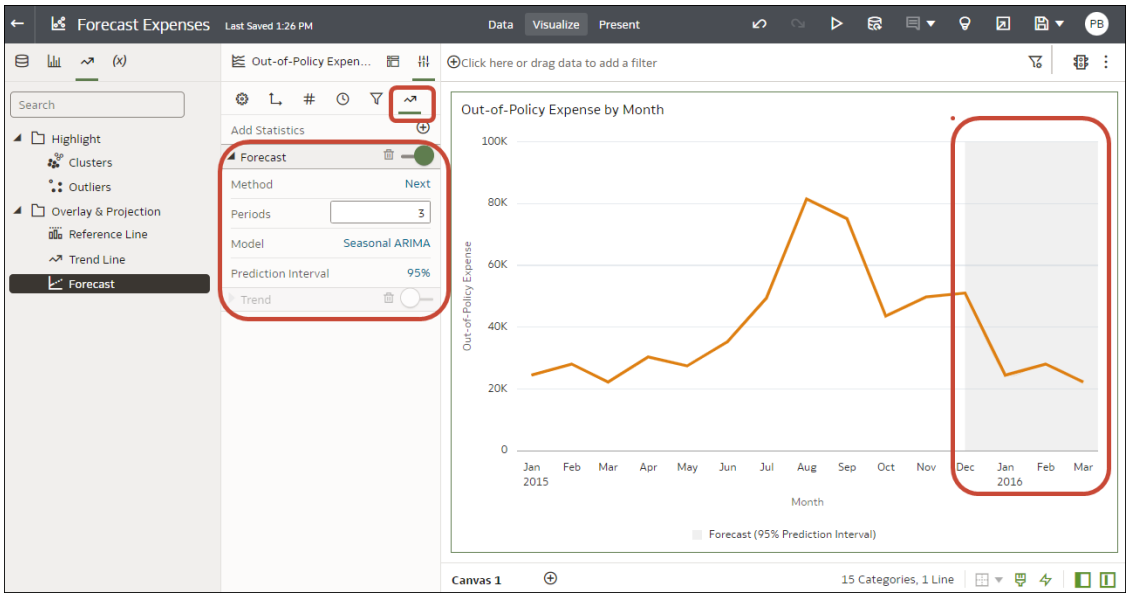
To add statistical analytics to your workbooks such as forecasts, outliers, and trend lines, you can either use ready-to-use analytics on the Analytics pane of the Data Panel, or use functions in expression builder if you need more control over the configuration.

Oracle Analytics enables you to add a range of statistical analytics from the Analytics pane of the Data Panel, which come fully configured so that you don't need to be a statistical expert to achieve results.

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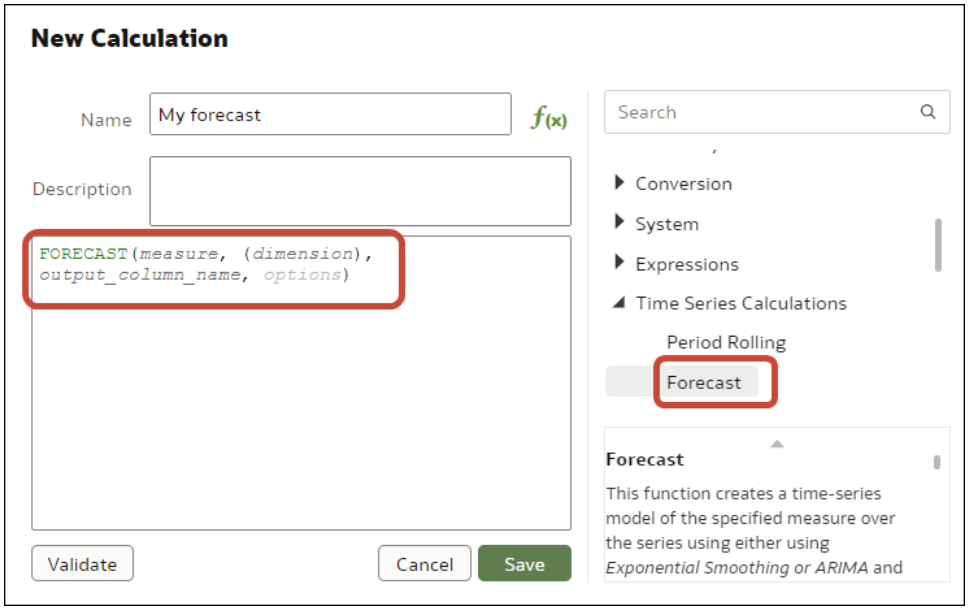
You configure the options for the analytics to match your requirements. For example, if your visualization analyzes Out-of-Policy Expenses by Month, you might use the **Periods** option to specify the number of months to forecast. In this example, '3' forecasts three months January, February, and March from the final data point for December.



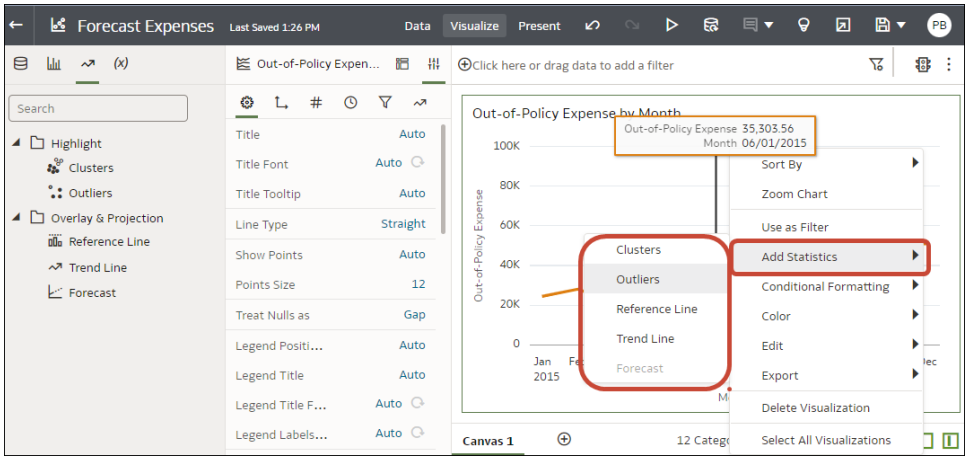
If you need more control over statistical settings, or you want to use the analytic in other visualizations, consider adding a calculation and use the expression builder to define the equivalent function. From the Data pane, click **Add** (**+**), then **Create Calculation** to display the expression builder. For example, you might use the FORECAST() function.

See Create a Calculated Data Element.

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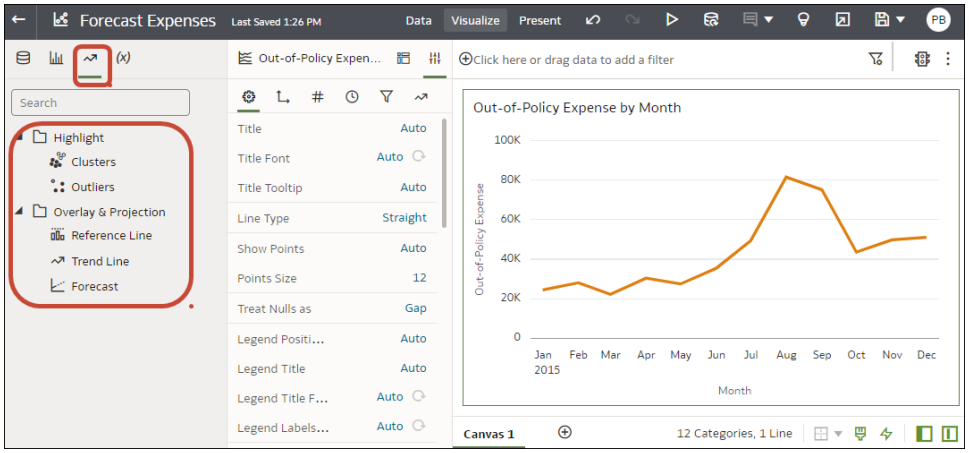
Tip: You can also access the statistical analytics options by right-clicking on a visualization, and selecting **Add Statistics**.



What Statistical Analytics Can I Add to Visualizations?

Add these statistical analytics to your visualizations to achieve better insights into your data.

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Forecast

The forecast function uses linear regression to predict future values based on existing values along a linear trend.

You can set future time periods to predict a value based on the time series in your data. See Add a Forecast to a Visualization.

Oracle supports these forecast model types:

- **Auto-Regressive Integrated Moving Average (ARIMA)** - This type is suitable if your past time series data is nonseasonal but provides enough observations (at least 50, but preferably more than 100 observations) to explain and project the future.
- **Seasonal ARIMA** - This type is suitable if your data has a regular pattern of changes that repeat over time periods. For example, seasonality in monthly data might be when high values occur during summer months and low values occur during winter months.
- **Exponential Triple Smoothing (ETS)** - This type is suitable for analyzing repetitive time series data that doesn't have a clear pattern. This model type produces an exponential moving average that takes into account the tendency of data to repeat itself in intervals over time.
- **Prophet** - This type is suitable if your dataset covers extended time periods, has multiple strong seasonalities, includes previously known irregular events, has missing data points, or has large outliers.

You can also create a custom calculation using the `FORECAST` function to have more control over settings, or if you want to use the forecast in other visualizations. See Analytics Functions.

Clusters

The cluster function groups a set of objects in such a way that objects in the same group show more coherence and proximity to each other than to objects in other groups. For example, you can use colors in a scatter chart to show clusters of different groups. See Create a Cluster or Outlier in a Visualization.

- **K-means clustering** - Use to partition "n" observations into "k" clusters in which each observation belongs to the cluster with the nearest mean, serving as a prototype of the cluster.
- **Hierarchical clustering** - Use to create a hierarchy of clusters built using either an agglomerative (bottom-up) approach, or a divisive (top-down) approach.

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You can also create a custom calculation using the `CLUSTER` function to have more control over settings, or if you want to use the cluster in other visualizations. See Analytics Functions.

Outliers

The outliers function displays data records that are located the furthest away from the average expectation of individual values. For example, extreme values that deviate the most from other observations fall into this category. Outliers can indicate variability in measurement, experimental errors, or a novelty. If you add outliers to a chart that already has clusters, then the outliers are depicted as different shapes.

Outliers can use K-means clustering or hierarchical clustering. See Create a Cluster or Outlier in a Visualization.

You can also create a custom calculation using the `OUTLIER` function to have more control over settings, or if you want to use the outlier in other visualizations. See Analytics Functions.

Reference Lines

The reference lines function defines horizontal or vertical lines in a chart that correspond to the X-axis or Y-axis values. See Add a Reference Line to a Visualization.

- **Line** - You can choose to compute the line between average, minimum, or maximum. For example, in the airline industry, if passenger turnout is plotted against time, the reference line can show whether passenger turnout for a particular month is above or below average.
- **Band** - A band represents upper and lower range of data points. You can choose a custom option or a standard deviation function, and between average, maximum, and minimum. For example, if you're analyzing sales by month and you use a custom reference band from average to maximum, you can identify months where sales are above average, but below the maximum.

Trend Lines

The trend line function indicates the general course of the metric in question. A trend line is a straight line connecting a number of points on a graph. A trend line helps you analyze the specific direction of a group of value sets in a visualization. See Add Statistical Analytics to Visualizations.

- **Linear** - Use with linear data. Your data is linear if the pattern in its data points resembles a line. A linear trend line shows that your metric is increasing or decreasing at a steady rate.
- **Polynomial** - Use this curved line when data fluctuates. It's useful, for example, for analyzing gains and losses over a large dataset.
- **Exponential** - Use this curved line when data values rise or fall at increasingly higher rates. You can't create an exponential trend line if your data contains zero or negative values.

You can also create a custom calculation using the `TRENDLINE` function to have more control over settings, or if you want to use the trend line in other visualizations. See Analytics Functions.

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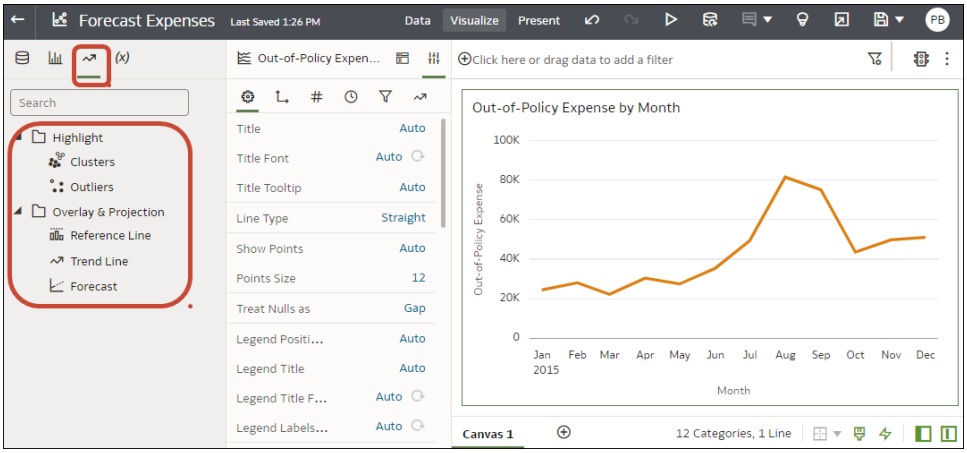
Add Statistical Analytics to Visualizations

Statistical analytics enable you to highlight clusters or outliers, add forecasts, and show trend and reference lines in your workbooks. Select them on the Analytics tab of the Data pane in the workbook editor.

Alternatively, you can add forecasts, trendlines, and clusters to a workbook using text-only analytics functions. See Analytics Functions.

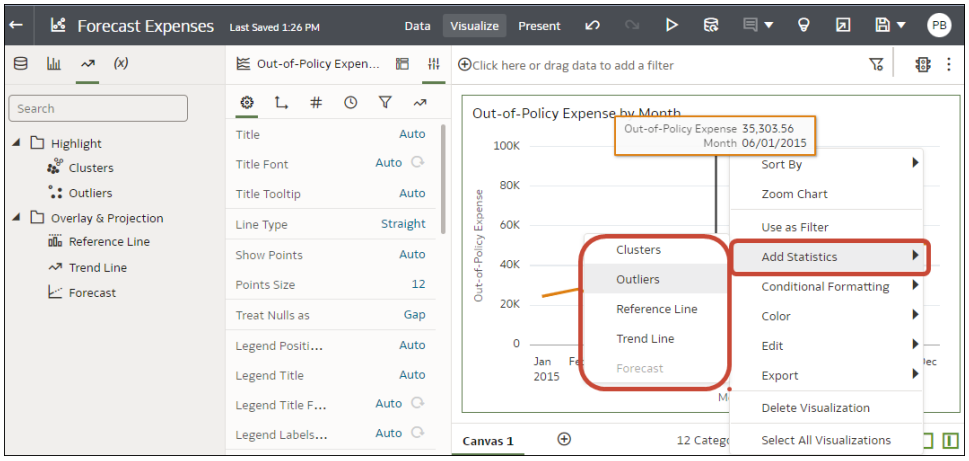
Before you start, make sure that you have the required data in your visualization for the type of analytics you want to add. For example, for a forecast, you need at least one time dimension and a measure or metric.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data Panel, click the **Analytics** icon .



3. Drag and drop **Cluster** or **Outlier** from the **Analytics** pane to a visualization.
4. To configure the analytics function click **Properties** on the Grammar Panel and use the options in the Analytics pane.

Add Statistics



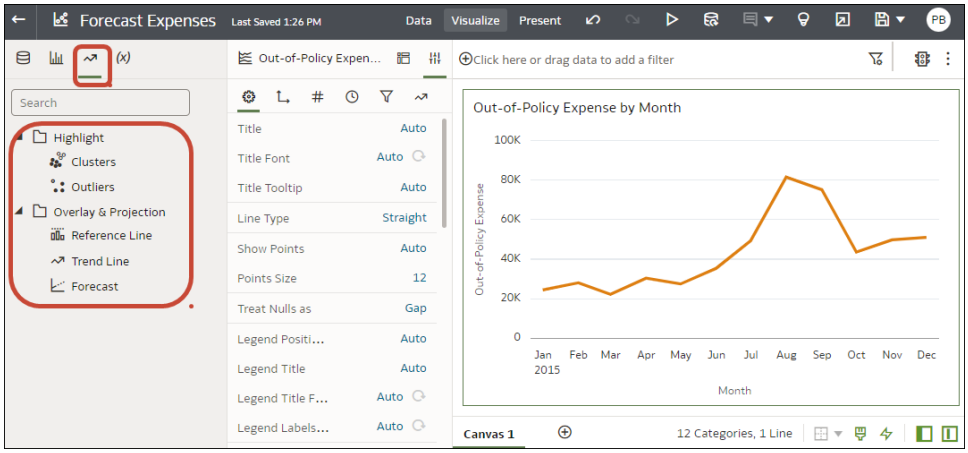
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Add a Forecast to a Visualization

Add forecasts to your workbooks based on Auto-Regressive Integrated Moving Average (ARIMA), Seasonal ARIMA, Exponential Triple Smoothing (ETS), or Prophet. For example, you might want to forecast summer temperatures based on data from previous summers.

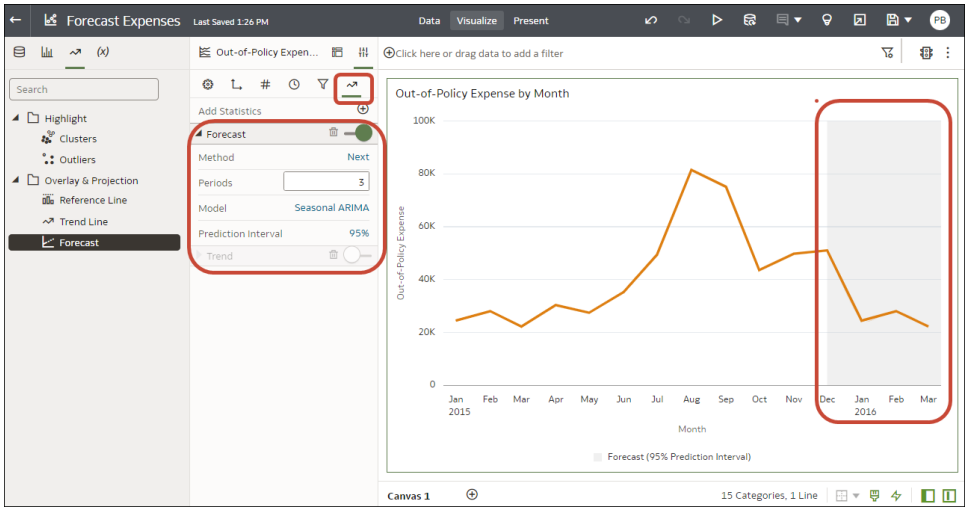
Before you start, make sure that you have the required data in your visualization for the type of analytics you want to add. For a forecast, you need a time dimension and a measure. For example, you might have *Week* as a time dimension and *Amount of rainfall (in millimetres)* as the measure. If you don't have the required data columns in your visualization, when you click Forecast in the Analytics pane, you see this message: "This visualization does not support Forecast".

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data Panel, click **Analytics**.



3. Drag and drop **Forecast** from the **Analytics** pane to a visualization.
4. Use **Analytics** pane in Grammar Panel to change the default settings for the model.

   For example, you can change the default model type **Seasonal ARIMA** to **Prophet**, or use **Periods** to specify the number of periods to forecast.



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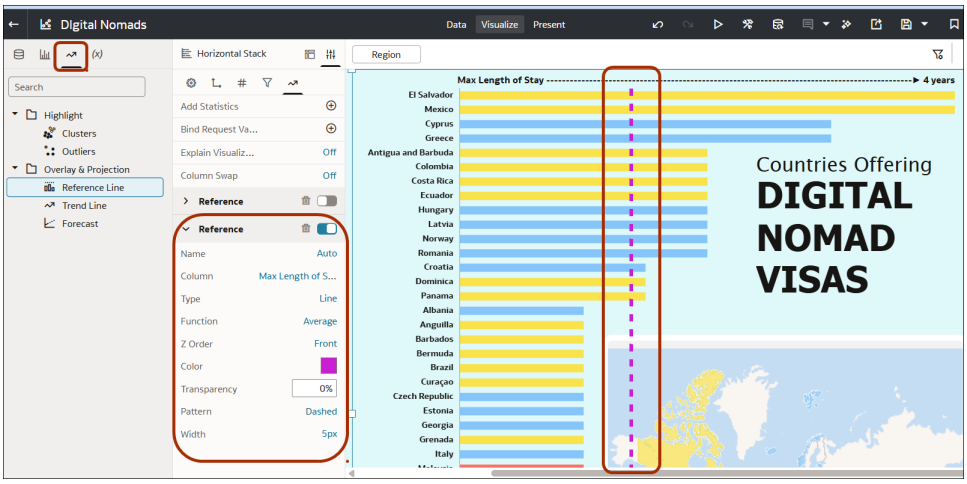
Add a Reference Line to a Visualization

Reference lines enable you to compare data points to the overall dataset and establish a baseline. This enables you to identify thresholds, targets, and outliers in your data.

You can use measure, attribute, date, and derived date columns to create reference lines and bands.

You can bind a parameter to a reference line value or a reference band range in a visualization when you want to use a parameter value to place the reference line or band on the visualization. See Bind a Parameter to a Reference Line or Band.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data panel, click **Analytics** .
3. Click **Add Statistics**, and select **Reference Line**.
4. Use the **Reference** pane on the **Grammar Panel** to configure the reference line:



- **Column** - Select a measure, date, or non-date attribute that's displayed in the visualization. For example, to specify a fixed target or threshold, use Column to specify a measure, select **Constant** as the **Function**, then specify a target or threshold number in the **Value** field.
- **Type** - Select **Line** to display a single threshold as a dotted line, for example, an average value. Or select **Band** to display the threshold as a range between two values that you specify using **Start Function** and **End Function**. For example, to display a band between 500,000 and 750,000 choose **Constant** for **Start Function** and specify 500,000, and choose **Constant** for **End Function** and specify 750,000. You can also mix and match the start and end functions, For example, you might specify **Top N** as the top of the band and a constant value for the bottom of the band.
- **Function** - Select the reference line that's most useful for comparing the values in your visualization, such as Average, Median, Percentile, or Top N. For example, if your data is skewed, you might use Percentile to show how measure values compare to 90% of the dataset.
- **Z Order** - Specify whether your reference line is drawn in front of **Front** or behind **Behind** other chart elements.

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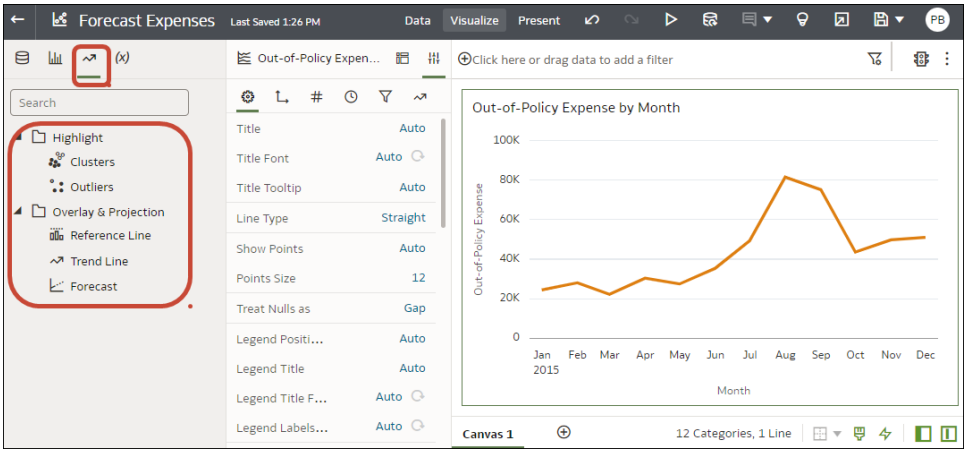
- If you select a non-date attribute column, for example City, you can choose a **Value**, for example Chicago, on which to display the reference line.
- **Other options** - Use these to change the default style for the reference line, for example, color, transparency, or width.

5. Click **Save**.

Create a Cluster or Outlier in a Visualization

Add clusters or outliers to your workbooks.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data Panel, click **Analytics** .



3. Drag and drop **Clusters** or **Outliers** from the Analytics pane to a visualization.
4. To configure the analytics function, click **Analytics** on the Properties pane.

Use Spark Charts to Examine Trends

You can add a spark chart to a tile visualization to view aggregate data trends over time.

The red dot on the spark chart line shows the lowest value, and the green dot shows the highest value. The tooltip shows the first, last, lowest, highest and average aggregate values for the selected category. Hover your cursor anywhere over the spark chart to display the tooltip.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Close Auto Insights.
3. In the Data pane, drag a measure to the canvas.
4. In the Data pane drag a time-based data element to **Category (Chart)** to add a spark chart to the tile visualization. For example, select and drag **Month**.
5. If you want to add a filter, drag a data element from the Data pane to **Click here or drag data to add a filter**.

   For example, **Year**.
   The filter changes the spark line to show the trend for the filtered data.
6. If you want to change spark chart display settings, click General in the Properties pane.

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- Click **Chart** to display one of the following spark charts, Line with Area, Line, Bar, or Area.
- Click **Color** to assign a color to the spark chart.
- Click **Position** to place the chart after or below the primary tile measure.
- Click **Width or Height** to specify the size of the spark chart.
- Click **High/Low Marks** to hide or show the high and low marks, displayed as a green and a red dot.
- Click **Reference Line** to display or remove a reference line. Use the **Average** option to display a reference line showing the average trend. Use the **None** option to remove the reference line.

7. Click **Save**.

Column Swapping

The topics in this section explain how column swapping works and how you can enable and configure it as a content author.

Topics:

- About Column Swapping
- Enable and Configure Column Swapping for a Visualization

For information for consumers about how to swap columns in a visualization, see Swap Columns in a Visualization.

About Column Swapping

In Oracle Analytics, you can configure a visualization to allow consumers to change the columns used so they can explore the data and discover insights without editing the workbook canvas.

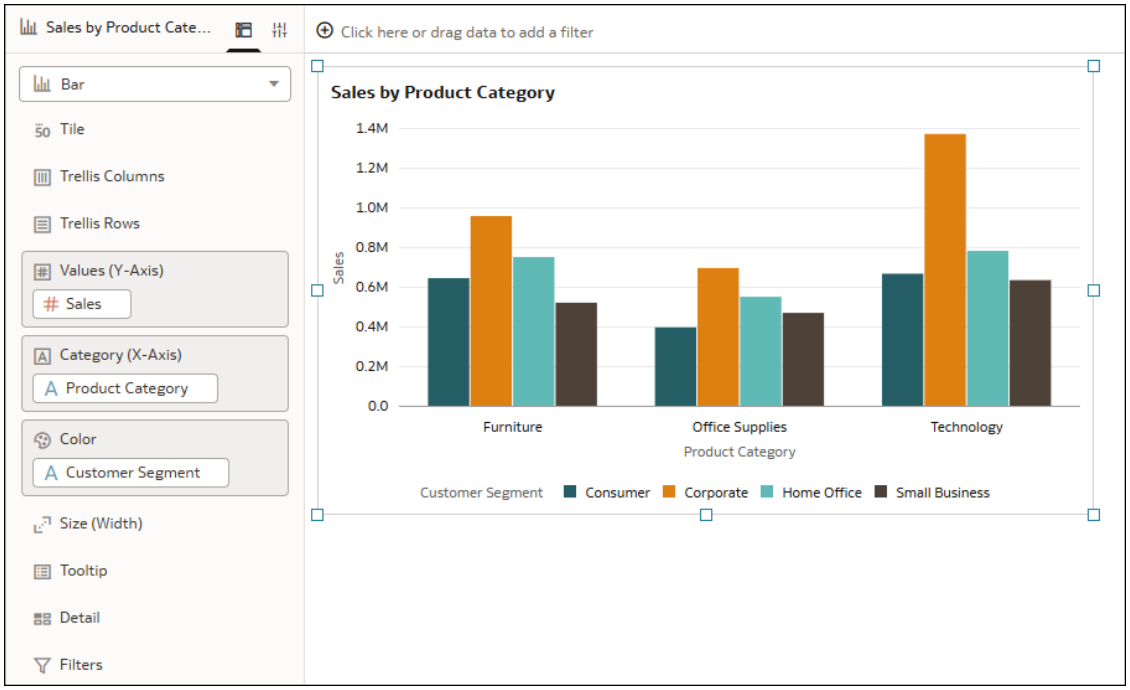
Column swapping is a way for consumers to interact with a canvas; it doesn't have any impact on the workbook itself. When a consumer selects a column to swap, the changes are only temporary for their session and they can't save them in a workbook state.

Column swapping is supported for visualizations using a vertical axis, horizontal axis, or legend, which includes the following visualization types:

- Bar graphs
- Tables and Pivots (legend only)
- Line graphs
- Network graphs
- Pie and treemap graphs
- Scatter graphs

For example, you might have a simple bar graph using the column Sales for the vertical axis (Values), the column Product Category for the horizontal axis (Category), and the column Customer Segment to show the breakdown of customer segment for each product category using a legend (Color).

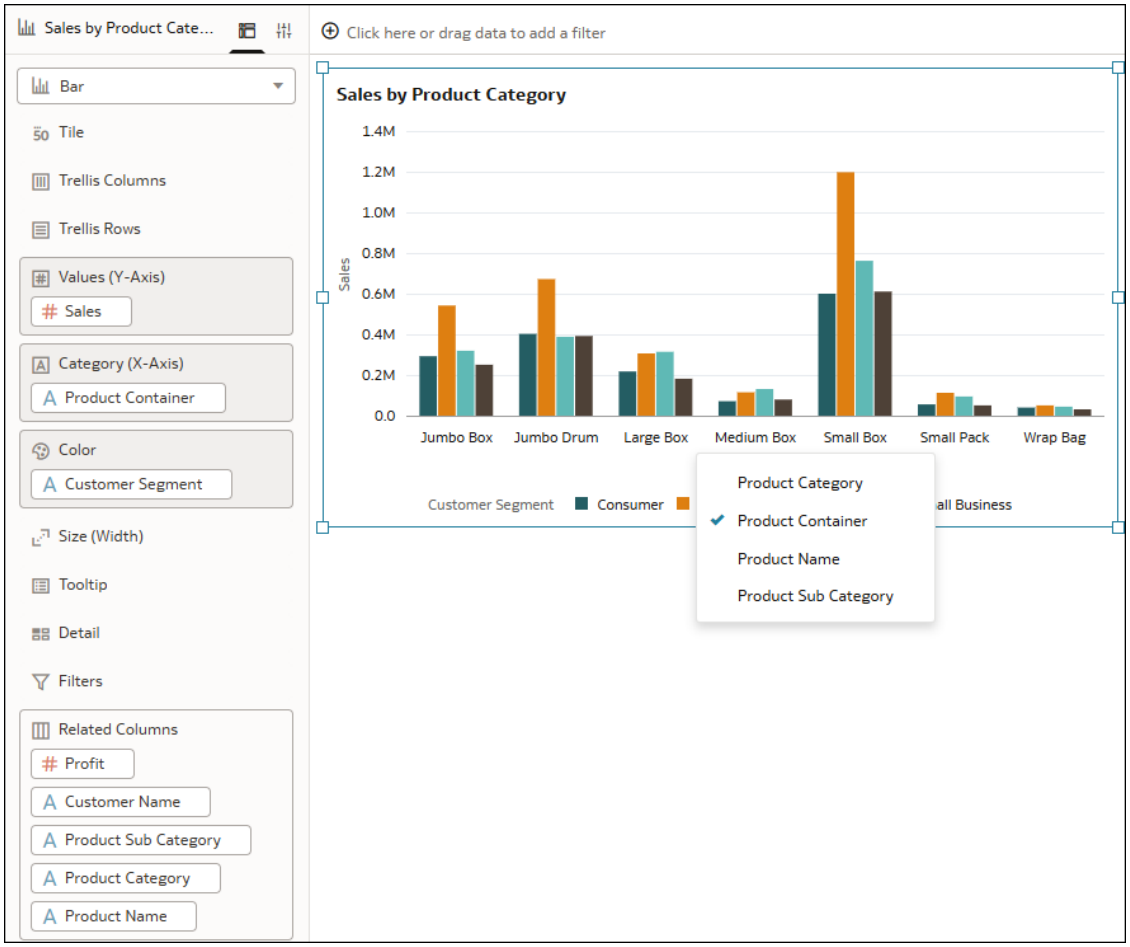
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You can make this visualization interactive for your consumers by enabling column swapping and then specifying which columns you want to make available for consumers to swap. You specify which columns are available for column swapping in the visualization by adding them to the Related Columns section of the Grammar pane.

Consumers can then click the column name in the visualization, for example Product Category on the horizontal axis, and choose a different column from the list provided, for example Product Container. This way they can explore a different view of the data, in this case, the sales values for each product container instead of product category.

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The list of available columns displayed to the consumer to swap with the existing column in the visualization depends on the type of column it's possible to use for that Grammar element. For example, if the vertical axis uses Values, consumers can only choose from the measure columns you add to Related Columns. If it uses Category, consumers can only choose from the attribute columns you add to Related Columns. For a legend, consumers can usually choose from both measure and attribute columns if the legend uses Color, whereas they can only choose a measure if the legend uses Size.

You enable column swapping for the entire visualization, not for each individual element. This means if the visualization contains both vertical and horizontal axes as well as a legend, and you add attributes and measures to Related Columns, the consumer can swap columns for all three elements.

This tutorial shows you how to enable, configure, and test column swapping. Tutorial

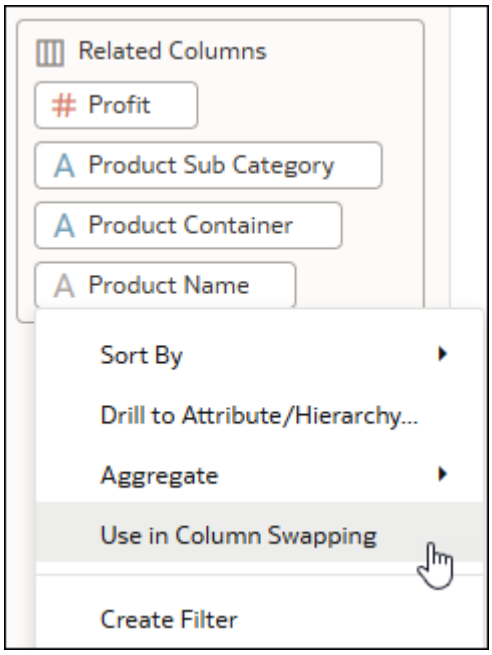
Enable and Configure Column Swapping for a Visualization

Enable column swapping for a visualization and specify which columns are available for consumers to use.

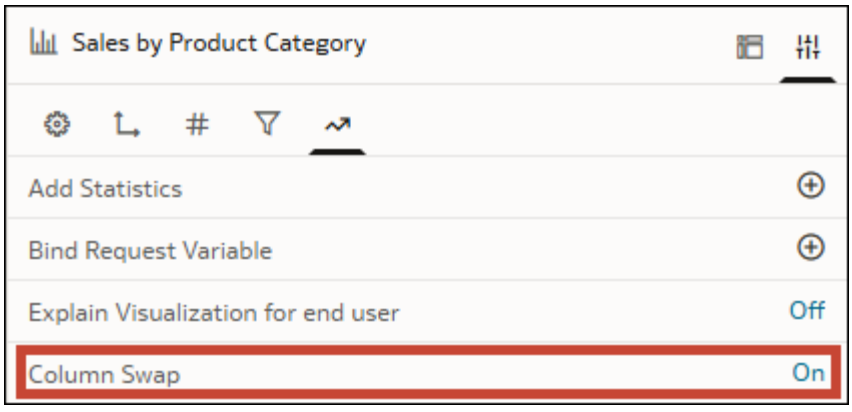
You specify which columns are available for column swapping in the visualization by adding them to the Related Columns section of the Grammar pane. Related Columns also holds columns that you want to use for Contextual Insights. For more information, see Enable and Configure Contextual Insights for a Visualization.

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If you don't want to include these columns in column swapping, you can select the column in the Related Columns section and deselect the **Use in Column Swapping** option from the menu. The column's Treat As icon appears gray when the column isn't used in column swapping.



1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select a visualization.
3. Click **Properties** and then click **Advanced** .
4. In the Column Swap row, click **Off** to turn it to **On**.



5. Click **Grammar**.
6. From the Data pane, drag the columns to use for column swapping to the **Related Columns** section of the Grammar pane.
7. Click **Save**.

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Hidden Columns in Visualizations

The topics in this section explain how to hide columns in a visualization and why it's useful.

Topics:

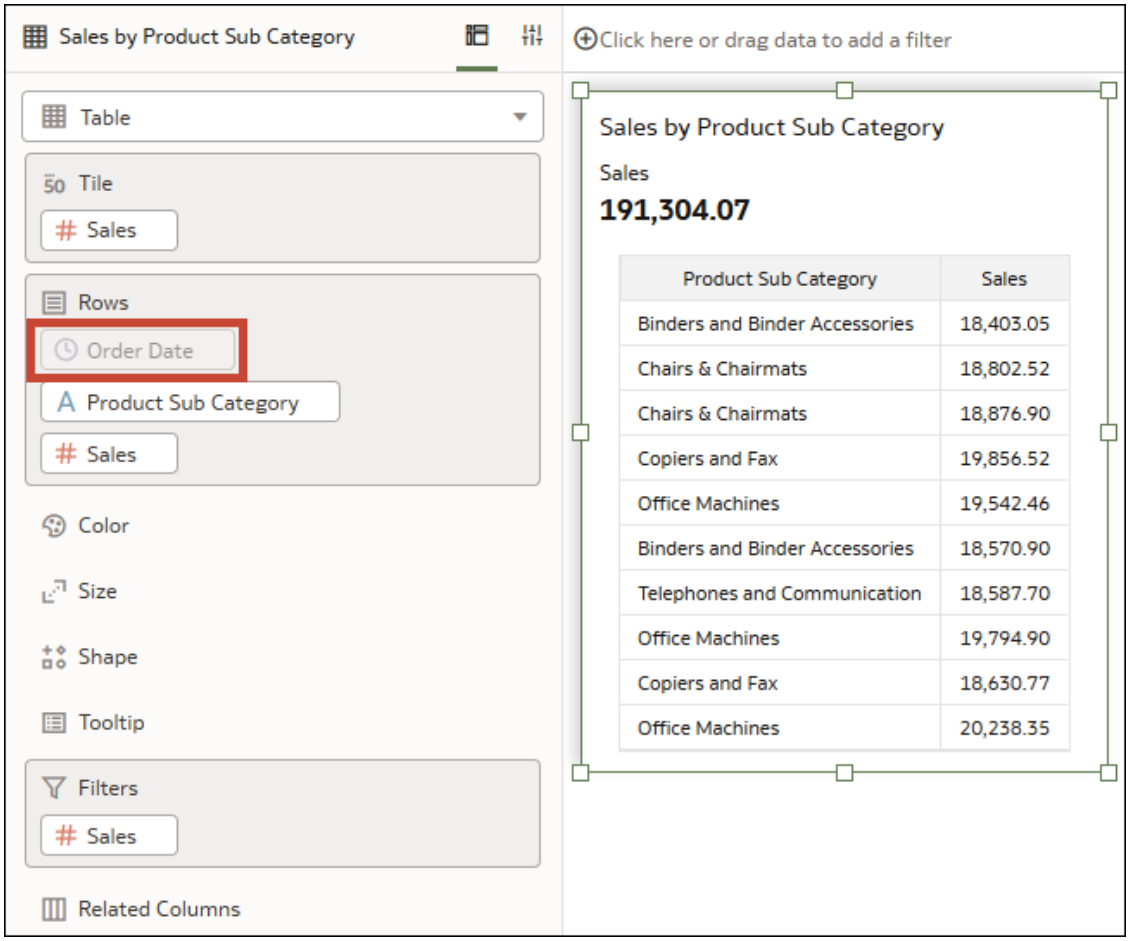
- About Hidden Columns in Visualizations
- Hide a Column in a Visualization

About Hidden Columns in Visualizations

In Oracle Analytics, you can hide a column in a visualization when you want to use it in calculations, filters, or aggregations but not show it to workbook users.

Hiding a column enables you to clean up the display and focus on the most relevant information for your audience.

For example, you might want to sort the data in a table visualization called Sales by Product Sub Category using the column Order Date, but you might not want that column to be visible in the table. When you select a column to hide, the data element is grayed out in the Grammar pane.



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When a column is hidden, you can't see the column values in the visualization, nor can you see the column name in the visualization title or any labels within the visualization. However, the hidden column's name is still visible in the following situations:

- The hidden column's name is visible in any tooltips.
- The hidden column is available to use in the visualization's Sort By, Drill, and Drill to menus.
- If you're using the hidden column in a filter, its name is visible within the filter name. You can hide the filter in the filter bar, dashboard filter, or visualization filter toolbar, as applicable. See Filter Data.
- If you have a visualization with a legend and you hide a column in any section of the Grammar pane other than Color or Shape, the column is hidden in the visualization itself but it's still visible in the legend. To hide the column in the legend, you must also hide it in the Color or Shape section.

You can hide attribute and measure columns in the following sections in the Grammar pane for a visualization, depending on the visualization type:

- Trellis Columns
- Trellis Rows
- Category
- Rows
- Color
- Shape
- Detail

You can use hidden columns in data actions. Additionally, any series or datapoint coloring used in a visualization still considers hidden columns.

You can't hide columns for map or network chart visualizations, nor can you hide calculations for any visualization type.

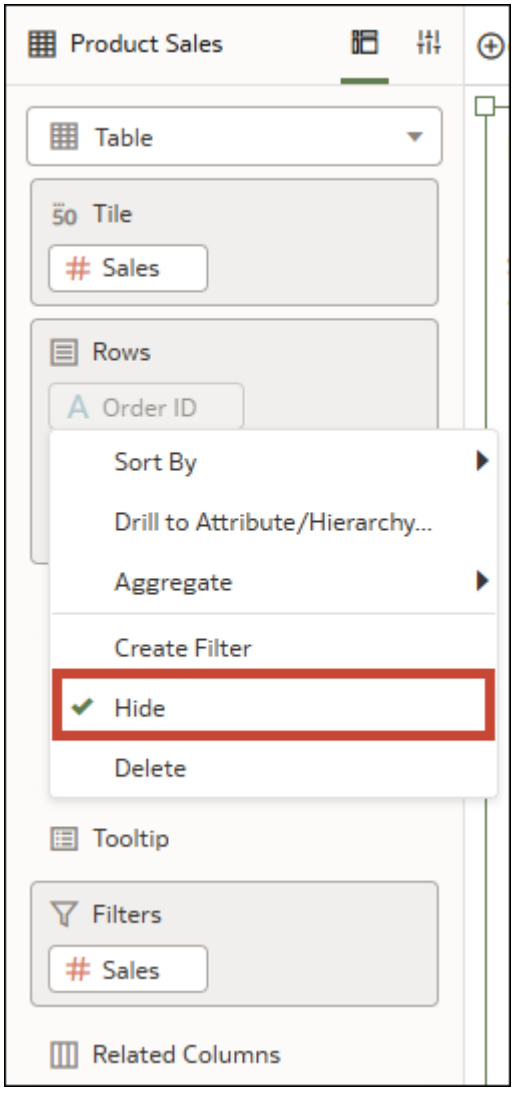
Hide a Column in a Visualization

Hide a column in a visualization so it isn't visible to end users.

This tutorial provides use cases explaining how to hide a column in a table visualization and how to sort a table using a hidden column. Tutorial

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a visualization.
3. In the Grammar pane, right-click the column you want to hide, then select **Hide**.

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4. Click **Save**.

Format Numeric Values of Columns

You can format numeric values of a column in your visualizations using a wide range of ready-to-use formats. For example, you might change the aggregation type from Sum to Average.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, select the column.
3. In the Properties pane for the selected column, use the **General** or **Number Format** tabs to change the numeric properties.
   - **General** - Change the column name, data type, treat as (measure or attribute), and aggregation type.
     For example, to change how a number is aggregated, use the **Aggregation** option.
   - **Number Format** - Change the default format of a number column.
4. Click **Save**.

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Format Numeric Values of Visualizations

You can format numeric properties of a visualization using a wide range of ready-to-use formats.

For example, you can change how you display data labels, currency, decimal places, abbreviation preset to scale number or currency options, negative numbers, tooltip numbers, and aggregation method.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Visualize** and select a visualization.
3. In the properties pane for the selected visualization, use the **Values** tab to change the numeric properties.

   For example, to change number format to display negative values in red, under **Number Format**, click **Negative Values** and select a red option, 123 or ($123).
4. Click **Save**.

Set Scale Options for Numbers and Currency Values

You can select an abbreviated preset scale option for a visualization column to display numbers or currency for thousands (K), millions (M), billions (B), or trillions (T).

You can change a column number scale format such as 32,810.00, to display in an abbreviated preset number scale format such as 32.81K. For example, select **K** to change a Sales column from displaying a value such as $37,723.21 to display the same value as $37.72K.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Visualize** and select a visualization.
3. In the properties pane for the selected visualization, select the **Values** tab and expand a measure column.
4. Under **Number Format**, click **Abbreviate**.
5. Select a value.
   - Select **On** if you want to automatically scale and abbreviate numbers.
   - Select a value if you want to choose a specific scale and abbreviation value.
   - Select **Off** if you want to disable abbreviations.
6. Click **Save**.

Set Currency Symbols for Visualizations

You can set measure values in a visualization to display an appropriate currency symbol.

You can configure a measure to use a custom currency to display the symbol associated with a currency. For example, if you set a canvas filter to display a European Ledger, then the Euro symbol is displayed for each measure value that's associated with the custom currency property. The workbook data must contain a currency code column, for example, a Ledger Currency column. The currency code column enables the display of an appropriate currency symbol for the measure column, for example, a Profit column.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

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2. In the Properties pane for a selected measure, click the **Values** tab, click **Number Format**, and select **Currency**.
3. In the **Currency** field, click the currently displayed value and select **Custom**.
4. In the **Custom** field, add the column that determines the currency code.
5. Click **Save**.

Tip: If you're your currency values are prefixed with country code and currency symbol in a Chrome browser, use the Languages settings in Chrome to set the Language value, which affects the format displayed in workbooks. For example, set the Language to "English (United States)" to prefix currency values with $ instead of US$.

Apply Color to Visualizations

Use color to enhance your visualizations. For example, you might change the default color pallet for analyses in a workbook.

Topics:

- About Color Assignments in Visualizations
- Access Color Options
- Change the Visualization Color Palette
- Assign Colors to Columns

About Color Assignments in Visualizations

Use color in visualizations to make them more attractive, dynamic, and informative. You can assign color to a series of measure values (for example, Sales or Forecasted Sales) or a series of attribute values (for example, Product and Brand).

Your color choices are shared across all visualizations on the canvas, so if you change the series or data point color in one visualization, then it appears on the other visualizations.

The **Visualize** canvas has a Color section in the Grammar pane where you can put a measure column, attribute column, or set of attributes columns. The canvas assigns color to the columns that are included in the Color section:

- When a measure is in the Color section, then you can select different measure range types (for example, single color, two color, and three color) and specify advanced measure range options (for example, reverse, number of steps, and midpoint).
- When you've one attribute in the Color section, then the stretch palette is used by default. Color palettes contain a set number of colors (for example, 12 colors), and those colors repeat in the visualization. The stretch palette extends the colors in the palette so that each value has a unique color shade.
- If you've multiple attributes in the Color section, then the hierarchical palette is used by default, but you can choose to use the stretch palette, instead. The hierarchical palette assigns colors to groups of related values. For example, if the attributes in the Color section are Product and Brand and you've selected Hierarchical Palette, then in your visualization, each brand has its own color, and within that color, each product has its own shade.

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Access Color Options

You can set color options for workbook and visualizations in your workbook.

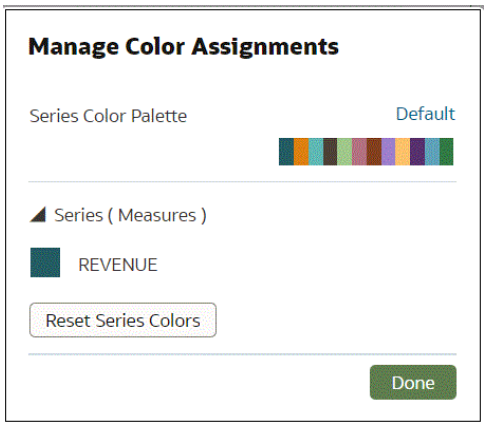
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to open the workbook in author mode.
3. If you want to edit color options for the workbook:
   a. Click **Menu** on the workbook toolbar and select **Workbook Themes** to change the theme and color series. See Workbook Themes.
   b. Click **Menu** on the workbook toolbar and select **Workbook Properties** to edit continuous coloring.
4. If you want to edit visualization color menu options.
   a. Select the visualization, click **Menu** and select **Color**. The available color options depend on how the measures and attributes are set up in your visualization.
   b. Select **Stretch Palette** to turn this option on or off.
   Color palettes have a set number of colors, and if your visualization contains more values than the number of color values, then the palette colors are repeated. Use the Stretch Palette option to expand the number of colors in the palette. Stretch coloring adds light and dark shades of the palette colors to give each value a unique color. For some visualizations, stretch coloring is used by default.
   c. Select **Reset Visualization Colors** to revert to the original colors.

Change the Visualization Color Palette

You can switch between the various color palettes until you find the one you want.

Each color palette contains 12 colors that you can apply to a visualization.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to open the workbook in author mode.
3. Select a visualization to change the color palette.
4. Click **Menu**, select **Color**, and then select **Manage Assignments**.
5. In Manage Color Assignments, click the color palette.



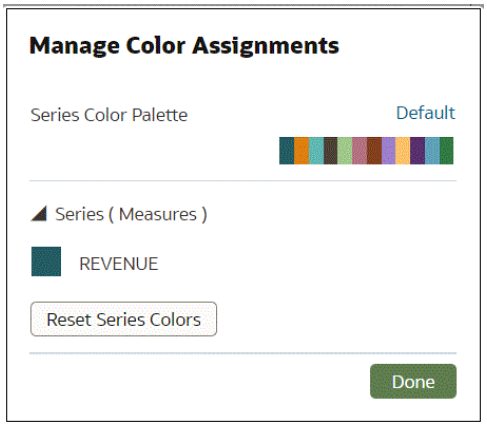
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6. From the Series Color list, click a color palette and click **Done**.

Assign Colors to Columns

Instead of using the palette's default colors, you can choose specific colors to fine-tune the look of your visualizations.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Edit** to open the workbook in author mode.
3. Click the visualization's **Menu**, select **Color**, and then select **Manage Assignments**.
4. Click the box containing the color assigned to the column. From the color picker dialog, select the color that you want to assign to the column. Click **OK**.
5. Specify how you want the color range to be displayed for the column (for example, reverse the color range, pick a different color range, and specify how many shades you want in the color range).



Highlight Important Data Events with Conditional Formatting

Use conditional formatting to highlight important data events in your visualizations so that you can take action.

Video

Topics:

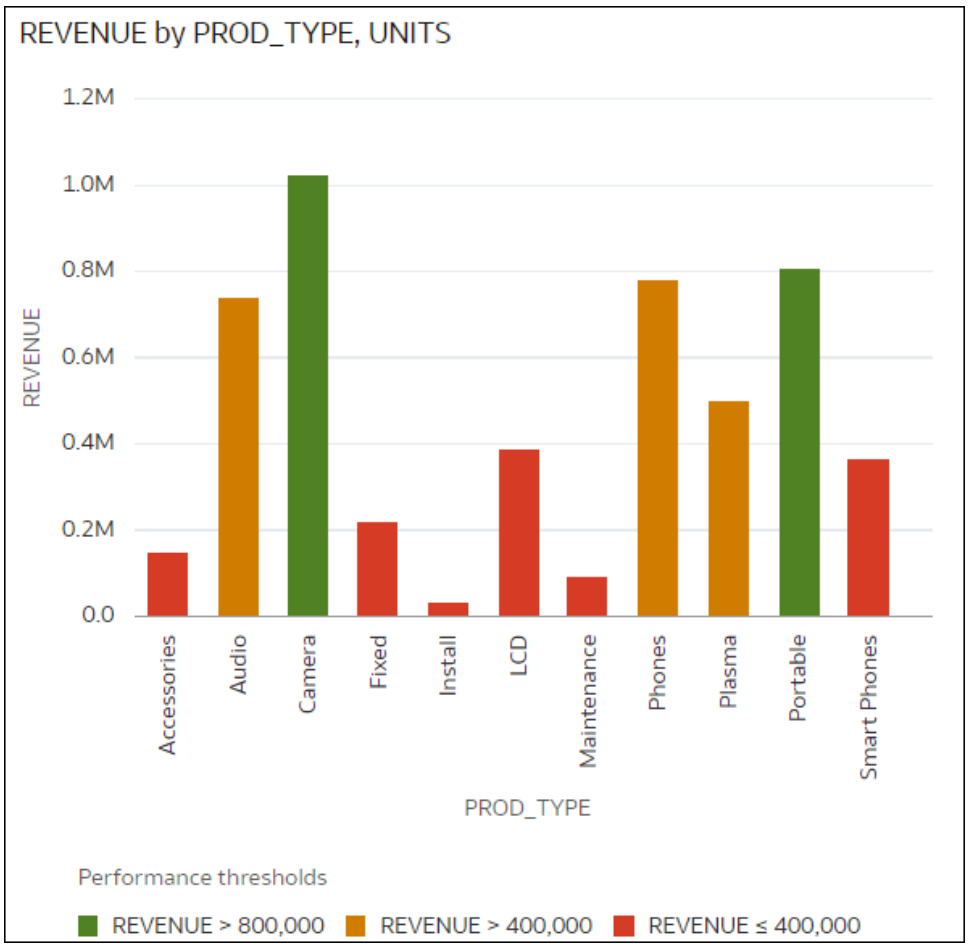
- What Can I Do with Conditional Formatting?
- Manage Conditional Formatting Rules
- Enable a Conditional Formatting Rule
- Add Conditional Formatting to a Visualization
- Add Workbook-level Conditional Formatting Rules
- Apply Conditional Formatting to Totals and Subtotals
- Example - Compare a Measure to a Set of Thresholds
- Example - Compare a Measure to a Target or Goal
- Example - Compare a Measure to a Complex Expression Value

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- Example - Compare a Measure to a Percentage of a Value
- Example - Highlight Values with Emojis
- Example - Highlight Attribute Values
- Example - Highlight Data by Date

What Can I Do with Conditional Formatting?

With conditional formatting, you apply rules to your data to highlight when something important happens. For example, you might use stoplight colors to show when revenues meet high, medium, and low thresholds.



You can apply conditional formatting rules to individual visualizations or to all visualizations on a canvas that evaluate using the same column.

Conditional formatting provides a way for business users to see events or changes in their data. For example, if users want to see when revenues meet high, medium, or low thresholds, you can create a conditional formatting rule that colors the revenue data points as green, orange, or red.

As a content author you can:

- Apply rules based on measure values, attribute values, and dates.
- Apply multiple rules at the same time.

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- Apply multiple rules to measures and attributes at the same time.
- Apply conditional formatting to data values, subtotals, and grand totals in tables and pivots.
- Change the order in which rules are applied.
- Turn rules on and off.
- Emphasize data in table, pivot, and tile visualizations with emojis and icons.

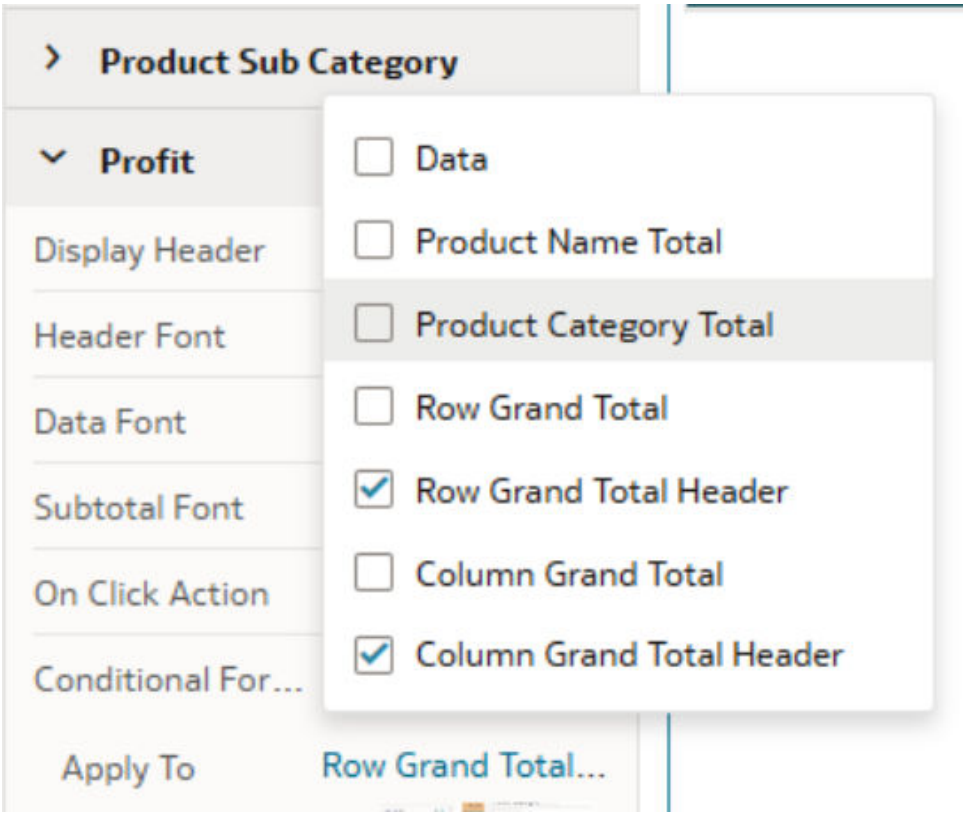
About Visualization-level Rules and Workbook-level Rules

- Visualization-level rules highlight data in a specific visualization in a workbook.
- Workbook-level rules can highlight data in any visualization that contains the column being highlighted.

Using Conditional Formatting with Totals and Sub-totals

For rules targeting measure columns, you can format:

- Subtotal values for any configured sub-total.
- Grand total values.
- Grand total headers.



Types of Comparison

Conditional formatting compares data values with one of the following:

- A set of thresholds.
  For example, highlight values in red if my blood pressure is above 90 or under 70, or highlight bike hires in orange where the return date is greater than the end hire-period date.

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- A target or goal.
  For example, highlight values in red if my costs exceed my budget.
- A percentage of a target.
  For example, highlight values in green when I reach 80% of my sales goal.
- A complex expression.
  For example, highlight values in green when I achieve 5% growth in sales compared to the same period last year.

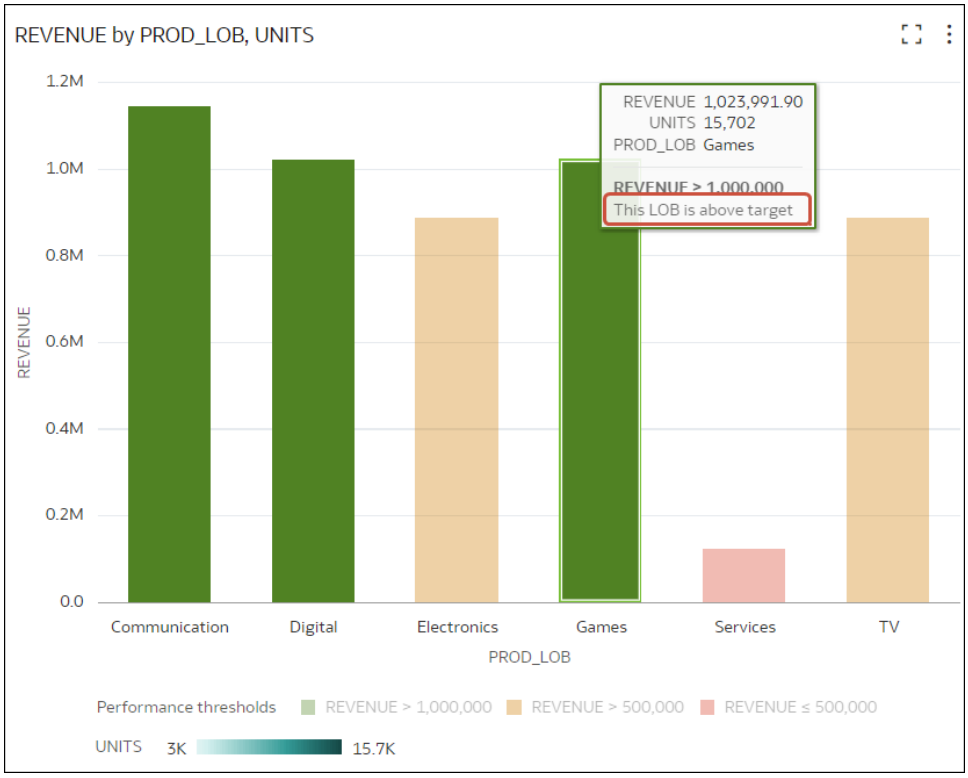
You can also apply conditional formatting based on attribute values. For example, you might highlight projects in green if a Status value is 'Open', or highlight projects in blue if a region value is 'East'.

With conditional formatting, you can:

- Format the fill color and color density.
- Format the font, font size, font color, and font style.
- Display emojis and icons in Table, Pivot, or Tile visualizations.

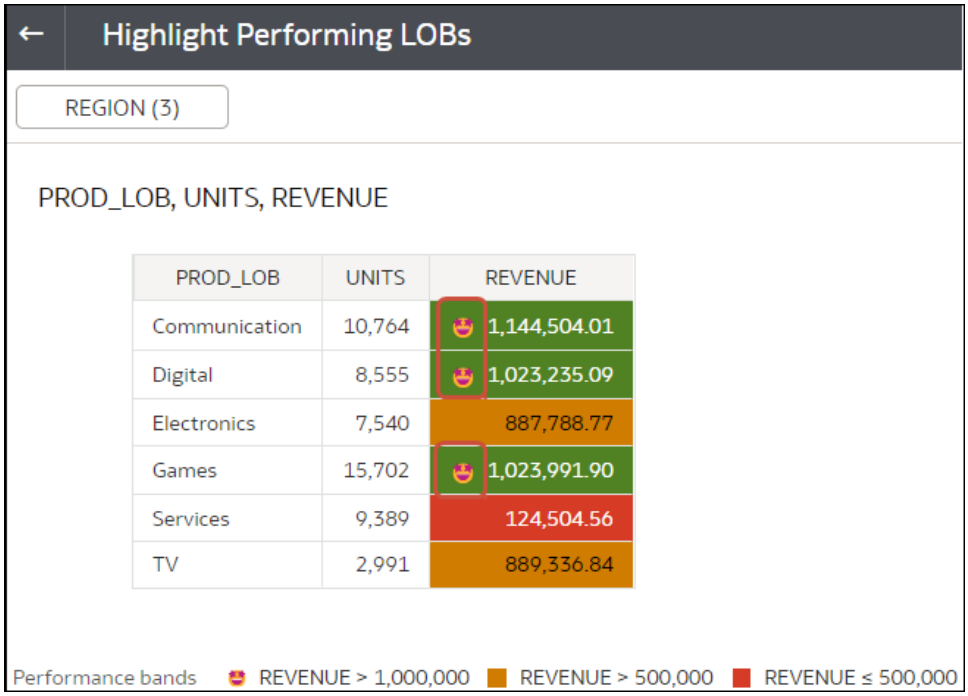
You can also:

- Apply conditional formatting to maps.
- Add labels, tooltips, and legends. For example, when you hover over a data point, display a label "This LOB is above target" to identify the rule applied.



- Highlight data in Table, Pivot, or Tile visualizations with icons and emojis. For example, you can use an emoji to highlight when revenue exceeds 1,000,000.

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- Combine the formatting of values that match more than one rule, using the **Enable rule blending** option. The format displayed is a combination of the formatting rules, for example, you might see bold text from one rule and a red background from another rule. If you don't blend rules, only the first matching rule is applied (based on the order listed), and subsequent rules are ignored.
  Example: you might have these two rules:
  - Rule 1 is revenue greater than one million and highlights in green with the italic Calibri font.
  - Rule 2 is revenue less than target and highlights in red with the Monospace font.

  In this scenario, a revenue greater than one million but less than target has the italic Calibri font with the background highlighted in red.

  If you're applying multiple rules to a measure, the last rule that evaluates to true is the one that colors the item. For example, you might have these two rules:
  - Rule 1 is revenue greater than one million and highlights in green.
  - Rule 2 is revenue less than target and highlights in red.

  In this scenario, an item where revenue meets both criteria highlights in red.

Manage Conditional Formatting Rules

Manage conditional formatting rules to edit, add, or remove them in workbooks. For example, you might adjust the thresholds for stoplight formatting.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Display the **Visualize** pane.
3. From the workbook toolbar (top right), click **Conditional Formatting** .
4. Use the Conditional Formatting dialog to configure rules.

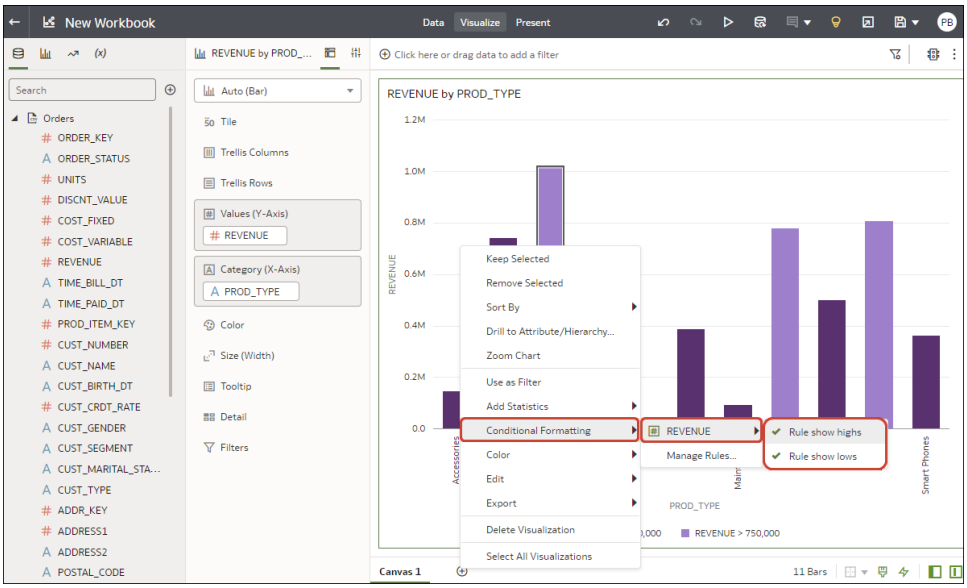
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Enable a Conditional Formatting Rule

To highlight important events in your data, you can enable conditional formatting rules that're provided in a workbook. For example, you might be using a workbook that's configured with rules to highlight when revenues meet high, medium, and low thresholds.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Visualize**.
3. From the visualization editor, hover over a visualization, right-click, then select **Conditional Formatting** to show columns with rules available.
4. Click a column name, for example, REVENUE, to display rules available for that column.

   In this example, REVENUE has two rules available, "Rule show highs" and "Rule show lows". Active rules have a check mark.



5. Click on rules to activate or deactivate them.

Add Conditional Formatting to a Visualization

Add conditional formatting to highlight important events in your data. For example, you might want to show when occupancy rates for a rental property meet high, medium, and low thresholds.

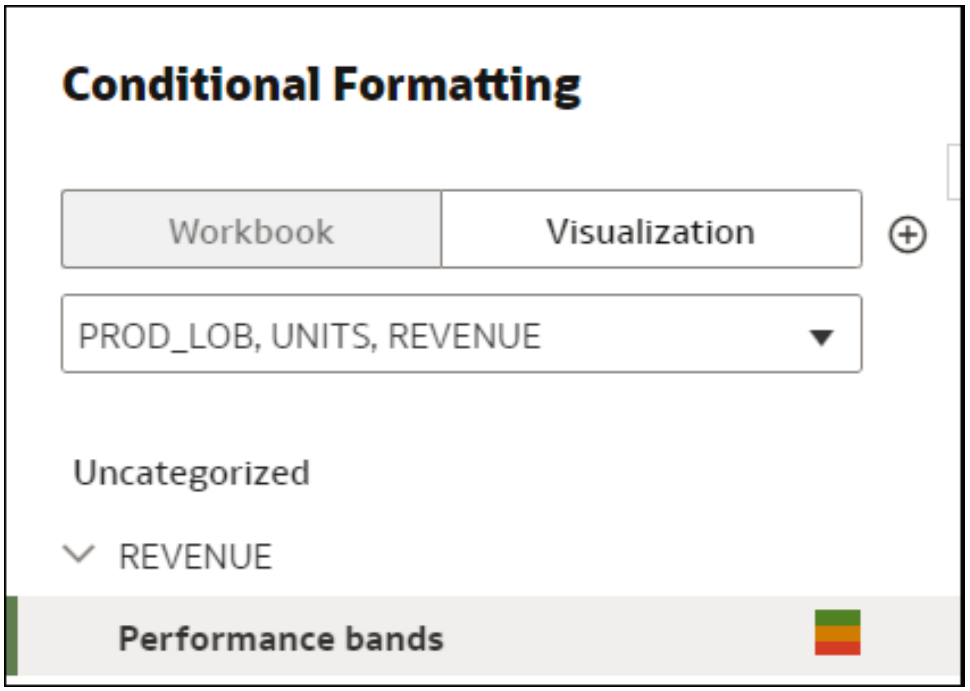
Video

Tutorial

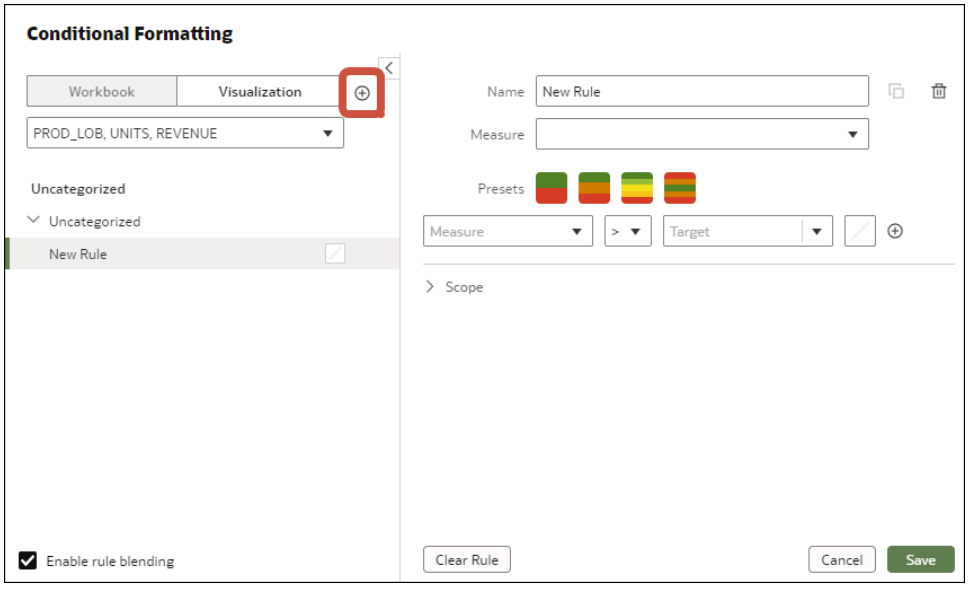
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Display the **Visualize** pane.
3. Hover over a visualization and on the visualization toolbar, click **Conditional Formatting** .

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Existing rules are listed under their target measure. Rules are displayed as **Uncategorized** until their target measure is specified. For example, in this example, the rule "Performance bands" is listed under the measure REVENUE.



4. In **Name**, change the default name to something more user-friendly.



5. In **Column**, select the column that you want to highlight.

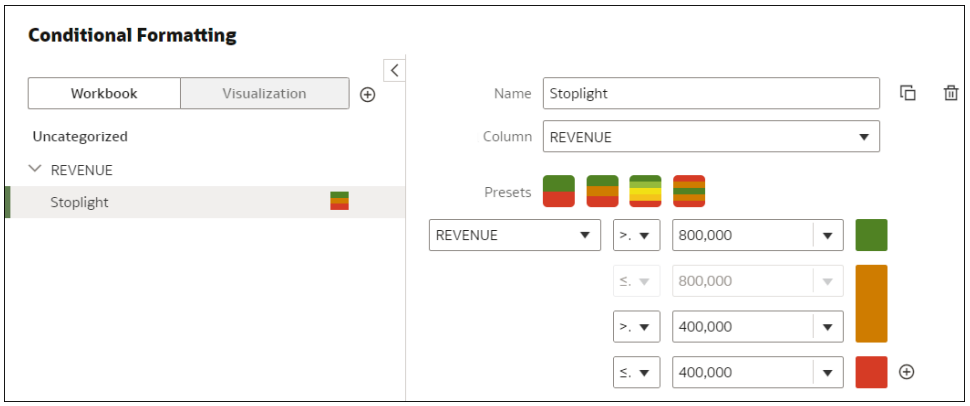
   For example, you might select a State column to display stoplight formatting on the state names.

6. Below the **Presets**, select the column on which the rule is evaluated, the operator field, and the threshold.

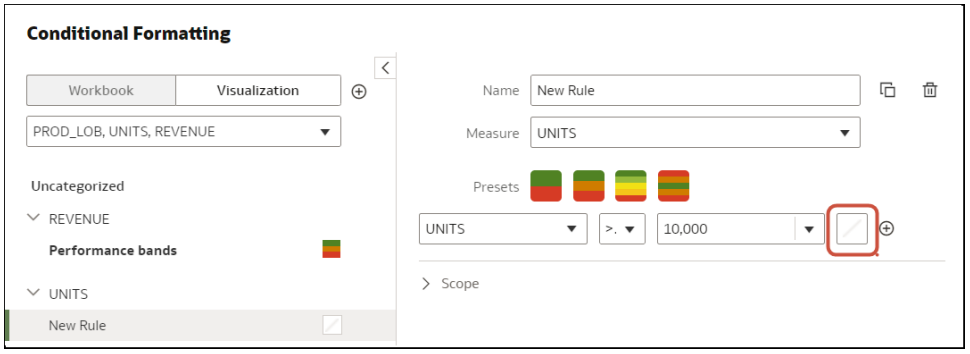
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For example, to highlight revenue rates greater than 1,000,000, select REVENUE in the evaluator column field, select the greater than symbol **>** in the operator field, and enter 1,000,000 in the value field.

Tip: You can also create a rule using a template by clicking one of the **Presets** and defining a value for each threshold. For example, click **3 Steps Threshold** to create a set of stoplight thresholds.



7. Click **Format** to configure the fill color, font, icon or emoji (tabular data), note, and legend.



8. Optional: Add additional rules if required.

   If you're applying multiple rules to the same column, use the grab handles to position the rules in the order you want (rules at the top activate first), and click **Enable rule blending** if you want to combine text font and styling but retain background color differentiation.

9. Click **Save**.

Add Workbook-level Conditional Formatting Rules

You can create conditional formatting rules at the workbook-level to enable workbook users to apply highlight data in visualizations in a workbook. For example, you might want to show when occupancy rates for a rentral property meet high, medium, and low thresholds in selected visualizations.

Video

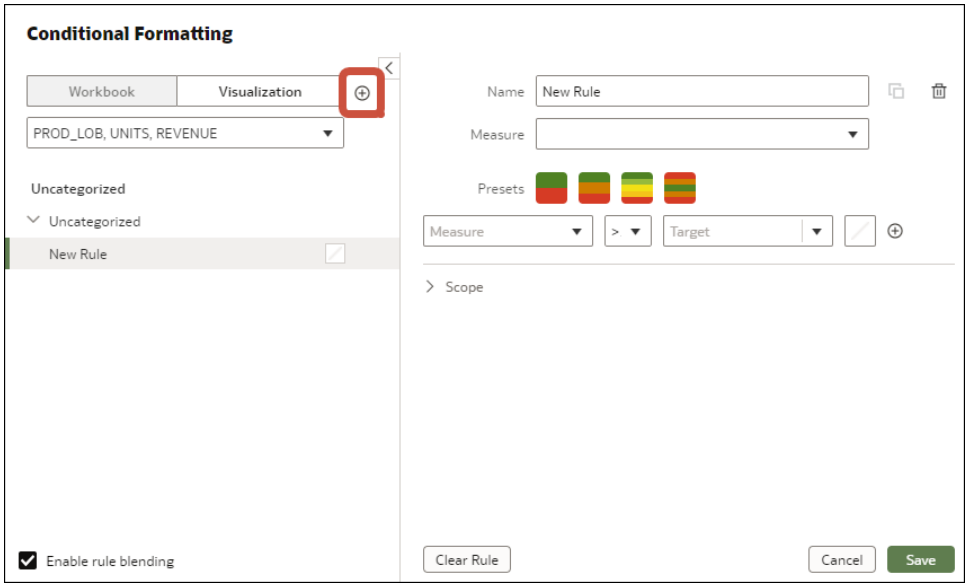
Tutorial

Workbook users can apply workbook-level rules to visualizations individually.

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Conditional formatting enables you highlight important events in your data.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Display the **Visualize** pane.
3. On the canvas toolbar, click **Conditional Formatting** .
4. Click **Add New Rule**.
5. In **Name**, change the default name to something more user-friendly.



6. In **Column**, select the column that you want to highlight.

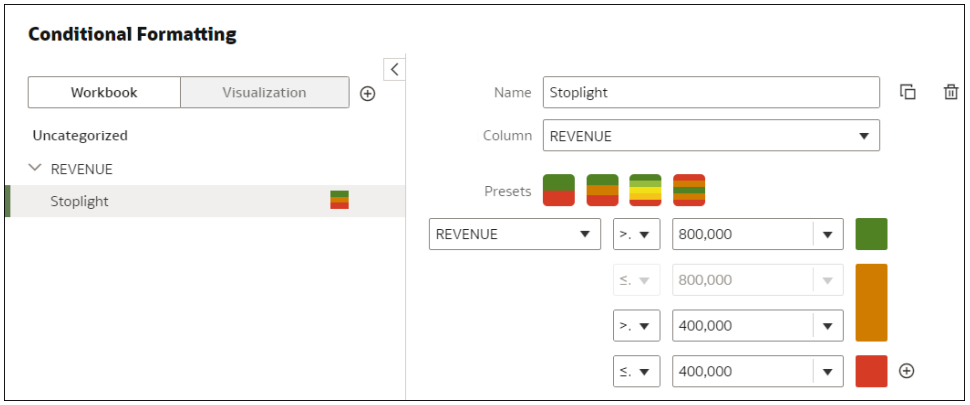
   For example, you might select a State column to display stoplight formatting on the state names.

7. Below the **Presets**, select the column on which the rule is evaluated, the operator field, and the threshold.

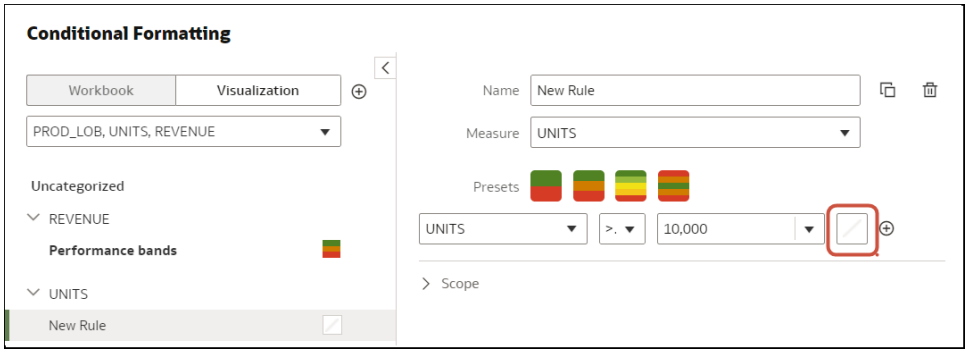
   For example, to highlight revenue rates greater than 1,000,000, select REVENUE in the evaluator column field, select the greater than symbol **>** in the operator field, and enter 1,000,000 in the value field.

   Tip: You can also create a rule using a template by clicking one of the **Presets** and defining a value for each threshold. For example, click **3 Steps Threshold** to create a set of stoplight thresholds.

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8. Click **Format** to configure the fill color, font, icon or emoji (tabular data), note, and legend.



9. Optional: Add additional rules if required.

   If you're applying multiple rules to the same column, use the grab handles to position the rules in the order you want (rules at the top activate first), and click **Enable rule blending** if you want to combine text font and styling but retain background color differentiation.

10. Click **Save**.

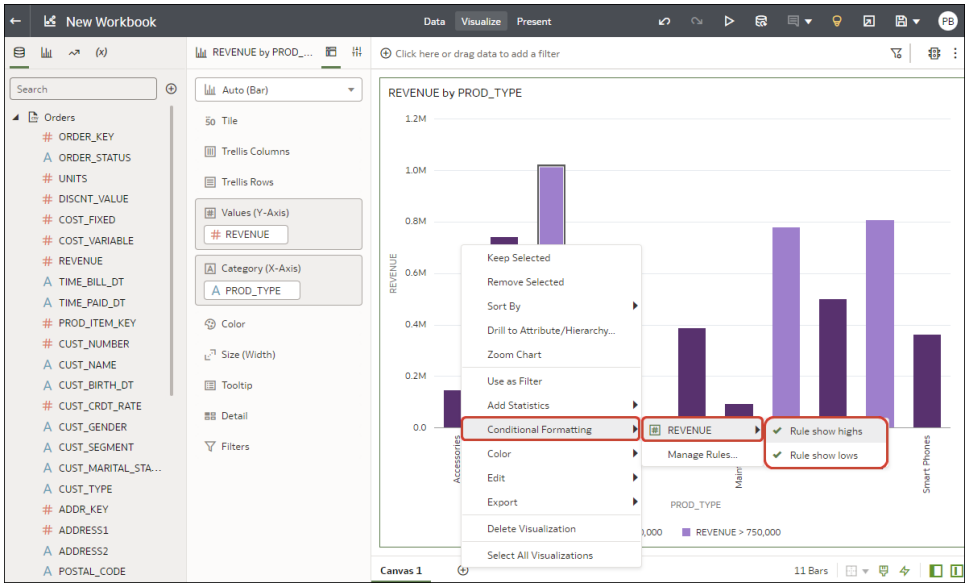
    Workbook-level rules aren't applied by default. Complete steps 11 to 13 to apply them.

11. In each visualization to which you want to apply the conditional formatting rule, hover over the visualization, right-click, then select **Conditional Formatting** to show columns with rules available.

12. Click a column name, for example, REVENUE, to display workbook-level rules available for that measure.

    In this example, REVENUE has two rules available, "Rule show highs" and "Rule show lows". Active rules have a check mark.

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13. Click on the rule that you just created.

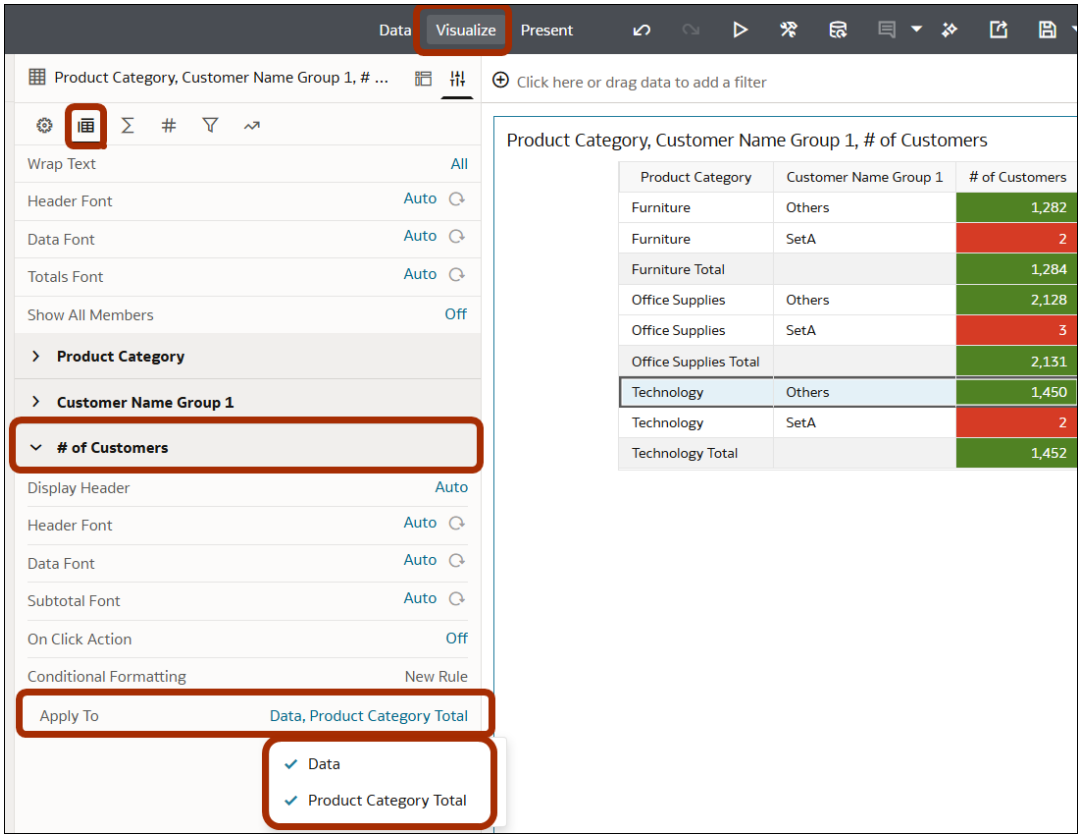
Apply Conditional Formatting to Totals and Subtotals

In workbooks you can optionally apply conditional formatting rules to totals and subtotals.

Tutorial

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Visualize**.
3. In the Grammar Panel, display the **Edge Labels** tab, and locate the column where the conditional formatting is applied.

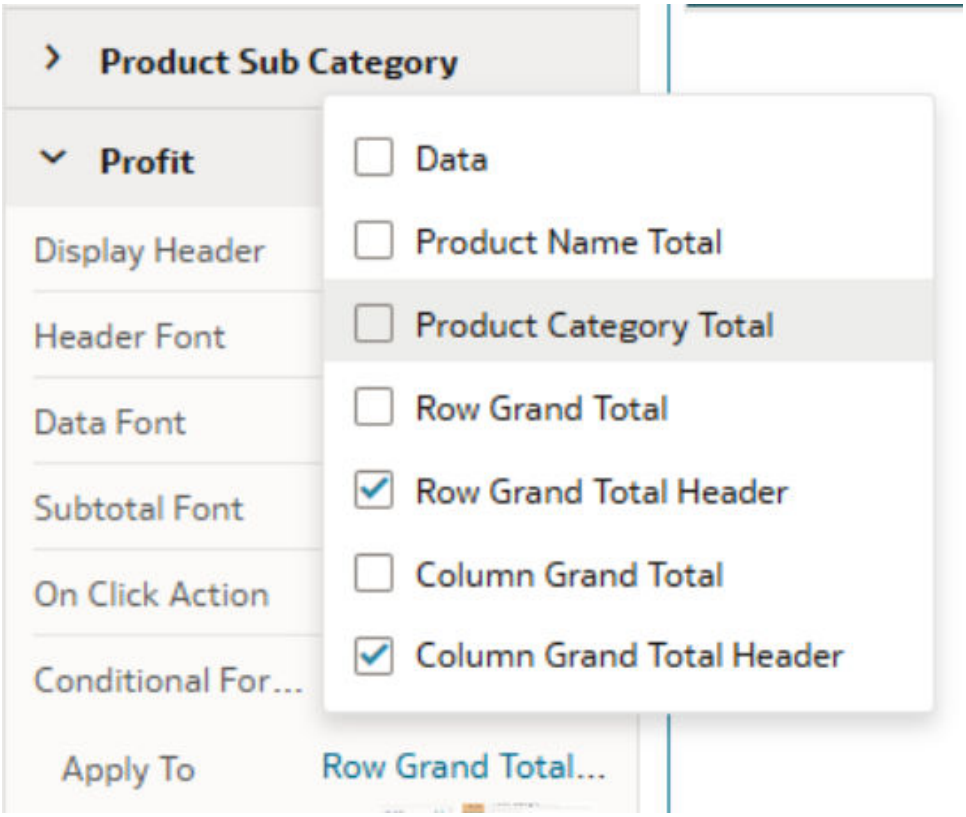
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4. Under **Conditional Formatting**, use the **Apply To** option to select **<Column Name> Total**.

If your visualization has subtotals or grand totals enabled (on the **Totals** pane of the Grammar panel) you can also apply conditional formatting to these.

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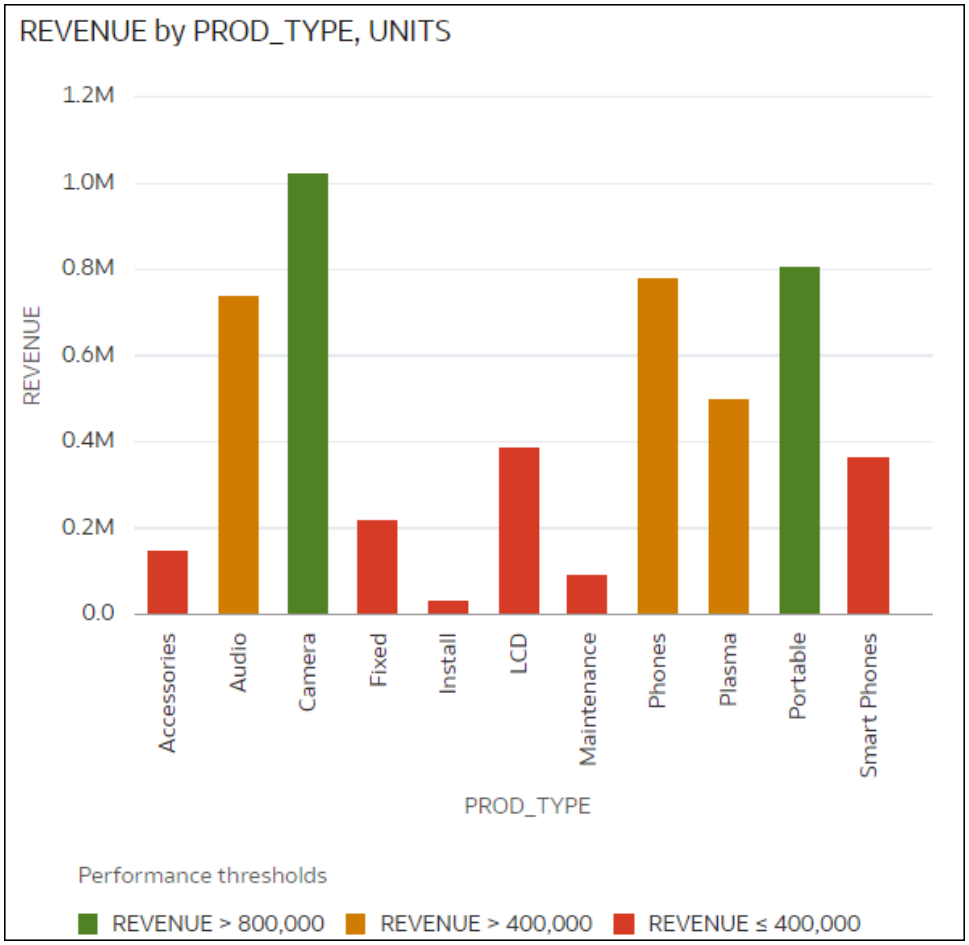
See Customize Grand Totals in Tables and Pivots.

Example - Compare a Measure to a Set of Thresholds

This example shows how to use conditional formatting to compare a measure to low, medium, and high thresholds, also known as stoplight formatting.

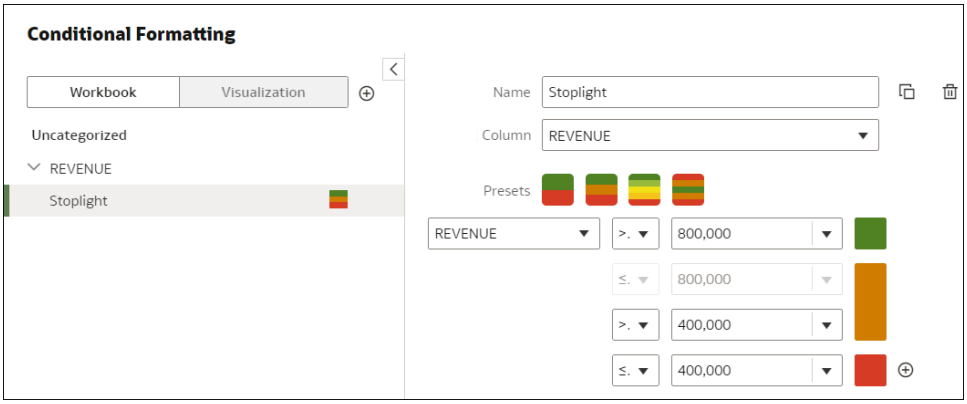
In this example you highlight the revenue level for product types such as audio, phones, and accessories. You show the revenues over 800,000 in green, revenues between 400,000 and 800,000 in amber, and revenues below 400,000 in red.

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Here's how to configure this example using the Conditional Formatting dialog.

- In the **Name** field, enter Stoplight.
- In the **Column** field, select Revenue.
- In **Presets**, click **3 Steps Threshold** to display a three-step template.
- In the first step, select the greater than symbol **>** and enter 800,000 as the value.
- In the second step, select the greater than symbol **>** and enter 400,000 as the value.

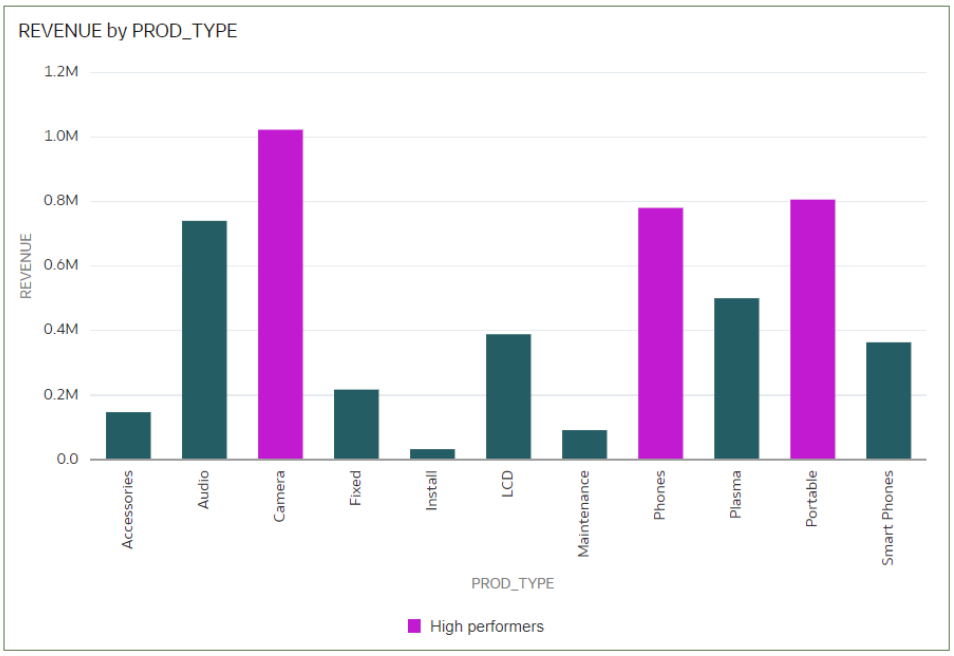


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Example - Compare a Measure to a Target or Goal

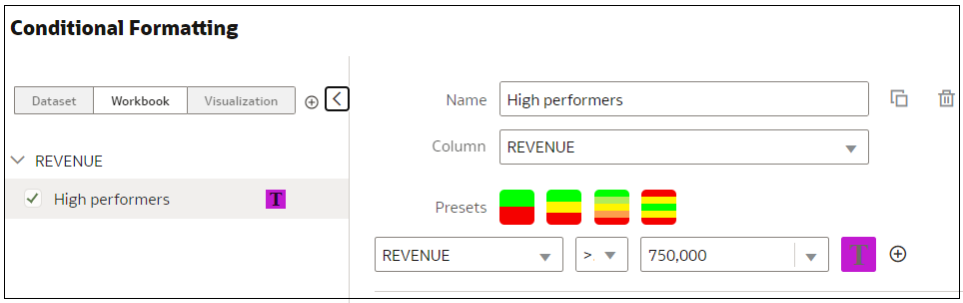
This example shows how to use conditional formatting to compare a measure to a target or goal.

In this example you highlight product types such as audio, phones, and accessories with a revenue of more than 750,000.



Here's how to configure this example using the Conditional Formatting dialog.

- In the **Name** field, enter High performers.
- In the **Column** field, select Revenue.
- In the operator list, select the greater than symbol **>**, and in the value box, enter 750,000.
- Click **Format** to display the color picker and select a purple shade.

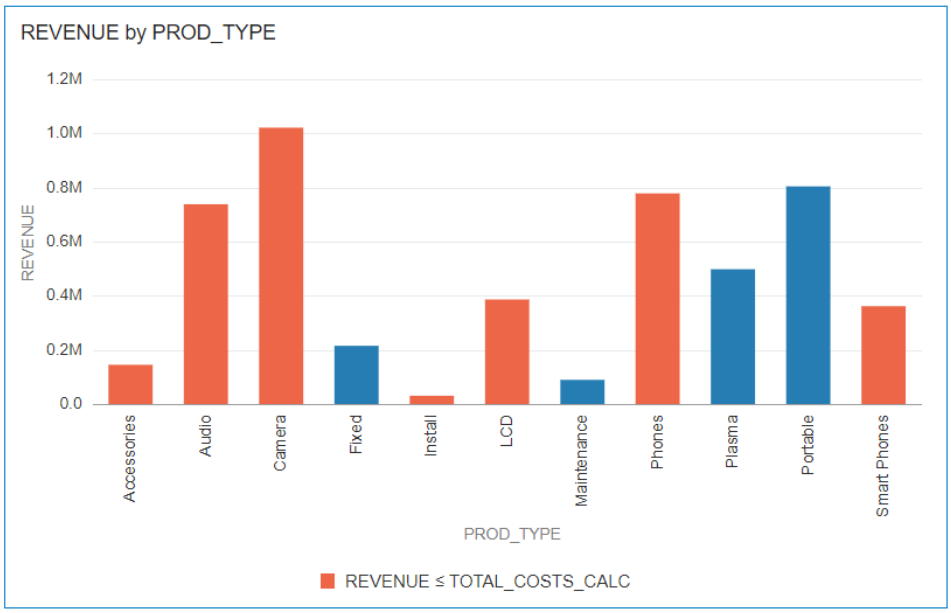


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Example - Compare a Measure to a Complex Expression Value

This example shows how to use conditional formatting to compare a measure to a value calculated by an expression.

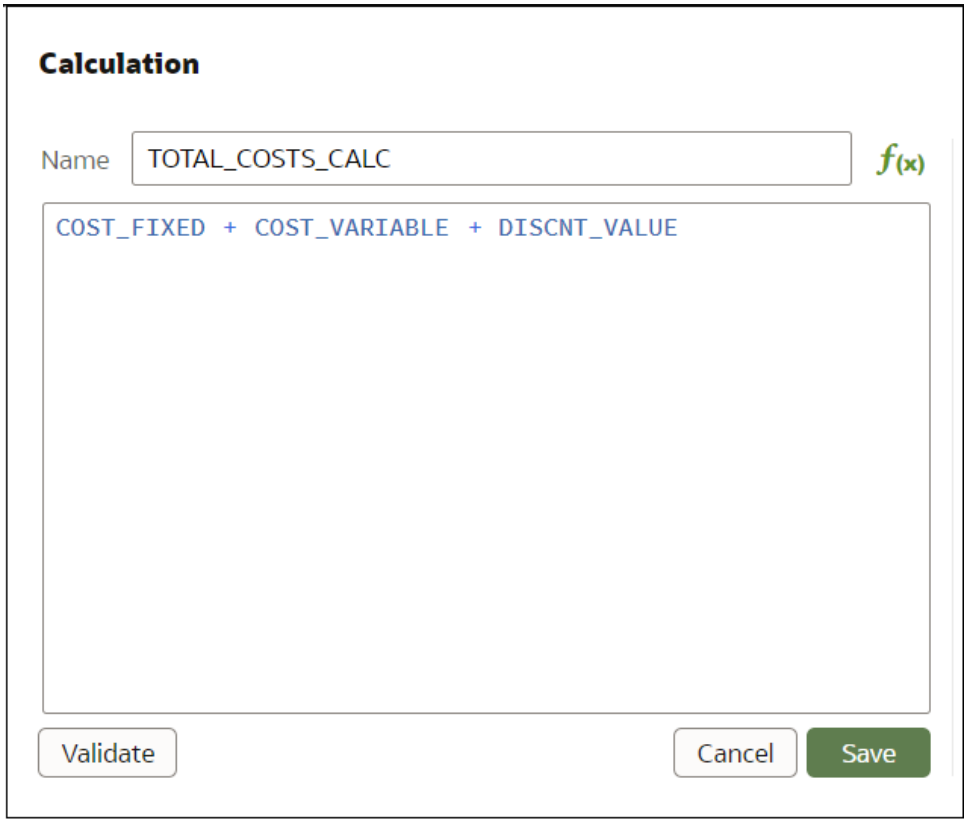
In this example, you compare revenue to total costs, which you calculate using an expression that sums fixed costs, variable costs, and discount value.



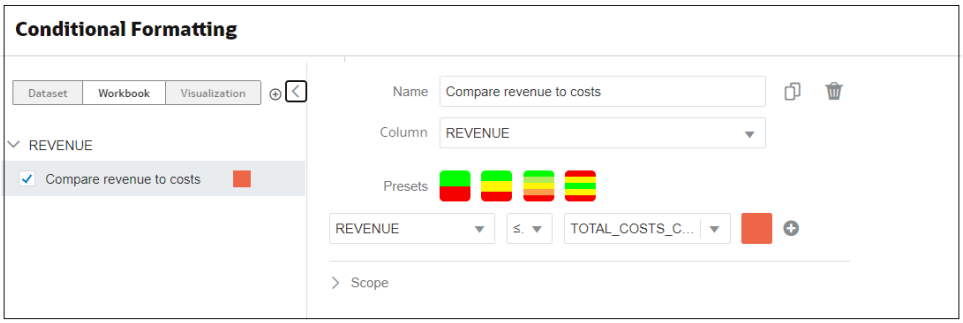
Here's how to configure this example using the Conditional Formatting dialog.

- In the **Name** field, enter Compare revenue to costs.
- In the **Column** field, select Revenue.
- In the operator list, select the equal to or less than symbol ≤.
- In the value box, click the down arrow, then click **f(x)** to display the calculation editor.
- In the **Name** field, specify TOTAL_COSTS_CALC, and in the calculation field specify `COST_FIXED + COST_VARIABLE + DISCNT_VALUE`.

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- Validate the expression and click **Save**.
- Click **Format** to display the color picker and select a red shade.

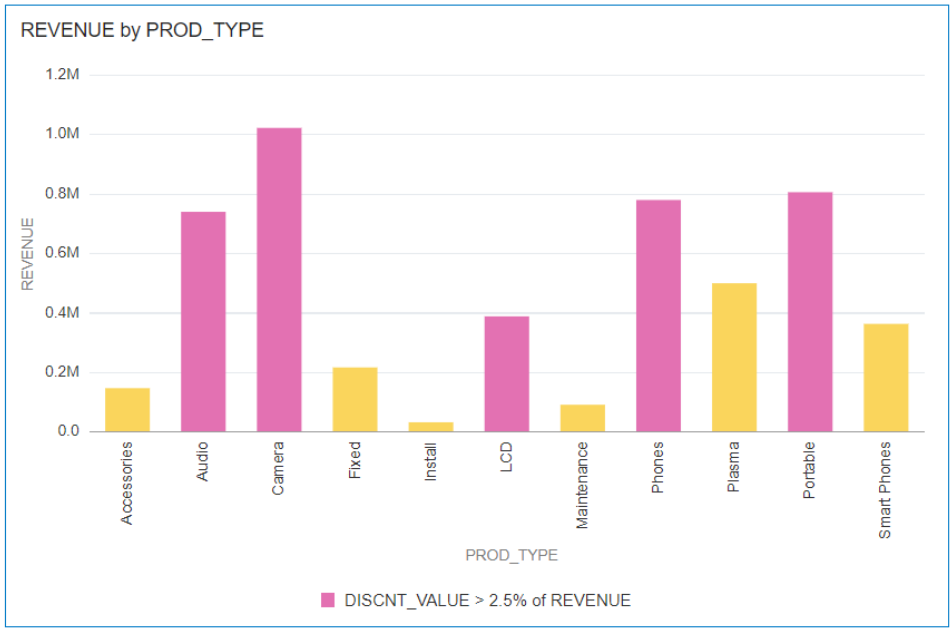


Example - Compare a Measure to a Percentage of a Value

This example shows how to use conditional formatting to compare a measure to a percentage of a value.

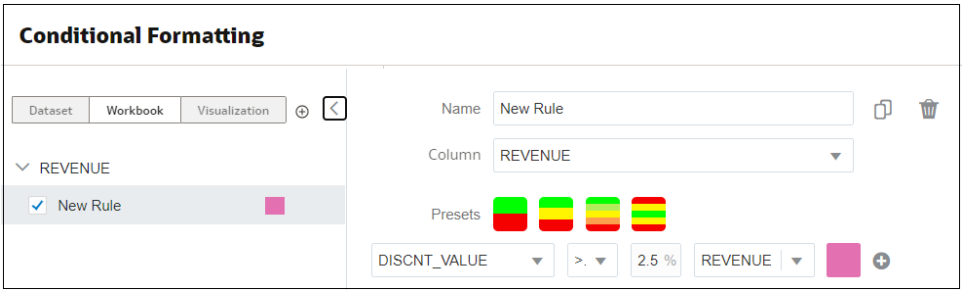
In this example you highlight product types such as audio, phones, and accessories where the discount value (stored in DISCNT_VALUE) is greater than 2.5% of revenue.

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Here's how to configure this example using the Conditional Formatting dialog.

- In the **Column** field, select Revenue.
- In the drop down list below **Presets** select DISCNT_VALUE.
- In the operator drop down list, select the greater than symbol '>', in the value box enter '2.5', and click **%**
- Click **Format** to display the color picker and select a purple shade.

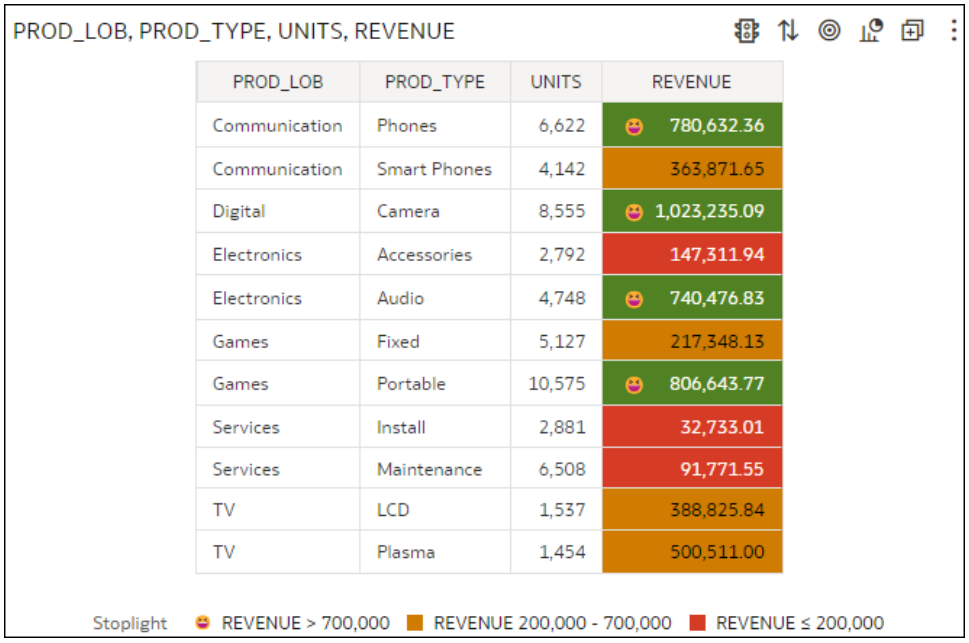


Example - Highlight Values with Emojis

This example shows how to use emojis in conditional formatting to highlight values.

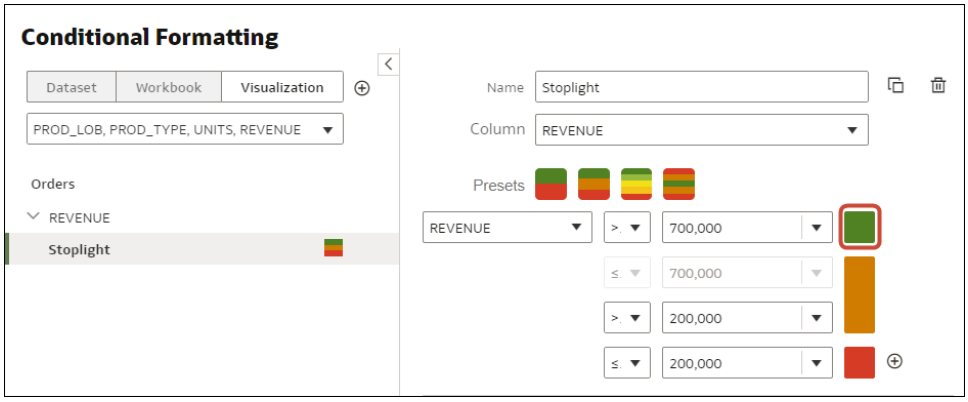
In this example you highlight product types such as audio, phones, and accessories with an emoji where the revenue is greater than 700,000, in addition to stoplight formatting.

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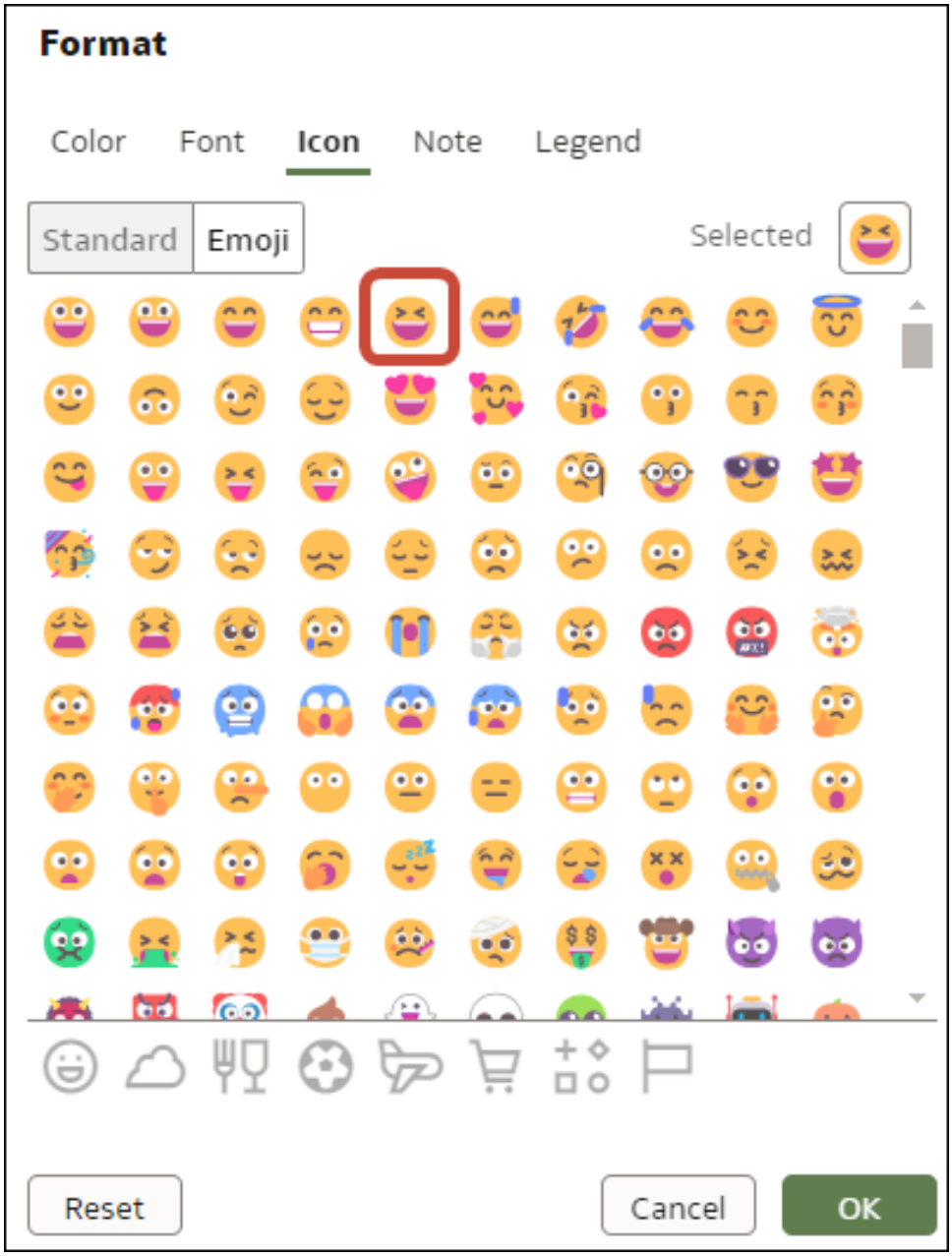
Here's how to configure this example using the Conditional Formatting dialog.

- Create a rule and click the **3 Steps Threshold** in **Presets**.
- In the **Column** field, select REVENUE and configure the thresholds as greater than 700,000, between 200,000 and 700,000, and less than 200,000.
- Click **Format** for the greater than 700,000 threshold.



- Click **Icon**, then click **Emoji**, and select a smile emoji.

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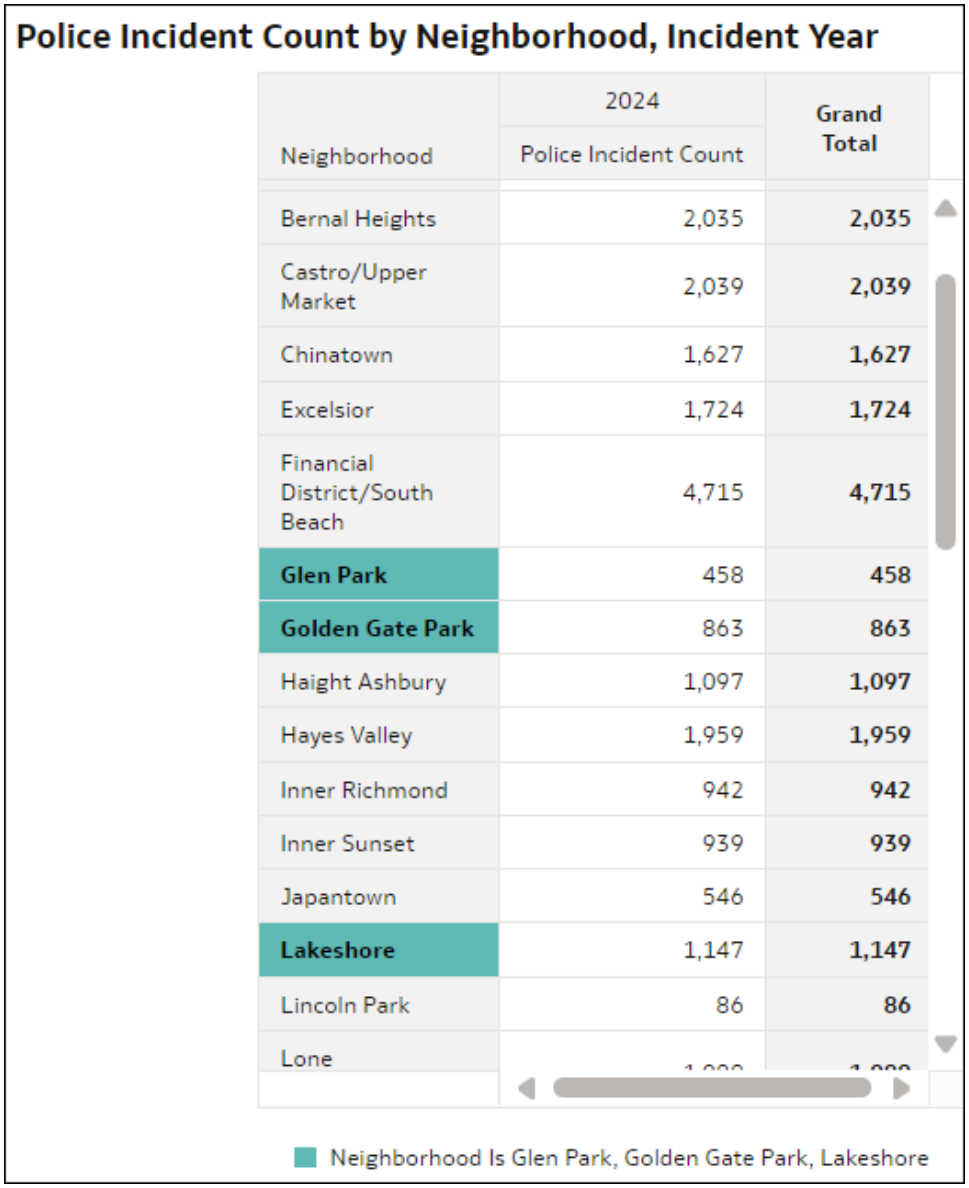


Example - Highlight Attribute Values

This example shows how to use conditional formatting to highlight attribute values in a police incident report.

In this example you highlight the neighborhoods Glen Park, Golden Gate Park, and Lakeshore in a police incident report.

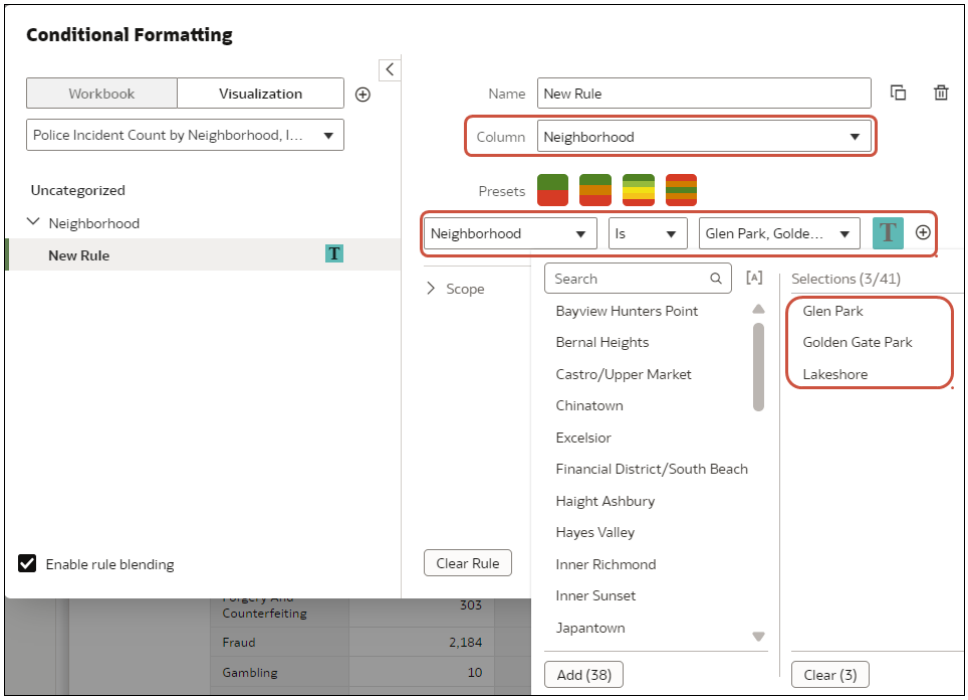
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Here's how to configure this example using the Conditional Formatting dialog.

- Create a rule.
- Select Neighborhood as the **Column** and select values Glen Park, Golden Gate Park, and Lakeshore in the dropdown to the right of the **Is** field.

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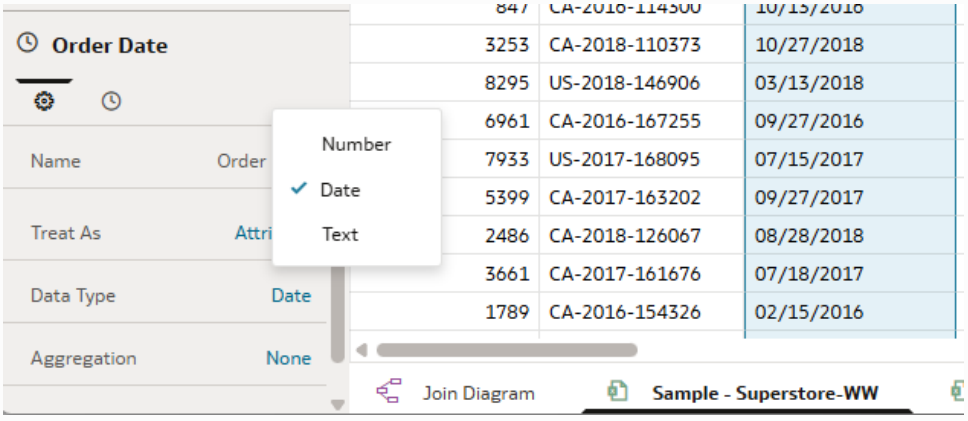


- Click **Format** and select bold text and a blue background.

Example - Highlight Data by Date

This example shows how to use conditional formatting to highlight events based on dates.

> **Note**
>
> You must use a date column that is defined in the DATE format.

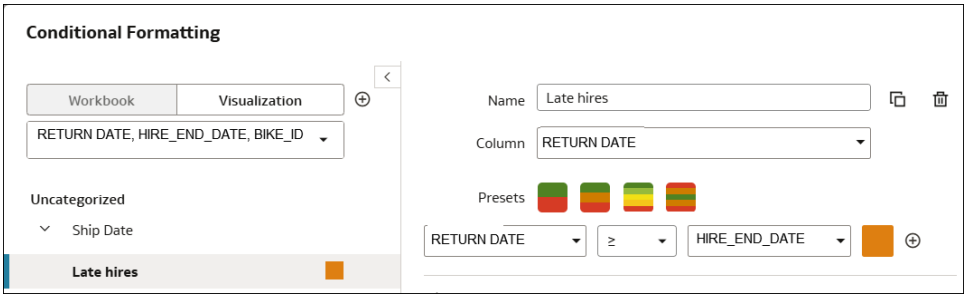


- In this example, you highlight bike hires in orange if they're returned later than the hire end date.

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HIRE_END_DATE	RETURN DATE	BIKE_ID
01/03/2015	01/07/2015	OFF-PA-10000174
01/04/2015	01/08/2015	OFF-BI-10004094
01/04/2015	01/08/2015	OFF-LA-10003223
01/04/2015	01/08/2015	OFF-ST-10002743
01/05/2015	01/12/2015	OFF-AR-10003478
01/06/2015	01/07/2015	OFF-AR-10002399
01/06/2015	01/08/2015	OFF-PA-10002005
01/06/2015	01/10/2015	FUR-CH-10004063
01/06/2015	01/10/2015	OFF-AR-10001662
01/06/2015	01/10/2015	OFF-BI-10004632
01/10/2015	01/10/2015	OFF-FA-10001883
01/10/2015	01/10/2015	OFF-PA-10000955
01/10/2015	01/10/2015	TEC-PH-10004539
01/10/2015	01/10/2015	TEC-PH-10004977
01/12/2015	01/12/2015	FUR-FU-10004864
01/12/2015	01/12/2015	OFF-BI-10003708
01/13/2015	01/13/2015	OFF-AR-10004078
01/13/2015	01/13/2015	TEC-AC-10001266
01/15/2015	01/15/2015	FUR-FU-10000965

- Here's how to configure this example using the Conditional Formatting dialog.
  - Create a rule and select RETURN DATE as the **Column**.
  - Specify RETURN DATE is greater than or equal to HIRE_END_DATE as the condition.
  - Click **Format** and select bold text and an orange background.



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Sorting Data in Visualizations

These topics explain how you can sort the data in visualizations.

Topics:

- About Sorting Data in Visualizations
- Sort Data in Visualizations
- Define a Sort Order for a Visualization

About Sorting Data in Visualizations

In Oracle Analytics, you can optimize the usefulness of a visualization and improve its readability by sorting the data.

The following options are available to sort by:

- **Attributes** - Alphabetically **A to Z** or in reverse alphabetical order **Z to A**.
- **Measures** - In ascending order **Low to High** or descending order **High to Low** based on value. Measure sorts take precedence over attributes and dates.
- **Dates** - In chronological order **Earliest to Latest** or reverse chronological order **Latest to Earliest**.
- **Attributes based on measures** - In ascending order **Low to High By** or descending order **High to Low By**. You can also use a measure that isn't used in the visualization.

You can sort the data in a visualization by an individual attribute or measure, or you can define a sort order to apply multiple sorts to the visualization.

If you have any sorts applied to a visualization in Edit Mode and you save the workbook, those sorts are included. To clear all existing sorts, you can right-click the visualization, hover over **Sort By**, and click **Clear Sorts**.

For information about sorting in tables and pivots, see About Tables and Pivots.

To control which sort options are available to consumers, see Specify the Workbook Visualization Actions in Present.

You can't sort data in the following visualization types:

- Network
- Dashboard controls
- Language Narrative
- Map
- Timeline
- Text
- Image

Sort Data in Visualizations

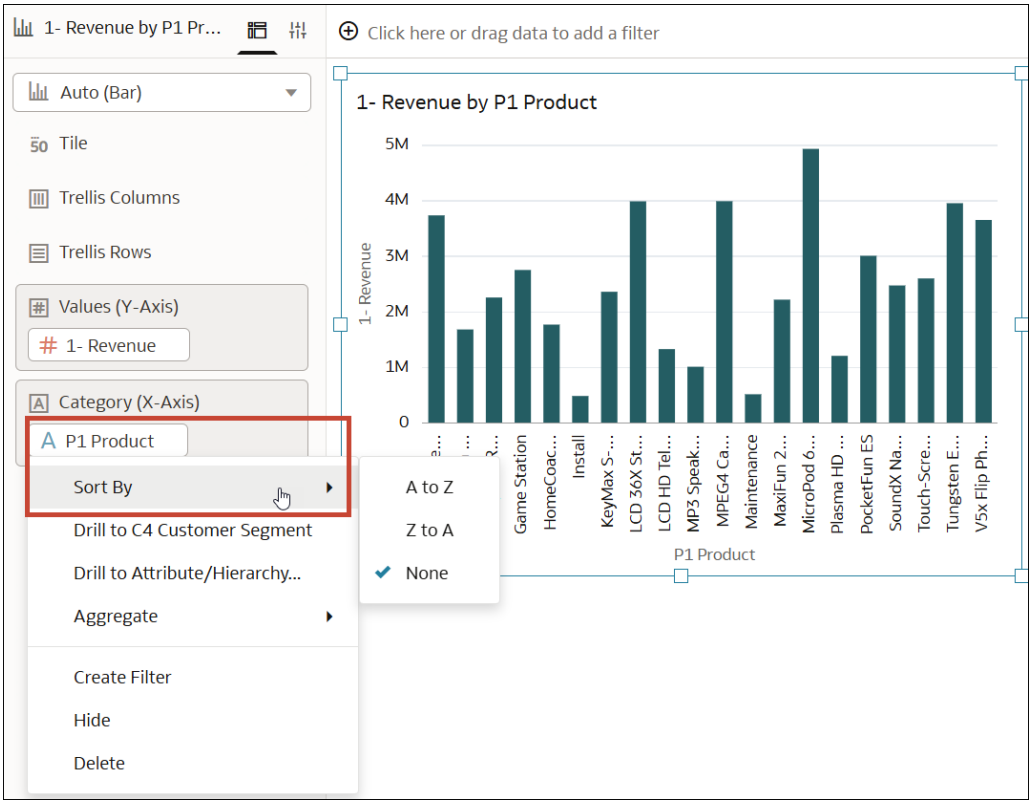
Sort a visualization based on an individual column to optimize your view of the data.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

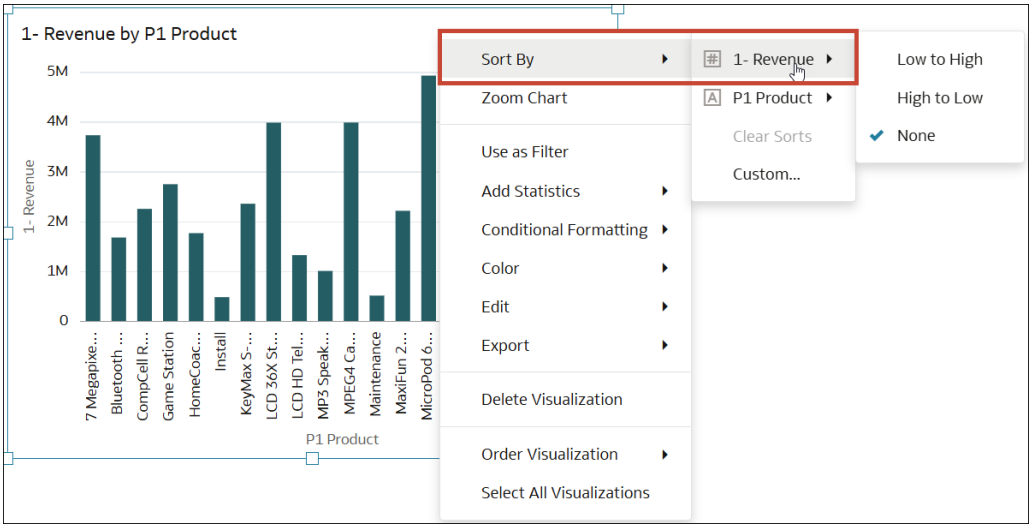
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2. Select a visualization, then do one of the following:

   - In the Grammar pane, right-click the data element you want to sort, click **Sort By** and select a sorting option.



   - Right-click the visualization, hover over **Sort By**, then hover over a column in the list and select a sorting option.



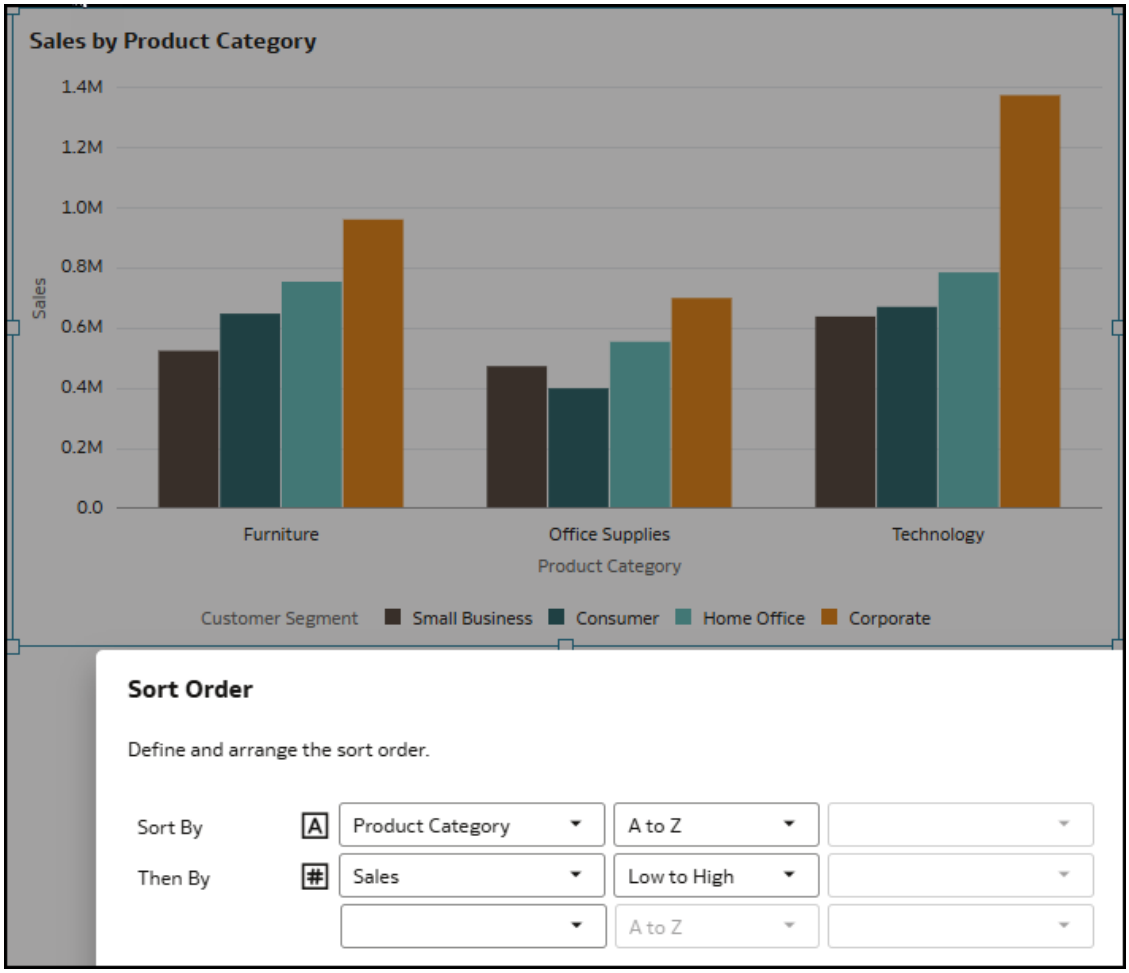
3. If you want to keep your sort applied to the visualization the next time you open the workbook, click **Save**.

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Define a Sort Order for a Visualization

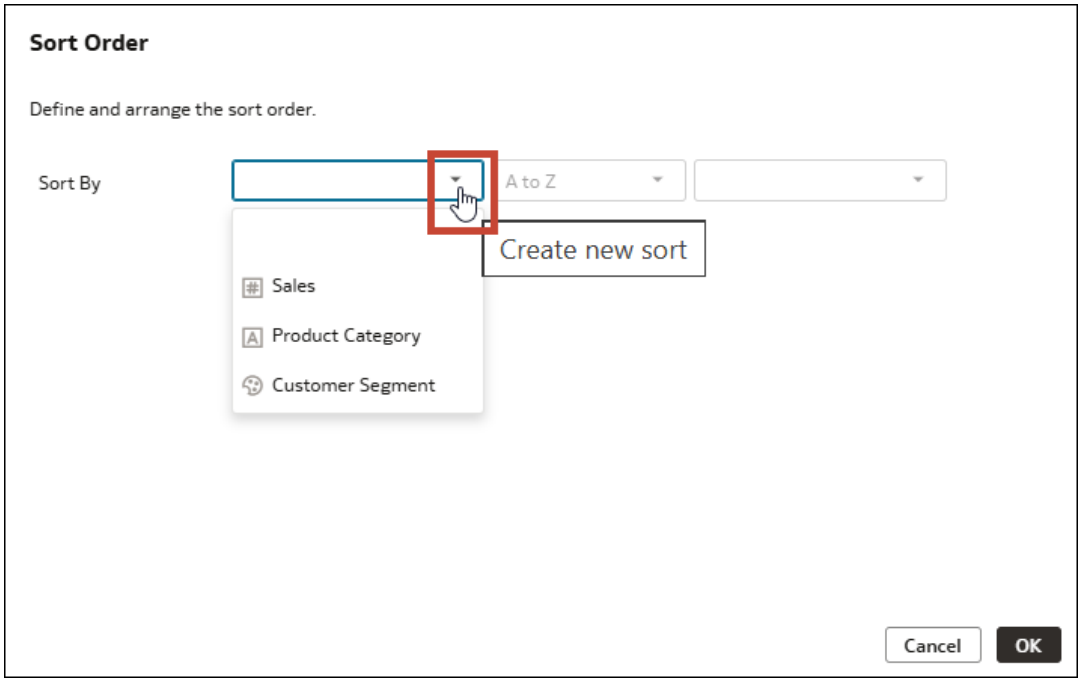
Define a sort order to apply multiple sorts to a visualization.

For example, you might want to sort a bar chart showing Sales by Product Category and Customer Segment. You can create a sort order to sort it first by Product Category alphabetically, and then by Sales from lowest to highest.



1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Hover over a visualization and click **Sort** ⇅ in the visualization toolbar.
3. In the Sort Order dialog, in the Sort By row, click the **Create new sort** drop-down and select an attribute or a measure.

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4. Click the **A to Z** drop-down and select a sort method.
5. In the second row, add another sort to apply next.
6. Click **OK**.

Create a Custom Error Message for Visualizations with No Data

You can create your own message that's displayed for visualizations that have no data to display in a workbook.

When the selected data elements and possibly the filters for a visualization don't produce results, the message 'No Data Found' is displayed. As the workbook author you can create a custom message to help explain why the visualization didn't display any results. For example, you might create a custom error message 'There is no data for the selected year' to display when a visualization contains no data. The message is displayed for all visualizations in the workbook.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the workbook **Menu** and **Workbook Properties**.
3. For No Data Text click **Auto**, and select **Custom**.
4. Enter your custom error message text.
5. Click **OK**.

Add Notes to Visualizations

Annotate your visualizations with notes to call out areas of interest or emphasize specific data points.

Topics:

- Add Notes to a Visualization

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- Connect a Note to Data Points in a Visualization
- Show or Hide a Note's Data Point Connectors
- Delete a Note's Data Connectors
- Show or Hide a Visualization's Notes

Add Notes to a Visualization

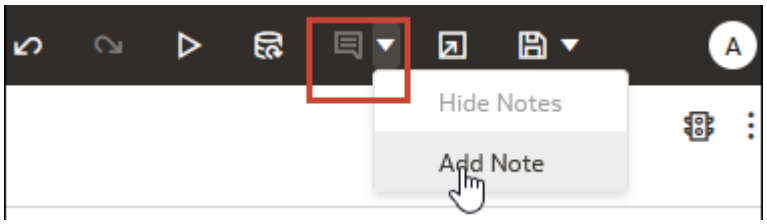
You can add notes to call out important information in a workbook's visualizations. You can use notes to annotate one or all of the visualizations in a canvas, or to emphasize specific data points in a visualization, such as columns in a table or clusters in a scatter plot.

There are many formatting options that you can use to customize a note's content. For example, you can choose font type, size, and color; add a bulleted or numbered list; and add URL links.

When you add a note, you can add data connectors to call out specific points in the visualization, or you can create the note and add or adjust the data point connectors later. See Connect a Note to Data Points in a Visualization.

By default, the notes that you add are displayed, but you can hide a visualization's notes. See Show or Hide a Visualization's Notes.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the workbook, click **Visualize**.
   - To add a note without data point connectors, click the **Notes** icon and select **Add Note**.
   - To add a note with data point connectors, go to the visualization where you want to add the note and hold down the Ctrl key and click up to ten data points that you want the note to connect to. Then click the **Notes** icon and select **Add Note**.



3. In the note box, enter the note text and use the formatting options to specify the note's font style, color, size, and so on.
4. Optional: To add a link to the note, highlight the note text that you want to make into a link. Click **Link** and in the Hyperlink dialog, enter a URL. Click **OK**.
5. Click **Save**.

Connect a Note to Data Points in a Visualization

Add connectors to a note to identify specific data points in a visualization.

LiveLabs Sprint

You can connect a note to up to ten data points on a visualization or canvas. You can't connect a note to a data point on these visualization types:

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- Chord Diagram
- Correlation Matrix
- List
- Map
- Parallel Coordinates
- Tile

By default, a note's data point connectors are displayed, but you can hide them. See Show or Hide a Note's Data Point Connectors.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Locate and hover over the note that you want to attach to data points. Click and hold a circle and drag the line to the data point that you want to connect the note to. You can connect a circle to multiple data points.

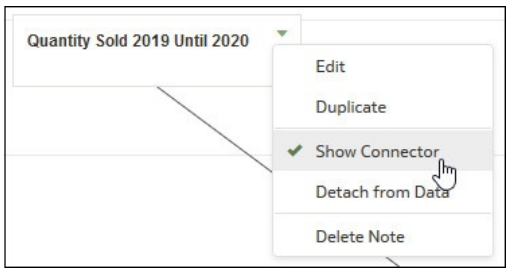


3. Click **Save**.

Show or Hide a Note's Data Point Connectors

By default a note's data point connectors are displayed, but you can hide or show them as needed.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Locate and hover over the note with the connectors to hide or show. Click **Click to edit** and then click **Show Connector**.



3. Click **Save**.

Delete a Note's Data Connectors

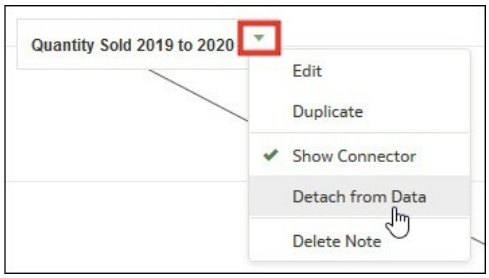
You can delete one or more of a note's data connectors.

Instead of deleting a note's data connectors, you can hide them. See Show or Hide a Note's Data Point Connectors.

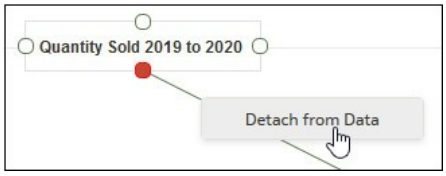
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

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2. Optional: To delete all connectors, locate and hover over a note with connectors. Click **Click to edit** and then click **Detach from Data**.



3. Optional: To delete an individual connector, hover over and right-click a connector, and then click **Detach from Data**.



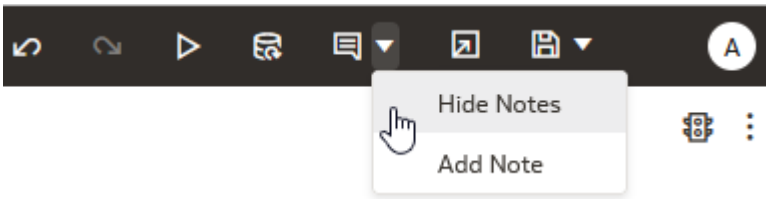
4. Click **Save**.

Show or Hide a Visualization's Notes

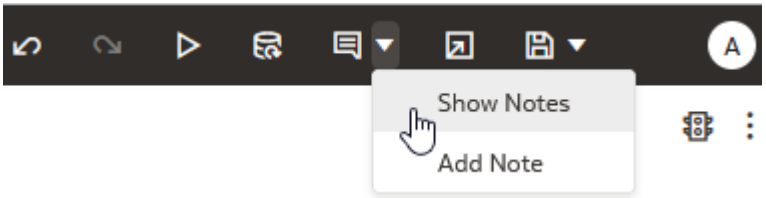
By default a workbook's visualization notes are displayed, but you can hide or show all notes.

If you create a presentation flow from a workbook, then all of the included canvases' notes are displayed in the dashboard even if you hide all notes in Visualize. In the Present page where you add canvases to create the presentation flow and workbook, you can use a canvas' **Notes** properties to show and hide individual notes for the canvas. If your presentation flow and workbook contains multiple canvases, then you can set to show and hide individual notes for each canvas. See Show or Hide Canvas Notes in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Optional: If the workbook's notes are displayed, then click **Hide Notes**.



3. Optional: If the workbook's notes aren't displayed, then click **Show Notes**.



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4. Click **Save**.

Set Visualization Loading Overlay Opacity

Data authors can adjust the white overlay opacity around visualizations that displays while a workbook loads the data. Setting a lower opacity level can enable canvases with a dark background to show through while rendering visualizations.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. If the workbook opens for viewing, click **Edit**.
3. Click **Menu** on the workbook toolbar and select **Workbook Properties**.
4. Use the **Visualization Loading Overlay** slider to set the opacity of the visualization overlay to a value between 1-100, where 1 is transparent, and 100 is opaque.
5. Click **OK**.
6. Click **Save**.

About the Warning for Data Issues in Visualizations

You see a data warning icon when the full set of data associated with a visualization isn't rendered or retrieved properly.

If the full set of data can't be rendered or retrieved properly, then the visualization displays as much data as it can as defined for the fixed limit, and the remaining data or values are either truncated or not displayed.

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11

Generate Visualizations with Oracle Analytics AI Assistant

After indexing a dataset, you can ask natural language questions to Oracle Analytics AI Assistant in a workbook or in your home page search bar to generate visualizations of the data.

Topics:

- About Oracle Analytics AI Assistant
- Generate Visualizations in a Workbook with Oracle Analytics AI Assistant
- Generate Visualizations from Your Home Page

About Oracle Analytics AI Assistant

The Oracle Analytics AI Assistant is an AI-powered tool that helps you build and refine visualizations for your workbooks.

> **Note**
>
> The AI Assistant is available in all regions in the OC1 realm. For more information, see About Regions and Availability Domains.

Before You Begin

If you don't see the Assistant option, you might not have the required permissions. Contact your administrator to request the Use Assistant in Workbooks permission. See Grant or Revoke Permissions for Application Roles.

Administrators may also need to enable Oracle's default generative AI as the source for your Assistant. See Configure Which Generative AI to Use with AI-supporting Features.

Administrators can also enable the Assistant to use its built-in knowledge to improve responses by allowing the Assistant to use information outside of your data. See Configure Built-In Knowledge for Oracle Analytics AI Assistant.

Get Started with Oracle Analytics AI Assistant

To use the Assistant, you need to first index the dataset or subject area you want the Assistant to have knowledge of.

- See About Indexing a Dataset for Oracle Analytics AI Assistant to index datasets.
- See About Indexing Subject Areas for Oracle Analytics AI Assistant and Home Page Search

When you're indexing data for use with the Assistant, you can improve responses by being mindful of the data you select to index and leveraging synonyms to help the Assistant identify

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data points. For help indexing your data, see Improve Results from Oracle Analytics AI Assistant and Tips on Using Synonyms for Home Page and AI Assistant Search.

After you enable the Assistant by indexing your dataset for search, you can find it by opening Auto Insights in your workbook and selecting the Assistant. You ask the Assistant natural language prompts to analyze indexed data, like "Show me sales" or "Profits by city" and it provides visualizations or data insights. You can continue to prompt the Assistant to further refine or analyze the results of your queries. You can add any visualizations created with the AI Assistant to your workbook and add the visualizations to a watchlist. You can also create visualizations from your home page and then add them to a workbook.

The Assistant supports English, German, French, Italian, Portuguese, Spanish, and Thai. The language set in your user profile determines the language the Assistant responds with. The Assistant responds to prompts made in unsupported languages, but responses use English and may be unreliable.

Assistant requests are always processed within a secure Oracle Cloud Infrastructure (OCI) environment. However, your Assistant request may be routed to another OCI region for processing. Verify local regulatory requirements before enabling or using this functionality.

Oracle Analytics leverages foundation models deployed through the Generative AI Service in OCI. These models are used in their native state without fine-tuning or model customization. Oracle Analytics doesn't use your data to train models, and achieves results through careful prompt engineering.

> **Note**
>
> The Oracle Analytics AI Assistant uses a Large Language Model (LLM) when processing your questions. As a result, it might generate responses based on patterns in data rather than factual accuracy. Always verify the results and consult your primary data sources before making critical decisions based on results generated by the Assistant. Oracle recommends you avoid providing any personally identifying information as part of your natural language prompts, as the text is sent exactly as written to the LLM.

Make the Assistant Available to Consumers

You can allow consumer users of your workbooks to use the Assistant and even select which datasets or subject areas the Assistant can use to respond to their natural language prompts. You enable consumers to use the Assistant as part of the presentation flow. See Show or Hide the Insights Panel for Consumers in Present and Specify Datasets and Subject Areas Available to Consumers in Insights Panel.

Consumers can learn more about using the Assistant with About Using the Oracle Analytics AI Assistant as a Consumer.

Learn More About the Assistant

Have questions about generative AI that aren’t answered here? See FAQs to Oracle Analytics Generative AI for a more detailed understanding of how Oracle Analytics uses generative AI.

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Generate Visualizations in a Workbook with Oracle Analytics AI Assistant

In a workbook with a dataset indexed with Oracle Analytics AI Assistant, you can enter questions. Oracle Analytics AI Assistant reviews the dataset and generates one or more visualizations to answer your question.

To ask questions in a workbook and generate visualizations, you need to index the dataset with the **Assistant and Homepage Ask** setting, see Index a Dataset.

1. On your home page, enter the dataset name in the search bar, click **Data** and press Enter.
2. Hover over the dataset, click **Actions**, and then **Create Workbook**.
3. In the workbook, click **Auto Insights**  , then click **Assistant**.
4. Click **Check Status** if this is the first time indexing the dataset.
5. Enter a question about the dataset in the **Ask a question** text box. For example, `Is there a relationship between sales and cost based on cities`.
6. Click **Additional Insights** ▸ to see other insights the Assistant found.
7. Hover over the visualization and click **Add to Canvas** + to include the visualization in the workbook or add it to your watch list.
8. Click **Save** to retain the Assistant results for your workbook.

Generate Visualizations from Your Home Page

You can enter questions using natural language or search terms into the search bar on your home page to generate visualizations.

When you ask a question using natural language, the AI Assistant finds and displays the most relevant dashboards and data.

If you want to generate visualization or dashboard to answer a data-related question, type a question and then press **Shift+Enter**. The AI Assistant will create a dashboard.

The resulting dashboard displays an LLM-created insights summary section, up to five visualizations, and links to related content. You can ask follow-up questions to update visualizations. These dashboards are saved as a thread on the left side of the page so you can quickly toggle between results.

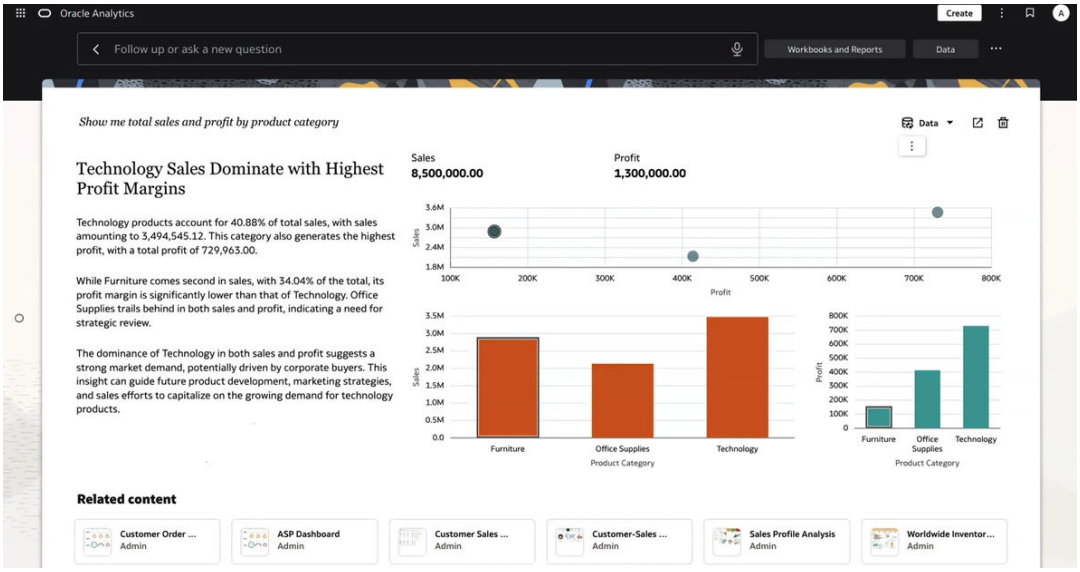
You must index your datasets before you or other users with access to them can use them to build visualizations from your home page. See Index a Dataset.

You can certify datasets to ensure that their contents rank high in search results. See Certify a Dataset.

You can assign synonyms to dataset columns. Use synonyms that are familiar to users to ensure successful searches. See Specify Synonyms for Dataset Columns.

1. On your home page, click the search bar.
2. Enter a question in natural language about the data that you want to visualize, for example "Show me total sales and profit by product category" and press **Shift+Enter**.

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3. Ask follow-up questions, such as "Can you add the city?" or "Can you only show information for this fiscal year?" and press **Enter**.
4. On the left side of the page, click the breadcrumbs to toggle through previously asked questions.
5. Optional: Explore or modify your results.
   - Click **Data** to the name of the dataset or subject area to select a different set or area to apply your question to.
   - Click **Explore as Workbook** to open the visualization in a new workbook.
   - Hover a visualization and click **Change Visualization Type** to select a different visualization type.
   - Hover a visualization and click **Add to Watchlist** to add the visualization to a new or existing watchlist.
   - Hover a visualization and click **Maximize** to change the size of a visualization.
   - Click **Delete** to remove the search result.
   - Explore the Related Content section to view other workbooks the AI Assistant thinks are relevant to your questions.

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12

Use AI Agents and the Oracle Analytics AI Assistant to Interact with Data

Learn how to use AI agents and the Oracle Analytics AI Assistant to empower consumers to interact with data conversationally, enabling intuitive data exploration, analysis, and insights discovery through natural language interfaces.

Topics:

- About Oracle Analytics AI Agents
- Create an Oracle Analytics AI Agent
- Make an Oracle Analytics AI Agent Available to a Workbook
- Modify an Oracle Analytics AI Agent
- Delete an Oracle Analytics AI Agent

About Oracle Analytics AI Agents

Oracle Analytics AI Agents enable you to define custom prompt instructions and incorporate organizational knowledge into Oracle Analytics AI Assistant interactions.

AI agents allow the Oracle Analytics AI Assistant to interpret natural-language questions with greater accuracy and deliver more meaningful, context-aware insights. Oracle Analytics AI Agents use Retrieval-Augmented Generation (RAG) to enhance generative AI with enterprise data, enabling large language models (LLMs) to “look up” relevant information before responding.

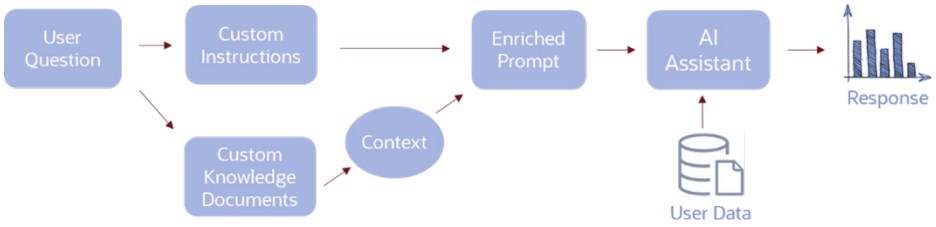


AI agents provide reliable, context-rich insights by combining business data with tailored LLM instructions and private documentation. AI agents can help your teams move beyond static dashboards to interactive, conversational analytics that accelerate insight discovery and improve business performance.

When you submit a question to an Oracle Analytics AI Agent:

- The agent automatically applies additional custom instructions created by the author, adding important context such as domain-specific definitions or guidance on preferred response formats.
- A RAG process scans the selected enterprise documents configured by the author, enriching your prompt with focused, relevant information. The enhanced query is then processed by the Oracle Analytics AI Assistant, which orchestrates the underlying LLM prompts to deliver a response that best reflects your intent and the available enterprise data.

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When you set up an AI agent in Oracle Analytics, you'll configure four primary components:

- **Dataset** – The foundational data source that powers your agent's analytics and responses. It contains the core business data the Oracle Analytics AI Assistant relies on to answer user questions.
- **Supplemental Instructions** – Custom guidance that shapes how the Oracle Analytics AI Assistant interprets user intent and formulates responses. These instructions influence the Oracle Analytics AI Assistant's reasoning and behavior. For example, by defining business terminology, specifying fiscal logic, outlining naming conventions, or clarifying domain rules. In essence, they teach the Oracle Analytics AI Assistant to think and communicate in your organization's language. Everything included here is passed directly to the AI without preprocessing. See About Supplemental Instructions in an Oracle Analytics AI Agent.
- **Welcome Message** – This is the introductory message users see when they first interact with the AI Agent. It can describe the agent's purpose and provide sample questions to help users get started.
- **Knowledge Documents** – A collection of supporting materials such as policies, reports, FAQs, or reference guides. You can upload PDF or .txt files, which are used through Retrieval-Augmented Generation (RAG), enabling the Oracle Analytics AI Assistant to "look up" and cite factual information directly from your content rather than relying solely on its pre-existing training. Knowledge Documents (RAG) define what information from your private knowledge base can assist the Oracle Analytics AI Assistant in answering a specific question. Only the document excerpts that are relevant to the user's query are shared with the Oracle Analytics AI Assistant. Unrelated content isn't included. See About Knowledge Documents Used in an Oracle Analytics AI Agent.

When to Use an Oracle Analytics AI Agent

This section outlines appropriate scenarios for using an Oracle Analytics AI Agent, ensuring optimal use of automated insights and efficiency in your analytics workflows.

AI agents are domain-specific functional experts. Think of an AI agent as a subject-matter expert in a specific business domain, supporting focused Oracle Analytics AI Assistant interactions. The more focused its scope, the more precise and meaningful its responses will be.

AI agents are designed to support Oracle Analytics AI Assistant users within a clearly-defined business domain. Each agent is associated with a specific dataset, curated knowledge documents, and tailored instructions. Together, these components significantly improve the ability of the Oracle Analytics AI Assistant and underlying LLM to interpret user questions accurately within a particular context.

By reducing ambiguity and grounding the AI in domain-specific semantics, instructions, and documentation, organizations can create highly specialized AI agents. For example, you can create an AI agent focused on the company's sales backlog, another AI agent with an employee attrition focus, or an AI agent focused on customer service request volumes. Each

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AI agent draws from a targeted set of data sources, applies customized response expectations, and incorporates relevant business knowledge such as competitive information, HR policies, or service level agreements.

AI agents are created by authors for use by consumers. Consumers can view dashboards or workbooks and rely on the Oracle Analytics AI Assistant to interact with their data using natural-language questions. Consumers don't create new visualizations themselves, instead they use agents to obtain quick clarifications, follow-up answers, and drill-down insights within the context of the analytics content they are exploring.

You can use Oracle Analytics AI Agents within a workbook or independently.

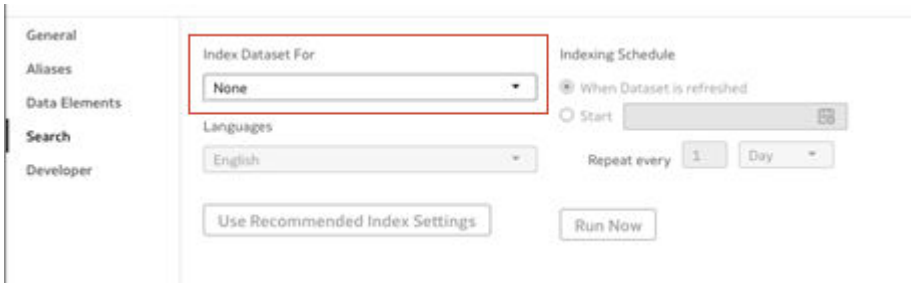
- Consumers can use agents that have been enabled in a workbook. See Attach an Oracle Analytics AI Agent to a Workbook.
- Authors can use agents in preview mode. See Modify an Oracle Analytics AI Agent.

About the Dataset Used in an AI Agent

In Oracle Analytics, you can associate any dataset with an AI agent.

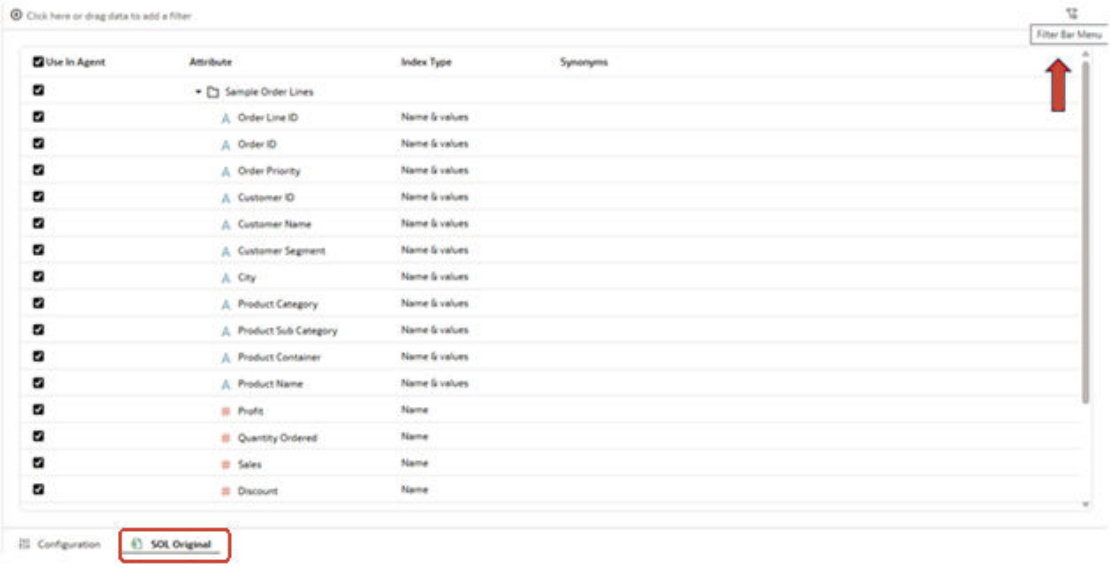
Oracle Analytics Cloud allows one dataset per AI agent. You can use a dataset based on a file, a table, or multi-table from a connection, a local subject area, or subject area.

When you associate a dataset with an AI agent, you must ensure the dataset is indexed for use with the Oracle Analytics AI Assistant. See Make Data Available for Oracle Analytics AI Assistant for more information on making data available for the Oracle Analytics AI Assistant.



In the AI agent editor, you can preview the dataset's metadata, which includes the full list of available columns and the Index Type and Synonyms configured for each column. Use this editor to select a subset of columns and define agent specific filters.

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Column Subsetting

You can activate or deactivate any indexed column to control which fields the agent can reference when answering questions. If a user asks about a column that isn't activated, the Oracle Analytics AI Assistant won't respond using that data. Columns that aren't indexed in the dataset can't be enabled for the agent and won't be available for selection.

Agent Filters

You can define data filters specific to the agent. These filters are automatically applied to all user questions processed by the agent and can't be overridden by consumers. This ensures that all interactions remain within the intended data scope.

About Supplemental Instructions in an Oracle Analytics AI Agent

Supplemental instructions play a crucial role in shaping how an AI agent interprets user questions and behaves within a specific business context.

Datasets and knowledge documents provide factual information. Supplemental instructions define the logic, expectations, and interpretation rules that guide the Oracle Analytics AI Assistant's reasoning. They act as the agent's operating manual by reducing ambiguity, minimizing hallucinations, and ensuring that responses align with your organization's terminology, standards, and domain logic rather than generic AI assumptions.

Custom supplemental instructions currently support up to 6,000 characters per agent.

Oracle recommends using the following structure for your supplemental instructions.

1. **Intent / Objective**
   Describe when the rule applies or what it is intended to achieve. For example, `Apply this rule when a user asks about Important Orders or Regular Orders.`
2. **Definition / Use Case Description**
   Specify how the agent should interpret or classify the concept. For example, `Use the following mapping: 'Low, Medium, Not Specified' = Regular Orders; 'High, Critical' = Important Orders.`
3. **Examples / Rules / Conditions**

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List the triggers, keywords, or conditions that determine when the rule should be executed. For example `When terms like ‘important,’ ‘regular,’ or ‘priority comparison’ appear, apply the above Order Priority mapping.`

Using this structure ensures your instructions are unambiguous and makes it easier for the AI agent to understand business intent and deliver accurate, context-aware responses.

About Knowledge Documents Used in an Oracle Analytics AI Agent

Knowledge documents allow you to provide internal information such as process documentation, enterprise policies, competitive insights, market data, budgets, objectives, or other domain-specific knowledge.

Your content remains private within your Oracle Analytics instance and is used solely to enrich Oracle Analytics AI Assistant prompts so the agent can produce more precise answers. After you upload knowledge documents, they are parsed and vectorized. A query retrieves and adds only the most relevant portions to the prompt, ensuring that responses remain accurate and contextually aligned.

You must save the agent once before you can upload knowledge documents. As you upload documents, an indexing process is initiated. Your document is ready for use by the agent once its status on the list shows it as ready.

You can use documents written in English and other supported languages. Text-heavy documents with clear punctuation are preferred. Avoid primarily tabular data, which is more difficult to split and vectorize effectively. Watch for conflicting information. If documents contain contradictory facts, for example, one states “return rate objective is 10%,” and another says “5%”, the RAG process may favor whichever information it retrieves first. To ensure reliable answers, avoid or reconcile conflicting information across your documents.

Oracle Analytics Knowledge Document File Considerations

Learn about important file considerations when working with Oracle Analytics knowledge documents, such as supported formats and size limitations.

- You need to save the agent once before uploading a knowledge document.
- PDF and TXT files are supported.
- Images inside documents aren’t supported and are ignored.
- You can upload up to 10 knowledge document files to each agent. Each file must be under 5 MB.
- Upload your files as-is. There’s no need to reformat your files for use with an agent.

Upload a Knowledge Document to an AI Agent

Learn how to upload a knowledge document to an AI agent to enhance its ability to provide accurate and relevant answers.

1. On your home page, find the agent you want to add a knowledge document.
2. Hover over the agent, click **Actions**, and then click **Open**.
3. Click **Edit the Agent**.
4. Click **Upload new document**. Navigate to the PDF or txt file you wish to upload and click **Open**.
5. Enter a title for the document then click **Save**.

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Once uploaded, the document will display an indexing status, indicating that the system is processing and preparing the document for use. Wait a few seconds for the indexing process to complete.You can refresh the page or panel to update the document's status. The status will change to Ready once indexing is finished.

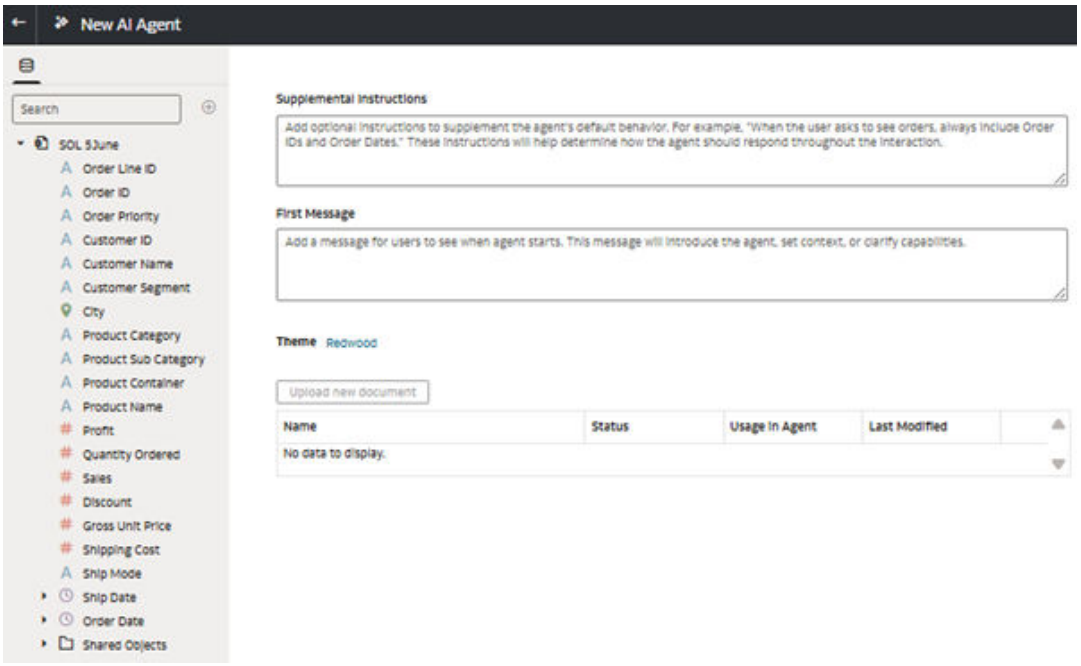
6. Once your document is indexed and ready, you can interact with it in the following ways:
   - Edit: Modify the document's title as needed.
   - Replace: Upload a new document to replace the existing one.
   - Download: Retrieve a copy of the uploaded document.
   - Delete: Remove the document from the knowledge base.

Create an Oracle Analytics AI Agent

When you create an AI Agent in Oracle Analytics, you bring together a dataset, a set of custom instructions to be passed to the Oracle Analytics AI Assistant, and specific knowledge documentation.

Ensure that your administrator has managed permissions related to AI agent use and configuration. See: Enable Users to Create AI Agents in Oracle Analytics.

1. On your Home Page, click **Create** then click **AI Agent**.



2. Select a dataset then click **Add to Agent**.
3. Configure the agent on the New AI Agent screen. Enter supplemental instructions, then click **Save**.
4. Enter a name for the agent, and optionally enter a description, then click **OK**.
5. Upload one or more knowledge documents.
6. Click **Save**.

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7. Click Preview  to run the agent. Enter test prompts and verify that the AI agent returns expected results.

You can share the AI agent with a specific set of users. See Control Access to Oracle Analytics AI Agents.

Make an Oracle Analytics AI Agent Available to a Workbook

When you enable an AI agent in a workbook, users with access to the workbook can access and interact with the AI agent. For example, users might use an AI agent within the context of a workbook to obtain quick clarifications, follow-up answers, and drill-down insights within the context of the analytics content they're exploring.

Topics:

- Attach an Oracle Analytics AI Agent to a Workbook
- Enable an Oracle Analytics AI Agent

Attach an Oracle Analytics AI Agent to a Workbook

Learn how to associate an Oracle Analytics AI Agent with a workbook to enable automated insights and enhanced data interaction.

1. On your home page, hover over the workbook where you want to enable the agent, **Actions**, and then click **Open**.
2. Click the Visualize tab, then click **Auto Insights**  .
3. Click the Assistant tab, then **AI Agents**  .
4. Click the name of the agent, click **OK**, then **Save**.

Enable an Oracle Analytics AI Agent

To make an AI agent available to consumers, the author must enable the Workbook Assistant through the Present Mode configuration.

Once an author enables the Workbook Assistant, the attached agent is enabled by default. For details, see Specify Workbook Assistant Data Source.

> **Note**
>
> Oracle Analytics AI Agents are available to end users only when dashboards are accessed in Present Mode. This configuration is intended for dashboard consumers, enabling authors to design dashboards and attach Agents specifically for the end-user experience. Authors will continue to leverage the dataset associated with the workbook while interacting with Oracle Analytics AI Assistant and not the AI agent.

Modify an Oracle Analytics AI Agent

You can update and extend an AI agent at any time. For example, you might modify the agent dataset definition, edit the supplementary instructions, fine-tune the start up message, add or update knowledge documents, and so on.

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1. On your home page, hover over the agent you want to edit, click **Actions**, and then click **Open**.
2. Click **Edit the Agent**.
3. Modify the details of the agent as needed, then click **Save**.
4. Click Preview  to run the agent. Enter test prompts and verify that the AI agent returns expected results.
5. If needed, make further edits, preview the changes, and test the AI agent again.

Delete an Oracle Analytics AI Agent

Learn how to permanently delete an AI agent in Oracle Analytics, ensuring that related data and schedules are no longer active.

1. On your home page, find the agent you want to edit.
2. Hover over the agent, click **Actions**, and then click **Delete**.

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13

Filter Data

Use filters in Oracle Analytics to focus the data in your workbooks and create an effective and interactive experience for your consumers.

Topics:

- About Filters
- How Do Filters Limit Each Other?
- Filter Properties
- Filter Personalizations and Workbook States
- Use the Filter Bar
- Dashboard Filters
- Visualization Filters
- Filter Groups (Preview)
- Selection Steps
- Change the Filter Type
- Top Bottom N Filters
- Create an Expression Filter
- Exclude Selected Filter Values
- Include Null Filter Values
- Disable Multi Select for Filters
- Disable a Filter or Selection Step

About Filters

Filters reduce the amount of data shown in visualizations. Oracle Analytics lets you filter the data in your workbooks in many different ways and configure the filter properties to customize the experience for your consumers.

Topics:

- Filter Scopes
- Filter Types
- How the Number of Datasets Affects Filters
- Ways to Use Parameters with Filters

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Filter Scopes

You can apply filters at different scopes in your workbook in Oracle Analytics, from broadly filtering the entire workbook down to filtering a single visualization on a canvas.

You can apply filters at the following scopes:

- **Workbook** - A workbook filter is pinned in the filter bar and applies to all canvases in the workbook. See Use the Filter Bar.
- **Canvas** - There are two types of filters you can use for a canvas:
  - A canvas filter is unpinned in the filter bar and applies only to a single canvas in the workbook. See Use the Filter Bar.
  - A dashboard filter is used directly on a canvas to enable consumers to interact with and filter data on the canvas. See Dashboard Filters.
- **Visualization** - A visualization filter is used directly on a visualization and applies only to that visualization. See Visualization Filters.

Filter Types

Oracle Analytics supports many different types of filters that you can use depending on the filter scope and the data element you're using to filter.

Filter Type	Description
List	A list filter can be applied to data elements that are text and date data types, and number data types that can't be aggregated. A list filter provides a simple list of values to choose from and lets you see which values are selected and which aren't. They work well for attributes with a long list of values. **Availability:** List filters are available for all filter scopes. **Properties:** • **Multi Select** • **Default Value** • **Exclude** • **Nulls** • **Disable** • **Selection Parameter Binding** • **Excludes Mode Parameter Binding** For more information about these properties, see Dashboard Filter Control Properties. **Limitations:** While list filters don’t have a limit to the number of values they can display, performance can decline if more than 10,000 values are selected.

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Filter Type	Description
List box	A list box filter is similar to a list filter and can be applied to text, uncountable values, and dates. It also provides a simple list of values but only lets you select one or All. **Availability:** List box filters are available only for dashboard filters. **Properties:** • **Custom Values** • **Default Value** • **Exclude** • **Nulls** • **Selection Parameter Binding** • **Excludes Mode Parameter Binding** For more information about these properties, see Dashboard Filter Control Properties. **Limitations:** • You can't disable a list box filter. • Multi Select isn't available for list box filters.
Checkbox / Radio Button	A checkbox or radio button filter can be applied to text, uncountable values, and dates. When Multi Select is on, the filter uses a checkbox, and when it's off, the filter uses a radio button. **Availability:** Checkbox or radio button filters are available only for dashboard filters. **Properties:** • **Multi Select** • **Default Value** • **Exclude** • **Nulls** • **Visible Values** • **Selection Parameter Binding** • **Excludes Mode Parameter Binding** For more information about these properties, see Dashboard Filter Control Properties. **Limitations:** • By default, this filter type is optimized to display only the first 50 data values. For a filter column with more than 50 values, Oracle recommends that you use a different filter type, for example a list box filter. • You can't disable a checkbox or radio button filter.
Top Bottom N	A top bottom N filter can be applied to measure and attribute data elements. For example, you might filter a visualization by the top 10 customers based on sales. **Availability:** Top bottom N filters are available for all filter scopes. For more information on how to use top bottom N filters, see Top Bottom N Filters. **Properties:** • **Method** - Specifies whether to filter by Top (highest values) or Bottom (lowest values). • **Count** - Specifies the number of values to display. • **By** - Specifies which measure or attribute to limit by.

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Filter Type	Description
Range	A range filter can be generated for data elements that are number data types and that have an aggregation rule set to something other than none. Range filters are applied to data elements that are measures, and that limit data to a range of contiguous values, such as revenue of $100,000 to $500,000. Or you can create a range filter that excludes (as opposed to includes) a contiguous range of values. Such exclusive filters limit data to noncontiguous ranges (for example, revenue less than $100,000 or greater than $500,000). **Availability:** Range filters are available for all filter scopes. **Properties:** • **Start** - Specifies the minimum value. • **End** - Specifies the maximum value. • **By** - Specifies which measure or attribute to limit by.
Date Range	A date range filter uses calendar controls to adjust time or date selections to limit data to a specific period of time. You can either select a single contiguous range of dates, or you can use a date range filter to exclude dates within the specified range. **Availability:** Date range filters are available for all filter scopes. **Properties:** • **Range** - Requires a start and end date to filter on. • **Start at** - Requires only a start date to filter from. • **End at** - Requires only an end date to filter to. • **Equal** - Requires a specific date to filter on.
Relative Time	A relative time filter focuses on values for a specified time period relative to today or end of last period. For example, you can focus on the last three years, the next three years, or year to date through the last fiscal period. The current date and time used in queries is the Oracle Analytics server host's date and time in the server's timezone (not the browser host's time or timezone). **Availability:** Relative time filters are available for all filter scopes. **Properties:** • **Type** - Specifies whether the filter is relative to a past or future time period, or to today's date. – **Last** - Uses the Increment and Time Level values to specify a time period up to either today's date or the end of the last period. Last filters that are based on a DateTime column and which have a grain of Day or longer (for example, Year, Quarter, Month, Week, Day), retrieve data from the same time of day on the starting day. For example, if the server date/time is currently Thursday 3:15pm , a Last 2 Days filter on a DateTime column retrieves data with timestamps between Tuesday 3:15pm and Thursday 3:15pm in the server's timezone. Filter queries that are based on a Date column (which by definition have no time of day associated) only depend on the server host's date, not the time of day. – **Next** - Uses the Increment and Time Level values to specify a time period after either today's date or the start of the next period. – **To Date** - Use the Time Level value to specify the time period from the beginning of the Time Level value up to today's date. For example, Month to Date retrieves data from midnight of the first day of this month up until the current date and time (that is, Today). • **Increment** - Specifies the increment of the unit of time to use for the filter. • **Time Level** - Specifies the unit of time to use for the filter. • **Relative To** - Specifies whether the filtered data is relative to Today, Start of Next Period, or End of Last Period. **Limitations:** You can apply a relative time filter only to date columns that already exist in the data source, not to derived columns such as Year, or Quarter. The relative time filter type supports Date and DateTime column types.

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Filter Type	Description
Slider	A slider filter can be used to animate visualizations and show dynamically how your data changes over a given dimension such as time. A slider filter can be applied to text, uncountable values, and dates. **Availability:** Slider filters are only available for dashboard filters. See Filter and Animate Visualizations Using a Slider Dashboard Filter. **Properties:** • Font - Value and Label • Auto Play - On, Off, Speed, and Repeat For more information about these properties, see Dashboard Filter Control Properties. **Limitations:** • You can't disable a slider filter. • Parameter binding isn't available for slider filters.

To change the filter type of an existing filter, see Change the Filter Type.

The following filter options are also available in Oracle Analytics:

- **Expression Filter** - An expression filter lets you define more complex filters using SQL expressions. See Create an Expression Filter.
- **Use as Filter** - A visualization can be used to filter other visualizations on the same canvas. See Use a Visualization as a Filter.
- **Selection Steps** - Selection steps let you filter hierarchical columns in visualizations to refine the data displayed. See Selection Steps.

How the Number of Datasets Affects Filters

Filters can interact differently with visualizations depending on the number of datasets and whether the datasets are joined.

If there's a single dataset in a workbook, and you add a filter, there are no restrictions on which data the filter applies to.

If a workbook contains multiple datasets, make sure that they're joined if you want to use data elements from one dataset as filters in your workbook. Filters based on data elements from one dataset don't work on visualizations using data from another dataset if the datasets aren't joined.

Ways to Use Parameters with Filters

In Oracle Analytics, you can use parameters and filters together to dynamically manipulate the data in your workbook.

Use parameters and filters together in the following ways:

- Bind a parameter to a filter to pass a selected filter value to the parameter everywhere it's used in the workbook. See Bind Parameters to Filters.
- Add a parameter to the filter bar to set the parameter value for the workbook or canvas. See Use a Parameter in the Filter Bar.
- Add a parameter to a dashboard filter visualization as a filter control. See Use a Parameter as a Dashboard Filter Control.

If you use a parameter as a filter, keep in mind that parameters have a limit of 10,000 available values that can be cached and also a limit of 1,000 initial values.

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You can also use a parameter and a filter together to conditionally show or hide visualizations on a canvas based on a user's selections. See Use a Parameter to Conditionally Show or Hide a Visualization.

How Do Filters Limit Each Other?

The topics in this section explain how different filters limit each other in workbooks in Oracle Analytics.

Topics:

- About the Limit Values Settings for Filters
- Specify Limit Values By for the Filter Bar
- Specify Limit Values for Workbook and Canvas Filters
- Specify Limit Values By for Dashboard Filters
- Specify Limit Values for Visualization Filters
- Specify Which Filters to Apply to a Visualization
- Apply a Dashboard Filter to Visualizations on the Canvas
- Example – Change the Limit Values Setting for a Canvas Filter
- Example – Change the Limit Values Setting for a Dashboard Filter
- Example – Change the Limit Values Setting for a Visualization Filter

About the Limit Values Settings for Filters

In Oracle Analytics, the selections you make for one filter can impact the values available to select from for other filters on your canvas. The impact depends on the filter's location and the Limit Values settings.

The Limit Values settings in a workbook operate based on filter location rather than filter scope. The filter location is where the filter is added in the workbook, whereas the filter scope is the range of data the filter acts on. Filters in higher locations normally limit filters in lower locations.

The filter locations in a workbook, listed from highest to lowest, are:

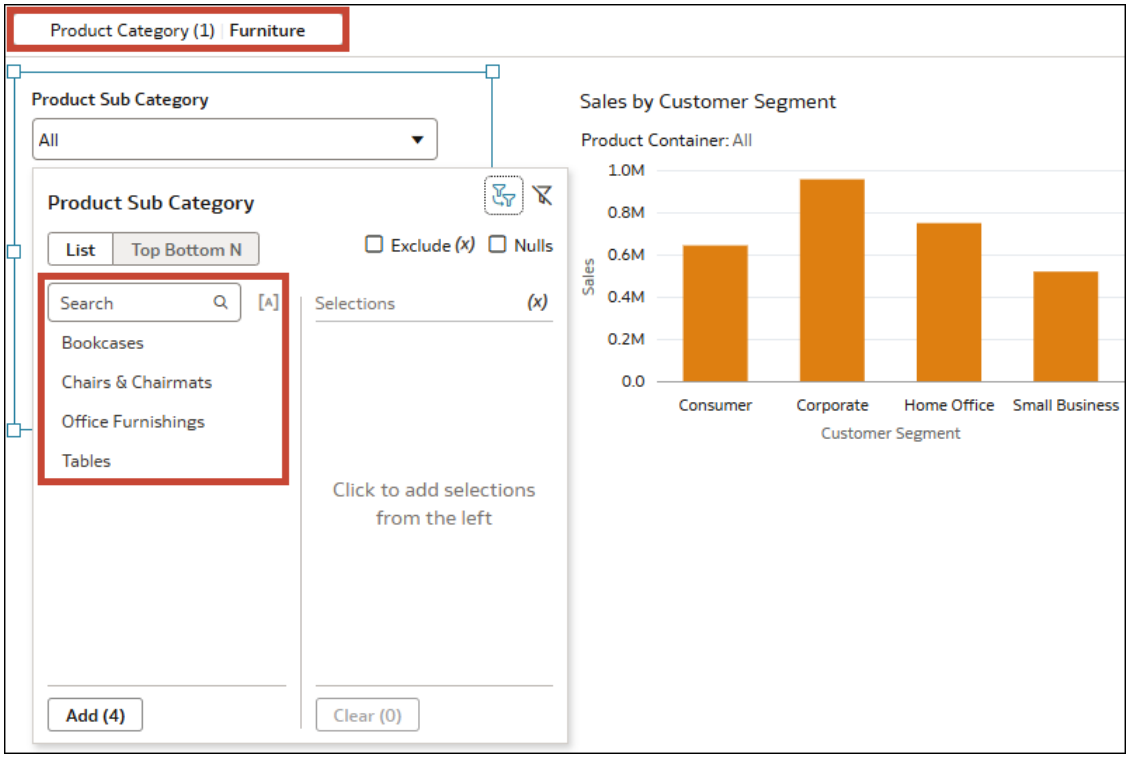
1. Filter bar
2. Dashboard filters visualizations
3. Individual visualizations (for visualization filters)

For information about filter scopes, see Filter Scopes.

For example, you can filter a visualization that shows Sales by Customer Segment using filters in the three different filter locations. You add a filter in the filter bar using the column Product Category, a dashboard filter on your canvas with the column Product Sub Category as the filter control, and a visualization filter on the visualization itself using the column Product Container.

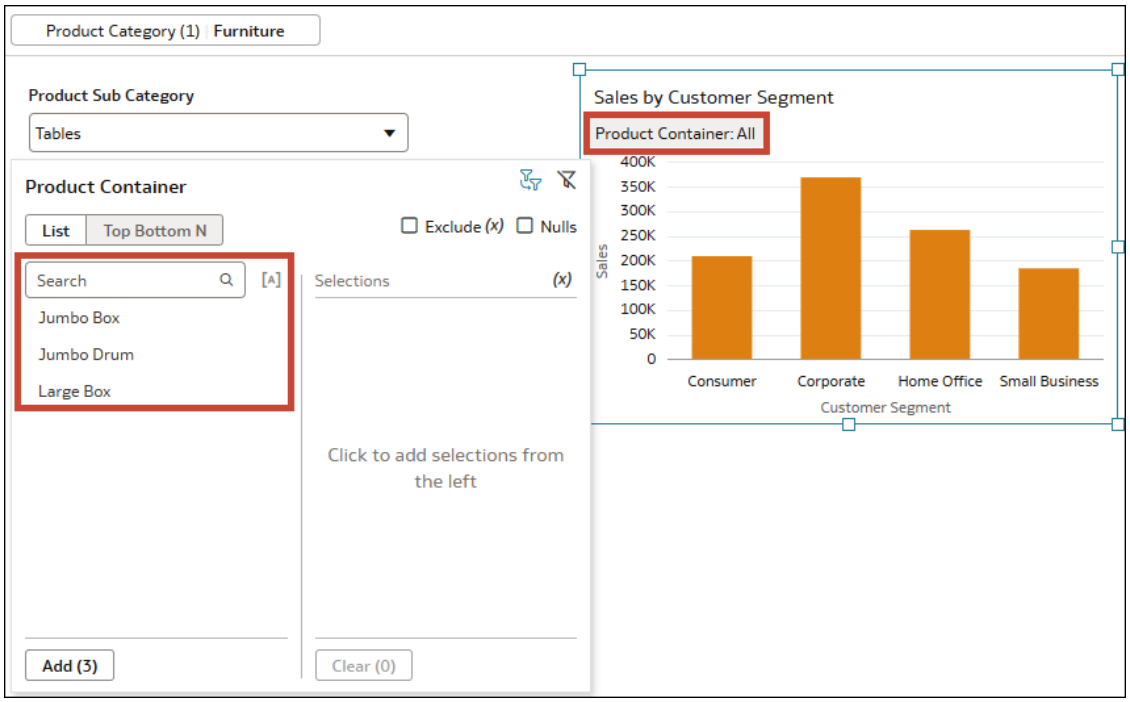
If you select Furniture in your Product Category filter, the values available to select from for Product Sub Category are limited to only those product subcategories that fall in the Furniture product category.

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The values available to select from for Product Container are also limited to only those that fall in the Furniture product category.

If you then select Tables for Product Sub Category, the values for Product Container are further limited to only those used for that product subcategory.



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Default Filter Behavior

The default behavior in a workbook for filters from the same dataset or subject area is as follows:

- The selections you make for a filter limit the values of any other filters in lower locations.
- The selections you make for a filter also limit the values of any other filters in the same location, regardless of filter scope.
  In the filter bar, this means that selections for canvas filters can limit workbook filter values. In a dashboard filter, the selections for one dashboard filter control can limit any other dashboard filter controls. If there's more than one visualization filter on a visualization, the selections for one can limit the others.
- If you add a visualization filter on a dashboard filters visualization, that filter limits the values for the dashboard filter controls.

> **Note**
>
> Administrators can change this default behavior by configuring the system setting **Default Limit Values By for Filters**. See Default Limit Values By for Filter. Ask your administrator what this system setting is set to before you configure any limit values settings within your workbook.

Limit Values Settings

As an author, you can change the default filter behavior on your canvas by configuring the following settings:

- The **Limit Values By** property in the Filter Bar Menu applies to all items in the filter bar. See Specify Limit Values By for the Filter Bar.
- The **Limit Values** setting in the Filter dialog for individual workbook, canvas, and visualization filters applies to only that filter. See Specify Limit Values for Workbook and Canvas Filters and Specify Limit Values for Visualization Filters.
- The **Limit Values By** property for dashboard filters applies to only the selected dashboard filter control. See Specify Limit Values By for Dashboard Filters.
- The **Filter This Viz By** property for an individual visualization, including dashboard filters visualizations, lets you prevent filters from a higher location from affecting the filters in the visualization. See Specify Which Filters to Apply to a Visualization.

Configuring Limit Values settings isn't supported for Top Bottom N filters.

Specify Limit Values By for the Filter Bar

Configure the **Limit Values By** setting for the filter bar to specify how any workbook filters, canvas filters, and selection steps in the filter bar get their selection values.

This setting doesn't apply to parameters in the filter bar.

The options for the **Limit Values By** setting in the Filter Bar Menu are:

- **Default** – Uses the system setting configured by your administrator.
- **Auto** – Limits the filters in the filter bar by the other filters in the filter bar, based on drill path and regardless of scope.
- **None** – Prevents all filters in the filter bar from limiting each other.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Filter Bar Menu**, then hover over **Limit Values By** .
3. Click an option to select it.
4. Click **Save**.

Specify Limit Values for Workbook and Canvas Filters

Configure the **Limit Values** setting for individual workbook filters and canvas filters in the filter bar to specify how the filter gets its selection values.

The options for this **Limit Values** setting are:

- **Default** - For a workbook (pinned) or canvas (unpinned) filter, uses the **Limit Values By** setting from the Filter Bar Menu.
- **Auto** – Limits the filter's values by the other filters in the filter bar, based on drill path and regardless of scope.
- **None** – Prevents all other filters in the filter bar from limiting the filter's values.
- **Custom** – Lets you choose which filters from the filter bar you want to limit the filter's values by. For a workbook filter, only other workbook filters are available to choose from. It isn't possible to limit a workbook filter by a specific canvas filter because other canvases in the workbook may not use that canvas filter.

To specify the limit values for selection steps, see Specify Limit Values for Selection Steps. To specify the limit values for filter groups, see Specify Limit Values for Filter Groups (Preview).

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the filter to open the Filter dialog.
3. Click **Limit Values** and click an option to select it.
4. Click **Save**.

Specify Limit Values By for Dashboard Filters

Configure the **Limit Values By** setting for individual dashboard filter controls in a dashboard filters visualization to specify how the filter gets its selection values.

The options for this **Limit Values By** setting are:

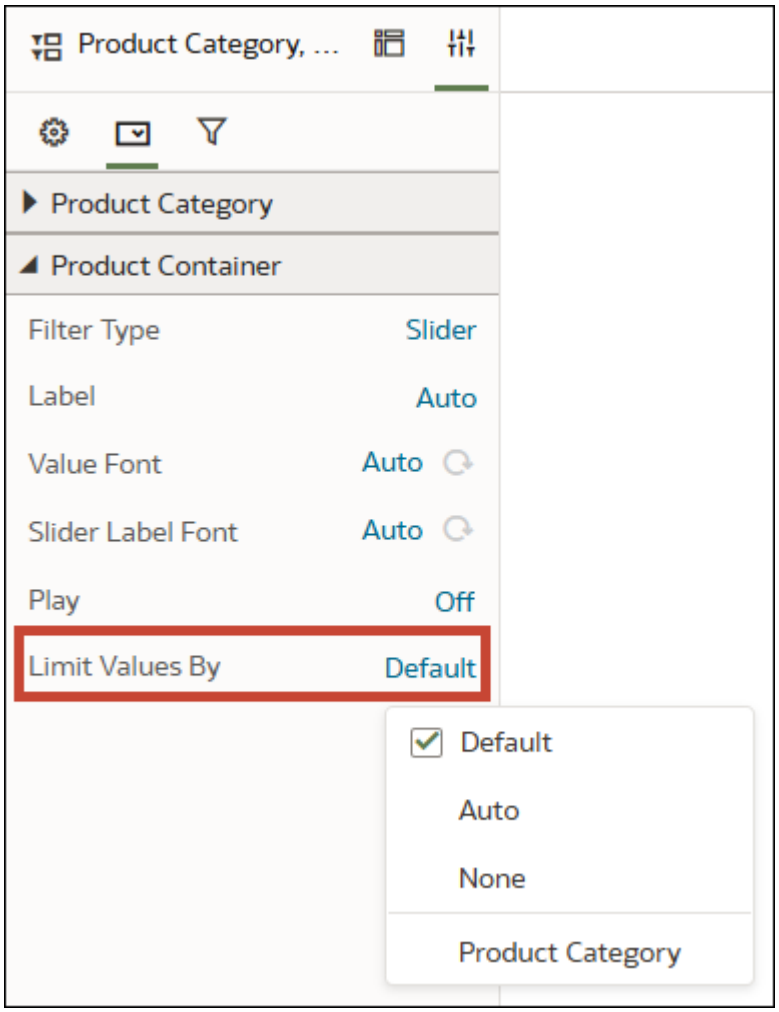
- **Default** - Limits the filter based on the system setting configured by your administrator.
- **Auto** – Limits the filter by all filters in the filter bar. Also limits the filter by other filter controls in the same dashboard filters visualization or in other dashboard filters visualizations on the canvas, providing the other filter controls are on a higher drill path or unrelated by drill path.
- **None** – Prevents all other filter controls in the dashboard filters visualization from limiting the filter's values. The filter is still limited by filters in the filter bar.
- **Custom** – Lets you choose which other dashboard filter controls you want to limit the filter's values by. If there's more than one dashboard filters visualization on the canvas, dashboard filter controls from all are available to choose from. The filter is still limited by filters in the filter bar.

To specify the limit values for selection steps, see Specify Limit Values for Selection Steps.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

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2. Click the dashboard filters visualization to select it.
3. Click **Properties**, then click **Filter Controls**.
4. Expand the filter you want to set the **Limit Values By** for.
5. In the **Limit Values By** row, click **Default** and select how you want to limit the filter's selection values.



6. Click **Save**.

Specify Limit Values for Visualization Filters

Configure the **Limit Values** setting for individual visualization filters to specify how a filter gets its selection values.

The options for this **Limit Values** setting are:

- **Default** - Limits the filter based on the system setting configured by your administrator.
- **Auto** – Limits the filter by all filters in higher locations. Also limits the filter by any other visualization filters on the visualization, providing they're on a higher drill path or unrelated by drill path.
- **None** – Prevents all other visualization filters on the visualization from limiting the filter's values. The filter is still limited by filters in higher locations.

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- **Custom** – Lets you choose which other visualization filters on the visualization you want to limit the filter's values by. The filter is still limited by filters in higher locations.

To specify the limit values for selection steps, see Specify Limit Values for Selection Steps. To specify the limit values for filter groups, see Specify Limit Values for Filter Groups (Preview).

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the filter on the visualization to open the Filter dialog.
3. Click **Limit Values** and click an option to select it.
4. Click **Save**.

Specify Which Filters to Apply to a Visualization

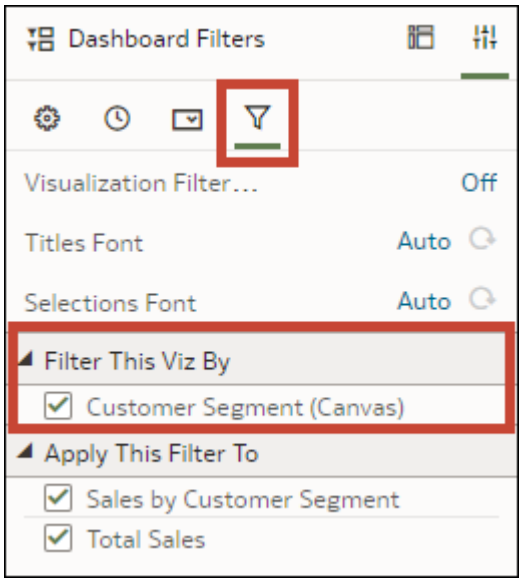
When you add a visualization to a workbook, Oracle Analytics applies all the existing workbook, canvas, and dashboard filters to the visualization. You can use the **Filter This Viz By** property to specify which filters you don't want to apply to a visualization.

This property applies to dashboard filter visualizations too.

You can use this property when you want to stop a filter in a higher location from limiting a dashboard filter or a visualization filter.

Any selection steps or filter groups (preview) that affect the visualization are also available to choose from using this property.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a visualization to select it.
3. Click **Properties** to open the Properties pane, then click **Filters**.
4. In the Filter This Viz By section, deselect the items you don't want to apply to the visualization.



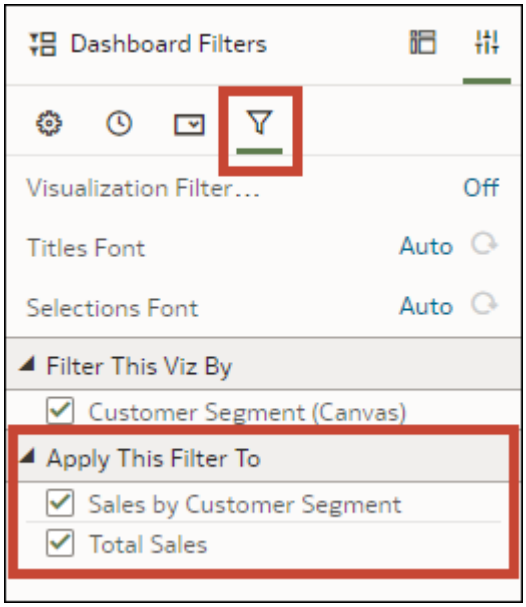
5. Click **Save**.

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Apply a Dashboard Filter to Visualizations on the Canvas

When you add a dashboard filter, Oracle Analytics applies it to all visualizations on the canvas. You can specify which of the visualizations you don't want to apply the dashboard filter to.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the dashboard filters visualization to select it.
3. Click **Properties** to open the Properties pane, then click **Filters**.
4. In the Apply This Filter To section, deselect the visualizations that you don't want the filter to apply to.



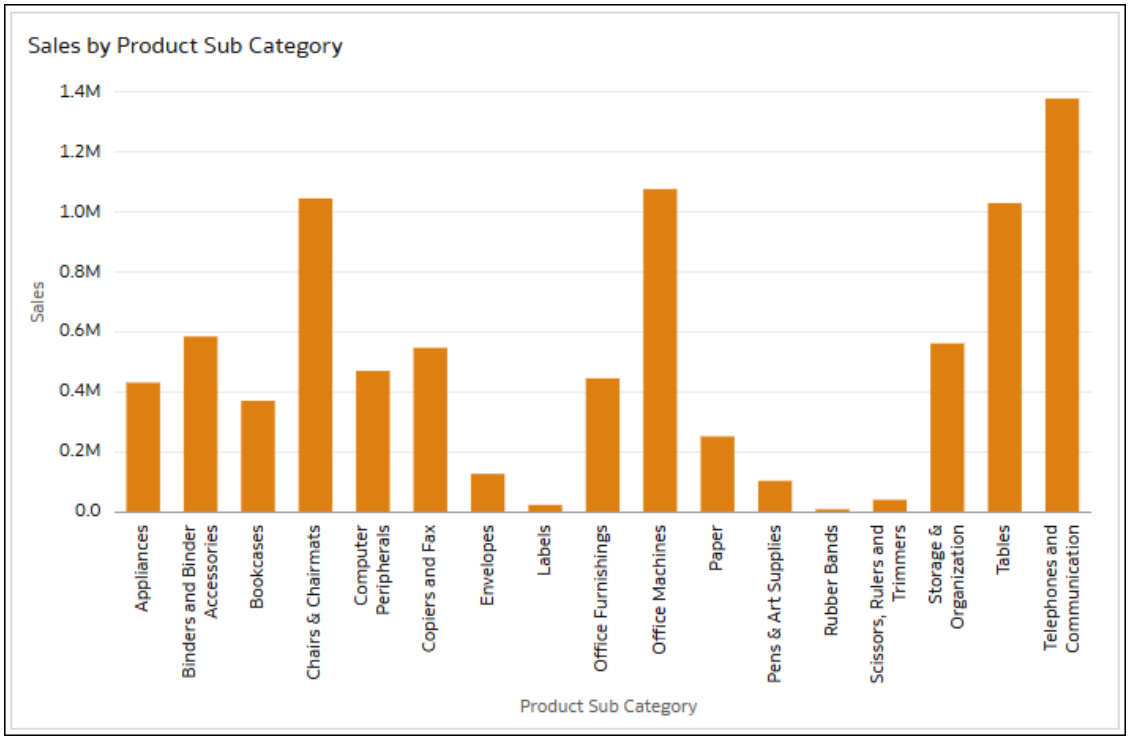
5. Click **Save**.

Example – Change the Limit Values Setting for a Canvas Filter

This example shows how to configure the **Limit Values** setting for a canvas (unpinned) filter in the filter bar.

In this example, you have a bar chart showing Sales by Product Sub Category.

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You add three filters to the filter bar:

1. In the Data pane, expand Ship Date and drag **Ship Date (Year)** to the filter bar.
2. In the filter bar, hover over Ship Date (Year) and click **Pin to All Canvases** to make it a workbook filter.
3. In the Data pane, drag **Ship Date (Quarter)** to the filter bar.
4. In the Data pane, drag **Ship Mode** to the filter bar.

The **Limit Values By** setting for the filter bar is set to **Default**. The **Limit Values** settings for each of these three filters are also set to **Default**.

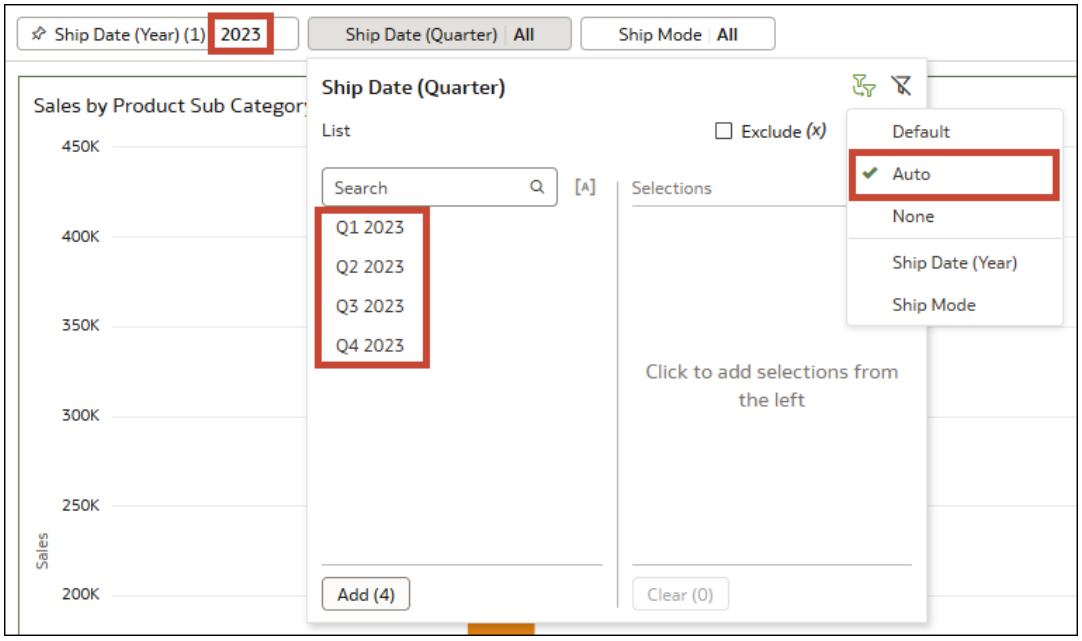
Next, you change the **Limit Values** for Ship Date (Quarter) from **Default** to **Auto**, **None**, and **Custom** to see how that canvas filter is affected each time.

Here's what happens if you change the **Limit Values** setting for Ship Date (Quarter) to **Auto**:

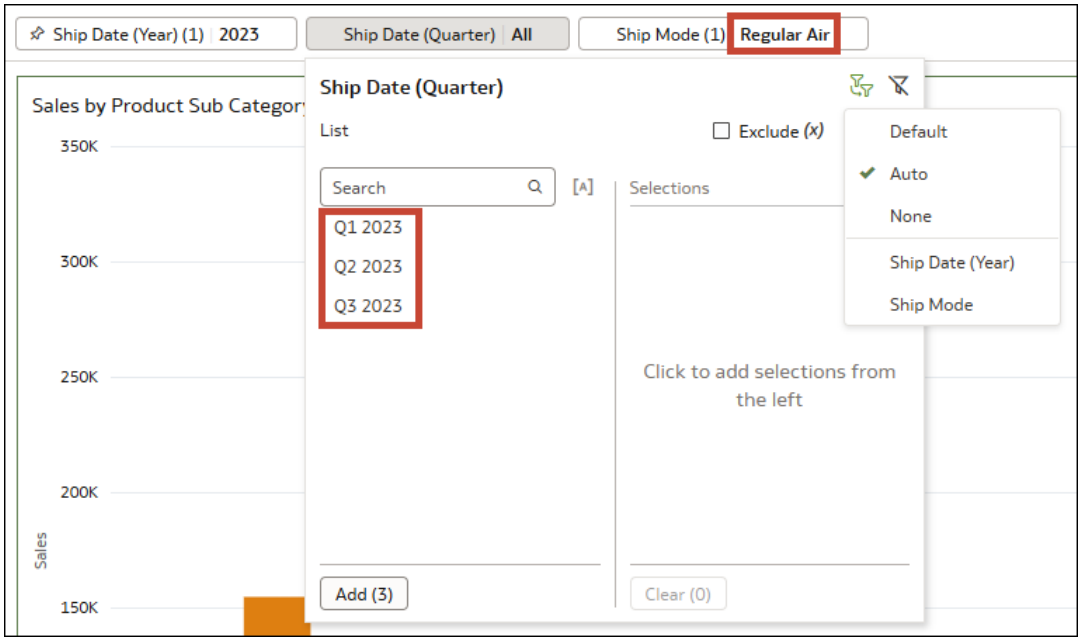
The values available to select from for Ship Date (Quarter) are limited by the selections you make for the workbook filter Ship Date (Year) and by the selections you make for the other canvas filter Ship Mode.

1. Select **2023** for Ship Date (Year). The values available to select for Ship Date (Quarter) are limited to the quarters in 2023.

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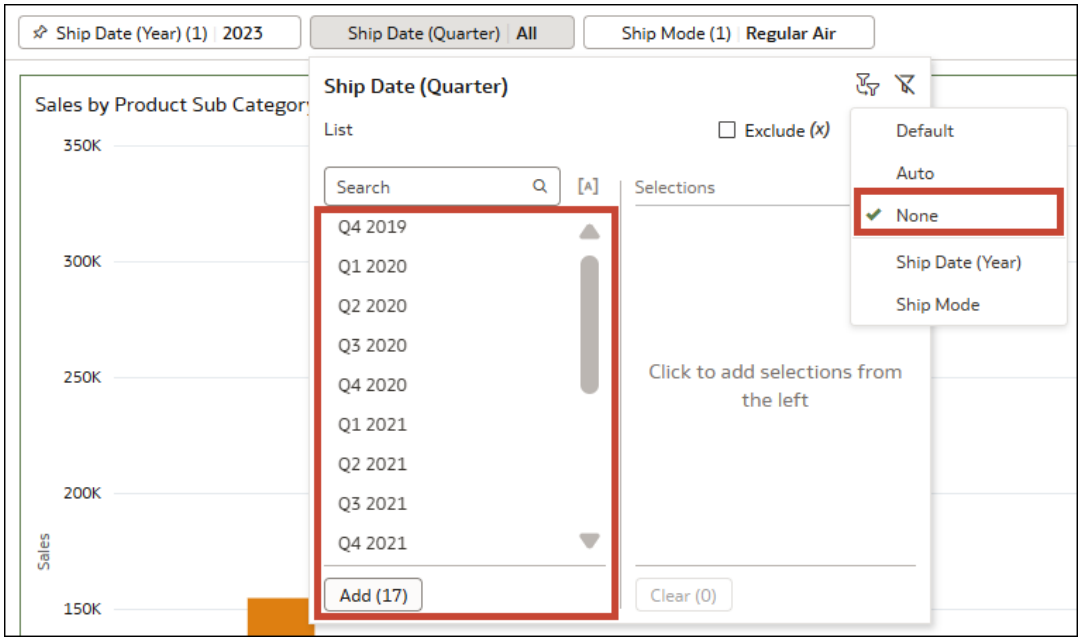
2. Then select **Regular Air** for Ship Mode. The values available to select for Ship Date (Quarter) are now limited to the first three quarters of 2023 because there were no shipments using Regular Air in Q4.



Here's what happens if you change the **Limit Values** setting for Ship Date (Quarter) to **None**:

- All the quarters in the dataset are available to select from for Ship Date (Quarter), regardless of the selections you made for Ship Date (Year) or for Ship Mode.

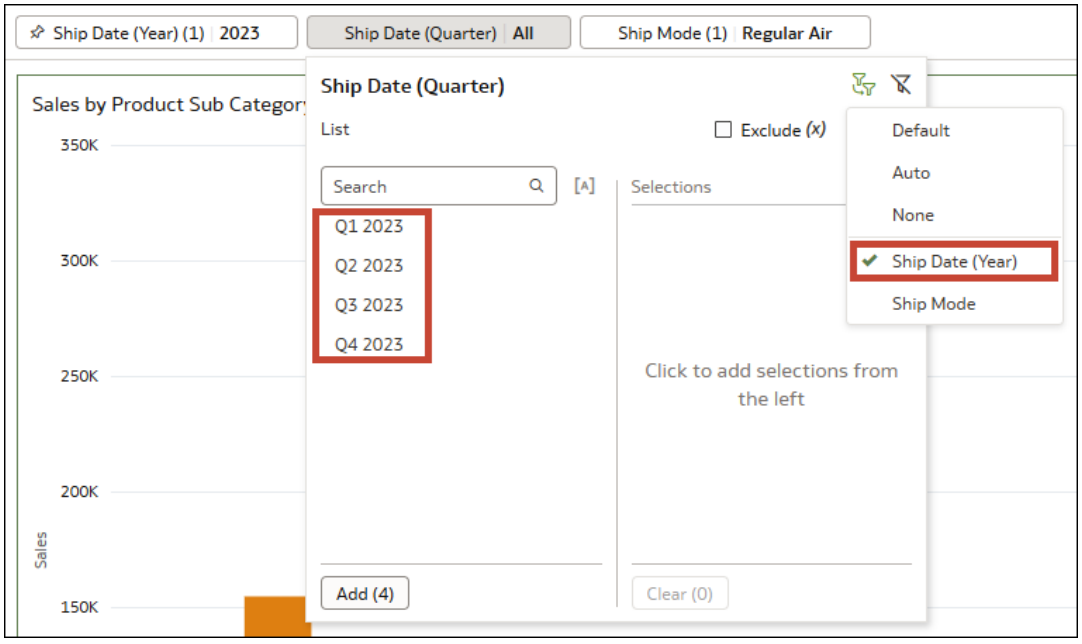
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- All three of the filters in the filter bar apply to the visualization regardless of the Limit Values settings. This means that if you select **Q4 2021** for Ship Date (Quarter), you get a query error and no data displays in the visualization because it's still limited to the first three quarters of 2023.

Here's what happens if you change the **Limit Values** setting for Ship Date (Quarter) to a custom option by selecting **Ship Date (Year)**, which is the workbook filter:

- The values available to select for Ship Date (Quarter) are limited by the selection you made for Ship Date (Year) but not by the selection you made for Ship Mode. All four quarters of 2023 are available because the Ship Mode filter selection of Regular Air is ignored.



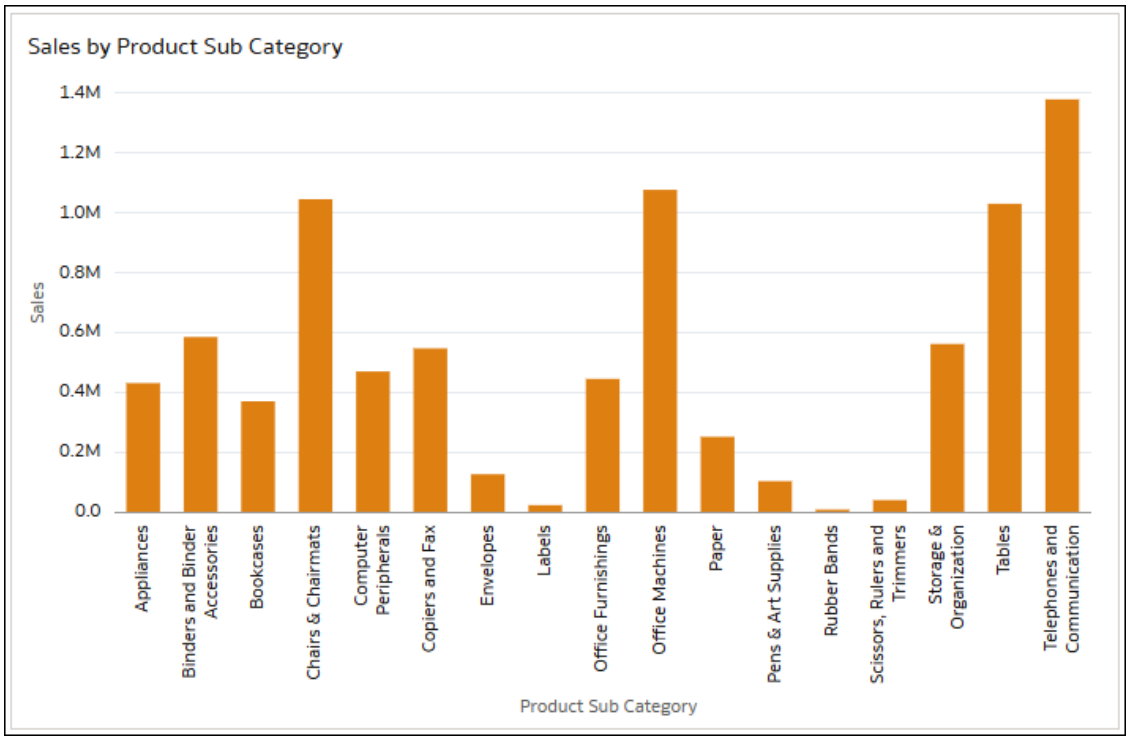
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- In this scenario, while the canvas filter Ship Date (Quarter) is only limited by Ship Date (Year), all three filters still apply to the visualization itself. This means that if you select **Q4 2023** for Ship Date (Quarter), no data displays in the visualization because there were no shipments using the ship mode Regular Air in that quarter.

Example – Change the Limit Values Setting for a Dashboard Filter

This example shows how to configure the **Limit Values** setting for a dashboard filter.

In this example, you have a bar chart showing Sales by Product Sub Category.



You create three filters:

1. In the Data pane, drag **City** to the filter bar.
2. Click **Visualizations** and drag **Dashboard Filters** to your canvas.
3. Click **Data** and drag **Product Category** and **Product Container** to the dashboard filters visualization.

The **Limit Values By** setting for the filter bar is set to **Default**. The **Limit Values** settings for each of these three filters are also set to **Default**.

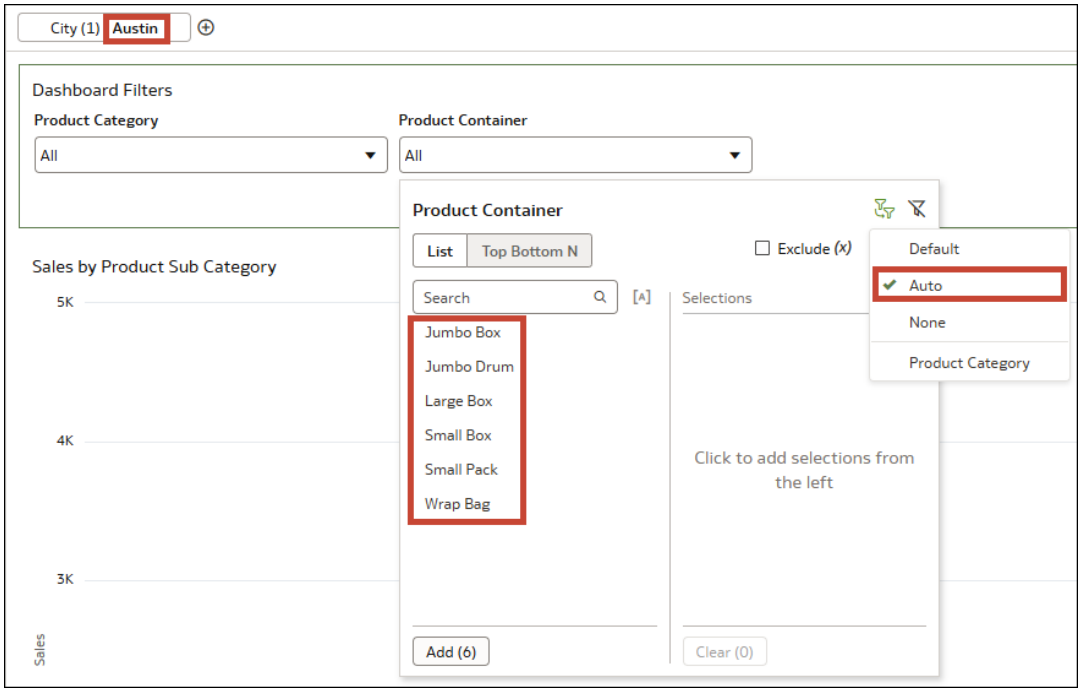
Next, you change the **Limit Values** for Product Container from **Default** to **Auto**, **None**, and **Custom** to see how that dashboard filter is affected each time.

Here's what happens if you change the **Limit Values** setting for Product Container to **Auto**:

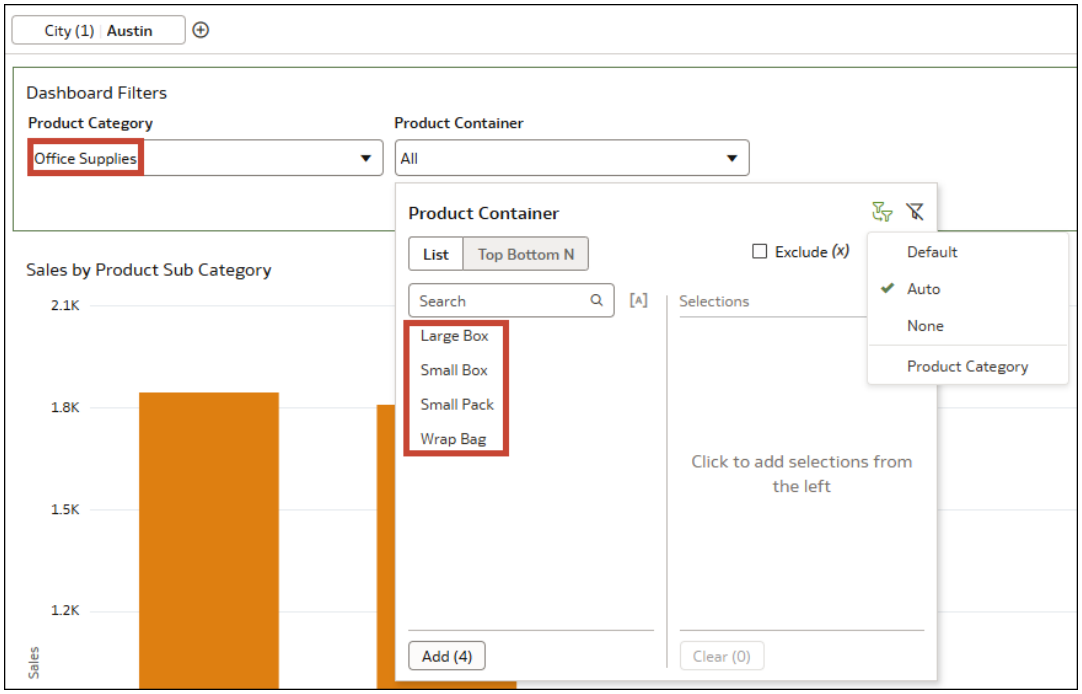
The values available to select from for Product Container are limited by the selections you make for the canvas filter City and by the selections you make for the other dashboard filter control Product Category.

1. Select **Austin** for City. There are only six values available to select for Product Container because the container Medium Box isn't used for that city.

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2. Then select **Office Supplies** for Product Category. The values available to select for Product Container are further reduced to just four, those that are used for office supplies in Austin.

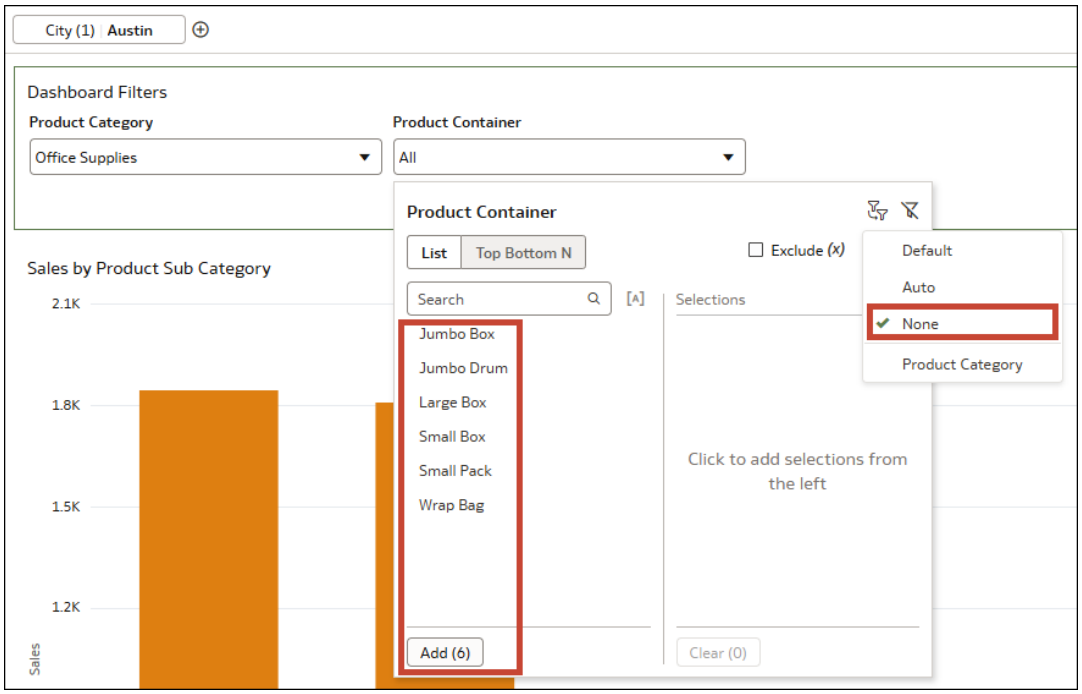


Here's what happens if you change the **Limit Values** setting for Product Container to **None**:

- The values available to select from for Product Container are only limited by the selection you made for the canvas filter City. All six of the Product Containers associated with Austin

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are now available. Even though you have Office Supplies selected for Product Category, that selection has no impact on the Product Container filter.

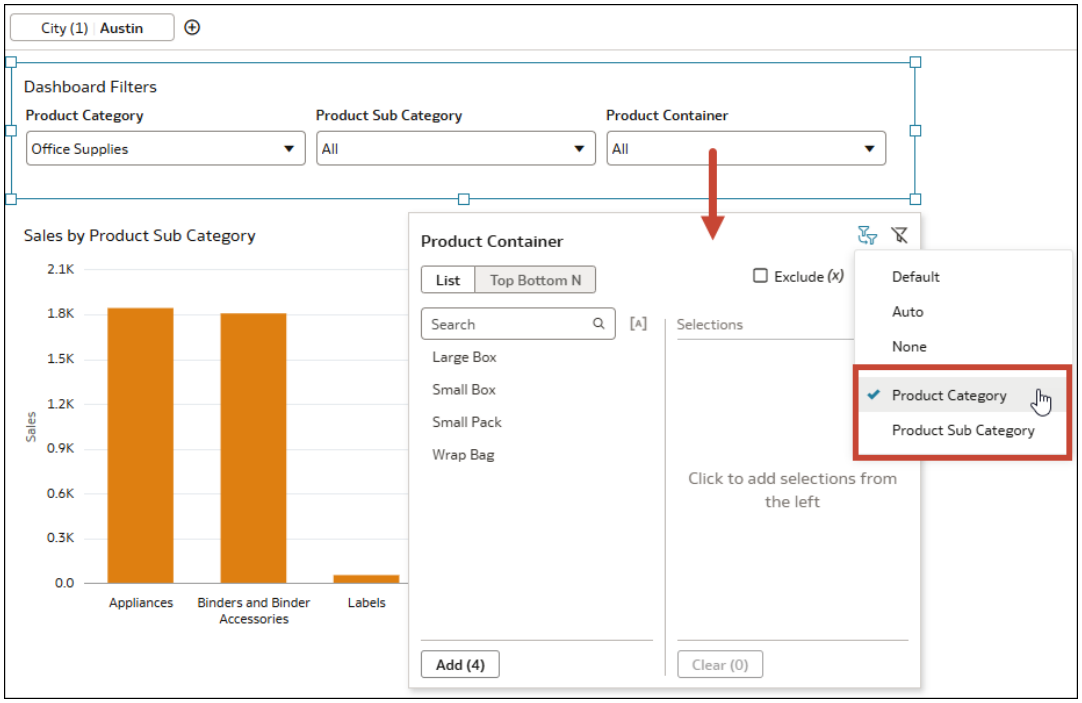


- In this scenario, while the Product Container filter is limited only by the City filter (because it's in a higher filter location), all three filters still apply to the visualization itself. This means that if you select Jumbo Box, no data displays in the visualization because that product container isn't used for office supplies in Austin.

Here's what happens if you change the **Limit Values** setting for Product Container to **Custom**:

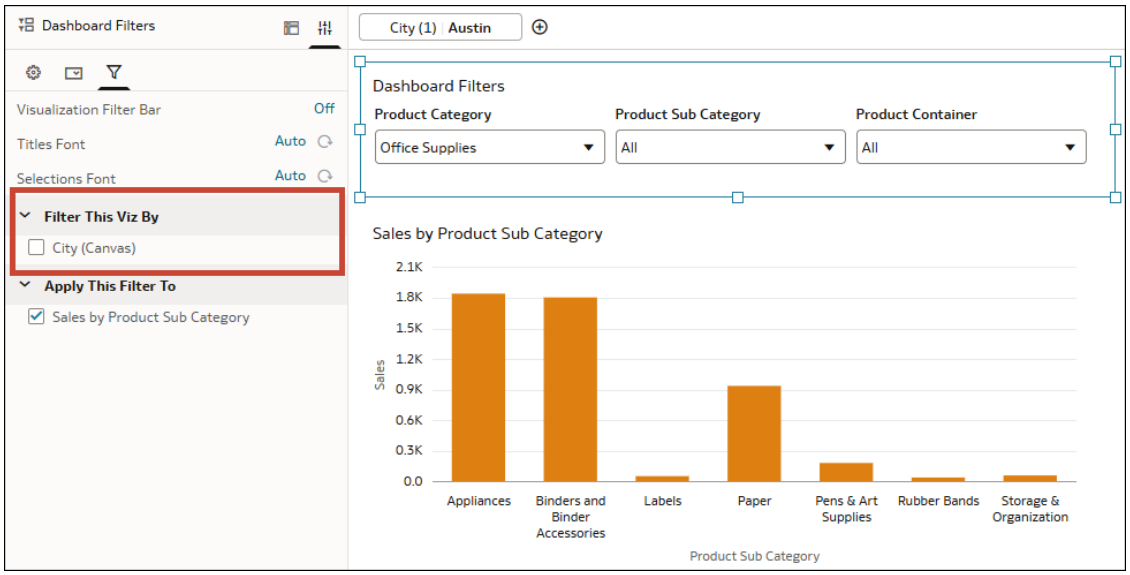
- This option is most useful if you have more than two filter controls in your dashboard filter, and you want to choose exactly which ones to limit Product Container by.
- If you add a third filter control using the column Product Sub Category, you can configure the **Limit Values** setting for Product Container to be limited by only Product Category or by only Product Sub Category, instead of both (Default and Auto) or neither (None).

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- Product Container is still limited by City.

If you want to stop the City filter from limiting the dashboard filters, you need to go to the Filters tab in the Properties pane for the dashboard filters visualization. Then, under **Filter This Viz By**, deselect **City (Canvas)**.

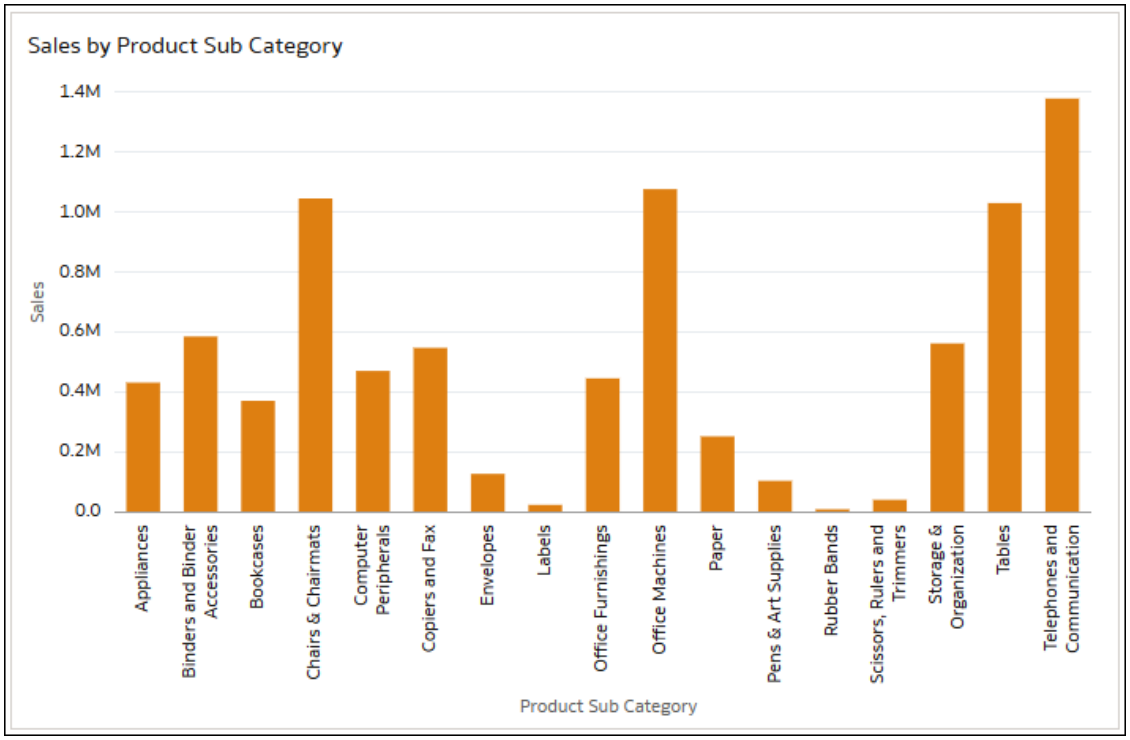


Example – Change the Limit Values Setting for a Visualization Filter

This example shows how to configure the **Limit Values** setting for a visualization filter.

In this example, you have a bar chart showing Sales by Product Sub Category.

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You create four filters:

1. In the Data pane, drag **City** to the filter bar.
2. Click **Visualizations** and drag **Dashboard Filters** to your canvas.
3. Click **Data** and drag **Ship Date (Year)** to the dashboard filters visualization.
4. Click the bar chart visualization to select it.
5. In the Data pane, drag **Product Sub Category** and **Product Container** to **Filters** in the Grammar pane.

The **Limit Values By** setting for the filter bar is set to **Default**. The **Limit Values** settings for each of these four filters are also set to **Default**.

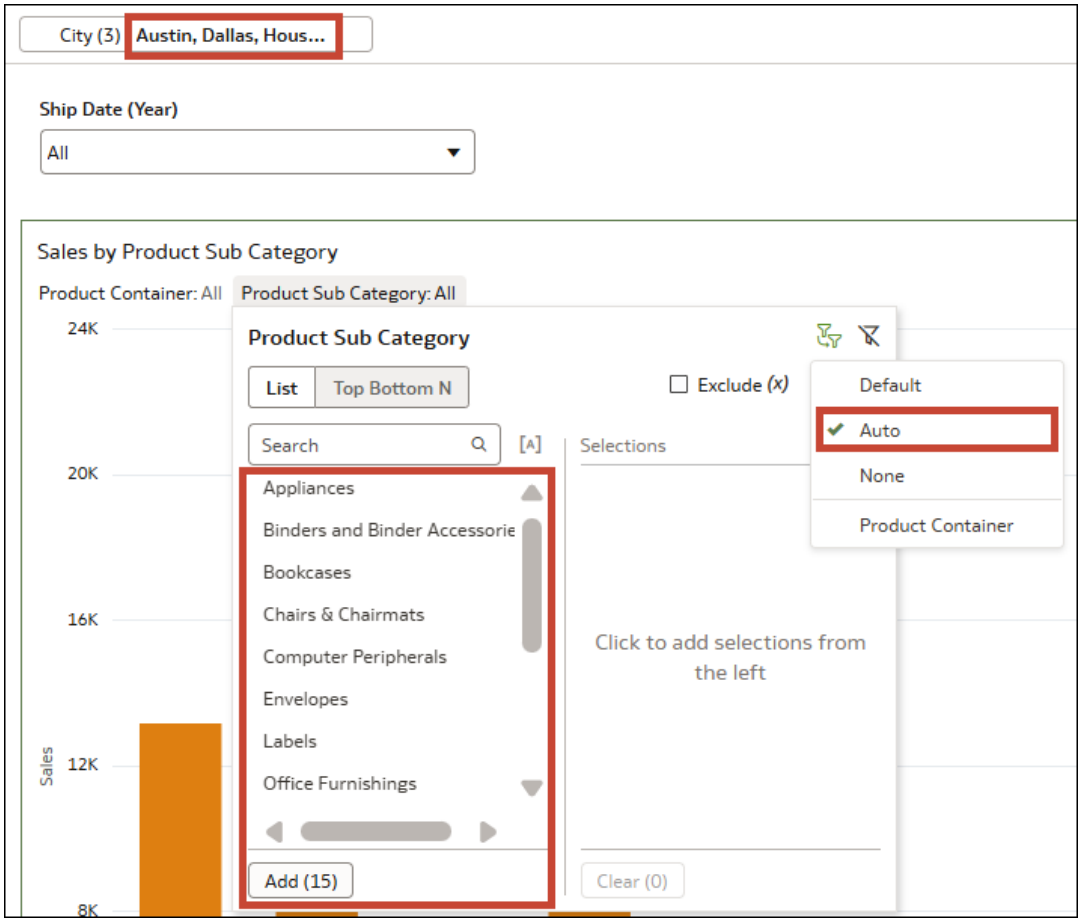
Next, you change the **Limit Values** for Product Sub Category from **Default** to **Auto**, **None**, and **Custom** to see how that visualization filter is affected each time.

Here's what happens if you change the **Limit Values** setting for Product Sub Category to **Auto**:

The values available to select from for Product Sub Category are limited by the selections you make for the canvas filter City, the dashboard filter Ship Date (Year), and the other visualization filter Product Container.

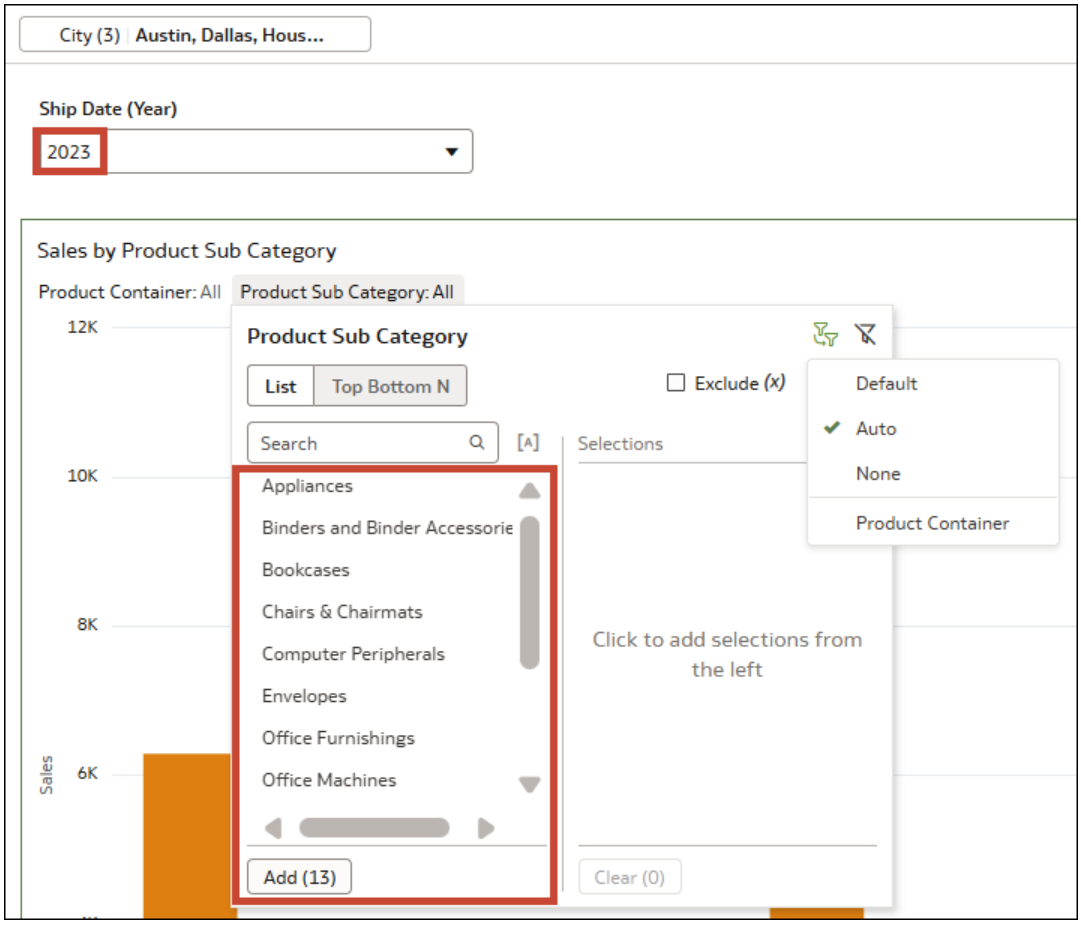
1. Select **Austin**, **Dallas**, and **Houston** for City. There are only 15 values available to select for Product Sub Category because no products for the sub categories "Copiers and Fax" and "Scissors, Rulers and Trimmers" were sold in those three cities.

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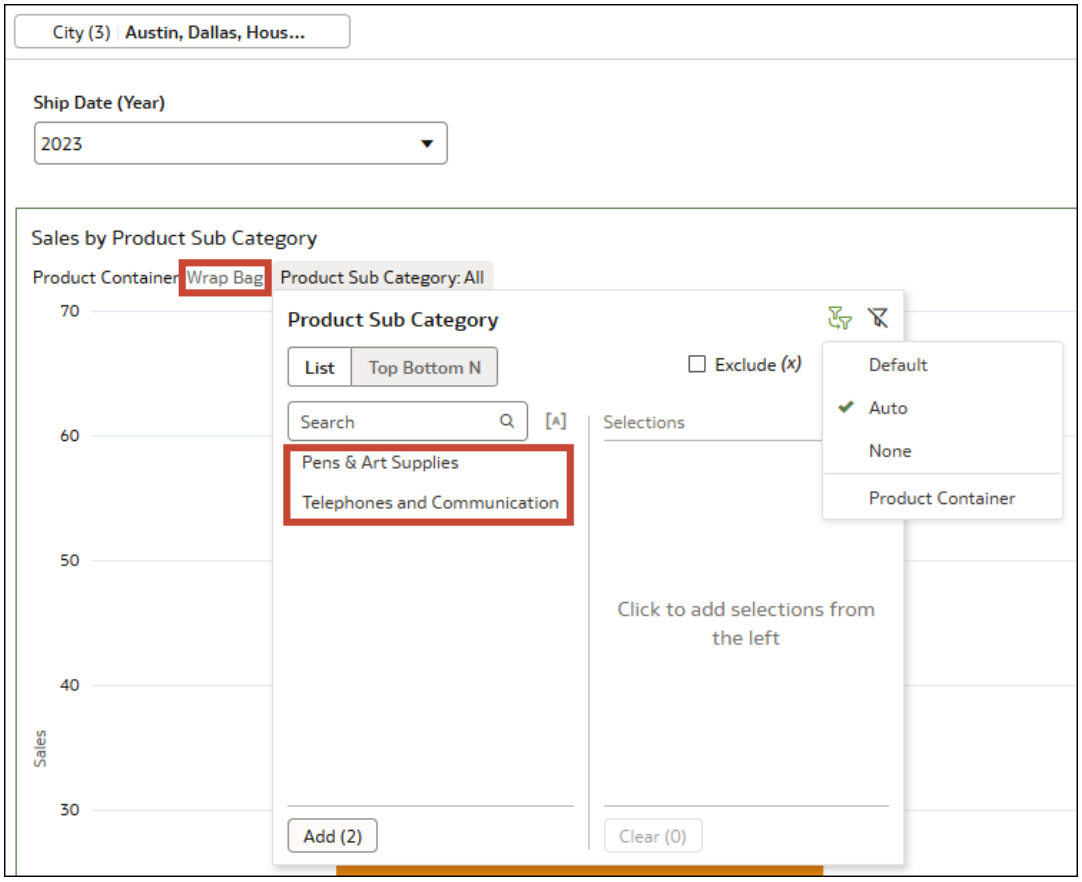
2. Then select **2023** for Ship Date (Year). The values available to select for Product Sub Category are further reduced to 13 to reflect the ones used for the three cities in 2023.

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3. Then select **Wrap Bag** for Product Container. The values available to select for Product Sub Category are further reduced to just two.

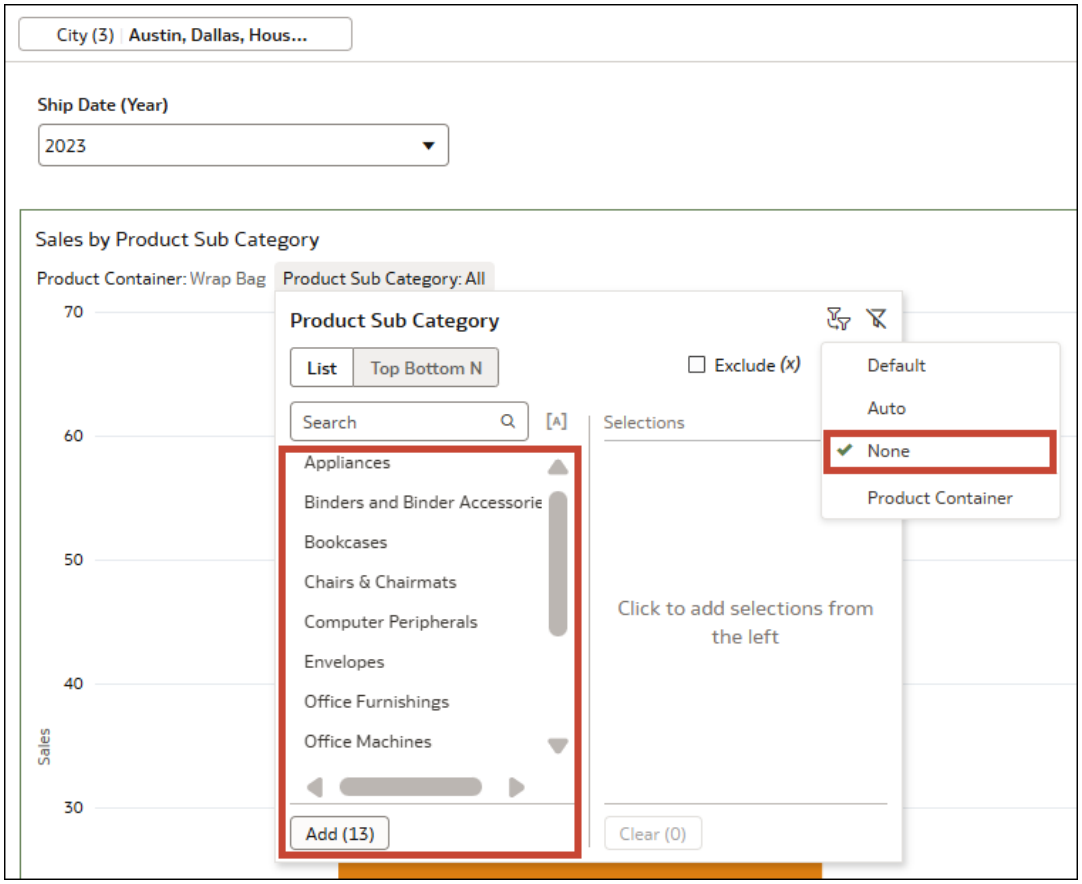
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Here's what happens if you change the **Limit Values** setting for Product Sub Category to **None**:

- The values available to select from for Product Sub Category are back to 13. Only the selections you made for the canvas filter City and the dashboard filter Ship Date (Year) are considered as they're in higher filter locations. The selection you made for Product Container, Wrap Bag, is ignored.

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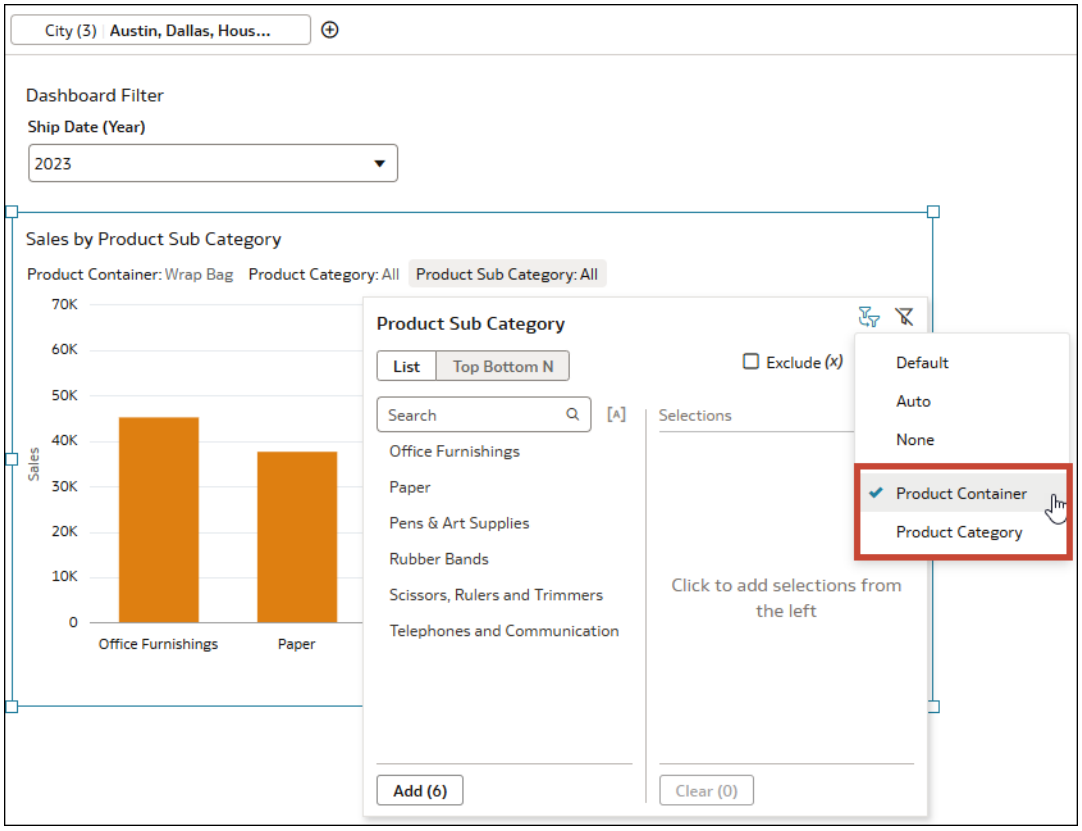


- In this scenario, while the Product Sub Category filter is limited only by the City filter and the Ship Date (Year) filter, all four filters still apply to the visualization itself. This means that if you select any product sub category other than "Pens and Art Supplies" or "Telephones and Communication", no data displays in the visualization because those are the only two that use the Wrap Bag product container in Austin, Dallas, and Houston in 2023.

Here's what happens if you change the **Limit Values** setting for Product Sub Category to **Custom**:

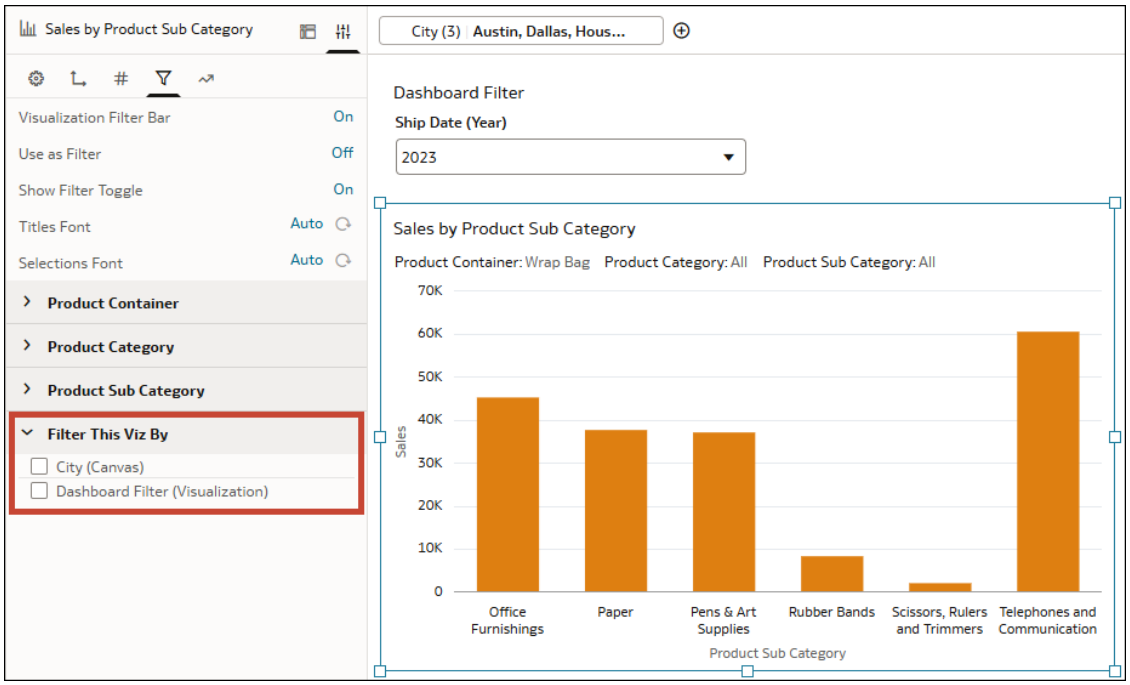
- This option is most useful if you have more than two visualization filters on your visualization, and you want to choose exactly which ones to limit Product Sub Category by.
- If you add a third filter control using the column Product Category, you can configure the **Limit Values** setting for Product Sub Category to be limited by only Product Container or by only Product Category, instead of both (Default and Auto) or neither (None).

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- Product Container is still limited by City.

If you want to stop the City filter or the Ship Date (Year) filter from limiting the visualization filters, you need to go to the Filters tab in the Properties pane for the Sales by Product Sub Category visualization. Then, under **Filter This Viz By**, deselect **City (Canvas)** or **Dashboard Filter (Visualization)**.



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Filter Properties

You can customize the appearance and functionality of filters in Oracle Analytics by setting the filter properties. The options available depend on the filter scope, filter type, and other property settings.

- Dashboard Filter General Properties
- Dashboard Filter Date/Time Properties
- Dashboard Filter Control Properties
- Dashboard and Visualization Filters Properties

See also Filter Bar Properties.

Dashboard Filter General Properties

You can modify these properties found under the General tab in the Properties pane to customize the appearance of your dashboard filters visualization.

These properties are available depending on the filter type and other property settings you're using. These properties are also available for selection steps used as dashboard filter controls.

Property	Description
Title	Specifies whether the visualization title is displayed and how it's generated. **Options** • **Auto** - Generates a title based on the column names used in the visualization. • **Custom** - Lets you create your own title. • **None** - Doesn't display a title.
Title Font	If the Title property is set to **Auto** or **Custom**, specifies the font formatting used for the visualization title. **Options** - The default is **Auto**, or you can modify the following properties: • Font • Size • Style • Color
Title Tooltip	If the Title property is set to **Auto** or **Custom**, specifies whether the visualization title is displayed in a tooltip and how it's generated. **Options** • **Auto** - Uses the visualization title • **Custom** - Lets you create your own tooltip title. • **None** - Doesn't display a title.

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Property	Description
Filter Style	Specifies how the filter controls are displayed. **Options** • **Standard** - Displays the name of the filtered data element above the filter selector. • **Filter Chip** - Displays dashboard filters in a compact style where the filter selector is hidden. This option merges the filtered data element name and the filter selector and provides a count of any selected values. See Change the Dashboard Filter Style.
Show Values	If the Filter Style is set to **Filter Chip**, specifies whether the filter values are displayed. You can hide the filter values when you need canvas space.
Label Font	Specifies the font formatting used for the filter control labels. **Options** - The default is **Auto**, or you can modify the following properties: • Font • Size • Style • Color
Label Location	Specifies the placement of the filter control labels in relation to the filter selectors. **Options** • **Before** • **After** • **Above**
Values Font	Specifies the font formatting used for the values displayed in the filter selectors. **Options** - The default is **Auto**, or you can modify the following properties: • Font • Size • Style • Color
Orientation	Specifies the orientation of the visualization itself. **Options** • **Vertical** • **Horizontal** • **Auto** - Automatically chooses the orientation based on the visualization's position and the space available on the canvas. See Change the Orientation of Dashboard Filters.
Wrap	Specifies whether the filter controls stay on one line or wrap within the visualization.
Max Control Width	Specifies the maximum width of the filter controls within the visualization as displayed to consumers. **Options** • **Auto** • **Fill** • **Custom** - You can specify a width of 121 or greater.

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Property	Description
Control Style	Specifies the formatting of the filter controls. **Options** - The default is **Auto**, or you can select **Custom** to modify the following properties: • **Color** - Changes the color of the filter selectors. • **Transparency** - Changes the transparency of the color applied to the filter selectors. • **Outline** - Hides or displays the outline for the filter selectors.
Buttons	Specifies whether the Reset or Apply buttons are available for consumers to use when selecting dashboard filters. **Options** • **Reset** - Consumers can click the button to clear their filter value selections and reset the filters to their original state. • **Apply** - If the Apply button is visible, filter value selections aren't applied until the user clicks the button.
Align	Specifies the alignment of the filter controls inside the dashboard filters visualization.
Visibility Parameter	Specifies whether the visualization is always displayed or conditionally hidden for the consumer based on the selected value of a parameter. For more information, see Use a Parameter to Conditionally Show or Hide a Visualization.
Background	Specifies the formatting of the visualization background. **Options** - The default is **Auto**, or you can click **Custom** to modify the following properties: • **Fill Color** - Changes the background color. • **Color Transparency** - Changes the transparency of the color applied to the background. • **Image Source** - Adds an image as the background using either a URL or an uploaded file.
Border	Specifies whether the visualization has a border and the format of the border. See Set Visualization Border Properties.
Shadow	Specifies whether the visualization has a shadow and the format of the shadow. See Set Visualization Shadow Properties.
Size and Position	If the canvas layout is set to Freeform, specifies the size and position of your visualization on the canvas. **Options** • **Width** • **Height** • **X Position** • **Y Position**

Dashboard Filter Date/Time Properties

You can modify these properties found under the Date/Time tab in the Properties pane for dashboard filters visualizations that use a date or time column.

Property	Description
Show By	For date columns in a dataset, specifies the time intervals in which the filter values available to select are displayed.

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Property	Description
Format	Specifies the format of the values based on the selection for **Show By**.

Dashboard Filter Control Properties

You can modify these properties found under the Filter Controls tab in the Properties pane to customize the appearance and functionality of your dashboard filters visualization.

These properties are available depending on the filter type and other property settings you're using.

Property	Description
Filter Type	Specifies the type of filter to use based on the data element you're using as a filter. See Filter Types.
Label	Specifies how the filter control label is generated and whether it's displayed. **Options** • **Auto** - Generates a label based on the data element being used as the filter. • **Custom** - Lets you create your own label. • **None** - Doesn't display a label.
Value Font	If the filter type is Slider, specifies the font formatting used for the values displayed in the slider filter control. **Options** - The default is **Auto**, or you can modify the following properties: • Font • Size • Style • Color
Slider Label Font	If the filter type is Slider, specifies the font formatting used for the slider filter control label. **Options** - The default is **Auto**, or you can modify the following properties: • Font • Size • Style • Color
Play	If the filter type is Slider, specifies whether the slider filter control is animated automatically. **Options** - If **Play** is set to **On**, the following options are available on the slider filter control: • **Speed** • **Repeat** See Filter and Animate Visualizations Using a Slider Dashboard Filter.
Multi Select	If the filter type is List or Checkbox / Radio Button, specifies whether more than one value can be selected in the filter control. See Disable Multi Select for Filters.
Custom Values	If the filter type is List Box, specifies whether users can type a value into the filter's value selection field.

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Property	Description
Null Selection	If the filter type is List Box or Checkbox / Radio Button, specifies whether the <NULL> option is included in the filter's value selection list. For list filters, the Nulls option is available in the filter dialog. See Include Null Filter Values.
Exclude Selection	If the filter type is List Box or Checkbox / Radio Button, specifies whether values selected in the filter's value selection list are excluded or not. For list filters, the Exclude option is available in the filter dialog. See Exclude Selected Filter Values.
Default Value	If the filter type is List, List Box, or Checkbox / Radio Button, specifies whether the filter control has a default value and what it is. **Options** • **First in List** • **Custom** • **None**
Selection Required	If the filter type is List, List Box, or Checkbox / Radio Button, specifies if the user is required to select a filter value.
Limit Values By	Specifies how the dashboard filter control gets its selection values. See Specify Limit Values By for Dashboard Filters.
Visible Values	If the filter type is Checkbox / Radio Button, specifies how many value selection options are displayed. **Options** • **Fit** - Displays the first 50. • **Custom** - You can choose a number to display from 1-50.
Selection Parameter Binding	If the filter type is List Box or Checkbox / Radio Button, specifies whether a parameter is bound to the filter. For all other filter types, the Bind to Parameter option is available in the filter dialog. See About Binding Parameters to Filters.
Excludes Mode Parameter Binding	If the filter type is List Box or Checkbox / Radio Button, specifies whether the filter excludes data values and is bound to an excludes parameter. For list filters, this option is available in the filter dialog. See Create and Bind a Parameter to Exclude Filter Values.
Consumer Interactivity	Specifies the level of control consumer users have over the selection steps. Available for selection steps used in dashboard filters. See Control Consumer Interactivity for Selection Steps.

Dashboard and Visualization Filters Properties

You can modify these properties found under the Filters tab in the Properties pane for dashboard filters visualizations and for visualizations using visualization filters or selection steps.

These properties are available depending on the visualization, filter type, and other property settings you're using.

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Property	Description
Visualization Filter Bar	Specifies whether the Visualization Filter Bar is displayed on the visualization. To hide individual filters or selection steps, or filter groups (preview) in the Visualization Filter Bar, see Show or Hide a Visualization Filter in Present.
Use as Filter	Indicates whether a visualization is used as a filter on the canvas. The Use as Filter icon is green when the visualization is active as a filter. See Use a Visualization as a Filter.
Show Filter Toggle	Specifies if the Use as Filter icon is visible on the visualization itself when the visualization is being used as a filter.
Titles Font	Specifies the font formatting used for the filter labels. **Options** - The default is **Auto**, or you can modify the following properties: • Font • Size • Style • Color
Selections Font	Specifies the font formatting used for the displayed filter values. **Options** - The default is **Auto**, or you can modify the following properties: • Font • Size • Style • Color You can't configure this property for filter groups (preview).
Label	Specifies how the filter label is generated and whether it's displayed. Applies to visualization filters, including filter groups (preview). **Options** • **Auto** - Generates a label based on the data element being used as the filter. • **Custom** - Lets you create your own label. • **None** - Doesn't display a label.
Multi Select	Specifies whether more than one value can be selected if the data element being used as the filter is text, uncountable values, or dates. Applies to only visualization filters. See Disable Multi Select for Filters. You can't configure this property for filter groups (preview).
Filter This Viz By	Indicates what the visualization is filtered by. The options available include workbook, canvas, and dashboard filters, filter groups (preview) and selection steps.
Apply This Filter To	Specifies which visualizations the dashboard filters apply to. See Apply a Dashboard Filter to Visualizations on the Canvas.
Consumer Interactivity	Specifies the level of control consumer users have over the selection steps. Available for selection steps used directly on a visualization. See Control Consumer Interactivity for Selection Steps.

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Filter Personalizations and Workbook States

This topic describes how filter personalizations and workbook states work and how you can manage them.

Topics:

- About Filter Personalizations (For Authors)
- About Filter Personalizations (For Consumers)
- Create a Custom Workbook State
- Modify a Custom Workbook State
- Change the Workbook State
- Set the Default Workbook State

About Filter Personalizations (For Authors)

Consumers can persist their selected filter values when they close and reopen a workbook by defining workbook states.

By default, personalizations are enabled for each workbook. As a workbook author, you can update the workbook's presentation flow to specify if the filter values persist when the user reopens the workbook. See Turn Workbook Personalization On or Off in Present.

> **Note**
>
> Administrators can switch off workbook personalization for the entire organization using the system setting **Enable Personalization in Workbooks**. See System Settings - Enable Personalization in Workbooks.

Consumers make filter personalizations by changing the filter value selections for any filters and selection steps that are available to them. This includes dashboard filters, visualization filters, using visualizations as filters, parameters as filter controls, and parameters bound to dashboard filters.

Filter personalizations don't apply to workbook filters or canvas filters in the filter bar. However, since parameters have a workbook scope, the value selections for a parameter persist across all filters it's bound to. So while selections for filters in the filter bar aren't persisted, selections for any parameters bound to those filters are.

You control which filters and filter functionalities are available to consumers. See Set the Workbook Properties in Present, Set Canvas Properties in Present, and Control Consumer Interactivity for Selection Steps.

Consumers can configure a workbook to always open in a specific state, or they can choose which state to apply after they open the workbook.

The following workbook states are available:

- **Original State** - This is the state in which you, as the workbook author, last saved the workbook. This is the default state when a user opens the workbook unless they set a different default state.

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- **Last State** - This is the state the workbook was in when the consumer last made filter personalizations.
- **Custom State** - This is a state the consumer creates to save a workbook with their preferred filter selections.

Workbook states are automatically purged as follows for a consumer instance:

- Every 90 minutes: The least used custom states when there are more than 15 custom states
- As applicable: Any states that haven't been used in the last year

If you disable or delete a filter or selection step for the workbook, consumers' custom states might no longer work.

If you rename a workbook or move it to a different catalog folder, any custom workbook states are lost.

For information about sharing a workbook URL that users can use to view the workbook with specific filter selections persisted, see Share a Workbook URL with Persisted Filter Values.

About Filter Personalizations (For Consumers)

You can persist your selected filter values when you close and reopen a workbook by defining workbook states.

You make filter personalizations by changing the filter value selections for any filters and selection steps that are available to you. Filter personalizations don't apply to items in the filter bar.

You can configure a workbook to always open in a specific state, or you can choose which state to apply after you open the workbook.

The following workbook states are available:

- **Original State** - This is the state in which the workbook author last saved the workbook. This is the default state when you open the workbook unless you set a different default state.
- **Last State** - This is the state the workbook was in when you last made filter personalizations.
- **Custom State** - This is a state you create to save a workbook with your preferred filter selections. You can create up to 15 custom states.

This tutorial shows you how to manage your workbook states. Tutorial

For information about sharing a workbook URL that other users can use to view the workbook with specific filter selections persisted, see Share a Workbook URL with Persisted Filter Values.

Create a Custom Workbook State

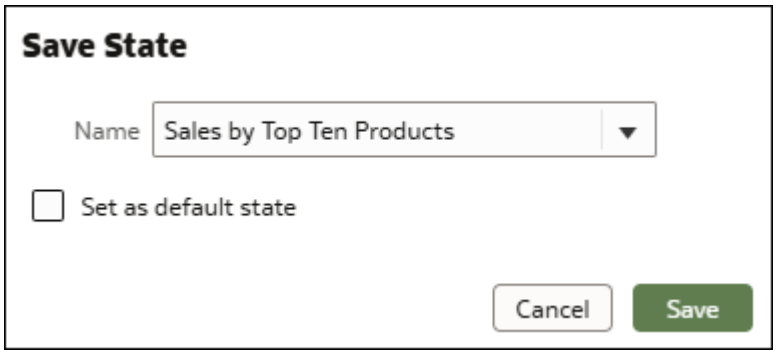
Save a custom workbook state so you can access the workbook in that exact state in the future.

If you make filter selections and then save the workbook in that state, you won't have to reset any filter values the next time you open the workbook in that state.

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You can also save a custom workbook state for yourself without making any filter personalizations. For example, if you're opening a workbook from a URL that someone has shared with you, you may want to save the workbook in its current state for future use.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Optional: Make filter selections for the available filters to refine the data to suit your needs.
3. Click **State Menu**, then click **Save State**.
4. In the Save State dialog, give your state a name.



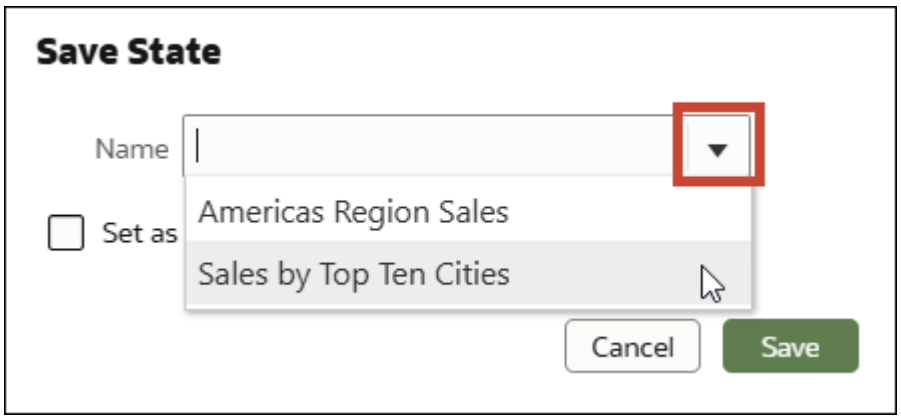
5. Optional: Select **Set as default state** if you want the workbook to open in this state the next time you open it.
6. Click **Save**.

Your saved state is now available to select in the **State Menu**.

Modify a Custom Workbook State

You can modify your existing custom workbook states without having to create new ones.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **State Menu**, then click the state you want to modify.
3. Modify the filter selections in the workbook to suit your needs.
4. Click **State Menu**, then click **Save State**.
5. In the Save State dialog, open the drop-down list and select the current state.



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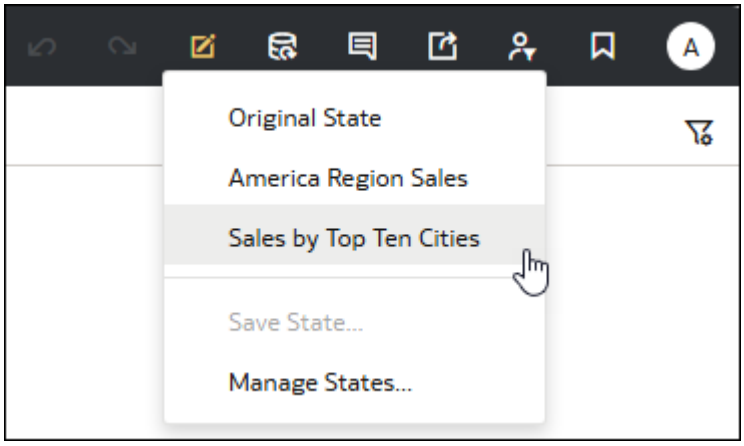
6. Click **Save**.
7. Click **Overwrite** to confirm you want to update the existing state.
8. Optional: Click **State Menu**, then click **Manage States**.
9. Click the custom state and modify the name if required.
10. Click **Done**.

Your custom state is now updated with your changes.

Change the Workbook State

Select a different workbook state so you can view the workbook with specific filter selections applied.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **State Menu**, then click one of the available states to apply the associated filter selections.



Set the Default Workbook State

Set a workbook state to be the default state when you open the workbook.

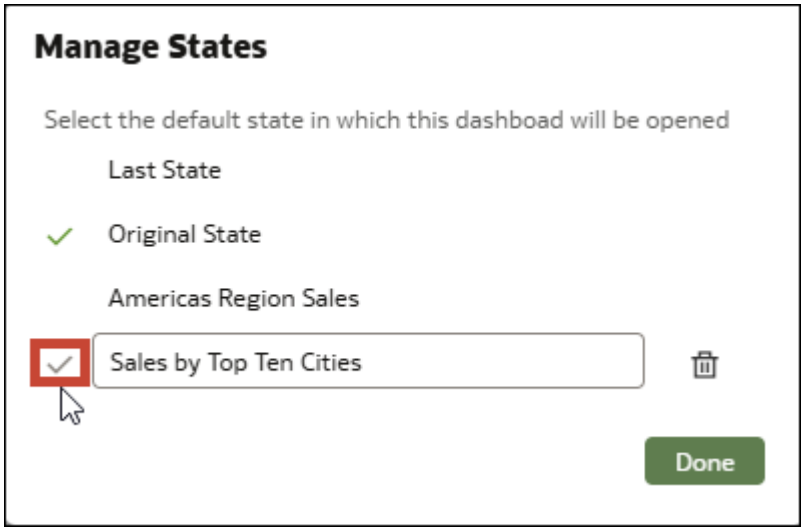
If you don't set a default state, workbooks open in their Original State.

If you set the default state to Last State, the workbook opens in whichever state it was in when you last closed it.

The Undo Last Edit and Redo Last Edit options in the workbook toolbar don't affect any changes you make in the Manage States dialog.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **State Menu**, then click **Manage States**.
3. In the Manage States dialog, hover over the state you want to set as the default state and click the checkmark beside it.

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4. Click **Done**.

Use the Filter Bar

You can use the filter bar to broadly limit the data on a specific canvas or all canvases in a workbook. For example, limit the data to the year 2024.

Topics:

- About the Filter Bar
- Filter Bar Properties
- Add Workbook and Canvas Filters
- Display or Hide Selected Values in the Filter Bar
- Manually Apply Selections in the Filter Bar
- Convert Canvas Filters to Dashboard Filters
- Use a Parameter in the Filter Bar

About the Filter Bar

You can add workbook filters, canvas filters, selection steps, and parameters to the filter bar.

These items in the filter bar are generally the first level of filtering that you add to a workbook. You can then add other levels to fine tune the data, for example, add dashboard filters that allow consumers to select their own filter values, or add visualization filters that cascade selected values from one visualization to another.

Filters in the filter bar can be pinned (called workbook filters) to limit the data on all canvases in the workbook, or unpinned (called canvas filters) to limit the data on a single canvas. See Add Workbook and Canvas Filters.

Selection steps work slightly differently than filters in the filter bar, but they can also be pinned or unpinned. For more information, see Selection Steps.

For information about using parameters in the filter bar, see Use a Parameter in the Filter Bar.

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You can hide the items in the filter bar from consumers for a cleaner experience (see Show or Hide the Filter Bar in Present) or you can customize the level of interactivity you want your users to have with the filter bar (see Specify Workbook Filter Options in Present and Specify Canvas Filter Actions in Present).

Filter Bar Properties

You can modify these properties found in the Filter Bar Menu for items in the filter bar, depending on whether they're workbook or canvas filters, selection steps, or parameters.

Property	Description
Limit Values By	Specifies how the filters and selection steps in the filter bar get their selection values. See Specify Limit Values By for the Filter Bar. You can't configure this property for parameters used in the filter bar.
Filter Values	Specifies whether the selected values for the filters, selection steps, and parameters in the filter bar are displayed. **Options** • **Show All** - Displays selected values for all existing items in the filter bar. • **Hide All** - Hides selected values for all existing items in the filter bar. • **Show by Default** - Shows selected values for items that you add next. Items that you added before selecting this option aren't affected. See Display or Hide Selected Values in the Filter Bar. You can’t configure this property for filter groups (preview).
Auto-Apply Filters	Specifies whether the filter, selection step, and parameter value selections in the filter bar are automatically applied. **Options** • **On** - Applies value selections as you make them in the filter bar. • **Off** - Doesn't automatically apply any selections you make in the filter bar. Adds an Apply button to the Filter or Selection Steps dialog. See Manually Apply Selections in the Filter Bar.
Move to Dashboard Filter	Converts all canvas filters and unpinned selection steps in the workbook to dashboard filters. Adds a dashboard filter visualization to each canvas and moves the canvas filters and unpinned selection steps for that canvas from the filter bar into the visualization. **Options** • **Horizontal** - Orients the new dashboard filters visualization horizontally. • **Vertical** - Orients the new dashboard filters visualization vertically. See Convert Canvas Filters to Dashboard Filters. You can't convert workbook (pinned) filters, filter groups (preview), or parameters used in the filter bar to dashboard filters using this option.

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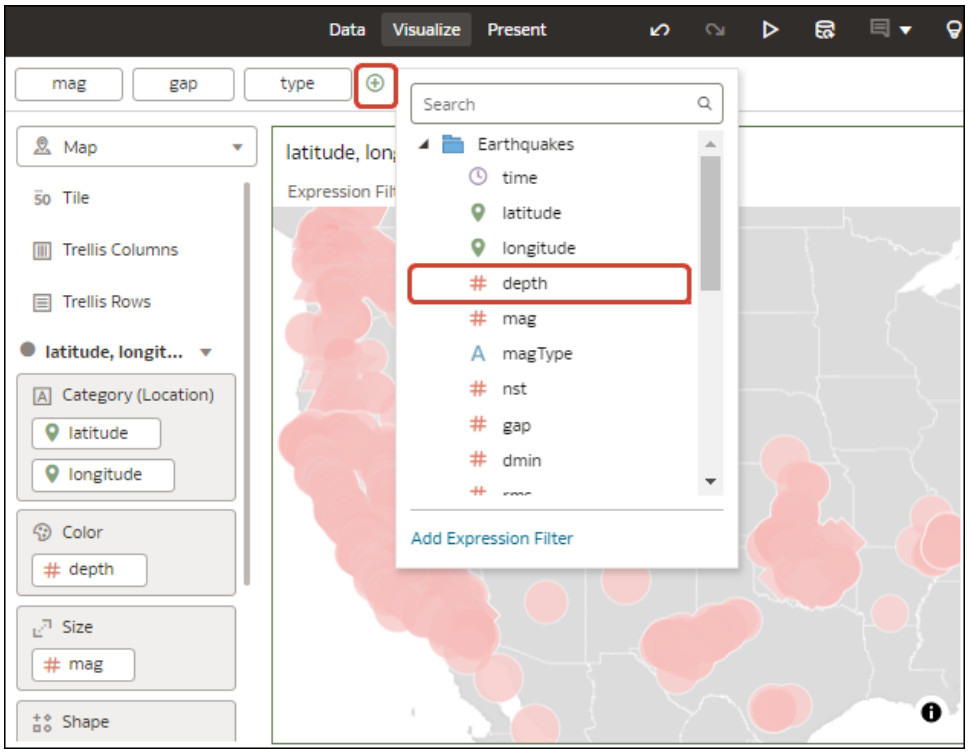
Add Workbook and Canvas Filters

When you add a filter to the filter bar, the filter applies to only the current canvas and is called a canvas filter. You can pin that filter to apply it to every canvas in the workbook and turn it into a workbook filter.

A pinned workbook filter functions the same on every canvas, so any filter data values that you select from any canvas are passed to the pinned filter on all canvases in the workbook. And any configurations you make for the filter are the same on every canvas, for example exclude, null, limit values, and disable filter.

For information about the different types of filters you can use, see Filter Types.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. On the Filter Bar, click **Add Filter** (+) and select the column you want to filter on.



3. In the Filter dialog, select the data values to filter on.
4. Optional: To make the filter a workbook filter that applies to all canvases, hover over the filter and click Pin to All Canvases.
5. Click **Save**.

Display or Hide Selected Values in the Filter Bar

You can display the selected filter, selection step, or parameter values in the labels in the filter bar so that you don't have to open a dialog to check the selected values. Or you can hide the selected values to reduce clutter on the filter bar.

Use the **Filter Values** property to show or hide the selected values in the filter bar. For more information about this property, see Filter Bar Properties.

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For a pinned workbook filter or selection step, you can change the value display settings from any canvas.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. On the filter bar, click **Filter Bar Menu** .
3. Hover over **Filter Values** and click an option to select it.
   - Show All
   - Hide All
   - Show by Default
4. Click **Save**.

Manually Apply Selections in the Filter Bar

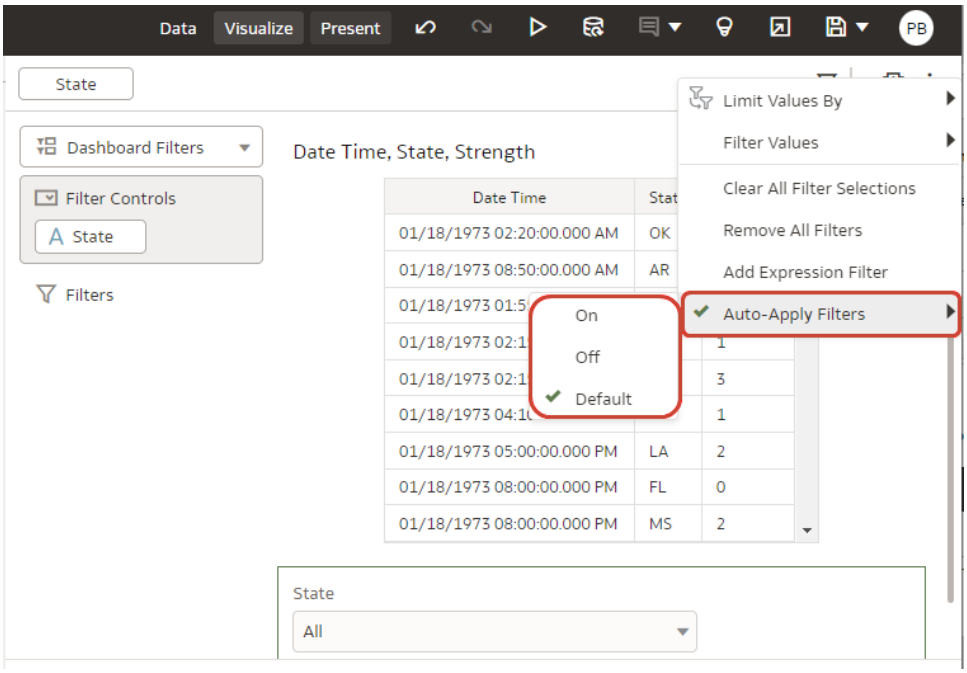
As you select filter, selection step, or parameter values in the filter bar, Oracle Analytics automatically applies them. You can change this behavior when you want to manually apply the selections instead.

Use the **Auto-Apply Filters** property in the **Filter Bar Menu** to specify if you want to manually apply all selections. When you set this property, it applies to all items in the filter bar across all canvases.

When set to **Off**, you can select values and then click the **Apply** button when you want to apply the selections.

For more information about this property, see Filter Bar Properties.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. On the filter bar, click **Filter Bar Menu**, hover over **Auto-Apply Filters**, and then click an option to select it.



3. Click **Save**.

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Convert Canvas Filters to Dashboard Filters

Convert canvas (unpinned) filters and unpinned selection steps in the filter bar to dashboard filters when you want to use the functionality, style, layout, and personalization options that dashboard filters provide. This way you can avoid manually adding dashboard filters and deleting existing canvas filters or selection steps in the filter bar.

Use the **Move to Dashboard Filter** option to move the canvas filters and unpinned selection steps from the filter bar into a dashboard filters visualization on each canvas. This option converts all canvas filters and unpinned selection steps in the workbook at once. Pinned selection steps and workbook filters apply to all canvases in the workbook and therefore can't be converted to dashboard filters.

Filter settings such as selected data values, exclude, null, and limit by are moved with the canvas filter or selection step to the dashboard filter. Parameters bound to the canvas filter are also migrated to the dashboard filter control.

For more information about this property, see Filter Bar Properties.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. On the filter bar, click **Filter Bar Menu** .
3. Hover over **Move to Dashboard Filter** and click a layout option to select it.
4. Click **Save**.

Use a Parameter in the Filter Bar

Adding a parameter to the filter bar allows you to set the parameter value for the whole workbook or an individual canvas.

This tutorial provides a use case explaining how to use a parameter in the filter bar:
Tutorial

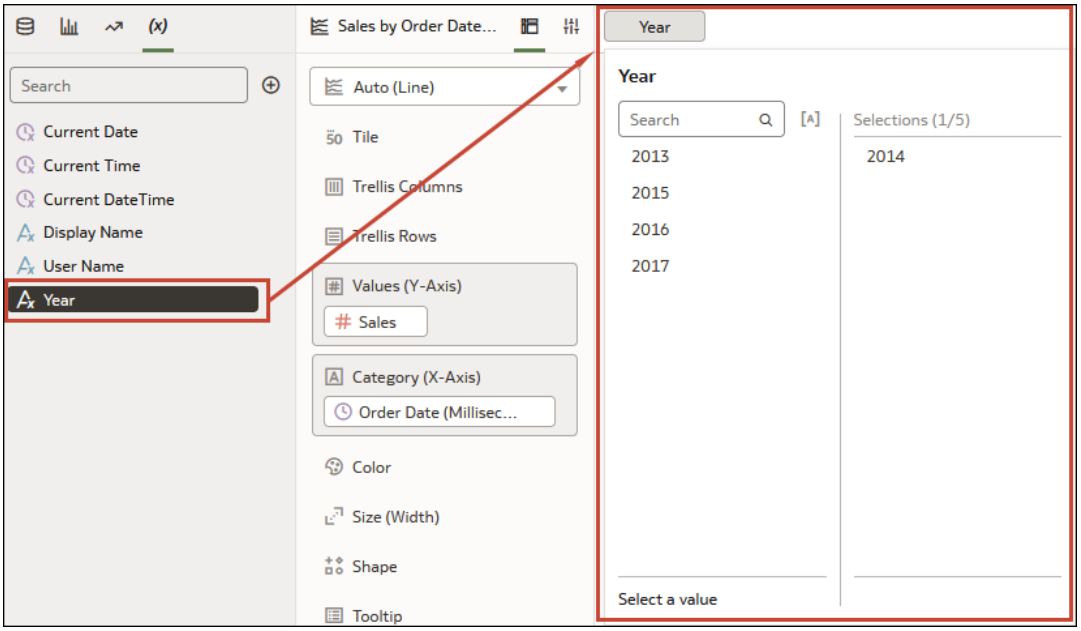
> **Note**
>
> Adding a parameter as a workbook (pinned) or canvas (unpinned) filter in the filter bar functions as a column selector, it doesn't filter the data.

Using a parameter in the filter bar doesn't provide the same features as a standard filter. For example, it doesn't provide the exclude, nulls, or limit values functionalities.

You can also create and bind a parameter to a workbook filter, see Create and Bind a Parameter to a Workbook Filter.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data Panel, click **Parameters**.
3. Drag and drop a parameter to the filter bar.

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4. Click **Save**.

Dashboard Filters

You can add dashboard filters to your canvases to enable consumers to select and change the values they want to see in the visualizations.

Topics:

- About Dashboard Filters
- Add Dashboard Filters
- Change the Orientation of Dashboard Filters
- Change the Dashboard Filter Style
- Use a Parameter as a Dashboard Filter Control
- Filter and Animate Visualizations Using a Slider Dashboard Filter

About Dashboard Filters

Dashboard filters provide filter controls for consumers to interact with on an individual canvas.

As an author, you usually add and set filters in the filter bar to broadly limit the data in your workbook, see Use the Filter Bar. You can then add and configure dashboard filters on each canvas to allow consumers to select their own filter values to change the data in the visualizations.

Dashboard filters are contained in the Dashboard Filters visualization. After you add a dashboard filters visualization to the canvas, you can then drag and drop columns to this visualization to create dashboard filters. Oracle Analytics assigns default properties based on the column you chose to create the filter but you can modify the filter's properties to better suit the data and improve the user experience.

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You can also drag hierarchy columns to the dashboard filters visualization and create a selection step as a filter control to refine the data in visualizations that use the same hierarchy. You can control the level of interactivity a consumer has with the selection steps, see Control Consumer Interactivity for Selection Steps.

Add Dashboard Filters

Use the Dashboard Filters visualization to create and configure your dashboard filters.

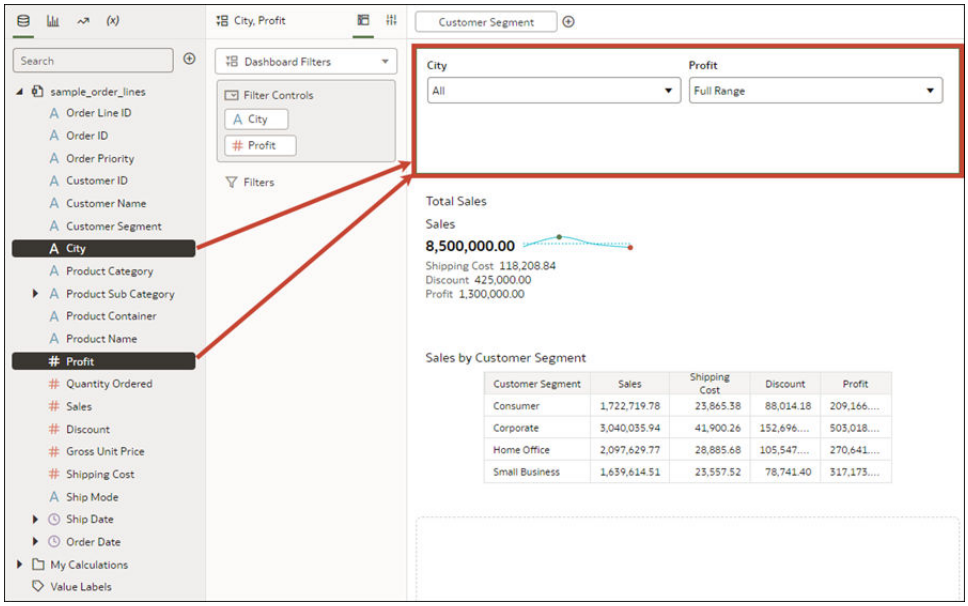
Dashboard filters enable consumers to select their own filter values to change the data in the visualizations.

For information about the different types of filters you can use, see Filter Types.

For information about dashboard filter properties, see Filter Properties.

For information about adding a selection step to a dashboard filter, see Selection Steps.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Visualizations Panel, click **Visualizations**, scroll to Dashboard Controls, and drag **Dashboard Filters** to the canvas.
3. In the Data Panel, click **Data** and drag one or more columns to the new dashboard filters visualization to create the dashboard filter controls.



4. Optional: Click a filter control to open the Filter dialog, then select the data values filter on.
5. Click **Save**.

Change the Orientation of Dashboard Filters

Where you add a dashboard filters visualization to the canvas determines if the filter controls are displayed horizontally or vertically.

You can change the dashboard filters visualization's orientation to provide a canvas layout and filter experience that works best for your users.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

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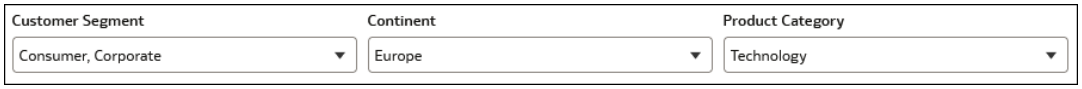
2. Click the dashboard filters visualization to select it.
3. Click **Properties** to open the Properties pane, then click **General**.
4. Click the **Orientation** field and select an orientation.
5. Click **Save**.

Change the Dashboard Filter Style

You can choose how you want the filter controls in the dashboard filters visualization to display to provide a canvas layout and filter experience that works best for your users.

Use the Filter Style property to change the dashboard filter style to either of the following:

- Standard



- Filter Chip



For more information about this property, see Dashboard Filter General Properties.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the dashboard filters visualization to select it.
3. Click **Properties** to open the Properties pane, then click **General**.
4. Click the **Filter Style** field and select a style.
5. Click **Save**.

Use a Parameter as a Dashboard Filter Control

You can use a parameter as a dashboard filter control to select and change the dimension and measure column values for the visualizations on a canvas.

These tutorials provide use cases explaining how to use a parameter in the dashboard filter control:

Tutorial

Tutorial

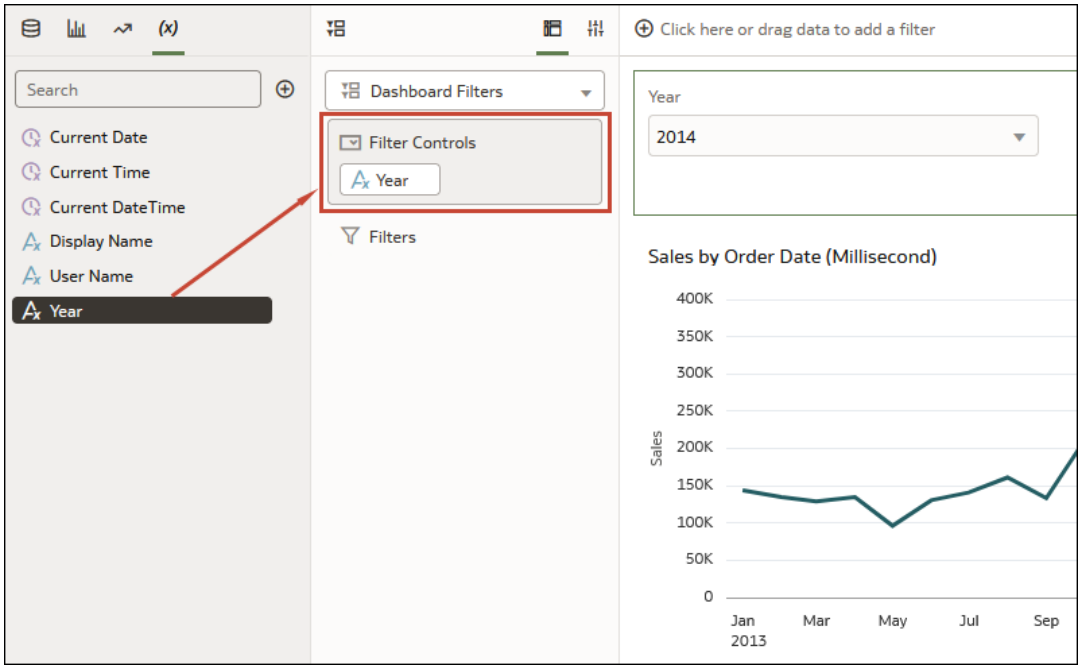
> **Note**
>
> Adding a parameter as a dashboard filter control functions as a column selector, it doesn't filter data.

Using a parameter as a dashboard filter control doesn't provide the same features as a standard filter. For example, it doesn't provide the Top Bottom N, exclude, nulls, or limit values functionalities.

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You can also use parameters to bind a dashboard filter to a corresponding filter in other canvases in the workbook. This allows you to pass a selected filter value from one canvas to another. See Create and Bind a Parameter to a Dashboard Filter.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data Panel, click **Visualizations**, scroll to the Dashboard Controls section, and drag **Dashboard Filters** to the canvas.
3. In the Data Panel, click **Parameters**, and drag and drop a parameter to **Filter Controls** in the Dashboard Filter visualization's **Grammar** pane.



4. Click **Save**.

Filter and Animate Visualizations Using a Slider Dashboard Filter

You can add a slider dashboard filter to a workbook canvas and animate visualizations to show how the data changes relative to a specified dimension. Consumers can select a dimension value interactively, or automatically play through dimension values, similar to a time-lapse video or animation.

This tutorial provides a use case explaining how to create a dashboard filter with a slider control to see how revenue and product type data changes over the years.

Tutorial

As another example, you might analyze Olympic medals between 2000 and 2012 in an animation showing the numbers changing over the years.

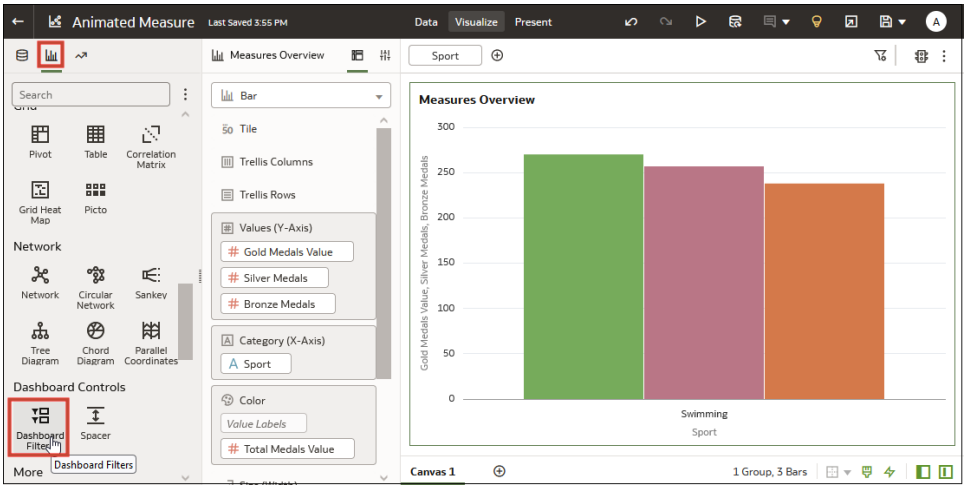
Before you can create a slider dashboard filter, you need to have one or more visualizations on your canvas for which the dimension, in this case, Year, can be used as a filter. Each visualization must include the same dimension data.

For this example, to filter on Year so that you can analyze Olympic medal data between year 2000 and year 2012, you need to add Year to your dashboard filter visualization.

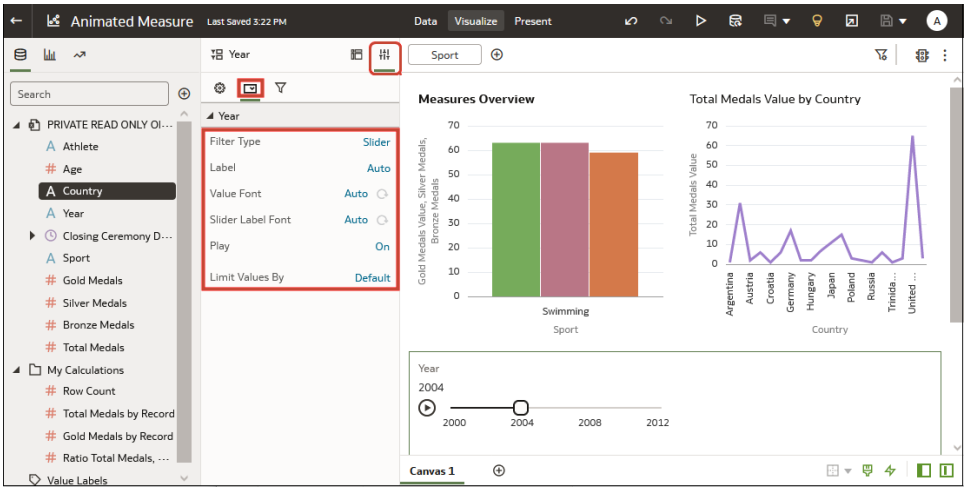
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For more information about slider filters, see Filter Types. For more information about slider dashboard filter properties, see Dashboard Filter Control Properties.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data panel, click **Visualizations**, scroll to the Dashboard Controls section, and drag **Dashboard Filters** to the canvas.



3. In the Data panel, click **Data**, and drag a dimension-based data element to the new dashboard filters visualization.
4. Click **Properties** to open the Properties pane, then click **Filter Controls**.
5. Locate and expand the filter you just added.
6. Click the **Filter Type** field and select **Slider**.



7. Click the **Play** field to turn auto-play on or off.
8. If you enabled play, in the slider filter control, click **Play** to see how your visualizations play with the default settings.

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Visualization Filters

You can add visualization filters and selection steps to individual visualizations to filter them without affecting any other visualizations.

Topics:

- About Visualization Filters
- Add Visualization Filters
- Use a Visualization as a Filter

About Visualization Filters

Visualization filters filter the data for only one visualization.

As an author, you usually add and set workbook and canvas filters in the filter bar to broadly limit the data in your workbook, see Use the Filter Bar. You can then add and configure dashboard filters on each canvas to allow consumers to select their own filter values to view the data in the visualizations on that canvas, see Dashboard Filters.

Oracle Analytics offers another, narrower filter scope in the form of visualization filters which you can add so that a user can select the values they want to see in that particular visualization without affecting the rest of the workbook. For visualizations using hierarchies, you can add selection steps at the visualization filter level as well.

You can also set visualization filters yourself and then hide them from the consumer, see Show or Hide a Visualization Filter in Present and Control Consumer Interactivity for Selection Steps.

Add Visualization Filters

Add visualization filters to a visualization to filter the data in that visualization only, without affecting anything else in the workbook.

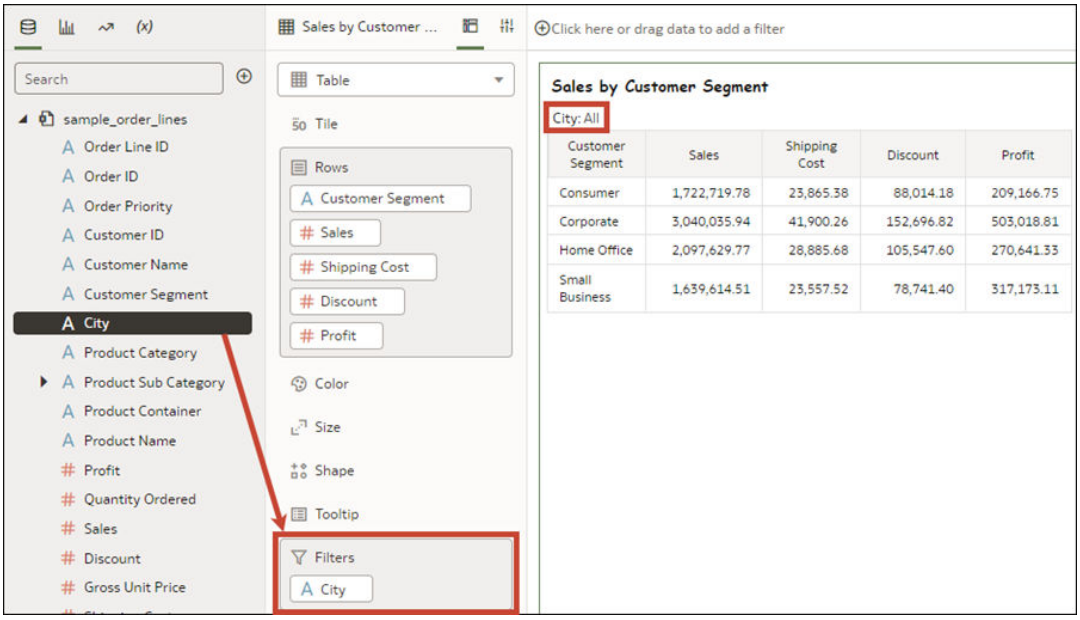
For information about the different types of filters you can use, see Filter Types.

For information about visualization filter properties, see Dashboard and Visualization Filters Properties.

For information about adding a selection step to a visualization, see Selection Steps.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a visualization to select it.
3. Click the **Grammar** pane.
4. Click **Data**, and drag and drop one or more columns to **Filters** in the Grammar pane to create the visualization filters.

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5. Click **Save**.

Use a Visualization as a Filter

You can use the data selections from one visualization to filter all other visualizations on the canvas, depending on the visualization type.

If a visualization's **Use as Filter** icon is displayed in green , it means that it's functioning as a filter on the canvas. When you select a data element in the visualization, the other visualizations on the canvas that also use that data element are updated to display their data based on your selection.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Hover over the visualization that you want to use as a filter.
3. Click the **Use as Filter** icon to activate.
4. Click **Save**.

Filter Groups (Preview)

These topics explain how to create and share filter groups.

Topics:

- About Filter Groups (Preview)
- Create a Filter Group (Preview)
- Specify Limit Values for Filter Groups (Preview)
- About Shared Filter Groups (Preview)
- Make a Filter Group Shareable (Preview)
- Create a Shared Filter Group (Preview)

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- Use a Shared Filter Group (Preview)
- Modify a Shared Filter Group (Preview)

About Filter Groups (Preview)

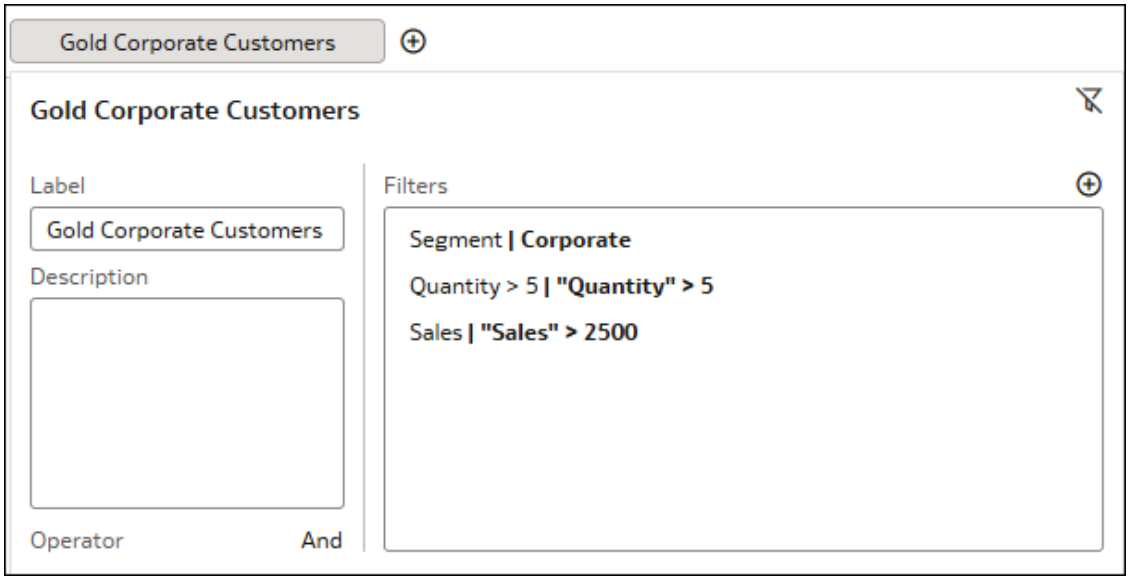
In Oracle Analytics, you can use filter groups to create complex filters.

Filter groups are available for preview and you can use them in the filter bar as workbook or canvas filters, or as visualization filters. Ask your administrator to turn on the **Enable Shared Filter Groups in Workbooks** option in System Settings. See Preview System Settings.

You create a filter group to combine multiple filters that you want to apply and control together. The filters are applied in the order they appear within the group and you can use the operators `AND` or `OR` to combine them.

For example, you might want to filter the sales data on a canvas based on your Gold Corporate Customers. You can create a filter group containing the following filters and the `AND` operator so they're applied together. In this example, the filter group acts as a definition for a Gold Corporate Customer and filters your data accordingly:

- **Segment** - List filter with the segment Corporate selected.
- **Quantity** - Expression filter for quantity sold over 5 units.
- **Sales** - Expression filter for sales over $2,500.



For information about the filter properties you can configure for filter groups, see Filter Bar Properties and Dashboard and Visualization Filters Properties.

You can also reuse filter groups in other workbooks by making them shared objects. For information about sharing a filter group, see About Shared Filter Groups (Preview).

Depending on the filter settings you configure in Present, consumers can view, add, and modify filter groups. You can hide filter groups from consumers or you can control the level of interactivity you want them to have. See Specify Workbook Filter Options in Present for filter groups in the filter bar and Show or Hide a Visualization Filter in Present for filter groups used as visualization filters.

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Create a Filter Group (Preview)

Use these steps to create a filter group.

You can add the following filter types to a filter group:

- List
- Top Bottom N
- Range
- Date Range
- Relative Time
- Expression

For more information about these filter types, see Filter Types.

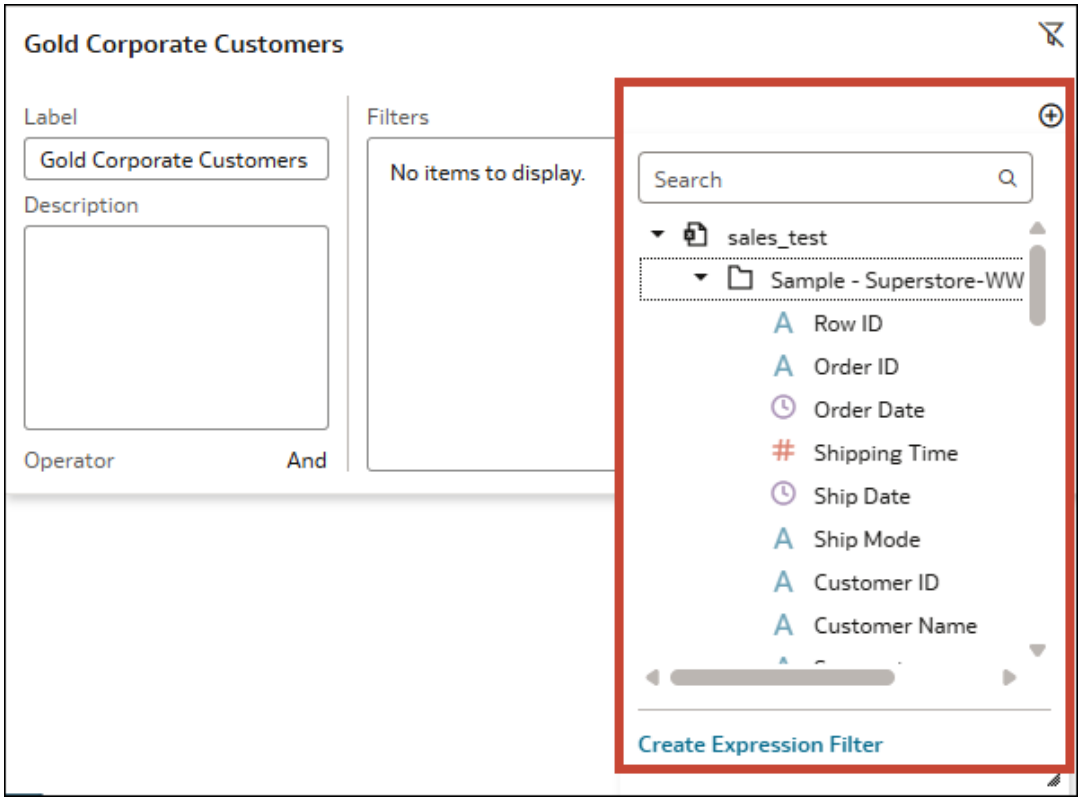
For information on how to create expression filters, see Create an Expression Filter.

For information about using workbook and canvas filters in the filter bar, see Use the Filter Bar.

For information about using visualization filters, see Visualization Filters.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. To create a filter group as a workbook or canvas filter, in the filter bar, click **Add Filter** ⊕, then click **Create Filter Group**.
3. To create a filter group as a visualization filter, in the Filters section of the Grammar pane, click **Drop Target Options**, then click **Create Filter Group**.
4. In the Filter Group dialog, in the Label field, give your group a name.
5. Click **Add Filters** ⊕.

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6. To add a list, top bottom N, range, date range, or relative time filter:
   a. Select the column you want to filter on.
   b. In the Filter dialog, configure the filter type and the values to filter on.
7. To add an expression filter:
   a. Click **Create Expression Filter**.
   b. In the Expression Filter dialog, define your expression, and click **Apply**.
8. Add more filters as needed to your filter group.
9. To change the operator to **Or**, click **And**.
10. Click **Save**.

Specify Limit Values for Filter Groups (Preview)

Configure the **Limit Values** setting for filters within a filter group in a workbook to specify how the individual filters get their selection values.

You can configure the Limit Values settings for each individual filter within a filter group. You can't configure Limit Values settings for a filter group as a whole.

For general information on how filters in different locations and scopes limit each other, see About the Limit Values Settings for Filters.

When you're configuring the Limit Values settings for individual filters within a filter group, refer to Specify Limit Values for Workbook and Canvas Filters and Specify Limit Values for Visualization Filters in conjunction with the following information.

If the operator in the filter group is `AND`, the Limit Values settings for each filter function as follows:

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- **Default:** Functions the same as for workbook, canvas, or visualization filters, depending on the location of the filter group.
- **Auto:** The filter is limited by the other filters in the filter group that are higher on a drill path. In a filter group, the drill path is based on the order the filters are listed in. The filter is also limited by filters outside the filter group.
- **None:** The filter isn't limited by other filters in the filter group but it is limited by filters outside the filter group.
- **Custom:** The list of filters available to choose from is limited to the other filters within the filter group.

If the operator in the filter group is `OR`, you can't configure the limit values setting for any filters in the filter group. In this scenario, the limit values behavior is equivalent to the **None** option.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the filter group to open it. Then click an individual filter to open the Filter dialog.
3. Click **Limit Values** and click an option to select it.
4. Click **Save**.

About Shared Filter Groups (Preview)

In Oracle Analytics, you can make filter groups shareable to reuse them in different workbooks.

Shared filter groups are available for preview. Ask your administrator to turn on the **Enable Shared Filter Groups in Workbooks** option in System Settings. See Preview System Settings.

You might have a filter combination that's useful in more than one workbook. You can create a filter group to combine the individual filters and then make the group shareable so you and other authors can quickly apply them in separate workbooks.

To make a filter group shareable, you add it to the Shared Objects folder of the workbook's dataset or subject area. As a shared object, it's accessible from any other workbooks that use the same dataset or subject area. This means that both you and other authors can use the filter group without having to recreate it. Because the filter group is a shared object, when you modify it, the changes do affect all workbooks that are using it.

Depending on the filter settings you configure in Present, consumers can view and add shared filter groups. However, they can't modify or unlink shared filter groups.

Make a Filter Group Shareable (Preview)

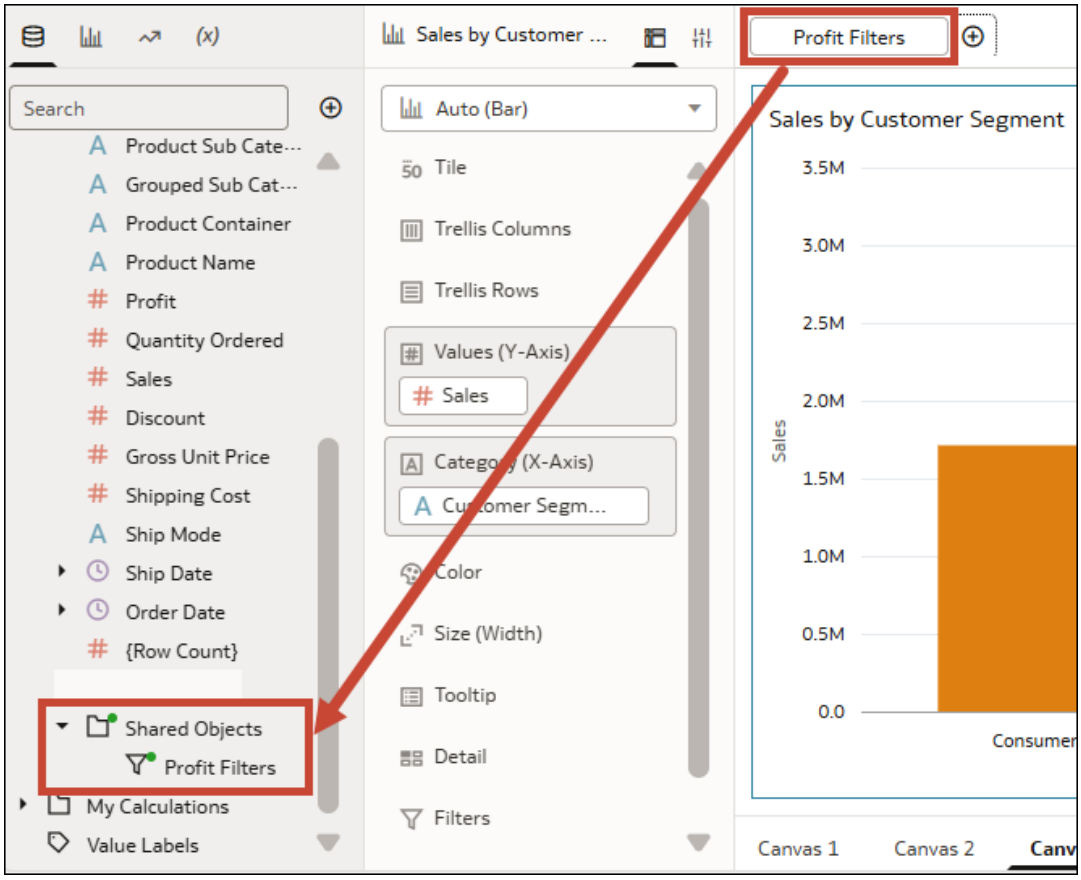
Use these steps to make an existing filter group shareable.

You can turn any filter group into a shared filter group.

When you add a filter group to the Shared Objects folder in the Data pane, both show green dots on their names to indicate your changes aren't saved and the filter group isn't available from other workbooks yet.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Drag the filter group to the **Shared Objects** folder in the Data pane.

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3. Click **Save**, then click **Save Shared Objects**.

Create a Shared Filter Group (Preview)

Use these steps to create a shared filter group.

You can create a filter group directly in the Shared Objects folder in the Data pane. When you do this, the filter group is created as a shared object, but isn't actually used in your workbook. To use the shared filter group in your workbook, see Use a Shared Filter Group (Preview).

When you add a filter group to the Shared Objects folder in the Data pane, both show green dots on their names to indicate your changes aren't saved and the filter group isn't available from other workbooks yet.

For more information about creating a filter group, see Create a Filter Group (Preview).

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, right-click to the **Shared Objects** folder and click **Create Filter Group**.
3. Click **Save**, then click **Save Shared Objects**.

Use a Shared Filter Group (Preview)

Use a shared filter group in your workbook.

Currently, you can use shared filter groups in the filter bar or as visualization filters.

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When you use a shared filter group in your workbook, you can view its information in the filter dialog but you can't modify it. If you want to modify the shared filter group, see Modify a Shared Filter Group (Preview).

If you want to create a filter group based on a shared filter group, you can add the shared filter group to the filter bar or a visualization and then unlink it using the **Unlink from Shared Filter Group** option so that it becomes a standalone filter group, separate from the original shared filter group. Any changes you make to this new filter group in your workbook won't impact the shared filter group object. This also means any changes made to the shared filter group won't impact this new filter group.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, expand the **Shared Objects** folder.
3. Drag the shared filter group you want to use to one of the following filter locations:
   - The filter bar to use it as a canvas or workbook filter.
   - The Filters area in the Grammar pane for a specific visualization.
4. Click **Save**.

Modify a Shared Filter Group (Preview)

When you modify a shared filter group, you're modifying a shared object, which means all workbooks using that shared filter group are impacted by any changes you make.

It's important to consider the impact any changes might have on other workbooks before you modify a shared object.

When you update a filter group in the Shared Objects folder, both show green dots on their names to indicate your changes aren't saved.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, expand the **Shared Objects** folder.
3. Right-click the shared filter group you want to modify and click **Edit Filter Group**.
4. In the filter dialog, make your changes.
5. Click **Save**, then click **Save Shared Objects**.

Selection Steps

The topics in this section explain how you can use selection steps in workbooks.

Topics:

- About Selection Steps in Workbooks
- Selection Steps Action and Operator Reference
- Add Selection Steps
- Specify Limit Values for Selection Steps
- Control Consumer Interactivity for Selection Steps

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About Selection Steps in Workbooks

In Oracle Analytics, you can use selection steps to specify which levels or members of a hierarchy you want to display in table or pivot visualizations that use that hierarchy.

Selection steps are similar to filters, but instead of filtering to select values from a column, they let you select members of a hierarchy to participate in the query. You can choose which levels or members of the hierarchy you want to keep, add, or remove in your selection. You can add as many selection steps as you need, at all filter scopes, and they're applied in a specific order.

For information about which filter properties you can configure for selection steps, see Filter Properties and Filter Bar Properties.

Hierarchies

Oracle Analytics supports using selection steps for both level-based hierarchies and parent-child hierarchies, including those with skip-level or ragged structures.

Level-based hierarchies (structure hierarchies) - In these hierarchies, members of the same type occur only at a single level, while members in parent-child hierarchies all have the same type. In level-based hierarchies, levels roll up from a lower level to a higher level, for example, months can roll up into a year. These roll ups occur over the hierarchy elements and span natural business relationships.

Parent-child hierarchies (value hierarchies) - In these hierarchies, the business relationships occur between different members of the same real-world type such as the manager-employee relationship in an organizational hierarchy tree. Parent-child hierarchies don't have explicitly named levels. There isn't a limit to the number of implicit levels in a parent-child hierarchy.

How Selection Steps and Filters Differ

It's important to understand the differences between filters and selection steps in workbooks so you can apply them effectively.

Purpose and Application

Filters act on individual columns to reduce or focus the data in one or more visualizations. Filters can apply to any visualization that uses data from the same dataset or subject area as the filter, including joined datasets. For more information, see About Filters.

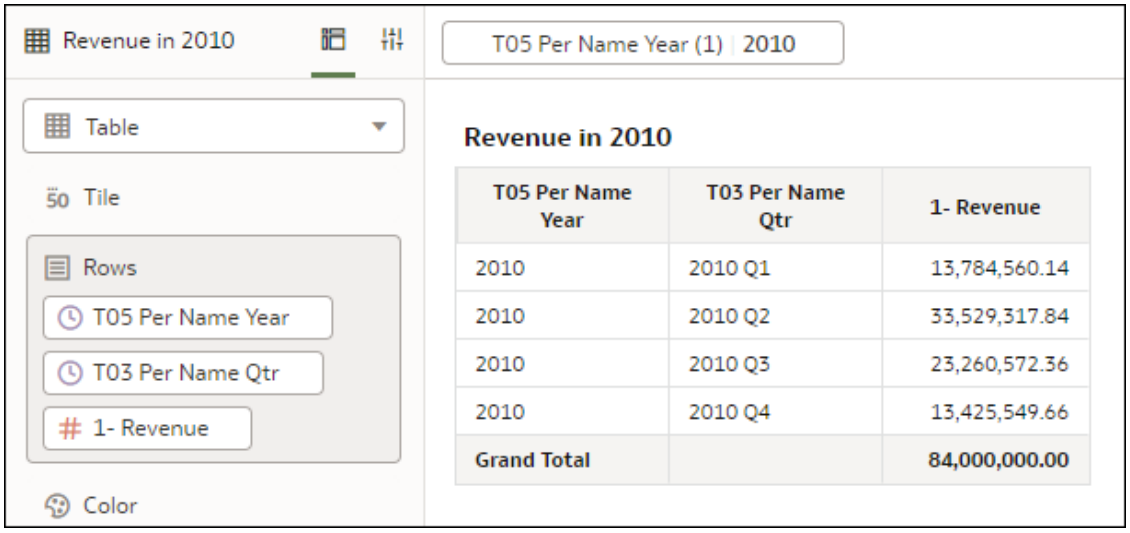
Selection steps act on hierarchies and don't actually filter the data in visualizations. Instead, they specify which levels or members from the hierarchy are displayed in any visualizations that use the same hierarchy that the selection step is based on. Selection steps have no effect on visualizations that don't use the same hierarchy.

Impact on Aggregation

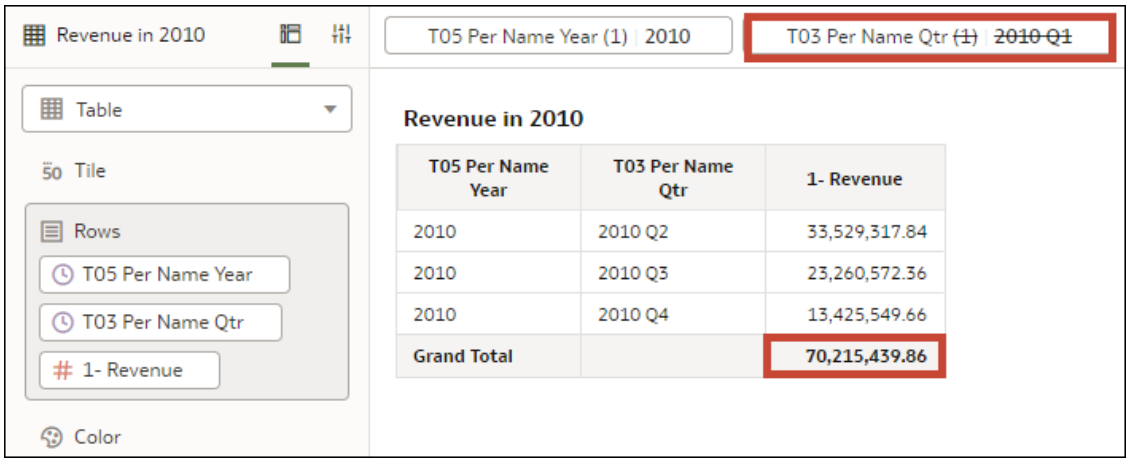
Filters are applied to data before aggregation and therefore affect any aggregate values in visualizations. Selection steps are applied after aggregation and therefore have no impact on aggregate values.

For example, suppose you have a table visualization named Revenue in 2010 that uses attribute and measure columns to show revenue by quarter for the year 2010, including the grand total for the whole year.

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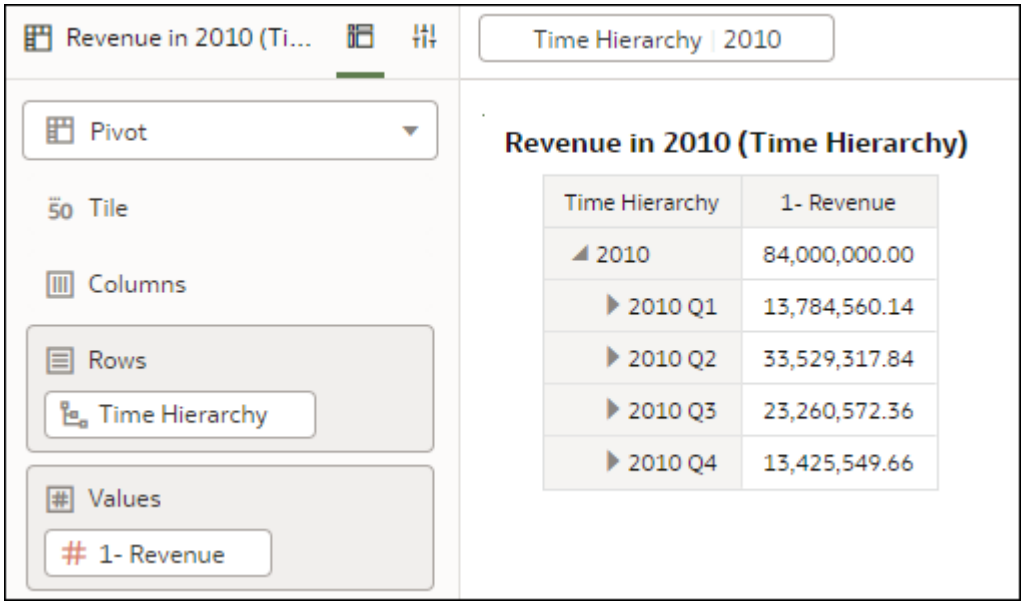


If you add a canvas filter in the filter bar to exclude the first quarter of 2010, the row for the first quarter disappears from the table and the grand total for the whole year changes to reflect the excluded filter value.

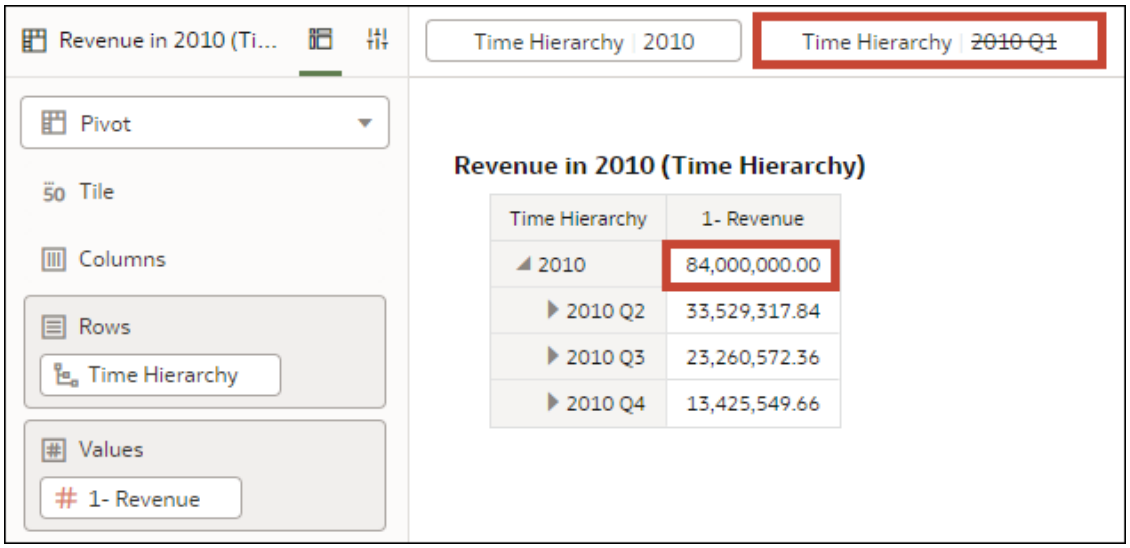


Now suppose your table visualization uses a time hierarchy to show the same data, now named Revenue in 2010 (Time Hierarchy).

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If you add a selection step in the filter bar to remove the first quarter of 2010, the row for the first quarter is gone from the table, but total revenue for the whole year doesn't change. This is because that selection step is applied after the query for revenue in 2010 was aggregated so it's only removing the 2010 Q1 member from the visualization.

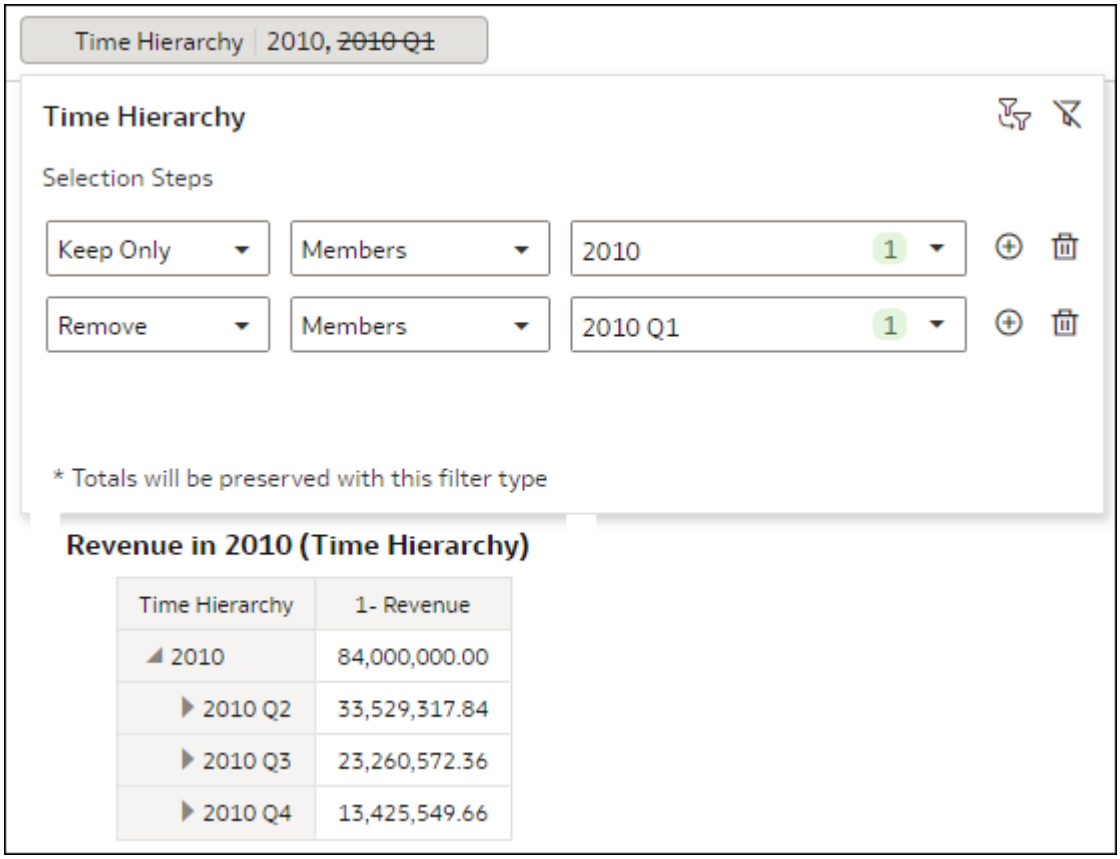


Order of Operation in the Filter Bar

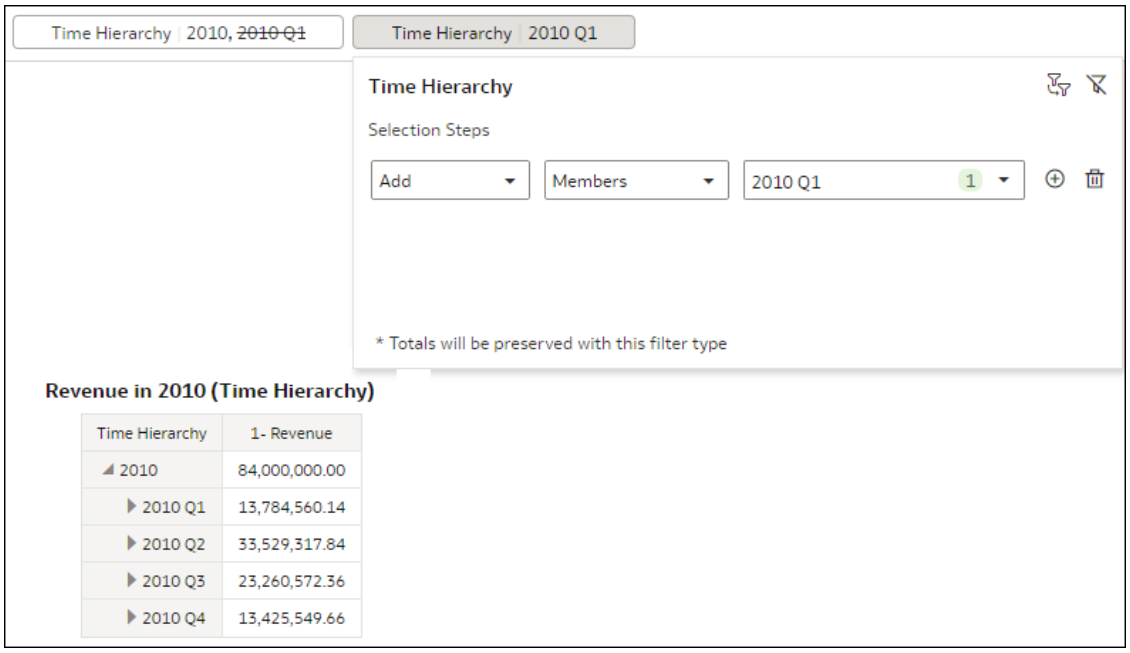
In the filter bar, the order in which workbook or canvas filters appear is irrelevant. However, the order in which selections steps appear is critical because it dictates the order in which they're applied.

For example, suppose you have a table visualization named Revenue in 2010 that uses a time hierarchy to show revenue by quarter for the year 2010, including the total revenue for the year. Suppose the first selection step in the filter bar starts with the year 2010 and then removes the first quarter, 2010 Q1, so only the revenue amounts for the year itself and the remaining three quarters are displayed.

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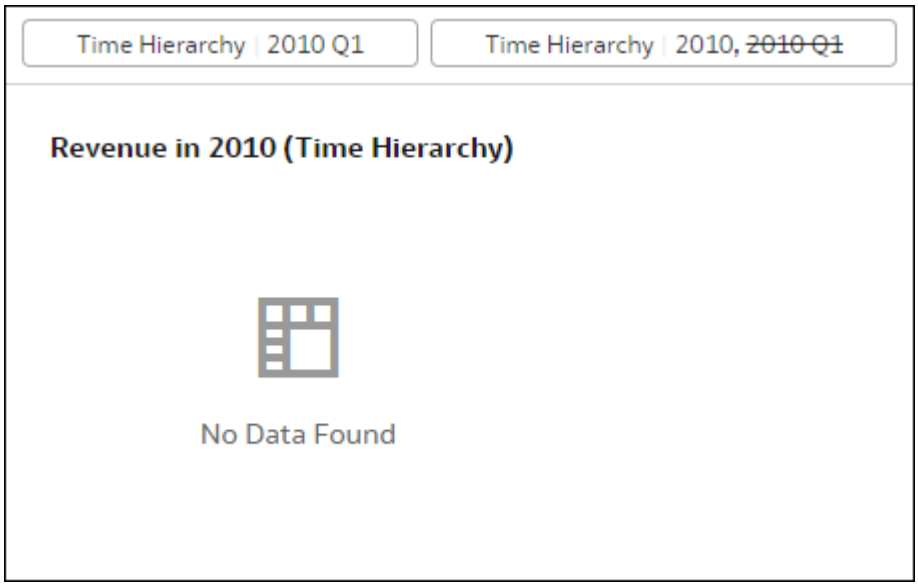
If you add another, separate selection step in the filter bar that adds back the first quarter, 2010 Q1, the visualization displays all four quarters for the year 2010, as expected.



If you swap the order of these two selection steps in the filter bar, the visualization doesn't display any data. This is because now, the selection step adding the member 2010 Q1 is

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applied first so the visualization starts with only 2010 Q1. The second selection step to keep 2010 and remove 2010 Q1 doesn't work because you can't keep the member 2010 if it's not in the selection to begin with.



It's important to make sure the selection steps appear in a logical order so that when they're applied, the visualization displays the data you expect.

Selection Steps Action and Operator Reference

Selection steps use actions and operators to help you access the specific data that you want to display in a table or visualization.

The combination of the action, operator, and values that you select determines what the selection step does.

To add a selection step, see Add Selection Steps.

Actions

There are three actions available for selection steps:

- **Add** - Lets you select levels or members to add to the selection.
- **Keep Only** - Lets you select the levels or members that you want to keep within the selection. This action doesn't add anything to the selection, it works only on levels or members that are already included in the selection. This is the default action.
- **Remove** - Lets you select levels or members to remove from the selection.

Operators

The operators available for a selection step depend on the type of hierarchy you're using.

The following operators are available only for level-based hierarchies:

- **Levels** - Lets you specify the levels you want the selection step to act on; for example, Year, Quarter, Month, and Day for a time-based hierarchy.
- **Nulls** - Lets you specify the hierarchy levels for which to include or exclude null values.

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When you choose any other operator, you can specify which members of the hierarchy you want the selection step to act on. Members are those data points residing at specific nodes in the hierarchy.

The following operators are available for both level-based hierarchies and parent-child hierarchies:

- **Members** - Lets you specify the exact members you want the selection step to act on. Only the selected members are displayed in the visualization. This is the default operator.
- **+ Children** - Lets you specify members so that the selection step acts on them and their children. The members and their children are displayed in the visualization.
- **+ Parents** - Lets you specify members so that the selection step acts on them and their parents. The members and their parents are displayed in the visualization.
- **+ Descendants** - Lets you specify members so that the selection step acts on them and their descendants. The members and all their descendants, down to the lowest members, are displayed in the visualization.
- **+ Ancestors** - Lets you specify members so that the selection step acts on them and their ancestors. The members and their ancestors are displayed in the visualization.
- **+ Siblings** - Lets you specify members so that the selection step acts on them and their siblings. The members and their siblings are displayed in the visualization.
- **+ Leaves** - Lets you specify members so that the selection step acts on them and all the leaves under them. The specified members and the lowest members under them are displayed in the visualization. Any members in between are excluded.
- **Children** - Lets you specify members so that the selection step acts only on their children (not the selected members themselves). Only the children are displayed in the visualization.
- **Parents** - Lets you specify members so that the selection step acts only on their parents. Only the parents are displayed in the visualization.
- **Descendants** - Lets you specify members so that the selection step acts only on their descendants. Only the descendants are displayed in the visualization.
- **Ancestors** - Lets you specify members so that the selection step acts only on their ancestors. Only the ancestors are displayed in the visualization.
- **Siblings** - Lets you specify members so that the selection step acts only on their siblings. Only the siblings are displayed in the visualization.
- **Leaves** - Lets you specify members so that the selection step acts only on the leaves under them. Only the leaves are displayed in the visualization.

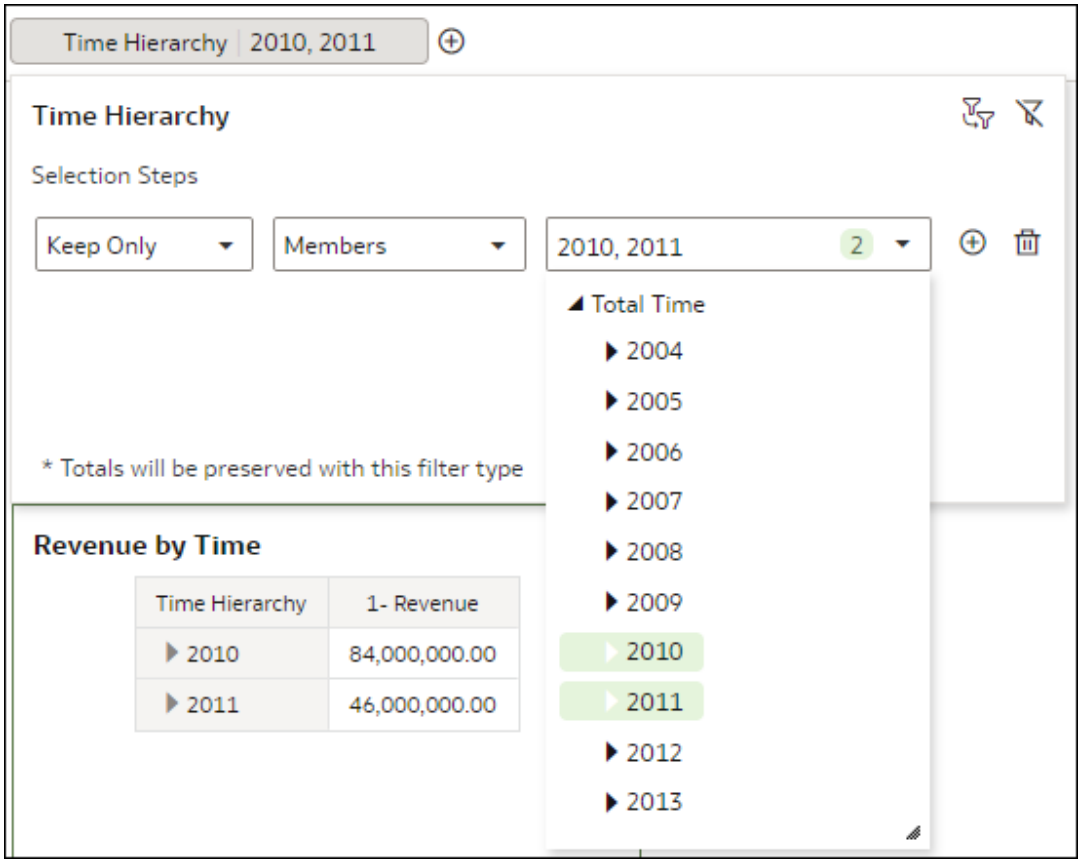
Operator Examples

The following examples illustrate the outcome of a selection step using the action **Keep Only** and each type of operator for a time-based level hierarchy and a parent-child hierarchy of sales representatives.

- **Members**

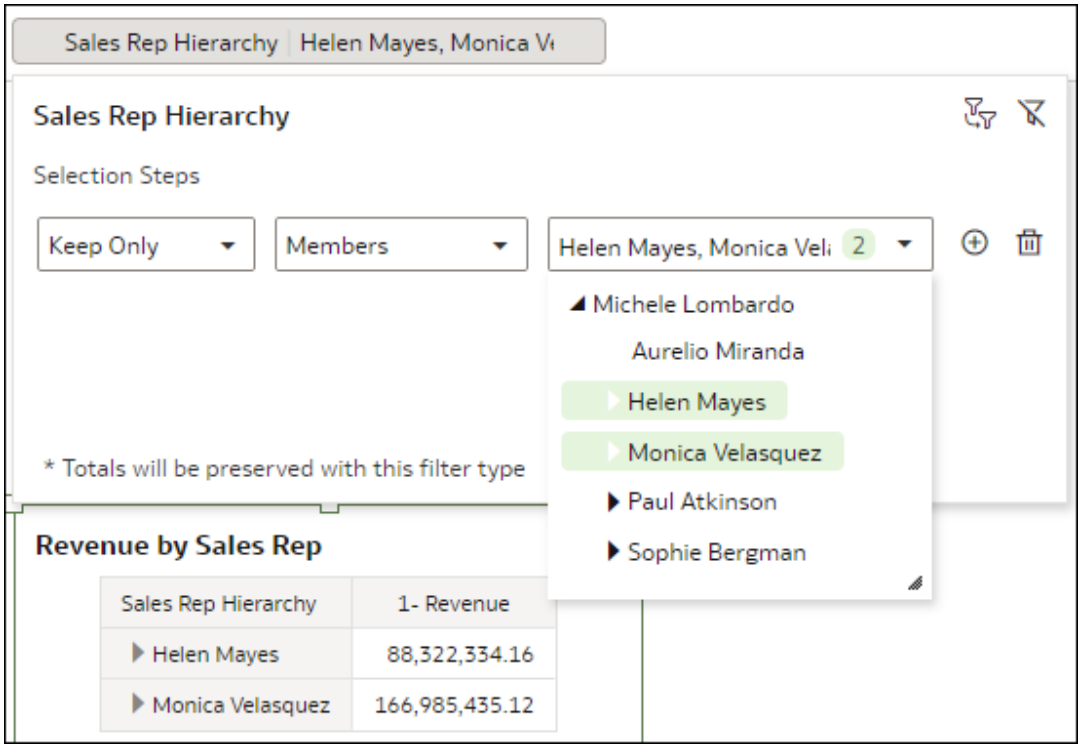
  Level hierarchy example: For a table showing revenue for a time dimension, if you use a selection step with the action Keep Only, the operator Members, and the members 2010 and 2011, the table shows the revenue for only those two years.

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Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator Members, and the members Helen Mayes and Monica Velasquez, the table shows the revenue for only those two representatives. The names in the table are displayed alphabetically.

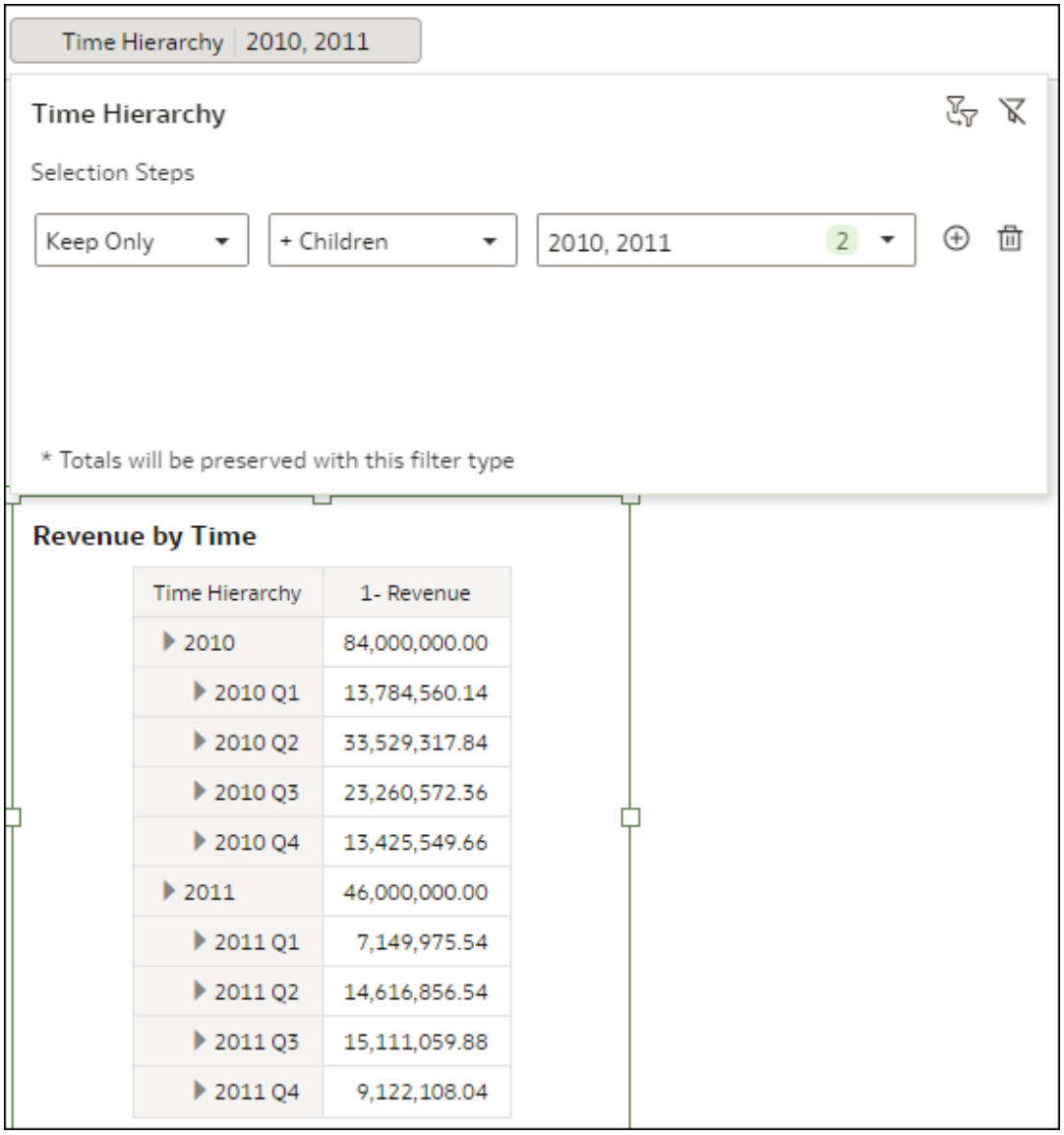
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- **+ Children**

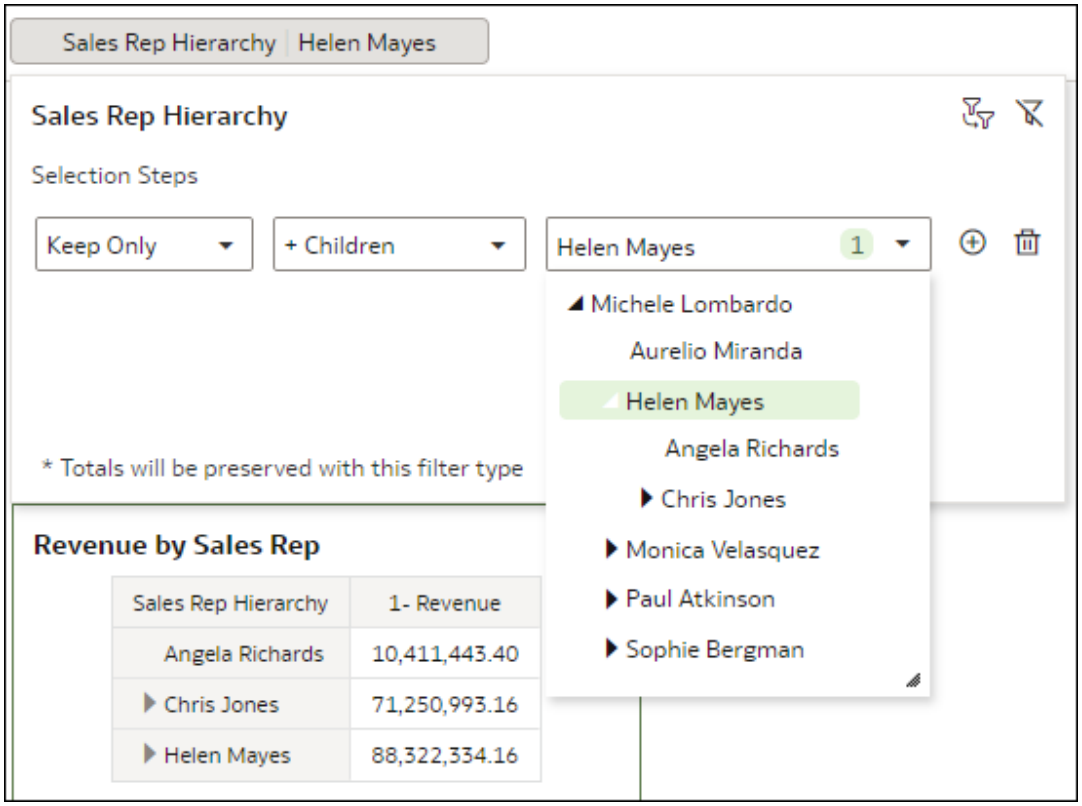
  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator + Children, and the members 2010 and 2011, the table shows the revenue for those two years and their children, in this case, four quarters.

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Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator + Children, and the member Helen Mayes, the table shows the revenue for her and the representatives reporting directly to her. The names in the table are displayed alphabetically.

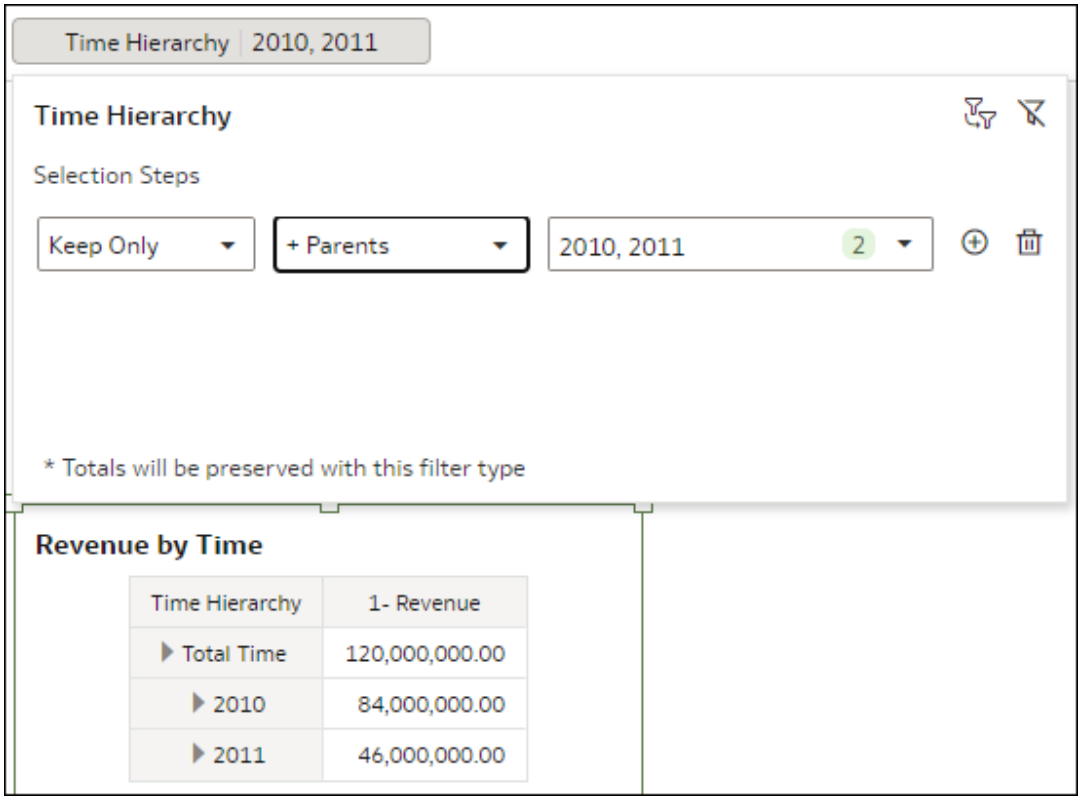
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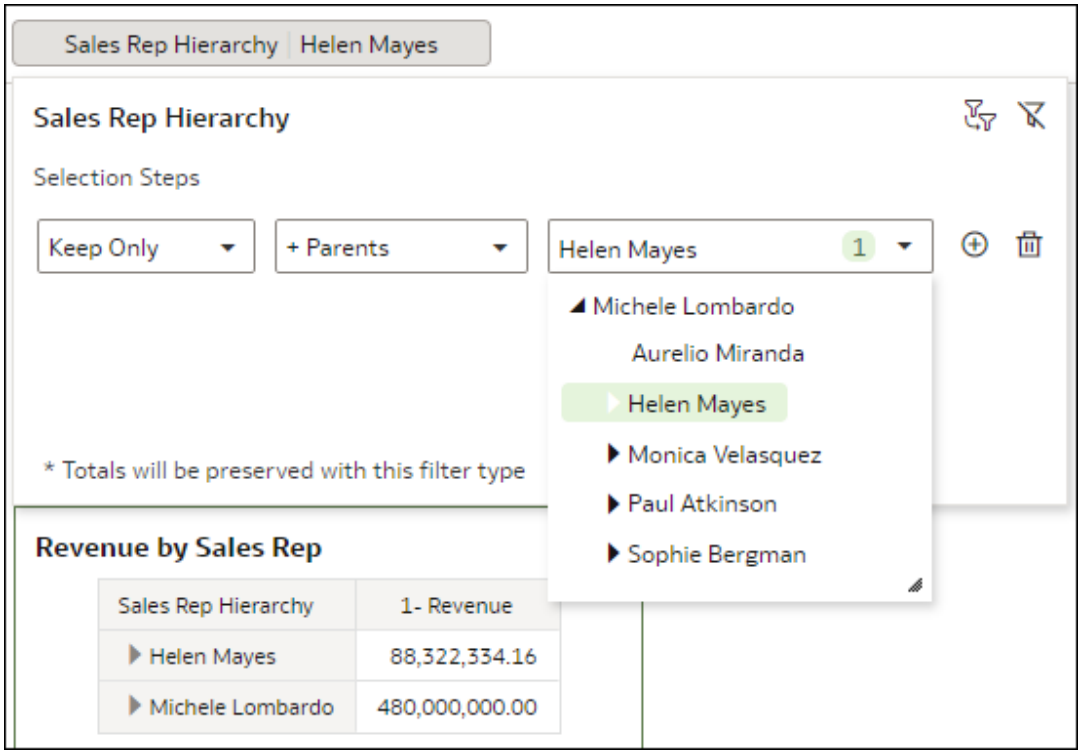
- **+ Parents**

  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator + Parents, and the members 2010 and 2011, the table shows the revenue for those two years and their parent, in this case, Total Time.

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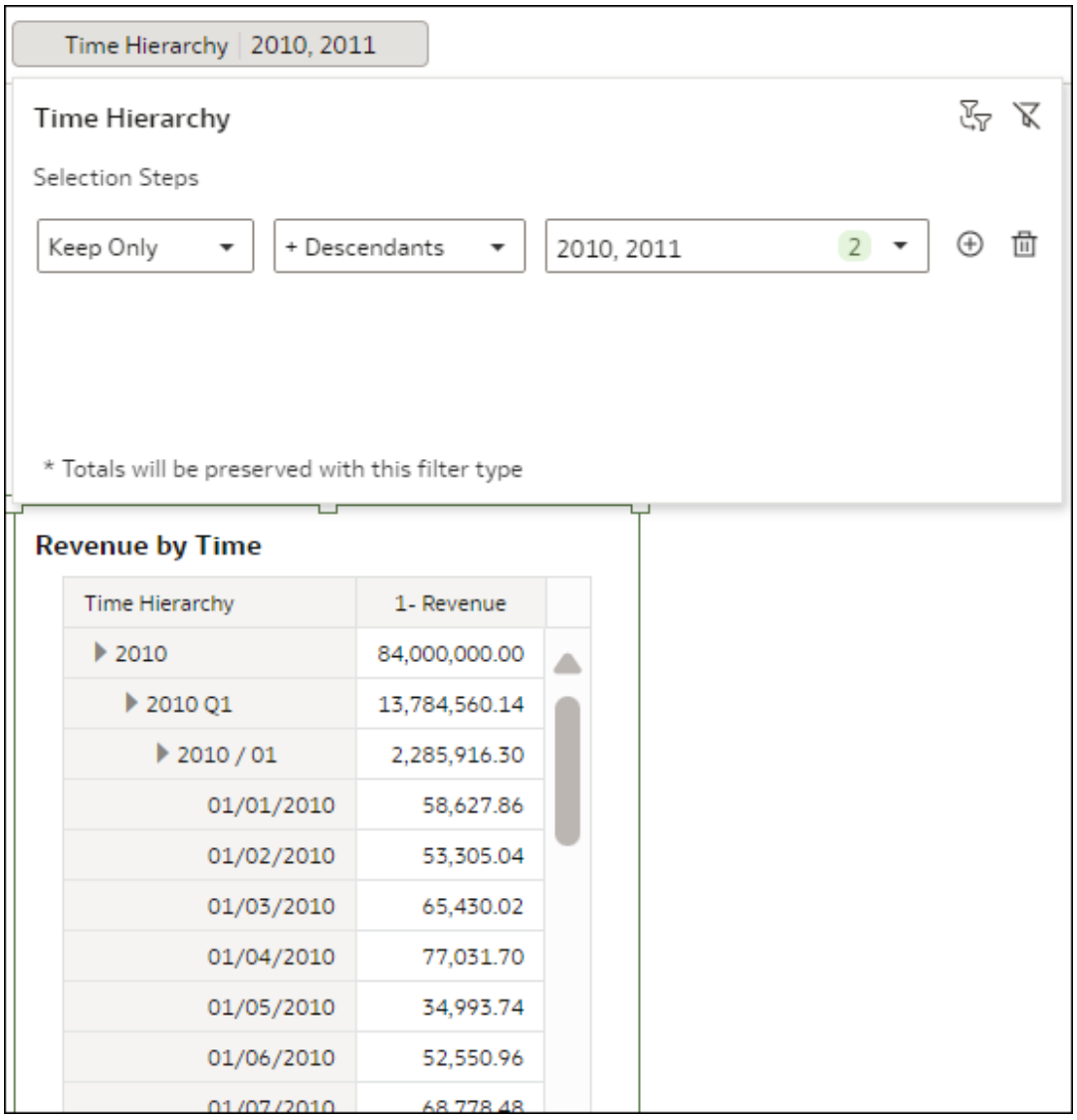
Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator + Parents, and the member Helen Mayes, the table shows the revenue for her and the representative she reports to. The names in the table are displayed alphabetically.



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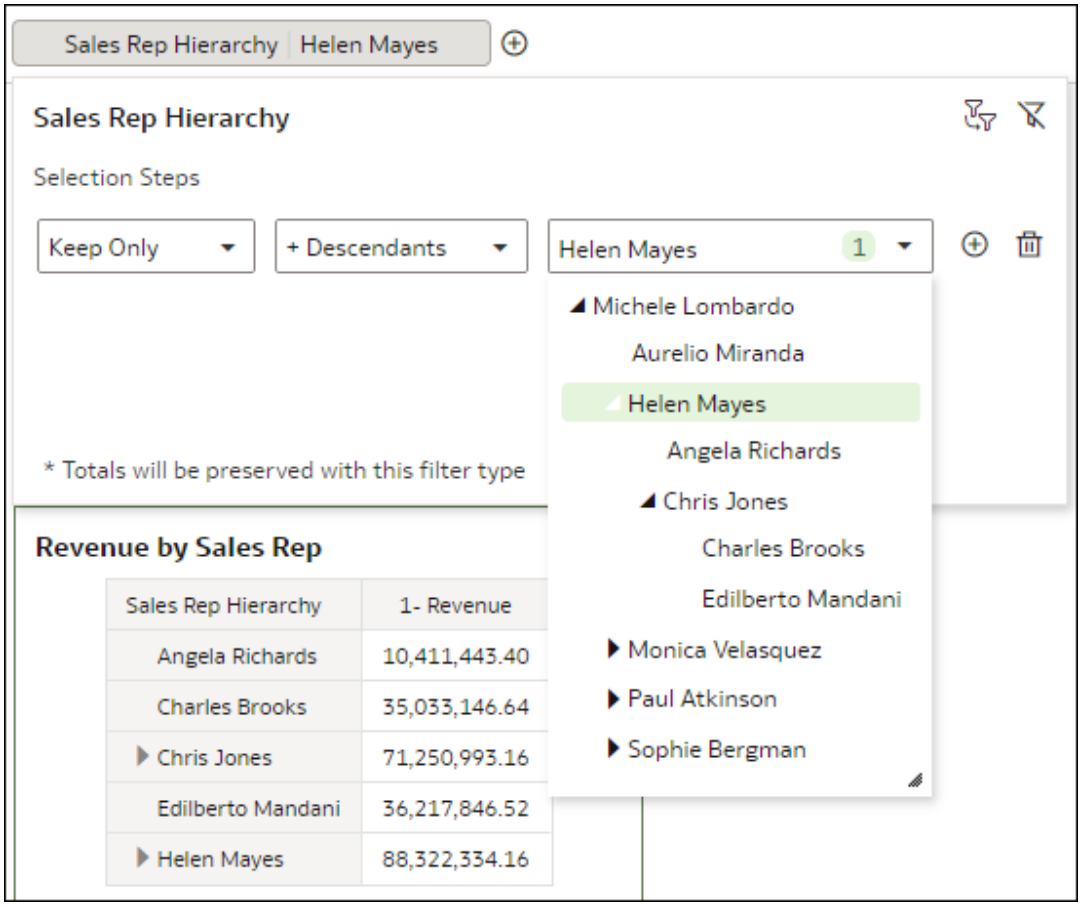
- **+ Descendants**

  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator + Descendants, and the members 2010 and 2011, the table shows the revenue for those two years and all their descendants, in this case, quarters, months, and days.



Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator + Descendants, and the member Helen Mayes, the table shows the revenue for her and all the representatives in the reporting structure under her. The names in the table are displayed alphabetically.

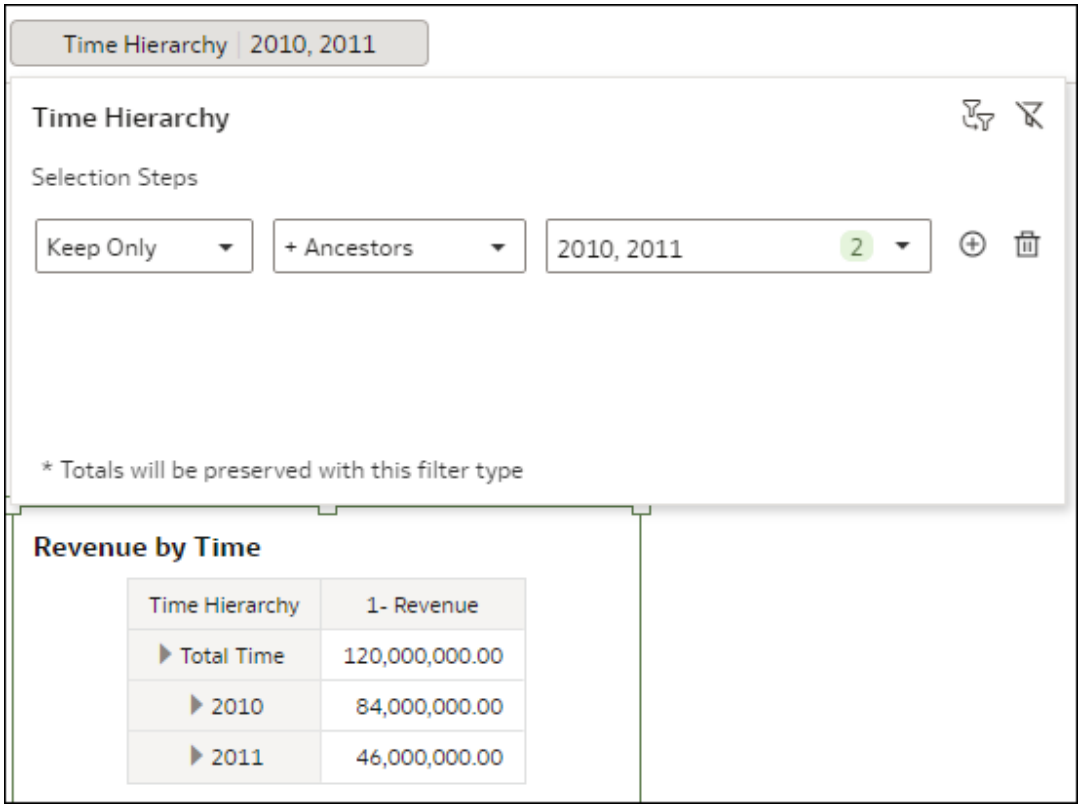
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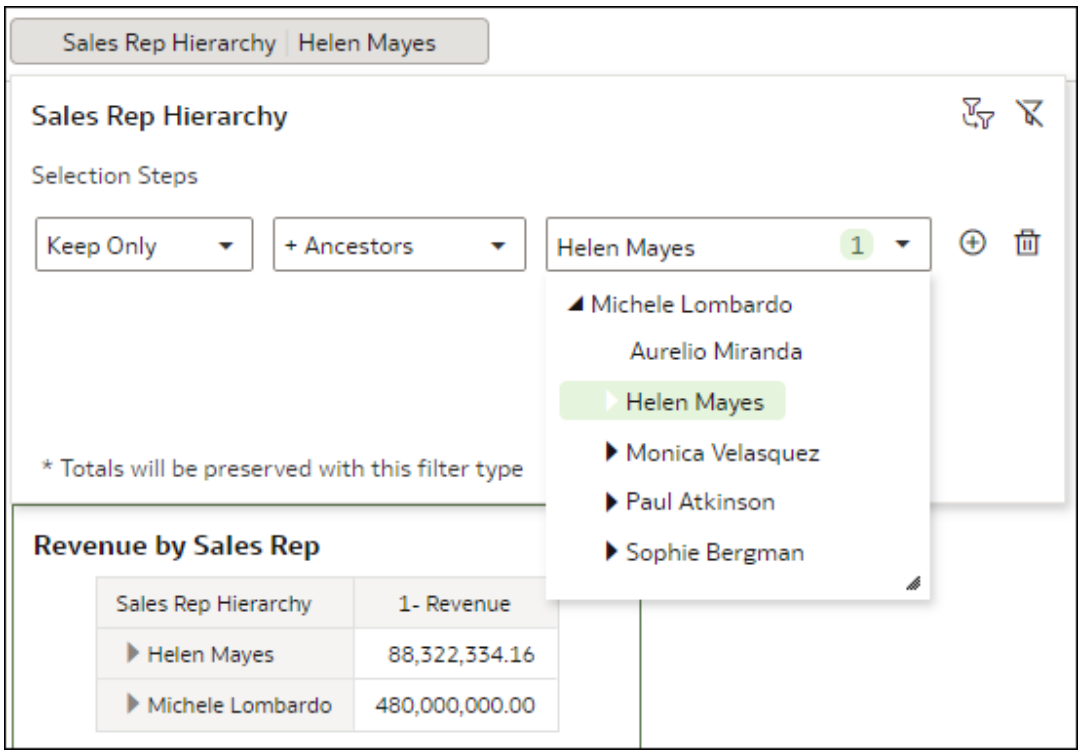
- **+ Ancestors** - Lets you specify members so that the selection step acts on them and their ancestors. The members and their ancestors are displayed in the visualization.

  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator + Ancestors, and the members 2010 and 2011, the table shows the revenue for those two years and their ancestor, in this case, Total Time.

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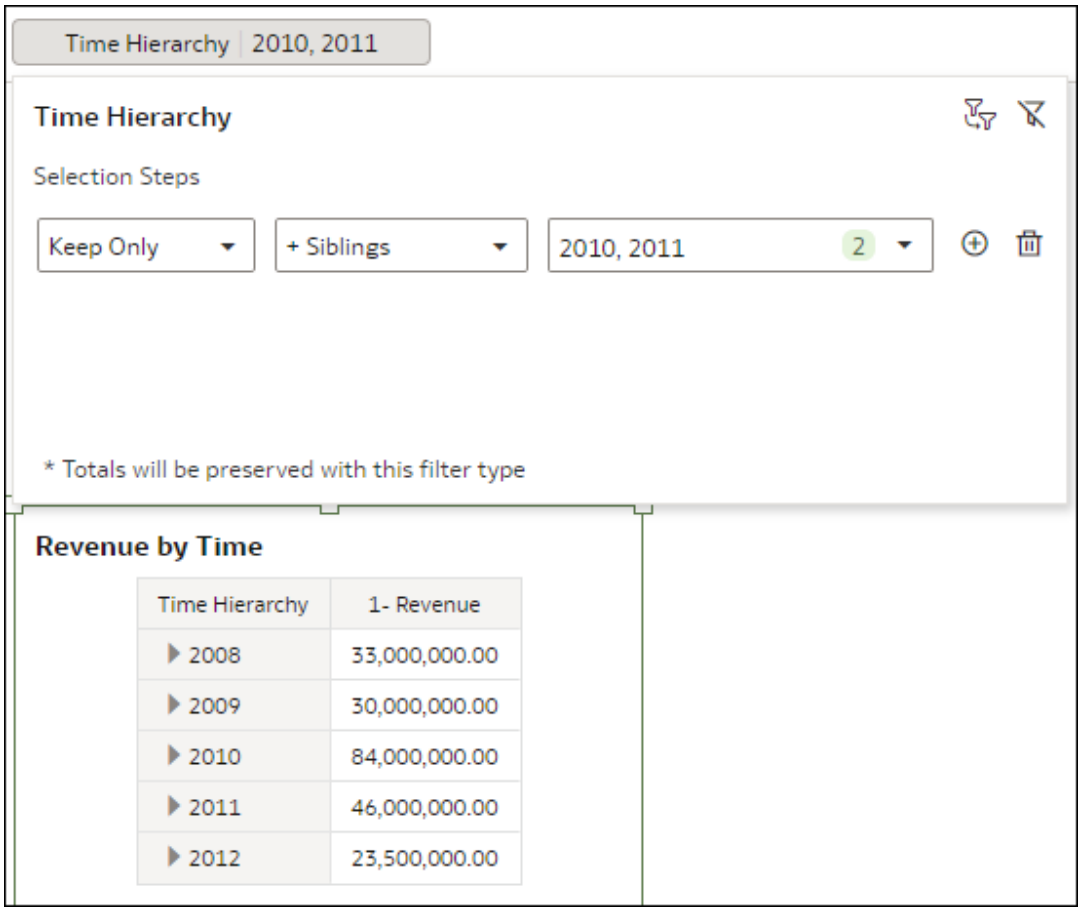
Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator + Ancestors, and the member Helen Mayes, the table shows the revenue for her and the representative she reports to. The names in the table are displayed alphabetically.



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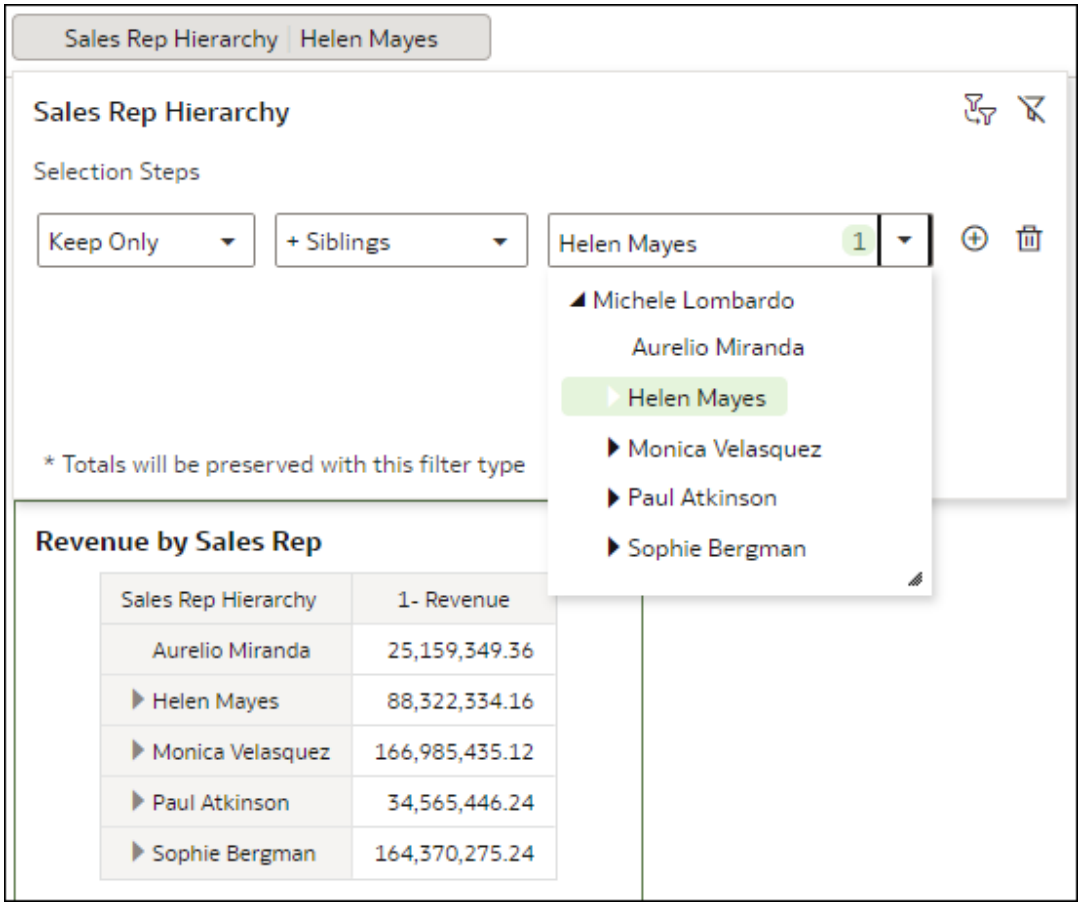
- **+ Siblings** - Lets you specify members so that the selection step acts on them and their siblings. The members and their siblings are displayed in the visualization.

  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator + Siblings, and the members 2010 and 2011, the table shows the revenue for those two years and their siblings, in this case, the rest of the years between 2008 and 2012.



Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator + Siblings, and the member Helen Mayes, the table shows the revenue for her and the other representatives at the same reporting level. The names in the table are displayed alphabetically.

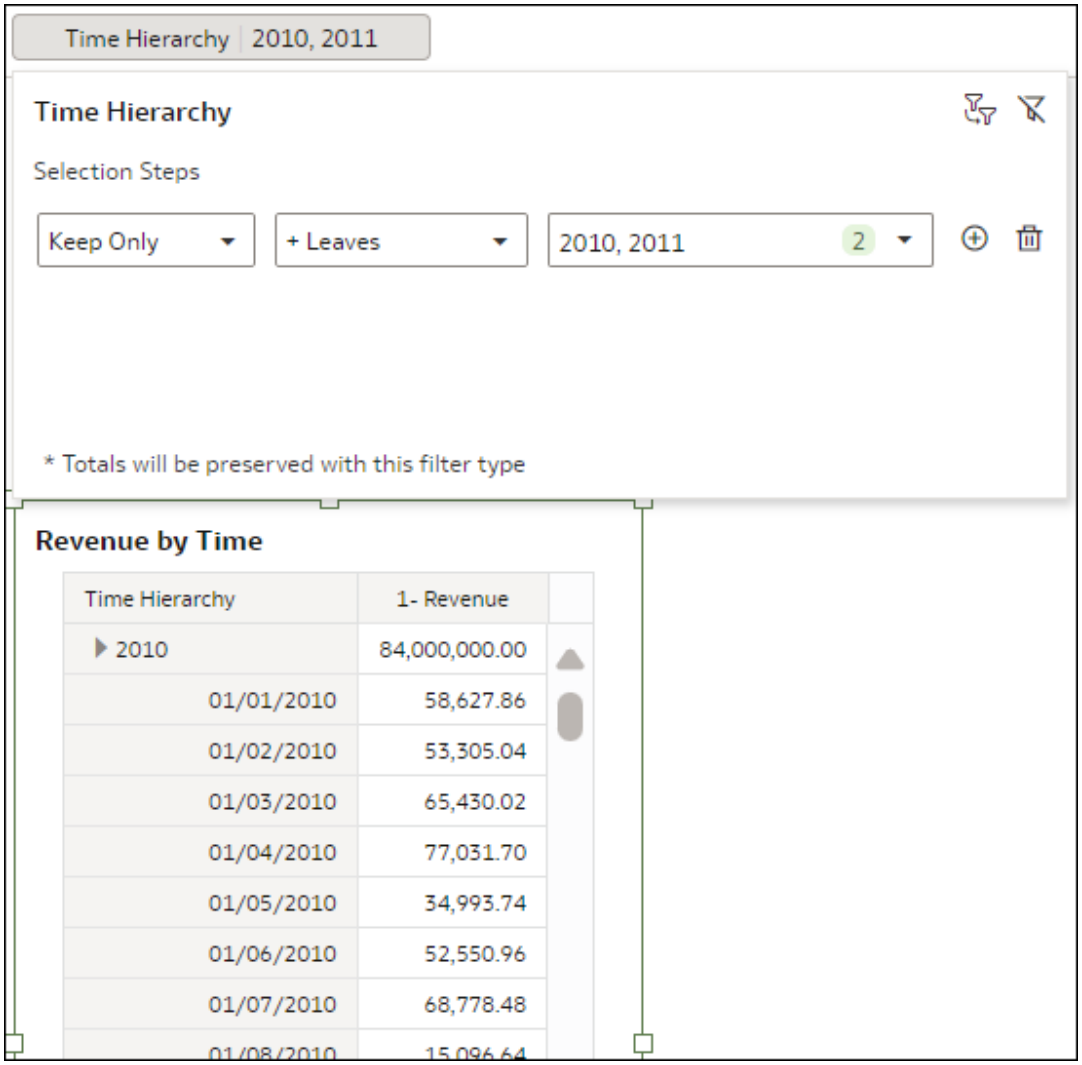
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- **+ Leaves** - Lets you specify members so that the selection step acts on them and all the leaves under them. The specified members and the lowest members under them are displayed in the visualization. Any members in between are excluded.

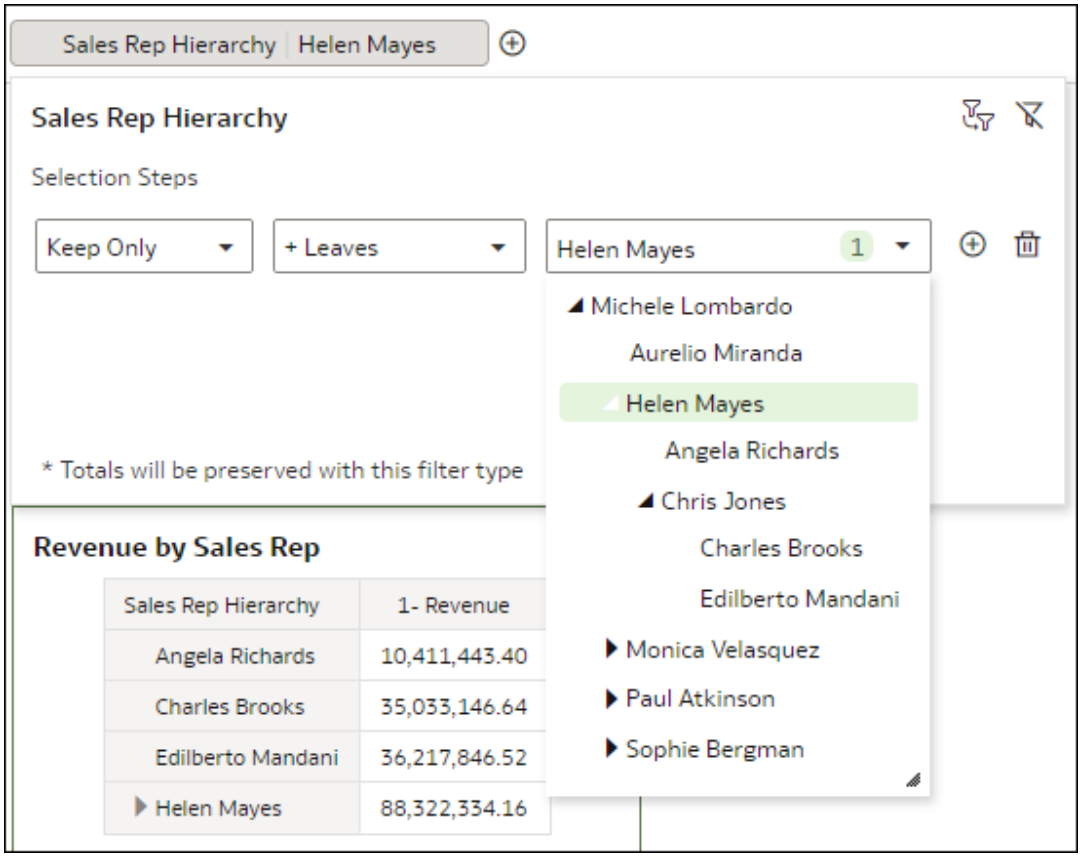
  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator + Leaves, and the members 2010 and 2011, the table shows the revenue for those two years and all their leaves, in this case, days.

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Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator + Leaves, and the member Helen Mayes, the table shows the revenue for her and all the representatives at the lowest level under her, excluding any in between. The names in the table are displayed alphabetically.

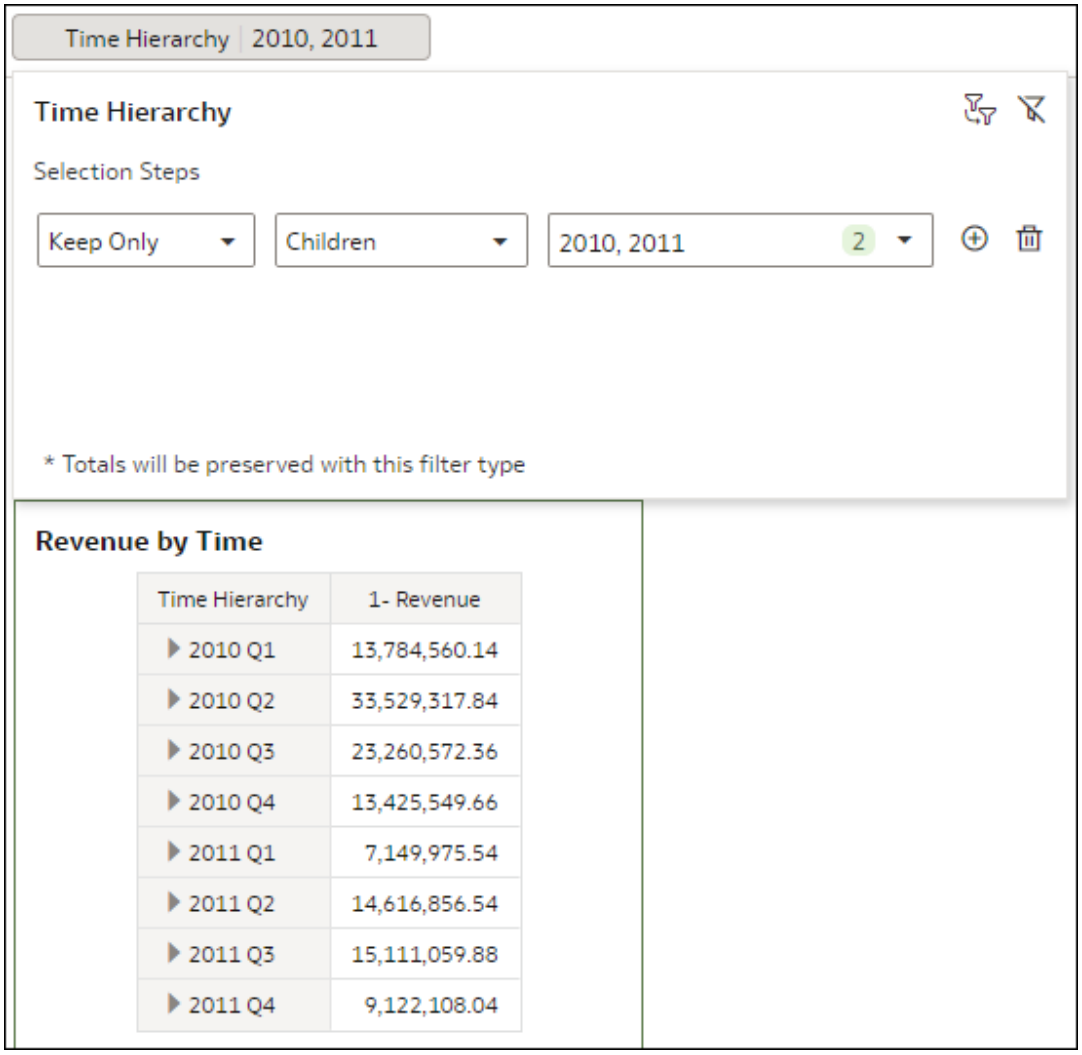
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- **Children** - Lets you specify members so that the selection step acts only on their children (not the selected members themselves). Only the children are displayed in the visualization.

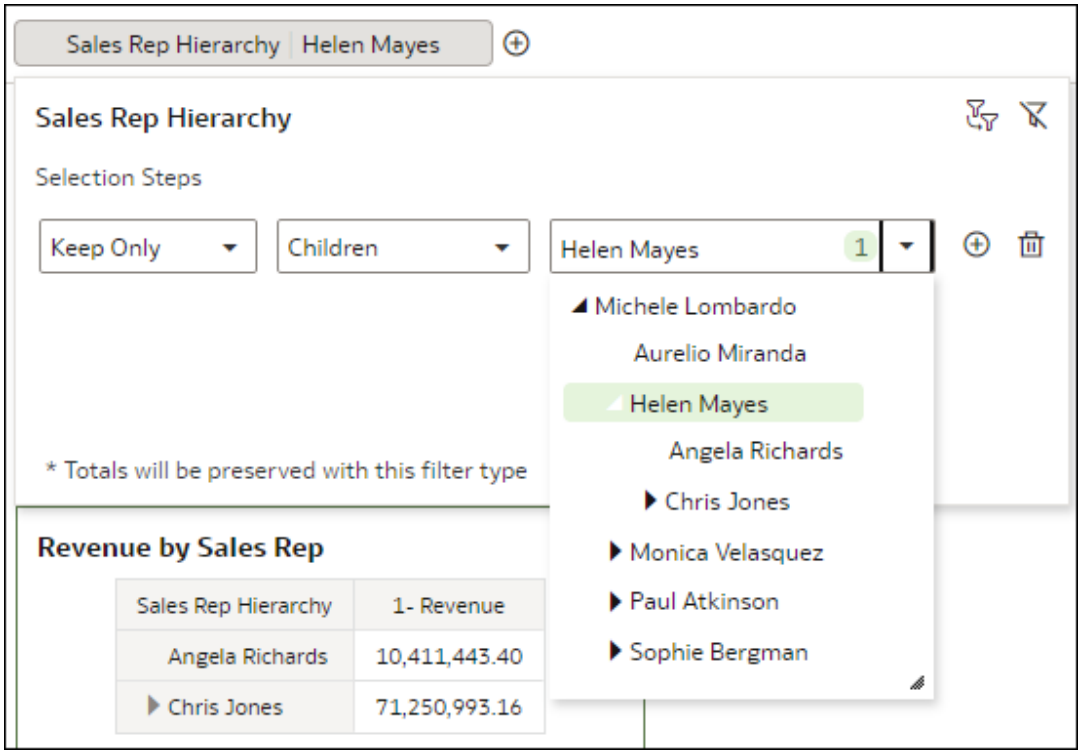
  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator Children, and the members 2010 and 2011, the table shows the revenue for the children of those two years, in this case, the quarters.

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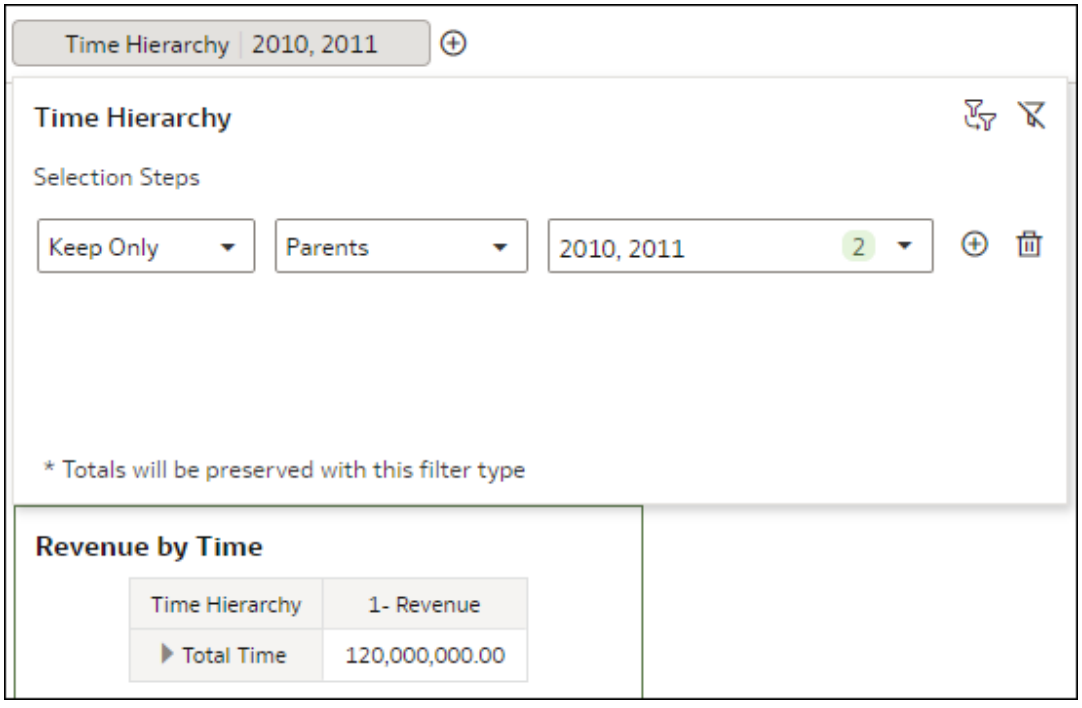
Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator Children, and the member Helen Mayes, the table shows the revenue for the two representatives reporting directly to her. The names in the table are displayed alphabetically.

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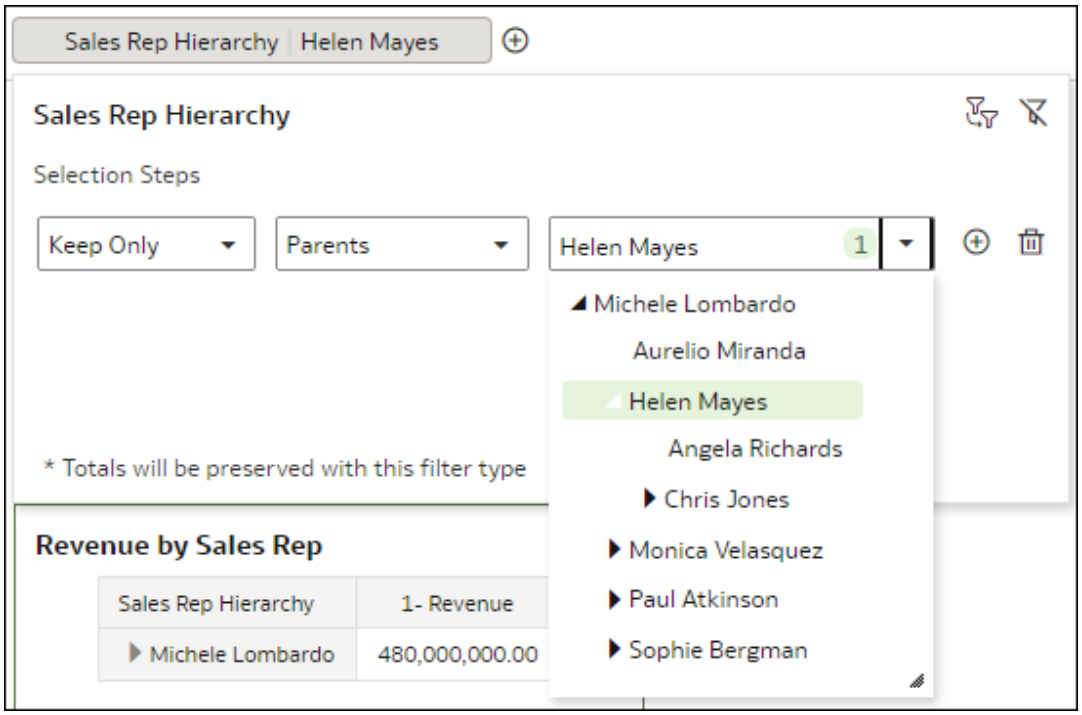
- **Parents** - Lets you specify members so that the selection step acts only on their parents. Only the parents are displayed in the visualization.

  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator Parents, and the members 2010 and 2011, the table shows the revenue for the parent of those two years, in this case, Total Time.



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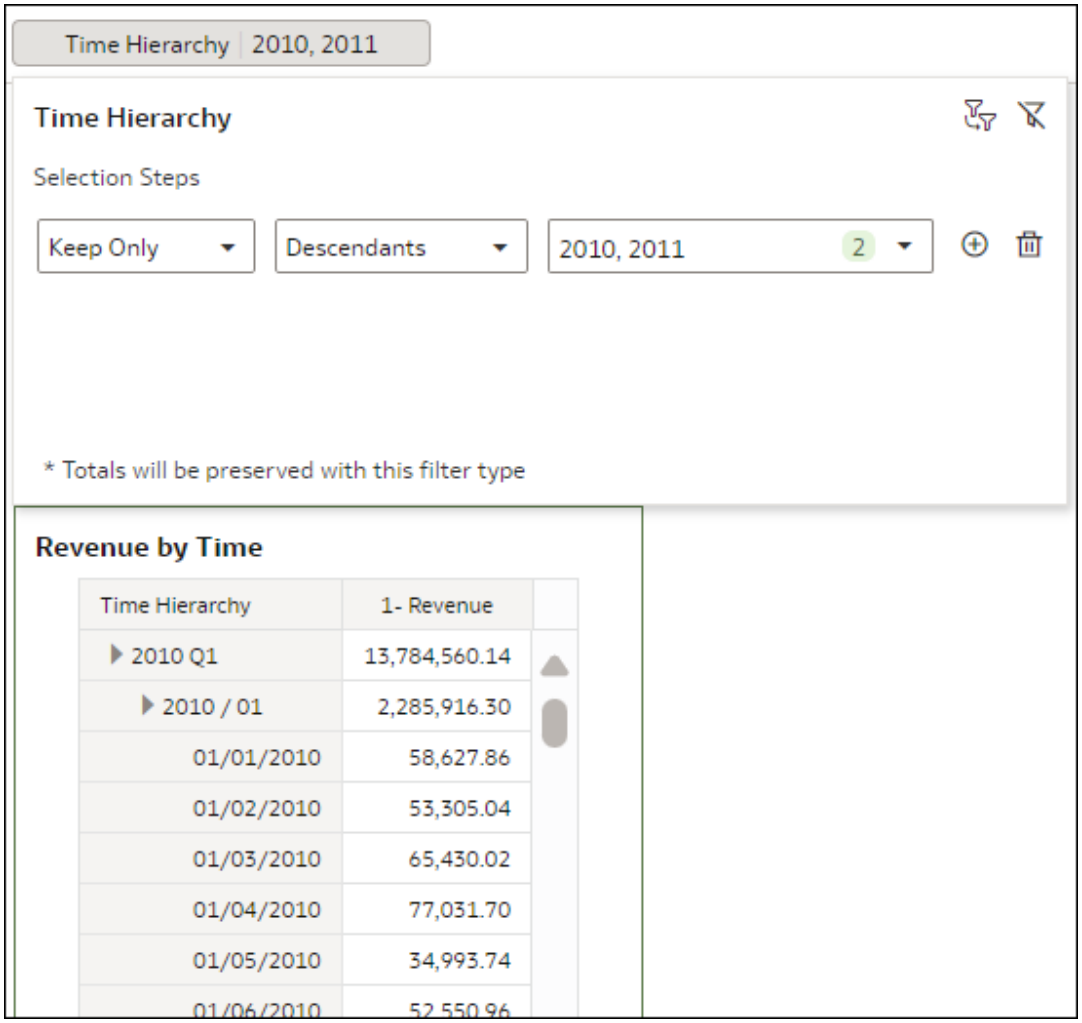
Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator Parents, and the member Helen Mayes, the table shows the revenue for the representative she reports to.



- **Descendants** - Lets you specify members so that the selection step acts only on their descendants. Only the descendants are displayed in the visualization.

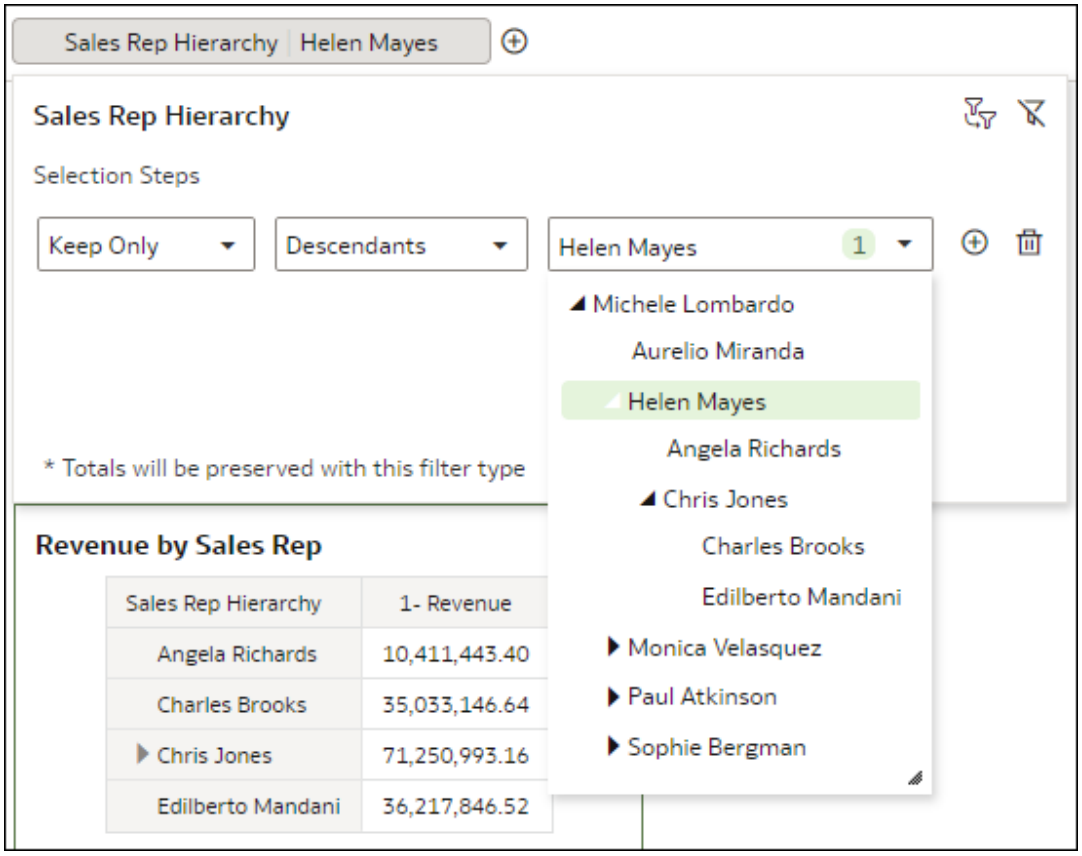
  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator Descendants, and the members 2010 and 2011, the table shows the revenue for all the descendants of those two years, in this case, quarters, months, and days.

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Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator Descendants, and the member Helen Mayes, the table shows the revenue for all the representatives in the reporting structure under her. The names in the table are displayed alphabetically.

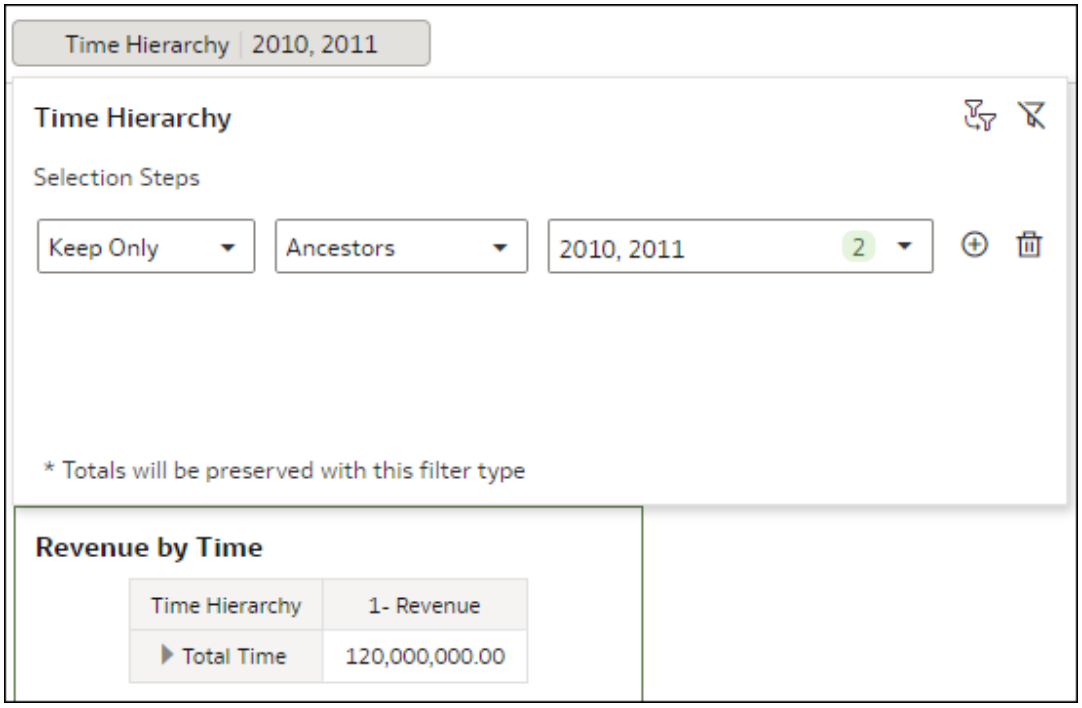
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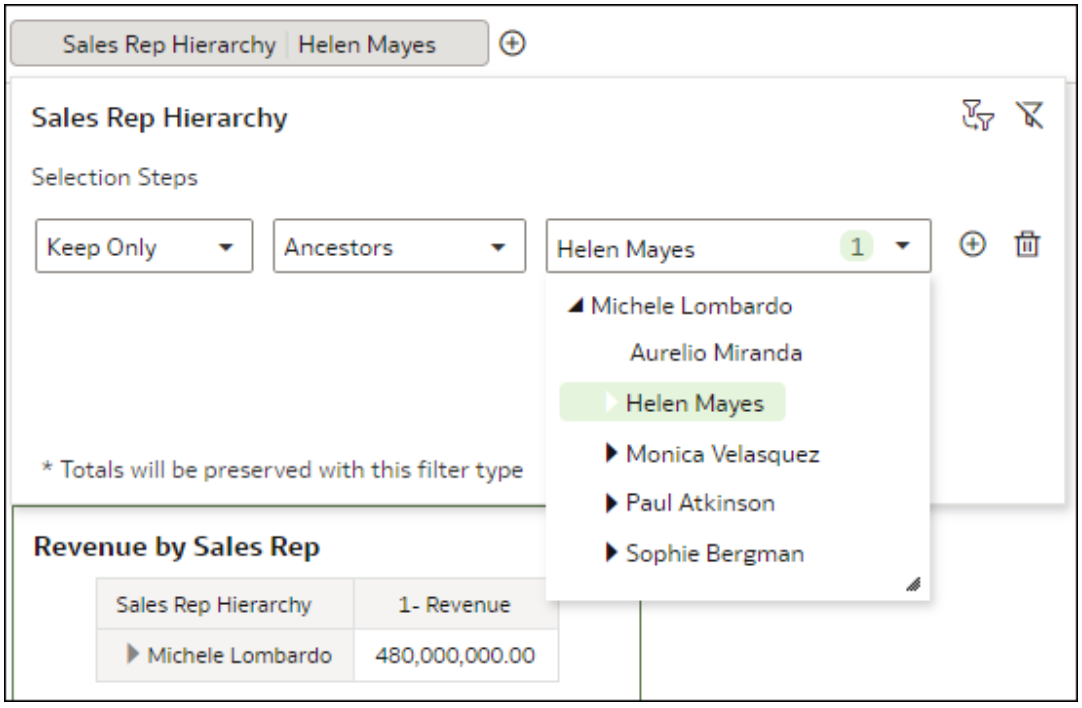
- **Ancestors** - Lets you specify members so that the selection step acts only on their ancestors. Only the ancestors are displayed in the visualization.

  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator Ancestors, and the members 2010 and 2011, the table shows the revenue for the ancestor of those two years, in this case, Total Time.

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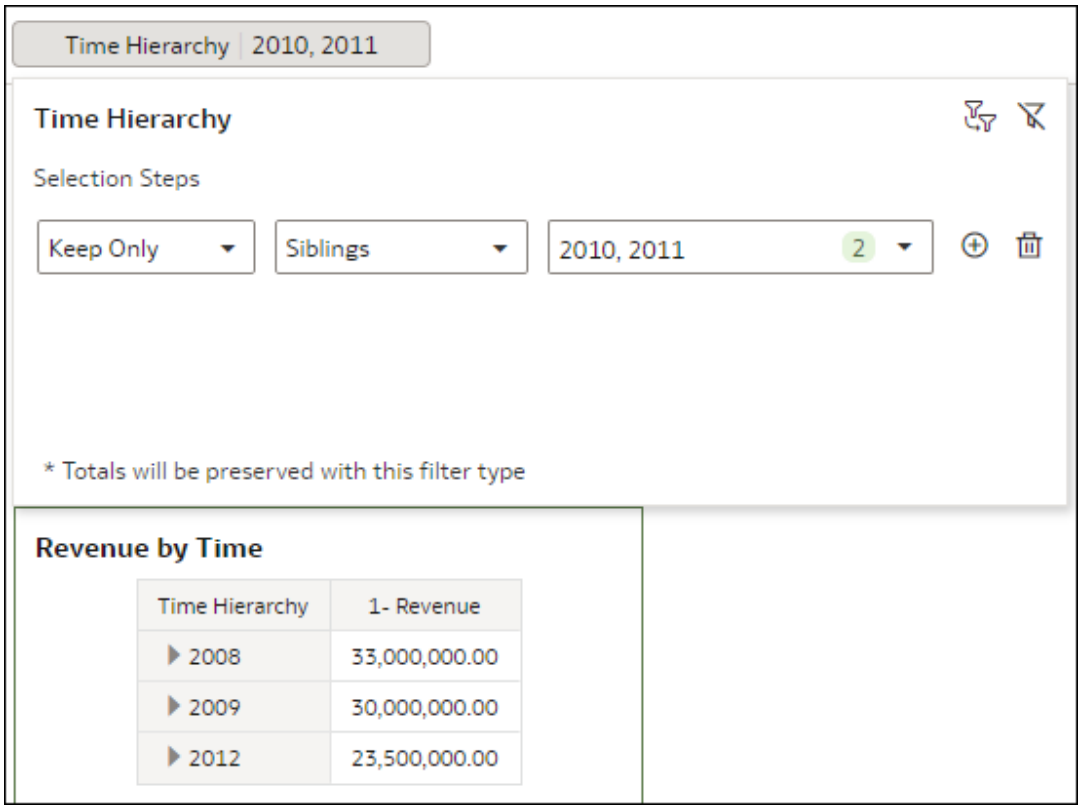
Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator Ancestors, and the member Helen Mayes, the table shows the revenue for the representative she reports to.



- **Siblings** - Lets you specify members so that the selection step acts only on their siblings. Only the siblings are displayed in the visualization.

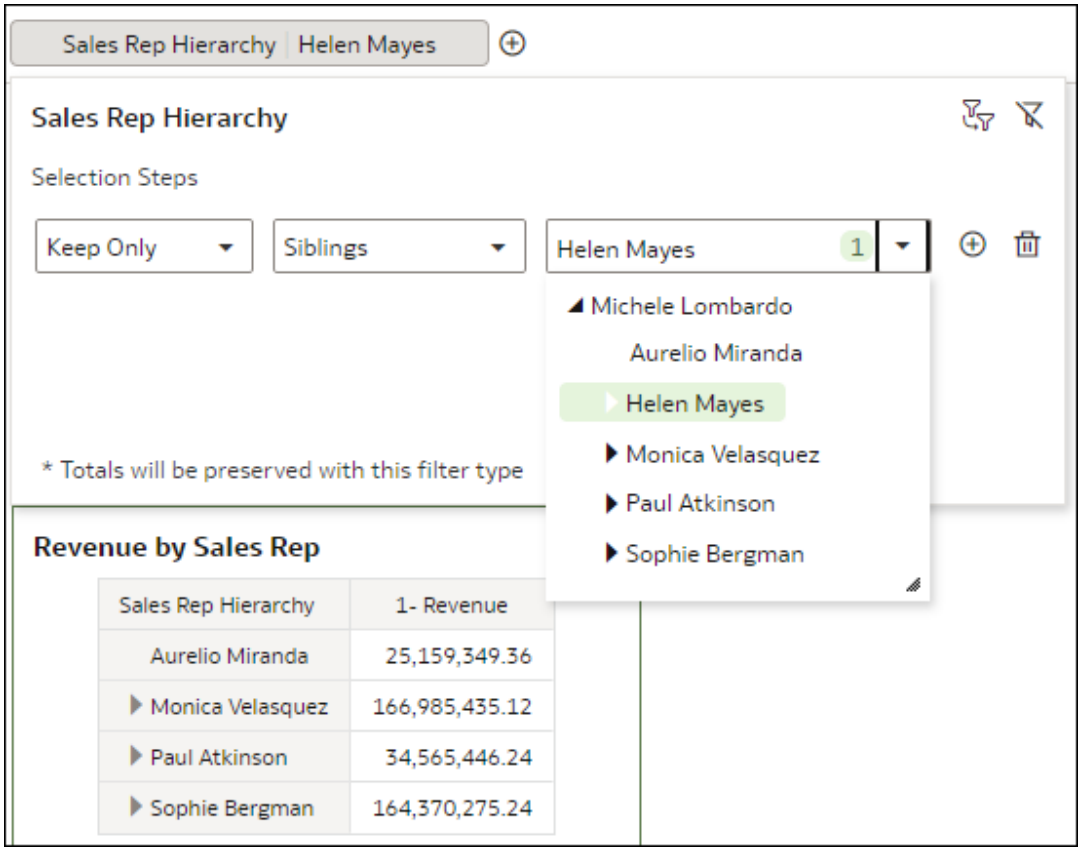
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Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator Siblings, and the members 2010 and 2011, the table shows the revenue for the siblings of those two years, in this case, the rest of the years between 2008 and 2012.



Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator Siblings, and the member Helen Mayes, the table shows the revenue for the other representatives at the same reporting level as her. The names in the table are displayed alphabetically.

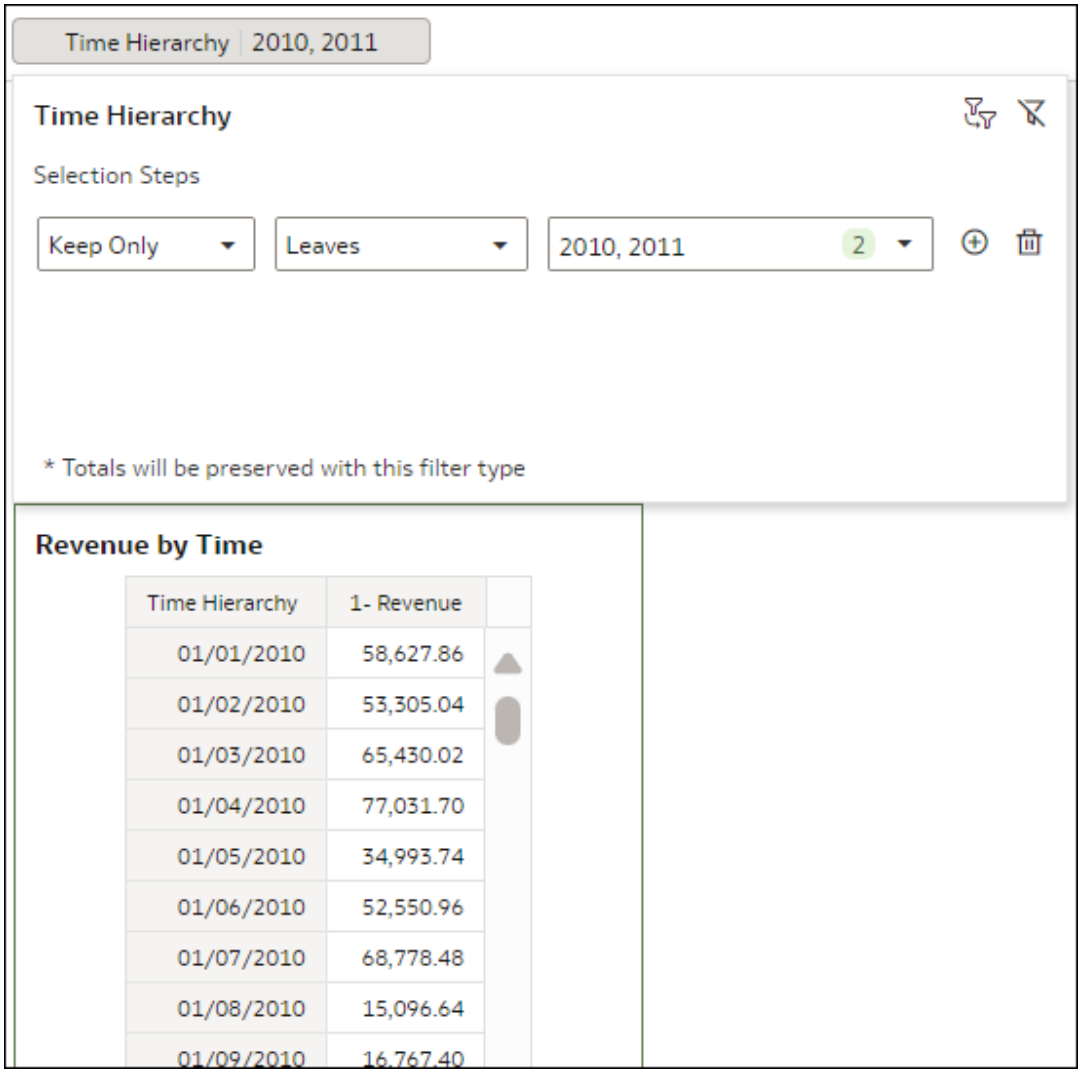
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- **Leaves** - Lets you specify members so that the selection step acts only on the leaves under them. Only the leaves are displayed in the visualization.

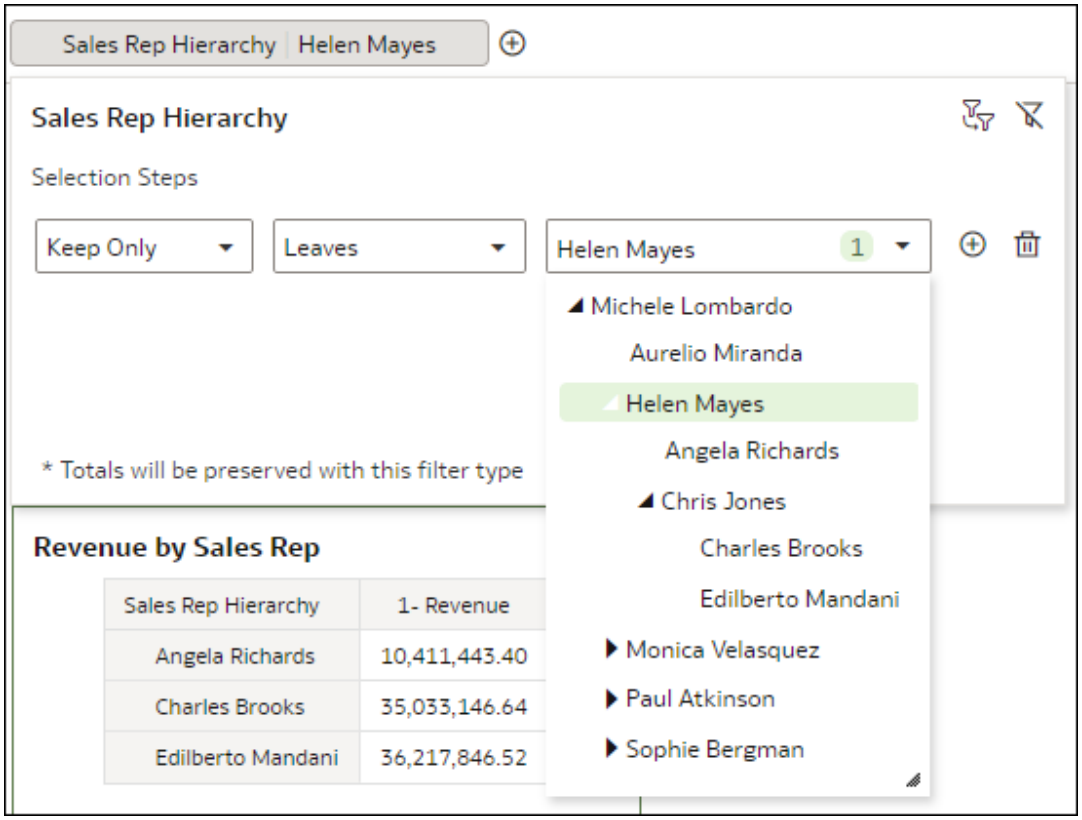
  Level hierarchy example: For a table showing revenue for a time hierarchy, if you use a selection step with the action Keep Only, the operator Leaves, and the members 2010 and 2011, the table shows the revenue for all the leaves of those two years, in this case, days.

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Parent-child hierarchy example: For a table showing revenue for a sales representative hierarchy, if you use a selection step with the action Keep Only, the operator Leaves, and the member Helen Mayes, the table shows the revenue for all the representatives at the lowest level under her, excluding any in between. The names in the table are displayed alphabetically.

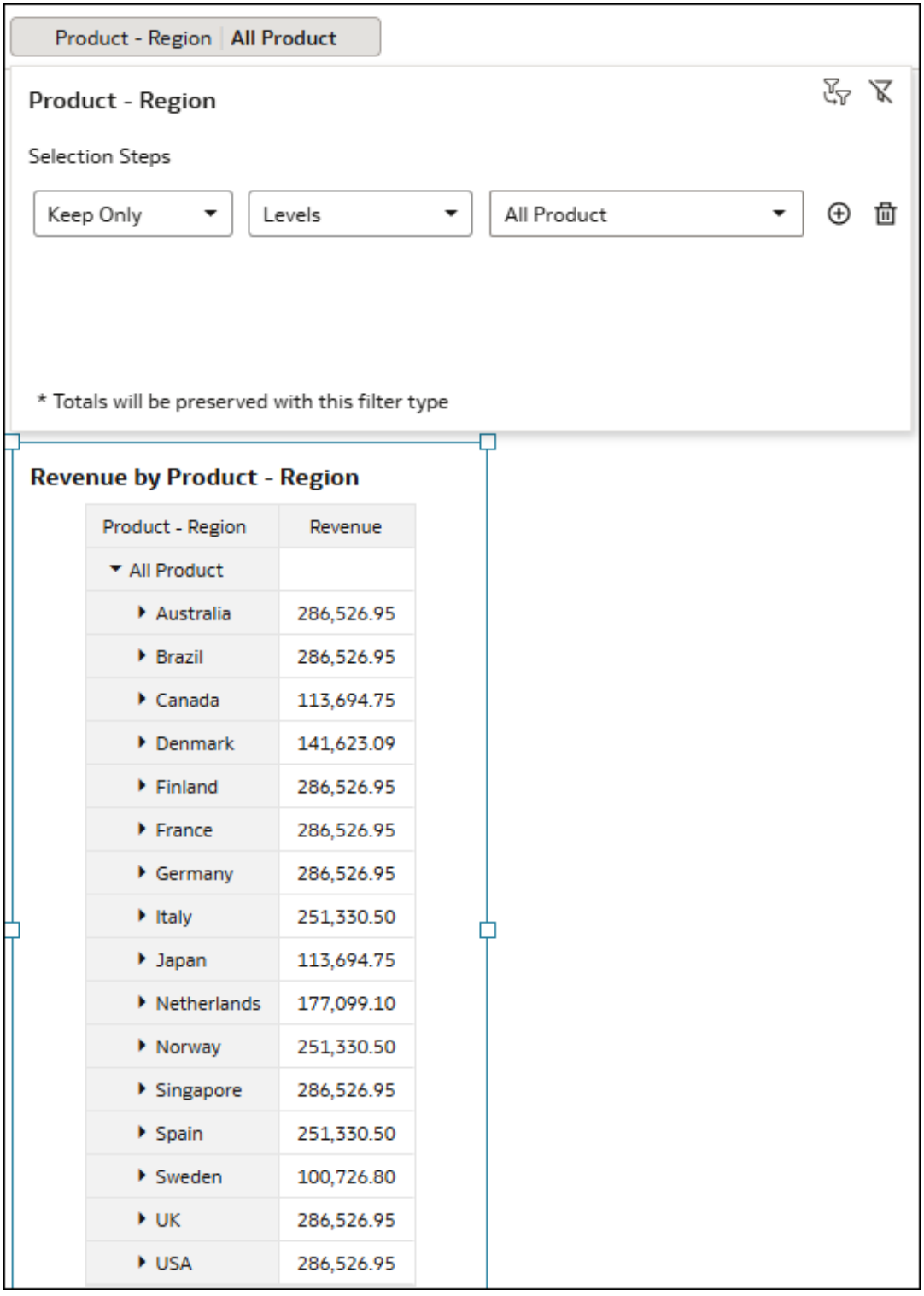
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- **Nulls** - Lets you specify the hierarchy levels for which to include or exclude null values.

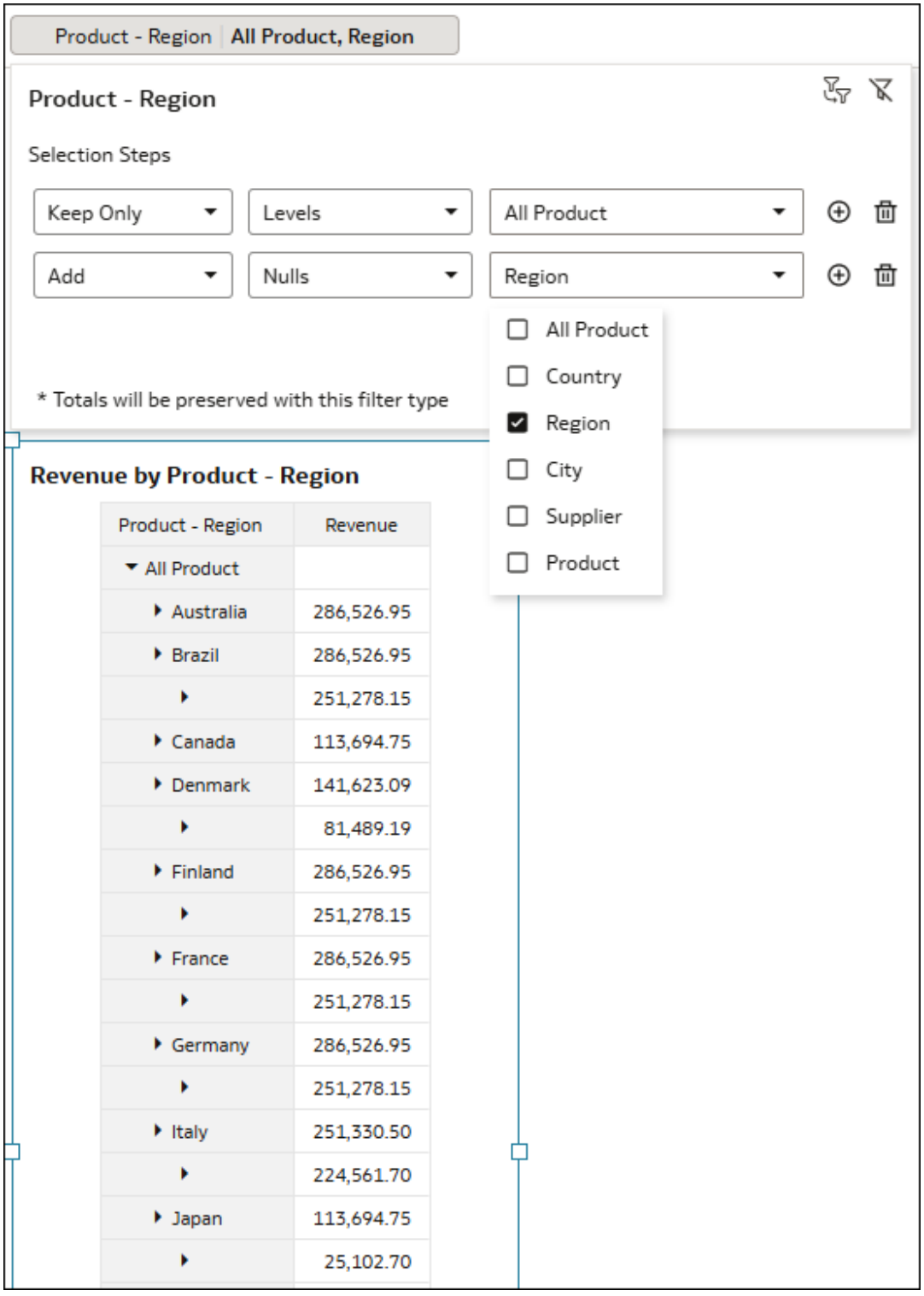
  Level hierarchy example: For a table showing revenue for a product-region hierarchy, you can start with a selection step with the action Keep Only, the operator Levels, and the level All Product, then expand All Product in the table so that all named regions and their revenue are displayed.

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If you add another selection step with the action Add, the operator Nulls, and the level Region, the table not only shows the revenue for the named regions, but also shows the revenue for any unnamed regions (in other words, those regions with null values).

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Add Selection Steps

Use selection steps to select the levels or members you want to display in a table or pivot visualization that uses a level or parent-child hierarchy.

You can add selection steps to the filter bar, to a dashboard filter, or to an individual visualization.

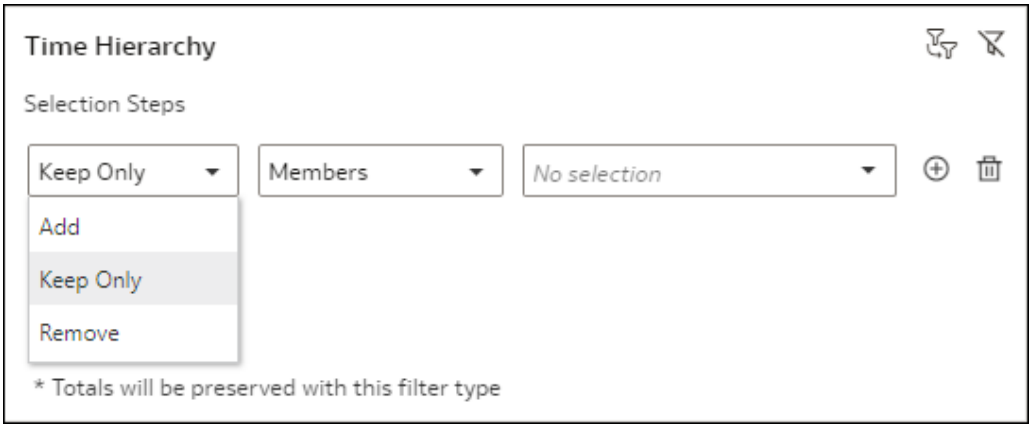
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For information about how to use the different actions and operators, see Selection Steps Action and Operator Reference.

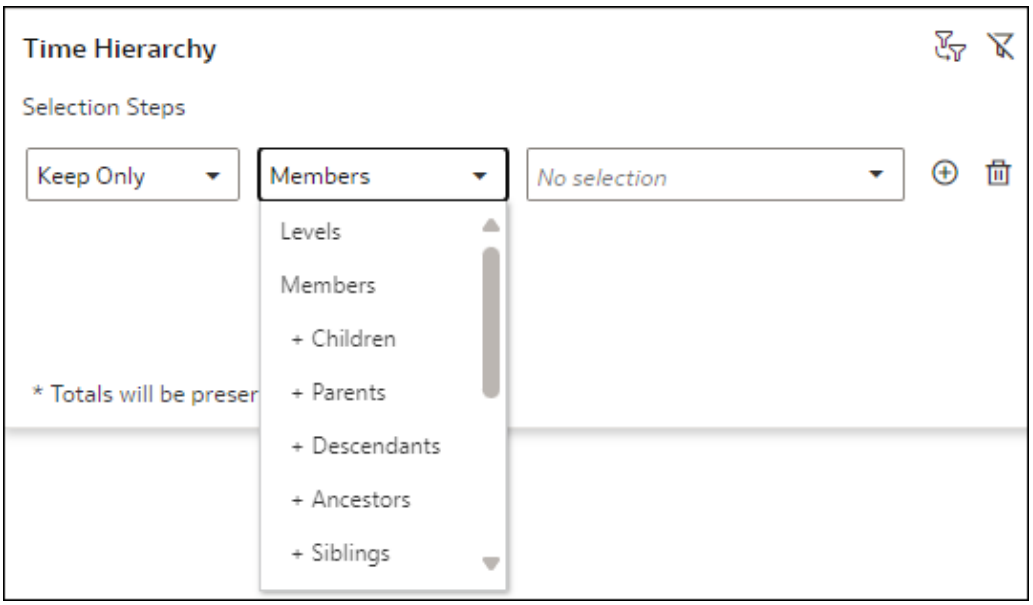
This tutorial shows you how to create selection steps in the filter bar for a level hierarchy and a parent-child hierarchy:

Tutorial

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, drag and drop a hierarchical data element to one of the following:
   - The filter bar to create a selection step to broadly limit the data on one or all canvases.
   - A dashboard filter on the canvas to create a selection step as a dashboard filter control that consumers can interact with.
   - The Filters area of the Grammar pane for a specific visualization to create a selection step to limit data in only that visualization.
3. In the Selection Steps dialog:
   a. Select an action from the Actions drop-down list.



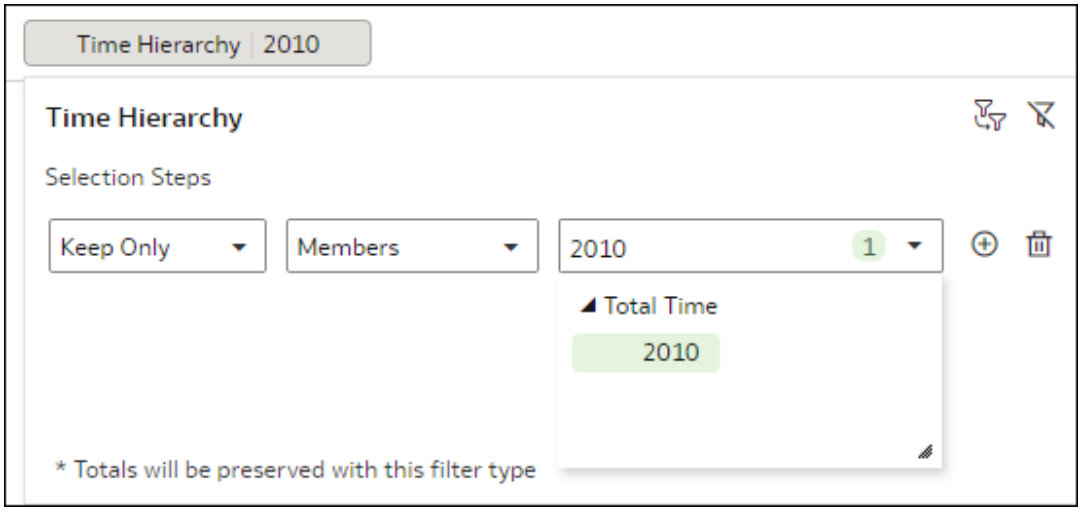
   b. Select an operator from the Operators drop-down list.



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c. Use Ctrl-click to select the levels or members from the Values drop-down list.

4. Optional: To quickly see the exact members selected, click the green highlighted number in the member selection drop-down list.



5. Click **Save**.

Specify Limit Values for Selection Steps

Configure the **Limit Values** setting for individual selection steps in a workbook to specify how a selection step gets its selection values.

As with filters in a workbook, the value selections you make for one selection step can impact the values available to select from for other selection steps, depending on the selection step location and the limit values settings. For information about the limit values settings, including the location ranking, see About the Limit Values Settings for Filters.

Selection steps can also be limited by, and can limit, filters that use the same dimension.

The options for the **Limit Values** setting for selection steps are:

- **None** – Prevents all other selection steps and filters in the same location from limiting the selection step's values. The selection step's values are still limited by selection steps and filters in higher locations.
- **Custom** - Lets you choose which selection steps and filters from the same location you want to limit the selection step's values by. Only selection steps and filters from the same hierarchy are available to choose from.
  For a pinned selection step in the filter bar, only other pinned selection steps are available to choose from. It isn't possible to limit a pinned selection step by an unpinned selection step because other canvases in the workbook may not use the unpinned selection step.

  If there's more than one Dashboard Filters visualization on the canvas, dashboard filter controls from all are available to choose from.

If there aren't any other selection steps from the same hierarchy or any filters from the same dimension in the same filter location, the only **Limit Values** setting available is **None**.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the selection step to open the dialog.

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3. Click **Limit Values** and click an option to select it.
4. Click **Save**.

Control Consumer Interactivity for Selection Steps

Specify the level of interactivity and control you want consumers to have with individual selection steps in your workbook.

You can configure the level of consumer interactivity for selection steps used as dashboard filter controls and for selection steps used on individual visualizations.

You can choose from the following levels of consumer interactivity:

- **Full** – Provides consumers with full control of the selection step. They can change the action and operator, and the level or member selections. They can also add or delete selection steps.
- **Restricted** – Lets consumers see the actions and operators but modify only the level or member selections. Prevents them from adding or deleting selection steps.
- **Minimal** – Hides the actions and operators completely from consumers, but lets them modify the level or member selections. Prevents them from adding or deleting selection steps.

For all three levels, consumers can access the Limit Values setting and disable or enable the selection step.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a dashboard filter or visualization to select it.
3. Click **Properties**, then:
   - For a dashboard filter, click **Filter Controls**.
   - For an individual visualization, click **Filters**.
4. In the Consumer Interactivity row, click **Full** and select an option.
5. Click **Save**.

Change the Filter Type

Switch your filter from the default filter type assigned by Oracle Analytics to another compatible filter type to best suit your needs.

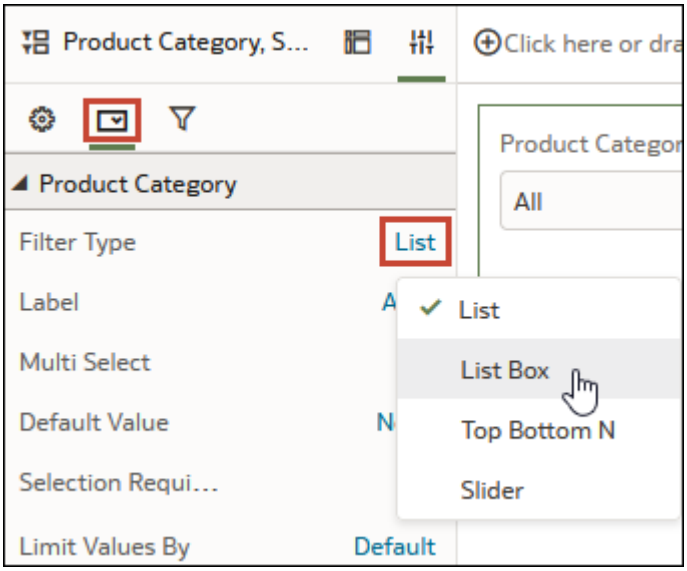
You can change the filter type of any filter but the compatible filter types available depend on the filter scope and data element you're using.

For more information about the filter types available, see Filter Types.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. For a workbook or canvas filter, in the filter bar, click the filter to open the Filter dialog, and then click the filter type you want to use.
3. For a dashboard filter:
   a. Click the dashboard filters visualization to select it.
   b. Click **Properties** to open the Properties pane, then click **Filter Controls**.
   c. Locate and expand the filter you want to change the filter type for.

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d. Click the **Filter Type** field and select the type of filter you want to use.



4. For a visualization filter, in the visualization, click the filter to open the Filter dialog, and then click the filter type you want to use.
5. Click **Save**.

Top Bottom N Filters

Add a Top Bottom N filter to identify the highest or lowest values in your data.

Topics:

- Create a Top Bottom N Filter
- Example – Use a Top N Filter to Show the Top Attribute Values Based on a Measure
- Example – Use a Top N Filter to Show the Top Measure Values Based on an Attribute

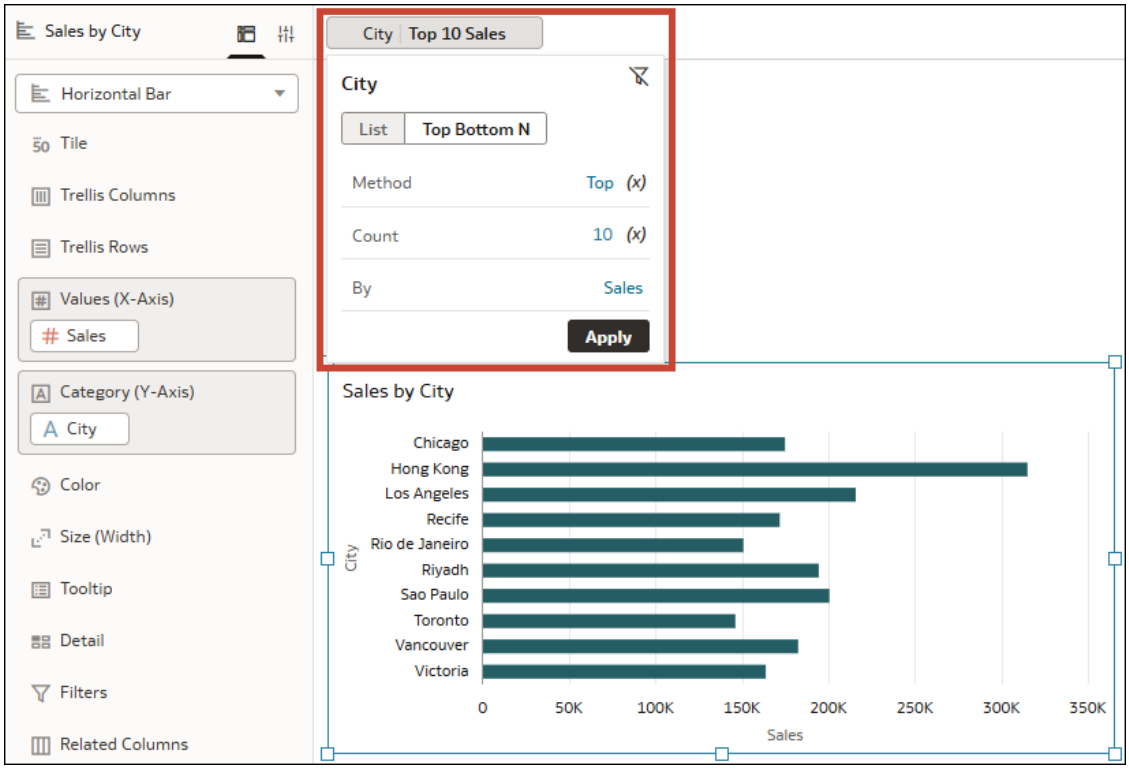
Create a Top Bottom N Filter

Use the Top Bottom N filter type to filter an attribute or measure to display a subset of its highest or lowest values.

When you create a Top Bottom N filter, you can choose how many top or bottom values to display. If your filter is an attribute, you can choose which measures to limit it by. If your filter is a measure, you can choose which attributes to limit it by.

For example, you can filter a visualization by the top 10 cities based on sales. You can define a Top Bottom N filter in the filter bar to show the top 10 cities with the highest sales.

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You can use top bottom N filters for all filter scopes.

To control the level of interactivity consumers have with a Top Bottom N filter, see Create and Bind Parameters to a Top Bottom N Filter.

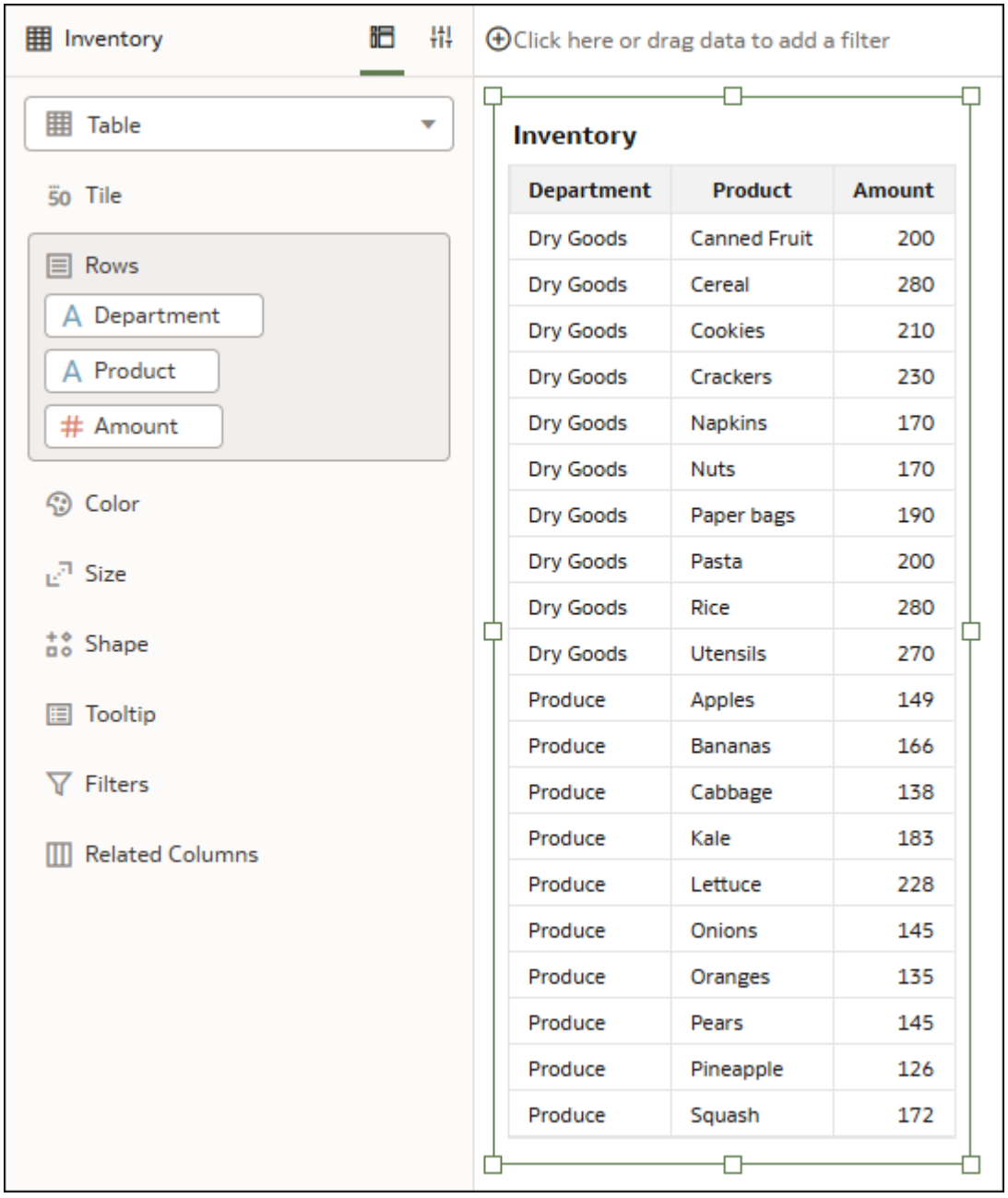
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Data pane, drag and drop the column you want to filter on to one of the following:
   - The filter bar to create a canvas or workbook filter to broadly limit the data on one or all canvases.
   - A dashboard filter on the canvas to create a dashboard filter control for consumers.
   - The Filters area of the Grammar pane for a specific visualization to create a filter to limit data in only that visualization.
3. Click the filter to open the Filter dialog and click **Top Bottom N**.
4. Optional: In the **Method** row, click **Top** to change the method to **Bottom**.
5. In the **Count** row, enter the number of values to display.
6. In the **By** row, if your column is an attribute, click **Select Measure** or, if your column is a measure, click **Select Attribute**. Then select a measure or attribute to limit the filter by.
7. Click **Save**.

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Example – Use a Top N Filter to Show the Top Attribute Values Based on a Measure

This example shows how to create a Top N filter using an attribute column to show a subset of the top values for that attribute based on a measure.

In this example, you have a table visualization showing the inventory of some products for a grocery store. There are 10 products in the Dry Goods department and 10 in the Produce department.



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You want to refine the visualization so that it shows the top 4 products in the Produce department based on the number of units available, and you want to target a specific time period.

Option: Add the Top N Filter to the Filter Bar

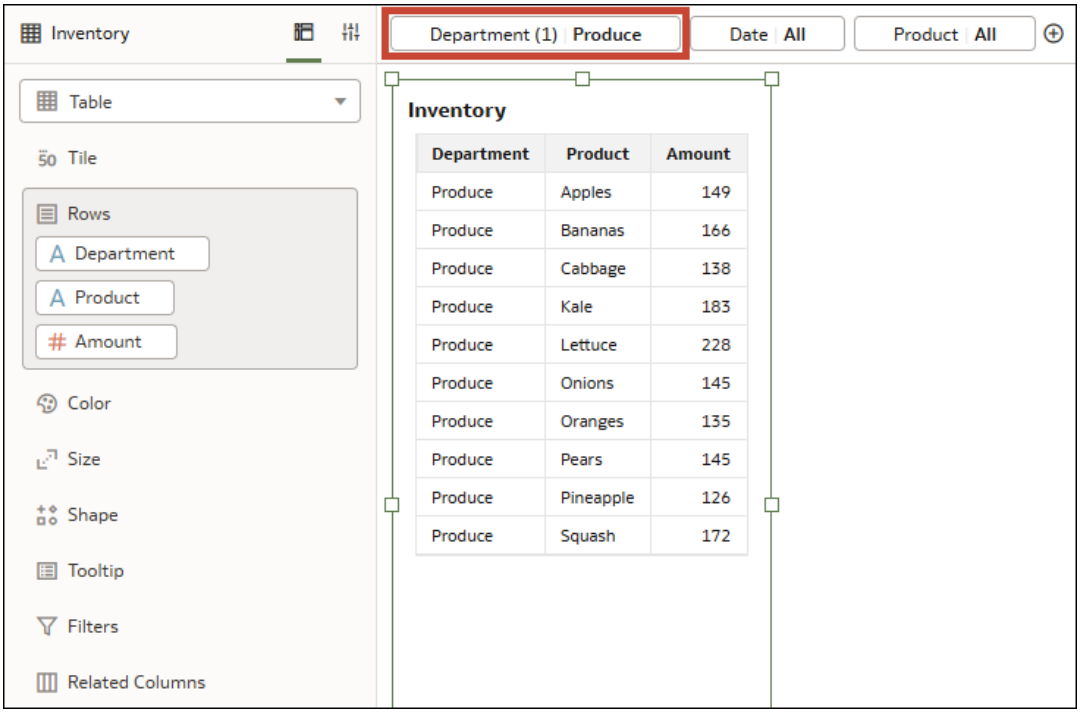
Add the following filters by dragging the columns to the filter bar:

- Department
- Date
- Product

In this situation where the Top N filter is a canvas (unpinned) filter in the filter bar, it's applied independently of the other canvas filters. The result set of the Top N filter is then combined with an `AND` operation with the other canvas filters, which results in no data.

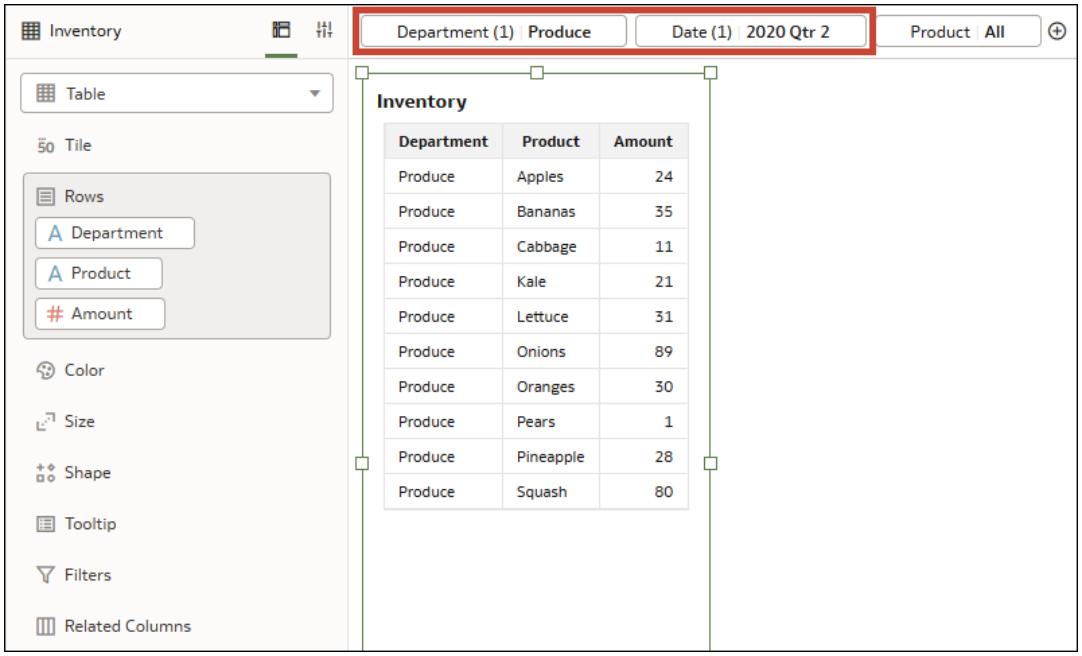
If you leave all three filters at the same filter scope in the filter bar, for example, unpinned as canvas filters, you won't get the result you want. Here's what happens:

1. Select **Produce** for the Department. The visualization displays only the products in the Produce department.

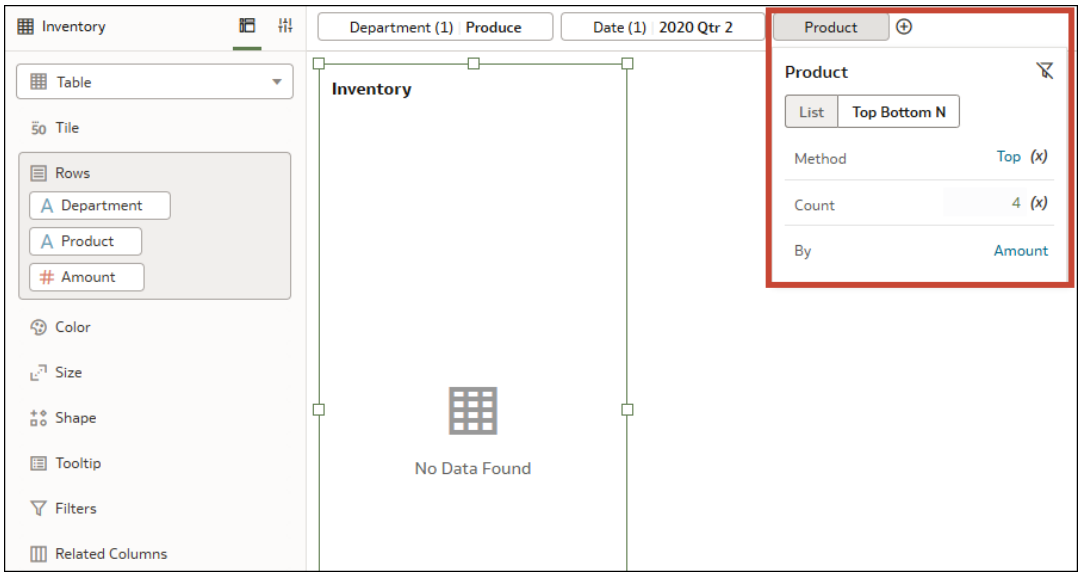


2. Select **2020 Qtr 2** for the Date. The visualization displays only the amount of products that were in the Produce department inventory in the second quarter of 2020.

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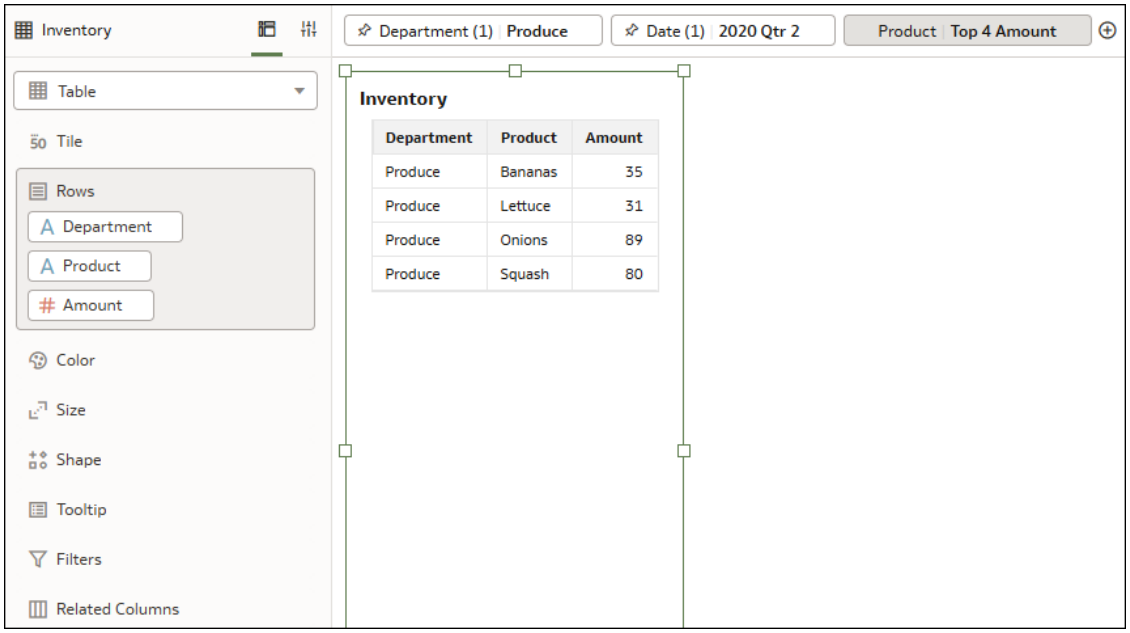


3. Click **Product** and in the filter dialog, change the filter type to Top Bottom N. Then type **4** in the Count row and select **Amount** in the By row. The visualization doesn't display any data.



Instead, you can pin Department and Date to change them to workbook filters, which means they are at a higher scope than the Product filter. Now, those filters are applied first, and then the Top N Product filter is applied, which produces the result you expect.

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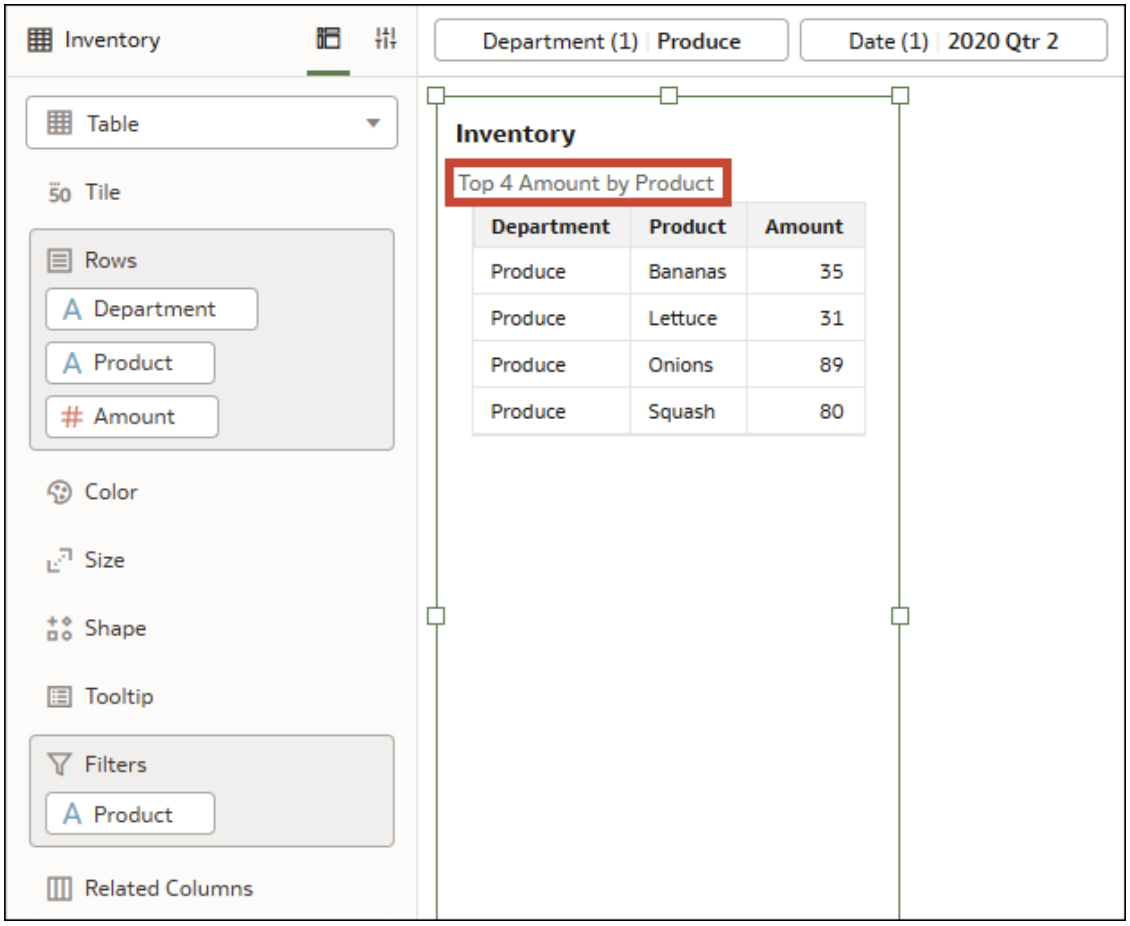
Option: Add the Top N Filter Directly to a Visualization

Another way to achieve this goal without creating workbook filters (if you don't want Department and Date to apply to all your canvases), is to use Product as a visualization filter.

1. Drag the Department and Date columns to the filter bar.
2. Drag the Product column to Filters in the Grammar pane for your visualization.
3. Select **Produce** for the Department and select **2020 Qtr 2** for the Date. The visualization displays only the amount of products that were in the Produce department inventory in the second quarter of 2020.
4. In the visualization, click **Product** and in the filter dialog, change the filter type to Top Bottom N. Then type **4** in the Count row and select **Amount** for the By row.

The visualization correctly displays the top 4 products in the Produce department in 2020 Qtr 2 based on the amount of inventory because the Product filter is applied to the data after it's already filtered by Department and Date.

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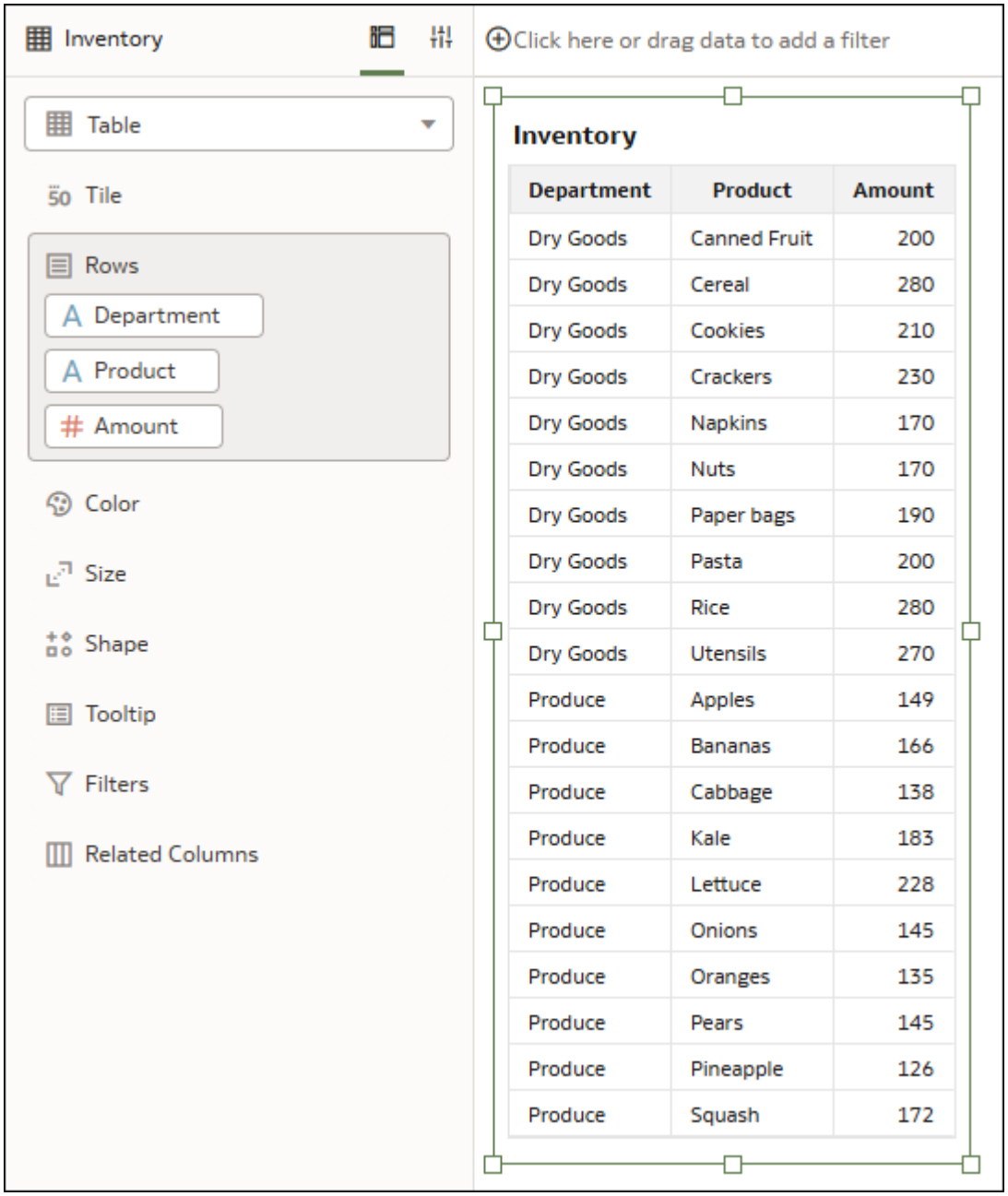


Example – Use a Top N Filter to Show the Top Measure Values Based on an Attribute

This example shows how to create a Top N filter using a measure column to show a subset of the highest values for that measure based on an attribute.

In this example, you have a table visualization showing the inventory of some products for a grocery store. There are 10 products in the Dry Goods department and 10 in the Produce department.

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You want to refine the visualization so that it shows the top 4 products in the Produce department based on the number of units available, and you want to target a specific time period.

Option: Add the Top N Filter to the Filter Bar

You can leave these filters at the same filter scope, for example, unpinned as canvas filters. However, if you set the Amount filter to filter on a specific attribute, you won't get the result you want. Here's what happens:

Add the following filters by dragging the columns to the filter bar:

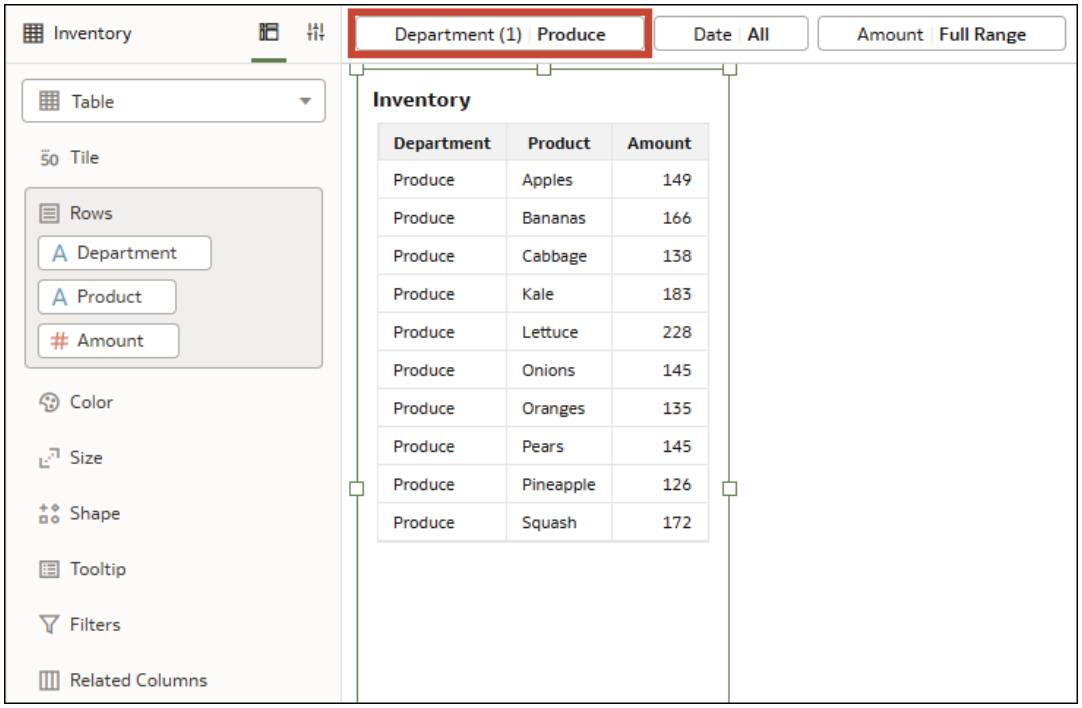
- Department
- Date

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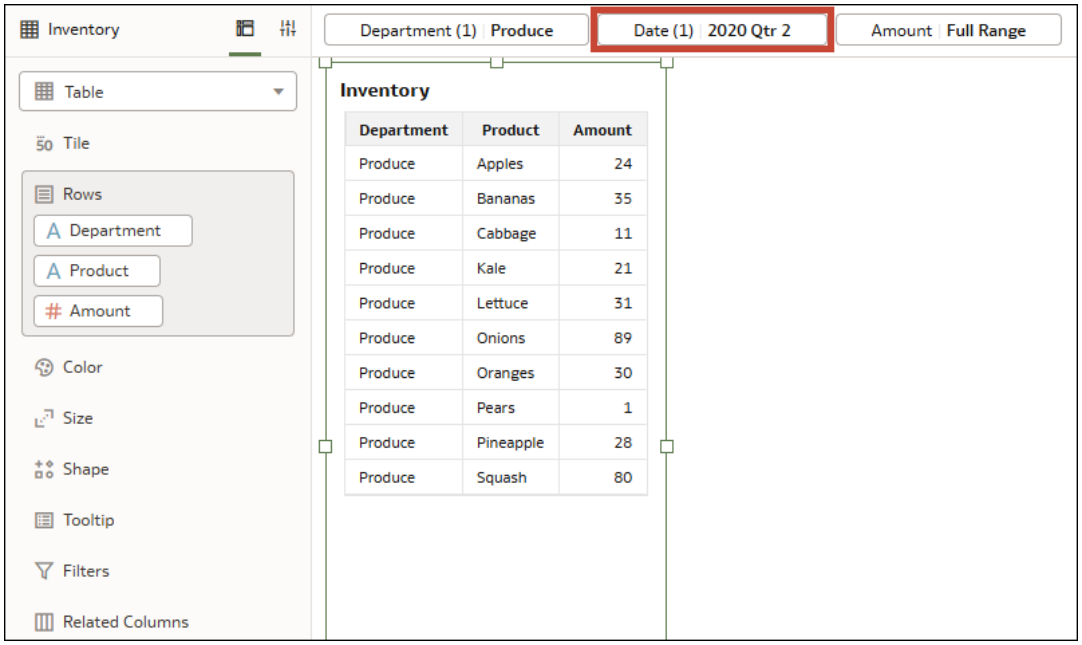
- Amount

In this situation where the Top N filter is a canvas (unpinned) filter in the filter bar, it's applied independently of the other canvas filters. The result set of the Top N filter is then combined with an AND operation with the other canvas filters, which results in no data.

1. Select **Produce** for the Department. The visualization displays only the products in the Produce department.

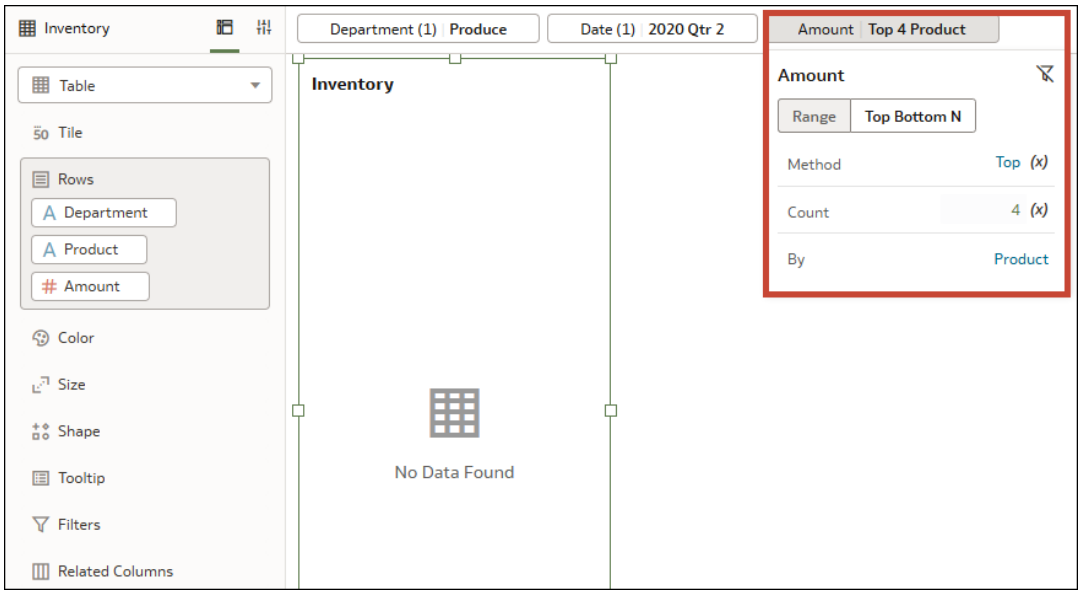


2. Select **2020 Qtr 2** for the Date. The visualization displays only the amount of products that were in the Produce department inventory in the second quarter of 2020.



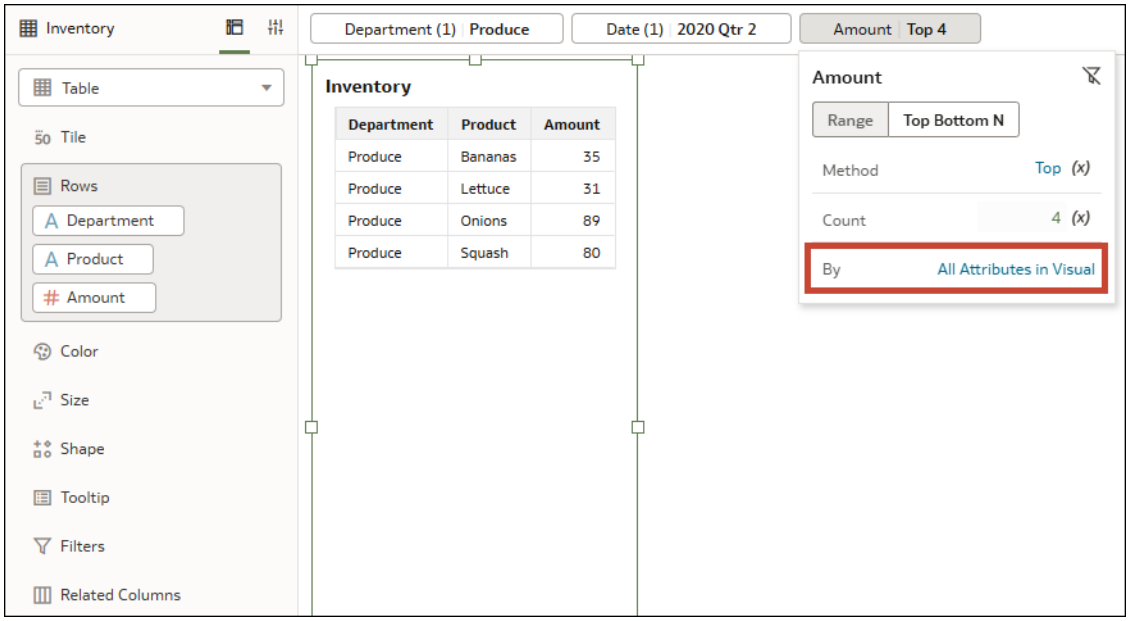
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3. Click **Amount** and in the filter dialog, change the filter type to Top Bottom N. Then type **4** in the Count row and select **Product** for the By row. The visualization doesn't display any data.



Now the visualization displays the top 4 products in the Produce department in 2020 Qtr 2 based on the amount of inventory, which is what you're looking for. This is because the All Attributes in Visual option acts like a visualization filter which means the Top N filter is applied after the other two filters.

Instead, you can de-select **Product** for the By row in the filter dialog so it uses All Attributes in Visual.



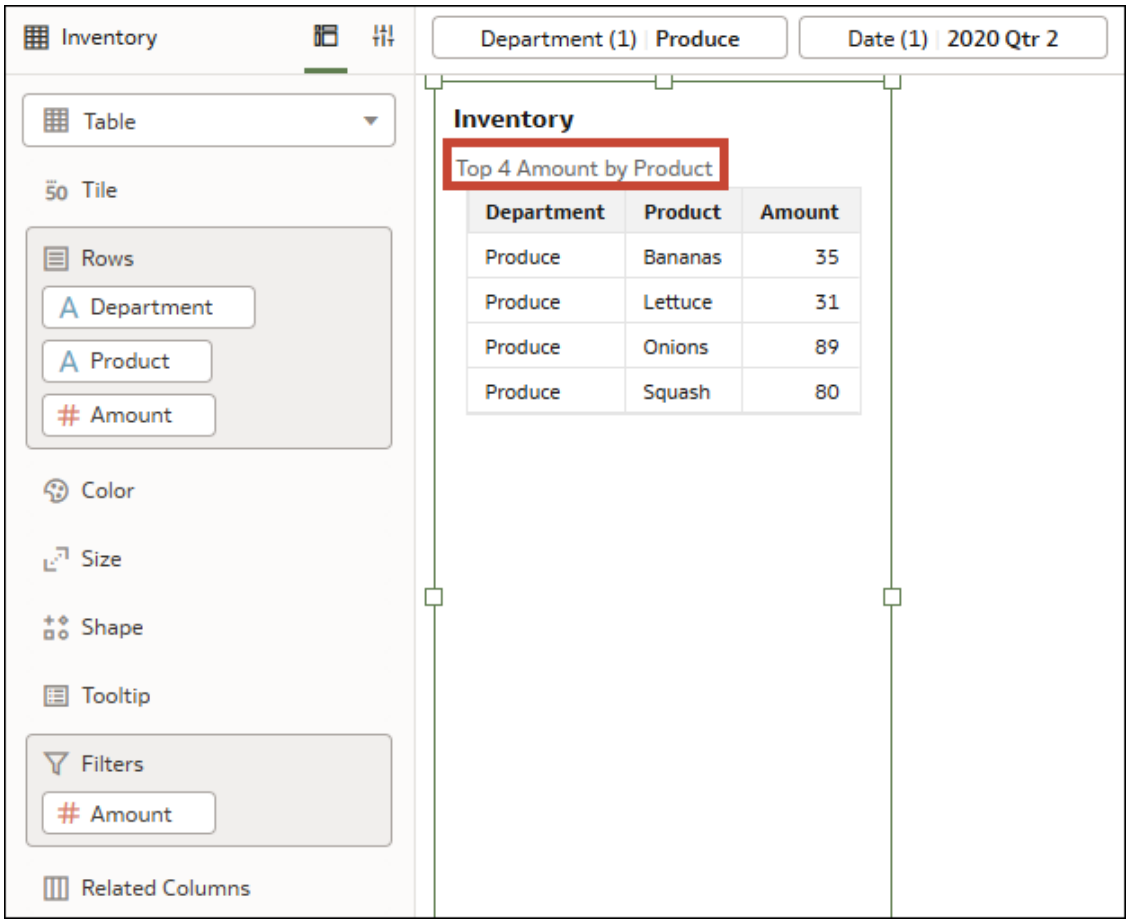
Option: Add the Top N Filter Directly to a Visualization

Another way to achieve this is to use Amount as a visualization filter.

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1. Drag the Department and Date columns to the filter bar.
2. Drag the Amount column to Filters in the Grammar pane for your visualization.
3. Select **Produce** for the Department. The visualization displays only the products in the Produce department.
4. Select **2020 Qtr 2** for the Date. The visualization displays only the amount of products that were in the Produce department inventory in the second quarter of 2020.
5. In the visualization, click **Amount** and in the filter dialog, change the filter type to Top Bottom N. Then type **4** in the Count row and select **Product** for the By row.

The visualization displays the top 4 products in the Produce department in 2020 Qtr 2 based on the amount of inventory. This is because the filters in the filter bar are applied first, then the visualization filter.



Create an Expression Filter

Using expression filters, you can define more complex filters using SQL expressions. Expression filters can reference zero or more data elements.

For example, if you want to filter the visualizations on your canvas to show only the products where the actual price was greater than the target price, you can create and apply the expression filter `Actual Unit Price > Target Unit Price`.

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You can use expression filters in the filter bar to apply to a canvas or the whole workbook, or you can use one as a visualization filter to apply only to a single visualization. You can also add an expression filter to a filter group (preview), see Create a Filter Group (Preview).

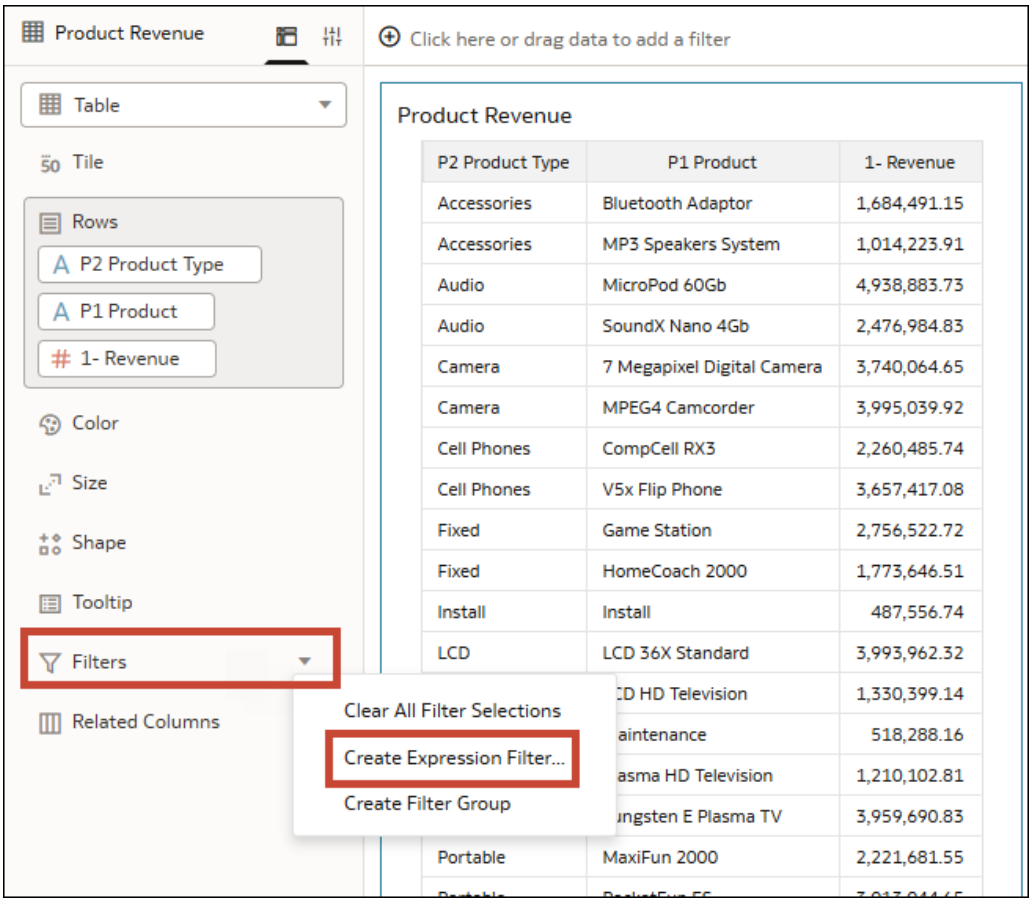
You can also use a parameter in an expression filter's SQL expression, see Use a Parameter in an Expression Filter.

You can compose a filter expression in various ways:

- Directly enter text and functions in the Expression field.
- Drag and drop data elements from the Data pane into the Expression field.
- Start typing a column name in the Expression field and select it from the list that displays.
- Open the functions panel in the Expression Filter dialog and drag and drop functions into the Expression field.

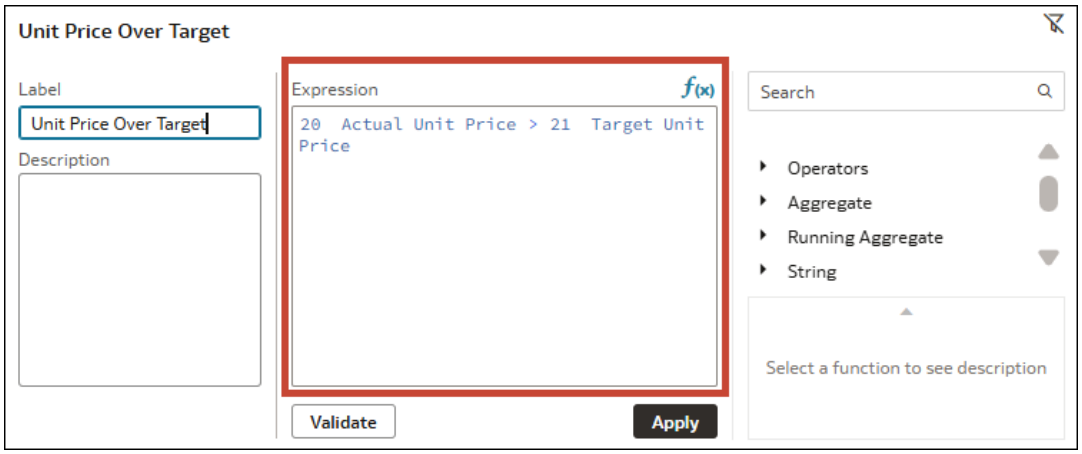
For information about the elements you can use in an expression, see Expression Editor Reference.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. For a workbook or canvas filter, in the filter bar, click **Add Filter** ⊕ and then select **Create Expression Filter**.
3. For a visualization filter:
   a. Click the visualization to select it.
   b. Click **Grammar**, scroll to the Filters area, click **Drop Target Options**, and then select **Create Expression Filter**.



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4. In the Expression Filter dialog, in the **Label** field, give the expression a name.
5. In the **Expression** field, compose an expression.



6. Click **Validate** to check if the syntax is correct.
7. When the expression filter is valid, click **Apply**.

Exclude Selected Filter Values

You can configure a filter to exclude rather than include the selected data values.

You can exclude data values for filters created on certain column types using certain filter types. For example, you can exclude data values for an attribute column filter but the filter type must be List, List Box, or Checkbox / Radio Button. You can't exclude data values for filters on measure columns.

You can use also parameters to pass excluded values between filters, see Create and Bind a Parameter to Exclude Filter Values.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. For a workbook or canvas filter, on the filter bar, click the filter to open the Filter dialog, and then select **Exclude**.
3. For a dashboard filter:
   a. If the filter type is List, in the dashboard filters visualization, click the filter to open the Filter dialog, and then select **Exclude**.
   b. If the filter type is List Box or Checkbox / Radio Button, click **Properties** to open the Properties pane, and then click **Filter Controls**.
   c. Locate and expand the filter you want to exclude values for, click the **Exclude Selection** field, and then select **On**.
4. For a visualization filter, in the visualization, click the filter to open the Filter dialog, and then select Exclude.
5. Click **Save**.

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Include Null Filter Values

You can configure a filter to include rather than exclude null values.

You can include null values for filters created on certain column types using certain filter types. For example, you can include null values for an attribute column filter, but the filter type must be List, List Box, or Checkbox / Radio Button. You can't include null values for filters on measure columns.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. For a workbook or canvas filter, on the filter bar, click the filter to open the Filter dialog, and then select **Nulls**.
3. For a dashboard filter:
    a. If the filter type is List, in the dashboard filters visualization, click the filter to open the Filter dialog, and then select **Nulls**.
    b. If the filter type is List Box or Checkbox / Radio Button, click **Properties** to open the Properties pane, and then click **Filter Controls**.
    c. Locate and expand the filter you want to include null values for, then click the **Null Selection** field, and select **On**.
4. For a visualization filter, in the visualization, click the filter to open the Filter dialog, and the select **Nulls**.
5. Click **Save**.

Disable Multi Select for Filters

You can configure a dashboard filter or visualization filter to allow only single value selections. For example, you must configure this setting to Off when you use a list filter to bind a parameter to a dashboard filter.

The Multi Select property is set to **On** by default and is available only for the filter types List and Checkbox / Radio Button.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. For a dashboard filter:
    a. Click the dashboard filters visualization to select it.
    b. Click **Properties** to display the Properties pane, then click **Filter Controls**.
3. For a visualization filter:
    a. Click the visualization to select it.
    b. Click **Properties** to display the Properties pane, then click **Filters**.
4. Locate and expand the filter you want to disable Multi Select for.
5. Click the **Multi Select** field and select **Off**.
6. Click **Save**.

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Disable a Filter or Selection Step

You can disable a filter or selection step to turn it off temporarily without deleting it so you can use it again in the future.

You can disable a filter for these filter types only:

- List
- Top Bottom N
- Range
- Date Range
- Relative Time

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. For a workbook filter, canvas filter, or selection step in the filter bar, click the item to open the Filter dialog.
3. For a dashboard filter, in the dashboard filters visualization, click the filter control to open the Filter dialog.
4. For a visualization filter, in the visualization, click the filter or selection step to open the Filter dialog.
5. Click **Disable Filter**  .
6. Click **Save**.

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14

Create and Use Parameters

This topic describes how to create parameters to store and manage values that you can use in various parts of a workbook.

Topics:

- What Are Parameters?
- About System Parameters
- About Parameter Properties
- About Modifying and Deleting Parameters
- Create a Parameter
- Create a Parameter that Uses a Logical SQL Query for a Double Column
- Create a Parameter with the SQL Expression Data Type
- Syntax for Referencing Parameters
- Bind Parameters to Filters
- Use Parameters in Workbooks

What Are Parameters?

A parameter functions as a user-defined variable that holds and manages a current value or values that you want to use in multiple places in a workbook. Use parameters to dynamically manipulate the workbook's data.

You can use parameters:

- In workbooks and visualizations as column selectors
- In workbook titles and visualization labels
- In expression filters
- In workbook, dashboard, and visualization filters
- In calculations
- In Logical SQL expressions
- In a visualization's properties to conditionally show or hide the visualization
- In data actions

When you create a parameter, you can specify a value that Oracle Analytics uses to initialize the parameter's current value. You can specify a list of available and initial values for a parameter by manually entering the values or using a Logical SQL query.

A parameter's scope is only within the workbook where you define it. You can't share parameters with other workbooks.

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About System Parameters

Each workbook contains system parameters that you can use when you want a workbook to contain data based on the user's system information such as current date or time.

System parameters are independent of the workbook's dataset or subject area, and are designed to cover the most common parameters use cases so that you don't have to create these parameters for each workbook.

In the workbook's Parameters tab, you can hover over a system parameter to view its definition. You can't add, modify, or delete a workbook's system parameters.

The system parameters are:

- Current Date
- Current Time
- Current DateTime
- Display Name
- User Name

About Parameter Properties

How and where you want to use a parameter in the workbook determines the properties that you set for it. For example, you might set different properties for a parameter that you want to use as a filter control versus a parameter that you want to use in an expression.

These are the properties that you can set when you create or modify a parameter:

Data Type

Specifies the kind of data the parameter contains and the accepted values or range of values. The data type is also used to validate that the parameter is compatible and any expressions are generated correctly for the location where you use the parameter.

Format

Provides date and time formatting options. This property is available for Date, Time, and Timestamp data types.

You can use the default format, Auto, choose from the available options, or define a custom format.

Allow Multi Select

Determines if the parameter can accept a single initial value or multiple initial values.

After you enable multiple values, you use the **Initial Value** field to specify more than one initial values or write a SQL expression to provide initial values. When your parameter includes multiple initial values and you use the parameter as a filter control, the user can choose one or more initial values.

Alias

Provides an override display value for the data element or key value passed by the parameter.

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Many datasets use unfriendly names for the data elements. Use an alias to help users understand what the data element is. For example, instead of LST_OR_DT, you can create an alias "Last Order Date" to make the data element name user-friendly.

Use aliases to provide more familiar, user-friendly names for users to choose from filter controls. For example, for a data value of 1, you can provide an alias of East Sales Region, and for a data value of 2, you can provide an alias of West Sales Region.

For data actions, use aliases in a parameter to pass a key value and display value. Then when the target workbook applies the incoming parameter values, it also applies the incoming display values for each incoming key value.

If **Available Values** is set to **Range**, Alias is disabled

Format Numbers

Determines if the parameter's numeric values contain the thousands and decimal formats. This option is available for Integer and Double data types.

When **Format Numbers** is toggled to on, parameter values use number formatting determined by the browser's language setting, for example, 12,500 or 12.500.

When **Format Numbers** is toggled to off, parameter values contains no number formatting, for example, 12500.

Available Values

Specifies the list of values that the parameter can hold. A parameter's available values are any, value, column, a Logical SQL query, and a range of values. Up to 10,000 available values can be cached.

- Select **Any** to allow users to enter any value supported by the data type.

  If Alias is turned on and the parameter is a double column, users can't enter any values because the parameter requires both key values and display values.
- Select **Value** to provide one or more values that the user can choose from. If **Allow Multiple Values** is enabled, then users can choose more than one value. If **Alias** is turned on, you can specify the key values (Values) and display values (Alias Name) for a double column.
- Select **Column** to choose a column from which to fetch a list of values. If **Alias** is turned off, when you select this option, the column selection field displays all of the workbook's subject area or dataset columns (including derived dates), and any key metrics and calculations. If **Alias** is turned on, the list will only show the double columns that are in the subject area or dataset.
- Select **Logical SQL Query** to enter a Logical SQL expression to return one or more available values. You can reference other parameters within the Logical SQL expression. After you enter a Logical SQL expression, you can click the **Validate** icon to validate the expression.
- Select **Range** to provide start and end values to limit the value a user can choose from.

Enforce Validation

When you create or modify a parameter, this option checks the parameter's initial value or values against the list of available values.

At runtime, this option validates that the specified parameter value or values is included in the list of available values.

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At design time, if in the **Available Values** field you select **Value**, enabling the **Enforce Validation** option provides the available values list in the **Initial Value** field.

Initial Value

The initial value is the parameter's default value that is applied and displayed when the user opens the workbook.

- Select **Value** and leave the value field blank when you don't want to apply a default initial parameter value. If you don't specify an initial value, then all values are used.
- Select **Value** and specify a value that you want to apply as the default initial parameter value. Note the following:
  - If you selected **Allow Multi Select**, you can specify more than one initial value, up to 1,000 initial values.
  - If you selected **Enforce Validation**, you can select from the values specified in the **Available Values** field.
- Select **First Available Value** to apply and display the first value in the parameter's value list as the default initial value. If you're working with an attribute column that contains letters, then the first value is determined by the list returned by the Logical SQL expression. The returned list is always in alphabetical order.
- Select **Logical SQL Query** to enter a Logical SQL statement to dynamically fetch a list of values from the data source. You can reference other parameters within the Logical SQL expression. After you enter a Logical SQL expression, you can click the **Validate** icon to validate the expression.
- If your parameter is a double column, select **Custom** to specify the key value (Value) and display value (Alias Name).

About Modifying and Deleting Parameters

Before you modify or delete a parameter, check the workbook to make sure that you know where and how the parameter is used.

For example, check to see if the parameter that you want to modify or delete is referenced in an expression or logical SQL query.

Understanding where and how the parameter is used before you modify or delete it prevents broken visualizations, queries, and calculations.

You can modify or delete only the parameters that you create in a workbook. You can't modify or delete a workbook's system parameters, for example Current Date or Current Time.

Create a Parameter

Create a parameter to hold and manage a current value or values that you want to use in multiple places in a workbook.

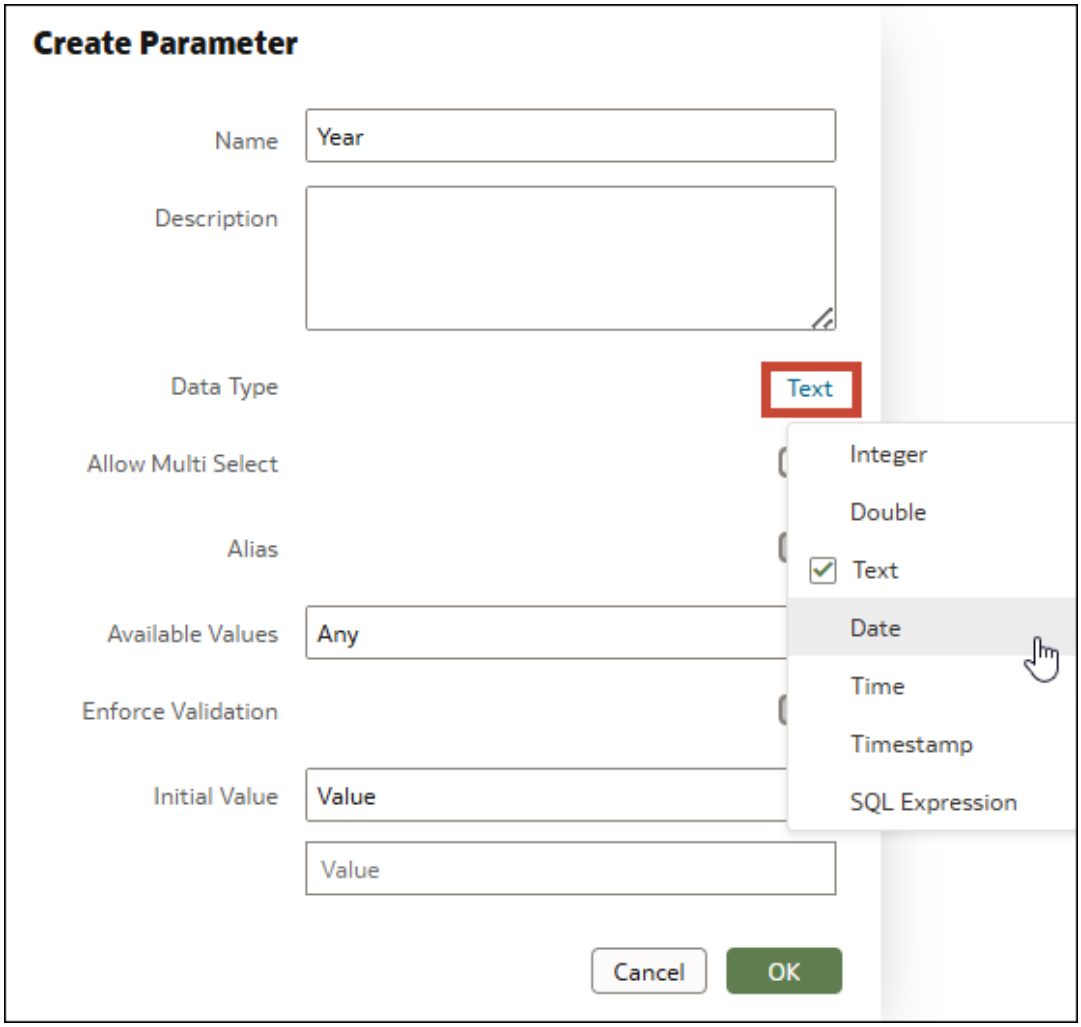
For information about how to choose the parameter's properties, see About Parameter Properties.

1. On your home page, select the workbook to add a parameter to, click **Actions**, and then select **Open**.
2. In the **Data Panel** click **Parameters**.

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3. In the Parameters Pane, click **Menu** ⋮, then select **Add Parameter**.
4. In the **Name** field, enter a unique name.
5. Click **Data Type** and choose the type of data you want the parameter to accept.



6. In the **Available Values** field select how you want specify the parameter's value.
7. In the **Initial Value** field, choose how you want the parameter's initial value to be determined. If you don't want to use an initial value, then select **Value** and leave the value blank.
8. Click **OK**.
9. Click **Save**.

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Create a Parameter that Uses a Logical SQL Query for a Double Column

If your workbook contains a double column, you can create a parameter and provide a Logical SQL statement to select the display column and the key column.

Double columns are available only in datasets created from local subject areas. In a double column, one column represents the data descriptor value and is displayed to the consumer. The second column represents an identifier of the data descriptor and isn't displayed to the consumer. You can use any column for the key and display columns.

You can also use the `DESCRIPTOR_IDOF` function in your Logical SQL to identify the key column, for example, `SELECT "A - Sample Sales"."Double Column Products"."P10 Product (Dble Column)", DESCRIPTOR_IDOF("A - Sample Sales"."Double Column Products"."P10 Product (Dble Column)") FROM "A - Sample Sales".`

If you don't use the `DESCRIPTOR_IDOF` function, Oracle Analytics assumes the first column is the display column and the second is the key column.

If you want to use a parameter in a double column type filter, you can create a parameter and bind it to a filter from the filter's properties. See Create and Bind a Parameter to a Double Column Type Filter.

1. On your home page, select the workbook to add a parameter to, click **Actions**, and then select **Open**.
2. In the **Data Panel** click **Parameters**.



3. In the Parameters Pane, click **Menu** ⋮, then select **Add Parameter**.
4. In the **Name** field, enter a unique name.
5. In the **Available Values** field, select **Logical SQL Query**.
6. In the text box, write the Logical SQL, making sure to include the display column and the key column.
7. Go to the **Initial Value** field and confirm that either **Value** or **First Available Value** is selected.
8. Click **Save**.

Create a Parameter with the SQL Expression Data Type

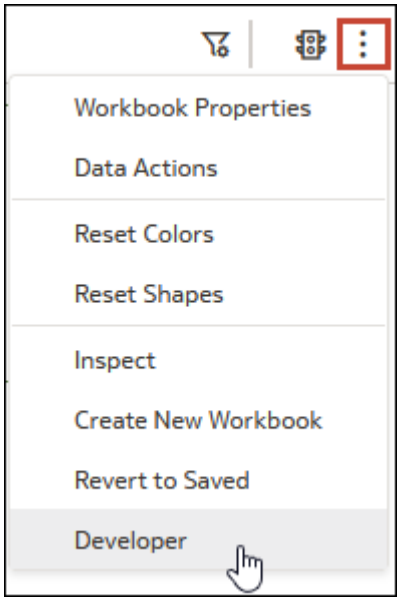
For a parameter that uses the SQL expression data type, you must enter or paste a Logical SQL expression to supply the column value that you want the parameter to use.

If the **Developer** option isn't displayed from the workbook, then you must enable the developer options from your profile settings. See Developer Options.

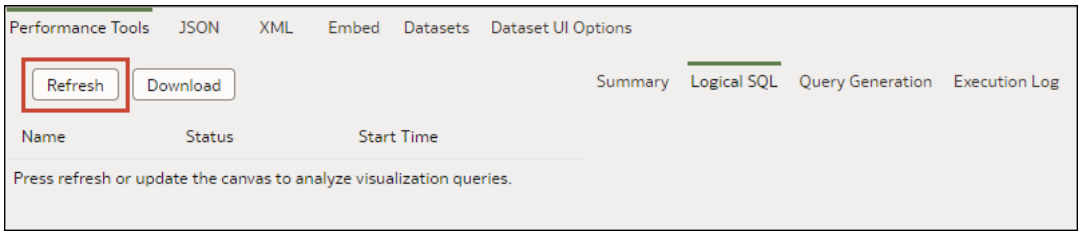
For information about referencing parameters in SQL expressions, see Syntax for Referencing Parameters.

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1. On your home page, select the workbook to add a parameter to, click **Actions**, and then select **Open**.
2. To find and copy the Logical SQL expression for the column that you want to specify as a parameter value, in the workbook drag and drop the column to a canvas.
3. Click **Menu** on the workbook toolbar and select **Developer**.

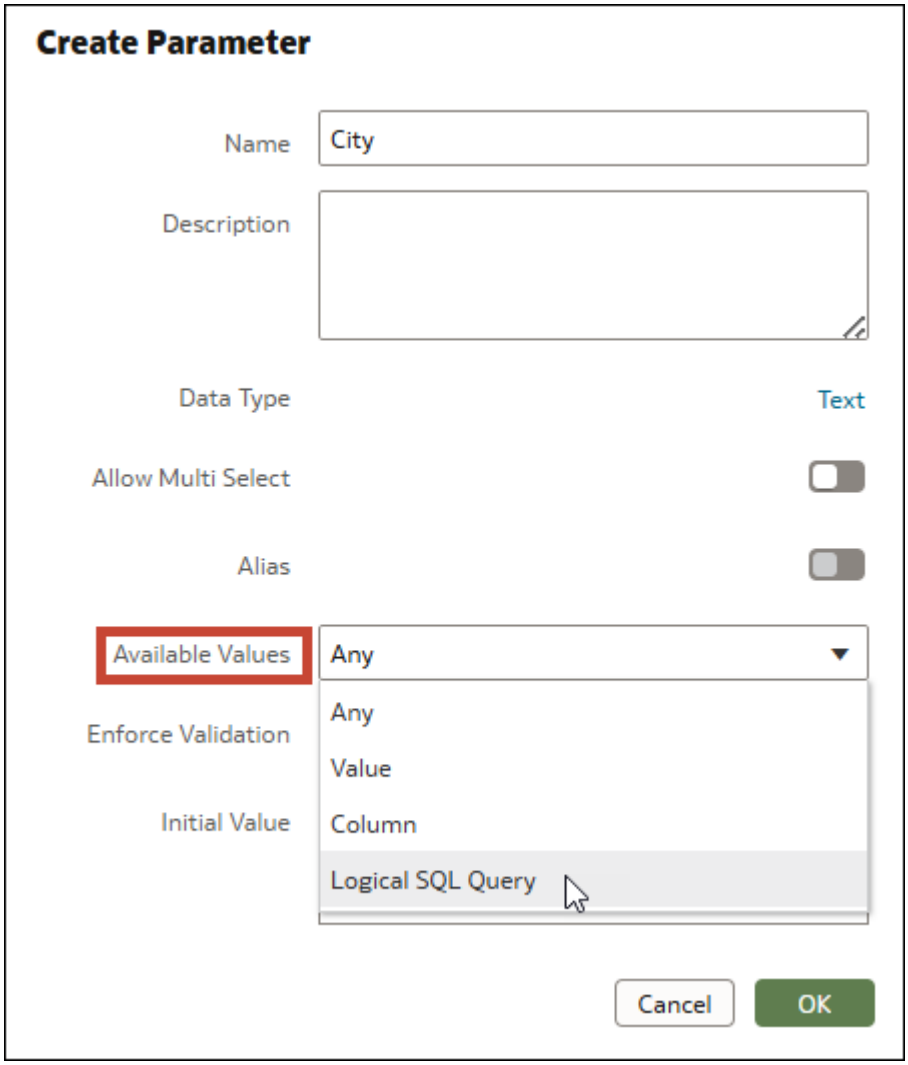


4. In the Developer pane, click **Performance Tools** and then click **Logical SQL**. Click **Refresh**.



5. Locate and copy the Logical SQL SELECT statement for the column that you want to use as a value in the parameter.
6. In the Workbook editor, go to the **Data Panel** and click **Parameters**.
7. In the Parameters Pane, click **Menu** ⋮, then select **Add Parameter**.
8. In the **Name** field, enter a name.
9. Click **Data Type** and select **SQL Expression**.
10. In the **Available Values** field select **Logical SQL Query**.

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11. In the text box, paste the column's Logical SQL expression. For example,

```
SELECT
   0 s_0
   XSA('Admin'.'sample_order_line')."sample_order_line"."City" s_1
FROM XSA('Admin'.'sample_order_line')
ORDER BY 2 ASC NULLS LAST
FETCH FIRST 125001 ROWS ONLY
```

12. Optional: Alternatively, provide an expression that includes a parameter with a default value. For example,

```
SELECT @parameter("Current Date")(DATE'2023-05-02') FROM
XSA('Admin'.'sample_order_line')
```

13. Click **Validate** to validate the Logical SQL expression that you pasted.
14. Click **OK**.
15. Click **Save**.

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Syntax for Referencing Parameters

Use the syntax provided to reference parameters from a workbook visualization's properties, SQL expression, tooltips, or calculations.

To reference a parameter use:

```
@parameter("parameter name")('default value')
```

This table contains expression syntax examples:

Parameter Expression	Description
@parameter("Supplier")('Brembo')	References the Supplier parameter. The parameter value is 'Brembo' unless the Supplier parameter is passed into the workbook via data actions or URL parameters. In that case, the parameter value is set by the data action or URL parameter.
@parameter("StartDate")(DATE'2021-10-08')	References a parameter named StartDate with a default date of October 8, 2021.
@parameter("CurrentTime")(TIME'18:00:00')	References a parameter named CurrentTime with a default time of 18:00:00.
@parameter("CurrentDateTime") (TIMESTAMP'2023-02-28T18:00:00')	References a parameter named CurrentDateTime with a default date of February 28, 2023 and a default time of 18:00:00.
@parameter("NumOccurrences")(5)	References a parameter named NumOccurrences with a default of 5.
@parameter("SelectedColumn")("A - Sample Sales"."Offices"."D2 Department"')	References a parameter named SelectedColumn, and defaults to "A - Sample Sales"."Offices"."D2 Department".
@parameter("Supplier", style="delimited", separator="/")('Brembo','Bosch')	References a parameter named Supplier, and the value defaults to "Brembo/Bosch" when used.
@parameter("Supplier", style="individual") ('Brembo','Bosch')	References a parameter named Supplier, and is used by data actions to separate parameters: &myParam=Brembo&myParam=Bosch
@parameter("Supplier", type="alias") ('Brembo','Bosch')	References a parameter named Supplier and uses any configured alias values, if they exist. If Alias is On but no alias is provided, it uses the available values instead.
@parameter("Supplier", type="value") ('Brembo','Bosch')	References a parameter named Supplier and uses any configured values, regardless of whether an alias is configured.

Bind Parameters to Filters

This topic describes how to create a parameter and bind it to a filter or choose an existing parameter to bind to a filter.

Topics:

- About Binding Parameters to Filters
- Create and Bind a Parameter to a Workbook Filter

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- Create and Bind a Parameter to a Dashboard Filter
- Create and Bind a Parameter to Exclude Filter Values
- Create and Bind a Parameter to a Double Column Type Filter
- Bind an Existing Parameter to a Filter
- Create and Bind Parameters to a Top Bottom N Filter

About Binding Parameters to Filters

Bind a parameter to a filter when you want to pass a selected filter value from one canvas to another in a workbook, or you want to have more control over how dashboard filters behave and are exposed to the user.

Binding a parameter to a filter is one-way binding, meaning a parameter doesn't limit the list of available filter values that the user can choose from. A parameter's properties define the values that it can accept from the filter.

When bound to a filter, the parameter listens to the filter's selections and when the parameter accepts a filter value, it passes that value to wherever you use the parameter in the workbook.

Binding a parameter to a filter has many uses. For example, by default when you add the Dashboard Filters control to a canvas, it only applies filters to that canvas. You can use parameters bound to filters to pin the dashboard filters across multiple canvases in the workbook. When multiple canvases include a dashboard control with the same filters bound to the same parameters, any filter values selected by the user are applied to each canvas.

Create and Bind a Parameter to a Workbook Filter

Select a workbook filter's data values and then use the **Create Parameter** option to create and bind a parameter to the filter. After you create the parameter, you can bind it to other filters in the workbook to pass data values between filters.

The parameter you create uses the filter's selected values and corresponding column's name as its properties, and is added to the workbook's **Parameters** tab. The parameter shares the filtered column's name, for example, if you bind a parameter to a City column filter, the binding creates a parameter named City.

For more information about how to use parameter binding in a workbook's filters, see About Binding Parameters to Filters.

You can also select an existing parameter to bind to the workbook filter. See Bind an Existing Parameter to a Filter.

1. On your home page, select the workbook where you want to create a workbook filter and add and bind a parameter to, click **Actions**, and then select **Open**.
2. Create or locate and click the workbook filter where you want to create and bind the parameter.
3. Optional: Select the filter values.
4. Click **Bind to Parameter** *(x)* and then click **Create Parameter** to create and bind the parameter to the filter.
5. Optional: Go to the workbook's **Data Panel**, click **Parameters**, right-click the parameter you created from the filter, and select **Edit Parameter** to review and update the parameter's properties. Click **OK**.

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Create and Bind a Parameter to a Dashboard Filter

You can create and bind a parameter to most dashboard filter types. After you create the parameter, you can bind it to other filters in the workbook, for example to the same filter on another canvas, to pass data values between filters.

You can select the dashboard filter's data values and use the **Create Parameter** option to create and bind a parameter to the filter. The parameter you create uses the selected values and corresponding column as its properties, and is added to the workbook's **Parameters** tab. The parameter shares the filtered column's name, for example, if you bind a parameter to a City column filter, the binding creates a parameter named City.

For more information about how to use parameter binding, see About Binding Parameters to Filters.

You can also select an existing parameter to bind to the dashboard filter. See Bind an Existing Parameter to a Filter.

1. On your home page, select a workbook, click **Actions**, select **Open**, and click **Edit**.
2. In the Data Panel, click the **Visualizations** tab, and drag and drop **Dashboard Filters** to the canvas.
3. In the Data Panel, click the **Data** tab, and drag and drop the column that you want to use to filter the canvas into the dashboard filters visualization.
4. Optional: Select the filter values.
5. Click **Properties** to open the Properties pane, then click **Filter Controls**.
6. Locate and expand the filter you just added, click the **Filter Type** field and select an appropriate filter type.
7. If you selected **List** or **Range**, then click the dashboard filter, click **Bind to Parameter** *(x)*, and select **Create Parameter** to use the selected filter values to create and bind the parameter to the filter.
8. If you selected **List Box** or **Checkbox / Radio Button**, then in the Properties pane, under Filter Controls, go to **Parameter Binding (Selection)** and click **None**. Select **Create Parameter** to use the selected filter values to create and bind the parameter to the filter, or select an existing parameter to bind to the filter.
9. Optional: To specify if the user is required to select a filter value, go to the Properties pane and under Filter Controls, click the **Selection Required** field, and select **On**.
10. Click **Save**.

Create and Bind a Parameter to Exclude Filter Values

Set a filter to exclude data values and then use the **Bind to Parameter** option to create and bind an excludes parameter to the filter. After you create the parameter, you can bind it to other filters in the workbook to pass excluded data values between filters.

This tutorial provides a use case explaining how to use a parameter to exclude filter values that you pass to another canvas.

Tutorial

This tutorial provides a use case explaining how to apply an exclusion list filter to all canvases in a workbook.

Tutorial

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You can create and bind a parameter to exclude data values for List, List Box, Checkbox / Radio Button, and Range filters.

The excludes parameter you create uses the Integer data type and contains Boolean values, and is added to the workbook's **Parameters** tab. The excludes parameter shares the filtered column's name, for example, if you bind an excludes parameter to a City column filter, the binding creates a parameter named Excludes City.

You can also select an existing excludes parameter to bind to a filter. An existing excludes parameter must use the Integer data type and contain Boolean values.

Before you create and bind an excludes parameter, you must set the filter's values and bind a parameter to the filter. This is to ensure that the exclusion list is passed to the parameter.

1. On your home page, select the workbook with the filter you want to create and bind an excludes parameter to, click **Actions**, and then select **Open**.
2. Locate and click the filter that you want to bind the excludes parameter to.
3. For a list or range filter:
    a. In Selections, confirm that the filter values are set to the values you want to exclude and that the **Bind to Parameter** icon *(x)* is green, indicating that a parameter is bound to the filter.
    b. Click **Exclude**, click **Bind to Parameter** *(x)*, and then click **Create Parameter** to create and bind the excludes parameter to the filter.
4. For a list box or checkbox / radio button dashboard filter:
    a. Click **Properties** and click **Filter Controls**.
    b. Go to the **Parameter Binding (Selection)** field and confirm that a parameter name is displayed, indicating that a parameter is bound to the filter.
    c. Go to the **Exclude Selection** field and set it to **On**.
    d. Locate the **Parameter Binding (Excludes Mode)** field and click **None**. Click **Create Parameter** to create and bind the excludes parameter to the filter.
5. Click **Save**.

Create and Bind a Parameter to a Double Column Type Filter

You can select the double column filter's data values and then use the **Create Parameter** option to create and bind a parameter to the filter. The parameter you create uses the selected values and corresponding column as its properties, and is added to the workbook's **Parameters** tab.

This tutorial provides a use case explaining how to bind a double column list filter to a parameter:

Tutorial

For more information about how to use parameter binding in a workbook's filters, see About Binding Parameters to Filters.

Double columns are available only in datasets created from local subject areas. In a double column, one column represents the data descriptor value and is displayed to the consumer. The second column represents an identifier of the data descriptor and isn't displayed to the consumer.

When you create a parameter for a double column, the **Alias** field in the parameter's property is turned on by default. An alias is required for a double column parameter, so you can't switch the Alias field to off.

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When you create a parameter from a filter, the parameter uses the filtered column's name.

1. On your home page, select the workbook where you want to create a double column type filter and add and bind a parameter to, click **Actions**, and then select **Open**.
2. Create or locate and click the double column type filter where you want to create and bind the parameter. The filter displays the double column's display values and not its ID values.
3. Click **Bind to Parameter** *(x)* and then click **Create Parameter** to create and bind the parameter to the filter.
4. Optional: Go to the workbook's **Data Panel**, click **Parameters**, right-click the parameter you created from the filter, and select **Edit Parameter** to reviews and update the parameter's properties.
5. Click **OK**.

Bind an Existing Parameter to a Filter

Choose a system parameter or an existing workbook parameter to bind to a filter and pass a selected filter value to the parameter.

For more information about how to use parameter binding in a workbook's filters, see About Binding Parameters to Filters.

You can also create a parameter from and bind it to a filter. See Create and Bind a Parameter to a Workbook Filter.

When you click **Bind to Parameter**, Oracle Analytics lists the workbook's parameters that are compatible and available for you to bind to the filter.

Hover over a parameter's exclamation icon  for information about the parameter's compatibility with the filter. This information is just a warning and doesn't prevent you from binding the parameter to the filter.

The warning "The filter supports multiple values but the parameter doesn't," means that you can select multiple values in the filter but the parameter definition accepts only the first value specified in the filter value selection list. If you want to fix this issue, go to the filter's properties and change its **Multi Select filter** control to match the parameter's **Allow Multi Select** setting.

1. On your home page, select the workbook with the filter that you want to bind a parameter to, click **Actions**, and then select **Open**.
2. Create or locate and click the filter that you want to bind the parameter to.
3. Click **Bind to Parameter** *(x)* and then click the parameter that you want to bind to the filter.
4. Click **OK**.

Create and Bind Parameters to a Top Bottom N Filter

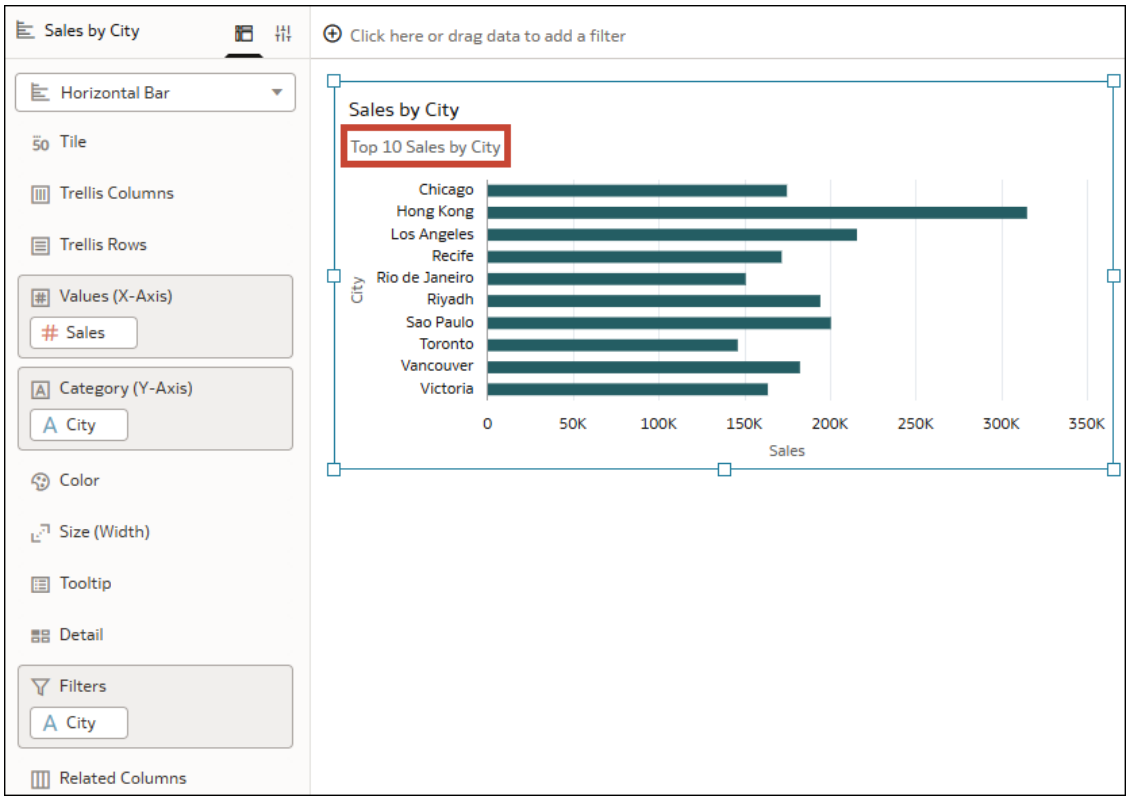
Create and bind parameters to a Top Bottom N filter to control how you want consumers to interact with the filter.

If you create a Top Bottom N filter and make it available to consumers, they have full access to adjust the Method, Count, and By properties, as well as change the filter type.

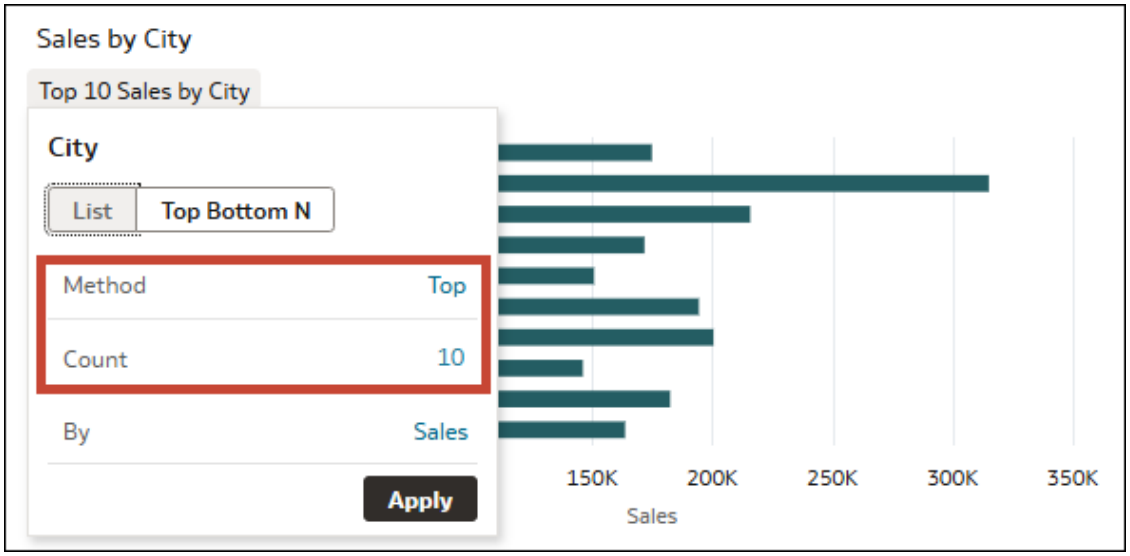
If you want to control the level of interactivity your consumers have with it, or make it easier for them to interact with, you can hide the filter, create and bind parameters to the Method and Count properties, and expose the parameters as dashboard filter controls for your consumers to use instead.

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For example, suppose you have a visualization showing Sales by City with a Top Bottom N filter applied to it to show the top 10 cities with the highest sales.



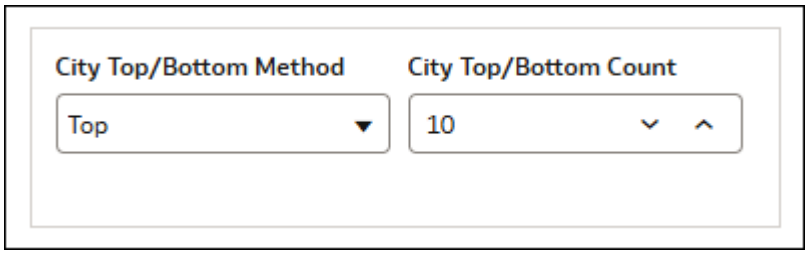
You want your consumers to be able to select different Method and Count values for the filter so they can explore different subsets of the top and bottom cities based on sales. You don't want your consumers to be able to change the By property or switch the filter type.



You can create a parameter called City Top/Bottom Method and another called City Top/Bottom Count, bind these parameters to the corresponding properties for the filter, and then use these

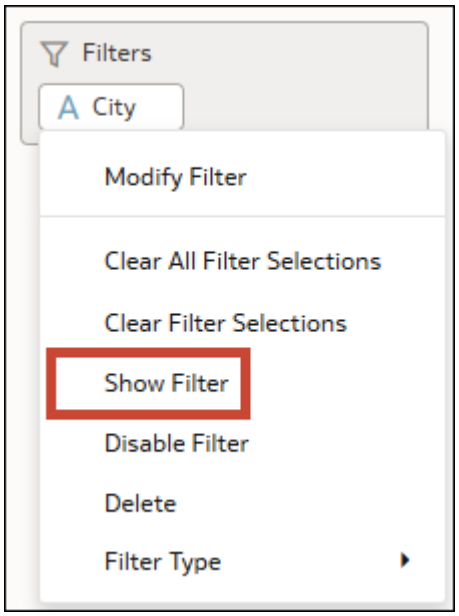
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parameters as filter controls in a dashboard filter. This lets your consumers switch between top and bottom and see the values within a specified range in the visualization.



Before you begin, create a Top Bottom N filter as a visualization filter, see Create a Top Bottom N Filter.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select the visualization and go to **Filters** in the Grammar pane.
3. Click the Top Bottom N filter and click **Show Filter** to deselect it so it doesn't have a check mark and isn't visible on the visualization.



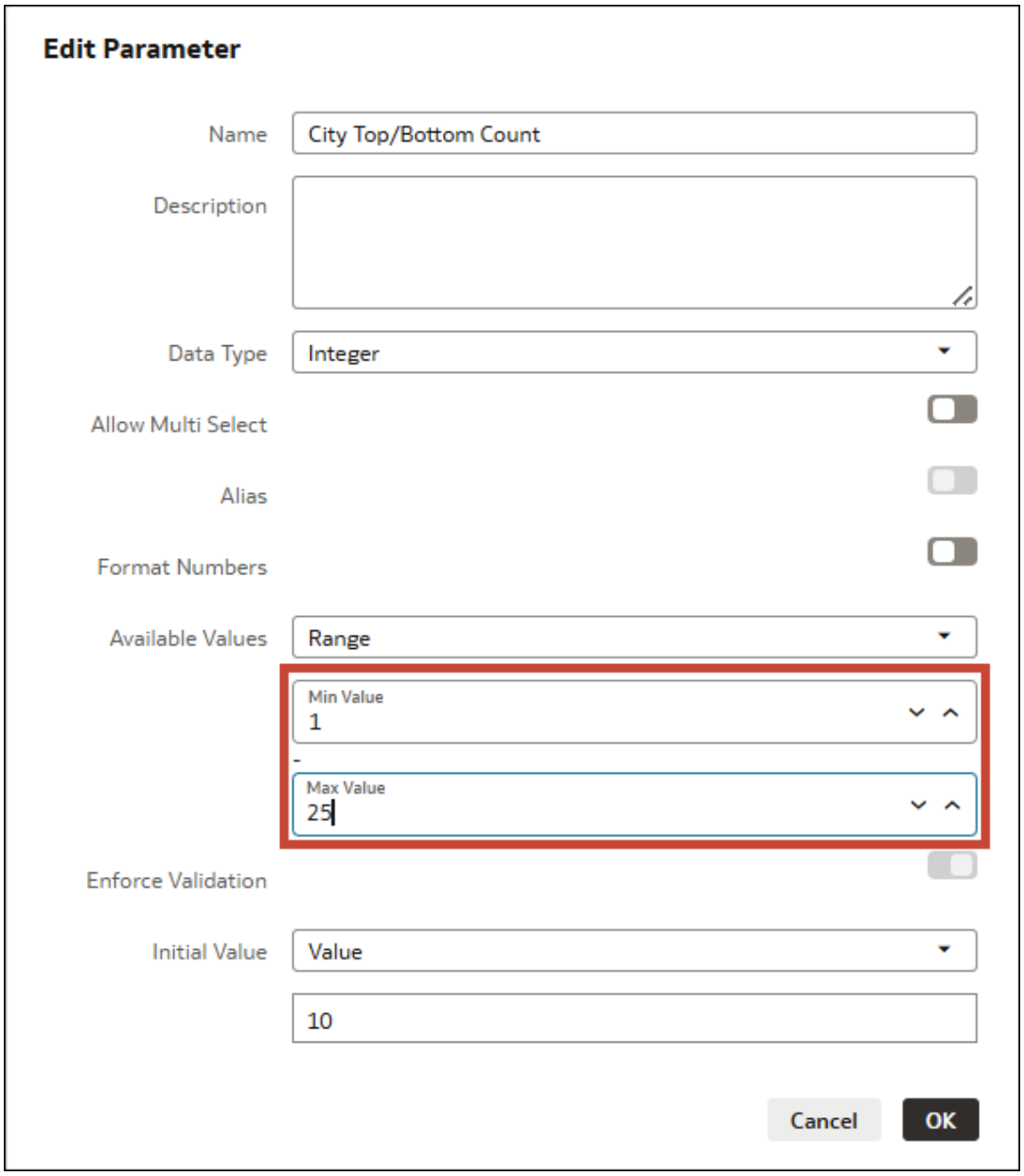
4. Click **Modify Filter** to open the Filter dialog.
5. In the **Method** row, click **(x) Bind to Parameter**.
6. Click **Create Parameter**.

   A parameter called *Column Name* Top/Bottom Method is added to **Parameters** in the Data panel.
7. In the **Count** row, click **(x) Bind to Parameter**.
8. Click **Create Parameter**.

   A parameter called *Column Name* Top/Bottom Count is added to **Parameters** in the Data panel.
9. In the Data panel, click **Parameters**, right-click the *Column Name* Top/Bottom Count parameter you just created, then click **Edit Parameter**.

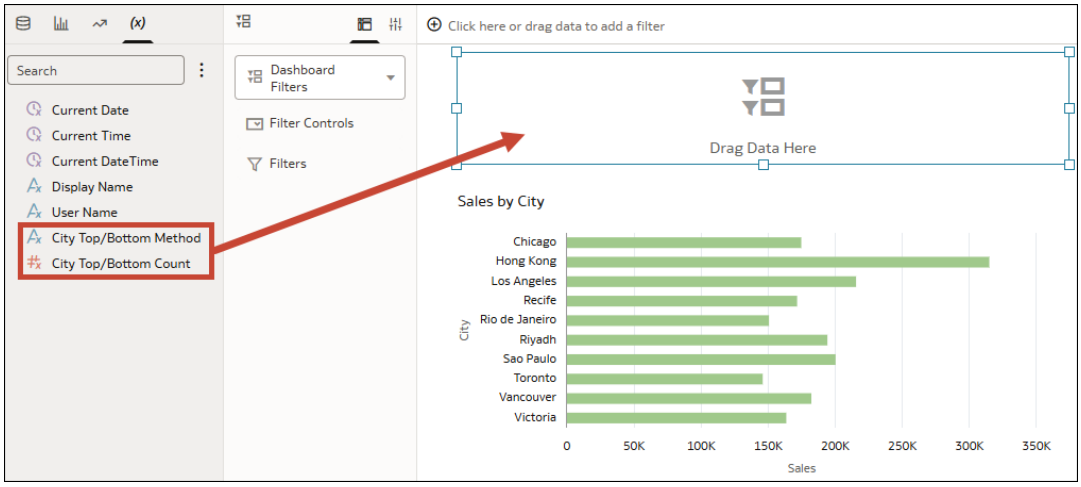
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10. Under **Available Values**, edit the **Min Value** and **Max Value** to reflect the range that you want to provide for your consumers.



11. Click **Ok**.
12. In the Data panel, click **Visualizations**, and drag a Dashboard Filters visualization to your canvas.
13. In the Data panel, click **Parameters**, and drag the two parameters you just created to the dashboard filters visualization.

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14. Click **Save**.

Use Parameters in Workbooks

This topic describes how you can use parameters in a workbook, for example, in visualization labels and expressions.

Topics:

- Use a Parameter to Conditionally Show or Hide a Visualization
- Use a Parameter in a Visualization's Title
- Use a Parameter as a Visualization's Axis Label
- Use a Parameter in a Tile Visualization's Measure Label
- Use a Parameter in an Expression Filter
- Use a Parameter in a Workbook Calculation
- Use an Analytics Link Data Action to Pass Parameter Values
- Use a URL Navigation Data Action to Pass Parameter Values
- Bind a Parameter to a Reference Line or Band
- Bind a Parameter to a Request Variable

Use a Parameter to Conditionally Show or Hide a Visualization

This topic describes how to use a parameter to conditionally show or hide a visualization based on a consumer's selections.

Topics:

- About Using Parameters to Show or Hide Visualizations
- Use a Parameter as a Filter to Conditionally Show or Hide a Visualization

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About Using Parameters to Show or Hide Visualizations

You can show or hide visualizations based on the selected value of a parameter to save space on the canvas and enable your consumers to focus on specific data.

You can configure the Visibility Parameter property for any visualization (except those created from custom plugins) to show or hide the visualization based on how a parameter's specified available values match the user-selected values. Using the parameter as a filter enables your consumers to select the parameter values and control whether the visualization is shown or hidden.

The visualizations are hidden only in Preview, not in Edit mode.

When a visualization is conditionally hidden, the canvas layout doesn't change. This means that if you design the canvas layout using Auto Fit, when the visualization is hidden, there's an empty space where it was on the canvas. You can use the Freeform canvas layout to overlay visualizations on top of each other so that one is shown in the space on the canvas while the other is hidden.

Visibility Parameter Settings

The Visibility Parameter property has the following options:

- **None** - Doesn't conditionally hide the visualization, it's always visible. This is the default setting.
- **Parameter Name** - Lets you select a parameter from a list of existing parameters, if available. You can create a parameter in advance specifically for the purpose of showing or hiding the visualization, and then select it from the list.
- **Create a Parameter** - Creates a basic parameter for you called Show Visual with two available values, Show and Hide. You can modify this parameter to suit your needs.

When you select a parameter for the Visibility Parameter property, you must use the Visibility Settings dialog to choose a condition and specify which of the parameter's available values to apply it to. Then, when a user selects a value, the visualization is shown or hidden depending on the condition you set.

The following conditions are available:

- **Any** - Displays the visualization when any of the values specified in the parameter condition are included in the user-selected values.
- **Subset** - Displays the visualization when any of the values specified in the parameter condition are the only user-selected values.
- **Exact Match** - Displays the visualization when all of the values specified in the parameter condition match all of the user-selected values.
- **Superset** - Displays the visualization when all of the values specified in the parameter condition are included in the user-selected values.

Condition Examples

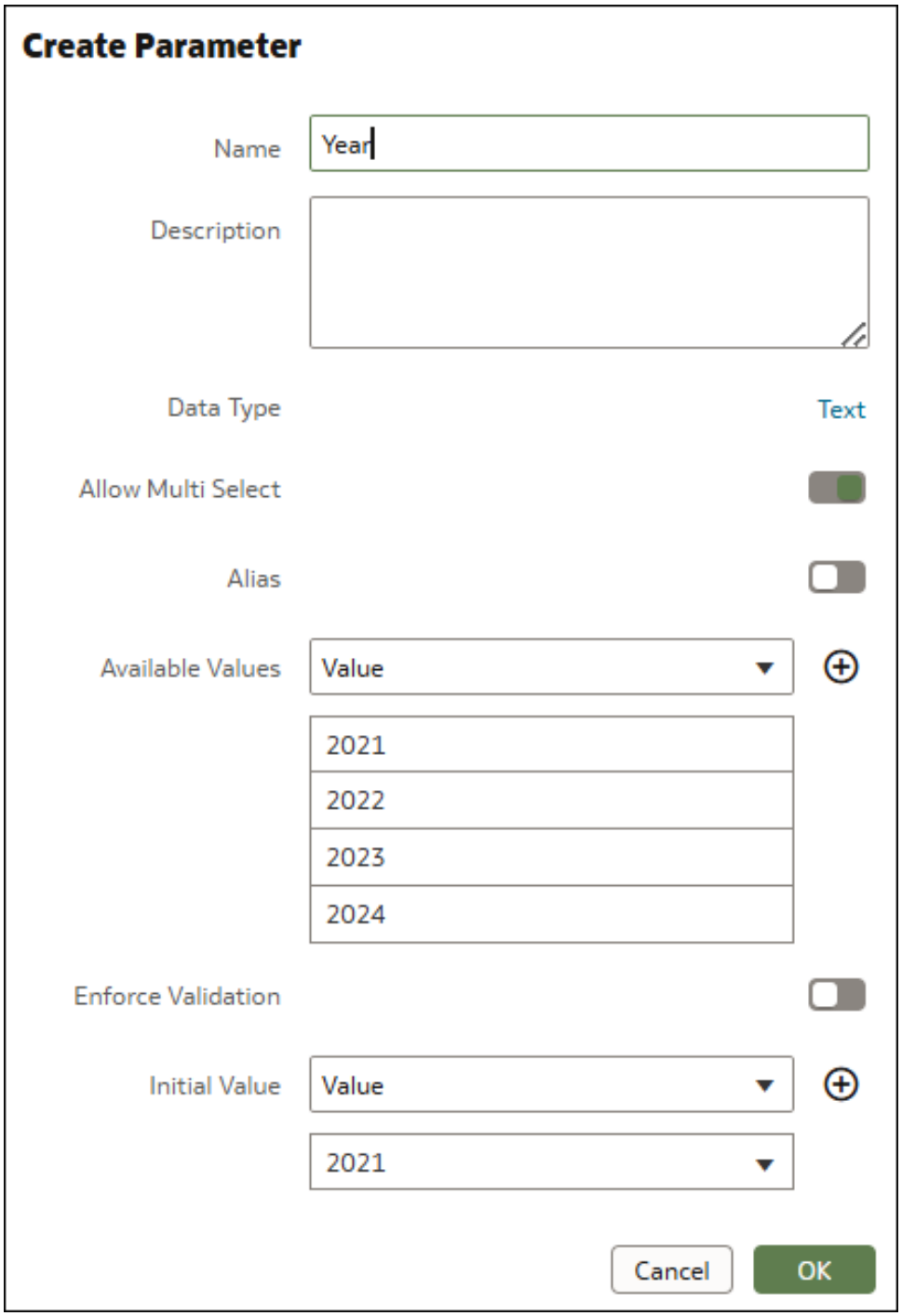
Suppose you select a parameter called Year using the Visibility Parameter property for a visualization.

The parameter has the following available values:

- 2021
- 2022

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- 2023
- 2024



Suppose you select 2023 and 2024 for the parameter condition in the Visibility Settings dialog.

This is what happens when you choose the following conditions:

- **Any** - The visualization is displayed when a user includes either 2023 or 2024, or both in their selections.

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- **Subset** - The visualization is displayed when a user selects either 2023 or 2024, or both, and nothing else.
- **Exact Match** - The visualization is displayed when a user selects both 2023 and 2024, and nothing else.
- **Superset** - The visualization is displayed when a user includes both 2023 and 2024 in their selections.

Use a Parameter as a Filter to Conditionally Show or Hide a Visualization

Create a parameter and then use the Visibility Parameter property for a visualization together with a filter to show or hide the visualization based on the values a consumer selects for the parameter.

This tutorial provides a use case explaining how to control visualization visibility using a parameter:

Tutorial

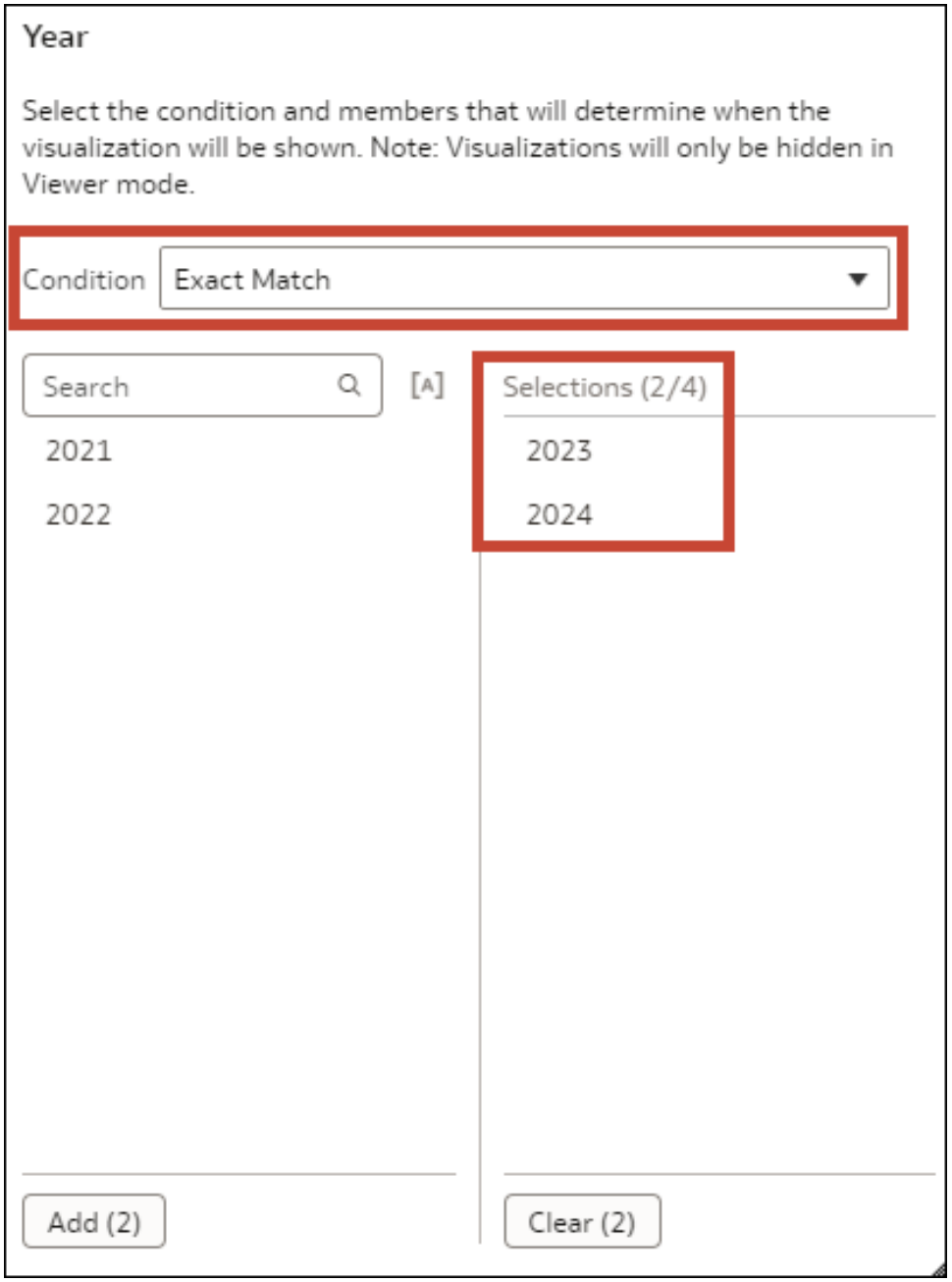
Before you configure the Visibility Parameter property, do the following:

- If a suitable parameter doesn't already exist, create a parameter and specify the available values you want users to choose from. See Create a Parameter.
- Create a filter using the parameter so that consumers can select values. See Use a Parameter in the Filter Bar or Use a Parameter as a Dashboard Filter Control.

Then you can configure the Visibility Parameter and Visibility Settings for your visualization.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the visualization that you want to conditionally show or hide to select it.
3. Click **Properties** to open the Properties pane.
4. Under **General**, in the **Visibility Parameter** field, click **None** and then select the parameter you created.
5. Beside the Visibility Parameters field, click **Visibility Settings** .
6. In the Visibility Settings dialog, select a condition, then select which of the parameter's available values to apply the condition to.

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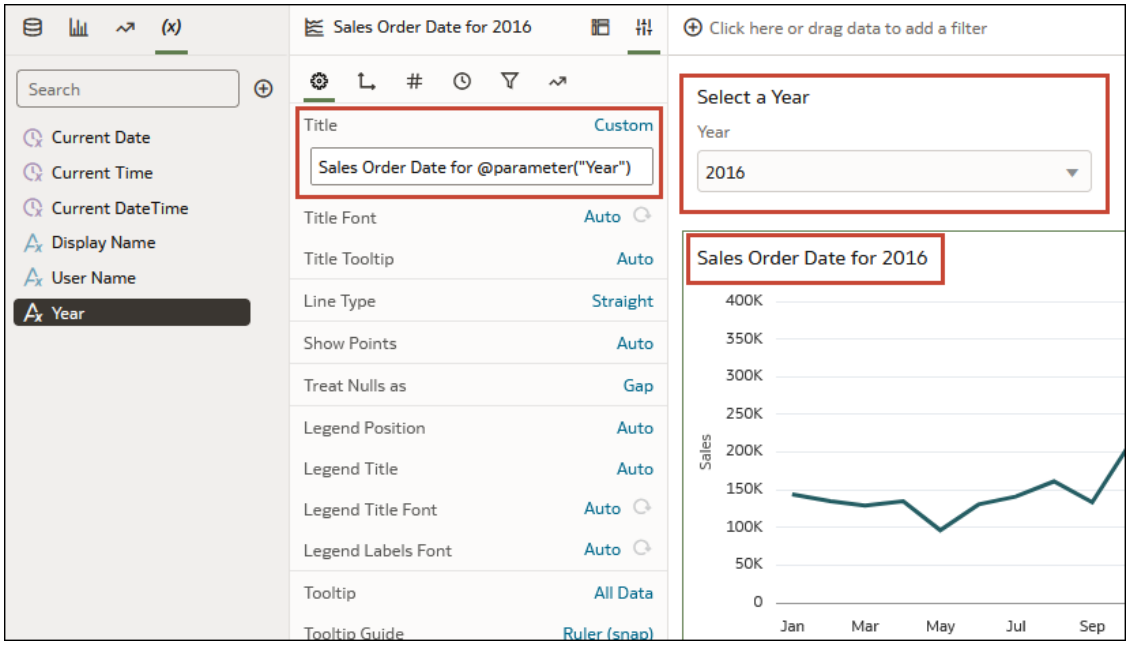
7. Click **Save**.
8. To test that the functionality works as intended for consumers, click **Preview** and try out the filter selections.

Use a Parameter in a Visualization's Title

Add a parameter to the visualization's title when you want to display the parameter's value in the context of the title.

For example, you can create a parameter called Year and add it to a dashboard filter on the canvas. Then you can reference the parameter in a visualization's title so that when the user chooses a year value, the title is updated to include the selected year.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a visualization to select it, and then click **Properties** to display the Properties pane and click **General** to display the general properties.
3. Locate the **Title** field and click **Auto**. Select **Custom**.
4. Clear or modify the default title and use this syntax to include a parameter in the title:

   ```
   @parameter("parameter name")
   ```

   For example:

   ```
   Sales by Order Date for @parameter("Year")
   ```

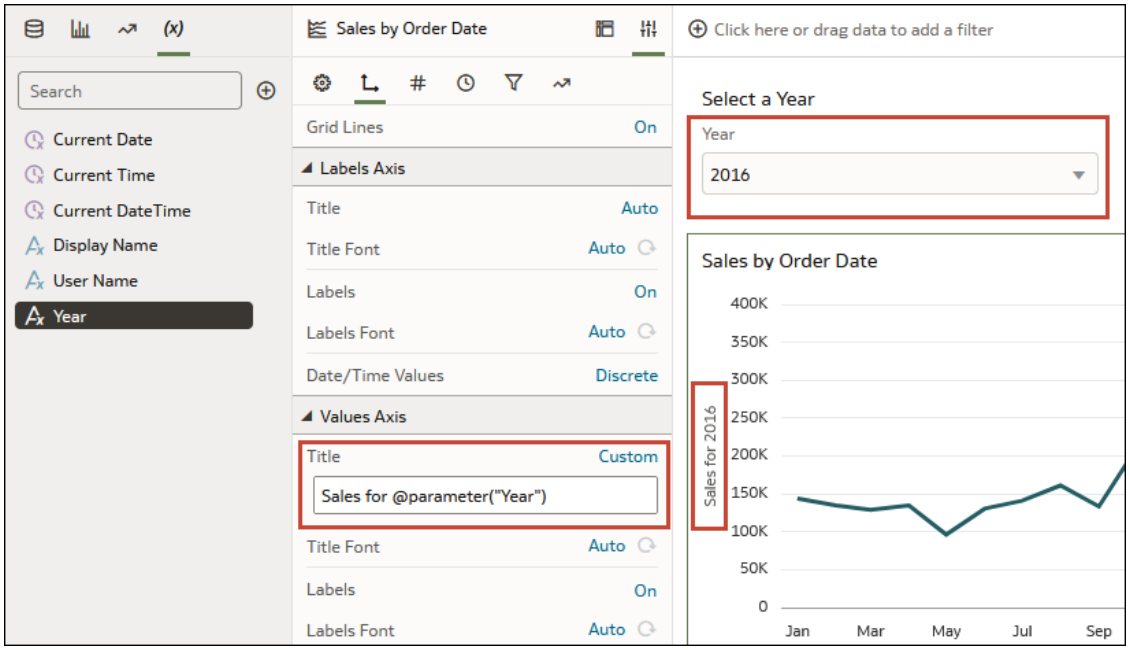
5. Click **Save** to save the workbook.

Use a Parameter as a Visualization's Axis Label

A parameter value can be dynamically passed to a visualization's axis labels. The current value of the parameter is used as the axis label's name.

For example, you can create a parameter called Year and add it to a dashboard filter on the canvas. Then you can reference the parameter in a visualization's value axis so that when the user chooses a year value, the value axis title is updated to include the selected year.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. On the canvas, select a visualization and click **Properties** to display the Properties pane and click **Axis** to display the axis properties.
3. Locate the axis label where you want to use the parameter. Go to the **Title** property, click **Auto**, and then click **Custom**.
4. Clear or modify the default title and use this syntax to include a parameter in the:

   ```
   @parameter("<parameter name>")
   ```

   For example:

   ```
   @parameter("Year")
   ```

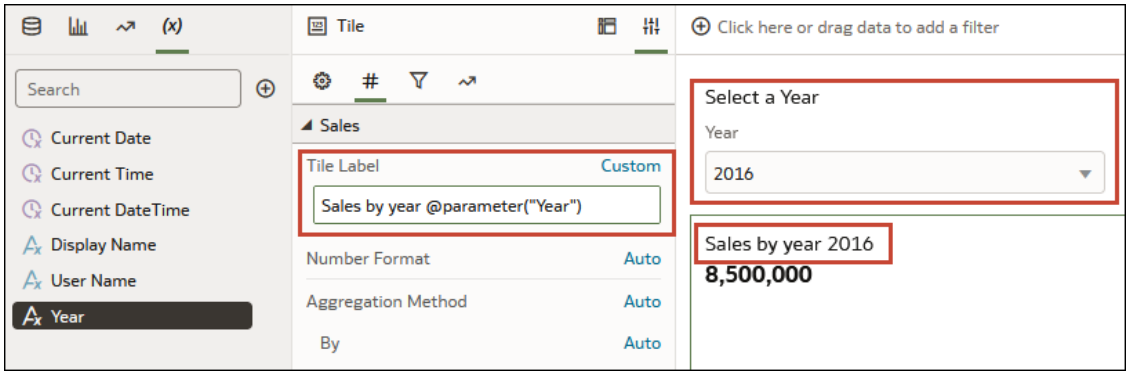
5. Click **Save** to save the workbook.

Use a Parameter in a Tile Visualization's Measure Label

A parameter value can be dynamically passed to a tile visualization primary and secondary measure labels.

For example, suppose you want the workbook to include a dashboard filter measure selector, and when the user selects a measure value, the selected value is passed to the measure's label to give the tile visualization more context.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click a tile visualization to select it, click **Properties** and then click **Values** to display the Values pane.
3. Locate the measure's **Tile Label** field and click **Auto**. Select **Custom**.
4. Clear or modify the default title and use this syntax to include a parameter in the title:

   ```
   @parameter("parameter name")
   ```

   For example:

   ```
   @parameter("Measure")
   ```

5. Click **Save** to save the workbook.

Use a Parameter in an Expression Filter

You can include a parameter in an expression filter's SQL expression to create a complex visualization filter.

This tutorial provides a use case explaining how to use a parameter in an expression filter:
Tutorial

See Syntax for Referencing Parameters.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the visualization that you want to add the expression filter to and confirm that the visualization's **Grammar** pane is displayed.
3. In the Grammar pane, scroll to the **Filters** area, hover over and click **Drop Target Options**, and select **Create Expression Filter**.
4. In **Label**, enter a name for the expression filter.
5. In the **Expression** field, use this syntax to build the expression:

   ```
   @parameter("parameter name")('default value')
   ```

   For example:

   ```
   rank(Sales)<=@parameter("Top N")(10)
   ```


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6. Click **Validate**, and then click **Apply** to save the expression filter.

Use a Parameter in a Workbook Calculation

Use a parameter to replace a constant in a calculation that you create in the workbook's My Calculations folder.

This tutorial provides a use case explaining how to use a parameter in a workbook calculation:
Tutorial

See Syntax for Referencing Parameters.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the **Data Panel** click **Data**.
3. Locate the My Calculations folder, right-click it, and select **Create Calculation**.
4. In New Calculation, enter a name for the calculation.
5. In the calculation field, use this syntax to build the calculation:

   ```
   @parameter("parameter name")('default value')
   ```

   For example:

   ```
   @parameter("Dimensions")('Order Priority')
   ```

6. Click **Validate** to validate the calculation, and then click **Save** to save the calculation.
7. Click **Save** to save the workbook.

Use an Analytics Link Data Action to Pass Parameter Values

You can create a data action to pass the selected parameter values to a canvas in another workbook.

This tutorial provides a use case explaining how to use a parameter in an analytics link:
Tutorial

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Menu** on the workbook toolbar and click **Data Actions**.
3. Click **Add Action** and enter a name for the new navigation link.
4. Click the **Type** field and select **Analytics Link**.
5. Click the **Anchor To** field and select the columns from the current visualization to associate with this data action. Don't select measure columns or hidden columns. If you don't specify a value for the **Anchor To** field, then the data action applies to all data elements in the visualizations.
6. In the **Target** field, click the **This Workbook** field and select **Select from Catalog** and browse for and select the workbook that you want to use for the anchor.
7. Click the **Canvas Link** field and select the canvas that you want to use.
8. If you want to pass a filter value, then click the **Pass Values** field and select which values you want the data action to pass.

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- **All** - Dynamically determines the intersection of the cell that you click and passes all filter values for the selected data.
- **Anchor Data** - Ensures that the data action is displayed at runtime, but only if the required columns specified in the **Anchor To** field are available in the view context.
- **None** - Opens the page (URL or canvas) but no filter values are passed for the selected data.
- **Custom** - Passes only user selected custom filter values for the selected data.

9. Click the **Pass Parameter Values** field and select which parameter values you want the data action to pass.
   - **All** - Dynamically determines the intersection of the cell that you click and passes all parameter values for the selected data.
   - **None** - Opens the page (URL or canvas) but no parameter values are passed for the selected data.
   - **Custom** - Passes only user selected custom parameter values for the selected data.
10. Click **Supports Multiple Selection** to set the value.
    - **On** - The data action can be invoked when one or multiple data points are selected.
    - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error.
11. Optional: Click **Open in** to set how the data action opens for a consumer user.
    - **Auto** - If the target is this workbook, the data action navigates to the specified canvas in the current workbook in the same tab. If the target is an external item, the data action opens in a new tab. If the data action is invoked in an embedded workbook, the target opens in a new tab, even when the target is this workbook.
    - **New Tab** - The data action opens in a new tab in same browser window.
    - **Same Tab** - The data action opens in the current tab, replacing the current canvas. If the data action is invoked in an embedded workbook, the target opens in a new tab even when the Open in property is set to Same Tab.
    - **Pop Up** - The data action opens in a pop-up window.
12. Click **OK** to save.

Use a URL Navigation Data Action to Pass Parameter Values

You can create a data action that uses a URL to pass the selected parameter values from a workbook to another application.

For example, suppose your workbook contains a parameter that allows a user to select an employee ID value. You can create a URL navigation data action to pass the employee ID value to your HCM application.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Menu** and select **Data Actions**.
3. Click **Add Action** and enter a name for the new navigation link.
4. Click the **Type** field and select **URL Navigation**.

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5. Click the **Anchor To** field and select the columns that you want the URL to apply to. If you don't specify a value for the **Anchor To** field, then the data action applies to all data elements in the visualizations.
6. Enter a URL and optionally include any URL options such as separator, style, or type.

   For example, `http://www.example.com/search?q=@parameter("City",separator=",",type="value")('')`
7. Click **Supports Multiple Selection** to set the value.
   - **On** - The data action can be invoked when one or multiple data points are selected.
   - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
8. Optional: Click **Open in** to set how the data action opens for a consumer user.
   - **Auto** - The data action opens in the current mode for opening data actions. The default is to open in a new tab in the same browser window.
   - **New Tab** - The data action opens in a new tab in same browser window.
   - **Same Tab** - The data action opens in the current tab, replacing the current canvas.
   - **Pop Up** - The data action opens in a pop-up window.
9. Click **OK** to save.

Bind a Parameter to a Reference Line or Band

You can bind a parameter to a reference line value or a reference band range in a visualization when you want to use a parameter value to place the reference line or band on the visualization.

When you bind a parameter to a reference line or band, you can add the same parameter as a filter so that a user can select a value or range to control the placement of a visualization's reference line or band.

For example, you can bind a parameter to a reference line based on Ship Date for a visualization that shows Sales by Ship Date. You can then use that parameter as a filter and move the Ship Date reference line on the visualization based on your parameter value selection.

You can only bind a parameter to a reference line value or reference band range that uses an attribute, date, or derived date column.

When you bind a parameter to a reference line, you can either create a new parameter with the same name as the reference line column, or you can choose an existing parameter. If you create a new parameter, it's added to the Parameters pane and you can edit it there.

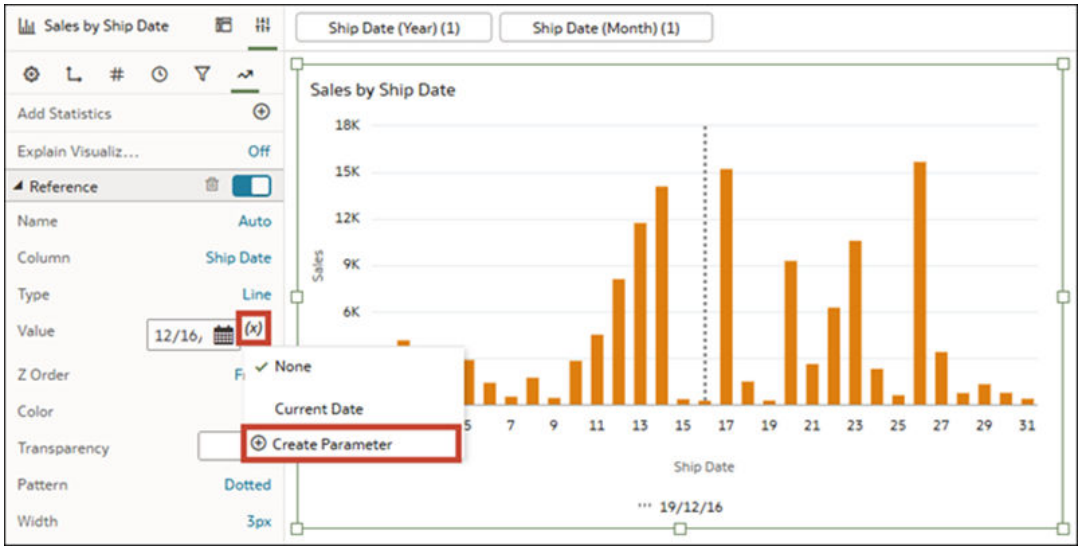
Because reference bands have a range, you can bind parameters to both the **From** property and the **Until** property. If you create a new parameter for both, the parameters both have the same name as the column used for the reference band.

For information about creating a reference line, see Add a Reference Line to a Visualization. For information about using a parameter as a filter, see Ways to Use Parameters with Filters .

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the visualization with the reference line or band to select it.
3. Click **Properties**, then click **Analytics**.

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4. Expand **Reference**.
5. For a reference line, in the **Value** field, click *(x)* **Bind to Parameter**, then click **Create Parameter**.



6. For a reference band, in the **From** and **Until** fields, click *(x)* **Bind to Parameter**, then click **Create Parameter**.
7. Click **Save**.

Bind a Parameter to a Request Variable

Bind a parameter to a request variable when you want to temporarily set the request variable to the parameter's value.

You can bind a parameter to a request variable for the entire workbook or for an individual visualization.

For example, binding a parameter to a request variable for the entire workbook is useful if you want a user to be able to select a currency type in a workbook so they can display the data in the visualizations in a specific currency. The request variable is set to the parameter's value only for the duration of a specific query in the workbook.

This tutorial provides a use case explaining how to bind a parameter to a request variable for a workbook:

Tutorial

If the parameter a request variable is bound to accepts multiple initial values, the request variable is set to the first value and the remaining values are ignored. You can bind only one parameter to a request variable.

You need to know the request variable name to bind a parameter to it. Your semantic model developer can provide the request variable name.

To create a parameter, see Create a Parameter.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. To bind a parameter to a request variable for the workbook:
   a. In the Data Panel, click **Parameters**.

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b. In the Parameters Pane, click **Menu** and select **Request Variable Binding**.

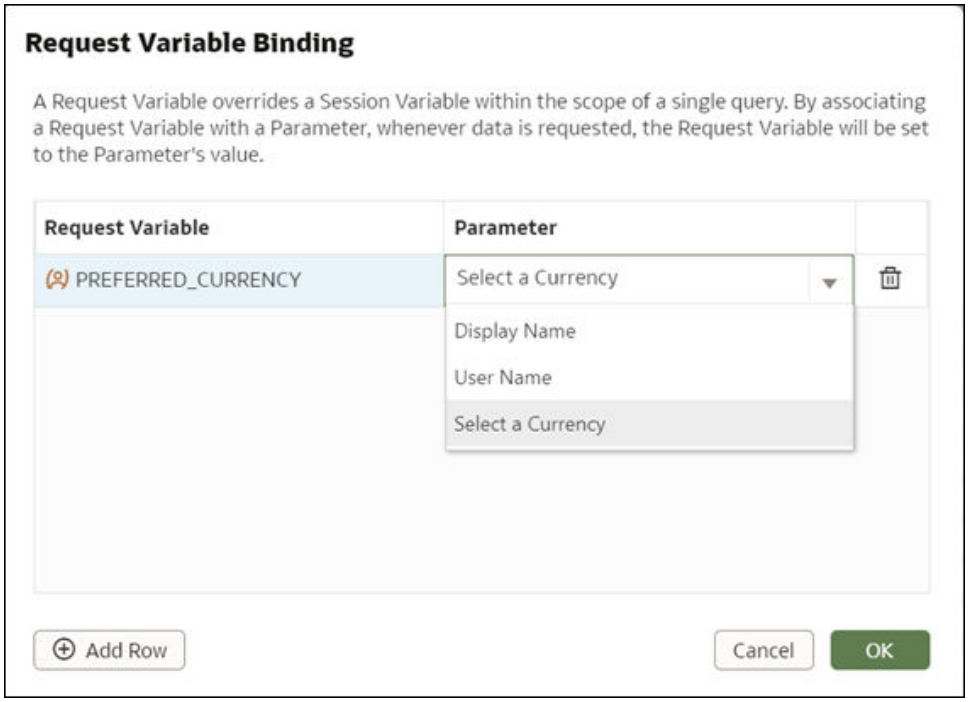
3. To bind a parameter to a request variable for a visualization:

a. Select the visualization, then click **Properties**.

b. Click **Advanced** , then click **Bind Request Variable** .

4. In the **Request Variable** field, enter the name of the request variable exactly as it's defined in the semantic model.

5. In the **Parameter** field, select the parameter from the drop-down list.



6. Click **OK**.

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15

Understand Your Data Using Insights

Use Auto Insights and Explain to understand your data and create the best analytics content. Use Contextual Insights to understand data in a specific visualization.

Topics:

- Use Auto Insights to Understand Your Data
- Use Explain to Understand Your Data
- Use Contextual Insights to Understand Your Data

Use Auto Insights to Understand Your Data

In Oracle Analytics, gain insights into your data using Auto Insights.

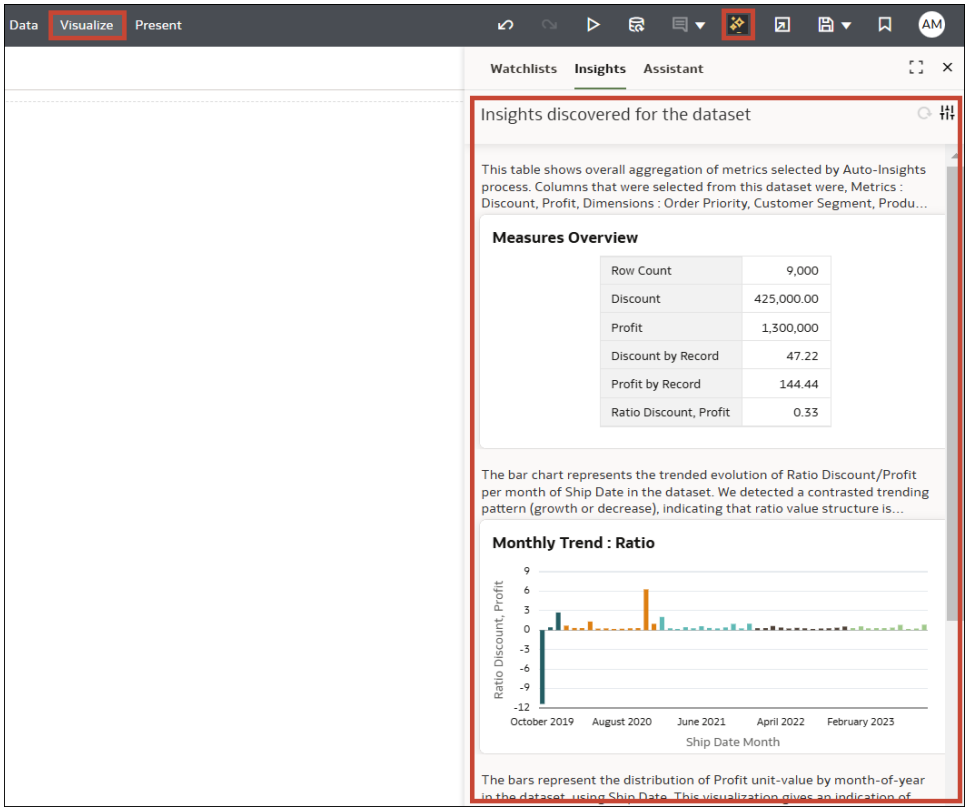
Topics:

- What Are Auto Insights?
- Use Auto Insights to Get Immediate Insights into Your Data
- Visualization Types Generated by Auto Insights
- Interact with Auto Insights to Focus on What You're Interested In
- Refresh Auto Insights to Include Filters
- Administration and Limitations

What Are Auto Insights?

With Auto Insights, you can build canvases from scratch by automatically scanning your dataset and generating visualizations that show remarkable insights from the data.

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You can build canvases by choosing from a gallery of meaningful insights built directly from your data. Auto Insights algorithms run silently on your data as your dataset is created, identify which columns hold the most meaningful insights, and represent these as Oracle Analytics visualizations in a gallery panel on your canvas.

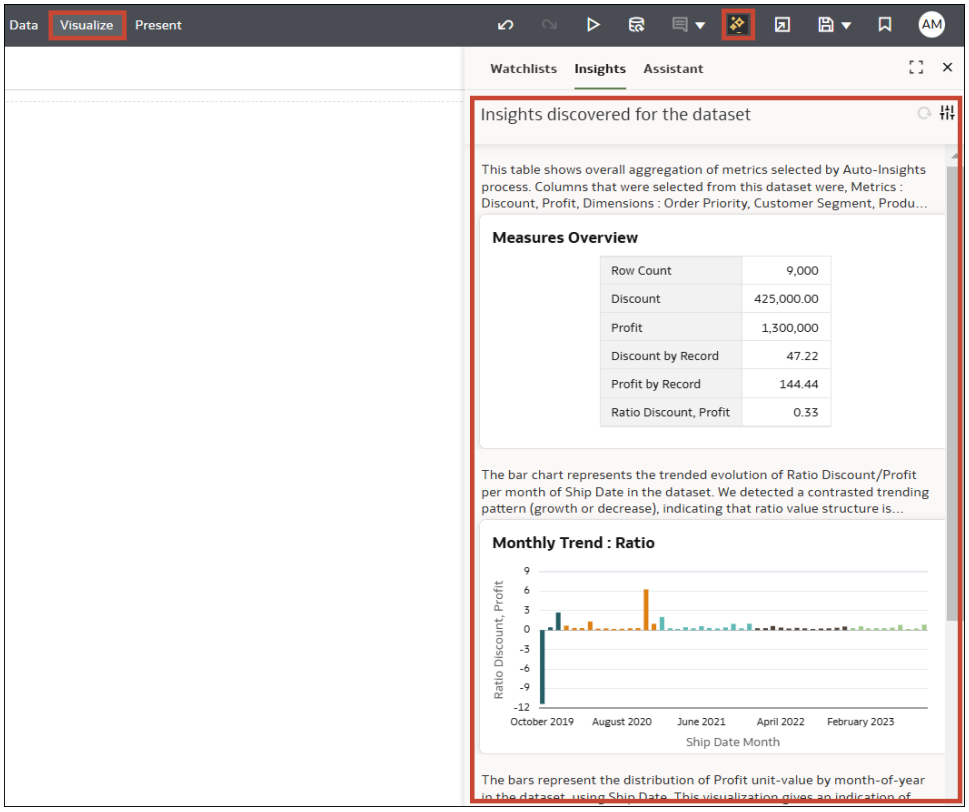
As a workbook designer, you can quickly go from a blank page to fully built, meaningful visualizations and insights into your data. You can also adjust the initial scope of Auto Insights and modify which columns to select and which type of insights to look for. Refining the scope of Auto Insights lets you quickly refresh a set of new insights, taking into account a user's directions.

Use Auto Insights to Get Immediate Insights into Your Data

When you upload a dataset to Oracle Analytics, Auto Insights compute interesting insights on the data.

Click **AI Assistant** in the top right corner of the Visualize page (when insights are ready, the icon turns yellow) and scroll through the pane for a list of ranked insights. The artificial intelligence engine that generates these insights is focused on finding the columns with the most appropriate data for interesting insights, and on how to apply advanced analytics techniques to those columns.

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The list of insights shown varies based on the following information:

- Which types of columns are present in your dataset (for example, how many dimensions, how many dates, how many metrics)
- Which data is present in each of the columns (for example, what are the cardinalities of dimensions, their sparsity, distribution)

For example, if there are no date columns in your data, then there won't be any insights about trending or seasonality.

As you scroll down the insights, visualizations are rendered with an overall text description to help you understand what the insight is about, how to read it, and why it qualifies to display here. Typically, insights that show a high contrast in values (for example, crossing line trends, high variations in bars, spread in scatter plots) will rank higher in the pane. You can drag any of these insights onto your workbook canvas or click the **Add to canvas** icon **+** on any visualization, or by double-clicking the visualization itself.

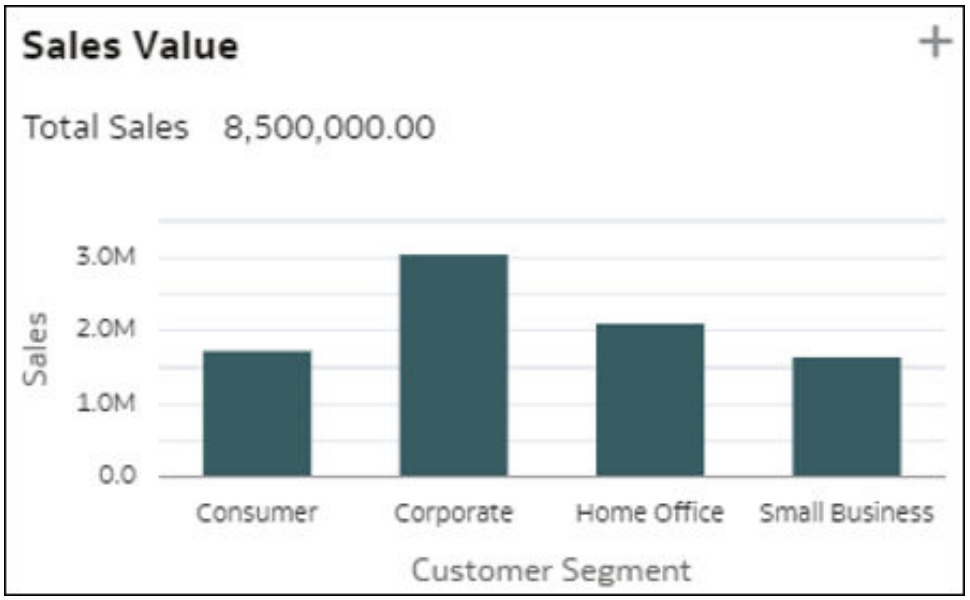
Once the visualizations you selected are on the canvas, they behave exactly as if you manually designed them from scratch. Any viewer can fully interact with any of these visualizations (for example, keep selected, use as filters), or even customize them further by replacing formats and columns or editing calculations. Any custom calculations required to support the insights you dragged onto your canvas are automatically added under the My Calculations folder. You can review these calculations to understand their formulas and modify them further.

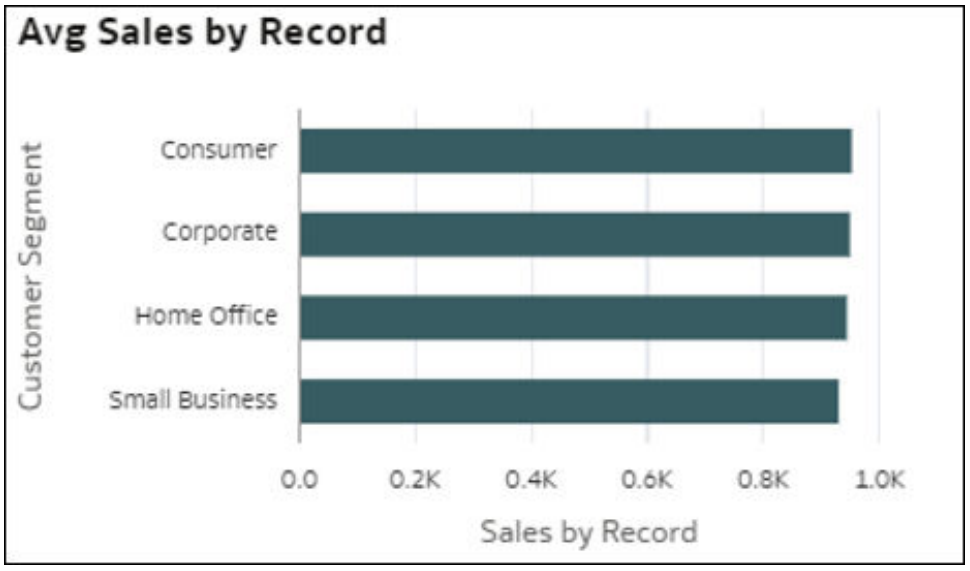
Visualization Types Generated by Auto Insights

Auto Insights generate various types of visualizations that deliver specific insights into your data. Each of these visualizations leverages different columns from your data and is ranked depending on the value of the insight within the context of your data.

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- **Dimension Breakdowns** - These visualizations aggregate a measure value for the various members of a dimension in your data. This lets you gain a quick view of how the selected metric is distributed against a given dimension. The measure can be a metric from your dataset, a count of records, or an average value of the metric per record.





- **Heatmap Pivot Tables** - These visualizations aggregate a measure value for the intersections of two dimensions in your data. Each cell in the pivot table represents an intersection of the members of the two selected D2 dimensions. These visualizations help you quickly understand where the highest values are for the measure by looking at the darkest cells in the tables. Measures in this visualization can be a metric from your dataset, a count of records, an average value of metric per record, or a percentage representing any of these options (with the top right total equal to 100%).

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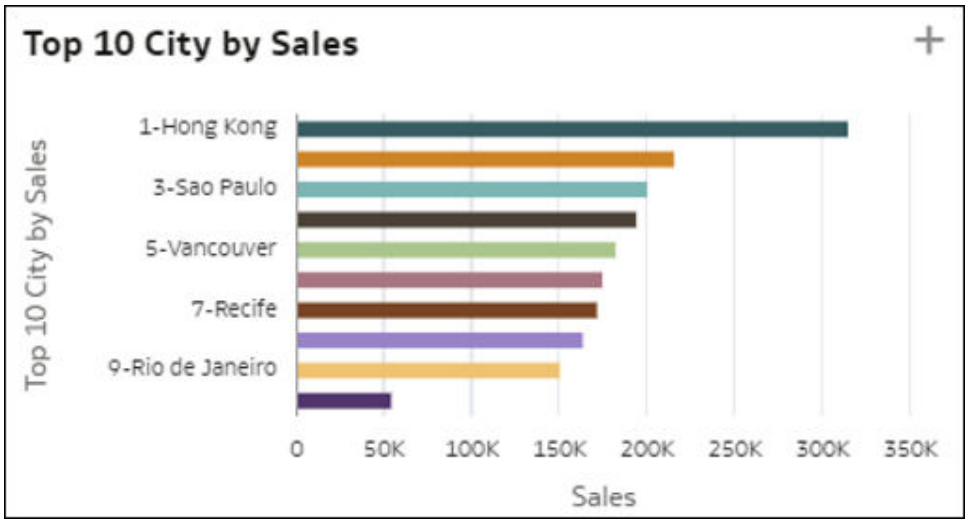
% of Sales

	Consumer	Corporate	Home Office	Small Business	Grand Total
Furniture	7.64%	11.33%	8.89%	6.18%	34.04%
Office Supplies	4.72%	8.24%	6.54%	5.58%	25.08%
Technology	7.91%	16.19%	9.25%	7.53%	40.88%
Grand Total	20.27%	35.77%	24.68%	19.29%	100.00%

Avg Sales

	Consumer	Corporate	Home Office	Small Business	Grand Total
Furniture	1,623.84	1,426.31	1,638.47	1,510.53	1,535.72
Office Supplies	433.57	413.94	453.26	480.54	441.29
Technology	1,388.69	1,646.50	1,467.53	1,491.03	1,520.72
Grand Total	952.31	948.83	943.60	929.49	944.44

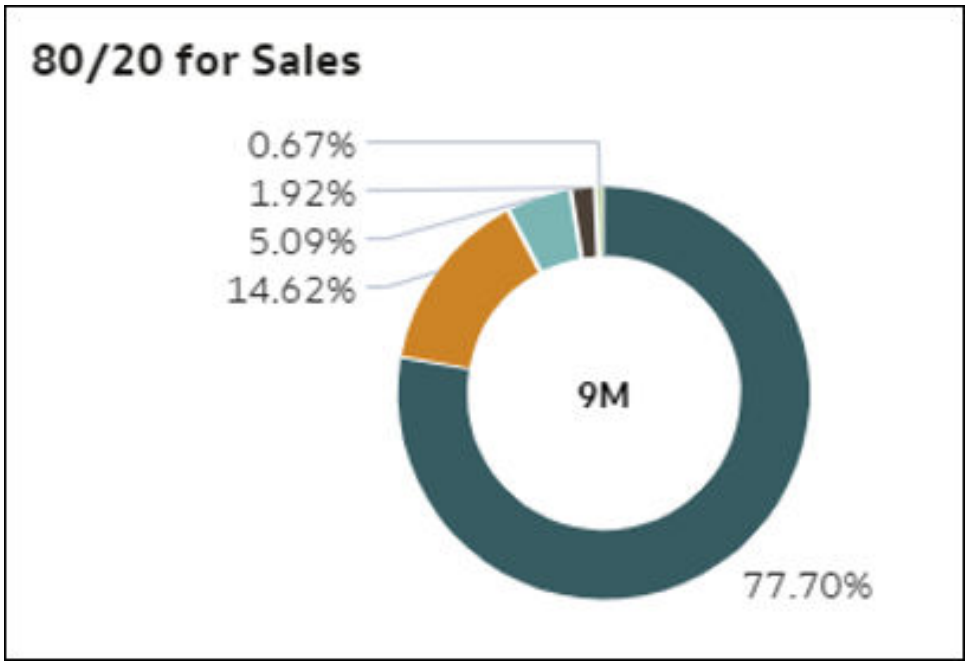
- **Top 10 Individuals** - This visualization shows the top members of a dimension by their decreasing value for a measure in your dataset. The last bar in the chart shows the average value of the measure for all the members that are not among the top nine. That is, the average value of M1 for all individuals that are not top ranking. This information shows how far ahead the top individuals are compared with the average of the rest of the population.



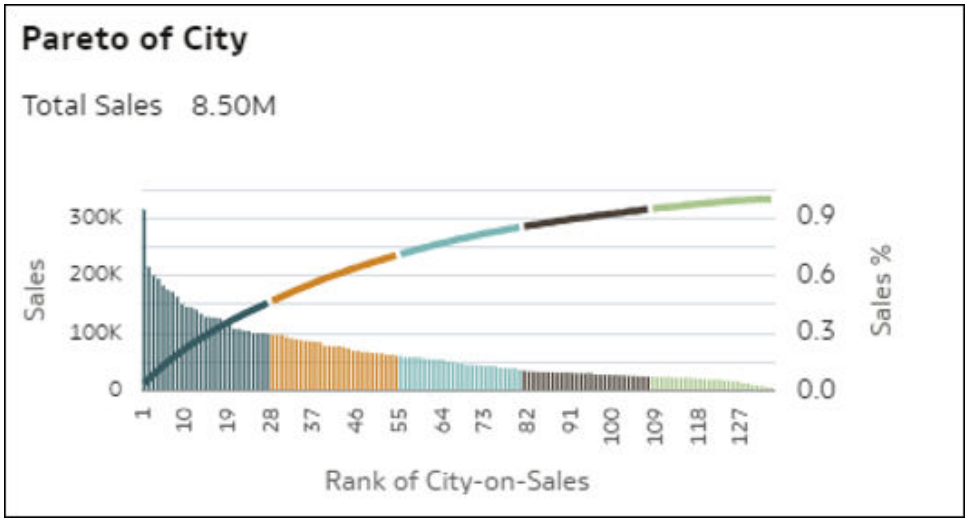
- **80/20** - This visualization shows, for a given measure, how much the records in the top 20% of your data weigh out of the total dataset. The top 20% is calculated based on detailed rows in your dataset. The donut chart shows the importance of the top individuals

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in your data for that measure. The arcs on the donut chart represent quintiles of records, that is, successive chunks of 20% of the records by decreasing number of rows (top 20% individuals, followed by the next 20%, and so on). The size of the arcs represents the total aggregated value of the measure for each quintile.



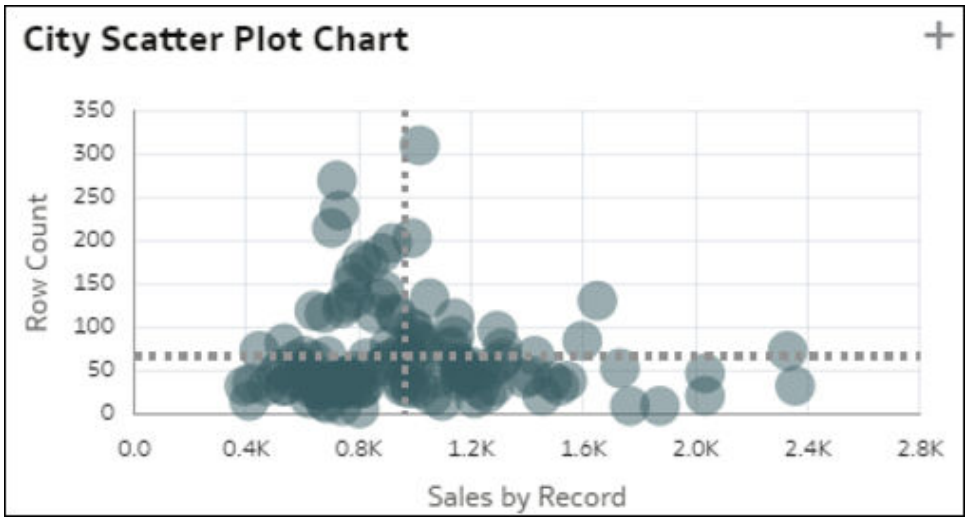
- **Pareto** - This Pareto chart visualization shows every member of a dimension (medium cardinality) ordered by decreasing value of a measure. Each bar represents this measure for a member, and the line represents the cumulative percentage of the measure value (summing up to 1.0 = 100%) as each member of the dimension is added cumulatively. A Pareto chart helps focus interest on the areas that offer the greatest relative value or frequency.

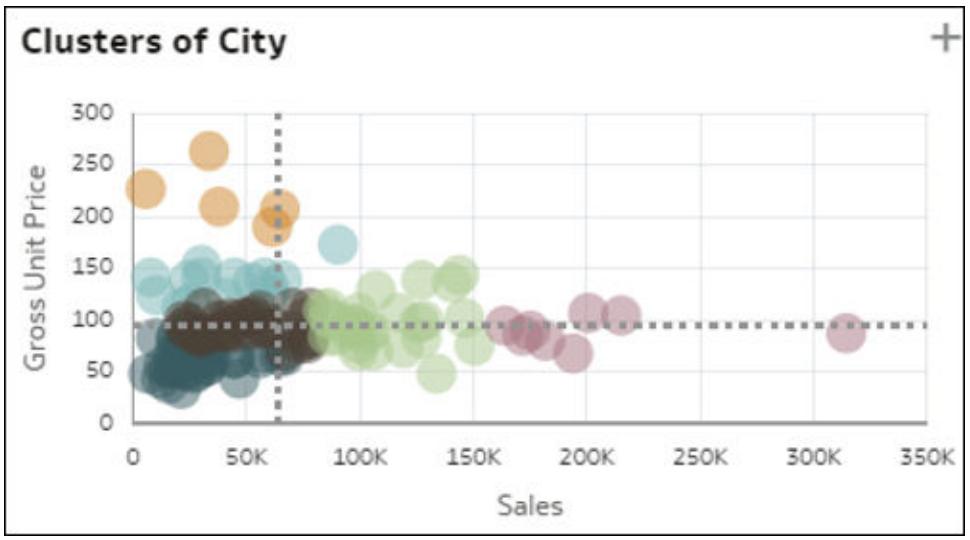


- **Scatter Plots and Clusters** - The scatter plot chart visualization shows all members of a dimension (medium cardinality) on a grid with two distinct measures from your data for the axes. Each measure is graduated by average unit value. The spread among all these records and the potential outliers represent interesting insights into your dimension

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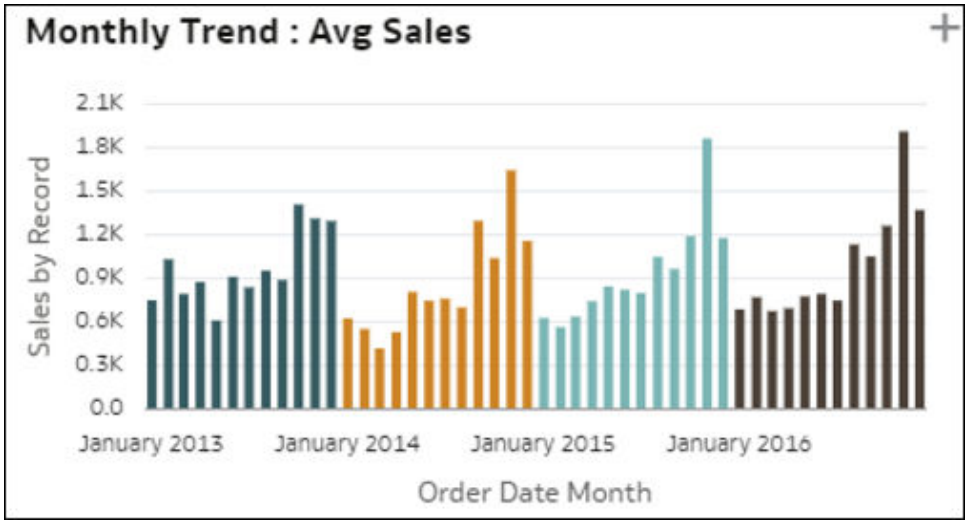
members. This chart gives you a quick insight into how well the two metrics correlate with each other on B1 members, and lets you easily understand which members fall in which quadrant. A variant of the scatter plot shows an automatic clustering of your records into six coherent groups.

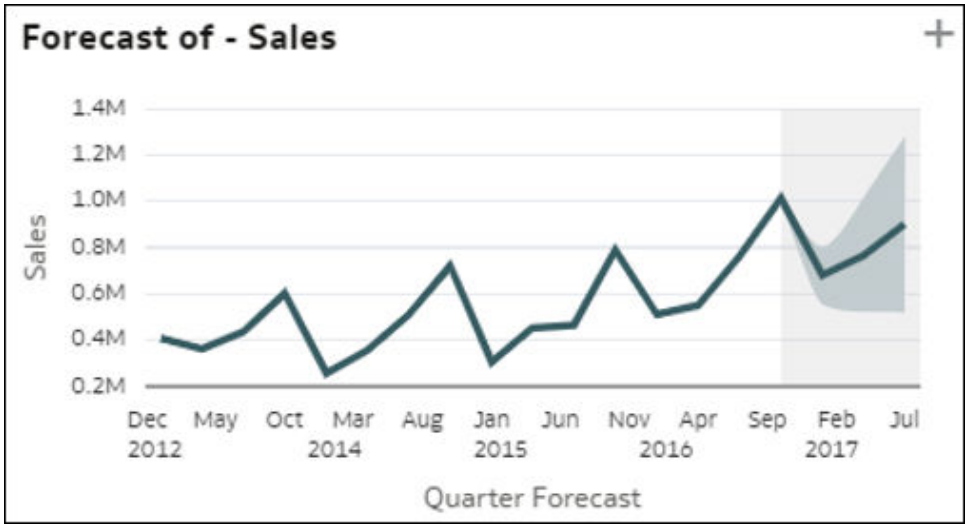




- **Simple Trending Bar Charts** - This visualization represents the trended evolution of a measure over a time column in your dataset. It can reveal interesting trending patterns such as growth or decline. The measure can be a metric from your dataset, a count of records, or an average value of a metric per record. The same insight can also display with an additional forecast line on the right side of the chart.

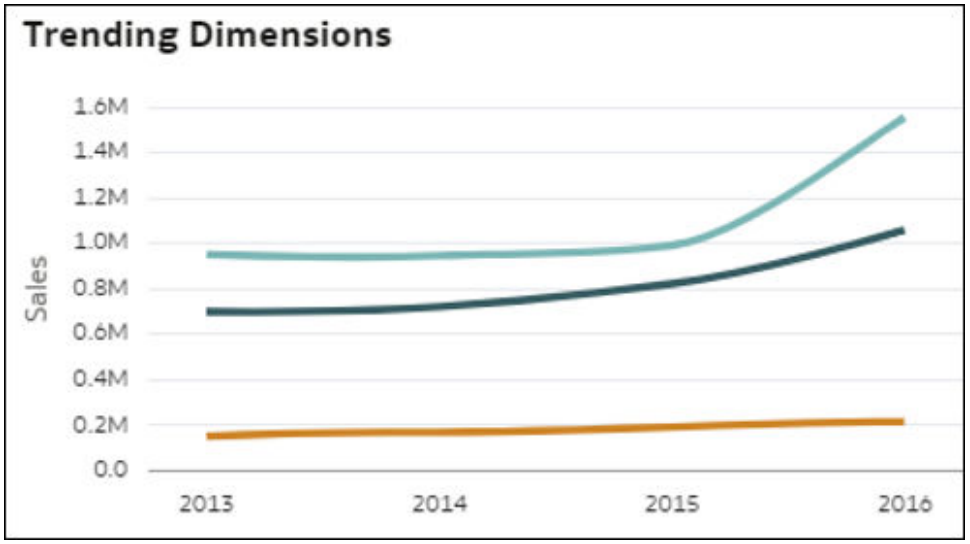
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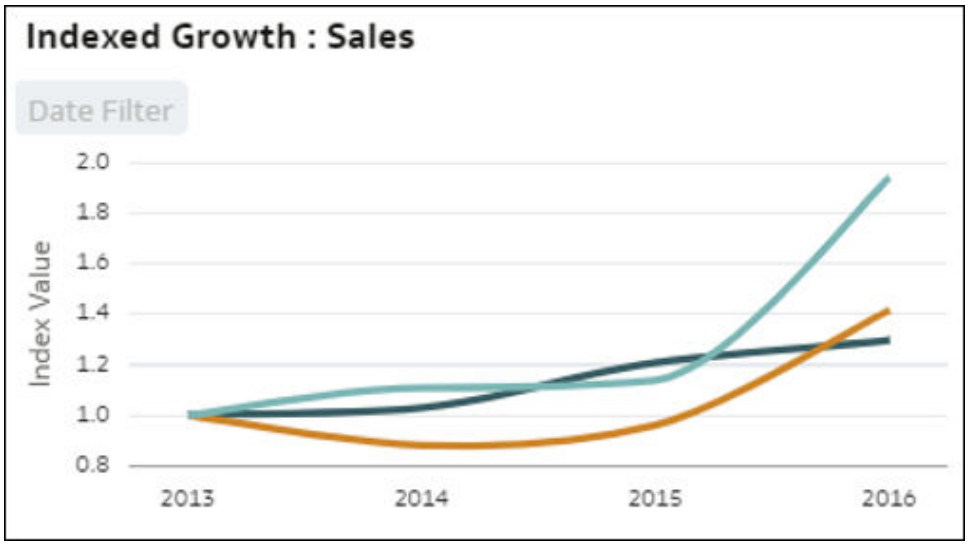


- **Comparative Trending by Dimension** - This visualization compares how a measure value has trended over time for each member of a dimension in your data. Each line in this chart shows the evolution of a measure for a given member of the dimension. The growth or decline in measure value may not be consistent across all members in the dimension, which could be an interesting insight: Which member trends differently from the others?

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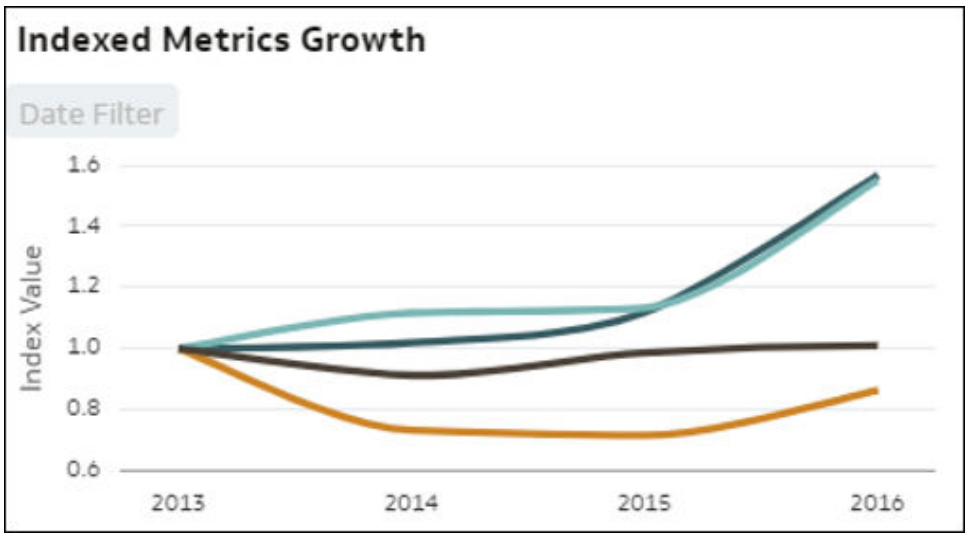


- **Comparative Indexed Trending** - This visualization compares relative growth of a measure over time for each member of a dimension column in your data. Each line represents a member of the dimension, with a base index value of 1.00 set at an initial time period. The evolution over time shows the relative value in the following periods compared to the index value 1.00 in the initial period. Using indexing instead of absolute values lets you make a fair comparison of various trends as the lines show true relative evolution, properly comparing growth of all members with each other. When looking at absolute values of the metrics instead of indexed values, discrepancies in values often make it impossible to properly compare growth or decline. Using indexes helps you understand actual relative behavior.

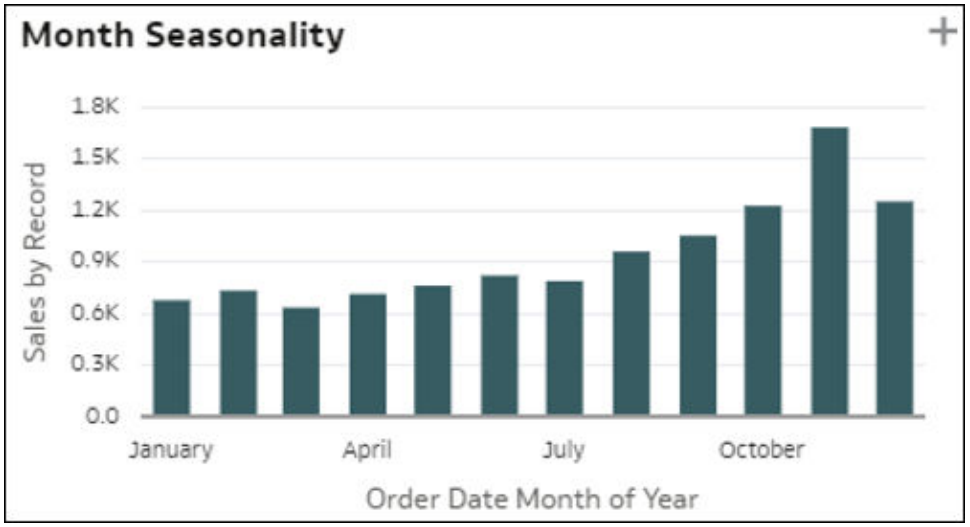


- **Indexed Trending by Measures** - This visualization compares the relative evolution of several measures in the dataset over time. The line chart visualizes the indexed value of various metrics in the dataset over time, with each line representing a measure. Using indexing instead of absolute values lets you make a fair comparison of various trends, as looking directly at the absolute values of the metrics often makes it impossible to properly compare growth or decline. The starting index value (1.00) is set for all metrics at an initial time period, and the line shows the relative evolution of each metric compared to its starting point in the chart (Index).

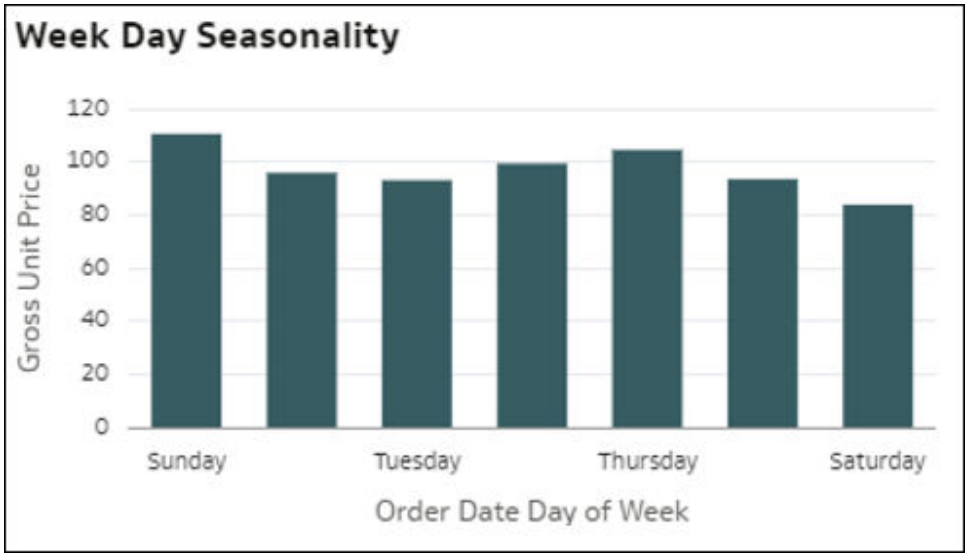
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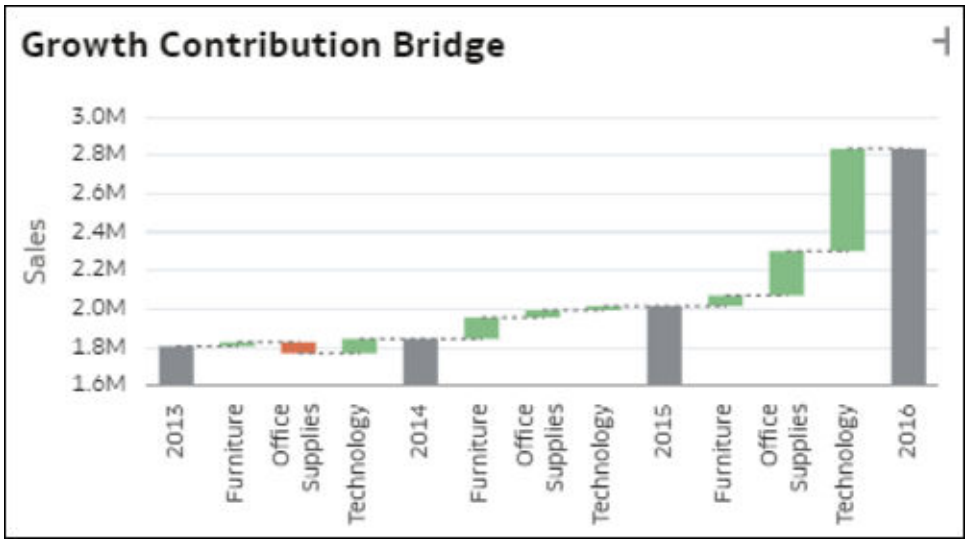
- **Seasonalities** - The bars in this visualization represent the distribution of a measure by Month-of-year, Day-of-month, or Day-of-week of a time object in your dataset. This gives you an indication of the possible seasonality of the ratio value over months. Seasonality charts are useful for identifying recurring patterns in data over specific periods. This can be crucial for understanding how measure values fluctuate seasonally.



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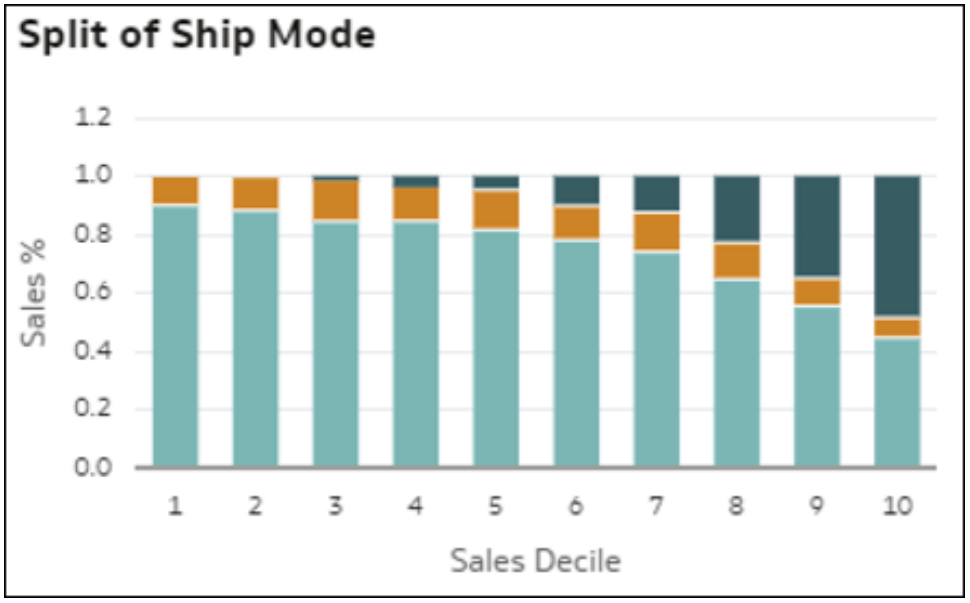


- **Members Contribution Bridge** - This bridge chart shows the contribution of each member of a dimension in your dataset to the variation of a measure value over time. It helps you understand which members were the biggest contributors to a variation over a period of time, for an increase or decrease. Each gray bar in the chart represents the total value of a measure for a period of T1. The green or red bars in between two periods indicate which members increased or decreased, and therefore how they contributed to the overall variation.

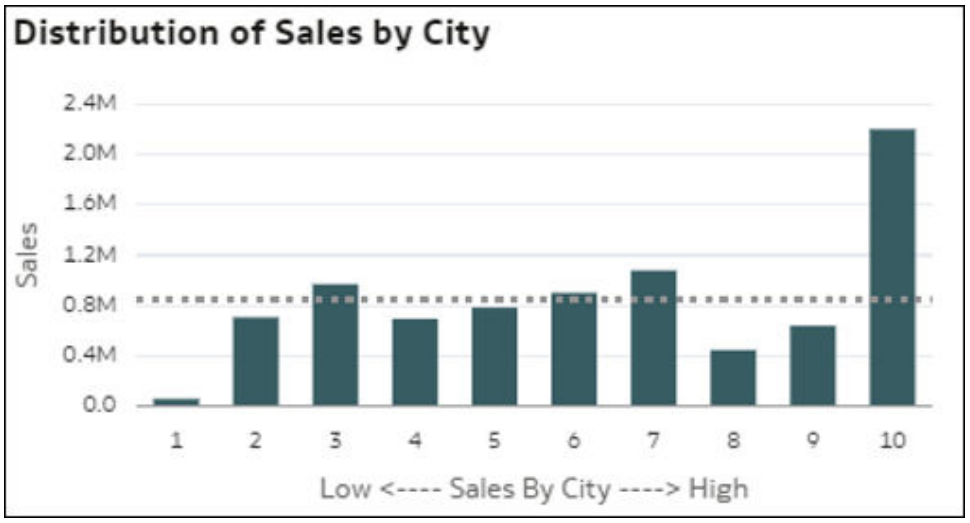


- **Dimension Members Split (Mix) vs. Measure Value** - This visualization helps you understand the mix (split) of all the members of a dimension in your data as the value of a measure grows. The bars represent relative values of the measure: Decile 1 = low measure value by record (first 10% records), Decile 2 = second 10%, up to Decile 10 = high measure value by record. In each bar, colors show the proportion (percent of total) of each member of the dimension in the total value of the measure, for that decile. This helps identify that the structure of the members mix changes as the measure value changes.

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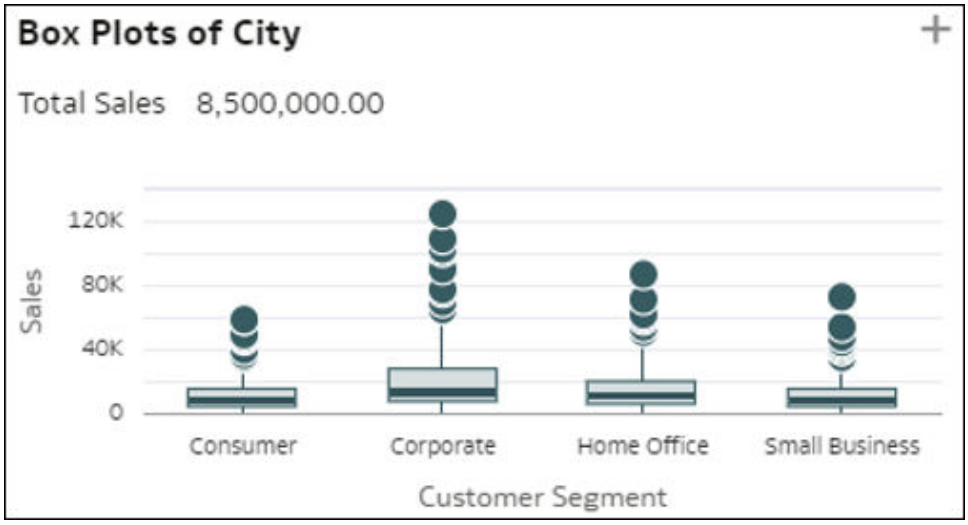


- **Histogram of a Measure by Record Bins** - This visualization shows how a measure distributes by the bins of another metric. The bars in the chart show the aggregation of the measure, and each bar represents a bin for a measure: Bin 1 = low measure value by record and Bin 10 = high measure value by record.

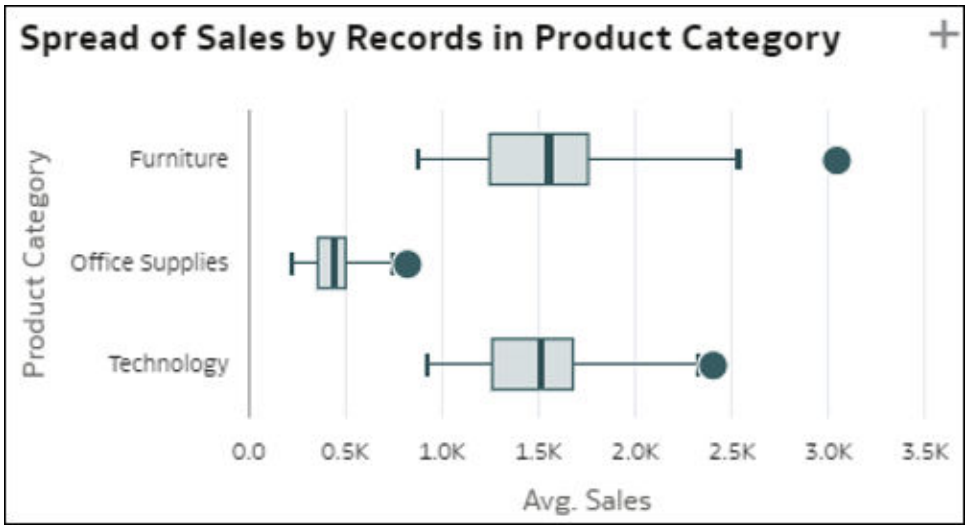


- **Dimension Members Boxplot** - This boxplot visualization compares the spread of individuals in a dimension D1 (medium cardinality) in your data (dots) with the value of a measure in your data, and is represented by each member of the other dimension D2 in your data (bars). Each vertical bar in the boxplot represents a member of D2, and each dot in a bar is a single D1 member, with the y-axis showing its measure's average unit value. Each bar represents three values for this member of D2: the first quartile value at the bottom of the bar, the average value in the middle of the bar, and the third quartile at the top. This visualization helps you understand the spread of records in a D1 dimension and compare differences in that spread with members of a D2 dimension.

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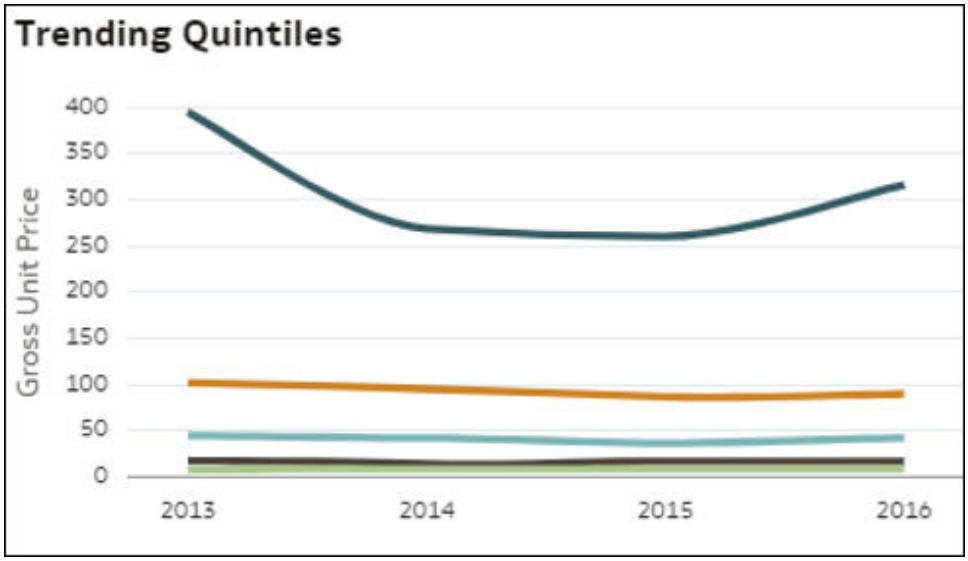


- **Spread of Record Values By a Dimension** - This chart visualization shows the dispersion (spread) of records on value of a measure, for each of the members of a dimension (bars). The x-axis shows the average value of the measure by record. The dots in each of the bars represent random groups of granular records from the dataset. This visualization helps you understand how the spread may vary between different members of a dimension (different horizontal bars on the visualization).



- **Quintiles Trend Comparison** - This visualization compares how each of the 20% groups of records in the data (sorted by the value of a measure) from toppers to bottomers (quintiles) have trended over time for their measure value. Was the growth or decline consistent among the top and bottom groups or not? For which population group is the measure trending different? Each line in the chart is a quintile showing the trending over time of M1 value. Quintiles are groups of 20% of the dataset records ordered by decreasing measure value: records with top 20% value, followed by the next 20%, and so on.

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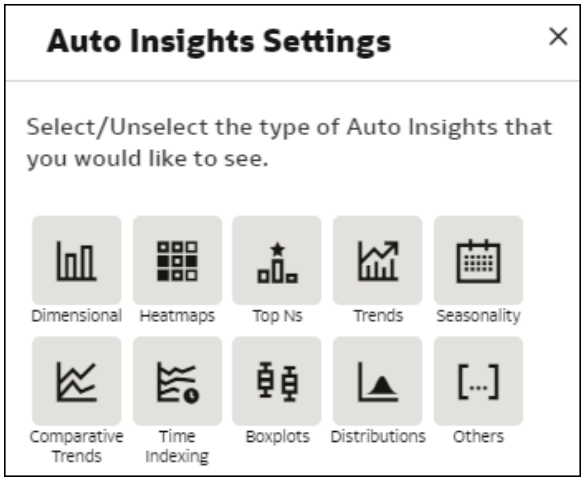
Interact with Auto Insights to Focus on What You're Interested In

Auto Insights enable content authors to directly adjust the AI algorithms and focus them only on specific types of insights or specific columns from the dataset.

Auto Insights User Settings

Click **Insight Settings** in the top right of the Insights pane. A dialog is displayed, offering two types of settings:

- **Select the insights type**
  At the top of the Auto Insights Settings pane, you see a set of 10 icons listing the types of insights that Auto Insights can generate. Each of these types represents a specific type of analysis to conduct on your dataset. Select or deselect types of insights by clicking various icons and then clicking **Apply**. Auto Insights take this choice into account in the new run and only search for insights from the types you selected. By default, all possible types are selected.



Some insights display only if specific columns exist in your dataset. Even if you've selected all the icons, they may still not be displayed because your dataset (or your selected columns) doesn't include the required column types. For example, time-related insights

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display only if a time column exists in your selection. As another example, heatmaps require at least two dimensions in their definition, so if only one dimension is present, no heatmaps are displayed.

- **Select which column from the dataset to include in Auto Insights**
  By default, Auto Insights automatically identify which columns from your dataset deliver the most valuable insights. This initial column selection process is based on internal algorithms, but you can override the initial choice of columns and instead select specific columns to be used by Auto Insights. The Auto Insights visualization ranking algorithms can consume up to 11 distinct columns from any dataset at once:

  – **Measures** - Up to three distinct measures can be used each time you run Auto Insights. If no metrics columns are selected, Auto Insights focus on insights counting records in your dataset.

  – **Generalized Calculations** - This setting indicates that Auto Insights also calculate a row counter metric (counting the number of records) to find insights about. If you're not interested in seeing insights about counting the number of rows, deselect that option.

  – **Time Attributes** - Only one time attribute is supported at a time when you run Auto Insights. Select one date type column in your data. If you have no time dimension selected, Auto Insights won't show the time-related insights type.

  – **Small Size Attributes** - These are low cardinality attribute columns, that is, columns that hold a small number of distinct values, for example, less than 10 distinct values. These attributes are useful to represent high-level aggregated insights and analyses. You can select up to five of these attributes at once in a single Auto Insights run.

  – **Medium Size Attributes** - These are attribute columns that hold up to a moderate number of distinct values, for example, up to 200 distinct values. These columns are useful to represent data in scatterplots or boxplots. You can select up to two of these attributes at once in a single Auto Insights run.

  – **Excluded Columns** - These columns have been identified as not friendly for Auto Insights visualization types, for example: columns with very high cardinality, such as row ID, or columns with a very high proportion of empty values. If you represent these columns directly in visualizations, you might not be able to extract easily readable insights. Specific aggregation rules (count or count distinct) may also be a reason for a column to be excluded.

  Look through the column settings and compose a meaningful selection of columns for your business case, then click **Apply**. The insight ranking artificial intelligence engine runs and quickly returns a series of insights ordered by their probability of showing interesting value. As you select more and more columns to include in the Auto Insights algorithm, you reduce the probability of seeing insights about all these columns at once. Only the top meaningful insights are shown in the panel, based on the algorithm's probability of interest. If you select many columns in the settings, it's unlikely that all of them will be part of the selected insights. On the contrary, if you select only a few columns, you increase the probability of seeing insights specifically for those columns in the panel.

  The selection that you make for a given dataset remains in the system memory the next time you open that dataset, so you don't need to select the same objects all over again.

Custom Calculations and Other Column Limitations

Workbook custom calculations don't display as choices for Auto Insights selections. In order to run Auto Insights on a specific custom formula, you need to build the formula at the data-preparation level. That is, by editing the dataset definition in Oracle Analytics and adding a calculated column there. These custom calculated objects are then included in Auto Insights scoring, just like any other columns in the dataset.

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Some column types aren't yet supported by Auto Insights, such as metrics with count or count distinct aggregation rules, or columns of the Geometries data type in Oracle Analytics.

Refresh Auto Insights to Include Filters

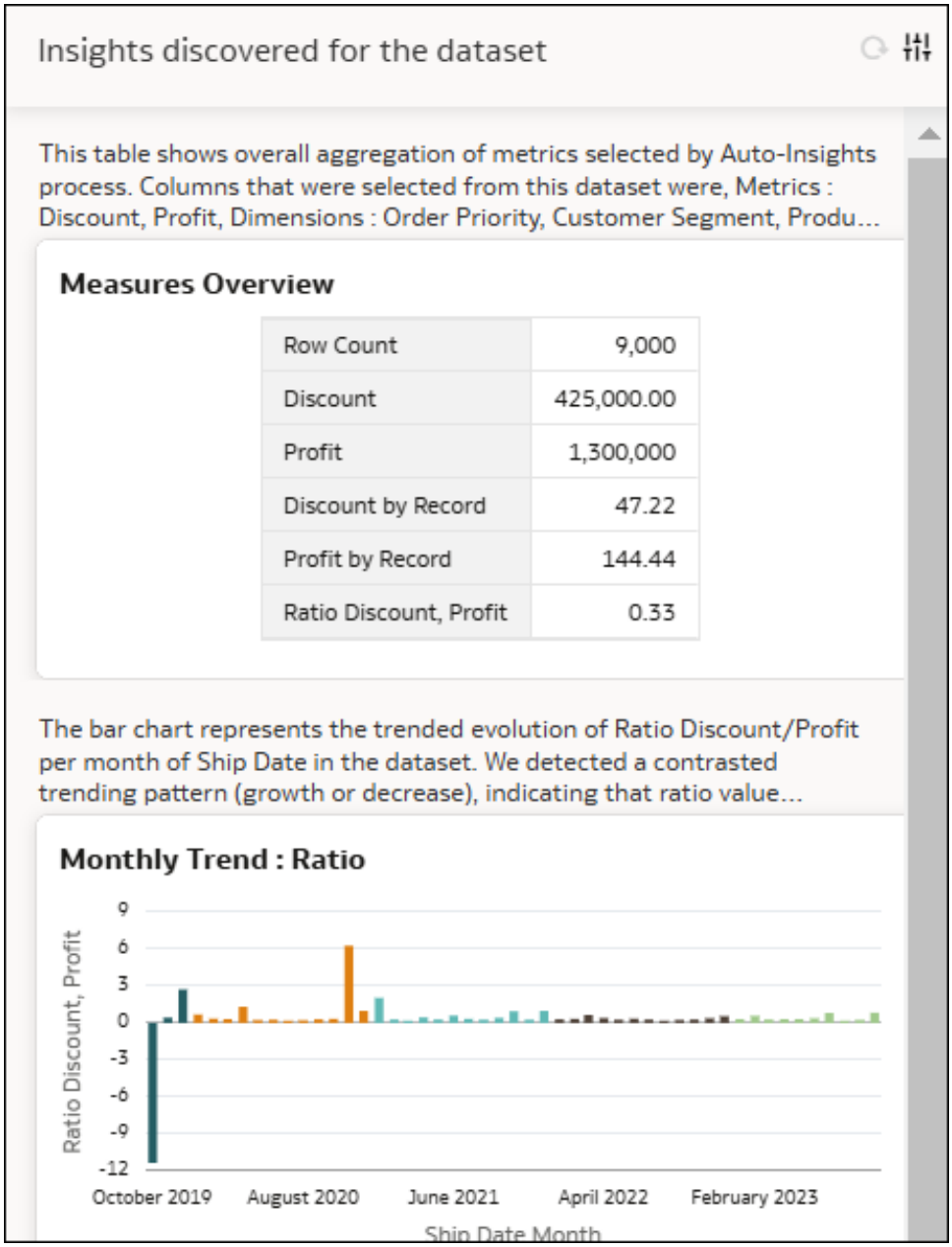
When you add filters to your workbook or make new selections for existing filters, you can refresh Auto Insights to see updated insights that take into account the new filters and filter selections.

Auto Insights considers filters in the filter bar, dashboard filters, and visualization filters. For more information about filters, see Filter Data.

If you add one of these updated insights to your canvas and it has a custom calculation that also uses the filter, the calculation appears under My Calculations in the Data pane with (Filtered) in front of its name.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **AI Assistant**  to review the insights currently available for the dataset.

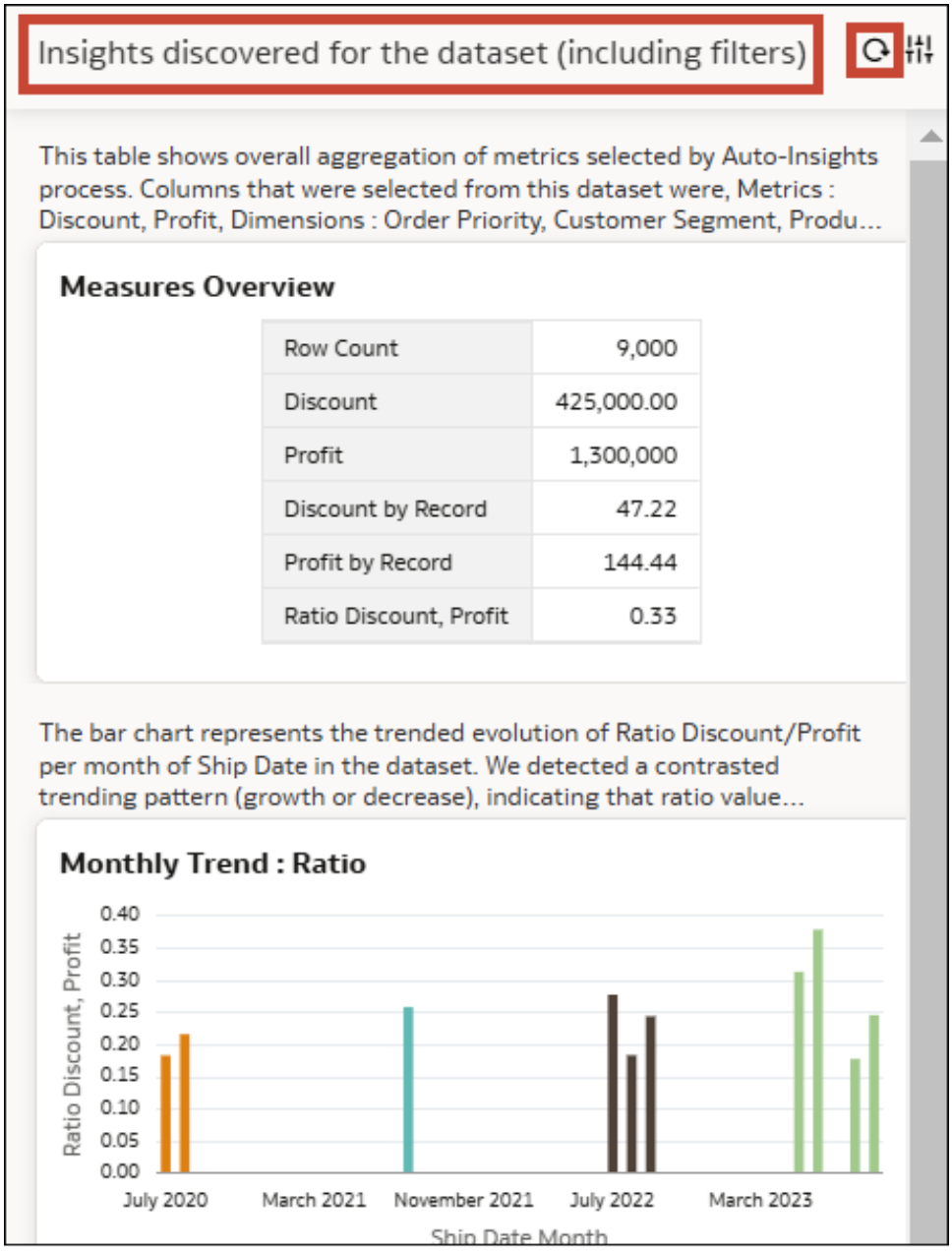
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3. Close the Insights pane.
4. On your canvas, update the selections for an existing filter or add a new filter, then click **AI Assistant** .

   The **Refresh** icon beside **Insight Settings** is now available.
5. Click **Refresh**. The text at the top of the pane changes to indicate that the insights discovered include filters.

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Administration and Limitations

Auto Insights are on by default and run when you upload and save your dataset. You can refresh or disable them if required. There are some limitations on the datasets supported by Auto Insights in Oracle Analytics.

When Do Auto Insights Run and How Do You Refresh or Disable Them?

Auto Insights start running on datasets when the datasets are added to Oracle Analytics and saved. It typically takes a minute or two to complete before the Auto Insights icon turns yellow. The algorithms also recalculate every time the dataset structure is edited, for example, if you edit a column in the dataset (such as by changing the name, changing an aggregate rule, or hiding a column), or if you resave the dataset. You can manually initiate a refresh of Auto Insights in two ways:

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- Edit the settings in the Insights pane, and click **Apply**. This refreshes the most interesting insights with the new settings. See the previous paragraph.
- Turn Auto Insights off and then back on in the dataset Inspect menu. This forces a complete refresh of the Auto Insights results and recalculates a new set of statistics on the dataset. This is a deeper refresh than the settings update suggested in the previous bullet and can take a few minutes to complete, depending on the size of the dataset.

For information about refreshing Auto Insights to include filter changes, see Refresh Auto Insights to Include Filters.

Auto Insights are turned on by default. The administrator controls the use of Auto Insights in your instance by setting an option in the Performance and Compatibility Options of the administration console. You can turn Auto Insights on and off for a dataset by displaying the Inspect menu and deselecting the **Insights** option on the first page of the dialog. Turning Auto Insights back on recalculates statistics on the dataset.

Supported Dataset Types and Known Limitations

Oracle Analytics generates insights for all datasets that contain less than 300 million cells (where the number of cells is calculated as the number of columns multiplied by the number of rows). Datasets larger than 300 million cells aren't currently supported. Additionally, the following types of datasets are unsupported:

- Multidimensional sources such as Essbase, Oracle Planning and Budgeting Cloud Service, and Analytic Views
- Subject Areas or Local Subject Areas

You can use multi-table datasets if you set the **Preserve Grain** option on the Fact Table in the model. Setting this option indicates which table acts as the fact table when multiple tables are joined in a model. Set the **Preserve Grain** option by right-clicking the table in the data model.

If you have a dataset of an unsupported type, you can generate an extract of these datasets and create a file-based or table-based dataset in Oracle Analytics, then run Auto Insights on them.

Auto Insights display text descriptions of insights and calculations in English.

After you refresh the Insights pane, if there are complex filters applied in the workbook, Auto Insights may not render certain types of visualizations.

Use Explain to Understand Your Data

In Oracle Analytics, gain insights into your data using Explain.

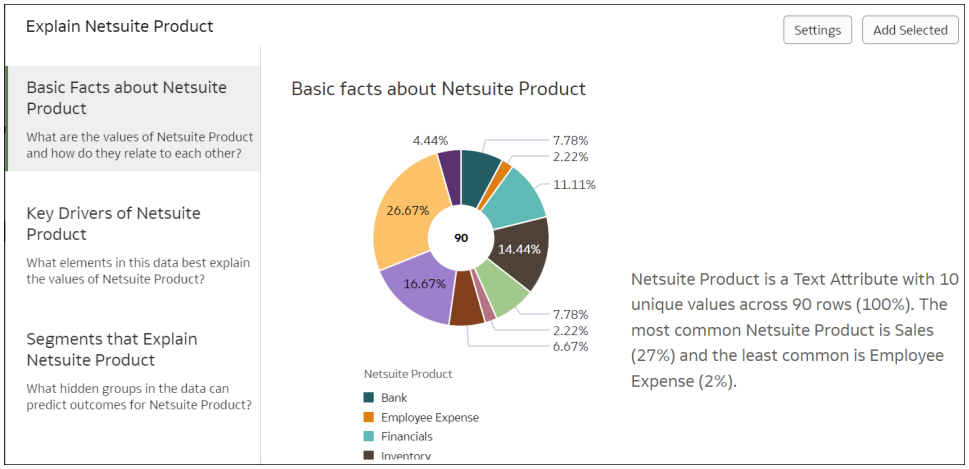
Topics:

- What Is Explain?
- Quick Start with Explain
- Use Explain to Get Immediate Descriptive Insights into Your Data
- Use Explain to Identify the Drivers of Your Selected Column
- Use Explain to Identify the Most Significant Segments of Records in Your Dataset
- Use Explain to Identify Anomalies Among Records in Your Dataset

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What Is Explain?

In Oracle Analytics, Explain provides advanced insights about any specific column or calculation that you select from your dataset. Explain analyzes data from the selected column (target column) in relation to other columns in the dataset and generates specific types of insights about it.



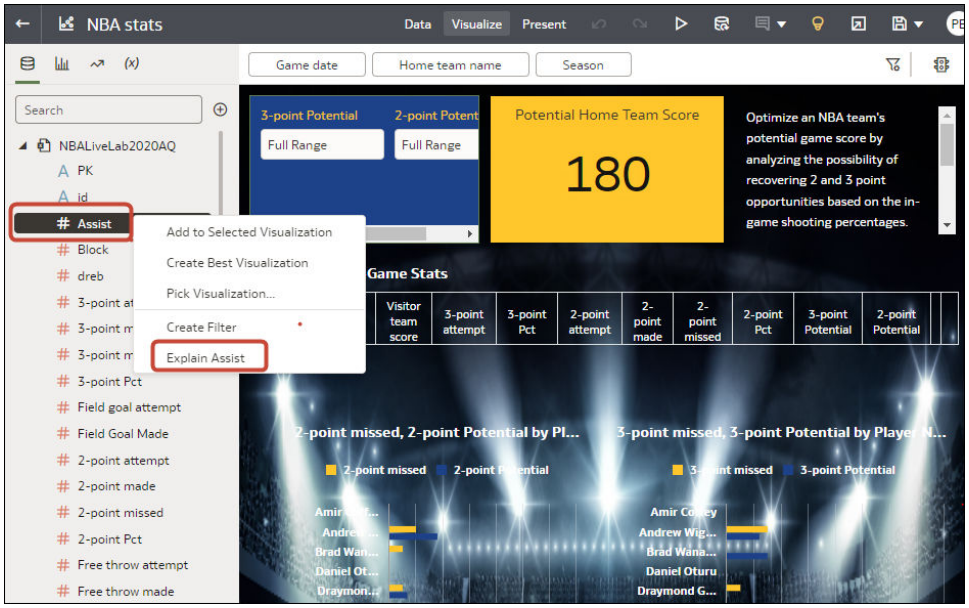
- Basic facts: shows a visualization and series of descriptive statistics about the selected column.
- Key Drivers: shows which other columns in the rest of the dataset are the most significant drivers of the selected column.
- Segments: shows whether there are segments of records in the whole dataset that show a particular unusual distribution for the selected column.
- Anomalies: shows intersections in the dataset that behave differently than expected.

You can use Explain to identify correlations or interesting segments in the data and quickly understand a new dataset. Explain uses statistics and machine learning algorithms to generate fast and powerful insights about your data. It then creates corresponding visualizations to present insights, each of which you can add to your workbook's canvas using a single click. Explain is a very useful starting point for data analysts to dive into the details for a specific column in their data, or confirm an expected behavior or relationship between various columns in the data.

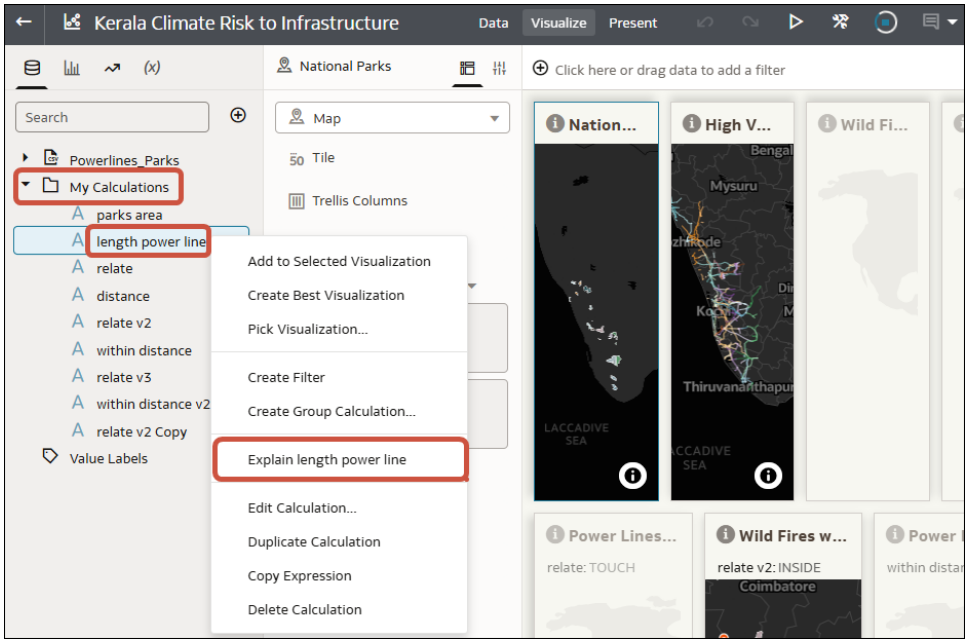
Quick Start with Explain

In the Oracle Analytics workbook designer, right-click a target column in the Data pane and select **Explain <column name>**. Oracle Analytics analyzes that column against various other columns available in the dataset (contributing columns) and generates insights.

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You can also generate insights for calculations or group calculations that are based on at least one column.



Using Explain with Columns

Explain works with any target column of the attribute type or measure type in your dataset (except dates and times). When you run Explain on a target column of the metric type, the results you get depend on the aggregation rule set for this target measure column. If your target measure has an average aggregation rule, Explain computes Key Drivers on that column, but not if you're running Explain on a Sum column.

Using Explain with Calculations

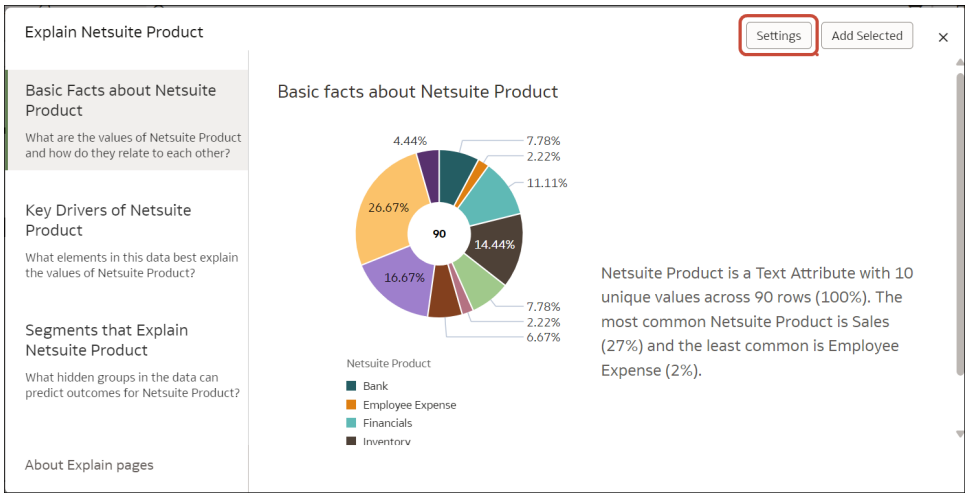
Explain works with most column-based calculation or group calculation listed in the My Calculations folder associated with a dataset. There are some limitations depending on the

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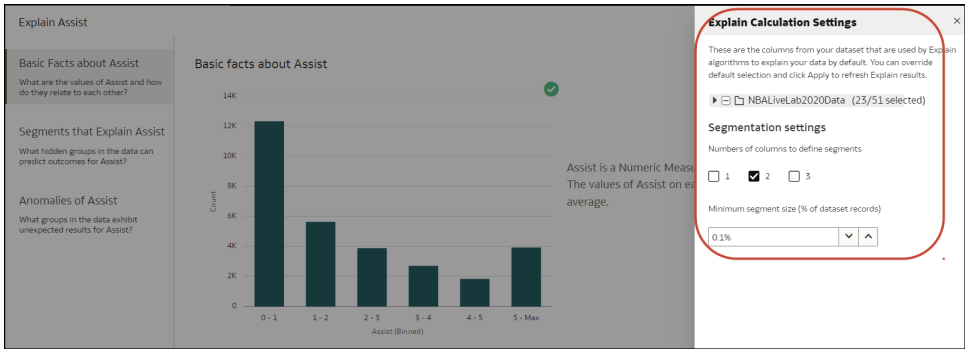
type of functions used and the complexity of the calculations. Right-click a calculation in the My Calculations area of the Data pane and select **Explain <calculation name>**.

Interact with Explain

Once the Explain panel is displayed, algorithms automatically identify the most interesting columns from your dataset to use for explaining your target column. It's possible that not all columns from your data are being used. You can also add or remove columns by clicking **Settings** to change the settings.

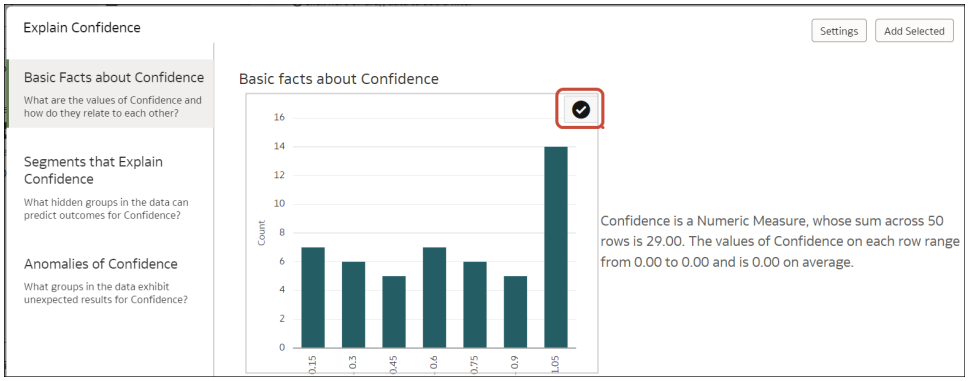


In the Settings dialog, expand the dataset folder and select the columns you want Explain to use when analyzing your target column.



As you browse visualizations on a tab, you can highlight the check mark by hovering over the top right of each data visualization. This icon lets you select the ones you want to add to your own canvas. Once done, click **Add Selected** at the top right of the window to automatically add the selected visualizations to your canvas.

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Supported Dataset Types and Known Limitations

Explain operates on any type of dataset except:

- Multidimensional sources such as Essbase, Oracle Planning and Budgeting Cloud Service, and Analytic Views
- Subject Areas or Local Subject Areas

You can use multi-table datasets if you set the **Preserve Grain** option on the Fact Table in the model. Setting this option indicates which table acts as the fact table when multiple tables are joined in a model. Set the **Preserve Grain** option by right-clicking the table in the data model. If you're using a multi-table dataset with the **Preserve Grain** option on, Explain considers the entire data model to explain the target column you have selected. If the **Preserve Grain** option is not set, Explain only considers the table that the target column you've clicked belongs to.

If you have a dataset of an unsupported type, you can generate an extract of these datasets and create a file-based or table-based dataset in Oracle Analytics, then run Explain on them.

Explain displays text descriptions of the results in English.

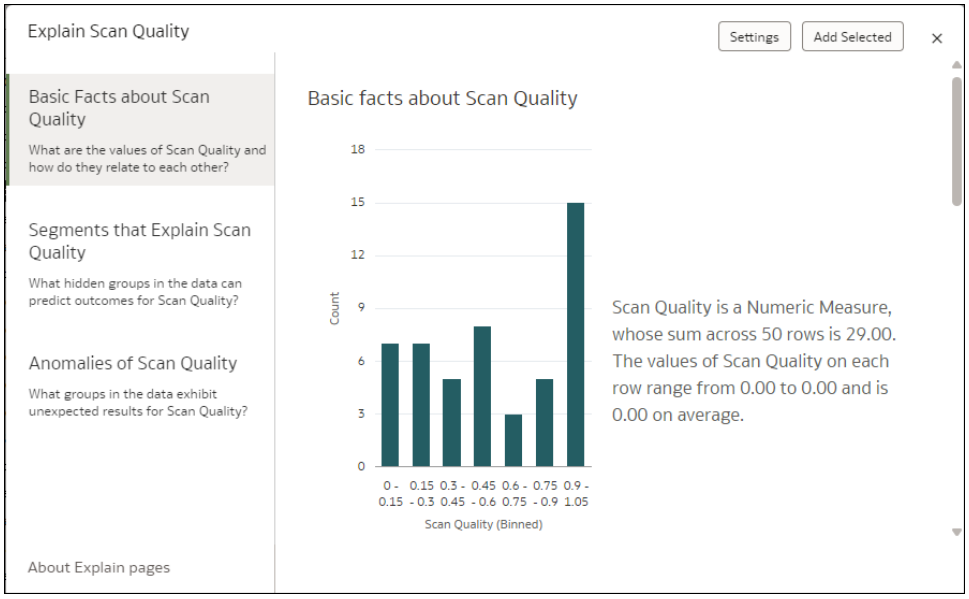
Use Explain to Get Immediate Descriptive Insights into Your Data

In Oracle Analytics, right-click a column in your dataset and select **Explain**. The Explain window defaults to the Basic Facts tab.

If You're Explaining a Measure Column

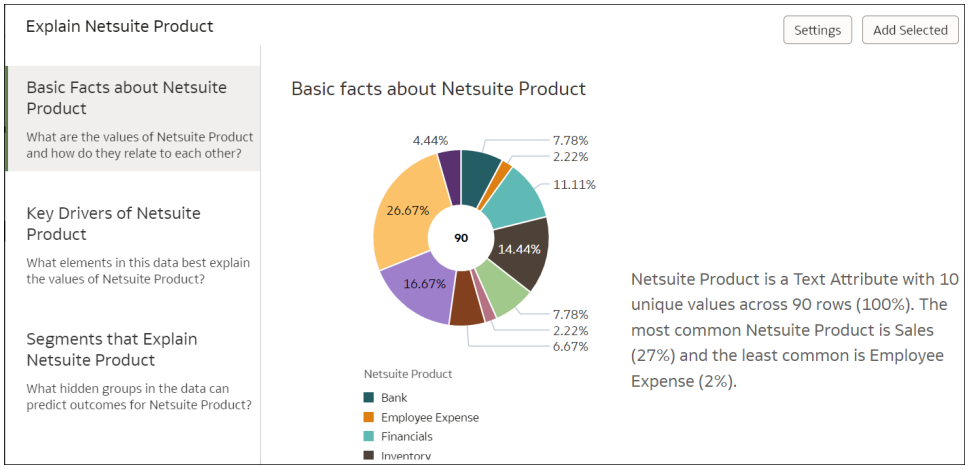
The Basic Facts page displays a histogram of your measure values indicating how records in your dataset distribute against values for this measure. A description next to the visualization summarizes the number of rows in your data as well as the total and average value of the measure. If you scroll down the page, you can see different visualizations displaying breakdowns of your target measure value against every attribute column in your dataset.

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If You're Explaining an Attribute Column

At the top of the Basic Facts page, a pie chart displays the distribution of your dataset records between the different member values of your target attribute. This provides a quick glimpse into how your records distribute for the attribute you selected, and which are the most and least frequent. The paragraph next to the pie chart gives a high-level description of how many rows are in your dataset. It also indicates how many distinct values your target attribute holds and the most and least common values.



As you scroll down the Basic Facts page, you can see different charts indicating how each measure in your data distributes against the values of the attribute you selected. Click **Settings** on the top right of the screen to change which measures are displayed in this descriptive statistics page.

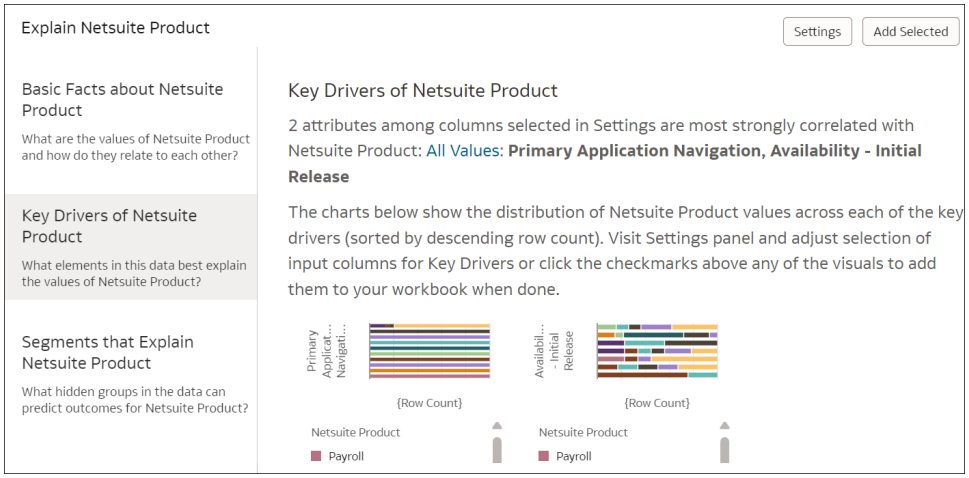
Use Explain to Identify the Drivers of Your Selected Column

In Oracle Analytics, right-click a target column in your dataset, select **Explain**, then select the Key Drivers tab.

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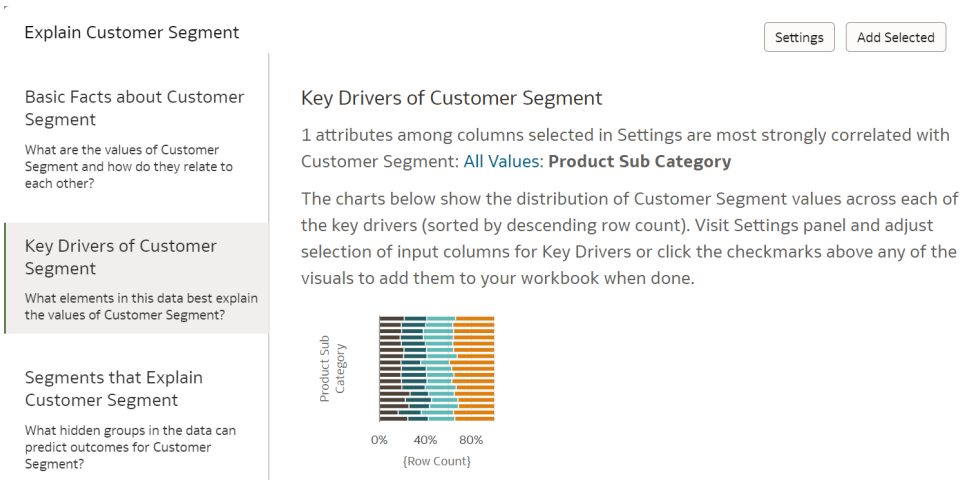
If You're Explaining a Measure Column

The Explain results depend on the aggregation rule of the selected column. If the measure has an additive aggregation rule (for example, sum), the Key Drivers tab isn't displayed. In order to see the Key Drivers tab you first need to set the aggregation rule to Average for your measure. This can be done in Oracle Analytics data preparation. When your measure has an aggregation rule of Average, the Key Drivers tab is displayed by Explain. The Key Drivers tab displays attribute columns that have the highest correlation with the value of your target measure. In other words, it indicates which columns in the dataset are the most significant drivers for the value of that measure.



If You're Explaining an Attribute Column

Once the Explain window opens, click the Key Drivers tab (left of the window). This tab displays visualizations indicating the various columns that are the most significant in driving values from the attribute you targeted, meaning columns from your dataset that have the highest correlation with the value of your target attribute. A paragraph at the top lists these key driver columns. You can also reduce the scope of the key drivers by selecting only a specific value of your attribute column (drop down in the paragraph). If you leave All Values selected by default, then the visualizations indicate key drivers for all values of your target attribute.



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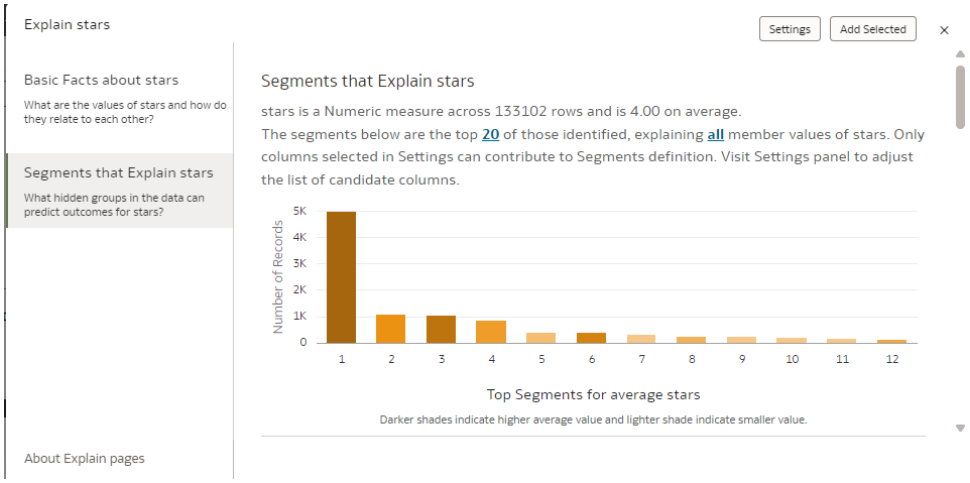
Use Explain to Identify the Most Significant Segments of Records in Your Dataset

In Oracle Analytics, right-click a target column in your dataset, select **Explain**, then select the Segments tab. Within seconds, you can see a list of segments, each represented as a single bar in the top bar chart.

Segments are groups of records in your dataset which the Explain algorithm identified as having different values to the overall dataset average for the target column. The detailed results differ for measures and attributes.

If You're Explaining a Measure Column

For measures, the Explain segmentation algorithm looks for groups of records in your dataset for which the average value is significantly different from the whole dataset average value. For example, if your target measure is Age and the average age for the whole dataset is 23, then a segment might be a group of records in your data where the age is 55, significantly higher that the whole dataset average. A single segment is defined by a few filters in the dataset that identify a group of records with an unusual average value for the column being explained. For example, the filters might be City and Job Type.



The vertical bar chart at the top indicates the size of each segment in the number of records (height of the bar), while the density of color indicates how far the segment average value is from the whole dataset average value.

The bullet charts at the bottom of the panel each represent a single segment in detail. Descriptions indicate the average measure value for a segment (the target measure), the total number of records in a segment, and the criteria defining a segment. On the chart, the bubble size represents the number of records in the segment, while the color and the position on the x-axis represent how far the average value of the segment is from the average value of the whole dataset (dotted line). You can hover over the chart to see the tooltip that displays these details. You can also adjust the sorting of all these segments, or you can display the list of the detailed segments as a table by editing the panel sorting or panel visualization type on top right of the panel.

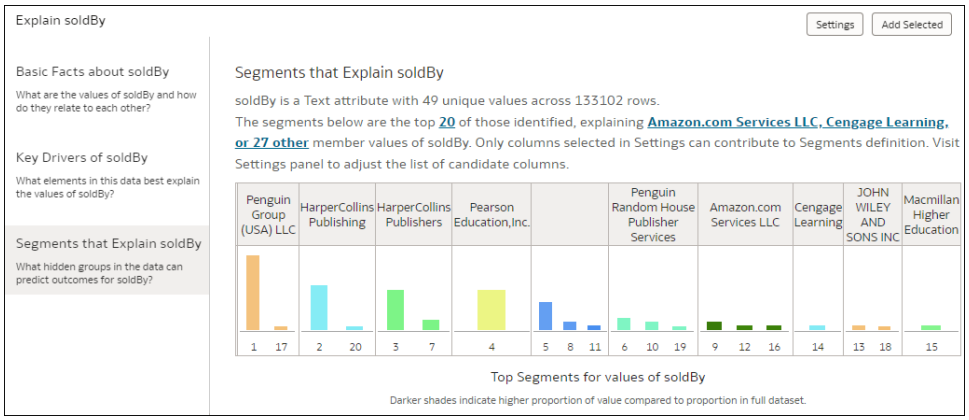
If you're interested in a segment, click the segment to add it to your workbook canvas. When you add a segment to your workbook canvas:

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- A table visualization is created with the count of rows in the segment and outside the segment.
- A custom calculation defining In or Out of the segment is created, which can be used to aggregate any measure in your dataset by this criteria. This object can also be used as a powerful filter for your canvas, showing how the records in a segment compare with those outside of it.

If You're Explaining an Attribute Column

If your target is an attribute, in your overall data each distinct value of that attribute gathers a given proportion of records. For example, a column with two values Yes or No, might have 20% of Yes and 80% of No. The segment algorithm identifies groups of records in your data for which these proportions significantly vary from the average distribution. For example, Segment 1 might be a group of records in your data where Yes is 55% (instead of 20% for the whole dataset), and No is 45% (instead of 80% for the whole dataset). A single segment is defined by a few filters in the dataset that identify a group of records with an unusual distribution for the column being explained. For example, Segment 1 might be defined as all records in a given city and of a given age value.



Explain scans your data and identifies many different segments. These are non-cumulative, that is, it's possible that a given record may belong to two distinct segments. The vertical bar chart at the top indicates the size of each segment in the records (height of the bar), whereas the color of the bar indicates the member value being analyzed. You can filter out specific member values by clicking the hyperlink in the text at the top of the page.

The horizontal bar charts at the bottom of the panel each represent a single segment in detail. Descriptions indicate the member value (for example, Yes or No) being analyzed, the total number of records in that segment, and the criteria defining the segment. The chart then represents the proportion of this value in the segment (colored zone) compared to the average proportion for the whole dataset (dotted line). You can hover over the chart to see the tooltip that displays this information in greater detail. You can also sort the segments and change how they are listed by editing the panel sorting or panel visualization type on the top right of the panel.

If you're interested in a segment, click the segment to add it to your workbook canvas. When you add a segment to your workbook canvas:

- A table visualization is created with the count of rows in the segment and outside the segment.
- A custom calculation defining In or Out of the segment is created, which can be used to aggregate any measure in your dataset by this criteria. This object can also be used as a

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powerful filter for your canvas, showing how records in a segment compare with those outside of it.

Use Explain to Identify Anomalies Among Records in Your Dataset

In Oracle Analytics, right-click a target column in your dataset, select **Explain**, then select the Anomalies tab. Within seconds, you can see a list of anomalies, each represented as a single bar in the top bar chart.

Explain considers the attribute and date columns and identifies intersections of two or three attribute columns where the value of a measure is different to the logically expected value (regressions). The detailed results differ for measures and attributes.

If You're Explaining a Measure Column

The Anomalies tab analyzes combinations of attributes from the dimensions selected in Settings, and identifies intersections where measure values are different to the values expected by regression algorithms. A description next to the visualization summarizes the combination of attributes identified as anomalous. The visualization underneath shows the gap between actual value of the measure (bar) versus the regression expected value (flat lines). You can add the chart to your canvas and leverage it as is. You can also manually visualize the combination that was identified as an outlier.

If You're Explaining an Attribute Column

The Anomalies tab analyzes combinations of attributes from the dimensions selected in Settings and identifies intersections where the number of records is different to the number expected by regression algorithms. You can display a drop down hyperlink in the overhead text at the top of the tab showing which value of your selected attribute is displayed. Further down the page, the text above each visualization describes the combination of attributes identified as anomalous. The visualization shows the gap between the actual number of records for that intersection (bar), versus the regression expected number (flat lines). You can add the chart to your canvas and leverage it directly as is.

Use Contextual Insights to Understand Your Data

The topics in this section show you how to use Contextual Insights for selected data points in a workbook's visualizations. Contextual Insights are available to all users.

Topics:

- What Are Contextual Insights?
- Enable and Configure Contextual Insights for a Visualization
- Explore Contextual Insights for a Visualization
- Understand Visualizations Generated by Contextual Insights
- Add a Contextual Insights Visualization to a Watchlist
- Dataset Support and Limitations for Contextual Insights

What Are Contextual Insights?

When you look at visualizations in a workbook, you might want to analyze a specific data selection in a visualization to get more insights about the data within the context of your filters.

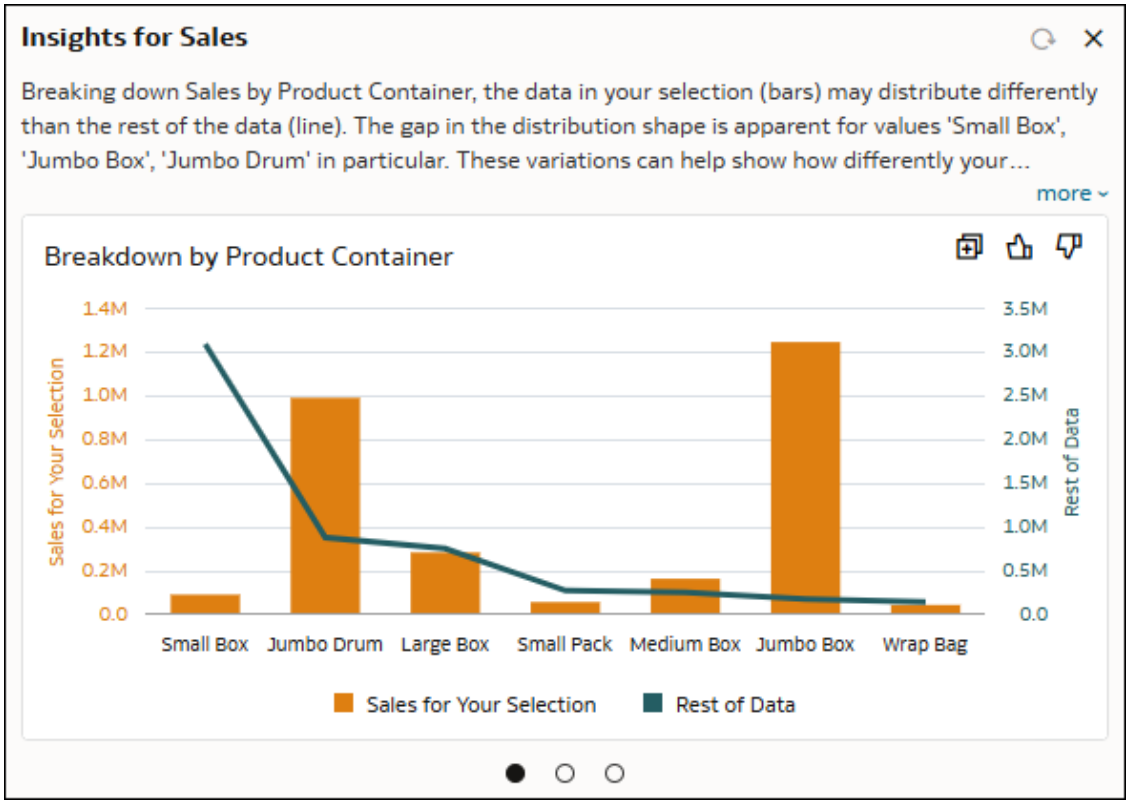
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In Oracle Analytics, you can quickly access meaningful insights about specific data selections in any visualization using AI-driven contextual insights.

Contextual Insights compare selected data in a visualization with the rest of the visualization's data to identify attributes from your dataset that show the most important contrast between the two groups of data. Contextual Insights expose dimensional breakdowns, trending charts, and other visualizations. These insights help to highlight how differently your selection behaves compared to the rest of the data in the visualization, and can reveal high levels of contrast.

Oracle Analytics provides up to three insights at a time, but you can expand into additional insights. When you remove an insight, another one is provided, if available. You can add these insights to a watchlist to easily refer to them later. If you're a content author, you can also add the insights to your canvas as visualizations.

Oracle Analytics provides a description above each insight to help you understand them. This description is also available in the tooltip that displays when you hover over the auto-generated visualization, either in the dialog or in a watchlist.



Enable and Configure Contextual Insights for a Visualization

As a content author, you can automatically access Contextual Insights for any visualization in your workbook. However, you need to enable Contextual Insights for consumers. You can also specify which columns from your dataset the algorithm uses to identify potential insights.

The Explain Visualization for end users property is turned off by default when you create or add a new visualization. You can enable this property for all visualization types, with the exception of Tile, Correlation Matrix, and Gantt. Once the property is switched on, consumers can explore the auto-generated insights.

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You can also specify which columns from your dataset you want the AI algorithm to consider when generating insights. You do this by adding them to the Related Columns section of the Grammar pane for your visualization. These columns are used by the Contextual Insights algorithm and aren't included in or added to your original visualization. Before you allow others to explore the Contextual Insights generated from your selections, take some time to review the insights yourself and make adjustments to the related columns as needed.

Related Columns are also used for column swapping, if enabled. While any columns added to Related Columns can be considered by the Contextual Insights algorithm, you can specify which of the columns you want to be available for column swapping. See Enable and Configure Column Swapping for a Visualization.

The Contextual Insights algorithm evaluates the related columns and identifies the ones that show the highest contrast between your selection and the rest of the data in the visualization, within the context of any applied filters.

You can add up to 30 related columns. These columns can be attributes, metrics, date and time columns, or calculations, however the algorithm only uses those it considers eligible. For example, only calculations that use simple functions such as string or cast functions are considered. If you add multiple date data type columns, only the first in the sequence is considered.

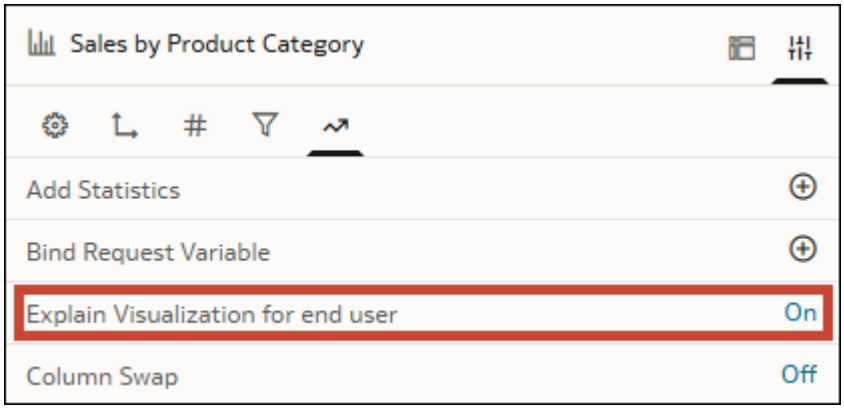
For XSA datasets (Non Subject Area-based sources), there's a default option to leave the Related Columns section of the Grammar pane empty. In this case, Contextual Insights automatically identifies the most appropriate columns to use to identify insights. However, Oracle recommends that you add relevant columns to yield meaningful insights. For subject areas, you must add related columns to generate Contextual Insights for visualizations using data from those subject areas.

Enable Contextual Insights for Consumers

As a content author, enable Contextual Insights for consumers so they can explore them.

For consumers to have access to Contextual Insights, you turn need to turn the Explain Visualization property on for the individual visualization in the Properties pane, and you need to enable it at the workbook level in Present. If the Explain Visualization property is disabled in Present, it limits the availability of Contextual Insights for consumers.

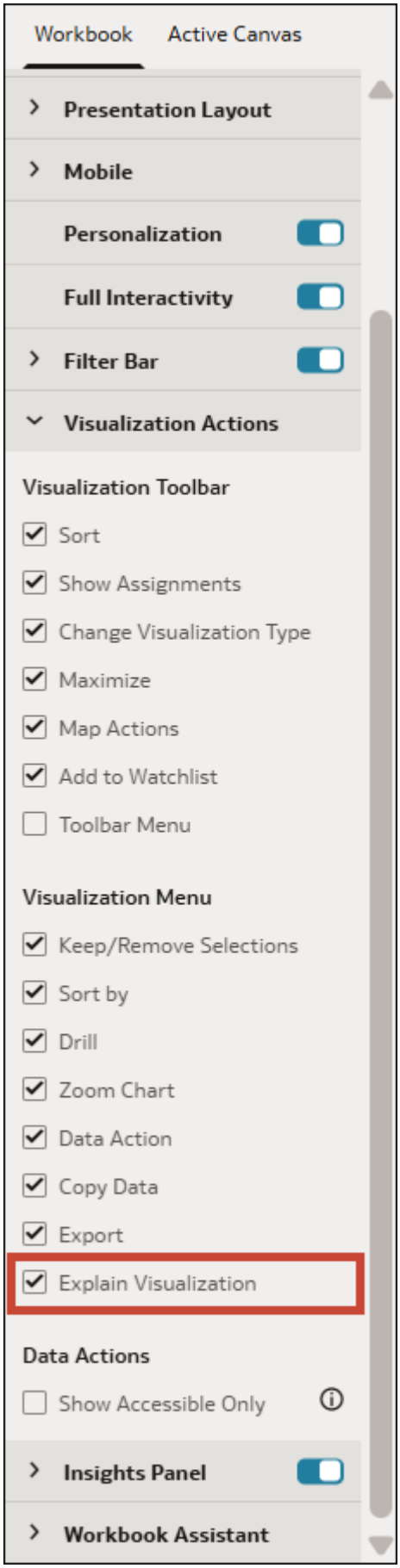
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In Visualize, select a visualization.
3. Click **Properties** to open the Properties pane, and then click **Advanced**.
4. Click the **Explain Visualization** field and select **On**.



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5. Click **Present**.
6. In the Workbook tab, go to the Visualization Actions section and, under Visualization Menu, ensure that **Explain Visualization** is selected.

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7. Click **Save**.

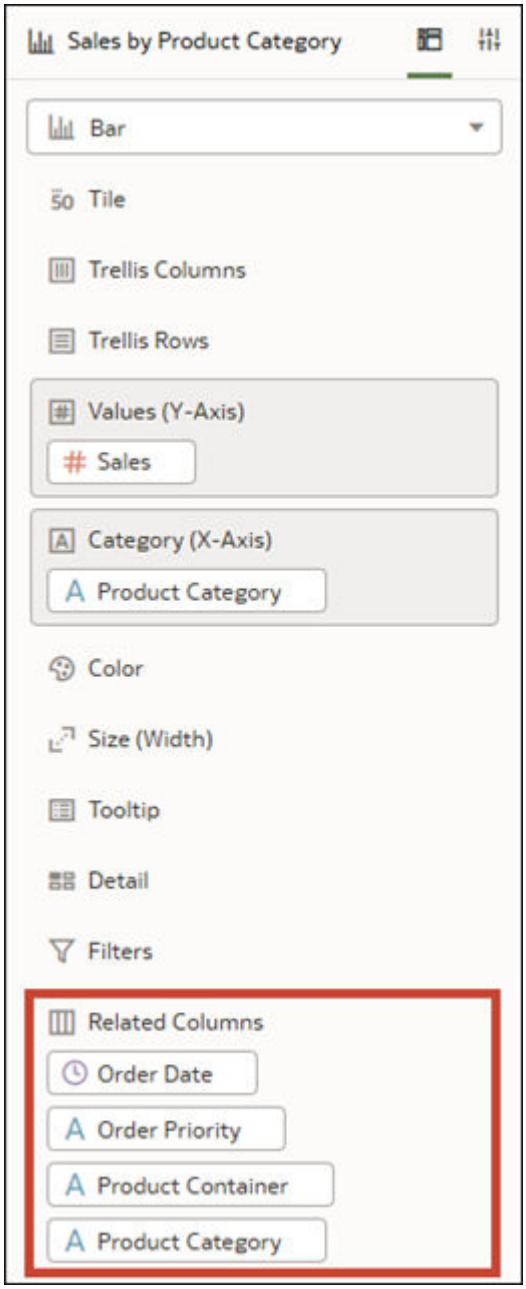
Configure Contextual Insights for a Visualization

As a content author, specify which columns you want the Contextual Insights algorithm to consider when generating insights for a visualization.

Related Columns are also used for column swapping, if enabled. While any columns added to Related Columns can be considered by the Contextual Insights algorithm, you should specify which of the columns you want to be available for column swapping if that functionality is also enabled. See Enable and Configure Column Swapping for a Visualization.

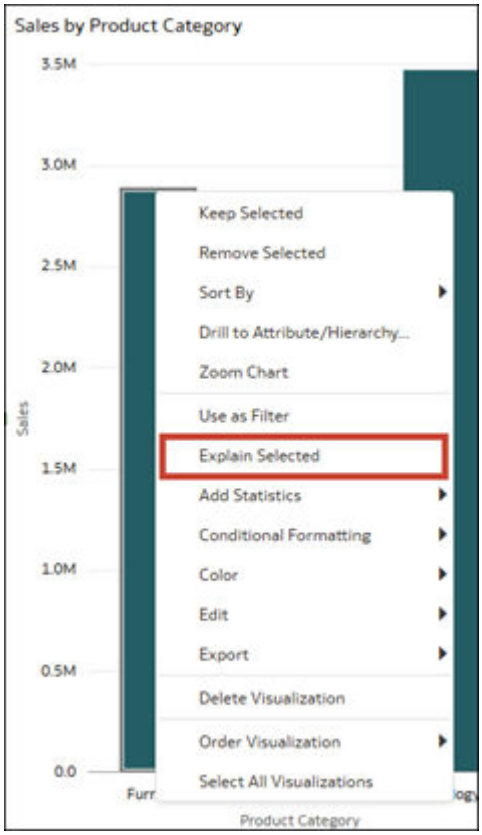
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In Visualize, click a visualization.
3. Click **Grammar** and scroll to **Related Columns**.
4. From the Data pane, drag the columns you want Contextual Insights to use to **Related Columns**.

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5. Click **Save**.
6. To test that Contextual Insights work as intended, select one or more data points in the visualization, right-click, and then click **Explain Selected**.

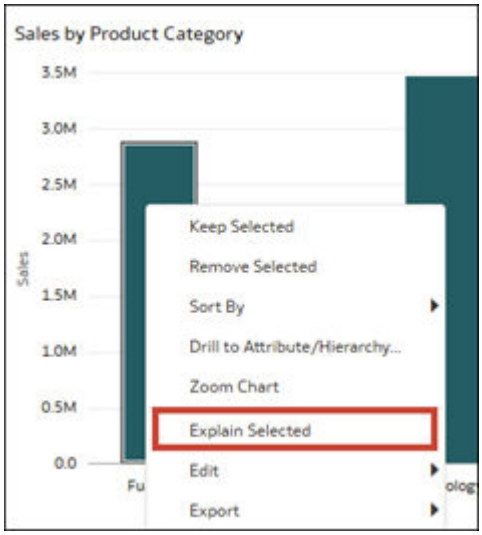
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Explore Contextual Insights for a Visualization

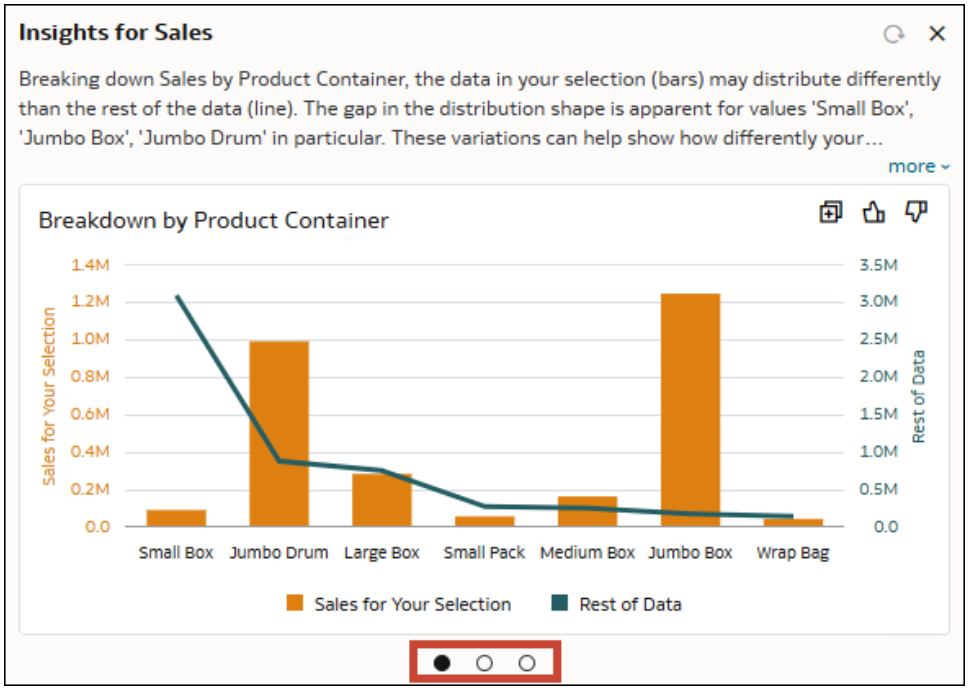
Use Contextual Insights to compare specific data selections with the rest of the data in a visualization.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click one or more data points in a visualization to select them, then right-click and click **Explain Selected**.



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3. In the dialog, browse through the insights.



4. Like or reject the insights generated for you.
   a. Hover over a visualization in the dialog.
   b. Click **Like Insight** to keep the insight.
   c. Click **Dismiss Insight** to remove the insight.

      After you dismiss an insight, Contextual Insights shows you the next available insight.

      If you invoke Contextual insights on the same data point, you won't see insights that you previously dismissed.
5. Select a different data point in the visualization and generate new insights.
   a. With the dialog open, select a different data point in the visualization on the canvas.
   b. Click the Refresh icon to get insights for the new data point that you selected.
6. Apply filters and refresh the insights.
   a. With the dialog open, add a filter to the canvas or visualization.
   b. Click the Refresh icon to get insights that take the filters into account.

Understand Visualizations Generated by Contextual Insights

The Contextual Insights algorithm generates many types of visualizations to render various insights, ranked by level of interest.

To rank these insights, the algorithm runs various analyses leveraging the related columns, and selects the ones where data shows a valuable contrast between your selection and the rest of the data. The order in which the insights are displayed depends on the data. In each insight, your selection appears in orange while rest of data appears in blue.

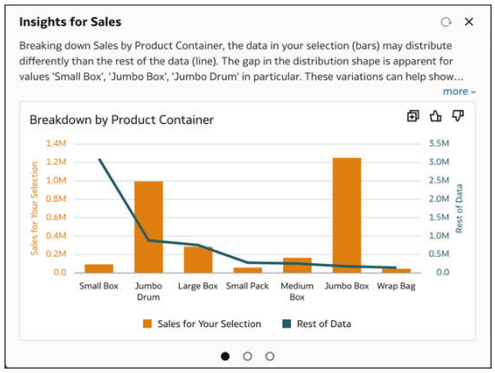
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Breakdown by attribute

Contextual Insights presents three types of breakdown visualizations. The overall shape of the distributions helps you quickly see which members in your selection contrast significantly with the rest of the data.

A breakdown can be represented as a dual-axis bar chart where the bars represent the breakdown of your selected data and the line represents the breakdown of all the remaining data. The members are sorted from highest to lowest based on the rest of the data.

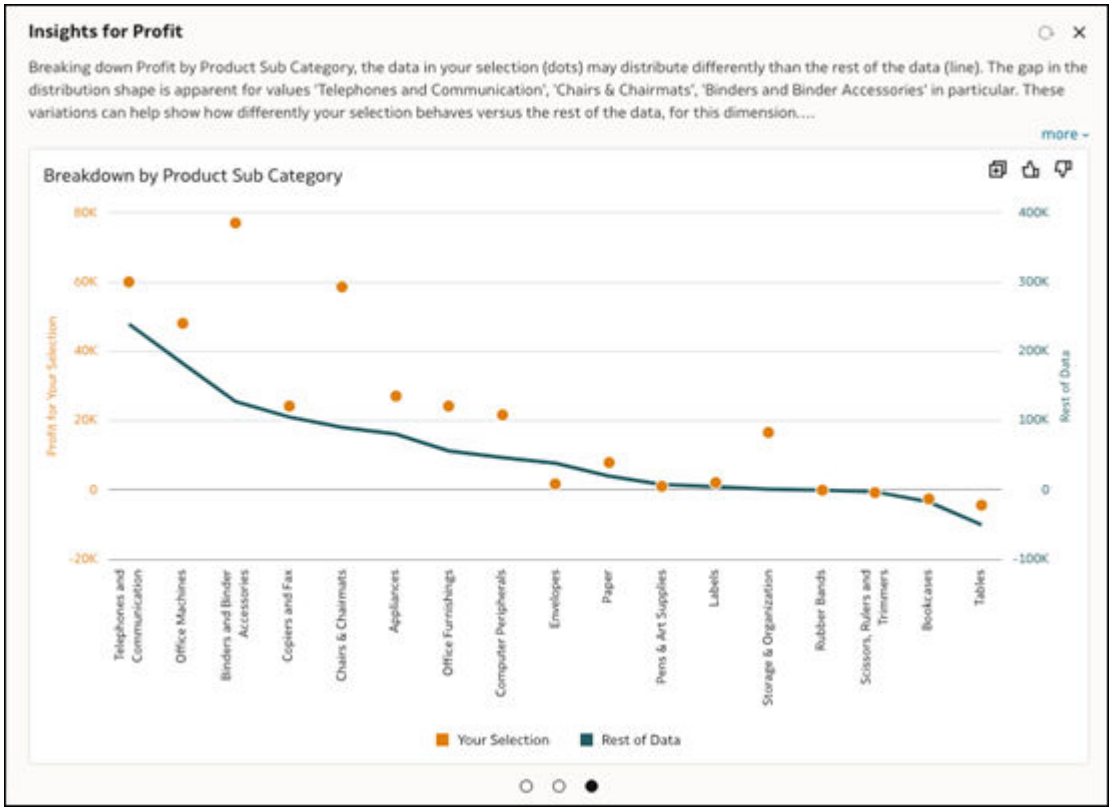
For example, this insight breaks down sales by product container. The description provided indicates that in the case of the Small Box product container, the selected data has significantly lower sales when compared to the rest of the data. It also points out that the Jumbo Drum and Jumbo Box product containers for the selected data have much higher sales than the rest of the data.



A dimensional breakdown can also be represented as a dual-axis scatter plot where each dot represents the breakdown of the selected data, and the line represents the breakdown of the remaining data. The members are sorted from highest to lowest based on the rest of the data.

For example, this insight breaks down profit by product sub-category. The selected data for Profit shows significant differences for the Product Sub Categories such as Telephones and Communication, Binders and Binder Accessories, and Chairs & Chairmats.

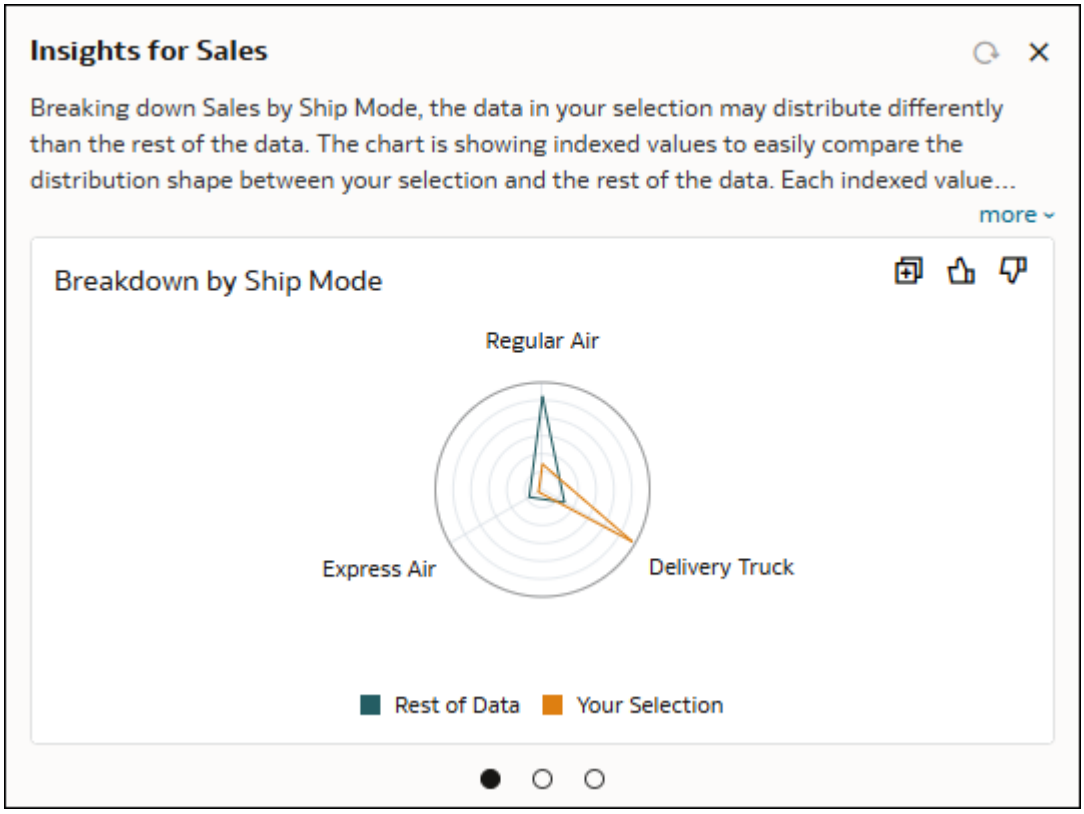
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A breakdown can also be represented as a radar line chart where the breakdown of the selected data line and the rest of the data line are indexed to a normalized scale.

For example, this insight breaks down Sales by Ship Mode. The shapes of the selected data and the rest of the data indicate significant differences for the Delivery Truck and Regular Air shipping modes.

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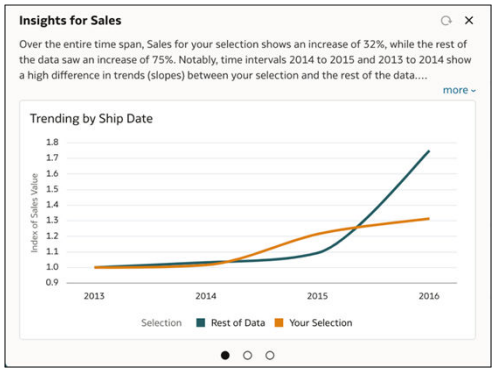


Trending

Trending visualizations compare the relative growth of a metric over time for your selection and the rest of the data using lines to show the evolution of each. The algorithm uses the first date column that appears in the Related Columns section of the Grammar pane.

Each line starts with a base index value of 1.00 set at the initial time period. The evolution of the metric over time shows the relative value in the following periods compared to the index value of 1.00 in the initial period. When looking at absolute values for the metric, discrepancies in values make it difficult to properly compare any growth or decline over time.

For example, this insight shows the trend in sales by ship date. The description provides additional insights about the overall performance of sales over time. The description also highlights the intervals in the data where there's a significant difference in the trend between your selection and rest of the data, in this case, 2014 to 2015.

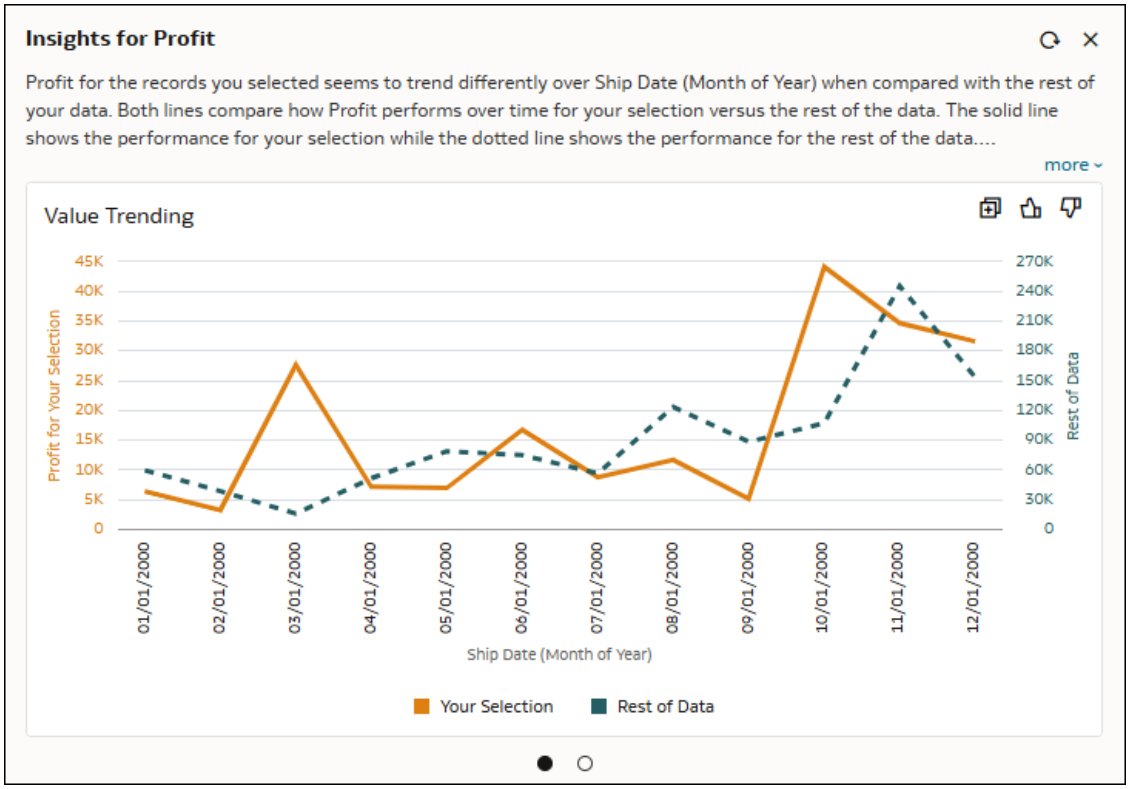


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Value Trending

This type of trending visualization shows the trending of a metric by derived Date or Time columns. While trending charts are indexed at the starting values, value trending charts are non-indexed dual-axis charts. Value trending charts are useful in identifying differences between your selected data and the rest of the data over the selected derived date or time column.

For example, this insight shows the value trend of Profit over a derived date column called Ship Date (Month of Year).

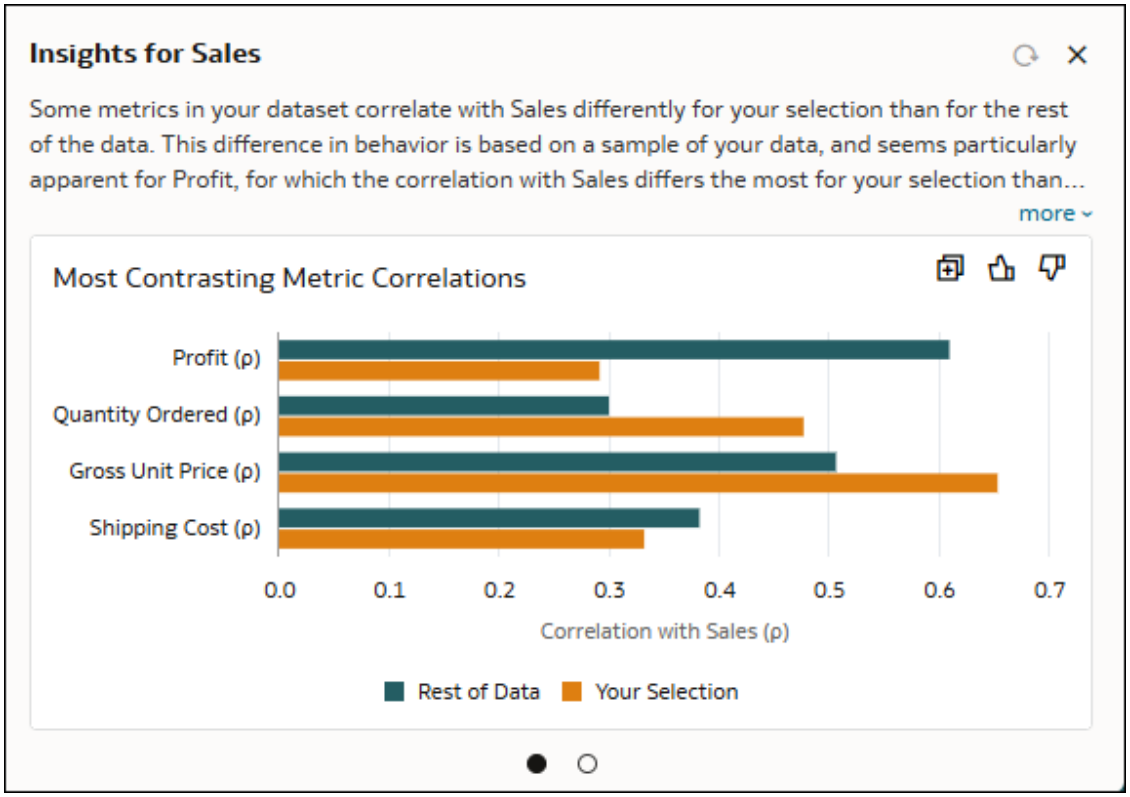


Correlation

This type of chart visualizes how different metrics correlate with another specific metric by comparing the selected data with the rest of the data. By displaying the correlations side by side, this visualization highlights any notable similarities and differences between the two groups of data. Correlation visualizations are only available when at least one metric shows a meaningful difference in correlation between the selected data and the rest of the data. Correlations for these metrics are computed at the most granular level of data for your source visualization.

For example, this insight shows the correlation patterns between Sales and other available business metrics called Profit, Quantity Ordered, Shipping Cost, and Gross Unit Price.

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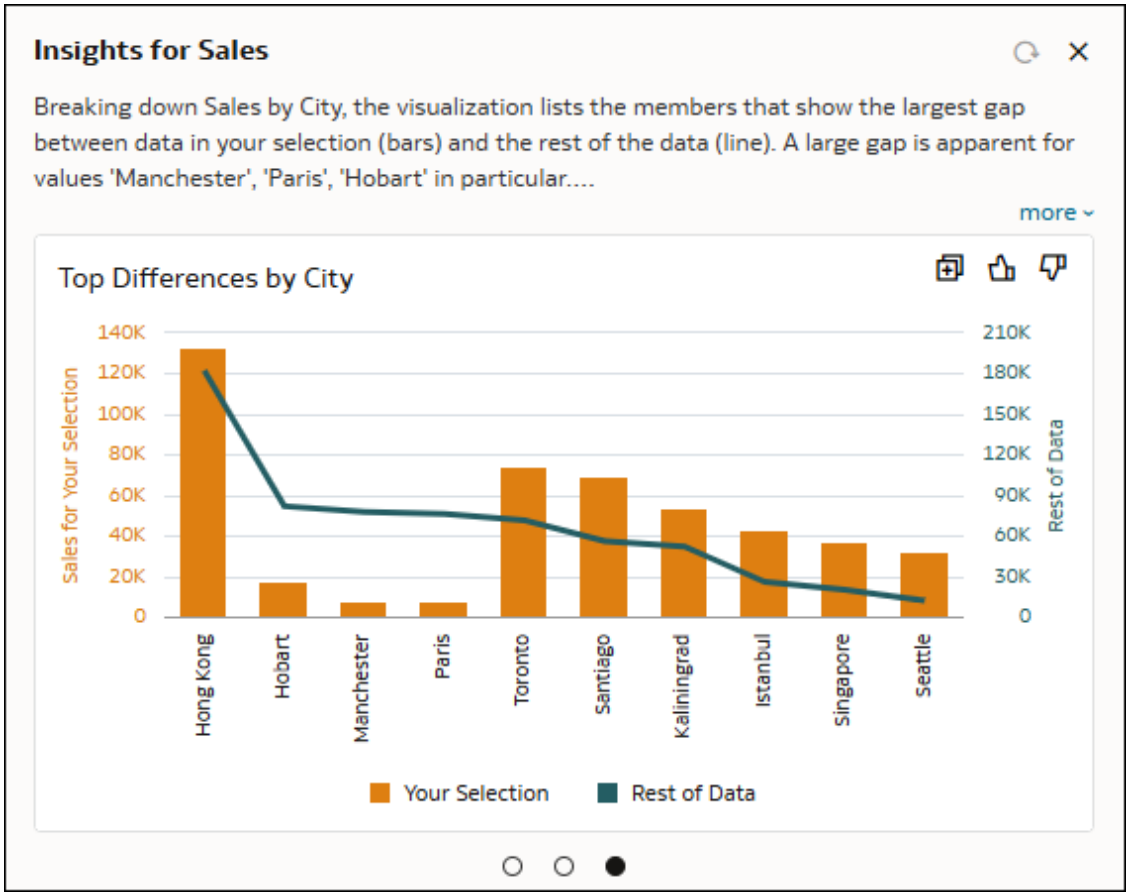


Top Differences

This is a type of breakdown chart. It compares a metric's patterns between the selected data and the rest of the data, focusing on the top 10 cases with the largest differences. When dealing with attributes that have high cardinality, for example, cities or products, this chart highlights the most significant variations in the metric.

For example, this insight displays the ten cities where sales diverge the most (whether higher or lower) between the selected data and the rest of the data.

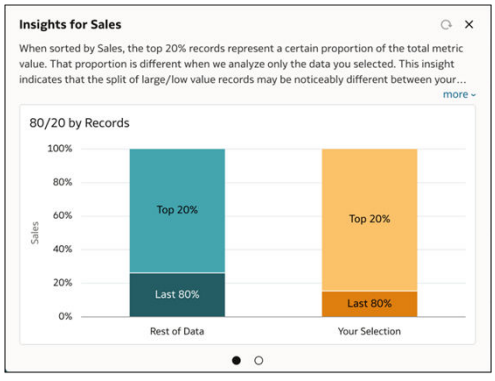
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80/20

This type of visualization shows what proportion of your metric value consists of the top 20% of the records and what proportion consists of the bottom 80% of the records when data is ordered by your metric. The visualization also shows the same for the rest of the data. This is computed at the most granular level of data in your source visualization.

For example, this insight shows the 80/20 proportions, sorted by sales, using two bars: the first for the rest of the data and the second for your selection. The description highlights the fact that the proportion is noticeably different between the two.



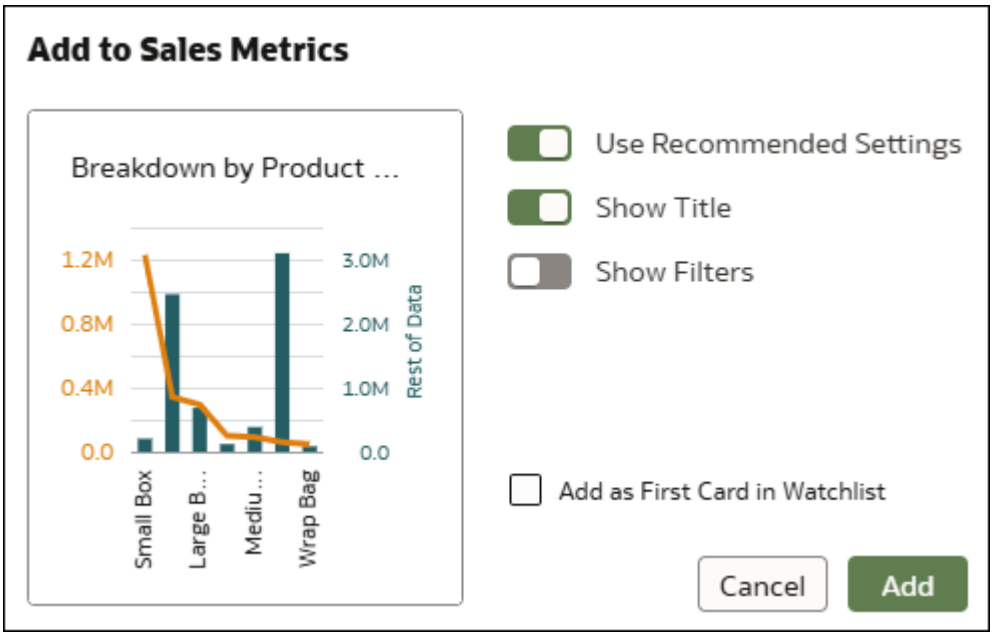
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Add a Contextual Insights Visualization to a Watchlist

You can add visualizations generated by Contextual Insights to a watchlist to access the insights from the Featured Watchlists area on your home page.

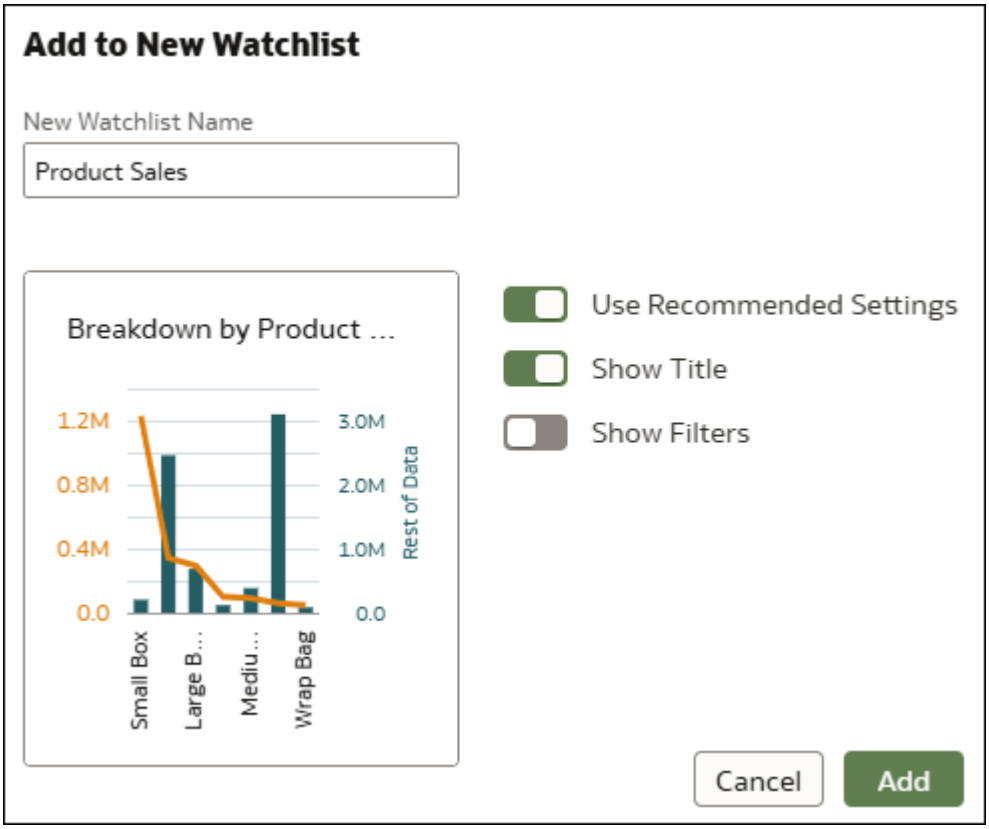
The Add to Watchlist option is available to everyone who uses Contextual Insights. You don't need special permissions or workbook settings to use this feature.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click one or more data points in a visualization to select them, then right-click and select **Explain Selected**.
3. In the Contextual Insights dialog, hover over the visualization of the insight you want to add to a watchlist and click **Add to Watchlist** .
4. Do one of the following:
   - If a watchlist exists, click the watchlist name in the list, then click **Add**.



   - If a watchlist doesn't exist, click **New Watchlist**, enter a new watchlist name, and click **Add**.

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Dataset Support and Limitations for Contextual Insights

This topic describes the datasets supported for Contextual Insights and the existing limitations.

- **Multidimensional data sources** - Contextual Insights aren't supported for multidimensional sources such as Essbase, Oracle Planning and Budgeting Cloud Service, and Analytic Views.
- **Multi-table datasets** - You can use multi-table datasets if you set the **Preserve Grain** option on the Fact Table in the model. Setting this option indicates which table acts as the fact table when multiple tables are joined in a model. Set the **Preserve Grain** option by right-clicking the table in the data model.
- **Hierarchical columns** - Attributes added as related columns that have a hierarchical relationship with an attribute in your visualization are filtered out by the Contextual Insights algorithm. In some cases, the algorithm may not be able to detect this relationship and this could lead to trivial insights showing empty visualizations.
- **Related columns for subject areas** - For visualizations using data from a subject area, if you've added related columns but are unable to see any contextual insights, you can reduce the number of related columns to less than six and retry.
- **Language** - Contextual Insights display text descriptions of insights and calculations in English.

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16

Apply Map Backgrounds and Map Layers to Enhance Visualizations

You can use geographical information to enhance the analysis of your data.

Topics:

- Overview to Using Spatial Data in Visualizations
- Enhance Visualizations with Map Backgrounds
- Use Different Map Backgrounds in a Workbook
- Interpret Data Values with Color and Size in Map Visualizations
- Download System Map Layer JSON Files
- Add GeoJSON Custom Map Layers
- Update GeoJSON Custom Map Layers
- Switch to Use Another Map Layer
- Apply Multiple Data Layers to a Single Map Visualization
- Apply Reference Layers to Map Visualizations
- Use Dynamic Line Map Layers to Connect Locations on Map Visualizations
- Use Vector Map Layers in Map Visualizations
- Use an Image as a Map Background and Draw Map Layer Shapes on the Image
- Assign a Map Layer to a Data Column
- Auto Focus on Data for a Map Visualization
- Configure Zoom in Map Visualizations
- Review Location Matches for a Map Visualization
- Create Heatmap Layers on a Map Visualization
- Create Cluster Layers on a Map Visualization
- Represent Point Data with Custom Icons on a Map
- Select Points or Area on a Map
- Represent Line Data Using Size and Color on a Map
- Make Map Layers and Backgrounds Available to Users
- Use a Map Background as the Default
- Add Map Backgrounds
- Add Data Labels to a Map

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Overview to Using Spatial Data in Visualizations

You can enhance map visualizations in workbooks by adding and maintaining map backgrounds.

You can apply the ready-to-use map backgrounds to a workbook. You can also add backgrounds from the available list of Web Map Service (WMS) providers such as Google Maps and Baidu Maps, or you can add a map background by specifying appropriate Web Map Service or Tiled Web Map details. Background maps from these providers offer details and language support (such as city or region name) that certain geographic regions (such as Asian countries) require.

You can modify backgrounds in the following ways:

- Modify the background parameters such as map type, format and API keys. The parameters are different for each WMS provider.
- Assign or change the default background in a workbook.
- Reverse the inherited default background settings in a workbook.

You can add a WMS provider and perform the following types of functions:

- Add the WMS map servers, and make them available as additional map background options.
- Select one or more map backgrounds available from the WMS provider.
- Assign an added WMS provider's map as the default map background.

Enhance Visualizations with Map Backgrounds

You can use map backgrounds to enhance visualizations in a workbook.

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Tutorial

Based on the column values, a specific set of dimensions and metrics is displayed on the map visualization. You'll see either the default map background or an existing Oracle map background if no default is set.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Visualize**.
3. To select a column and render it in a map view, do one of the following:
   - Right-click a map-related column in the Data Element pane and click **Pick Visualization**, then select **Map**.
   - Drag and drop a map-related column from the Data Element pane to the blank canvas, or between visualizations on the canvas. On the visualization toolbar, click **Change Visualization Type** and select **Map**.
4. In the properties pane, click **Map** and specify the visualization properties.
5. If you want to use a different map background, click the **Background Map** value in the properties pane and select a background. For example, select Google Maps, and the visualization displays Google Maps as the map background.

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- If you want to see the list of available map backgrounds or change the backgrounds that you can use, do one of the following:
  - Click the **Background Map** value and select **Manage Map Backgrounds** to display the Map Background tab.
  - Open the Console page, click **Maps** and select the Backgrounds tab.
- Select another map background such as Satellite, Road, Hybrid, or Terrain.

6. Click **Save**.

Use Different Map Backgrounds in a Workbook

As an author you can use different map backgrounds in map visualizations.

Here is an example of how you might use a map background in a workbook.

1. On your home page, click **Create**, then click **Workbook**.
2. Select a dataset in the Add Dataset dialog.
3. Click **Add to Workbook**.

   The Workbook pane and list of Data Elements is displayed.
4. Select a map-related data element (for example, click **City**), and click **Pick Visualization**.
5. Select **Map** from the list of available visualizations.

   Either the default map background or an existing Oracle map background if no default is set is displayed.
6. In the visualization properties pane, select the **Map** tab.
7. Click the **Background Map** value and select a map from the drop-down list.

   For example, select Google Maps and Google Maps as the map background is displayed.
8. Optional: Click another value to change the type of map (such as Satellite, Road, Hybrid, or Terrain).
9. Optional: Click **Manage Map Backgrounds** from the **Background Map** options to display the Map Backgrounds pane.

   Use this option to maintain the map backgrounds that you want to use.

Interpret Data Values with Color and Size in Map Visualizations

You can use the color and size of a shape such as a polygon or a bubble, to interpret values in a map visualization.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Select a column and render it in a map view, doing one of the following:
   - Right-click a map-related column in the Data Element pane and click **Pick Visualization**, then select **Map**.
   - Drag and drop a map-related column from the Data Element pane to the blank canvas, or between visualizations on the canvas. On the visualization toolbar, click **Change Visualization Type** and select **Map**.
3. Drag and drop columns to the following sections on the visualization Grammar pane.

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- Use **Color** to change the color for geometries displayed in the corresponding map layer (for example, polygon fill color, bubble color) based on the values.
- Use **Size (Bubble)** to change color bubble size based on the measure column values. To change the size of the color bubble you've to drag and drop measure columns only. The size shows the aggregated measure for a specific geographic location in a map visualization.
- Use **Trellis Columns / Rows** to Compare multiple map visualizations based on the column values using filters.

In the map visualization, you can also use the following to interpret measure columns and attribute values:

- **Legend** - If a measure column or an attribute has multiple values, then the legend is displayed that shows values by size or color.
- **Tooltip** - If you hover the mouse pointer over a color bubble or data point, then the values are displayed in a tooltip.

Download System Map Layer JSON Files

You can download a system map layer as a JSON file and then customize it. You must have administrator privileges to download system map layers.

For example, if a system map layer such as World Cities is missing a city, region, or other location, you can download the JSON file, add the missing location data and upload to use as a custom map layer. This enables you to more accurately represent your organization's data and geographic structure.

1. On your home page, click **Navigator**  , and then click **Console**.
2. Click **Maps** and **Data Layers**, then click **System Map Layers**.
3. Select a system map layer, click **Options** and then click **Download**.
4. Navigate to a folder where you want to save the system map layer JSON file and click **Save**.

Add GeoJSON Custom Map Layers

You can add GeoJSON custom map layers to use in map visualizations to view geometric map data in a workbook.

Video

For example, you might add a Mexico_States.json file to enable you to visualize geometric data in a map of Mexico states.

You add a custom map layer using a geometric data file with the .json extension that conforms to GeoJSON schema https://en.wikipedia.org/wiki/GeoJSON.

The maximum upload size for an individual GeoJSON file is 100 MB (compressed). The overall default storage limit for GeoJSON files is 200 MB (compressed). Compressed GeoJSON files are smaller (up to half the original size) than uncompressed GeoJSON. Oracle Analytics compresses files that you upload by stripping out whitespace and truncating precision to 6 decimal points.

- Map layer files containing polygons with 12 or more decimal points might reduce in size by 50%.

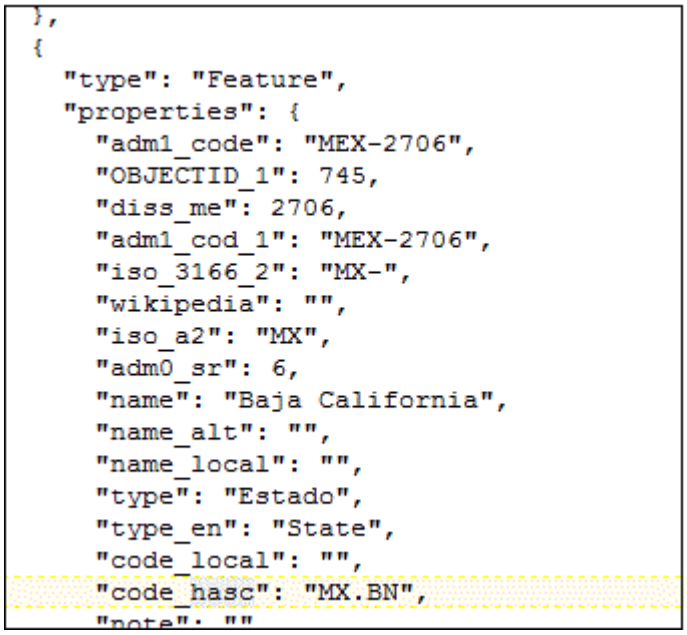
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- Map layer files that contain point geometries might reduce in size by 15-20%.

If preferred, you can compress your map layer files before you upload them to Oracle Analytics using tools such as mapshaper.org.

The overall external cloud storage limit for GeoJSON files is 50 GB.

When creating a custom map layer, you must select layer keys that correspond with data columns that you want to analyze in a map visualization. For example, if you want to analyze Mexican states data on a map visualization, you might start by adding a custom map layer for Mexican states, and select HASC code layer key from the Mexican_States.json file. Here's an extract from the Mexican_States.json file that shows some of the geometric data for the Baja California state.



If you wanted to use the Mexican_States.json file, the layer keys that you select must match columns that you want to analyze from the Mexican states data tables. For example, if you know there's a data cell for the Mexican state Baja California then select the corresponding name field in the JSON file to display state names in the map visualization. When you create a workbook and select column (such as State, and HASC), then Mexican states are displayed on the map. When you hover the mouse pointer over a state, the HASC code (such as MX BN) for each state is displayed on the map.

1. On your home page, click **Navigator**, and then select **Console** to display the Console page.
2. Click **Maps** to display the Map Layers page.

   You can enable and disable System Map Layers but you can't create or delete them.
3. To add a custom map layer, in the **Data Layers** tab, click **Add Custom Layer** then click **GeoJSON**, or drag and drop a JSON file from File Explorer to the Custom Maps area.
4. Browse the Open dialog, and select a JSON file (for example, Mexico_States.json).

   The JSON file must be a GeoJSON file that conforms to the standard specified in https://en.wikipedia.org/wiki/GeoJSON (the maximum file size allowed is 100 MB).

   Custom layers that use the Line String geometry type aren't fully supported. The Color and Size section on the visualization Grammar pane doesn't apply to line geometries.
5. Click **Open** to display the Map Layer dialog.

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6. Optional: If you want to significantly expand storage capacity beyond the limits of internal storage, click **Advanced**, and select the **External** Storage Type.

   External storage requires no configuration or additional resource.

7. In the **General** tab enter a **Name** and an optional **Description**.
8. Select the layer keys that you want to use from the Layer Keys list.

   The layer keys are a set of property attributes for each map feature, such as different codes for each state in Mexico. The layer keys originate from the JSON file. Where possible, select only the layer keys that correspond with your data.

9. Click **Save**. A success message is displayed when the process is complete and the layer is added.

Update GeoJSON Custom Map Layers

You can maintain GeoJSON custom map layers.

1. On your home page, click **Navigator**  , and then click **Console**.
2. Click **Maps**, click **Map Layers** and click **Custom Map Layers**.
3. To include or exclude a custom map layer from being available, click the tick symbol  for the layer. For example, if you want to exclude us_states_hexagon_geo from maps, click the tick to disable it and remove it from searches.
4. Click **Options** and select any of the following options:
   a. Optional: To change settings for the custom map layer select **Inspect**.

      You can specify the Name, Description, Layer Keys, and choose an image or a map to use as the default background for this layer.

   b. Optional: To upload a JSON file again select **Reload**.
   c. Optional: To save the JSON file locally select **Download**.
   d. Optional: To delete the custom map layer, select **Delete**.

Switch to Use Another Map Layer

You can change which map layer you use in a map visualization.

1. On your home page, hover over a workbook containing a map visualization, click **Actions**, and then select **Open**.
2. Click **Data Layers** in the Properties pane.
3. Click the current **Map Layer** for example Mexican States. This displays a list of available map layers that you can choose from.
4. Click the map layer that you want to use to match your data points.

Apply Multiple Data Layers to a Single Map Visualization

You can add data layers that provide details about dimensions and metrics to a map visualization. Data layers overlay the base map visualization.

1. On your home page, select a workbook containing a map visualization, click **Actions**, and then select **Open**.

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2. Drag and drop measure or attribute columns containing map-related data from the Data pane to the Category (Location) section on the Grammar pane.
3. Click **Layer options** in the Category (Location) section of the Grammar pane and click **Add Layer** to add a new data layer (for example, Layer 2).
4. Drag and drop a column to the Category (Location) section. Based on the column values the map visualization automatically updates with a different set of dimensions, and it overlays on the previous layer.
5. Optional: Click **Data Layers** in the Properties pane. Depending on the layer type, you can select:
   - **Name** - Change the layer name.
   - **Layer Type** - Change the layer type. For example, Polygon.
   - **Transparency** - Change the visibility of the layer.
   - **Outline** - Change the layer outline to **Custom** to select an **Outline Color** and set the **Outline Width**.
   - **Size** - Change the size of the layer in relation to the map.
   - **Tooltip** - Modify the data that appears on the tooltip when hovering over the layer on the map.
   - **Show Layer** - Display or hide the layer.
   - **Show Legend Title** - Display or hide the legend.
   - **Data Labels Position** - Display and select a position for data labels on the map for selected data columns.
   - **Auto Zoom** - Automatically zoom to this layer's extent whenever the map visualization renders.
   - **Enable Selection** - Enable selection of data for this layer using the **Rectangle**, **Radial**, or **Polygon** selection toggles, or using left or right mouse click.
6. Click **Save**.

Apply Reference Layers to Map Visualizations

You can add reference layers that don't display any data to overlay a map visualization. You might add a reference layer to show how the path of a storm impacts customer locations displayed on the map.

A static reference layer with no data is defined in a custom GEOJSON file that an administrator must add to the **Reference Layers** section in **Maps** in the Console. See Add GeoJSON Custom Map Layers.

1. On your home page, select a workbook containing a map visualization, click **Actions**, and then select **Open**.
2. Click **Layer options** in the Category (Location) section of the Grammar pane, click **Add Layer** and select **Add Reference Layer**.
3. Click **Layers** in the Properties pane, expand the new reference layer, click **Map Layer** and select the appropriate custom GEOJSON file that you want to display (for example, one that shows the path of a storm).
4. Optional: If you want to specify a display color for the reference layer, click **Color**, select **Custom**, click **Fill Color** and choose a color, then click **OK**.
5. Click **Save**.

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Use Dynamic Line Map Layers to Connect Locations on Map Visualizations

Use the dynamic line map layer type to connect locations on a map visualization.

Topics:

- About the Dynamic Line Map Layer Type
- Connect Points on a Map with Dynamic Lines
- Configure the Properties for Dynamic Lines on a Map

About the Dynamic Line Map Layer Type

You can represent movements and connections between two geographic points or areas on a map visualization using a dynamic line map layer.

The dynamic line map layer generates lines between specified start and end coordinates on a map. For example, you might want to visualize movement patterns between cities, illustrate flight routes between airports, or show business relationships, or logistics routes between countries or warehouses.

The dynamic line map layer type requires attribute columns for the following two categories:

- **Start Node**: Defines origin coordinates or a geographic location.
- **End Node**: Defines destination coordinates or a geographic location.

The Start Node and End Node can contain the following map data formats:

- **Latitude and Longitude:** Use latitude and longitude coordinates for each node.
- **Cities or Countries:** Use named cities or countries as coordinates for each node.
- **Points or Polygons:** Use individual points or polygons (geographic shapes) as coordinates for each node.

You can only use attribute columns for the start and end nodes in the Grammar pane. Oracle Analytics treats number columns as measures so make sure any number columns you plan to use in the dynamic line map layer, such as latitude and longitude columns, are set to be treated as attributes See Configure Columns Properties in a Dataset.

If you use attribute columns for the names of geographical locations, Oracle Analytics automatically identifies them as such and applies an appropriate system map layer. For example, if your attribute column contains the names of cities across the global, the system map layer World Cities is applied. You can also select a custom map layer yourself.

The dynamic line map layer type also supports lines between data elements stored as geometry data types. The geometry data type is a Preview feature, see Oracle Analytics Cloud Preview Features.

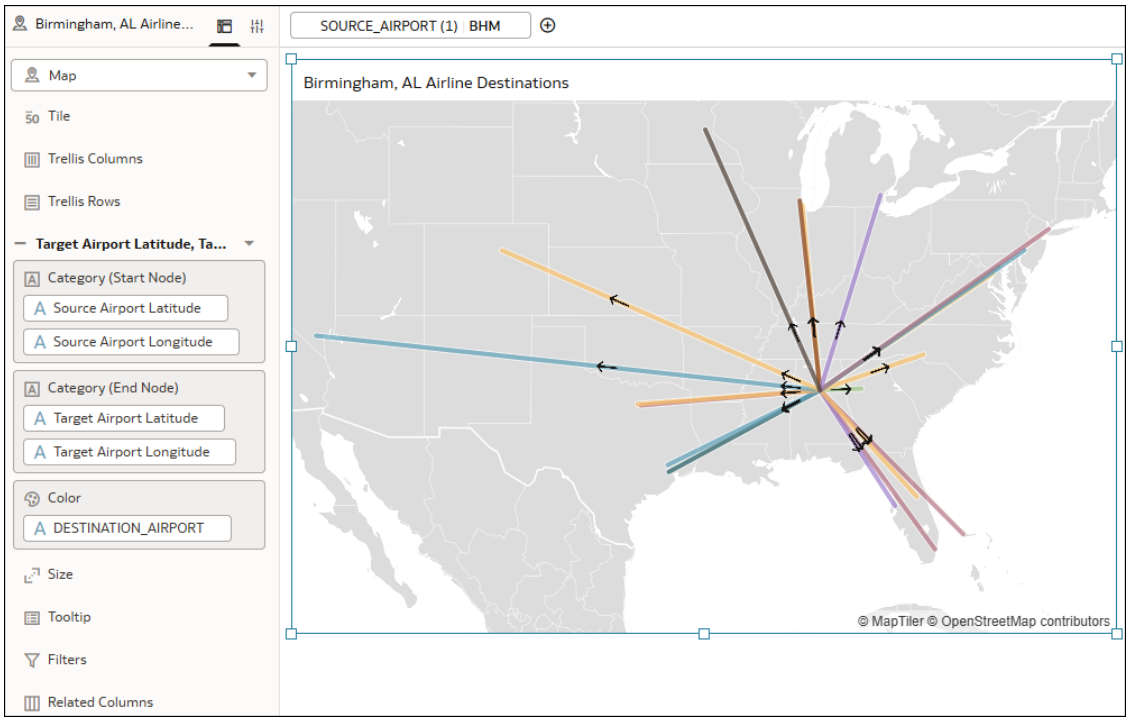
Connect Points on a Map with Dynamic Lines

Connect points on a map using a dynamic line map layer type to quickly visualize the connections.

Use defined origin attribute columns as start nodes and defined destination attribute columns as end nodes to create the dynamic lines.

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For example, to generate dynamic lines between a source airport and all of its destination airports, you might use attribute columns called Source Airport Latitude and Source Airport Longitude as the start nodes and destination attribute columns called Target Airport Latitude and Target Airport Longitude as the end nodes.

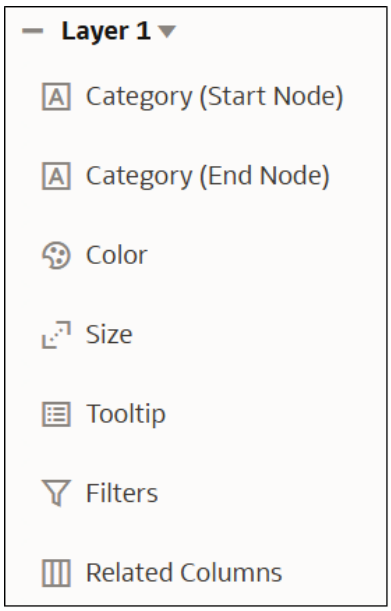


This tutorial explains how to show connections between source and destination airports using a dynamic lines map layer and latitude and longitude coordinates: Tutorial

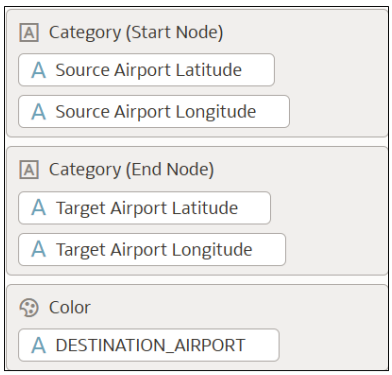
1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the Visualizations pane, drag the Map visualization to the canvas.
3. In the Grammar pane, beside Layer 1, click **Layer options**, click **Layer Type**, and select **Dynamic Line**.

   The new layer shows the Category (Start Node) and Category (End Node).

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4. In the Data pane, drag origin and destination attributes to Category (Start Node) and Category (End Node).



5. Drag an origin or destination attribute to Color to make the lines easier to distinguish.
6. Click Properties, then click **Layers** .
7. In the Size row, click **8** and use the slider to reduce the line size for readability.
8. From the Data pane, drag an origin or destination attribute to the filter bar to focus the data shown in the map.
9. Click **Save**.

Configure the Properties for Dynamic Lines on a Map

Customize the design of dynamic lines for maps using the dynamic line map layer properties to make the visualization clear and impactful.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click the map visualization.
3. Click Properties, then click **Layers** .

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4. In the Line Shape row, click **Straight** and select a different option to change the line shape:
   - **Straight** – Useful for showing short distances.
   - **Curved** – Useful for representing long distances and connections like airline routes.
   - **Bi-directional curved** – Useful for showing back and forth connections between two points.
5. In the Directional Arrows row, click **Off** to turn the property on and add directional arrows to the dynamic lines in the map. Configure the following options to optimize the design of the arrows:
   - **Color** – Select a color for the arrows to make them stand out from the lines.
   - **Size Factor** – Change the size of the arrows to suit the scale of the map.
   - **Placement** - Specify whether you want a single arrow to appear in the middle of each line or multiple arrows to appear at equal intervals along the lines.
   - **Halo** – Add an outline to the arrows to make them stand out. You can choose the color of the halo.
6. Click **Save**.

Use Vector Map Layers in Map Visualizations

In Oracle Analytics, you can use vector layers on a map visualization to render large or complex polygon boundaries. For example, you can use a vector layer on a map to show the polygonal boundaries for postal codes, districts, parcels, or grids across a country.

Vector layers stream database-generated tiles directly from Oracle AI Database through Oracle REST Data Services. These vector tiles provide a compact, web-optimized format that delivers only the portion of the map needed at each zoom level.

For information on how to prepare and use vector layers in Oracle Analytics, see Vector Map Layers in Oracle Analytics.

Use an Image as a Map Background and Draw Map Layer Shapes on the Image

You can upload an image, prepare the image as a map background, draw map layer shapes onto the image, and associate data with the map background layer.

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Video

Topics:

- Upload an Image as a Map Background
- Draw Custom Map Layer Shapes on an Uploaded Image
- Associate a Dataset with Map Layer Shapes Drawn on an Uploaded Image

Upload an Image as a Map Background

You can upload an image as a map background and then draw layer shapes on top of the uploaded image.

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1. On your home page, click **Navigator**, and then click **Console**.
2. On the Console page, click **Maps**.
3. In Maps, click the **Backgrounds** tab, and expand **Image Backgrounds**.
4. Click **Add Image**, select your image, and click **Open**.
5. Enter a name and description for the uploaded image, and click **Save**.

Draw Custom Map Layer Shapes on an Uploaded Image

You can draw and edit custom map layer shapes on an uploaded image and associate the shapes with data in map visualizations.

1. On your home page, click **Navigator**, and then click **Console**.
2. On the Console page, click **Maps**.
3. In Maps, click the **Backgrounds** tab, and expand **Image Backgrounds**.
4. In Image Backgrounds, select the image, click **Options**, and then select **Create Map Layer**.
5. Select **Polygon**, **Line**, or **Point**, and draw a shape onto the image.

Shape	Actions
Polygon	Click the image, drag and click to draw each edge of the polygon until the shape is complete, then click to finish.
Circle	Click the image, drag to increase the circle size until the circle reaches the required size, then click to finish.
Line	Click the image, then drag and click to draw each line edge until the line is complete.
Point	Click the image in the location where you want to draw a data point.

   If you uploaded a motorcycle image, you could draw a shape outline over each visible part. For example, you might draw a polygon to represent an irregular shape like the fuel tank, or a line to represent a fork, or a circle to represent a tire, and so on.

   Each new shape that you create is given a default name and is listed under Features.

6. Enter a name for each shape that corresponds to a key column value in the dataset.

   For example, if you drew a petrol tank polygon shape and the key column PartID in the dataset has the value PT for petrol tank, then you must enter `PT` as the shape name.

   You can also edit a shape name by clicking the corresponding object in the Features list.

7. Optional: If you want to reposition a shape, click the shape, then drag it to move it to a new position.
8. Optional: If you want to resize a shape, click and hold the shape, or edge, and drag it until it reaches the required size, then click again to finish.
9. Click **Save**.

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Associate a Dataset with Map Layer Shapes Drawn on an Uploaded Image

You can associate a dataset with the map background layer shapes that you drew on an uploaded image, and use it in a workbook.

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1. On your home page, click **Create** to bring in a dataset file that you want to associate with your map background.

   For example, you might select `motorbike.xls` to create a motorcycle dataset with a PartID key column containing values that match the part names of the shapes that you drew.

2. In the key column of the dataset, click **Options**, select **Location Details**, choose the custom map layer, and click **OK** to assign the key column to the selected map layer.
3. Create a workbook.
4. Drag and drop the key column into the visualization. This automatically places the column into Category (Location).

   A map visualization is suggested based on the key column, and the associated map background is displayed.
5. Continue to add columns, and create visualizations as required.
6. Click **Save**.

Assign a Map Layer to a Data Column

Assign a map layer to a data column to use it consistently in any workbook.

You can assign a map layer to a column that contains text or numeric attributes, for example, columns such as Airport Name, Latitude, and Longitude. When you select a data column with a map layer assignment for a visualization, Oracle Analytics automatically creates a map visualization.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Data** to go to the Data page.
3. In the **Data Diagram** select the dataset that contains the column that you want to prepare and click the dataset's **Edit** icon.

   If the dataset contains multiple tables, the Dataset editor is displayed and you'll see the Join Diagram with a tab for each table. Select the table that contains the column you want to prepare to open it in the transform editor.
4. In the transform editor, click **Options** for any numeric or text attribute column, and then click **Location Details**.
5. In Location Details, review the associated map layer, change the map layer if you want to, and then click **OK**.

   The property change is listed as a Change Property step in the Preparation Script pane.
6. Depending on your dataset, in the Preparation Script pane click **Apply Script**, or on the toolbar click **Save Dataset**.

   The updated column displays the location icon indicating that the location preference has been set.

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7. In the Properties pane for the updated column, click the **Location** icon to verify the map layer associated with the column.
8. Create a visualization with the data columns for which you have set the location details.

   The visualization type is now automatically set as Map and the map layer is available for the specific columns. You no longer need to set the location details for each visualization.

Auto Focus on Data for a Map Visualization

You can override the current visible area when you focus on new data in a map visualization.

The ability to auto focus on data enables you to view the visualization for the specific data that you displayed in a map. For example, if your map visualization displays sales by countries and you have first viewed sales for Australia, the map zooms to Australia. However, if you focus on sales for Italy, the map zooms to Italy.

1. On your home page, select a workbook containing a map visualization, click **Actions**, and then select **Open**.
2. In Visualization Properties, click **Map**, and then set **Auto Focus on Data** to **On**.

   The default value of this property is **Off**.

Configure Zoom in Map Visualizations

You can configure zoom to enable users to zoom in and out of a map visualization.

When Zoom Control is On, it displays the magnification control that enables you to zoom in or out of the map. When Zoom Interaction is On, it enables you to use the mouse wheel or a touch screen to zoom in or out of a selected map area. When Zoom Control and Zoom Interaction are On, you can zoom in or out of the map using the magnification control, mouse wheel, or a touch screen.

1. On your home page, select a workbook containing a map visualization, click **Actions**, and then select **Open**.
2. In Visualization Properties, click **Map**.
3. Click **Zoom Control** and **Zoom Interaction** to **On**.

Review Location Matches for a Map Visualization

You can review mismatch issues between data and match results in map layers, such as when there are ambiguous or partial matches between words.

If ambiguous results are present, consider adding more columns to the map visualization to get the specific match. For example, your map might have layers for City, Country, and Continent. You can also exclude rows of data.

1. On your home page, select a workbook containing a map visualization, click **Actions**, and then select **Open**.
2. Click the **Visualization** tab.
3. Right-click the map visualization and select **Location Matches** from the menu to display the Location Matches dialog.
4. Select a tab representing a map layer in the current visualization to inspect how well your data matches the map layer.

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For example, select the **Country** tab to see how well your data matches with the Country map layer.

5. Optional: Click **Map Layer** to select a different layer or click **Manage Map Layers** to display the Console page.
6. Review and resolve data mismatches use the columns.

   Use **Match** to see what data items match with the map layer information. A match can be anything from No Match, Partial Match, to a 100% match. Matches are displayed initially sorted top down from the worst to the best matches.

   - No Match - Displays a red warning triangle indicator.
   - A Match with an issue - Displays a yellow warning triangle indicator.
     The warning doesn't indicate a poor match but an imperfect match for which you might want to review the use case.
   - A Perfect Match - Displays no warning triangle indicator.
   - If you are matching Latitude and Longitude, the match values are Valid or Invalid.

   The summary section above the table displays the number of locations and any issues.
7. Click the filter icon in the **Match** column title and select a filter option.
   - Use **All Data** to display all types of matches.
   - Use **Good Matches** to display only 100% perfect matches.
   - Use **All Issues** to display partial matches, multiple matches and no match.
   - Use **Partial Matches** to indicate the percentage difference between the strings being matched. For example: Part of a string is exactly right, such as `Paulo` versus `Sao Paulo`. Most of a word is exactly right, such as `Caiyro` versus `Cairo`.
   - Use **Multiple Matches** to indicate how many matches exist for ambiguous cases. For example, you may see `Barcelona, Spain` matching with `Barcelona Argentina`. In this case you might want to revisit the data to add more detail to your GEO columns to ensure that you only match the correct columns.
8. Click in the **Exclude** column for each row of data that you want to exclude.
9. Click the **Exclude** menu:
   - Click **Select All** or **Deselect All**.
   - Click one of **Workbook Scope**, **Canvas Scope**, or **Visual Scope**.
10. Optional: Add in more columns to the Category (Location) edge on the visualization to make your match more specific. For example, add Country data to remove a mismatch like Barcelona, Spain versus Barcelona, Argentina.
11. Display the Location Matches dialog to check the summary for any remaining mismatches, and click **OK** when you are satisfied, or repeat previous steps as required.

Create Heatmap Layers on a Map Visualization

You can use a heatmap as a data layer type on a map visualization to identify the density or high concentration of point values or metric values associated with the points. For example, you can use a heatmap to identify the high profit stores in a geographic region or country.

You can create two types of heatmap layers:

- **Density heatmap** - Uses only map-related column data (such as latitude and longitude columns). Density heatmap layers show the cumulative sum of a point, where each point

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carries a specific weight. A point has a radius of influence around it, such that other points that fall in the same area also contribute to the total cumulative result of a point.

- **Metric heatmap** - Uses measure column data in the same layer. For example, if you add a measure column to the Color section on the Grammar pane the heatmap is updated to show interpolated metric values.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Create an empty map visualization.
3. Drag and drop attribute columns containing map-related data from the Data pane to the Category (Geography) section on the Grammar pane.
   - If you're creating a workbook with a map visualization, in the Data pane, right-click an attribute column and click **Pick Visualization** then select **Map**.
4. Go to the Data Layers tab of the Properties pane.
   - Alternatively, click **Layer options** in the Category (Geography) section and click **Manage Layers**.
5. To create a density heatmap, click **Layer Type** value and select **Heatmap**.
   - Alternatively, you can add a new map layer, change the layer type to **Heatmap** and then add attribute columns to the Category (Geography) section.
6. To create a metric heatmap, drag and drop a metric column from the Data pane to the Color section. The heatmap visualization changes from density to metric.
7. In the Data Layers tab of the Properties pane, specify the options for the heatmap layer such as Radius, Interpolation, Transparency, and Color.
   - The default interpolation method is automatically selected based on the aggregation rule of the metric column or value that you've selected for the layer.
   - You can select the radius value in pixels (px). The radius value is the extent of influence of a measure around a point value on a map.

The heatmap is automatically updated based on the options selected in the Data Layers tab.

Create Cluster Layers on a Map Visualization

You can use a cluster layer as a type of data layer on a map visualization. In a cluster layer, points that are positioned near each other are grouped together into a common bubble.

The number of points clustered in the group is indicated in the bubble's label. If selected points are grouped with unselected points, the circle is dotted to indicate a partial selection. Individual points are displayed as pin icons to emphasize the distinction between grouped and ungrouped points. Points are grouped based on their proximity in pixels and on the map's zoom factor.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Create an empty map visualization by dragging the Map visualization from the Data pane to the canvas.
3. Drag and drop attribute columns containing map-related data from the Data pane to the Category (Geography) section on the Grammar pane.

   If you're creating a workbook with a map visualization, in the Data pane, right-click an attribute column and click **Pick Visualization** then select **Map**.
4. Click the Data Layers tab of the Properties pane.

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Alternatively, click **Layer options** in the Category (Geography) section and click **Manage Layers**.

5. To create a point cluster, click **Layer Type** value and select **Cluster**.

   Alternatively, you can add a new map layer, change the layer type to **Cluster** and then add attribute columns to the Category (Geography) section.

The point cluster is automatically updated based on the zoom level.

Represent Point Data with Custom Icons on a Map

You can use the Shapes edge to represent point data with custom icons in a map visualization.

You can associate a column with the Shape edge to display a custom shape for point data. For example, you can distinguish between cities by displaying them using custom shapes (for example, a square, a triangle, or a currency symbol). You can also change which custom shape you want to apply to one or more data points.

1. On your home page, select a workbook containing a map visualization that contains point data, click **Actions**, and then select **Open**.
2. Drag and drop an attribute column containing point data (for example, city) from the Data pane to the Category (Geography) edge on the Grammar pane.
3. Drag and drop a column from the Data pane to the **Shapes** edge and optionally to the **Color** edge on the Grammar pane.

   The map visualization automatically updates based on your selection and overlays the previous layer.
4. Optional: You can change how you assign custom shapes to data points and to the map legend.
   a. Highlight one or more data points on the map using one of the selection tools, or use Ctrl-click to select one or more data points.
   b. Right-click one of the multiple-selected data points, select **Custom Shapes** and then select **Series** or **Data Point**.
   c. Select a custom shape and click **Done**.

      Custom shapes are applied as follows:

      - **Series dialog** - custom data point shape not previously set
        Replaces highlighted data points and series items with the custom shape.
      - **Series dialog** - custom data point shape previously set
        Replaces only corresponding series items with the custom shape.
      - **Data Point dialog**
        Replaces only highlighted data points with the custom shape.
5. If you want to reassign the custom shape for a data point:
   a. Right-click any data point, select **Shape**, and click **Custom Shapes**.
   b. To change the custom shape assigned to a data point, click the shape corresponding to the data point that you want to change.
   c. Select a new custom shape and click **Done**, then click **Done** again.
6. If you want to reset all of the custom shapes currently applied to data points on a map visualization, right-click any data point, select **Shape**, and click **Reset Custom Shapes**.

   This resets all of the shapes applied to data points on the map to the default setting.

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Select Points or Area on a Map

You can select multiple points on the map in a specific area that you define using the selection tools.

1. On your home page, select a workbook containing a map visualization, click **Actions**, and then select **Open**.
2. In the Visualize canvas, select the map visualization.
3. On the visualization toolbar, do one of the following:
   - Click the **Rectangle Selection** tool and drag a rectangle on the map to select the points or area you want.
   - Click the **Radial Selection** tool and select a point on the map, then drag outward to create a circle. The unit shows the total distance covered on the map.
   - Click the **Polygon Selection** tool and drag a freehand border around the points or area you want to select on the map.

   The selected points or area is highlighted on the map.

Represent Line Data Using Size and Color on a Map

You can represent the weight of line data through thickness and color in a map visualization.

You can associate a measure with the Size edge to indicate the relative weight of a line. For example, to compare delays in airline routes, you can display flight routes with varying line thickness, where a thicker line and a darker color correspond to a higher number of delays.

1. On your home page, select a workbook with a map visualization that contains line data, click **Actions**, and then select **Open**.
2. In the Visualize canvas, select the map visualization that displays the line data.
3. Drag and drop a column containing line data (for example airline routes) from the Data pane to the Category (Geography) edge on the Grammar pane.
4. Drag and drop a line measure column from the Data pane to the **Size** edge and optionally to the **Color** edge on the Grammar pane.

   The map visualization automatically updates based on your selection and overlays the previous layer.

Make Map Layers and Backgrounds Available to Users

For visualization workbooks, as an administrator you can hide or display map layers and backgrounds for users.

1. On your home page, click **Navigator**  , and then click **Console**.
2. Click **Maps** and then click **Backgrounds** or **Map Layers**.
3. Click the **Include** blue tick option to make the selected row item available or hidden from users.

   You can hide or display map backgrounds, image backgrounds, custom map layers, and system map layers.

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Use a Map Background as the Default

For visualization workbooks, as an administrator you can make a map background the default for users.

1. On your home page, click **Navigator**, and then click **Console**.
2. Click **Maps**, click **Backgrounds** and then click **Map Backgrounds**.
3. Click the **Default** column field in the row of a map background to make it the default.

   The map background is used by default in new visualizations.

Add Map Backgrounds

You can add Google, Baidu, and other web map service backgrounds to use in visualizations.

Topics:

- Add Google Map Backgrounds
- Add Baidu Map Backgrounds
- Add Web Map Service (WMS) Backgrounds
- Add Tiled Web Map (XYZ) Backgrounds
- Web Map Background Troubleshooting Tips

Add Google Map Backgrounds

You can add Google map backgrounds to use in map visualizations.

1. On your home page, click **Navigator**, and click **Console**.
2. In the Console, select **Maps**, click **Backgrounds**, and then click **Map Backgrounds**.
3. Click **Add Background** and select a **Google** from the list.
4. Enter a helpful description if needed.
5. Click **Account Type** to select your account.
6. Copy and paste your Google Maps API access key.

   To use Google Maps tiles, you must obtain a Google Maps API access key from Google. Google prompts you to enter your Maps API access key and, when applicable, your Google “Client ID”. Usage of the tiles must meet the terms of service specified by Google in the Google Developers Site Terms of Service.
7. Click **Default Map Type** if applicable.
8. Click **Save** to include the map in the list of available map backgrounds.

Add Baidu Map Backgrounds

You can add Baidu map backgrounds to use in map visualizations.

1. On your home page, click **Navigator**, and click **Console**.
2. In the Console, select **Maps**, click **Backgrounds**, and then click **Map Backgrounds**.

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3. Click **Add Background** and select **Baidu** from the list.
4. Enter a helpful description if needed.
5. Copy and paste your Baidu Maps API access key.

   To use the Baidu Maps tiles, you must obtain a Baidu Maps API access key from Baidu. Baidu prompts you to enter your Maps API access key. Usage of the tiles must meet the terms of service specified by Baidu in their user agreement.
6. Click **I agree to trust this external host** if applicable.
7. Click **Save** to include the map in the list of available map backgrounds.
8. For Baidu Maps in Analytics Cloud, you must add the following URLs as safe domains. You do this in the Console, from the Safe Domains page.
   - `*.map.baidu.com [Image, Script]`
   - `*.map.bdimg.com [Image, Script]`
   - `*.bdstatic.com [Image, Script]`

   You must select both the `Image` and `Script` options. This indicates these domains can be trusted to provide image tiles and the necessary scripts to run, ensuring that Baidu map content renders successfully.

Add Web Map Service (WMS) Backgrounds

You can add web map service backgrounds and use them in map visualizations.

Web map service backgrounds are hosted dynamically on a web server using the Web Map Service (WMS) protocol. You can use them to integrate maps containing information that you might not have in your enterprise, and easily present it spatially with your data.

1. On your home page, click **Navigator**  , and click **Console**.
2. In the Console, select **Maps**, click **Backgrounds**, and then click **Map Backgrounds**.
3. Click **Add Background** and select **Web Map Service** from the list.
4. Click the **General** tab and enter a name and description.
5. In **URL**, enter the full URL for the web map service.

   Contact your web map service provider to find out the correct URL.

   For example, `https://www.gebco.net/data_and_products/gebco_web_services/web_map_services/mapserv`.

   Version automatically displays the web map service protocol version used by the WMS provider. The default value is 1.1.1 but you can select an alternative version from the drop-down list.

   Coordinate Reference System automatically displays the reference system used by the host provider. The default value EPSG:3857 is the coordinate system used for projecting maps in 2 dimensions. Hover over the tooltip icon for details.
6. Click **I agree to trust this external host** to automatically add the host to your list of safe domains.
7. In **Layers**, enter the name of each background map layer that you want to use. Click the cross **(x)** icon to remove a layer.
8. Click **Format** if you need to change the image type.
9. Display the **Parameters** tab and click **Add Parameter**.

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Parameters that you enter are included in the URL and tell the hosting server what to display in the map background (for example, image type, layer, geographic extent of the map, size of the returned image).

10. Enter parameters that you want to pass in the URL to the host server in `key:value` format.

    Use this URL to find parameters that you can use for this web map service:

    `http://<url_of_the_map_server>?request=getCapabilities&service=wms`

11. Click **Save** to add the background map layer to the list of available map backgrounds.

    You must refresh a page to see any changes.

12. Click **Preview** to display a preview of the map background.

    The Preview tab only becomes available after the page is saved and refreshed . This is because the refresh enables recognition of the safe domains.

Add Tiled Web Map (XYZ) Backgrounds

You can add tiled web map (XYZ) backgrounds and use them in map visualizations.

Tiled web map (XYZ) backgrounds are displayed in a browser by seamlessly joining dozens of individually requested image or vector data files over the Internet through a web server. You can use them to integrate maps containing information that you might not have in your enterprise, and easily present them spatially with your data.

You configure tile URL strings to specify vector tiles or raster tiled map images to load. The host evaluates each string and determines which tile to load.

Contact your tiled web map service provider to find out the correct URLs. Parameters in the URLs tell the hosting server what to display in the map background. For example, the map name, version, and the number of tiles to use at the specified focus. Here are some examples of Mapbox tiled web map background URLs:

- `https://api.mapbox.com/styles/v1/mapbox/streets-v11/tiles/256/{z}/{x}/{y}`
- `https://api.mapbox.com/styles/v1/mapbox/satellite-v9/tiles/256/{z}/{x}/{y}`
- `https://api.mapbox.com/styles/v1/mapbox/light-v10/tiles/256/{z}/{x}/{y}`
- `https://api.mapbox.com/styles/v1/mapbox/dark-v10/tiles/256/{z}/{x}/{y}`
- `https://api.mapbox.com/styles/v1/mapbox/outdoors-v11/tiles/256/{z}/{x}/{y}`

1. On your home page, click **Navigator**  , and click **Console**.
2. In the Console, select **Maps**, click **Backgrounds**, and then click **Map Backgrounds**.
3. Click **Add Background** and select **Tiled Web Map** from the list.
4. Click the **General** tab and enter a name and description.
5. In **URL**, enter the full URL for the host tiled web map service.
6. Click the plus **(+)** icon to enter additional server URLs in the same domain, for load balancing.
7. Click **I agree to trust this external host** to automatically add the host to your list of safe domains.
8. Display the **Parameters** tab and click **Add Parameter**.

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Parameters that you enter are included in the URL and tell the hosting server what to display in the map background (for example, image type, layer, geographic extent of the map, size of the returned image).

For example, you might enter `access_token` with a value of `exampleaccessTokenXyZ123456789nnnxxxZZz`.

Contact your provider for details.

9. Enter parameters that you want to pass in the URL to the host server in `key:value` format.
10. Click **Save** to add the specified tiled web maps to the list of available map backgrounds.

    You must refresh a page to see any changes.
11. Click **Preview** to display a preview of the map background.

    The Preview tab only becomes available after the page is saved and refreshed . This is because the refresh enables recognition of the safe domains.

Web Map Background Troubleshooting Tips

You might experience errors when you add a web map background. For example, a web map background image isn't displayed in the Preview tab or in a visualization.

Use these methods to find and diagnose web map background errors:

- Press **F12** to display the browser Developer Tools application and search for errors in the browser console tab. For example, search for `error` or `CORS`. Error messages are displayed in red text.
- If you see an error message similar to `Access to image at http://example.com has been blocked by CORS policy...`, contact the host provider to resolve the issue. Error messages that refer to the Cross Origin Resource Sharing (CORS) policy can only be resolved by the host provider.

Add an Outline to Points and Shapes on a Map

You can add an outline to highlight the boundaries of points and shapes on a map visualization.

An outline highlights the boundaries of points and shapes so that users can quickly identify the visual information presented on a map. The Outline property is only available on maps that use the Point layer type; Heatmap and Cluster layer types don't have the Outline property.

1. Open the workbook containing the map visualization, click **Actions**, and then select **Open**.
2. Click **Properties**. In Properties, click **Data Layers**.
3. In the Outline row, click **Auto** and select **Custom**.
4. Click the **Outline Color** field to select a color. In **Outline Width**, use the up arrow to increase the width and the down arrow to decrease the width.
5. Click **Save**.

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Add Data Labels to a Map

You can include data labels on a map visualization to describe individual data points.

Data labels in maps make the maps clear and informative. Data labels help to highlight specific data points or regions of interest, and users can quickly interpret the visual information presented in the maps.

1. Open the workbook containing the map visualization, click **Actions**, and then select **Open**.
2. In the map visualization, use the rectangular selection tool and select the data element to use for the label, and then click **Menu**.
3. Click **Properties**, and then in Properties, click **Data Layers**.
4. Select and turn on **Data Labels**.
5. Configure the data labels.
   - **Data Labels Position** - Select a position for the label.
   - **Columns** - Select one or more columns to source the data labels.
     If you select more than one column, turn on the Multi Line property to show the second label in a new line.
   - **Allow Overlap** - Turn on to show all data labels regardless of the spacing and zoom level.
   - **Font** - Select the size and color of the data labels.
   - **Halo** - Select **Auto** or **Custom** to add a halo effect to enhance the data label text.
     If you select **Custom** you can click **Halo Color** to choose a color for the halo.

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17

Use Data Actions

A Data Action link can pass context values as parameters to external URLs, filters to other workbooks or to visualizations embedded in external containers. You can use actions to connect to canvases, external URLs, Oracle Business Intelligence Publisher reports, and use in external containers.

When a link navigates to a workbook, the data context is displayed in the form of canvas scope filters in the filter bar. The links data context may include attributes associated with the selections or cell from which the link was initiated.

Topics:

- Create Data Actions to Connect Canvases
- Create Data Actions to Connect to External URLs from Visualization Canvases
- About Creating HTTP API Data Actions
- Create HTTP Data Actions
- Use Data Actions to Connect to Oracle Analytics Publisher Reports
- Invoke Data Actions from Visualization Canvases
- How Data Actions Affect Filters
- Tips on Using Data Actions
- Create Data Actions in Visualizations Embedded in External Containers
- Execute Data Actions that Contain Embedded Content

Create Data Actions to Connect Canvases

You can create data actions to navigate to a different canvas in the current workbook or to a canvas in another workbook. You might want to navigate to other canvases to quickly view different visualizations displaying data that's complimentary to the current canvas.

Video

You can also use data actions to pass context-related information such as an order number, to a workbook or canvas with customer-specific data. See Invoke Data Actions from Visualization Canvases. If you don't specify a value, then the data action applies to all data elements in the visualizations. See Tips on Using Data Actions.

If a data action navigates to a canvas in a workbook that the consumer doesn't have access to, they won't be able to invoke it successfully. You can hide inaccessible data actions from consumers, see Hide Inaccessible Data Actions in a Workbook from Consumers in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Menu** on the workbook toolbar and select **Data Actions**.
3. In Data Actions, click **Create Action** and enter a name for the new navigation link.
4. In Data Actions, enter a name. Select **Analytics Link** from the **Type** list.

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5. Optional: In the **Anchor To** row click **Add Data**, select a data element or calculation.
6. In the **Target** row click **This Workbook** and select an option. Choose Use This Workbook or Select from Catalog. This choice lets you choose a workbook from the catalog.
7. Optional: If you chose Use This Workbook in the **Target** row, click the **Canvas Link** field and select target canvas to display.
8. Optional: To retain context when workbook users navigate using the data action, use the **Pass Values** option to select which values you want to retain. See How Data Actions Affect Filters.

   For example, if in the **Anchor To** field, you specified order number column, then in the **Pass Values** field, select **Anchor Data** to pass the specified column values.

   - **All** - Dynamically determines the intersection of the cell that you click and passes those values to the target. For example, when the user clicks a data action on a STATE data point 'California', the target canvas is filtered on 'California'.
   - **Anchor Data** - Ensures that the data action is displayed at runtime, but only if the required columns specified in the **Anchor To** field are available in the view context.
   - **None** - Opens the page (URL or canvas) but doesn't pass any data. For example, when the user clicks a data action on a STATE data point 'California', the target canvas shows data for all states.
   - **Custom** - Enables you to specify which columns to pass.
9. Optional: Click **Supports Multiple Selection** to set the value.
   - **On** - The data action can be invoked when a user selects one or more data points.
   - **Off** - The data action can be invoked only when a user selects a single data point. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
10. Optional: Click **Open in** and select an option for opening the data action or use the default **Auto** to open in a new tab.
11. Click **OK**.

Create Data Actions to Connect to External URLs from Visualization Canvases

You can use data actions to navigate to an external URL from a canvas so that when you select a column such as the supplier ID, it displays a specific external website.

LiveLabs Sprint

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Menu** and select **Data Actions**.
3. Click **Add Action** and enter a name for the new navigation link.

   You can add multiple navigation links.
4. Click the **Type** field and select **URL Navigation**.
5. Click the **Anchor To** field and select the columns that you want the URL to apply to. If you don't specify a value for the **Anchor To** field, then the data action applies to all data elements in the visualizations.
6. Enter a URL address and optionally include notation and parameters.

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For example, where `http://www.example.com?q=${keyValuesForColumn:"COLUMN"}` is displayed like `www.oracle.com?q=${keyValuesForColumn:"Sales"."Products"."Brand"}` The column names that you select here are replaced with values when you invoke the data action.

7. Click **Supports Multiple Selection** to set the value.
   - **On** - The data action can be invoked when one or multiple data points are selected.
   - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
8. Optional: Click **Open in** to set how the data action opens for a consumer user.
   - **Auto** - The data action opens in the current mode for opening data actions. The default is to open in a new tab in the same browser window.
   - **New Tab** - The data action opens in a new tab in same browser window.
   - **Same Tab** - The data action opens in the current tab, replacing the current canvas.
   - **Pop Up** - The data action opens in a pop-up window.
9. Click **OK** to save.
10. In the **Canvas**, click a cell, or use Ctrl-click to select multiple cells.
11. Right-click and select from the menu the navigation name that you created earlier.

    Selecting the cells determines the values to pass to the parameters (that is, the URL tokens).

About Creating HTTP API Data Actions

You can create HTTP API data actions to connect to a REST API from a workbook.

You configure an HTTP API data action to pass selected column values from a workbook to a REST API which returns a response. Note the following:

- There's no limit to the number of data actions you can create.
- A URL can contain tokens that pass contextual values to a data action, for example, data values, user name, workbook path, canvas name.

  The following REST API URL example includes a Category column token value that displays the Google books API: `http://www.googleapis.com/books/v1/volumes?q=${valuesForColumn:"Category"}`. The value that you select from a cell in the Category column, for example, "Books", passes to the REST API which displays the requested page.
- If you use a POST method, or custom HTTP header that overrides the HTTP header, the following apply:
  - Enter each parameter as a name-value pair with the name and value separated by "**=**".
  - You can use the same URL token syntax in the name-value pairs as required by the API that you're calling. For example:
    * `paramName1=paramValue1`
    * `paramName2=${valuesForColumn:"Product"}`

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- A custom header works if the target of the HTTP request specifically allows the HTTP headers that you're using to be set on the request. If the headers aren't allowed, the browser blocks the request and displays an error message, for example a Cookie header, containing `Content-Type=application/json` will be blocked.

Create HTTP Data Actions

You can use an HTTP API data action in a workbook so that when you select a column, it sends the value to a REST API which returns a response.

You must configure the domain that you're trying to connect to as a safe domain before you create an HTTP API data action. See Register Safe Domains.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click workbook **Menu** and then select **Data Actions**.
3. Click **Add Action** and enter a name for the new HTTP API data action. For example, enter `HTTP API Example`.
4. Click the **Type** field and select **HTTP API**.
5. Click the **Anchor To** field and select the columns that you want the HTTP API data action to apply to. Don't select measure columns or hidden columns. If you don't specify a value for the **Anchor To** field, then the data action applies to all data elements in the visualizations.
6. In the **HTTP Method** list select a method.
7. Enter the URL for the REST API that starts with http or https and optionally includes replacement tokens.
8. If you selected the POST method:
   - When you select the **Payload Type** value Form Data, enter each parameter on a separate line.
   - When you select the **Payload Type** value Raw Data, enter the raw data.
9. Enter a custom HTTP header if you want to add or override the HTTP header to suit the API that you're interfacing with.
10. Click **Supports Multiple Selection** to set the value.
    - **On** - The data action can be invoked when one or multiple data points are selected.
    - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
11. Click **OK** to save.
12. Click a data point in the visualization.

    For example, you might select "Books" from a token Category column to display a particular REST API.
13. Right-click and select **HTTP API Example** to display the result.

    The selected data-points determine which values to pass to the URL tokens.

    A success or failure message is displayed confirming the REST API has been successfully invoked using the selected value.

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Use Data Actions to Connect to Oracle Analytics Publisher Reports

Use data action links to pass context values as URL parameters in Publisher reports.

When you click a link to open a Publisher report, the link might include attributes associated with the column selected in the visualization.

Topics:

- About Creating Data Actions to Connect to Oracle Analytics Publisher Reports
- Create Data Actions to Connect to Oracle Analytics Publisher Reports
- Create Custom Column Names in Data Actions to Pass in Oracle Analytics Publisher Report URLs

About Creating Data Actions to Connect to Oracle Analytics Publisher Reports

You can create a data action to link to an Publisher report.

You configure a data action to pass selected column values from a visualization to display in a Publisher report.

- You must store your Publisher report in a local folder.
- When the Publisher report uses the analysis as the data model, prompts in the underlying analysis must have **User Input** value set to **Choice List** to enable selected values to pass to prompts in the Publisher report.
- You can pass lists of values and list filters to display as prompts in your Publisher report. However, you can't pass number filters, date filters, or expression filters.

Create Data Actions to Connect to Oracle Analytics Publisher Reports

You can create an analytics data action link to transfer selected data points from an Oracle Analytics workbook to an Oracle Analytics Publisher report.

The Oracle Analytics workbook, Publisher report, and analysis can be in different folders.

1. On your home page, select a workbook that uses the data model used in the Publisher report, click **Actions**, and then select **Open**.
2. Click **Menu** and select **Data Actions**.
3. Click **Add Action** and enter a name for the new navigation link.
4. Click the **Type** field and select **Analytics Link**.
5. Enter a name for the data action in the **Name** field.
6. Click the **Target** field, select **Select from Catalog**, then browse to select the Publisher report that you want the data action to pass data to, and click **OK**.
7. Verify that **Parameter Mapping** is set to `Default`.
8. Verify the **Pass Values** field value is set to `All`.

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9. Click **Supports Multiple Selection** to set the value.
    - **On** - The data action can be invoked when one or multiple data points are selected.
    - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
10. Optional: Click **Open in** to set how the data action opens for a consumer user.
    - **Auto** - The data action opens in the current mode for opening data actions. The default is to open in a new tab in the same browser window.
    - **New Tab** - The data action opens in a new tab in same browser window.
    - **Same Tab** - The data action opens in the current tab, replacing the current canvas.
    - **Pop Up** - The data action opens in a pop-up window. This option isn't available for Publisher reports.
11. Click **OK**.
12. Select data points in the visualization and choose the data action to test that the values are passed to the Publisher report.

Create Custom Column Names in Data Actions to Pass in Oracle Analytics Publisher Report URLs

You can create a data action link that passes custom column names in the URL of an Oracle Analytics Publisher report.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Menu** and select **Data Actions**.
3. Click **Add Action** and enter a name for the new navigation link.
4. Click the **Type** field and select **Analytics Link**.
5. Enter a name for the data action in the **Name** field.
6. Click the **Target** field, select **Select from Catalog**, then browse to select the Publisher report that you want the data action to pass data to, and click **OK**.
7. Click **Parameter Mapping** and select **Set Custom Mapping** to specify custom column names to pass as URL parameters to the Publisher report.
8. Click **Add Row** and click **Select a Column** for each column that you want to pass to the Publisher report using a custom name.
9. Click **Enter Parameter** and enter a custom name for each column name that you want to replace.

    The custom name passes to the Publisher report in the URL.
10. Verify the **Pass Values** field value is set to `All`.
11. Click **Supports Multiple Selection** to set the value.
    - **On** - The data action can be invoked when one or multiple data points are selected.
    - **Off** - The data action can only be invoked when a single data point is selected. This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
12. Optional: Click **Open in** to set how the data action opens for a consumer user.

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- **Auto** - The data action opens in the current mode for opening data actions. The default is to open in a new tab in the same browser window.
- **New Tab** - The data action opens in a new tab in same browser window.
- **Same Tab** - The data action opens in the current tab, replacing the current canvas.
- **Pop Up** - The data action opens in a pop-up window. This option isn't available for Publisher reports.

13. Click **OK**.
14. Select data points in the visualization and choose the data action to verify that the custom column names are displayed in the URL of the Publisher report.

Invoke Data Actions from Visualization Canvases

You can invoke data actions from a workbook canvas to navigate to other canvases or URLs.

When you use data actions, these rules apply to matching data elements passed as values with data elements on the target canvas:

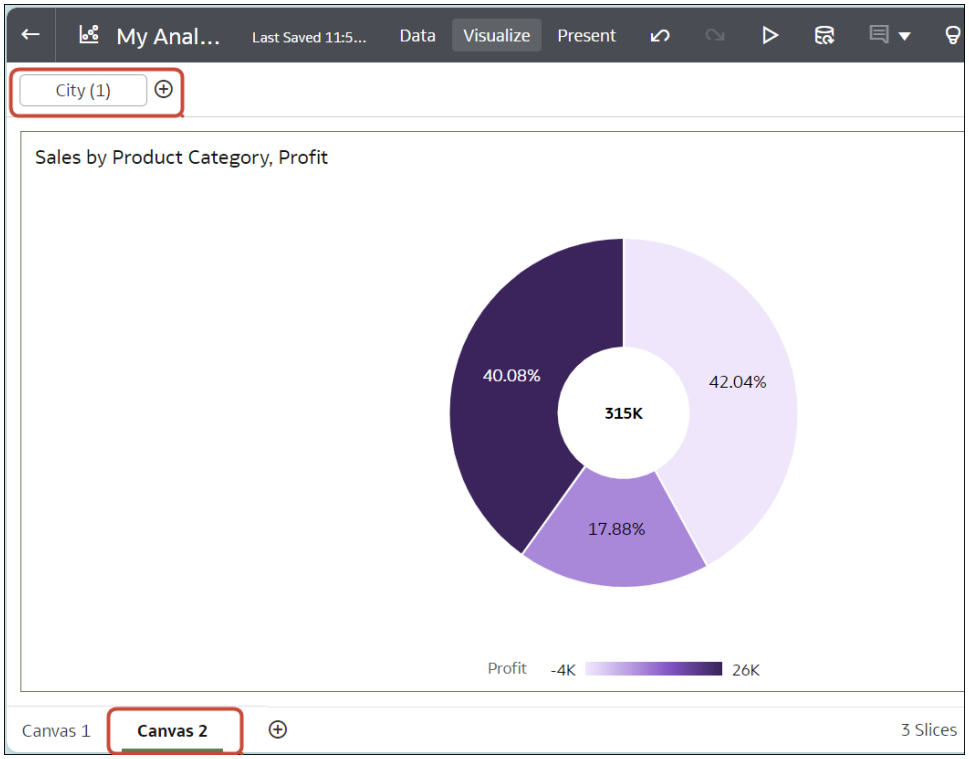
- If the same data element is matched in the target workbook's canvas, and if the target canvas doesn't have an existing canvas filter for the data element, a new canvas filter is added. If there is an existing canvas filter, it's replaced by the value from the source workbook's canvas.
- If the expected dataset is unavailable but a different dataset is available, the match is made by using the column name and data type in the different dataset, and the filter is added to that.
- If there are multiple column matches by name and data type, then the filter is added to all those columns in the target workbook or canvas.

If a data action is anchored to multiple columns, make sure that you select data elements from all of the columns to display the data action in the context menu. See Tips on Using Data Actions.

The name of the data actions that apply in the current view context are displayed in the context menu. For example, on Canvas 1 you right-click Hong Kong and select the data action named "Data Action - Drill to city".

When you click a data action you navigate to the target workbook canvas, and if the data action was configured to pass workbook values, the target workbook is filtered based on the data points selected in the starting canvas. For example, if you right-click Hong Kong in the starting workbook and select the data action named "Data Action - Drill to city", you navigate to Canvas 2 and the content is filtered to show data relating to Hong Kong. A City filter is displayed in the workbook filter bar.

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See How Data Actions Affect Filters.

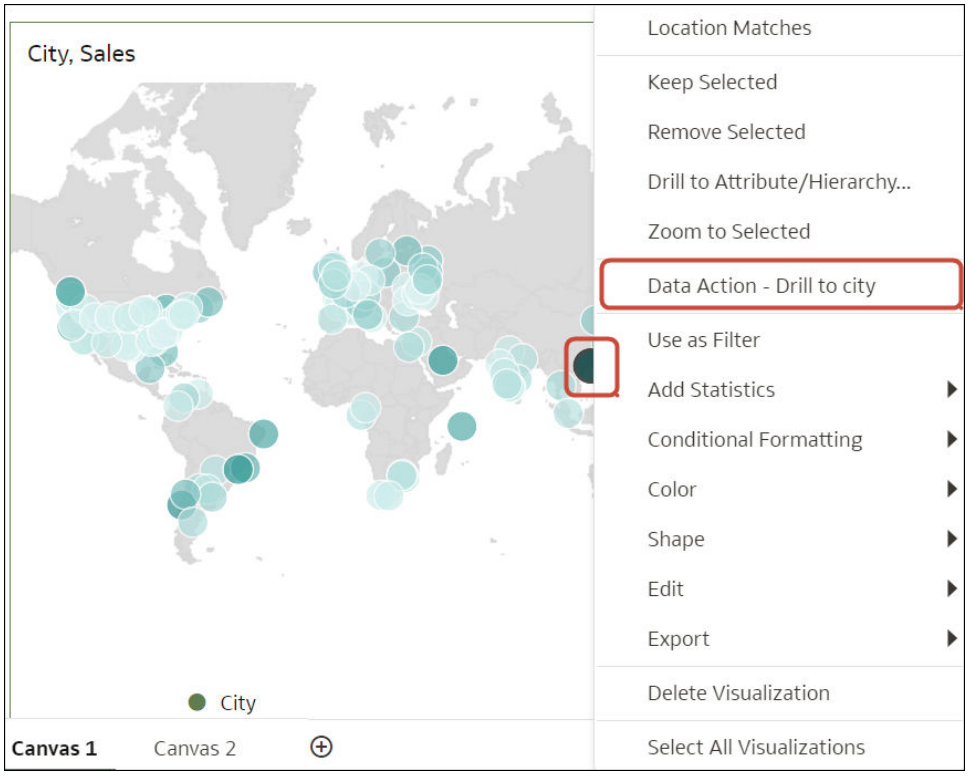
To enable users to invoke data actions in one click for column values in table or pivot visualizations, see Display Values in Table and Pivot Visualizations as Links.

To enable users to invoke data actions using buttons on a canvas, see Button Bars.

If a data action navigates to a canvas in a workbook that the consumer doesn't have access to, they won't be able to invoke it successfully. You can hide inaccessible data actions from consumers, see Hide Inaccessible Data Actions in a Workbook from Consumers in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. On the canvas that contains a data action link, right-click one or more data elements.
3. In the context menu, click the data action that you want to invoke.

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See How Data Actions Affect Filters.

How Data Actions Affect Filters

Use these rules to understand how data actions affect filters in target workbooks.

You configure a data action to pass filters from one workbook to another. Data actions can only change canvas-scope filters in the target workbook. This includes dashboard filters and unpinned filters in the filter bar. Data actions won't change unpinned filters in the filter bar if the filter bar is hidden.

If a matching canvas-scope, user-visible filter exists in the target workbook, then the data action filter values can override it. The filter values from a data action can't override pinned filters in the filter bar or visualization filters.

Here's how filter values passed from data actions affect workbooks:

- Filter values from data actions change dashboard filter column selection values - this happens when the target workbook has a dashboard filter that uses the same columns, and has a matching filter type.
- Filter values from data actions change values of unpinned filters in the filter bar - this happens when changes to the dashboard filter aren't possible. Oracle Analytics then looks at canvas-scope filters in the filter bar and makes a change if there's a filter that matches the incoming filter (same type and similar column), the filter bar is visible to the user, and the specific matching filter is visible and interactive (not read-only).
- Filter values from data actions create a canvas-scope (unpinned) filter in the filter bar - this happens when the filter bar or a matching filter is hidden, or read-only. The default Limit By behavior is retained.

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Here's how filter values passed from data actions affect existing filters in dashboards and workbooks:

- A data action can't add filters to a dashboard filter; it can only reuse existing filters on the dashboard filter.
- A data action can only reuse dashboard filters if a matching filter exists on the target canvas.
- A data action gives precedence to matching filters on the dashboard filter. This means that if there's a choice between a data action reusing a matching filter in a dashboard filter or the filter bar, then the data action reuses the matching dashboard filter.
- A data action creates a canvas-scope (unpinned) filter in the filter bar if a compatible dashboard filter doesn't exist in the target canvas.
- A data action never creates a workbook-scope (pinned) filter in the target workbook. You need to bind the filter to a parameter to achieve this functionality. See Bind Parameters to Filters.
- A data action can't change visualization filters because they aren't the target of data actions. This includes visualization filters selected on the dashboard filter. You need to bind these filters to parameters to change the values.
- A data action never reuses an expression filter but instead creates a new canvas-scope (unpinned) expression filter.

Tips on Using Data Actions

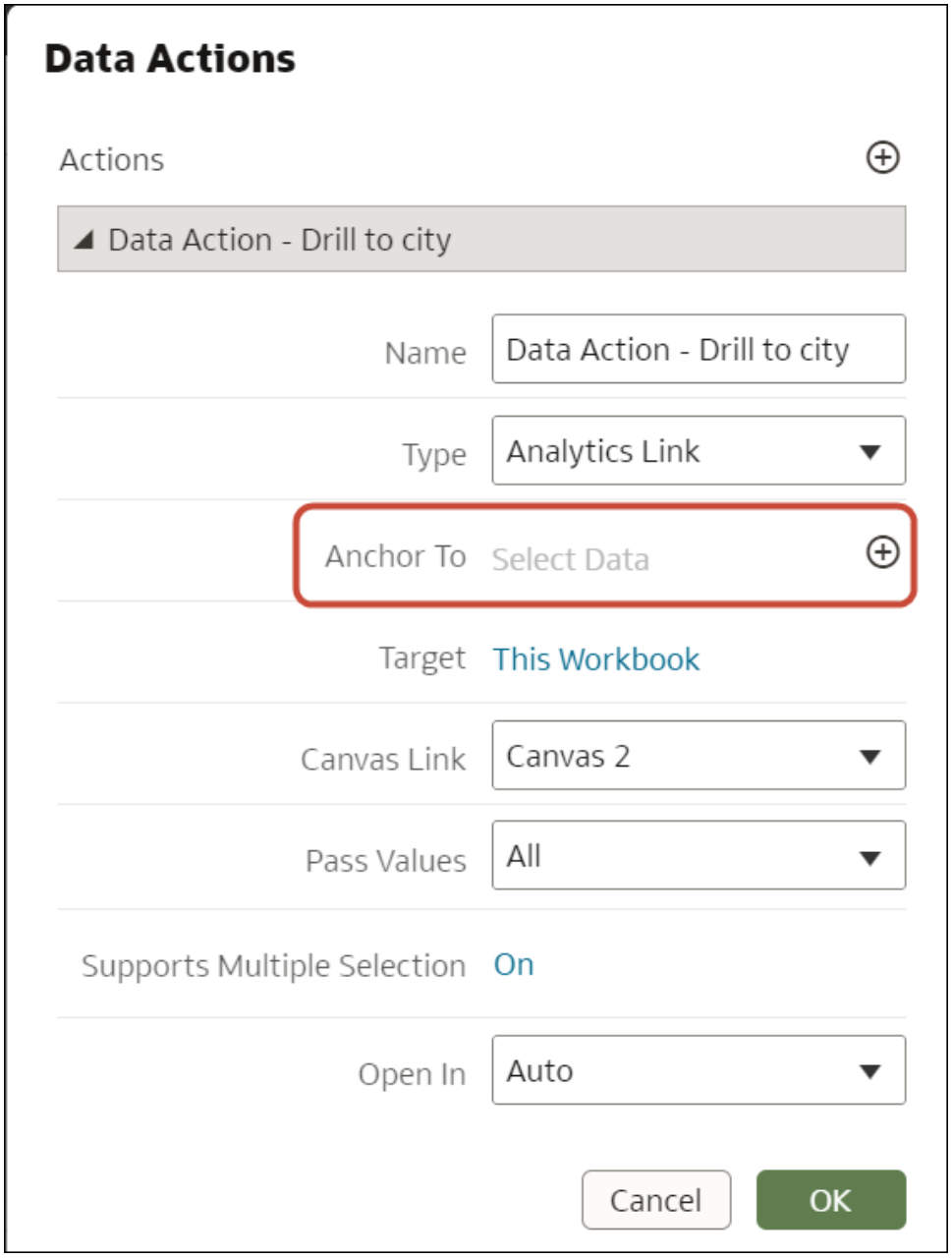
Get the most from using data actions in workbooks using these tips.

Anchoring Data Actions to Columns

When you create a data action, you can anchor it to specific columns displayed on the canvas. If you anchor a data action to specific columns, the data action is only available to workbook users if they select data points in all specified columns.

On the Data Actions dialog, select **Add Data** under **Anchor To** and select one or more columns.

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If you anchor a data action to multiple columns, the user must multi-select data points from all of the specified columns in order to see the data action displayed in the right-click context menu. For example, if no columns are anchored to the data action "Data Action - Drill to city", the user can click anywhere on the source canvas to have access to "Data Action - Drill to city".

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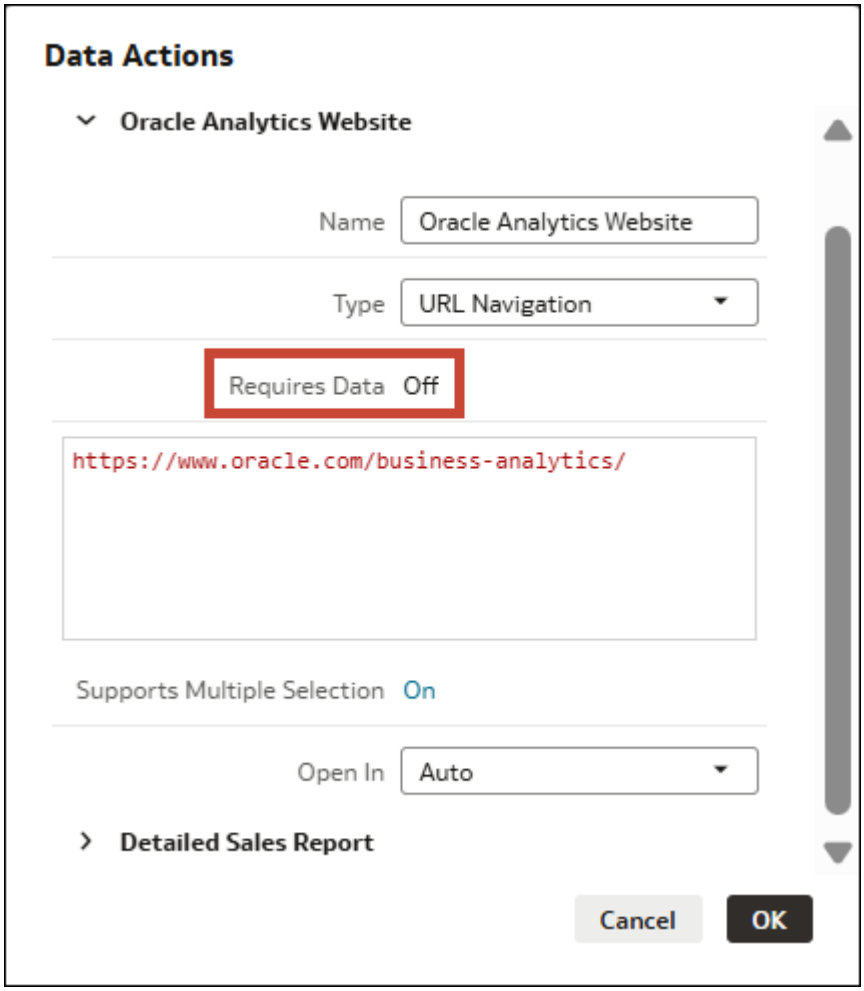


Data Actions That Don't Require Data

You can create data actions that don't require data and therefore aren't anchored to any columns. This kind of data action can be used in Button Bars, see Button Bars.

The **Requires Data** row is set to **On** by default when you create a new data action. To turn it off, click **On**. The **Anchor To** row disappears.

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General Tips

- Don't anchor data actions to measure columns or hidden columns.

Create Data Actions in Visualizations Embedded in External Containers

You can embed visualizations in external containers, for example, an HTML page or consumer's application page, and you can include data actions in the visualization. An embedded data action enables interacting with the embedded visualization in the external container. You can retrieve a set of data elements used in a visualization from an external container. You can add any number of embedded data actions.

The Publish Event enables external applications to receive the set of data element values in the selected visualization, known as the visualization context. The set of data element values in the selected visualizations mustn't be measure columns or hidden columns.

The event name is provided in the external container and is passed when you publish the context event. The context is the set of data element values at a selected location in the visualization. If the data action is used across multiple workbooks or multiple data elements in a workbook, you can provide a unique event name for easier tracking. For example, if you

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entered `DV Embedded Content DA1` as the action name, then in the **Event Name** field, you might enter `Event from DA1` to indicate which data action the event comes from.

Note the following when you enter **Pass Values**:

- Use **All** to dynamically determine the intersection of the cell that you click, for example, "Product and Year", and passes those values to the target.
- Use **Anchor Data** to ensure that the data action is displayed at runtime, but only if the required columns specified in the **Anchor To** field are available in the view context.
- Use **None** to open the page (URL or canvas) but doesn't pass any data. For example, you might want to navigate to www.oracle.com without passing any context.
- Use **Custom** to specify a custom set of columns to pass.

Note the following when you select **Supports Multiple Selection**:

- **On** - Invokes the data action when one or more data points are selected.
- **Off** - Invokes the data action when a single data point is selected.
  This setting is particularly useful when the selection of multiple data points might result in an error, for example, with some third-party REST APIs.

After saving the workbook, you can embed the workbook in external containers. The external container shows the embedded visualizations. When you right-click the visualization and it includes applicable data actions, they're displayed in the visualization in a drop-down menu. If you click an embedded data action, it determines the context information for the visualization and passes that information to the navigation action service to process it. The navigation service raises an event with the context payload information. You can subscribe to this event to receive the payload in the event callback and use the payload in other areas.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. In the workbook, click **Menu**, and select **Data Actions**.
3. Click **Add Action**. In New Data Action, go to **Name** and enter a name.
4. Click **Type** and select **Publish Event**.
5. Click **Add Data** or **Select Data** in the **Anchor To** field, and select one or more data elements that you want to pass values when the data action is applied.
6. Enter an **Event Name**.
7. Click the **Pass Values** field and select which values you want the data action to pass to the consumer.
8. Click **Supports Multiple Selection** to set the value.
   - **On** - The data action can be invoked when one or multiple data points are selected.
   - **Off** - The data action can only be invoked when a single data point is selected.
     This setting is particularly useful when the selection of multiple data points might result in an error (for example, with some third-party REST APIs).
9. Click **OK** to save.

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Execute Data Actions that Contain Embedded Content

Follow the information described here to learn about embedding and executing data actions in a visualization within external containers such as an HTML page or an application web page.

> **Note**
>
> The examples in this section apply to embedded data actions when the embedding application doesn't use Oracle JET technology. See:
>
> - Embed Oracle Analytics Content into an Application That Doesn't Use Oracle JET
> - Create Data Actions in Visualizations Embedded in External Containers

Executing Data Actions

When you click a Publish Event data action, it determines the context information for the visualization and passes that information to the navigation action service to process it. The service process for the navigation action raises an event called "oracle.bitech.dataaction" with the context payload information. You can subscribe to this event and receive the payload in the event callback, and you can make further use of the payload as required.

The following visualization shows the revenue in Dollars for lines of business, for example Communication, Digital, Electronics, across organizations, for example Franchises Org, Inbound Org, International Org.

	Franchises Org. 1- Revenue	Inbound Org. 1- Revenue	International Org. 1- Revenue	Production Org. 1- Revenue	Subcontracted Org. 1- Revenue	Subsidiaries Org. 1- Revenue
Communication	1,945,442.17	3,205,196.75	2,072,118.69	1,970,055.76	1,311,952.23	2,596,174.23
Digital	1,057,904.94	1,458,738.42	915,528.97	1,140,216.00	721,805.34	1,319,910.88
Electronics	1,948,769.52	2,849,051.48	1,772,490.57	2,027,938.13	1,298,795.50	2,502,014.97
Games	2,459,631.95	3,697,414.06	2,318,144.51	2,595,862.48	1,651,129.01	3,163,713.44
Services	1,232,145.16	2,104,468.29	1,289,809.63	1,222,054.29	829,583.58	1,650,876.93
TV	2,054,249.30	3,296,097.36	2,091,426.20	2,103,728.80	1,408,666.46	2,716,894.00

Event and Payload Format and Context

The following example demonstrates publishing an event when the embedded data action is invoked by one or more data cells that have been right-clicked and the data action selected from the menu that's displayed in the embedded workbook.

The examples below are from a JSON file, for example, `obitech-cca/cca/component.json`.

Event Format

```
"events": {
   "oracle.bitech.dataaction": {
      "description": "Generic DV Event published from an embedded data
visualization.",
      "bubbles": true,
      "cancelable": false,
      "detail": {
```


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```
         "eventName": {
         "description": "The name of the published BI Event",
         "type": "string"
      },
      "payload": {
         "description": "The payload contains context and related information
to the event published",
         "type": "object"
      }
   }
}
```

Payload Format

```
{"context":[
   "or": [
      "and":[
         {"contextParamValues":[...],
          "contextParamValuesKeys":[...],
          "colFormula":"...",
          "displayName":"...",
          "isDoubleColumn":true/false,
          "dataType":"..."
         }
      ]
   ]
 ]
}
```

Passing a single value for a single column in the Pass By Context

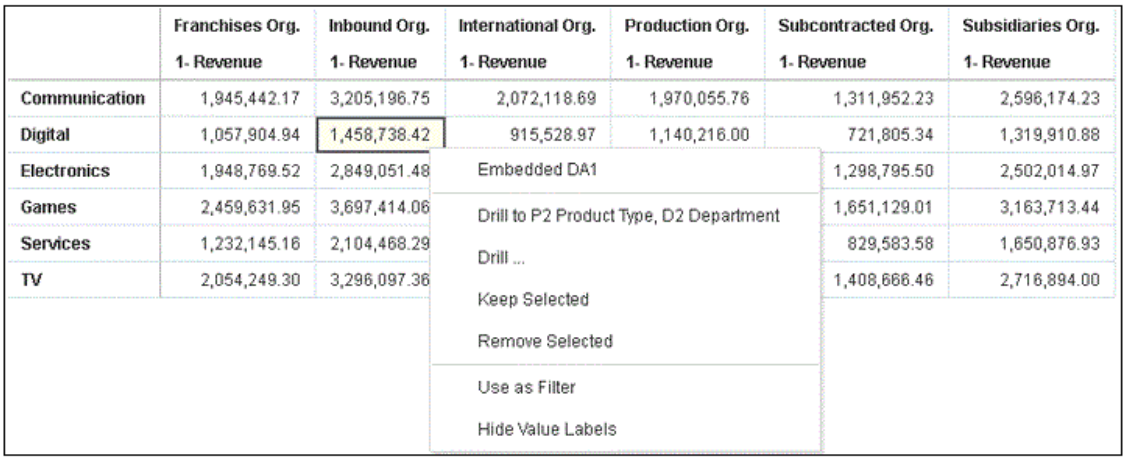
In this example, when you click a column cell, the object with the context information about the column is passed to the external container. In this case, the organization name is passed.

```
{
   "context": [
      {
         "contextParamValues": [
            "Inbound Org."
         ],
         "contextParamValuesKeys": [
            "Inbound Org."
         ],
         "colFormula": "\"A - Sample Sales\".\"Offices\".\"D3
Organization\"",
         "displayName": "D3  Organization",
         "isDoubleColumn": false,
         "dataType": "varchar"
      }
   ]
}
```

Passing a single value for each column in the Pass By Context

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In this example, when you click a column cell, for example, Inbound Org, and Digital products, what gets passed when you click the Embedded DA1 menu option to select the embedded action is the revenue value in Dollars for the selected line of business and organization. For example, the revenue for Digital products from the Inbound Org is passed, which is $1, 458,738.42 in this example.



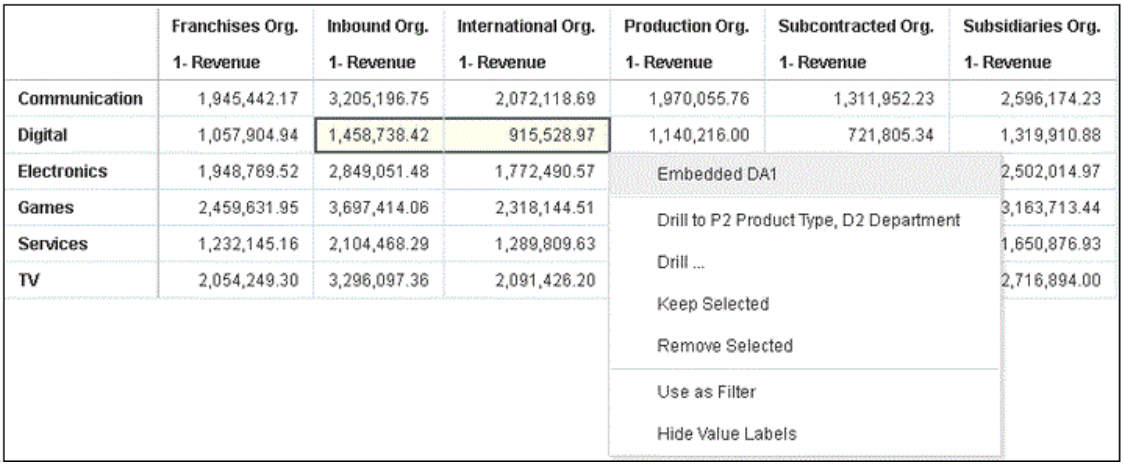

```
{
   "context": [
      {
         "contextParamValues": [
            "Digital"
         ],
         "contextParamValuesKeys": [
            "Digital"
         ],
         "colFormula": "\"A - Sample Sales\".\"Products\".\"P3  LOB\"",
         "displayName": "P3  LOB",
         "isDoubleColumn": false,
         "dataType": "varchar"
      },
      {
         "contextParamValues": [
            "Inbound Org."
         ],
         "contextParamValuesKeys": [
            "Inbound Org."
         ],
         "colFormula": "\"A - Sample Sales\".\"Offices\".\"D3
Organization\"",
         "displayName": "D3  Organization",
         "isDoubleColumn": false,
         "dataType": "varchar"
      }
   ]
}
```

Passing multiple values in the Pass By Context

In this example, when you click two row cells (for example Inbound Org and International Org for Digital products) and click the Embedded DA1 menu option to select the embedded action,

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what gets passed is the revenue value in dollars for the two selected cells for organization and lines of business. For example, clicking the revenue for Digital products from the two selected organizations (Inbound Org and International Org) passes the values $1, 458,738.42, and $915,528.97.




```
{
   "context": [
      {
         "or": [
            {
               "and": [
                  {
                     "contextParamValues": [
                        "Digital"
                     ],
                     "contextParamValuesKeys": [
                        "Digital"
                     ],
                     "colFormula": "\"A - Sample Sales\".\"Products\".\"P3
LOB\"",
                     "displayName": "P3  LOB",
                     "isDoubleColumn": false,
                     "dataType": "varchar"
                  },
                  {
                     "contextParamValues": [
                        "Inbound Org."
                     ],
                     "contextParamValuesKeys": [
                        "Inbound Org."
                     ],
                     "colFormula": "\"A - Sample Sales\".\"Offices\".\"D3
Organization\"",
                     "displayName": "D3  Organization",
                     "isDoubleColumn": false,
                     "dataType": "varchar"
                  }
               ]
            },
            {
```


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```
                "and": [
                   {
                      "contextParamValues": [
                         "Digital"
                      ],
                      "contextParamValuesKeys": [
                         "Digital"
                      ],
                      "colFormula": "\"A - Sample Sales\".\"Products\".\"P3
LOB\"",
                      "displayName": "P3  LOB",
                      "isDoubleColumn": false,
                      "dataType": "varchar"
                   },
                   {
                      "contextParamValues": [
                         "International Org."
                      ],
                      "contextParamValuesKeys": [
                         "International Org."
                      ],
                      "colFormula": "\"A - Sample Sales\".\"Offices\".\"D3
Organization\"",
                      "displayName": "D3  Organization",
                      "isDoubleColumn": false,
                      "dataType": "varchar"
                   }
                ]
             }
          ]
       }
    ]
}
```

Use these steps to view event payloads using Chrome browser tools.

1. In Chrome, right-click and select **Inspect Source**.
2. In the **Sources** tab, right-click the line `console.log("To view the payload, add a breakpoint on this line and use the browser tools debugger") ;` and select **Add breakpoint**.
   When the event data action is invoked from the embedded canvas, a payload entry will appear in the **Scope** section on the right-hand pane of the browser tools.
3. Right-click on the payload entry and select **Store as global variable**.
   The global variable can be viewed within the **Console** tab and expanded to view details of the payload.

Example of an HTML Page with Visualization that Receives Events

The following sample code illustrates how to define an event listener for an analytics event data action. You must update the analytics instance and embedded path to the workbook in this code sample. The workbook must have an event data action defined. The event that is

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being listened for is called `oracle.bitech.dataaction`. When the event has fired, a message is sent to the console.

```
<!DOCTYPE HTML>
<html dir="ltr">
   <head>
      <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
      <title>Oracle Analytics embed example to view data action event
payload</title>
      <meta id="viewport" name="viewport" content="width=device-width,
initial-scale=1, minimum-scale=1.0, maximum-scale=1.0, user-scalable=no"/>
      <script src="https://<OAC-INSTANCE>.analytics.ocp.oraclecloud.com/
public/dv/v1/embedding/standalone/embedding.js" type="application/javascript">
      </script>

   </head>
   <body>
      <h1>Oracle Analytics embed example to view data action event
payload</h1>

      <div id="mydiv" style="position: absolute; width: calc(100% - 40px);
height: calc(100% - 120px)" >
         <oracle-dv project-path='<WORKBOOK-PATH-TO-EMBED>'
          active-page='insight'
          active-tab-id='snapshot!canvas!1'>
         </oracle-dv>
      </div>

      <script>
         requirejs(['knockout', 'ojs/ojcore', 'ojs/ojknockout', 'ojs/
ojcomposite', 'jet-composites/oracle-dv/loader'], function(ko) {
          ko.applyBindings();
         });

      </script>
      <script>
         var eventName = 'oracle.bitech.dataaction';
         var element = document.getElementById("mydiv");
         if (element) {
         var oEventListener = element.addEventListener(eventName, function
(e) {
         console.log("***** Payload from DV sent ***** ");
         console.log("eventName = " + e.detail.eventName);
         console.log("To view the payload, add a breakpoint on this line and
use the browser tools debugger") ;
         console.log("****************************** ");
         }, true);
         }
      </script>
   </body>
</html>
```


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You can also modify the <script> section in the previous code sample to return the values of where the data action was invoked:

```
<script>
         var eventName = 'oracle.bitech.dataaction';
         var element = document.getElementById("mydiv");
         if (element) {
         var oEventListener = element.addEventListener(eventName, function
(e) {
         console.log("***** Payload from DV sent ***** ");
         console.log("eventName = " + e.detail.eventName);
         console.log("To view the payload, add a breakpoint on this line and
use the browser tools debugger") ;
         console.log("****************************** ");

         var res = " Data Received from DV Content:    ";

       // Get the values of the row from where data action was invoked
           Object.keys(e.detail.payload.context).forEach(function(key) {
            res = res.concat(key);
            res = res.concat(" : ");
            var temp = e.detail.payload.context[key]["oValueMap"];
            var temp1 = Object.keys(temp)[0];
            res = res.concat(temp1);
            res = res.concat(" | ");
           });

          console.log("Data Action Row Context : " + res);

         }, true);
         }
      </script>
```


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18

Build a Presentation Flow

This chapter explains how to use Present to create a presentation flow from the workbook you created in Visualize. The presentation flow determines the workbook for the consumer.

Topics:

- What Is a Presentation Flow?
- What Are Auto and Manual Modes in Present?
- Manual Mode and How Canvases Synch
- Switch Between Auto and Manual Modes in Present
- View Canvas Layout Breakpoints in Present
- Open the Presentation Flow
- Specify the Canvases Layout in Present
- Set the Workbook Properties in Present
- Set Canvas Properties in Present
- Preview a Presentation Flow

What Is a Presentation Flow?

Use the presentation flow to customize the workbook for consumers. A presentation flow hides the complexity of the workbook's design and provides consumers with the most effective way to navigate and interact with their data.

By default Oracle Analytics creates a presentation flow based on the workbook that you design in Visualize. The default presentation flow is displayed the first time you access Present. The presentation flow is identical to the workbook you designed in Visualize and contains all of the workbook's canvases, visualizations, filters, and so on.

If you preview the workbook from Visualize and are happy with the design and functionality, then you don't have to do anything. But if you want to fine tune the workbook, you can use Present to modify the presentation flow to better suit the workbook consumer's needs. Present gives you as the author the ability to provide the best navigation and interactivity.

You can use Present to modify the workbook to:

- Hide unfinished canvases.
- Hide visualizations.
- Provide more options on a visualization's toolbar or menu.
- Hide the workbook's filter bar.
- Change the order of the canvases.

Remember that if you want to change a canvas' content, for example add a new visualization, then you use Visualize. Any changes you make in Visualize are included in the presentation

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flow in Present. But when you use Present to polish the consumer experience, any changes you make aren't applied to the workbook's design in Visualize.

What Are Auto and Manual Modes in Present?

Auto Mode and Manual Mode determine the types of changes that you can make while designing the presentation flow in Present.

See What Is a Presentation Flow?

The first time that you open a workbook's presentation flow in Present, by default the presentation flow's properties and settings match those of the workbook design in Visualize. It's important to remember that the changes you make in Auto Mode or Manual Mode aren't applied to the workbook or canvas in Visualize.

Auto Mode is enabled the first time you open a workbook's presentation flow. You can switch to Manual Mode, which provides additional Present options.

Present Option	Available in Auto Mode?	Available in Manual Mode?
Change canvas order	No	Yes
Delete a canvas	No	Yes
Duplicate a canvas	No	Yes
Hide a canvas	Yes	Yes
Rename canvas	No	Yes
Move or resize a visualization on a canvas	No	Yes

When you work in Manual Mode, the Visualize and Present workbook and canvases can become out of synch. For example, you add a canvas to the workbook in Visualize, and when working in Manual Mode in Present the added canvas is automatically set to hidden. See Manual Mode and How Canvases Synch and Reset a Canvas in Present.

What happens when you switch modes?

Switching from Manual Mode to Auto Mode resets any of the manual changes listed above to match the workbook settings in Visualize. Switching from Manual Mode to Auto Mode preserves all other workbook or canvas-level properties that you set in Present.

Switching from Auto Mode to Manual Mode allows you to make the additional changes listed above. Any of these changes that you make differ from the workbook settings in Visualize.

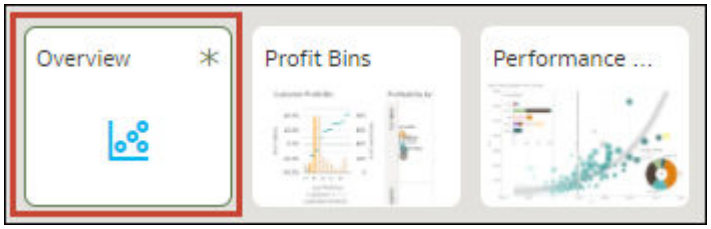
Manual Mode and How Canvases Synch

By default a canvas in Present matches its corresponding canvas in Visualize. However, when you use Manual Mode in Present, some of the adjustments you make cause the canvas to become out of synch with the corresponding canvas in Visualize.

See What Are Auto and Manual Modes in Present?.

In Present, a canvas that is out of synch with Visualize displays an asterisk that you can click to reset the Present canvas to match the Visualize canvas.

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Your Present canvas become out of synch when you're working in Manual Mode and:

- You change filter values in the Present canvas.
- You edit a visualization on a canvas that is already out of synch with its base canvas in Visualize.

Use the information in these tables to understand how the canvases in Visualize and canvases in Present synch, and how Auto Mode or Manual Mode determines how canvases synch.

This table explains how canvases synch between Visualize and Present.

Visualize Update	Present Auto Mode	Present Manual Mode
Add canvas	Canvas is added to the presentation flow and is visible to the consumer.	Canvas is added to presentation flow as hidden. The canvas isn't visible to the consumer.
Duplicate canvas	Canvas is added to presentation flow and visible to the consumer.	Canvas is added to presentation flow as hidden. The canvas isn't visible to the consumer.
Delete canvas	Canvas is deleted.	Canvas is deleted.

This table explains how visualizations synch between Visualize and Present.

Visualize Update	Present Auto Mode	Present Manual Mode
Add visualization	Visualization is added to the canvas	Visualization isn't added to the canvas if the canvas is out of synch with the Visualize canvas. Canvas displays an asterisk if its out of synch.
Duplicate visualization	Visualization is duplicated to the canvas	Visualization isn't duplicated to the canvas if the canvas is out of synch with the Visualize canvas. Canvas displays an asterisk if its out of synch.
Delete visualization	Visualization is deleted.	Visualization isn't deleted from the canvas if the canvas is out of synch with the Visualize canvas. Canvas displays an asterisk if its out of synch.

This table explains how workbook filters behave between Visualize and Present.

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Visualize Update	Present Auto Mode	Present Manual Mode
Add workbook filters	Filters are added as read-only.	Filters are added. You can change filter values, which makes the canvas out of synch with the Visualize canvas.
Delete workbook filters	Filters are deleted.	Filters are deleted if the filter values aren't modified in the Present canvas. Filters aren't deleted if the filter values are modified.

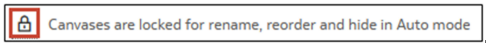
Switch Between Auto and Manual Modes in Present

Setting Auto Mode or Manual Mode in Present determines what type of changes you can make to the presentation flow's canvases and visualizations.

See What Are Auto and Manual Modes in Present? and Manual Mode and How Canvases Synch.

This tutorial provides a use case explaining how to create a presentation flow in auto mode:
Tutorial

This tutorial provides a use case explaining how to create a presentation flow in manual mode:
Tutorial

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present** and go to the bottom of the Present page and locate the mode button 

.
3. Depending on which mode you're using, do one of the following:
   - Click **Switch to Manual mode** to switch from auto mode to manual mode.
   - Click **Switch to Auto mode** to switch from manual mode to auto mode.

View Canvas Layout Breakpoints in Present

In Present, you can view the canvas layout breakpoints that you added in Visualize. Breakpoints determine how the visualizations display on the canvas for different screen sizes.

Go to Visualize to modify a canvas' breakpoints. See Design Canvas Layouts to View on Different Devices.

When you work in Present's Manual Mode you can hide visualizations for a specific breakpoint. Hiding visualizations can impact the canvas layout for that breakpoint. Oracle recommends that if your canvas uses breakpoints that you go to Visualize to hide visualizations.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and click **Responsive Canvas Editor**.
4. Go to the breakpoint slider bar at the top of the canvas and click a breakpoint to view how the canvas is displayed for that screen size.

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Open the Presentation Flow

Open the workbook's presentation flow to fine-tune how the workbook and its canvases look and function for the consumer.

The changes you make to the presentation flow are saved in Present and displayed in the consumer workbook. Changes aren't saved to the workbook design in Visualize. For example, if in Present you customize the workbook's name and hide the filters bar, those changes aren't transferred to the workbook in Visualize.

See Set the Workbook Properties in Present and Set Canvas Properties in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.



Specify the Canvases Layout in Present

The presentation flow workbook inherits the layout you specified in Visualize. You can use Present to specify how the canvases are displayed in the presentation flow and the consumer workbook.

Topics:

- Rearrange the Canvases in Present
- Duplicate a Canvas in Present
- Remove a Duplicate Canvas in Present
- Hide a Canvas in Present
- Display a Hidden Canvas in Present
- About Moving or Hiding Visualizations on a Canvas in Present
- Change a Visualization's Placement on a Canvas in Present
- Reset a Canvas in Present

Rearrange the Canvases in Present

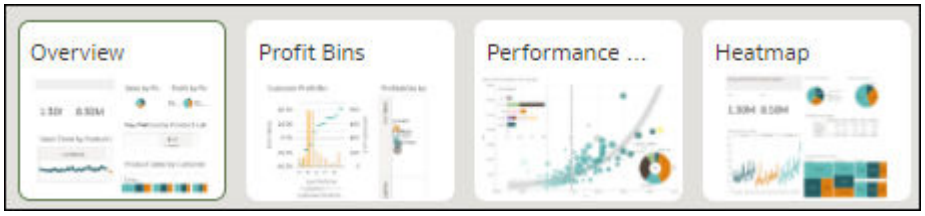
When working on the presentation flow in manual mode, you can change the order of the workbook's canvases.

Any changes that you make to the canvas order in Present are saved to the presentation flow and not to the workbook design in Visualize.

See Switch Between Auto and Manual Modes in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.

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4. In the Canvases panel, drag and drop a canvas to a new position in the canvas display order.
5. Optional: Drag and drop more canvases to rearrange them in the canvas display order.
6. Click **Save**.

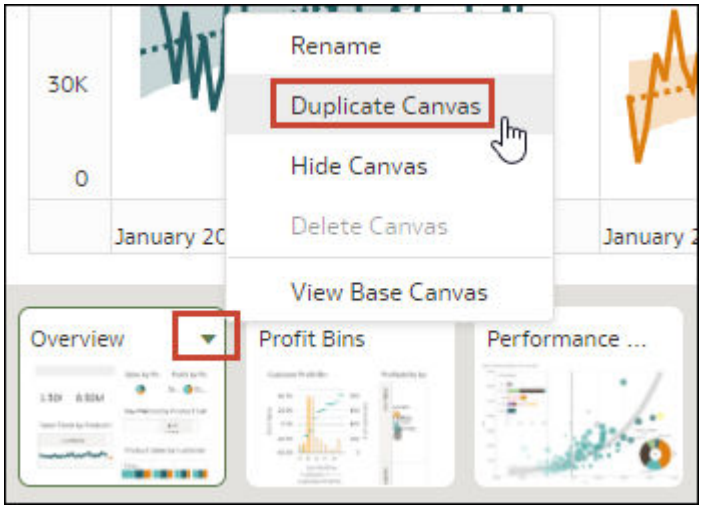
Duplicate a Canvas in Present

When working on the presentation flow in manual mode, you can add the same canvas multiple times to the presentation flow. You might add a canvas multiple times when you want users to see different filter values on each version of a duplicated canvas.

Any canvases that you duplicate in Present are saved to the presentation flow and not to the workbook design in Visualize.

See Switch Between Auto and Manual Modes in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas, click the down arrow, and select **Duplicate Canvas**.



5. Click the duplicate canvas and modify it.
6. Click **Save**.

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Remove a Duplicate Canvas in Present

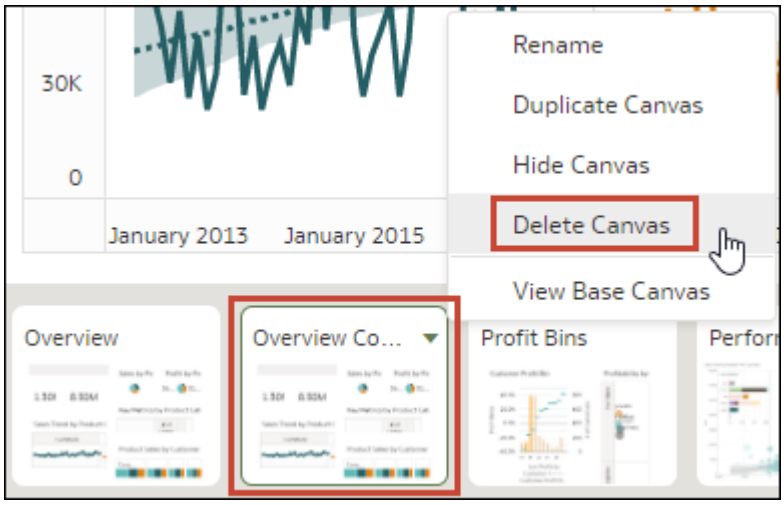
When working on the presentation flow in manual mode, you can delete any duplicate canvases from the presentation flow.

The Delete Canvas option is only available for canvases that you duplicated. You can hide but not delete any other canvases in Present.

Any changes that you make to the canvas display in the presentation flow are saved to Present and not to the workbook design in Visualize.

See Switch Between Auto and Manual Modes in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas, click the down arrow icon, and select **Delete Canvas**.



5. Click **Save**.

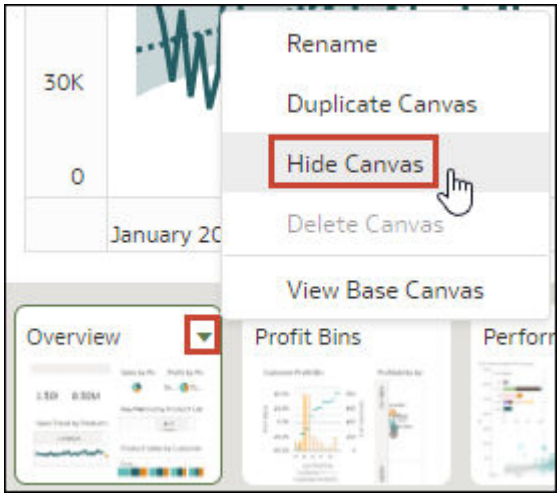
Hide a Canvas in Present

When working on the presentation flow in either manual or auto mode, you can hide a canvas that you don't want consumers to see in the workbook.

Any changes that you make to the canvas display in Present are saved to the presentation flow and not to the workbook design in Visualize.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas, and select **Hide Canvas** to hide the canvas.

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5. Click **Save**.

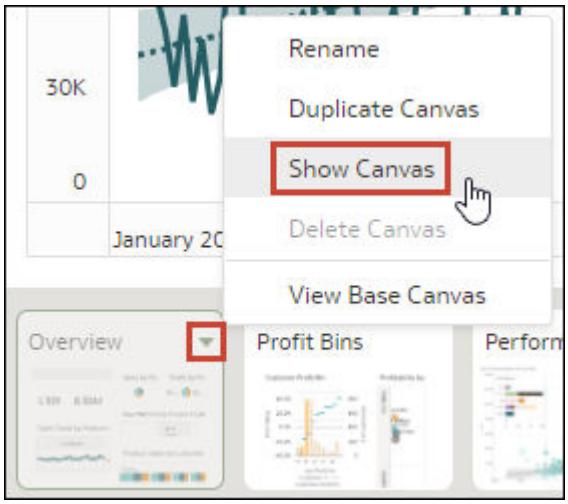
Display a Hidden Canvas in Present

When working on the presentation flow in either manual or auto mode, you can display any hidden canvases.

If you're working in Present in manual mode, any canvases added in Visualize are displayed as hidden in the presentation flow. You can choose to keep the canvases hidden or you can display them in Present.

Any changes that you make to the canvas display in the presentation flow are saved to Present and not to the workbook design in Visualize.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas, click the down arrow icon, and select **Show Canvas** to reveal the canvas.



5. Click **Save**.

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About Moving or Hiding Visualizations on a Canvas in Present

When working on the presentation flow in Manual Mode, the base canvas' **Layout** property in Visualize determines if the canvas includes white spaces or overlaps when you adjust the canvas' layout in Present.

See About Canvas Layout Properties and Update Canvas Properties.

When the base canvas' **Layout** property is set to **Auto Fit** in Visualize, then in Present the canvas layout automatically adjusts to accommodate any visualizations that you move or hide. When you preview the canvas or select **Reset Adjustments** to remove the canvas' layout changes, no white spaces and overlaps are displayed.

When the base canvas' **Layout** property is set to **Freeform** in Visualize, then the canvas layout doesn't automatically adjusts to accommodate any visualizations that you move or hide in Present. When you preview the canvas or select **Reset Adjustments** to remove the canvas' layout changes, white spaces and overlaps are displayed.

If your canvas is set to **Freeform** and in Present you move or hide visualizations, or reset the canvas, be sure to rearrange the visualizations to prevent any white spaces or overlaps. See Show or Hide Canvas Visualizations in Present and Reset a Canvas in Present.

Change a Visualization's Placement on a Canvas in Present

You can drag and drop visualizations to new positions on the canvas using Manual Mode in Present.

The canvas' **Layout** property in Visualize determines if your canvas contains white spaces and overlaps when you reposition visualizations. See About Moving or Hiding Visualizations on a Canvas in Present.

Any changes that you make to the canvas display in Present are saved to the presentation flow and not to the workbook design in Visualize.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas with the visualizations that you want to reposition.
4. In the canvas, drag and drop the visualizations to reposition them.
5. Click **Save**.

Reset a Canvas in Present

When working in manual mode, you can use the **Reset Adjustments** canvas option to synch the canvas in Present with its base canvas in Visualize.

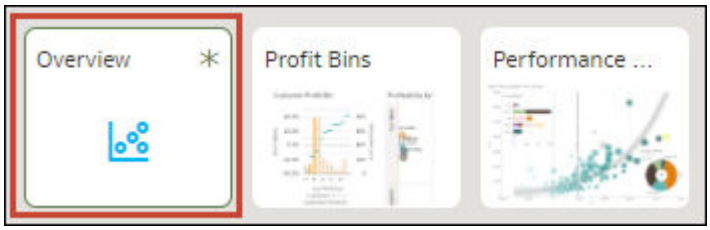
You can reset any canvas that displays an asterisk. The asterisk indicates that the canvas' layout adjustments or filter settings are out of synch with its base canvas in Visualize.

The canvas' **Layout** property in Visualize determines if your canvas contains white spaces and overlaps when you reset the canvas. See About Moving or Hiding Visualizations on a Canvas in Present.

See Manual Mode and How Canvases Synch and Switch Between Auto and Manual Modes in Present.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. Go to the bottom of the Present page and locate the Canvases panel.
4. In the Canvases panel, hover over a canvas displaying an asterisk.



5. Click the down arrow icon, and select **Reset Adjustments** to reset the canvas layout properties, or select **Reset Filters** to reset the filter values to match the canvas in Visualize
6. Click **Save**.

Set the Workbook Properties in Present

The workbook inherits the properties that you set in Visualize. You can use Present to specify how you want the workbook to display to the consumer and how the consumer navigates and interacts with the workbook.

Topics:

- Specify Workbook Canvas Navigation in Present
- Show or Hide the Workbook Header Bar in Present
- Modify the Workbook Header Title in Present
- Modify the Workbook Header Color in Present
- Add an Image to the Workbook Header in Present
- Show or Hide the Workbook Toolbar in Present
- Select Workbook Toolbar Options in Present
- Show or Hide the Zoom Control in Present
- Specify Workbook Zoom Control Options in Present
- Change the Workbook Canvases Visualization Alignment in Present
- Specify the Workbook Layout for the Mobile App in Present
- Turn Workbook Personalization On or Off in Present
- Turn On or Off All Workbook and Canvas Actions in Present
- Show or Hide the Filter Bar in Present
- Specify Workbook Filter Options in Present
- Show or Hide Workbook Filters in Present
- Specify the Workbook Visualization Actions in Present
- Hide Inaccessible Data Actions in a Workbook from Consumers in Present
- Specify Datasets and Subject Areas Available to Consumers in Insights Panel

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- Specify Insights Panel Options for Consumers in Present
- Show or Hide the Insights Panel for Consumers in Present
- Specify Workbook Assistant Data Source

Specify Workbook Canvas Navigation in Present

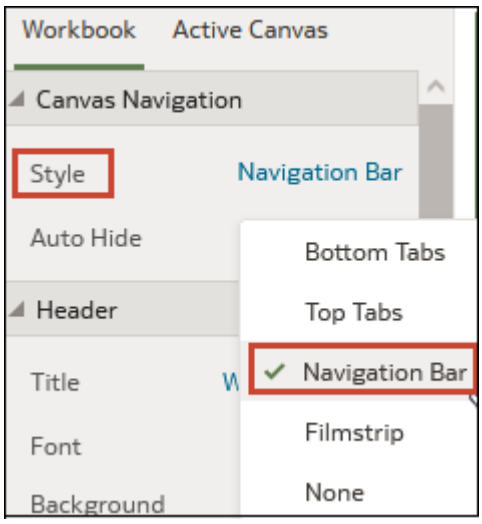
When you design a presentation flow, you can choose between navigation options to best fit how you want the consumer to move between the workbook's canvases.

You can choose to always display the workbook's canvas navigation bar, or to display it only when the consumer hovers over the bottom of the workbook. You can also choose a navigation control corresponding to how you want to represent the canvases on the workbook's navigation bar.

The navigation control options are:

- **Bottom Tabs** - Displays each canvas as a tab including the canvas' title at the bottom of the workbook. The user clicks the tabs to navigate between canvases.
- **Top Tabs** - Displays each canvas as a tab including the canvas' title at the top of the workbook. The user clicks the tabs to navigate between canvases.
- **Navigation Bar** - Displays each canvas as a circle at the bottom of the workbook. The user clicks the circles to navigate between canvases.
- **Filmstrip** - Displays each canvas as a thumbnail at the bottom of the workbook. The user clicks the thumbnails to navigate between canvases.
- **None** - Removes the navigation control from the workbook.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Canvas Navigation section, click the **Style** field and select how to you want the user to move between workbook canvases.



5. Optional: Click the **Auto Hide** field and select **On** if you want to display the navigation panel when the user mouses over the bottom of the workbook.
6. Click **Save**.

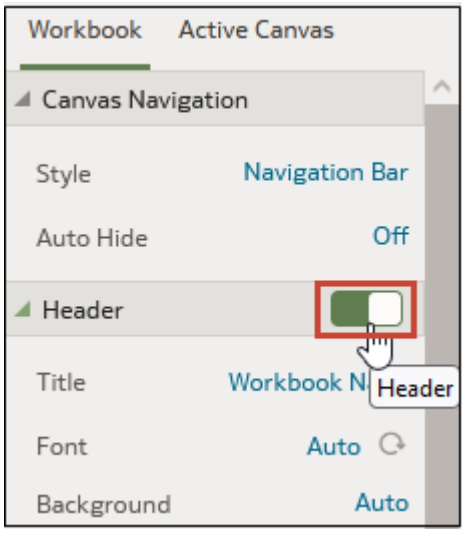
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Show or Hide the Workbook Header Bar in Present

When you design a presentation flow, the workbook's header bar is set to display by default. You can choose to show or hide the header bar.

The header bar displays the workbook title that you specify. For example, canvas name, workbook name, or a custom name.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Header section, click **Header** to toggle it to **Off** to hide the header bar, or click it to toggle it to **On** to show the header bar.



5. Click **Save**.

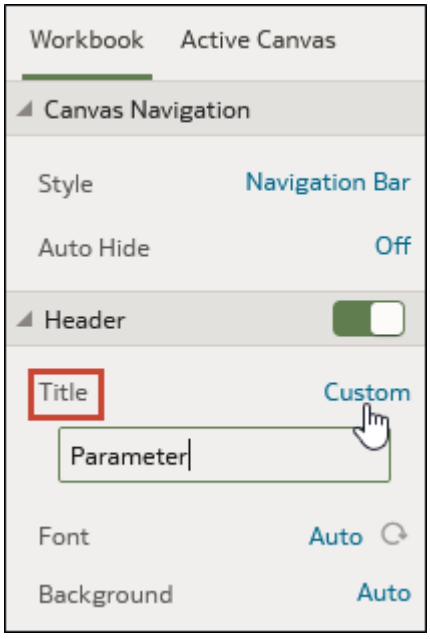
Modify the Workbook Header Title in Present

When you design a presentation flow, you can specify which name you want to display as the workbook's header and how you want to format the header text.

You can also add an image to the workbook header. See Add an Image to the Workbook Header in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Header section, click the **Title** field and select the name you want to use as a title, or select **Custom** and enter a title.

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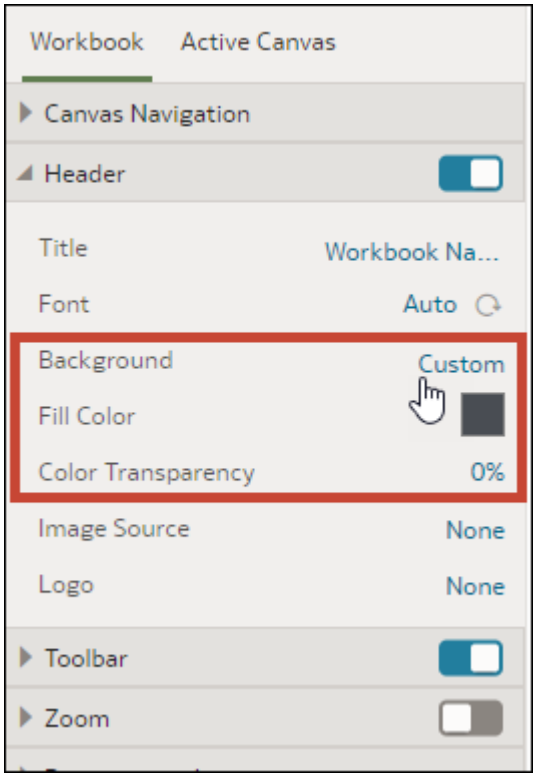
5. Optional: Click the **Font** field and specify the font style, font size, and any formatting that you want to use in the title, for example, bold or italic.
6. Click **Save**.

Modify the Workbook Header Color in Present

When you design a presentation flow, you can customize the workbook header background's color and transparency.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Header section, click the **Background** field and select **Custom**.

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5. In the Header section, use the **Fill Color** and **Color Transparency** fields to specify how you want the header's background to display.
6. Click **Save**.

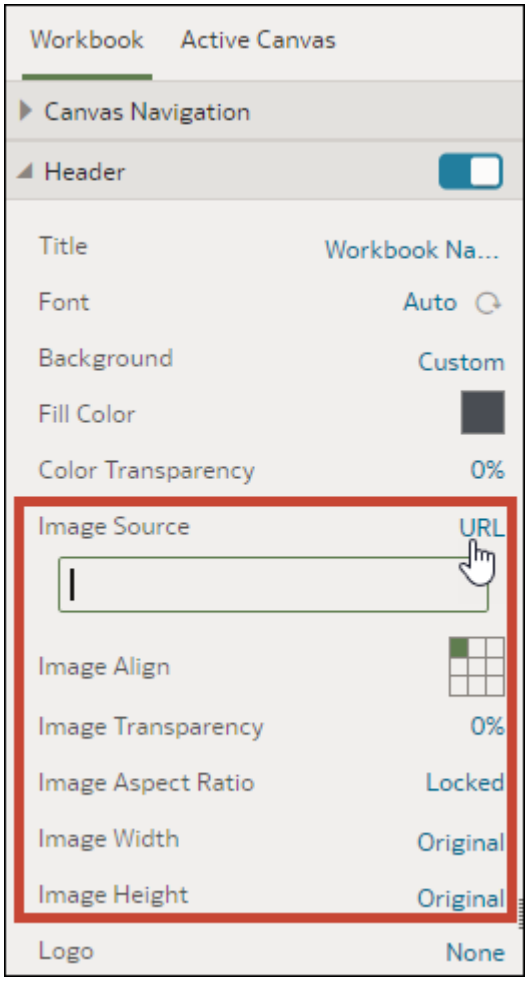
Add an Image to the Workbook Header in Present

When you design a presentation flow, you can add an image from a file , URL, or Shared Images to the workbook header and specify how you want the image to display.

For more information on images, see Use Images in Workbooks.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Header section, click the **Background** field and then select **Custom**.
5. In the **Image Source** row, click **None**, then select an image source.
   - **File** – Click the file upload icon then browse for and select the image file.
   - **URL** – Paste the image source's URL into the text field.
   - **Shared Image** – Click the file upload icon and select a shared image.
6. In the Header section, specify the image's display properties, for example image width and height.

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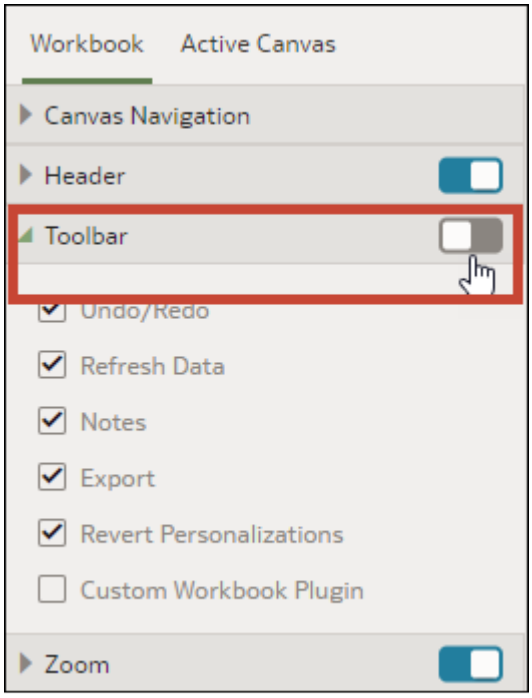
7. Click **Save**.

Show or Hide the Workbook Toolbar in Present

When you design a presentation flow, the workbook's toolbar displays by default. You can choose to show or hide the workbook's toolbar for users.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present, click the **Workbook** tab.
4. In the Toolbar section, click **Toolbar** to toggle it to **Off** to hide the toolbar, or click it to toggle it to **On** to show the toolbar.

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5. Click **Save**.

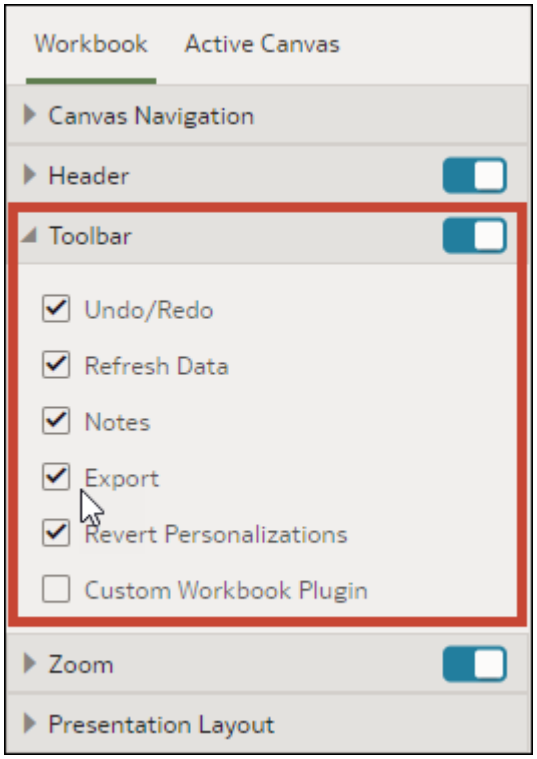
Select Workbook Toolbar Options in Present

You can specify which of the workbook's toolbar options you want to display to the user.

You can select the Toolbar properties that you want to display to users in Present. Toolbar properties include undo and redo changes, refresh the workbook's data, show notes, allow export, reset filter personalizations, and display the custom workbook extension icon and list.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Toolbar section, deselect the toolbar options that you want to hide, or select the toolbar options that you want to display.

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5. Click **Save**.

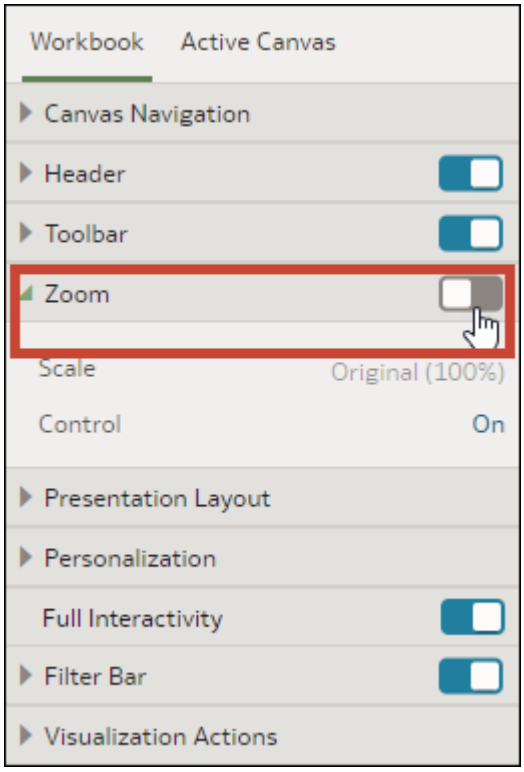
Show or Hide the Zoom Control in Present

When you design a presentation flow, the workbook's header bar zoom control is set to hide by default. You can choose to show or hide the zoom control for all canvases.

When the zoom control is set to show, the zoom control is displayed in the header bar for all workbook canvases with the **Layout** canvas property set to **Freeform**.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Zoom section, click **Zoom** to toggle it to **On** to show the zoom control in the header bar, or click it to toggle it to **Off** to hide the zoom control in the header bar.

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5. Click **Save**.

Specify Workbook Zoom Control Options in Present

When you design a presentation flow, you can choose the default zoom setting used when the user opens a canvas.

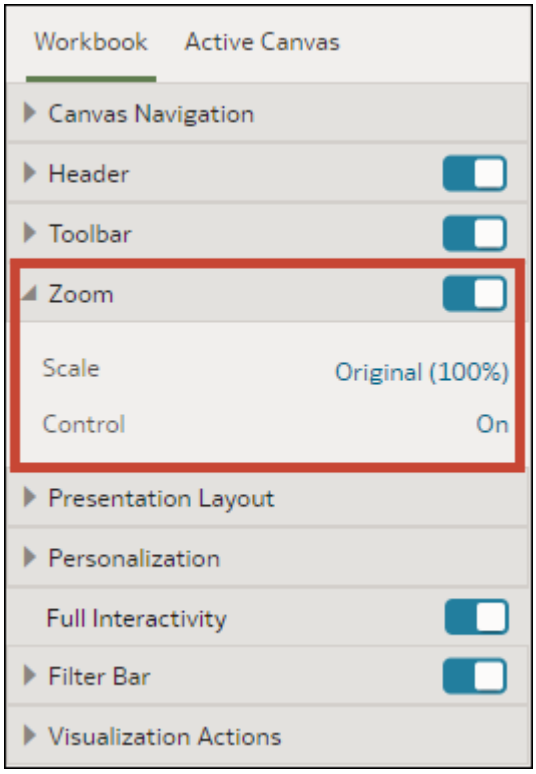
The Zoom/Layout controls button allows consumers to zoom in and out of the whole active canvas to best fit their screen. Although you set the control for the workbook, the zoom control is displayed only for canvases with the **Layout** canvas property set to **Freeform**.

The zoom control properties that you set on the **Workbook** tab are carried over to the Active Canvas' zoom properties. You can override the **Workbook** tab's zoom properties on any individual canvas.

The Zoom section's toggle must be set to **On** before you can update the **Scale** property.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.

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4. In the Zoom section, click **Scale** and select the zoom size used to display the canvas when a user opens it.
5. In the Zoom section, click **Control** to set it to **Off** to hide the zoom control in the workbook's header bar for all canvases, or click it to set it to **On** to show the zoom control in the workbook's header bar for all canvases.

   Set this option to **Off** when your workbook contains many canvases and you want to use the Active Canvas option to display the zoom control on only a few canvases.
6. Click **Save**.

Change the Workbook Canvases Visualization Alignment in Present

When you design a presentation flow, you can control where the visualizations are displayed on the workbook's canvases. This allows you to choose the best placement of the visualizations based on the end user's screen size and resolution.

For example, if the workbook's canvases each contain one visualization, then you can choose **Center** to add white space around the visualizations to center them on the canvases.

The alignment options are:

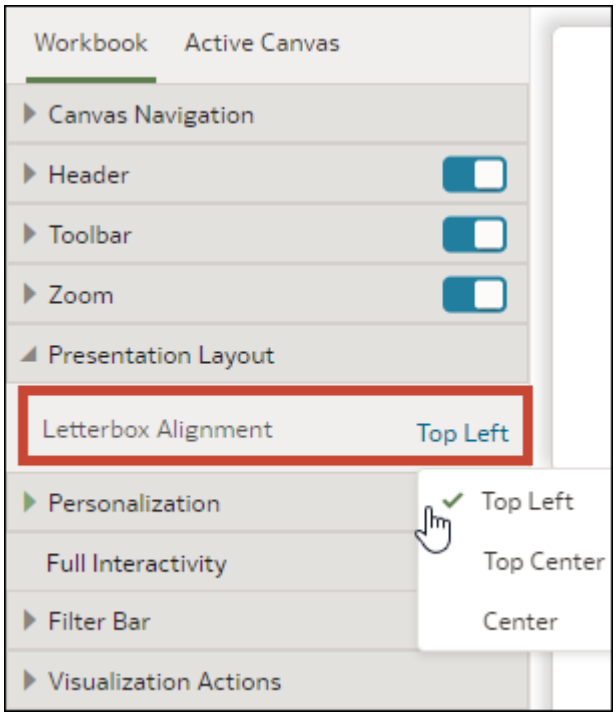
- **Top Left** - Adds white space to the right of the visualizations on the canvas, but not to the top and left of the canvas. This is the default.
- **Top Center** - Adds white space to the left and right of the visualizations on the canvas, but not to the top of the canvas.
- **Center** - Adds white space to the top, left, and right of the visualizations on the canvas.

You can also change the positions of the visualizations on a canvas. See Change a Visualization's Placement on a Canvas in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

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2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Presentation Layout section, go to the **Letterbox Alignment** field and choose an alignment.



5. Click **Save**.

Specify the Workbook Layout for the Mobile App in Present

When you design a presentation flow, you can specify a workbook layout for users that open it in the Oracle Analytics mobile app.

You set the mobile experience option in Present. Oracle Analytics applies the option when a user opens the workbook in the app. If a mobile user doesn't use Auto as the Default Layout for the workbook in the app, their setting overrides the Present setting.

The mobile experience options in Present are:

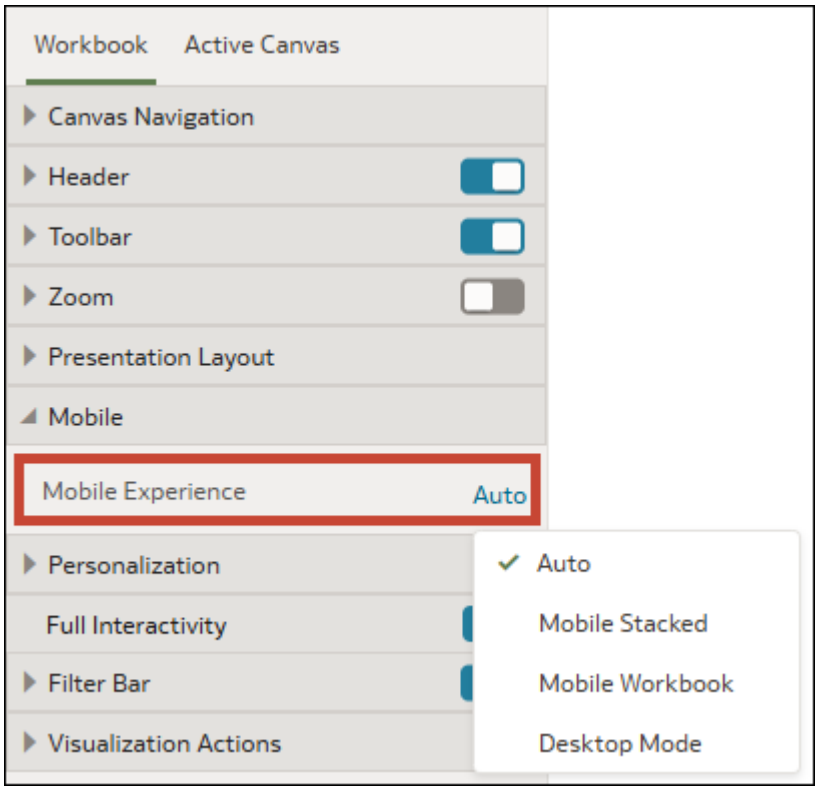
- **Auto** - Uses whatever setting the user has enabled in the mobile app.
- **Mobile Stacked** - Stacks all visualizations in a vertical list so the user can scroll through them one at a time.
- **Mobile Workbook** - Maintains the design and layout of the canvases while applying breakpoints, if available, to optimize the mobile experience.
- **Desktop Mode** - Renders the workbook exactly as it appears on a desktop, without applying breakpoints. Users can experience the full design and functionality of the workbook.

For information about designing canvas layouts with breakpoints, see Design Canvas Layouts for Different Screen Sizes.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.

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2. Click **Present**.
3. On the Present page, click the **Workbook** tab.
4. In the Mobile section, click the **Mobile Experience** field and select a layout.



5. Click **Save**.

Turn Workbook Personalization On or Off in Present

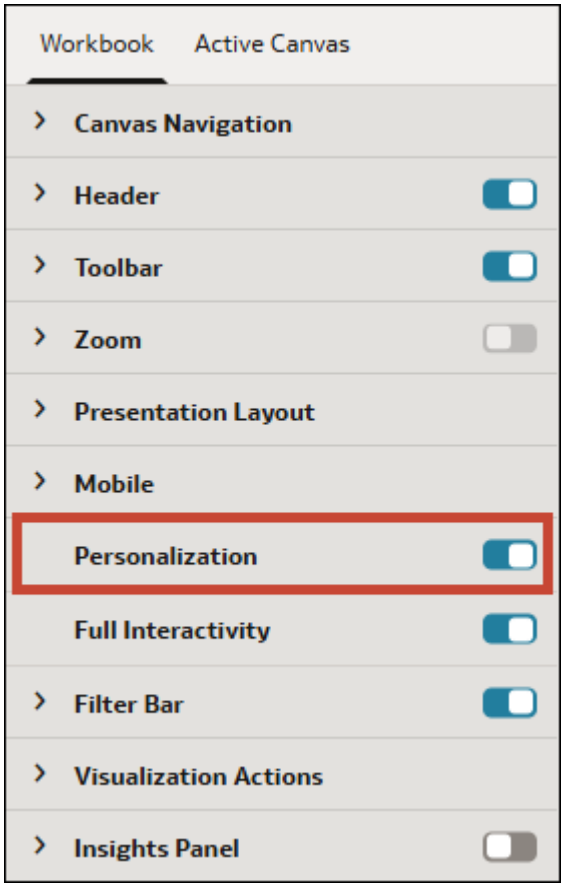
When you design a presentation flow, you can specify if consumers can use filter personalizations and workbook states.

For information about how filter personalizations and workbook states work, see Filter Personalizations and Workbook States.

Your administrator can disable workbook personalization for the entire organization through system settings. In this case, you can't turn personalization on for your workbook. See System Settings - Enable Personalization in Workbooks.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. Click **Personalization** to turn it:
   - **On** - Enables workbook states so consumers can use them.
   - **Off** - Disables workbook states so consumers can't use them.

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5. Click **Save**.

Turn On or Off All Workbook and Canvas Actions in Present

When you design a presentation flow, all filter bar and visualization actions are on by default. You can turn off and on actions individually, or use the **Full Interactivity** option to turn off or on all actions for the workbook's canvases.

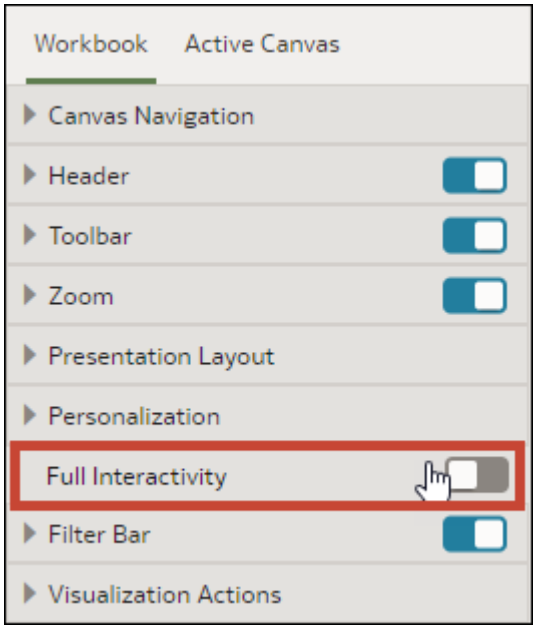
Examples of filter actions are add filters, remove filters, and change filter value selections. Examples of visualization actions are drill, export, and sort by.

To turn off all filter and visualization actions that the user can perform on all canvases, set **Full Interactivity** field to **Off**.

Setting the **Full Interactivity** field to **On** allows you to set individual filter and visualization actions to specify how you want the user to interact with the workbook and canvases.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Interactivity section, go to the **Full Interactivity** field.

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- Select **Off** to disable all filter and visualization actions on all canvases.
- Select **On** to enable all filter and visualization actions on all canvases.

5. Click **Save**.

Show or Hide the Filter Bar in Present

When you design a presentation flow, you can show or hide the workbook's filter bar.

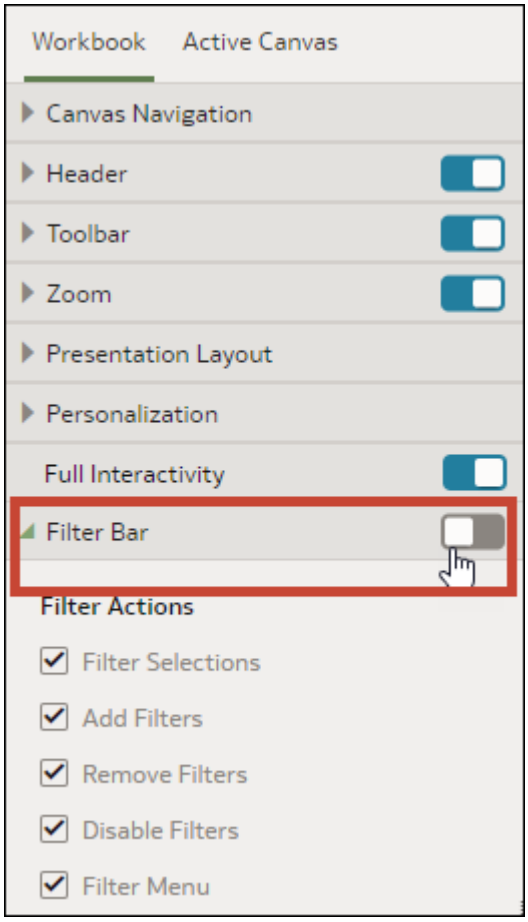
Showing the filter bar allows users to view, set, and modify any items in it, such as workbook and canvas filters, selection steps, or parameters. You can select values for items in the filter bar and then hide the filter bar so that the workbook includes specific data. Hiding the filter bar prevents users from changing the values.

The filter bar properties that you set on the **Workbook** tab are carried over to the Active Canvas' Filter Actions properties. You can override the **Workbook** tab's filter bar properties on any individual canvas.

All Filter Actions options are grayed out when the **Full Interactivity** option is set to **Off**. See Turn On or Off All Workbook and Canvas Actions in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present, click the **Workbook** tab.
4. In the Filter Bar section, click **Filter Bar** to toggle it to **Off** to hide the filter bar, or click it to toggle it to **On** to show the filter bar.

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5. Click **Save**.

Specify Workbook Filter Options in Present

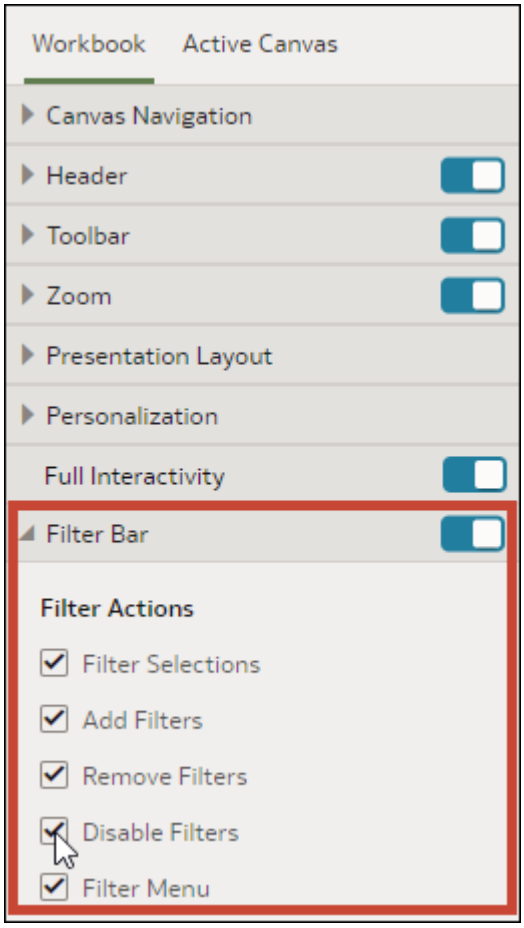
When you design a presentation flow, you can specify which options you want the user to have when using the filter bar, for example, add filters or change filter values.

The options you set on the **Workbook** tab are carried over to the Active Canvas' Filter Actions properties. You can override the **Workbook** tab's filter bar properties on any individual canvas.

All Filter Actions options are grayed out when the **Full Interactivity** option is set to **Off**. See Turn On or Off All Workbook and Canvas Actions in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Filter Bar section, deselect the filter actions options that you want to hide, or select the filter action options that you want to display.

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5. Click **Save**.

Show or Hide Workbook Filters in Present

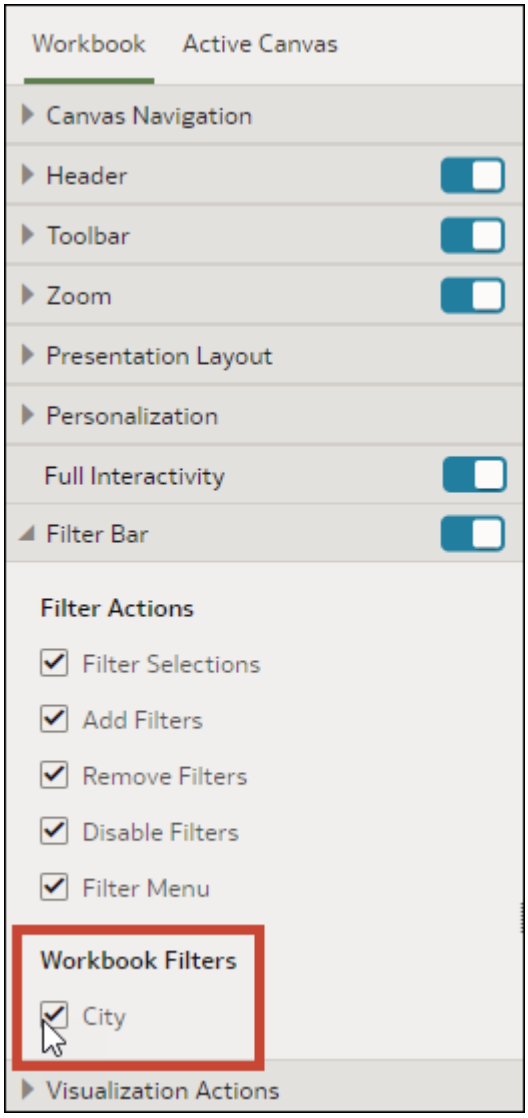
When you design a presentation flow, you can hide or show any individual workbook filters.

When working with filters in the presentation flow, any filters that you hide or show are saved in Present and aren't saved in Visualize.

Pinned selection steps in the filter bar can't be hidden.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Workbook Filters section, deselect the filters that you want to hide, or select the filters that you want to display.

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5. Click **Save**.

Specify the Workbook Visualization Actions in Present

When you design a presentation flow, you can choose which visualization actions to make available to users in a workbook.

The visualization properties that you set on the **Workbook** tab are carried over to the Active Canvas' Visualization Actions properties. You can override the **Workbook** tab's visualization properties on any individual canvas. See Select Canvas Visualization Toolbar Options in Present .

All Visualization Actions options are grayed out when the **Full Interactivity** option is set to **Off**. See Turn On or Off All Workbook and Canvas Actions in Present.

You can choose which of the following options you want consumers to see and use in the visualization toolbar:

- **Sort** ⇅ - Lets consumers access the Sort Order dialog to sort data in the visualization.

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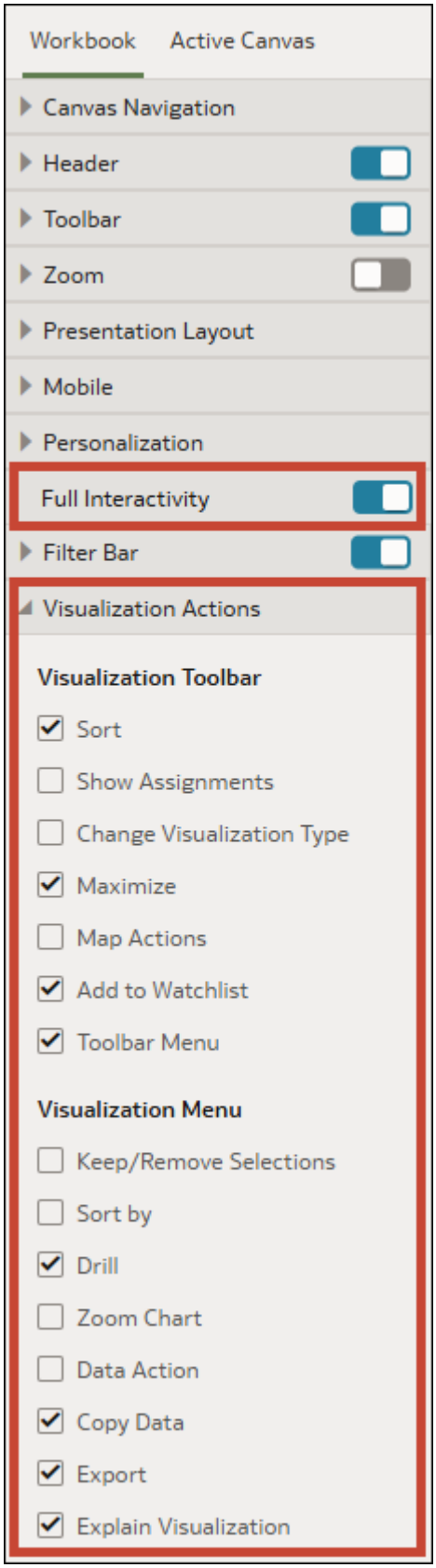
- **Show Assignments** - Lets consumers see which Grammar elements the columns in the visualization are assigned to.
- **Change Visualization Type** - Lets consumers choose a different visualization type.
- **Maximize** - Lets consumers maximize the visualization to the full canvas size.
- **Map Actions** - For map visualizations, lets consumers use the Rectangle, Radial, and Polygon selection options to select data in the map.
- **Add to Watchlist** - Lets consumers add the visualization to a watchlist, if they have the Create and Edit Watchlists permission.
- **Toolbar Menu** - Lets consumers access the visualization menu. The options available to users in the menu depend on the selections you make in the Visualization Menu section of Visualization Actions.

If you enable **Toolbar Menu**, you can choose which of the following options you want consumers to access in the visualization menu:

- **Keep/Remove Selections** - Lets consumers use the Keep Selected and Remove Selected options for data points in the visualization.
- **Sort By** - Lets consumers select a sorting method for the attributes or measures in the visualization.
- **Drill** - Lets consumers access the Drill to Attribute/Hierarchy option for data points in the visualization.
- **Zoom Chart** - Lets consumers increase the size of the data points on the chart by a predefined amount.
- **Data Action** - Lets consumers access any data actions available to them for data points in the visualization.
- **Copy Data** - Lets consumers copy the visualization's data to their clipboard.
- **Explain Visualization** - Lets consumers access Contextual Insights for the visualization, if available.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Visualization Actions section, deselect the actions that you don't want users to perform, or select the actions that you want users to perform.

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5. Click **Save**.

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Hide Inaccessible Data Actions in a Workbook from Consumers in Present

When you design a presentation flow, you can specify whether you want consumers to see all available data actions in a workbook, or whether you only want them to see the ones that are accessible to them.

Accessible data actions are those that a consumer can invoke successfully. If a consumer tries to invoke a data action that takes them to a workbook, analysis, dashboard, or report that they don't have access to, they'll get an error and the data action won't work.

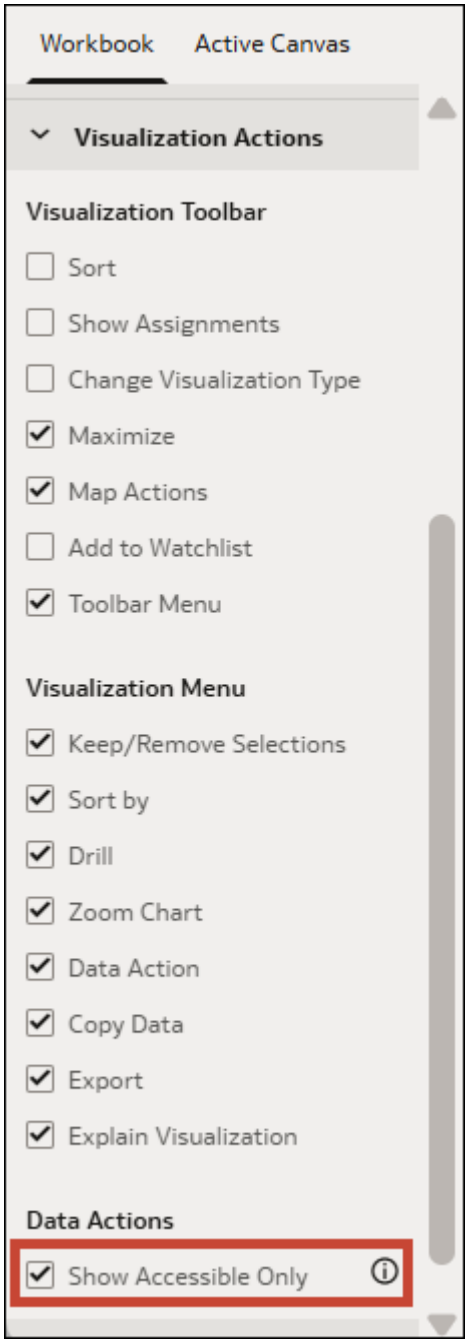
To improve your consumers' experience, you can use the **Show Accessible Only** property under **Data Actions** in Present to limit the data actions a consumer sees to only those that are accessible to them.

If you turn on this property, it might impact performance when consumers open the workbook.

The Data Actions property you set in the Workbook tab applies to all canvases in the workbook. It's carried over to the Active Canvas' Data Actions property for each canvas. You can override the Workbook tab's Data Actions property for any individual canvas in the Active Canvas tab. See Hide Inaccessible Data Actions on a Canvas from Consumers in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Visualization Actions section, go to **Data Actions**.
5. Select **Show Accessible Only** to show only the accessible data actions to consumers and hide any that are inaccessible.

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6. Click **Save**.

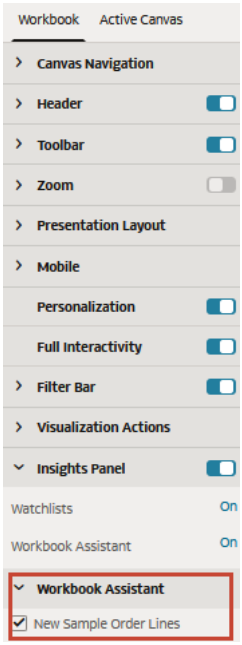
Specify Datasets and Subject Areas Available to Consumers in Insights Panel

When you give consumers access to Workbook Assistant in the Insights Panel, you can select which datasets and subject areas are accessible to consumer users.

You must enable Workbook Assistant for consumer users from the Insights Panel section before you can select which datasets and subject areas are accessible. If Insights Panel is not enabled, the author must enable the Insights Panel to select the Workbook Assistant property.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.



4. In the Workbook Assistant section, deselect the datasets and subject areas that you want to hide from consumers, or select the datasets and subject areas that you want to make available.
5. Click **Save**.

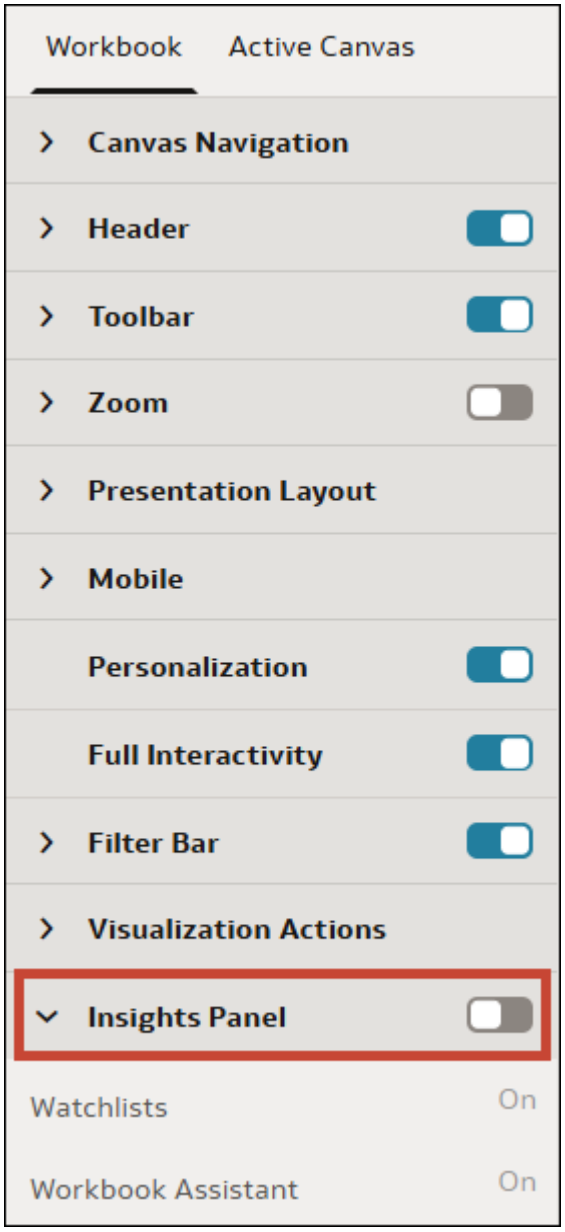
Show or Hide the Insights Panel for Consumers in Present

When you design a presentation flow, the Insights Panel is hidden for consumers by default. You can choose to make the Insights Panel available for consumers so they can use it.

Showing the Insights Panel allows consumers to access watchlists and the Workbook Assistant from the panel, see Specify Insights Panel Options for Consumers in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In Present, click the **Workbook** tab.
4. In the Insights Panel section, click **Insights Panel** to toggle it to **On** to show the panel, or toggle it to **Off** to hide the panel.

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5. Click **Save**.

Specify Insights Panel Options for Consumers in Present

When you design a presentation flow, you can specify which options you want consumers to be able to access in the Insights Panel.

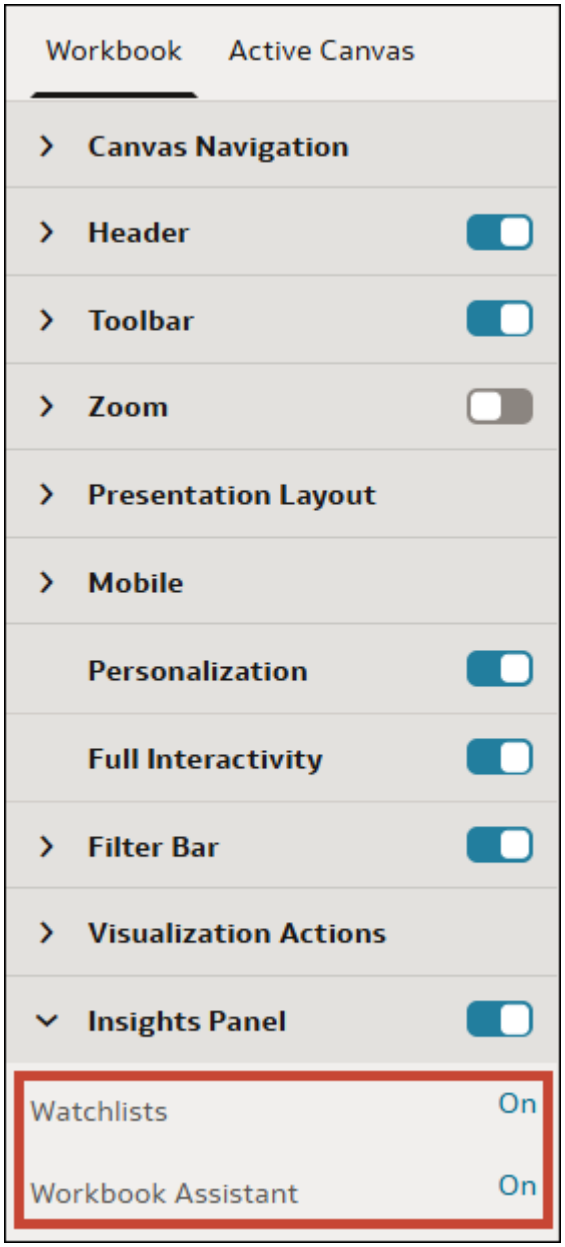
When you make the Insights Panel available to consumers, you can choose whether or not to keep the following features available in the panel:

- Watchlists - Consumers can view watchlists that have been shared with them.
- Workbook Assistant - Consumers can ask natural language questions to the Oracle Analytics AI Assistant to analyze data in the workbook.

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> **Note**
>
> A consumer can only use watchlists or the workbook Assistant in the Insights Panel if your administrator has granted them the **Use Assistant in Workbooks** or the **Create and Edit Watchlists** permissions. See About Permissions.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Insights Panel section, deselect the options that you want to hide from consumers, or select the options that you want to make available.



5. Click **Save**.

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Specify Workbook Assistant Data Source

You can enable the Workbook Assistant and an AI agent to use with a workbook.

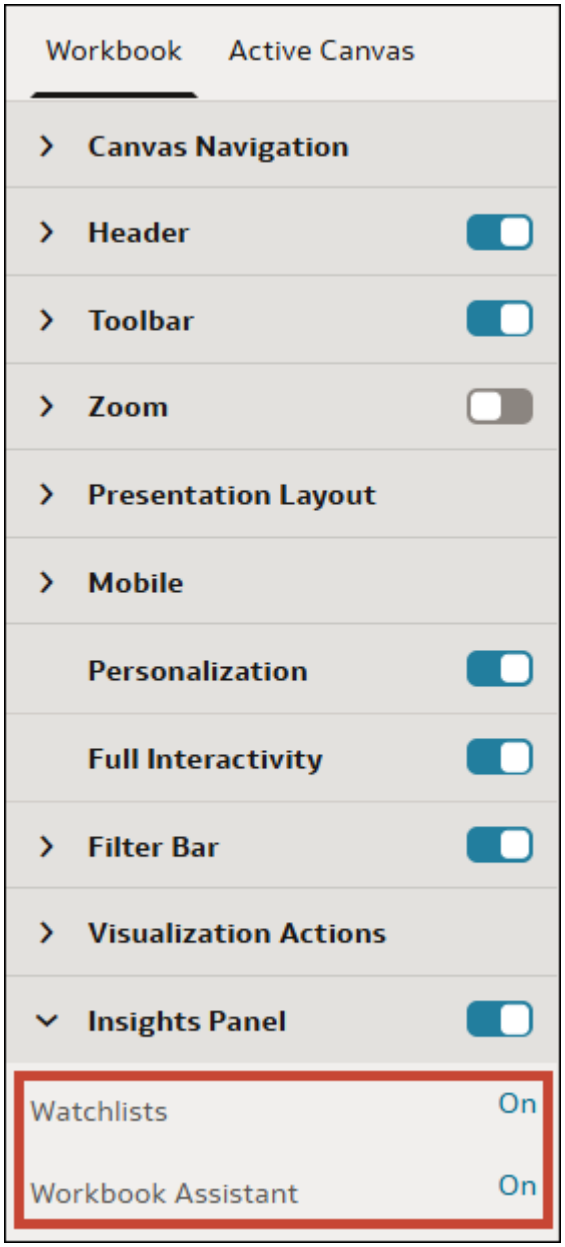
When you make the Insights Panel available to consumers, you can choose whether or not to keep the following features available in the panel:

- Watchlists - Consumers can view watchlists that have been shared with them.
- Workbook Assistant - Consumers can ask natural language questions to the Oracle Analytics AI Assistant to analyze data in the workbook. You need to enable the Workbook Assistant to connect a workbook to an AI Agent.

> **Note**
>
> A consumer can only use watchlists or the workbook Assistant in the Insights Panel if your administrator has granted them the **Use Assistant in Workbooks** or the **Create and Edit Watchlists** permissions. See About Permissions.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Workbook** tab.
4. In the Insights Panel section, make sure **Workbook Assistant** is set to **On**.

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5. In the Workbook Assistant section, select the AI Agent you want to connect to the workbook.
6. Click **Save**.

Set Canvas Properties in Present

In the presentation flow, each canvas inherits the workbook properties that you set in the **Workbook** tab in Present. You can change any canvas' inherited properties.

Topics:

- Specify Canvas Filter Actions in Present
- Show or Hide Canvas Filters in Present
- Select Canvas Visualization Toolbar Options in Present

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- Specify Canvas Visualization Menu Options in Present
- Hide Inaccessible Data Actions on a Canvas from Consumers in Present
- Show or Hide Canvas Visualizations in Present
- Show or Hide a Visualization Filter in Present
- Specify Canvas Zoom Control Options in Present
- Show or Hide Canvas Notes in Present

Specify Canvas Filter Actions in Present

When you design a presentation flow, each canvas inherits the filter actions you set on the **Workbook** tab. You can use the **Active Canvas** tab to customize an individual canvas' filter bar options, for example, add filters or change filter values.

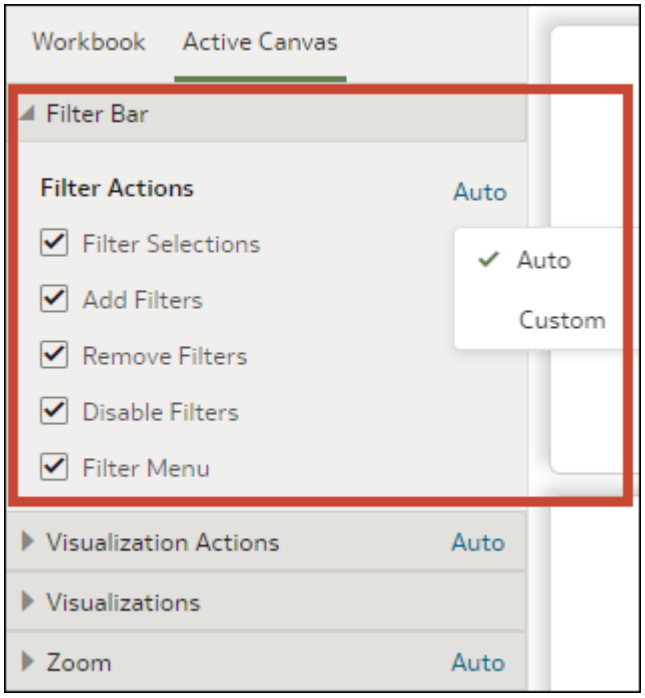
Showing the filter bar allows users to view, set, and modify any items in it, such as canvas filters, selection steps, or parameters. You can select values for items in the filter bar and then hide the filter bar so that the canvas includes specific data. Hiding the filter bar prevents users from changing the values.

Any filter settings that you change or filter values that you add or remove in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

All Filter Actions options are grayed out when the **Full Interactivity** option is set to **Off** on the **Workbook** tab. See Turn On or Off All Workbook and Canvas Actions in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas that you want to update filters for.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Filter Bar section and in the Filter Actions area, deselect the filter bar options that you want to hide, or select the options that you want to display.

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6. Optional: Click **Custom** and then click **Auto** to reset all visualization actions to the default settings you specified in the **Workbook** tab.
7. Click **Save**.

Show or Hide Canvas Filters in Present

When you design a presentation flow, you can hide or show any individual canvas filters.

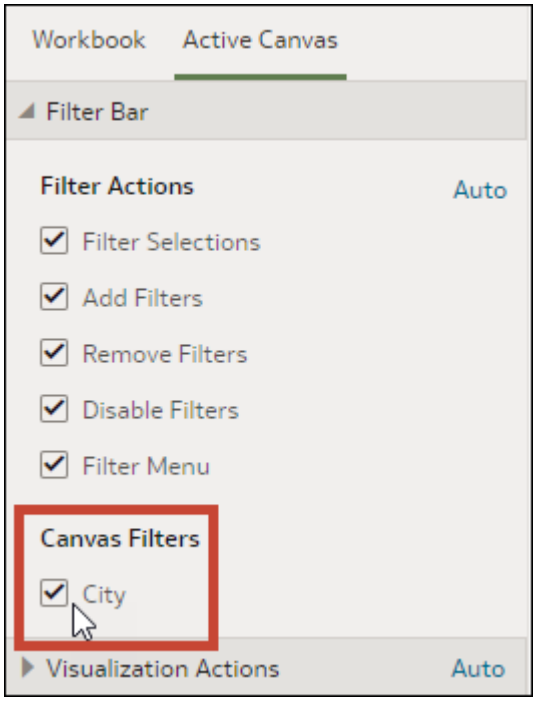
Any filters that you hide or show in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

All Canvas Filters options are grayed out when the **Full Interactivity** option is set to **Off** on the **Workbook** tab. See Turn On or Off All Workbook and Canvas Actions in Present.

Unpinned selection steps in the filter bar can't be hidden.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas that you want to update filters for.
4. In the Present page, click the **Active Canvas** tab.
5. In the Canvas Filters area, deselect the filters that you want to hide on the canvas, or select the filters that you want to display.

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6. Click **Save**.

Select Canvas Visualization Toolbar Options in Present

When you design a presentation flow, each canvas inherits the visualization toolbar options you set on the **Workbook** tab. You can use the **Active Canvas** tab to override the visualization toolbar options that are set for the workbook, for example Map Actions, Add to Watchlist, or Toolbar Menu.

Any visualization settings that you change in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

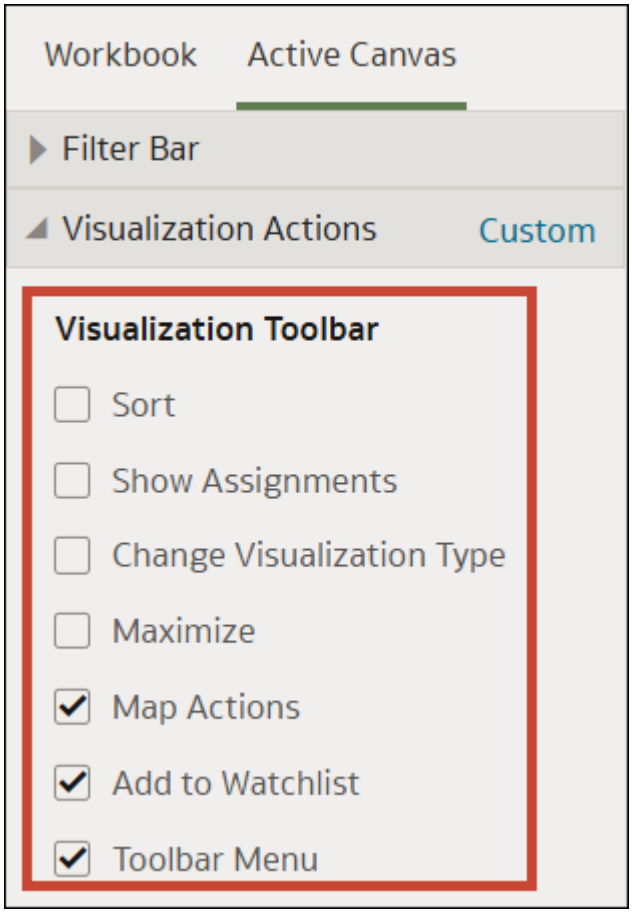
All Visualization Actions options are disabled when the **Full Interactivity** option is set to **Off** on the **Workbook** tab. See Turn On or Off All Workbook and Canvas Actions in Present.

When Visualization Actions is set to Custom, it means the Visualization Toolbar options here in the Active Canvas tab are overriding those in the Workbook tab. To reset all visualization actions to the default settings you specified in the Workbook tab, set Visualization Actions to Auto.

For more information about the Visualization Toolbar options, see Specify the Workbook Visualization Actions in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas to update.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Visualization Toolbar section, then select the options that you want users to access from the visualization's toolbar, or deselect the options that you don't want users to access from the visualization's toolbar.

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6. Click **Save**.

Specify Canvas Visualization Menu Options in Present

When you design a presentation flow, each canvas inherits the visualization menu options you set on the **Workbook** tab. You can use the **Active Canvas** tab to specify which visualization menu options you want to provide to the user, for example, drill or export.

Any visualization settings that you change in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

All Visualization Actions options are grayed out when the **Full Interactivity** option is set to **Off** on the **Workbook** tab. See Turn On or Off All Workbook and Canvas Actions in Present.

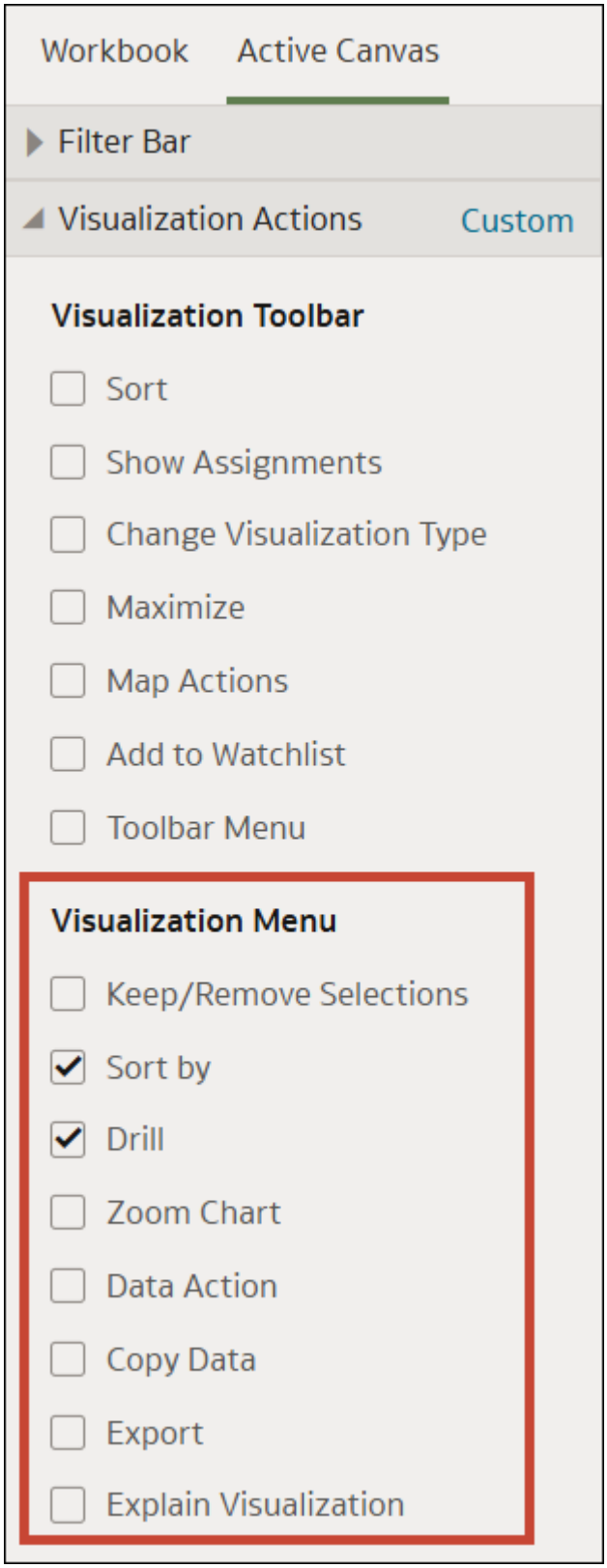
When Visualization Actions is set to Custom, it means the Visualization Menu options here in the Active Canvas tab are overriding those in the Workbook tab. To reset all visualization actions to the default settings you specified in the Workbook tab, set Visualization Actions to Auto.

For more information about the Visualization Menu options, see Specify the Workbook Visualization Actions in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas to update.

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4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Visualization Toolbar section, then select the options that you want users to access from the visualization's menu, or deselect the options that you don't want users to access from the visualization's menu.



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6. Click **Save**.

Hide Inaccessible Data Actions on a Canvas from Consumers in Present

When you design a presentation flow, each canvas inherits the Show Accessible Only property you set in the Workbook tab. You can use the Active Canvas tab to override this property that's set for the workbook and show or hide inaccessible data actions for individual canvases.

Accessible data actions are those that a consumer can invoke successfully. If a consumer tries to invoke a data action that takes them to a workbook, analysis, dashboard, or report that they don't have access to, they'll get an error and the data action won't work.

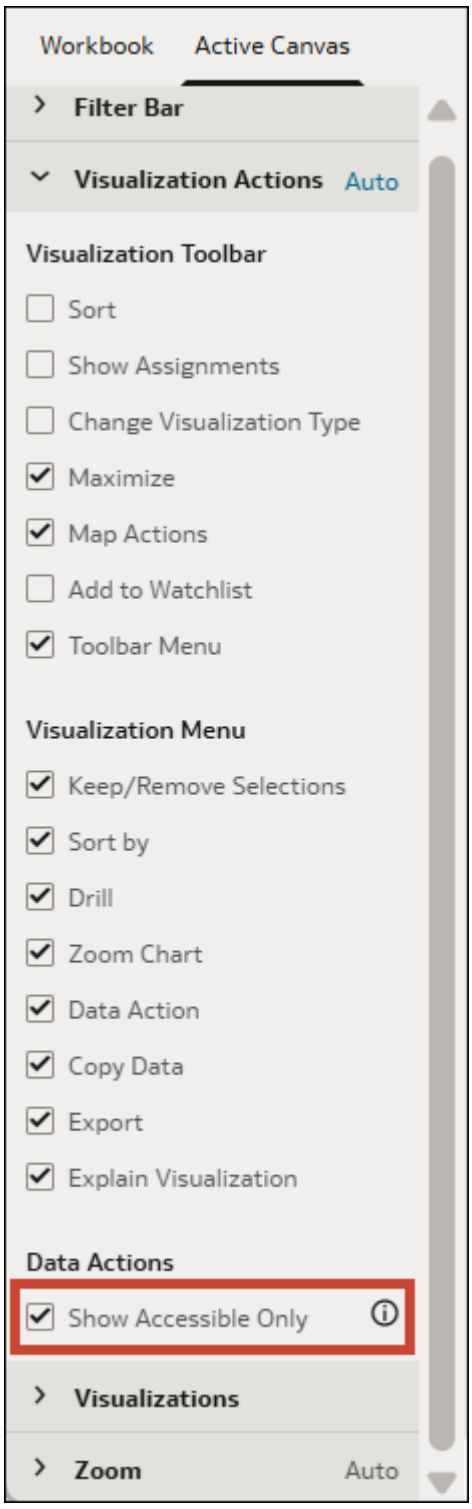
To improve your consumers' experience, you can use the **Show Accessible Only** property under **Data Actions** in Present to limit the data actions a consumer sees to only those that are accessible to them.

If you turn on this property, it might impact performance when consumers open the workbook.

To set the Show Accessible Only property for the entire workbook, see Hide Inaccessible Data Actions in a Workbook from Consumers in Present.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. In the Present page, click the **Active Canvas** tab.
4. In the Visualization Actions section, go to **Data Actions**.
5. Select **Show Accessible Only** to show only the accessible data actions to consumers and hide any that are inaccessible.

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6. Click **Save**.

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Show or Hide Canvas Visualizations in Present

When working in manual mode, you can hide or display individual visualizations on a canvas.

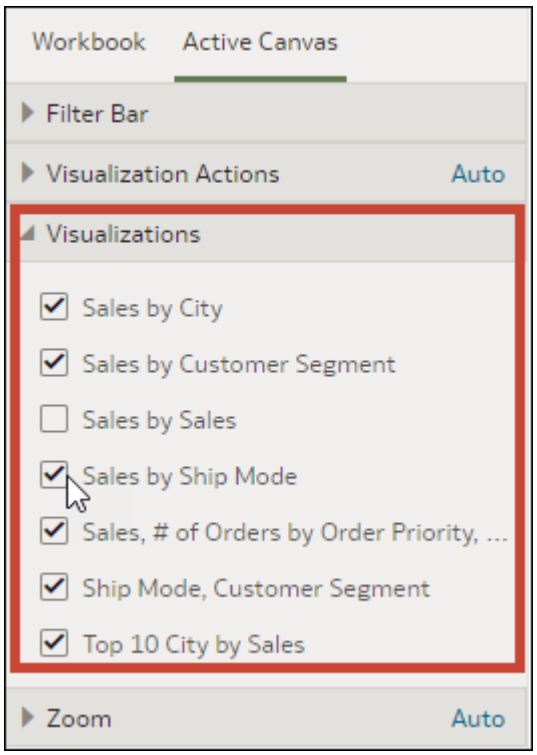
> **Note**
>
> When you work in Present's Manual Mode you can hide visualizations at a specific breakpoint. Hiding visualizations can impact the canvas layout for that breakpoint. Oracle recommends that if your canvas uses breakpoints that you go to Visualize to hide visualizations. See View Canvas Layout Breakpoints in Present.

The canvas' **Layout** property in Visualize determines if your canvas contains white spaces and overlaps when you hide or show visualizations. See About Moving or Hiding Visualizations on a Canvas in Present.

See Switch Between Auto and Manual Modes in Present.

When you show or hide visualizations in Present, the changes are saved to the presentation flow's canvas and not to Visualize.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas where you want to show or hide visualizations.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Visualizations section and deselect the visualizations that you want to hide, or select the visualizations that you want to display on the canvas.



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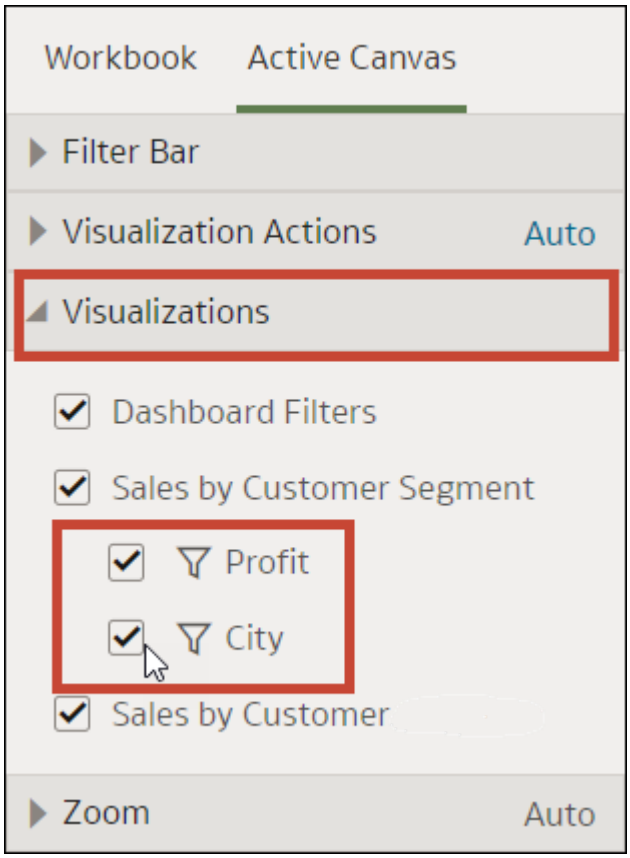
6. Click **Save**.

Show or Hide a Visualization Filter in Present

You can hide or display individual visualization filters for visualizations on a canvas depending on how you want your consumers to view and interact with the visualization.

When you hide a filter for a specific visualization in Present, the filter still functions however it was set, it's just not visible to consumers. Additionally, when you hide a visualization filter in Present, the changes are saved to the presentation flow's canvas and not to Visualize.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas where you want to show or hide visualizations.
4. On the Present page, click the **Active Canvas** tab.
5. Scroll to the Visualizations section and under the applicable visualization, deselect the filters that you want to hide, or select the filters that you want to display on the canvas.



6. Click **Save**.

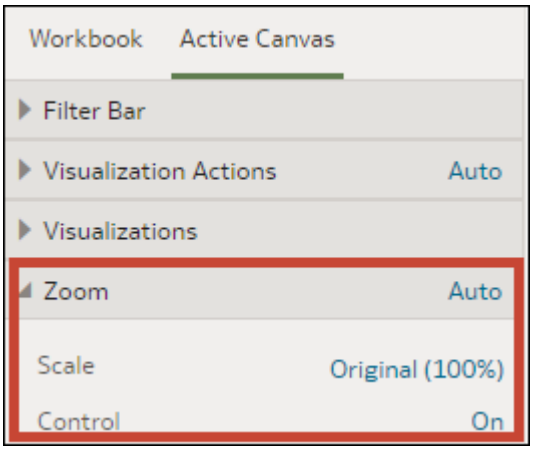
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Specify Canvas Zoom Control Options in Present

When you design a presentation flow, each canvas inherits the zoom control options you set on the **Workbook** tab. You can use the **Active Canvas** tab to customize an individual canvas' zoom control options.

The Zoom/Layout controls button allows consumers to zoom in and out of the whole active canvas to best fit their screen. The zoom control is displayed only for canvases with the **Layout** canvas property set to **Freeform**.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas that you want to update the zoom control for.
4. In the Present page, click the **Active Canvas** tab.



5. Scroll to the Zoom section, click **Scale**, and select the zoom size used to display the canvas when a user opens it.
6. In the Zoom section, click **Control** to set it to **Off** to hide the zoom control in the workbook header bar for the canvas, or click it to set it to **On** to show the zoom control in the workbook header bar for the canvas.
7. Optional: Click **Custom** and then click **Auto** to reset the default settings you specified in the **Workbook** tab.
8. Click **Save**.

Show or Hide Canvas Notes in Present

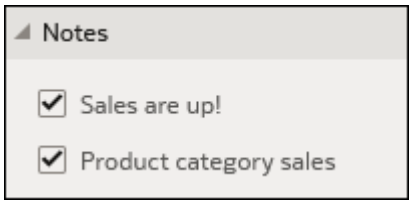
When you design a presentation flow, by default all canvas notes are displayed. You can use the **Active Canvas** tab to specify which canvas notes to hide or show.

If you choose to leave some or all notes displayed for a canvas, then when you preview the workbook, you can click the **Hide Notes** workbook header button to turn off or on all notes that aren't hidden. Or when users view the workbook, they can click the **Hide Notes** header button to turn off or on all notes that aren't hidden. See Show or Hide a Visualization's Notes.

Any notes that you hide or show in Present are saved to the presentation flow's canvas and not to the canvas in Visualize.

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1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Click **Present**.
3. If the presentation flow contains more than one canvas, then go to the bottom of the Present page and click the canvas where you want to show or hide notes.
4. In the Present page, click the **Active Canvas** tab.
5. Scroll to the Notes section and deselect the notes that you want to hide, or select the notes that you want to display on the canvas.



6. Click **Save**.

Preview a Presentation Flow

As an author using the Present page to design the presentation flow, you can use the preview mode to test how a user views and interacts with the workbook you're designing. Switching to preview mode removes the presentation flow's workbook and canvas options and the canvas panel.

1. On your home page, select a workbook, click **Actions**, and then select **Open**.
2. Click **Present**.
3. Click **Preview** to view the workbook as it displays to the user.
4. Click **Edit** to exit the workbook's preview mode and return to the presentation flow in the **Present** page.

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19

Use Oracle Analytics Predictive Models and Oracle Machine Learning Models

In Oracle Analytics you can consume predictive models or machine learning models that reside in Oracle Database, Oracle AI DatabaseOracle Autonomous AI Lakehouse, or Oracle Cloud Infrastructure (OCI). Apply predictive models to your data to build machine learning Machine Learning (ML) and Artificial Intelligence (AI) into your applications without requiring ML or AI expertise.

Topics:

- What Machine Learning and Artificial Intelligence Services Does Oracle Analytics Support?
- Create and Use Oracle Analytics Predictive Models
- Use Oracle Machine Learning Models in Oracle Analytics
- Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset
- Perform Similarity Analysis in Oracle Analytics
- Use Oracle Cloud Infrastructure Vision Models in Oracle Analytics
- Use Oracle Cloud Infrastructure Data Science Models in Oracle Analytics
- Use Oracle Cloud Infrastructure Language Models in Oracle Analytics
- Use Oracle Cloud Infrastructure Document Understanding Models in Oracle Analytics

What Machine Learning and Artificial Intelligence Services Does Oracle Analytics Support?

In Oracle Analytics, you can build machine learning and artificial intelligence into your applications without requiring data scientist expertise.

Oracle Analytics integrates with:

- Oracle Cloud Infrastructure Artificial Intelligence
- Oracle Cloud Infrastructure Data Science
- Oracle Cloud Infrastructure Functions
- Oracle Cloud Infrastructure Language
- Oracle Cloud Infrastructure Vision
- Oracle Database Machine Learning
- Oracle Database Advanced Analytics (Database analytics and Graph analytics)
- Oracle Autonomous AI Lakehouse, for example, the AutoML capability.

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Create and Use Oracle Analytics Predictive Models

Oracle Analytics predictive models use several embedded Oracle Machine Learning algorithms to mine your datasets, predict a target value, or identify classes of records. Use the data flow editor to create, train, and apply predictive models to your data.

Topics:

- What Are Oracle Analytics Predictive Models?
- How Do I Choose a Predictive Model Algorithm?
- Train a Predictive Model Using AutoML in Oracle Autonomous AI Lakehouse
- Create and Train a Predictive Model
- Inspect a Predictive Model
- Add a Predictive Model to a Workbook
- Evaluate Machine Learning Models Using Lift and Gain Charts

What Are Oracle Analytics Predictive Models?

An Oracle Analytics predictive model applies a specific algorithm to a dataset to predict values, predict classes, or to identify groups in the data.

You can also use Oracle machine learning models to predict data.

Oracle Analytics includes algorithms to help you train predictive models for various purposes. Examples of algorithms are classification and regression trees (CART), logistic regression, and k-means.

You use the data flow editor to first train a model on a training dataset. After the predictive model has been trained, you apply it to the datasets that you want to predict.

You can make a trained model available to other users who can apply it against their data to predict values. In some cases, certain users train models, and other users apply the models.

> **Note**
>
> If you're not sure what to look for in your data, you can start by using Explain, which uses machine learning to identify trends and patterns. Then you can use the data flow editor to create and train predictive models to drill into the trends and patterns that Explain found.

You use the data flow editor to train a model:

- First, you create a data flow and add the dataset that you want to use to train the model. This training dataset contains the data that you want to predict (for example, a value like sales or age, or a variable like credit risk bucket).
- If needed, you can use the data flow editor to edit the dataset by adding columns, selecting columns, joining, and so on.
- After you've confirmed that the data is what you want to train the model on, you add a training step to the data flow and choose a classification (binary or multi), regression, or

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cluster algorithm to train a model. Then name the resulting model, save the data flow, and run it to train and create the model.

- Examine the properties in the machine learning objects to determine the quality of the model. If needed, you can iterate the training process until the model reaches the quality you want.

Use the finished model to score unknown, or unlabeled, data to generate a dataset within a data flow or to add a prediction visualization to a workbook.

Example

Suppose you want to create and train a multi-classification model to predict which patients have a high risk of developing heart disease.

1. Supply a training dataset containing attributes on individual patients like age, gender, and if they've ever experienced chest pain, and metrics like blood pressure, fasting blood sugar, cholesterol, and maximum heart rate. The training dataset also contains a column named "Likelihood" that is assigned one of the following values: absent, less likely, likely, highly likely, or present.
2. Choose the CART (Decision Tree) algorithm because it ignores redundant columns that don't add value for prediction, and identifies and uses only the columns that are helpful to predict the target. When you add the algorithm to the data flow, you choose the Likelihood column to train the model. The algorithm uses machine learning to choose the driver columns that it needs to perform and output predictions and related datasets.
3. Inspect the results and fine tune the training model, and then apply the model to a larger dataset to predict which patients have a high probability of having or developing heart disease.

How Do I Choose a Predictive Model Algorithm?

Oracle Analytics provides algorithms for any of your machine learning modeling needs: numeric prediction, multi-classifier, binary classifier, and clustering.

Oracle's machine learning functionality is for advanced data analysts who have an idea of what they're looking for in their data, are familiar with the practice of predictive analytics, and understand the differences between algorithms.

> **Note**
>
> If you're using data sourced from Oracle Autonomous AI Lakehouse, you can use the AutoML capability to quickly and easily train a predictive model for you, without requiring machine learning skills. See *Train a Predictive Model Using AutoML in Autonomous Data Warehouse*.

Normally users want to create multiple prediction models, compare them, and choose the one that's most likely to give results that satisfy their criteria and requirements. These criteria can vary. For example, sometimes users choose models that have better overall accuracy, sometimes users choose models that have the least type I (false positive) and type II (false negative) errors, and sometimes users choose models that return results faster and with an acceptable level of accuracy even if the results aren't ideal.

Oracle Analytics contains multiple machine learning algorithms for each kind of prediction or classification. With these algorithms, users can create more than one model, or use different fine-tuned parameters, or use different input training datasets and then choose the best model.

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The user can choose the best model by comparing and weighing models against their own criteria. To determine the best model, users can apply the model and visualize results of the calculations to determine accuracy, or they can open and explore the related datasets that Oracle Analytics used the model to output.

Consult this table to learn about the provided algorithms:

Name	Type	Category	Function	Description
CART	Classification Regression	Binary Classifier Multi-Classifier Numerical	-	Uses decision trees to predict both discrete and continuous values. Use with large datasets.
Elastic Net Linear Regression	Regression	Numerical	ElasticNet	Advanced regression model. Provides additional information (regularization), performs variable selection, and performs linear combinations. Penalties of Lasso and Ridge regression methods. Use with a large number of attributes to avoid collinearity (where multiple attributes are perfectly correlated) and overfitting.
Hierarchical	Clustering	Clustering	AgglomerativeClustering	Builds a hierarchy of clustering using either bottom-up (each observation is its own cluster and then merged) or top down (all observations start as one cluster) and distance metrics. Use when the dataset isn't large and the number of clusters isn't known beforehand.
K-Means	Clustering	Clustering	k-means	Iteratively partitions records into k clusters where each observation belongs to the cluster with the nearest mean. Use for clustering metric columns and with a set expectation of number of clusters needed. Works well with large datasets. Result are different with each run.

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Name	Type	Category	Function	Description
Linear Regression	Regression	Numerical	Ordinary Least Squares Ridge Lasso	Linear approach for a modeling relationship between target variable and other attributes in the dataset. Use to predict numeric values when the attributes aren't perfectly correlated.
Logistic Regression	Regression	Binary Classifier	LogisticRegressionCV	Use to predict the value of a categorically dependent variable. The dependent variable is a binary variable that contains data coded to 1 or 0.
Naive Bayes	Classification	Binary Classifier Multi-Classifier	GaussianNB	Probabilistic classification based on Bayes' theorem that assumes no dependence between features. Use when there are a high number of input dimensions.
Neural Network	Classification	Binary Classifier Multi-Classifier	MLPClassifier	Iterative classification algorithm that learns by comparing its classification result with the actual value and returns it to the network to modify the algorithm for further iterations. Use for text analysis.
Random Forest	Classification	Binary Classifier Multi-Classifier Numerical	-	An ensemble learning method that constructs multiple decision trees and outputs the value that collectively represents all the decision trees. Use to predict numeric and categorical variables.

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Name	Type	Category	Function	Description
SVM	Classification	Binary Classifier Multi-Classifier	LinearSVC, SVC	Classifies records by mapping them in space and constructing hyperplanes that can be used for classification. New records (scoring data) are mapped into the space and are predicted to belong to a category, which is based on the side of the hyperplane where they fall.

Train a Predictive Model Using AutoML in Oracle Autonomous AI Lakehouse

When you use data from Oracle Autonomous AI Lakehouse, you can use its AutoML capability to recommend and train a predictive model. AutoML analyzes your data, calculates the best algorithm to use, and registers a prediction model in Oracle Analytics so that you can make predictions on your data.

Using AutoML means that Oracle Autonomous AI Lakehouse does all of the hard work for you, so that you can deploy a prediction model without machine learning or artificial intelligence skills. The generated prediction model is saved in the Models area of the Machine Learning page. To predict data based on the new model, create a data flow and use the **Apply Model** step.

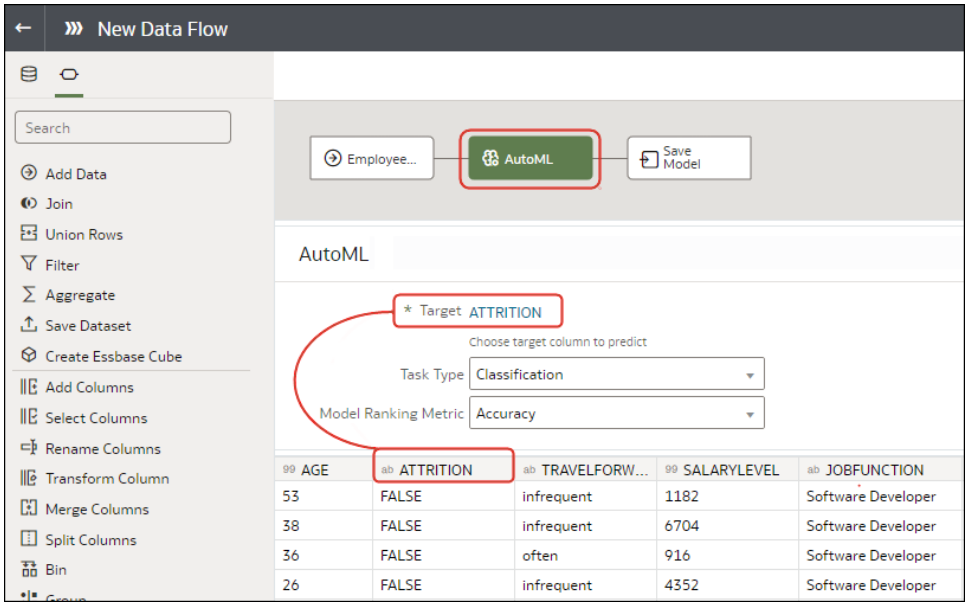
Before you start:

- Create a dataset based on the data in Oracle Autonomous AI Lakehouse that you want to make predictions about. For example, you might have data about employee attrition, including a field named ATTRITION indicating 'Yes' or 'No' for attrition.
- Make sure that the database user specified in the Oracle Analytics connection to Oracle Autonomous AI Lakehouse has the role `OML_Developer` and isn't an 'admin' super-user. Otherwise, the data flow fails when you try to save or run it.

1. On your home page, click **Create**, and then click **Data Flow**.
2. In Add Dataset, select the dataset based on Oracle Autonomous AI Lakehouse containing the data to analyze.
3. Click **Add a step**, then click **AutoML**.
4. For the **Target**, click **Select a column**, and select the data column containing the value you're trying to predict.

   For example, to predict employee attrition, you might select a field named ATTRITION indicating 'TRUE' or 'FALSE' for whether employees have left an organization or not.

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5. Accept the suggested **Task Type** and **Model Ranking Metric** that Oracle Analytics recommends, or select a different algorithm.
6. Click **Save Model**, and specify the name of the generated prediction model.
7. Click **Save** and specify a name for the data flow.
8. Click **Run** to analyze the data and generate a predictive model.
9. On your home page, click **Navigate**, then click **Machine Learning**, then right-click the generated model and select **Inspect**.

You can locate the model that Oracle Analytics generates on the **Machine Learning** page on the **Models** tab. Inspect the model to assess its quality. See Assess a Predictive Model's Quality. You can also refer to related datasets that are generated for models generated by AutoML. See What Are a Predictive Model's Related Datasets?.

Create and Train a Predictive Model

Advanced data analysts create aand train predictive models so that they can use them to deploy Oracle Machine Learning algorithms to mine datasets, predict a target value, or identify classes of records. Use the data flow editor to create and train predictive models and apply them to your data.

LiveLabs Sprint

Arriving at an accurate model is an iterative process and an advanced data analyst can try different models, compare their results, and fine tune parameters based on trial and error. A data analyst can use the finalized, accurate predictive model to predict trends in other datasets, or add the model to workbooks.

> **Note**
>
> If you're using data sourced from Oracle Autonomous AI Lakehouse, you can use the AutoML capability to quickly and easily train a predictive model for you, without requiring machine learning skills. See *Train a Predictive Model Using AutoML in Autonomous Data Warehouse*.

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Oracle Analytics provides algorithms for numeric prediction, multi-classification, binary-classification and clustering.

1. On your home page, click **Create**, and then select **Data Flow**.
2. Select the dataset that you want to use to train the model. Click **Add**.
3. In the data flow editor, click **Add a step (+)**.

   After adding a dataset, you can either use all columns in the dataset to build the model or select only the relevant columns. Choosing the relevant columns requires an understanding of the dataset. Ignore columns that you know won't influence the outcome behavior or that contain redundant information. You can choose only relevant columns by adding the **Select Columns** step. If you're not sure about the relevant columns, then use all columns.
4. Select one of the train model steps (for example, **Train Numeric Prediction**, or **Train Clustering**).
5. Select an algorithm and click **OK**.
6. If you're working with a supervised model like prediction or classification, then click **Target** and select the column that you're trying to predict. For example, if you're creating a model to predict a person's income, then select the Income column.

   If you're working with an unsupervised model like clustering, then no target column is required.
7. Change the default settings for your model to fine tune and improve the accuracy of the predicted outcome. The model you're working with determines these settings.
8. Click the **Save Model** step and provide a name and description.
9. Click **Save**, enter a name and description of the data flow, and click **OK** to save the data flow.
10. Click **Run Data Flow** to create the predictive model based on the input dataset and model settings that you provided.

Data Flow Steps for Training Machine Learning Models

Oracle Analytics enables you to train machine learning models using steps in data flows. When you've trained a machine learning model, apply it to your data using the **Apply Model** step.

Step Name	Description
AutoML (requires Oracle Autonomous AI Lakehouse)	Use Oracle Autonomous AI Lakehouse's AutoML capability to recommend and train a predictive model for you. The AutoML step analzes your data, calculates the best algorithm to use, and registers a prediction model in Oracle Analytics.
Train Binary-Classifier	Train a machine learning model to classify your data into one of two predefined categories.
Train Clustering	Train a machine learning model to segregate groups with similar traits and assign them into clusters.

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Step Name	Description
Train Multi-Classifier	Train a machine learning model to classify your data into three or more predefined categories.
Train Numeric Prediction	Train a machine learning model to predict a numeric value based on known data values.

Inspect a Predictive Model

After you create the predictive model and run the data flow, you can review information about the model to determine its accuracy. Use this information to iteratively adjust the model settings to improve its accuracy and predict better results.

Topics:

- View a Predictive Model's Details
- Assess a Predictive Model's Quality
- What Are a Predictive Model's Related Datasets?
- Find a Predictive Model's Related Datasets

View a Predictive Model's Details

A predictive model's detail information helps you understand the model and determine if it's suitable for predicting your data. Model details include its model class, algorithm, input columns, and output columns

1. On your home page, click **Navigator**, and then click **Machine Learning**.
2. Click the menu icon for a training model and select **Inspect**.
3. Click the **Details** to view the model's information.

Assess a Predictive Model's Quality

View information that helps you understand the quality of a predictive model. For example, you can review accuracy metrics like model accuracy, precision, recall, F1 value, and false positive rate.

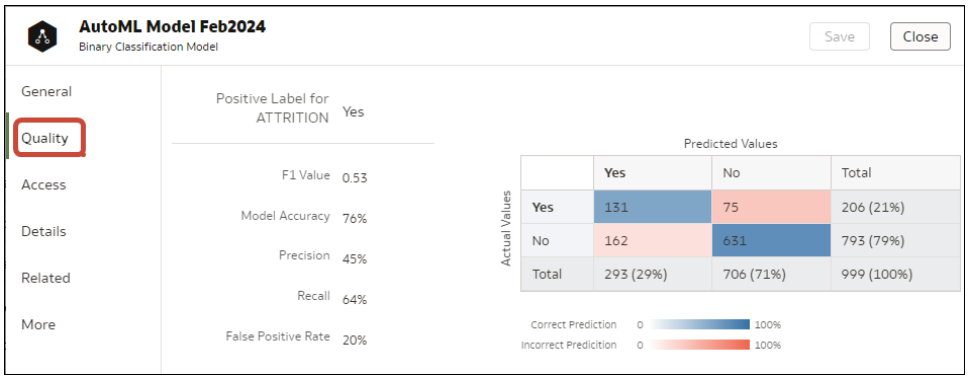
Oracle Analytics provides similar metrics irrespective of the algorithm used to create the model, thereby making comparison between different models easy. During the model creation process, the input dataset is split into two parts to train and test the model based on the Train Partition Percent parameter. The model uses the test portion of the dataset to test the accuracy of the model that is built.

Based on your findings in the **Quality** tab, you may need to adjust the model parameters and retrain it.

1. On your home page, click **Navigator**, and then click **Machine Learning**.
2. Click the menu icon for a training model and select **Inspect**.

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3. Click the **Quality** tab to review the model's quality metrics and assess the model. For example, review the **Model Accuracy** score.



Tip: Click **More** to review details of the views generated for the model.

What Are a Predictive Model's Related Datasets?

When you run the data flow to create the Oracle Analytics predictive model's training model, Oracle Analytics creates a set of related datasets. You can open and create workbooks on these datasets to learn about the accuracy of the model.

LiveLabs Sprint

Depending on the algorithm you chose for your model, related datasets contain details about the model such as prediction rules, accuracy metrics, confusion matrix, and key drivers for prediction. You can use this information to fine tune the model to get better results, and you can use related datasets to compare models and decide which model is more accurate.

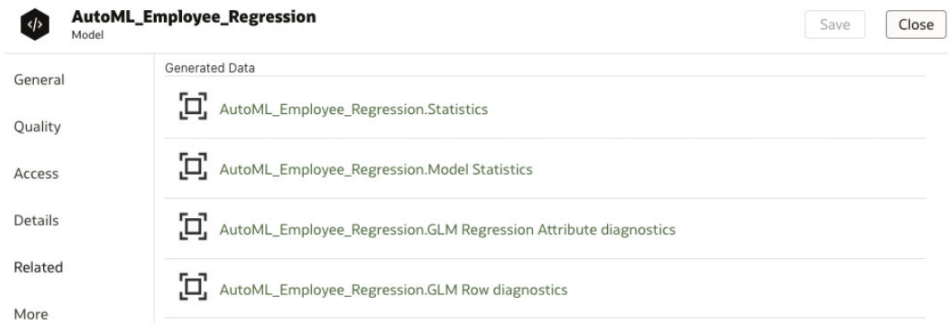
For example, you can open a Drivers dataset to discover which columns have a strong positive or negative influence on the model. By examining those columns, you find that some columns aren't treated as model variables because they aren't realistic inputs or that they're too granular for the forecast. You use the data flow editor to open the model and based on the information you discovered, you remove the irrelevant or too-granular columns, and regenerate the model. You check the Quality and Results tab and verify if the model accuracy is improved. You continue this process until you're satisfied with the model's accuracy and it's ready to score a new dataset.

Different algorithms generate similar related datasets. Individual parameters and column names may change in the dataset depending on the type of algorithm, but the functionality of the dataset stays the same. For example, the column names in a statistics dataset may change from Linear Regression to Logistic Regression, but the statistics dataset contains accuracy metrics of the model.

Related Datasets for AutoML Models

When you train a predictive model using AutoML, Oracle Analytics creates additional datasets that contain useful information about the model. The number of datasets created depends on the model algorithm. For example, for Naive Bayes models, Oracle Analytics creates a dataset providing information about conditional probabilities. For a decision tree model, the dataset provides information about decision tree statistics. When you inspect an AutoML-generated model using the generalized linear model (GLM) algorithm, you see entries prefixed with GLM* for the model-specific datasets that contain metadata information about the model.

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Related Datasets

> **Note**
>
> Oracle Analytics appends the dataflow's output name to the related dataset type. For example, for a CART model, if the data flow's output is named cart_model2, then the dataset is named cart_model2_CART.

CART

Oracle Analytics creates a table for the CART (Classification and Regression Tree) related dataset, which contains columns that represent the conditions and the conditions' criteria in the decision tree, a prediction for each group, and prediction confidence. Use the tree diagram visualization to visualize this decision tree.

The CART dataset is created when you select these model and algorithm combinations.

Model	Algorithm
Numeric	CART for Numeric Prediction
Binary Classification	CART
Multi Classification	CART

Classification Report

Oracle Analytics creates a table for the Classification Report related dataset. For example, if the target column can have the two distinct values, Yes or No, this dataset shows accuracy metrics like F1, Precision, Recall, and Support (the number of rows in the training dataset with this value) for every distinct value of the target column.

The Classification dataset is created when you select these model and algorithm combinations.

Model	Algorithms
Binary Classification	Naive Bayes Neural Network Support Vector Machine
Multi Classification	Naive Bayes Neural Network Support Vector Machine

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Confusion Matrix

Oracle Analytics creates a pivot table for the Confusion Matrix related dataset, which is also called an error matrix. Each row represents an instance of a predicted class, and each column represents an instance in an actual class. This table reports the number of false positives, false negatives, true positives, and true negatives, which are used to compute precision, recall, and F1 accuracy metrics.

The Confusion Matrix dataset is created when you select these model and algorithm combinations.

Model	Algorithms
Binary Classification	Logistics Regression CART (Decision Tree) Naive Bayes Neural Network Random Forest Support Vector Machine
Multi Classification	CART (Decision Tree) Naive Bayes Neural Network Random Forest Support Vector Machine

Drivers

Oracle Analytics creates a table for the Drivers related dataset, which contains information about the columns that determine the target column values. Linear regressions are used to identify these columns. Each column is assigned coefficient and correlation values. The coefficient value describes the column's weight-age used to determine the target column's value. The correlation value indicates the relationship direction between the target column and dependent column. For example, if the target column's value increases or decreases based on the dependent column.

The Drivers dataset is created when you select these model and algorithm combinations.

Model	Algorithms
Numeric	Linear Regression Elastic Net Linear Regression
Binary Classification	Logistics Regression Support Vector Machine
Multi Classification	Support Vector Machine

Hitmap

Oracle Analytics creates a table for the Hitmap related dataset, which contains information about the decision tree's leaf nodes. Each row in the table represents a leaf node and contains information describing what that leaf node represents, such as segment size, confidence, and expected number of rows. For example, expected number of correct predictions = Segment Size * Confidence.

The Hitmap dataset is created when you select these model and algorithm combinations.

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Model	Algorithm
Numeric	CART for Numeric Prediction

Residuals

Oracle Analytics creates a table for the Residuals related dataset, which contains information about the quality of the residual predictions. A residual is the difference between the measured value and the predicted value of a regression model. This dataset contains an aggregated sum value of absolute difference between the actual and predicted values for all columns in the dataset.

The Residuals dataset is created when you select these model and algorithm combinations.

Model	Algorithms
Numerics	Linear Regression Elastic Net Linear Regression CART for Numeric Prediction
Binary Classification	CART (Decision Tree)
Multi Classificatin	CART (Decision Tree)

Statistics

Oracle Analytics creates a table for the Statistics related dataset. This dataset's metrics depend upon the algorithm used to generate it. Note this list of metrics based on algorithm:

- Linear Regression, CART for Numeric Prediction, Elastic Net Linear Regression - These algorithms contain R-Square, R-Square Adjusted, Mean Absolute Error(MAE), Mean Squared Error(MSE), Relative Absolute Error(RAE), Related Squared Error(RSE), Root Mean Squared Error(RMSE).
- CART(Classification And Regression Trees), Naive Bayes Classification, Neural Network, Support Vector Machine(SVM), Random Forest, Logistic Regression - These algorithms contain Accuracy, Total F1.

This dataset is created when you select these model and algorithm combinations.

Model	Algorithm
Numeric	Linear Regression Elastic Net Linear Regression CART for Numeric Prediction
Binary Classification	Logistics Regression CART (Decision Tree) Naive Bayes Neural Network Random Forest Support Vector Machine
Multi Classification	Naive Bayes Neural Network Random Forest Support Vector Machine

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Summary

Oracle Analytics creates a table for the Summary related dataset, which contains information such as Target name and Model name.

The Summary dataset is created when you select these model and algorithm combinations.

Model	Algorithms
Binary Classification	Naive Bayes
	Neural Network
	Support Vector Machine
Multi Classification	Naive Bayes
	Neural Network
	Support Vector Machine

Find a Predictive Model's Related Datasets

Related datasets are generated when you train a predictive model.

Depending on the algorithm, related datasets contain details about the model like: prediction rules, accuracy metrics, confusion matrix, key drivers for prediction, and so on. These parameters help you understand the rules the model used to determine the predictions and classifications.

1. On your home page, click **Navigator**, and then click **Machine Learning**.
2. Click the menu icon for a training model and select **Inspect**.
3. Click the **Related** tab to access the model's related datasets.
4. Double-click a related dataset to view it or to use it in a workbook.

Add a Predictive Model to a Workbook

When you create a scenario in a workbook, you apply a predictive model to the workbook's dataset to reveal the trends and patterns that the model was designed to find.

> **Note**
>
> You can't apply an Oracle machine learning model to a workbook's data.

After you add the model to the workbook and map the model's inputs to the dataset's columns, the Data pane contains the model's objects, which you can drag and drop onto the canvas. Machine learning generates the model's values based on the visualization's corresponding data columns.

1. On your home page, click **Create**, and then click **Workbook**.
2. Select the dataset that you want to use to create the workbook and click **Add to Workbook**.
3. In the Data pane, click **Add**, and select **Create Scenario**.
4. In the Create Scenario - Select Model dialog, select a model and click **OK**.

   You can only apply a predictive model. You can't apply an Oracle machine learning model.

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If each model input can't be matched to a data element, then the Map Your Data to the Model dialog is displayed.

5. If the Map Your Data to the Model dialog is displayed, then in the **Dataset** field, select the dataset to use with the model.
6. Match the model input and data elements as needed. Click **Done**.

   The scenario is displayed as a dataset in the Data Elements pane.
7. Drag and drop elements from the dataset and the model onto the Visualize canvas.
8. To adjust the scenario, right-click the scenario in the Data Elements pane and select **Edit Scenario**.
9. Change the dataset and update the model input and data elements mapping as needed.
10. Click **Save** to save the workbook.

Evaluate Machine Learning Models Using Lift and Gain Charts

Lift and gain charts enable you to compare different machine learning models to determine the most accurate model.

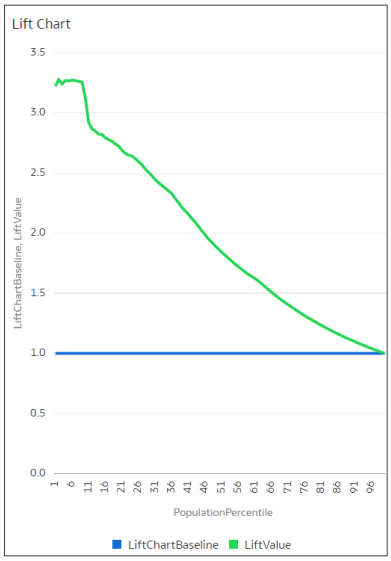
Topics:

- Overview to Using Lift and Gain Charts
- Generate Predictive Data for Lift and Gain Charts
- Evaluate a Machine Learning Model Using a Lift and Gain Chart

Overview to Using Lift and Gain Charts

Lift and gain charts enable you to evaluate predictive machine learning models by charting modeling statistics in a visualization in Oracle Analytics.

When you use a data flow to apply a classification model to a dataset, Oracle Analytics enables you to compute lift and gain values. You can then visualize this data in a chart to help you assess the accuracy of predictive models and determine the best one to use.



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Prequisites

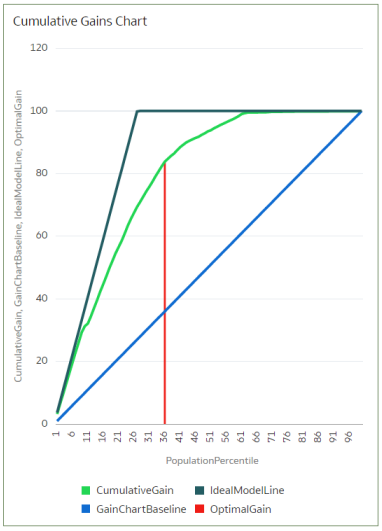
- Oracle Database/Oracle AI Database or Oracle Autonomous AI Lakehouse
- A classification model that includes prediction probability (for example, a multi-classifier model created using the Naive Bayes training script).
  You access existing predictive models in the Machine Learning area in Oracle Analytics.

Statistics Generated For Lift and Gain Analysis

When you apply a predictive classification model to a dataset and generate lift and gain statistics, you produce a dataset named <*Data flow name*>_LIFT with these columns:

- PopulationPercentile - The dataset population split into 100 equal groups.
- CumulativeGain - The ratio of the cumulative number of positive targets up to that percentile, to the total number of positive targets. The closer the cumulative gains line is to the top-left corner of the chart, the greater the gain; the higher the proportion of the responders that are reached for the lower proportion of customers contacted.
- GainChartBaseline - The overall response rate : the line represents the percentage of positive records we expect to get if we selected records randomly. For example, in a marketing campaign, if we contact X% of the customers randomly, we will receive X% of the total positive response.
- LiftChartBaseline - Value of 1 and used as a baseline for lift comparison.
- LiftValue - The cumulative lift for a percentile. Lift is the ratio of the cumulative positive records density for the selected data, to the positive density over all the test data.
- IdealModelLine - The ratio of the cumulative number of positive targets to the total number of positive targets.
- OptimalGain - This indicates the optimum number of customers to contact. The cumulative gain curve will flatten beyond this point.

You can then visualize the <*Data flow name*>_LIFT dataset in an Oracle Analytics chart. For example, to analyze gains, you might plot PopulationPercentile on the x-axis, and CumulativeGain, GainChartBaseline, IdealModelLine, and OptimalGain on the y-axis.



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Generate Predictive Data for Lift and Gain Charts

When you use a data flow to apply a classification model to a dataset, Oracle Analytics enables you to compute statistics that you can visualize in lift and gain charts.

Before you start, create a classification model that includes prediction probability (for example, a multi-classifier model created using the Naive Bayes training script). Oracle Analytics displays available models on the Models tab on the Machine Learning page (from your home page, click **Machine Learning**).

1. On your home page, click **Create**, then click **Data Flow**.
2. Select a data source, then click **Add**.
3. Click **Add a Step**, and select **Apply Model**.
4. At Select Model, select a classification model that includes prediction probability, then click **OK**.
5. In Apply Model, in the **Parameters** section:
   - In **Compute lift and gain**, select **Yes**.
   - In **Target column to compute lift**, select the column name of the value being predicted. For example, if your model predicts whether customers will sign up for a membership using a column named SIGNUP, select SIGNUP.
   - In **Positive class to compute**, specify the case-sensitive data value representing the positive class (or the preferred outcome) in the prediction. For example, if your model predicts whether customers will sign-up for a membership using a column named SIGNUP with values YES or NO, specify YES.
6. Add a **Save Data** node to your data flow.
7. Execute this data flow.

The data flow produces a dataset named <*Data flow name*>_LIFT that contains lift and gain statistics, which you can evaluate.

Evaluate a Machine Learning Model Using a Lift and Gain Chart

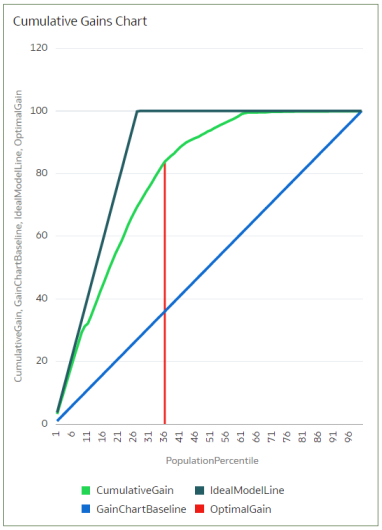
Use a chart to analyze statistics generated by machine learning classification models to determine the best model to use.

Before you start, apply a predictive model to your data and generate lift and gain statistics in a dataset.

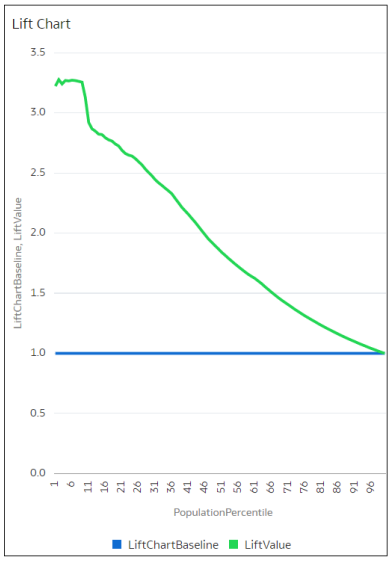
1. On your home page, click **Create**, then click **Workbook**.
2. In **Add Dataset**, select the <*Data flow name*>_LIFT dataset that you generated in the previous task, then click **Add to Workbook**.
3. In the **Visualize** panel, select the statistics to analyze, then right-click and select **Pick Visualization**, and choose **Line Chart**.

   For example, to analyze gains, you might place **PopulationPercentile** on the x-axis, and place **CumulativeGain**, **GainChartBaseline, IdealModelLine**, and **OptimalGain** on the y-axis.

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To analyze lift, you might place **PopulationPercentile** on the x-axis, and place **LiftChartBaseline**, and **LiftValue** on the y-axis.



Use Oracle Machine Learning Models in Oracle Analytics

You can register and use Oracle machine learning models from Oracle Database or Oracle Autonomous AI Lakehouse to score data in Oracle Analytics. Use the data flow editor to apply the machine learning models to your data.

Oracle Analytics enables you to build machine-learning into your applications without data scientist expertise.

Topics:

- How Can I Use Oracle Machine Learning Models in Oracle Analytics?
- Register Oracle Machine Learning Models in Oracle Analytics
- Inspect Registered Oracle Machine Learning Models
- Visualize a Registered Oracle Machine Learning Model's View

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How Can I Use Oracle Machine Learning Models in Oracle Analytics?

Oracle Analytics allows you to register and use Oracle machine leaning models from Oracle Database or Oracle Autonomous AI Lakehouse.

Using Oracle machine learning models with Oracle Analytics greatly increases the level of predictive analytics that you can perform on datasets because the data and the model reside in the database, the data scoring is performed in the database, and the resulting dataset is stored in the database. This allows you to use the Oracle machine learning execution engine to score large datasets.

You can register and use Oracle machine learning models from these database data sources:

- Oracle Autonomous AI Lakehouse
- Oracle Database

In Oracle Analytics you can register any of the database's Oracle machine learning models in the mining classes Classification, Regression, Clustering, Anomaly, or Feature Extraction that were created using the Oracle Machine Learning for SQL API (OML 4SQL). Your Oracle Analytics user role and database permissions determine the Oracle machine learning models that are available for you to register and use.

You can also create predictive models in Oracle Analytics.

Register Oracle Machine Learning Models in Oracle Analytics

The Oracle machine learning models must be registered in Oracle Analytics before you can use them to predict data. You can register and use models that reside in your Oracle Database or Oracle Autonomous AI Lakehouse data sources.

1. On your home page, click **Page Menu**, then **Register Model/Function**, then **Machine Learning Models**.

   This option is available for users with the BI Service Administrator or DV Content Author role.

2. In the Register an ML Model dialog, select a connection.

   In the Select a Model to Register dialog, you see the database's Oracle machine learning models in the mining classes Classification, Regression, Clustering, Anomaly, or Feature Extraction that were created using the Oracle Machine Learning for SQL API (OML 4SQL). If needed, click **Create Connection** to create a connection to the Oracle Database or Oracle Autonomous Data Warehouse data source containing the Oracle machine learning model that you want to use.

3. In the Select a Model to Register dialog, click the model that you want to register and review the model's information. For example, the model class and algorithm used to build the model, the target the model predicts, the columns the model is trained on, model predictions, and parameters.

4. Click **Register**.

5. On your home page, click **Navigator**  , and then click **Machine Learning** to confirm that the model was imported successfully.

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Inspect Registered Oracle Machine Learning Models

You can access and review information about the Oracle machine learning models that you registered in Oracle Analytics.

Topics:

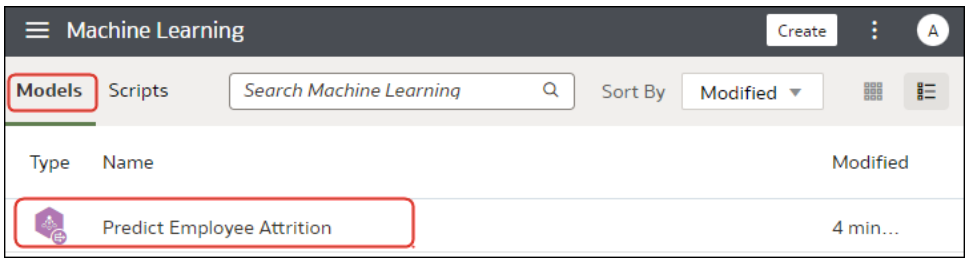
- View a Registered Model's Details
- What Are a Registered Model's Views?
- View a Registered Model's Views List

View a Registered Model's Details

View an Oracle machine learning model's detail information to help you understand the model and determine if it's suitable for predicting your data. Model details include model class, algorithm, input columns, output columns, and parameters.

When you register a model, its detail information is included. This information is obtained from Oracle Database or Oracle Autonomous AI Lakehouse.

1. On your home page, click **Navigator**, and then click **Machine Learning**.
2. Click the **Models** tab.



3. Hover over the model you want to view, click **Actions**, and then select **Inspect**.
4. Click **Details** to view the model's information.

What Are a Registered Model's Views?

When an Oracle machine learning model is created, views containing specific information about the model are generated and stored in the database. Use Oracle Analytics to access a list of a model's views, and then build datasets that you can use to visualize the information contained in the views.

Views contain information about the registered model such as model statistics, target value distribution, and algorithm settings. The number and kind of views created are determined by the model's algorithm. So a model built from the Naive Bayes algorithm has one set of views and a model built from the Decision Tree algorithm has a different set of views. For example, some of the views generated for a Decision Tree model are:

- Scoring Cost Matrix - Describes the scoring matrix for classification models. The view contains `actual_target_value`, `predicted_target_value`, and `cost`.
- Global Name-Value Pairs - Describes global statistics related to the model like number of rows used in the model build and convergence status.

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- Decision Tree Statistics - Describes the statistics associated with individual nodes in the decision tree. The statistics include a target histogram for the data in the node. For every node in the tree, this view has information about `predicted_target_value`, `actual_target_value`, and `node` support.

Each view's name is unique, for example DM$VCDT_TEST. The format used to generate view names is DM$V*Alphabet_Model Name* where:

- DM$V - Represents a prefix for views generated from a registered model.
- *Alphabet* - Represents a value that indicates the type of output model. For example, C indicates that the view type is Scoring Cost Matrix, and G indicated that the view type is Global Name-Value Pair.
- *Model Name* - Holds the name of the registered Oracle machine learning model and its view. For example, DT_TEST.

For more information about views, see the documentation for your Oracle database version.

Oracle Analytics provides a list of any registered model's views. However, you can only access and visualize views for Oracle Database 12*c* Release 2 or later. If you're working with an early version of Oracle Database, then you can't use Oracle Analytics to access and visualize views.

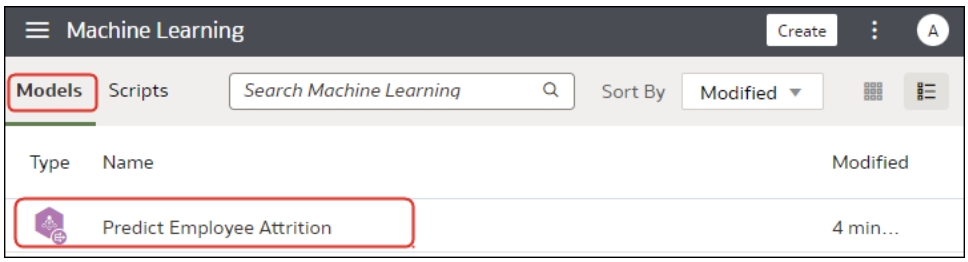
View a Registered Model's Views List

A registered model's views are stored in the database, but you can use Oracle Analytics to display a list of the model's views.

Views contain information such as a model's size, settings, and the attributes used in the model. This information can help you better understand and utilize the model.

> **Note**
>
> You can access and visualize views for Oracle Database 12*c* Release 2 or later. If you're working with an earlier version of Oracle Database, then these views don't exist in the database and you can't use Oracle Analytics to access and visualize them.

1. On your home page, click **Navigator**, and then click **Machine Learning**.
2. Click the **Models** tab.



3. Hover over the model you want to view, click **Actions**, and then select **Inspect**.
4. Click the **Related** tab to view a list of the model's views.

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Visualize a Registered Oracle Machine Learning Model's View

Visualize any of a registered model's views to discover information that helps you better understand and utilize the model.

> **Note**
>
> You can access and visualize views for Oracle Database 12*c* Release 2 or later. If you're working with an earlier version of Oracle Database, then these views don't exist in the database and you can't use Oracle Analytics to access and visualize them.

When creating the dataset, you need to know the model's view name and the database schema name. Use the following task to find these names, create the dataset, and visualize the view's information.

1. On your home page, click **Navigator**, and then click **Machine Learning**.
2. Locate the registered machine learning model, click **Actions**, and click **Inspect**.
3. Click **Details** and confirm that the **Model Info** section is expanded. Go to the **DB Model Owner** field and record the database schema name.
4. Click **Related** and locate and record the name of the view. Click **Close**.
5. On your home page, click **Create** and click **Dataset**.
6. Select the connection that contains the machine learning model and its views.
7. In the Dataset editor, browse for and click the database schema name that you located on the **Details** tab.
8. Select the view that you located on the **Related** tab, and double-click columns to add them to the dataset. Click **Add**.
9. Click **Create Workbook** to build visualizations.

Apply a Predictive or Registered Oracle Machine Learning Model to a Dataset

Use the data flow editor to score a predictive model on any dataset, or score a registered Oracle machine learning model on a dataset in its corresponding database.

Apply predictive models to your data to build machine learning Machine Learning (ML) and Artificial Intelligence (AI) into your applications without requiring ML or AI expertise.

Running the model outputs a new dataset with columns containing predicted values that you can use for analysis and visualization.

When you run a predictive model, the data is moved into and processed by Oracle Analytics. When you run a registered Oracle machine learning model, data isn't moved from the database into Oracle Analytics. Instead the model resides, is processed, and the output dataset is stored in the database.

In a data flow when using the **Apply Model** step:

- The registered models are displayed and are available for review and analyses. Unregistered models aren't displayed.

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- The available output columns are specific to the model type. For example, for numeric prediction, output columns include PredictedValue and PredictedConfidence, and for clustering, output columns include the clusterId.
- The available parameters are specific to the model type. For example, if you use a clustering model for scoring, maximum null values is a parameter that you can provide for the scoring process. This parameter is used in the missing value imputation.
- The model and the mapped input data types must match when you're working with an Oracle machine learning model. See View a Registered Model's Details.

1. On your home page, click **Create**, and then click **Data Flow**.
2. Select a dataset and click **Add**.
3. In the Data Flow editor, click **Add a step (+)**.
4. From the Data Flow Steps pane, double-click **Apply Model**, and then select the model to use.
5. In Apply Model, go to the Inputs section, and then select a column as the input.
6. In Apply Model, go to the Outputs section, and then select the columns that you want created with the dataset, and update the **Column Name** fields as needed.
7. In the data flow editor, click **Add a step (+)** and select **Save Data**.
8. Enter a name. In the **Save data to** field, specify the location for saving the output data.

   If you're working with an Oracle machine learning model, then the dataset's connection information defaults to the input dataset's connection.
9. Set data preferences as needed in the **Treat As** and **Default Aggregation** fields.

   When you save data, the apply model appends the model's output columns that you selected to the input dataset.
10. Click **Save**, enter a name and description for the data flow, and click **OK** to save the data flow.
11. Click **Run Data Flow** to create the dataset.

Perform Similarity Analysis in Oracle Analytics

In Oracle Analytics, you can analyze data to identify records that are similar to a specific record. For example, you might want to know which medical patients have a health profile similar to a given patient.

Oracle Analytics enables you to build similarity analysis into your applications without data scientist expertise.

Topics:

- Overview to Performing Similarity Analysis in Oracle Analytics
- Prerequisites to Performing Similarity Analysis in Oracle Analytics
- Apply a Similarity Analysis Model to Your Data
- Interpreting Results from a Similarity Analysis Model

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Overview to Performing Similarity Analysis in Oracle Analytics

In Oracle Analytics, you can perform similarity analysis on your data using a variety of vector embedding models. Similarity analysis enables you to measure how alike (similar) two or more objects, datasets, documents, or patterns are, based on defined criteria or metrics.

For example, you might want to answer questions such as:

- Which patients have similar symptoms to a given patient?
- Which customers have a similar profile to a given customer?
- Which insurance claims are similar in profile to a given insurance claim?

How does it work?

Oracle Database V23ai or later supports vector search and SQL functions to calculate the distance between vectors, which is used to quantify the degree of resemblance between data records. Oracle Analytics uses vector search behind the scenes to perform similarity analysis on datasets.

Performance Considerations

Processing time for similarity analysis varies depending on:

- The number of rows in your source dataset.
- The number of columns you select to use in your data flow. Note that not all columns in your source dataset will be used in your similarity analysis model. We recommend using between 10 and 15 columns. Selecting more than 15 columns can adversely affect the performance of the data flow you use to apply the model.
- The number of ECPUs allocated to your Oracle Autonomous AI Lakehouse instance.

Data flows have a timeout limit of 2.5 hours, which dictates the amount of data that can be processed.

Prerequisites to Performing Similarity Analysis in Oracle Analytics

Performing similarity analysis in Oracle Analytics requires:

- An Oracle Database V23ai or later.
- A similarity analysis model registered in your Oracle Analytics instance. See Make a Similarity Analysis Model Available in Oracle Analytics.
- A Oracle Analytics dataset containing the data to analyze, based on the same database where the vector embedded model is registered.
- An Oracle Analytics connection to Oracle Database V23ai or Oracle Autonomous AI Lakehouse V23ai or later data source. The connection must use the same user as that used to register your vector embedding model. See Connect to an Oracle Database or Connect to Autonomous Data Warehouse.

Apply a Similarity Analysis Model to Your Data

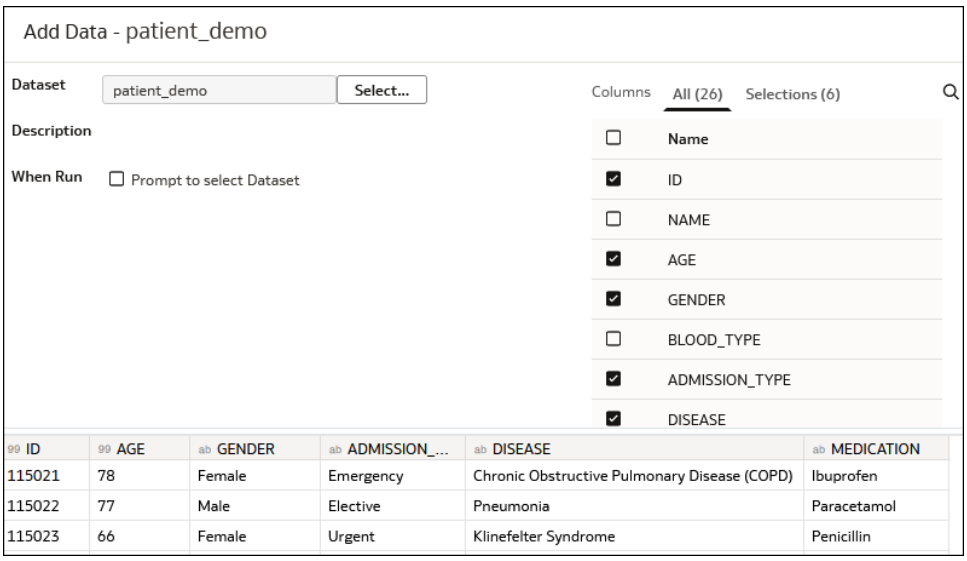
Use a data flow to apply a similarity analysis to your data, which enables you to identify records that are similar to a given record.

Before you start, make sure that you have the prerequisites for performing this type of analysis. See Prerequisites to Performing Similarity Analysis in Oracle Analytics.

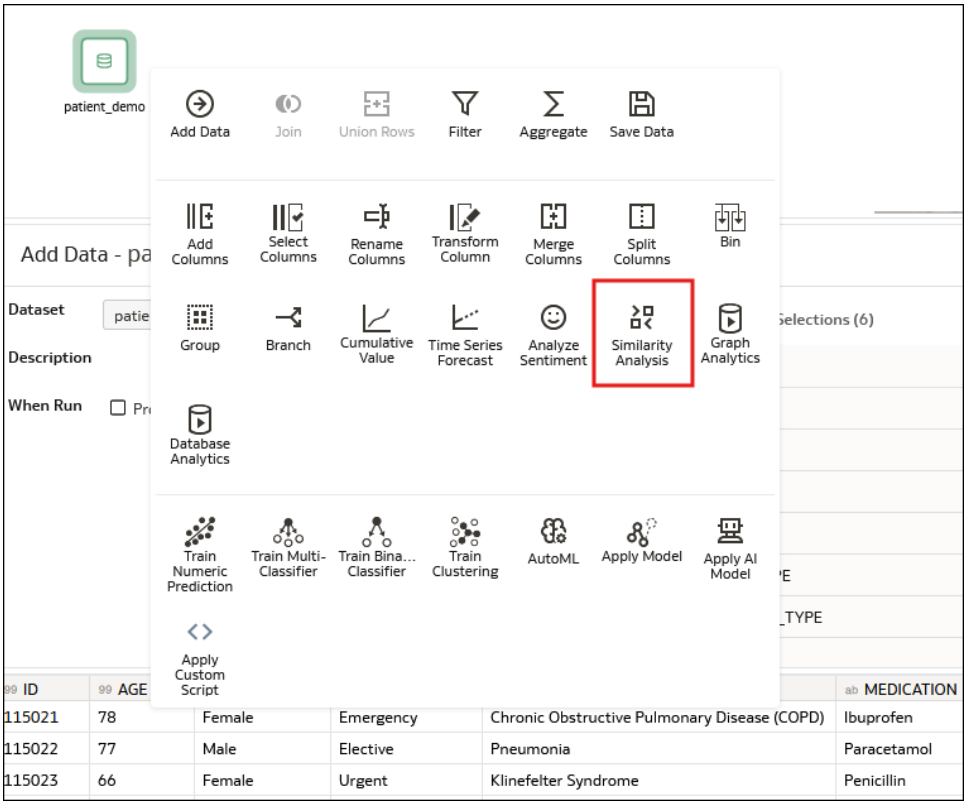
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1. On your home page, click **Create**, and then click **Data Flow**.
2. In Add Data, select a dataset, then click **Add**.

   You must use an Oracle Database or Oracle Autonomous AI Lakehouse V23ai or later.
3. In the list of columns, deselect the columns that you don't want to analyze (they're all selected by default). You must include a column with a unique ID. We recommend selecting between 10 and 15 columns. Selecting more than 15 columns can adversely affect performance.

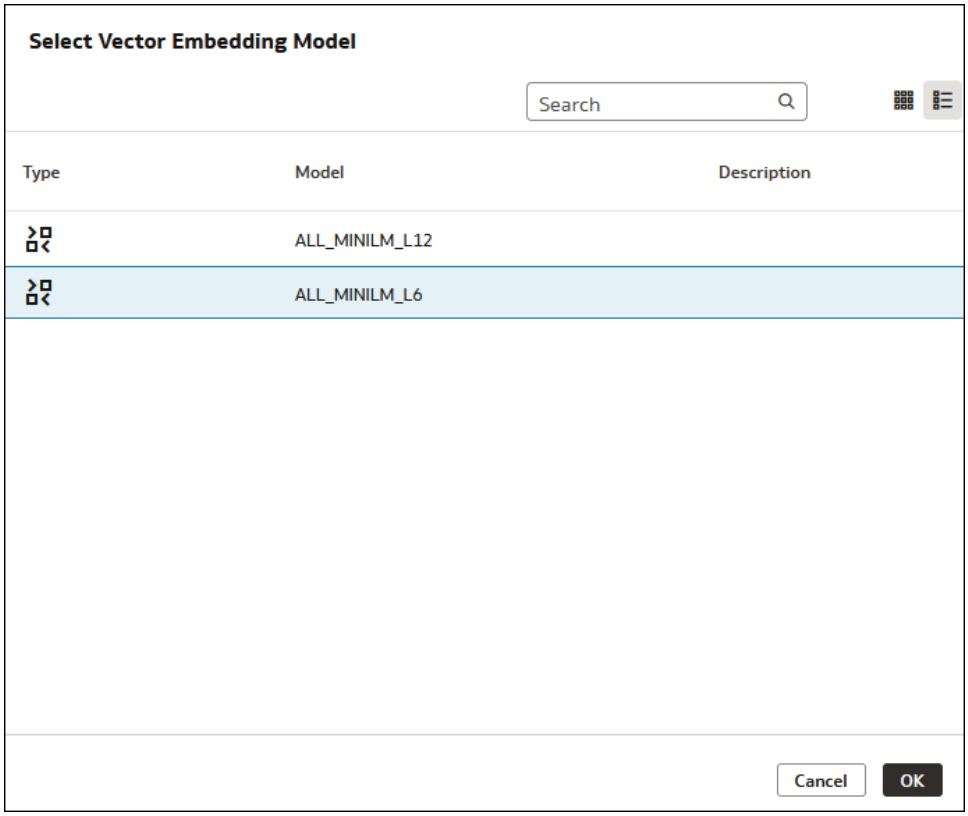


4. Hover over the dataset node and select **Add a step**, then click **Similarity Analysis**.



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5. Select a model to use, then click **OK**.

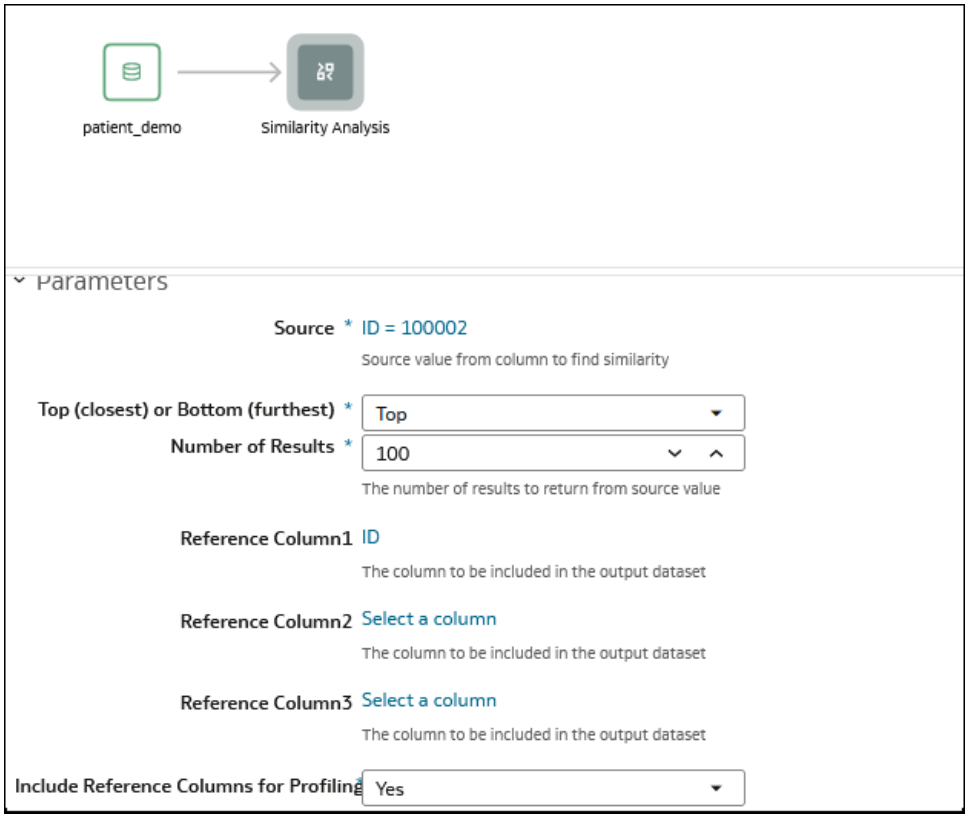


6. Expand the **Outputs** section, and select **Profile_expression**.

   This adds a concatenated output column of all your selected data.

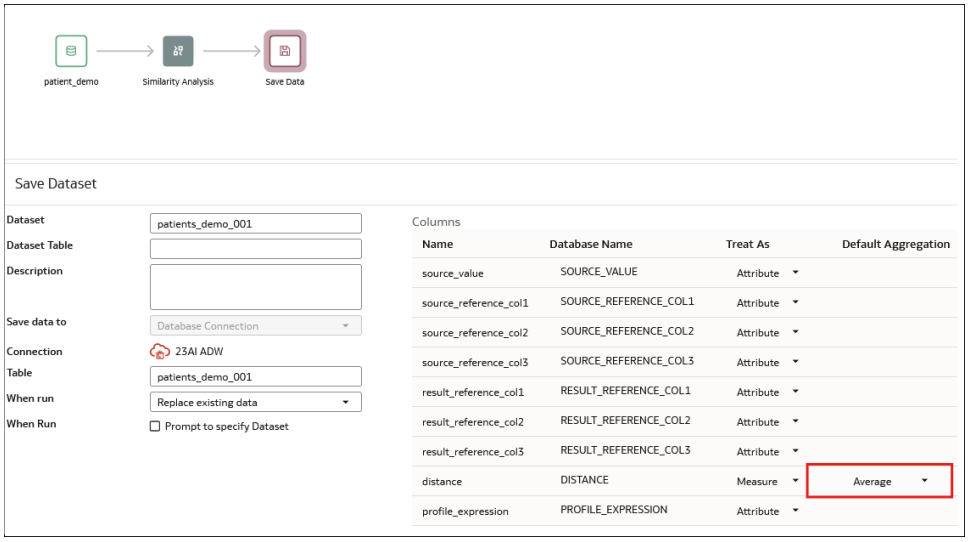
7. Expand the **Parameters** section.

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8. Configure the parameters:
   - **Source** - Click **Select a value**, then select the data column and value to uniquely identifies the record you want to compare with others in the dataset. For example, you might specify ID and select a patient with the ID "100002".
   - **Top (closest) or Bottom (furthest)** - Select "Top" to find the most similar records, or "Bottom" to find the least similar records.
   - **Number of Results** - Specify the number of matching records to return. For example, select "100" to find the top 100 matching records nearest to your target record.
   - (Optional) **Reference Column1, 2, and 3** - Specify a column or combination of columns that uniquely identify the records with which you're comparing the **Source** value. For example, for medical patients, you might select "ID", "Age", and "Medication". You're not required to make a selection in reference columns.
   - **Include Reference Columns for Profiling** - Choose No to exclude the reference columns specified in **Reference Column1, 2, and 3** from the profiling, or Yes to include them in the profiling.
9. Click **+** next to the **Similarity Analysis** node in the diagram, then click **Add step**, and select **Save Data**.
10. Configure the Save Data step:

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- **Dataset** - Change the default value to a more meaningful name. For example, "Similarity Analysis Top 10".
- **Table** - Don't change the default value. Oracle Analytics creates a new value when the data flow runs based on the **Dataset** name specified.
- (Optional) **Default Aggregation** - Change the default aggregation. For example, you might change it to Average.

11. Click **Save Model**, and specify the name of the generated prediction model.
12. Click **Save** and specify a name for the data flow.
13. Click **Run** to analyze the data and generate a predictive model.

You can locate the dataset that Oracle Analytics generates on the **Dataset** tab on the **Data** page. See Interpreting Results from a Similarity Analysis Model.

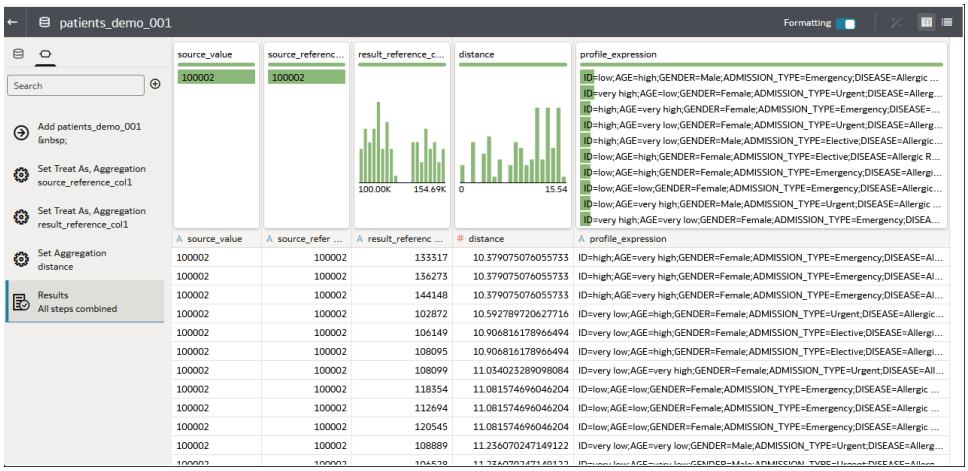
Interpreting Results from a Similarity Analysis Model

When you run a data flow to perform similarity analysis, Oracle Analytics generates a dataset containing the results.

Here's what you can do:

- Locate the output dataset on the Oracle Analytics Data page. Look for a dataset with the name specified in the **Save Data** step in the data flow. The dataset contains the same output columns listed in the **Outputs** section of the Similarity Analysis step in your data flow.

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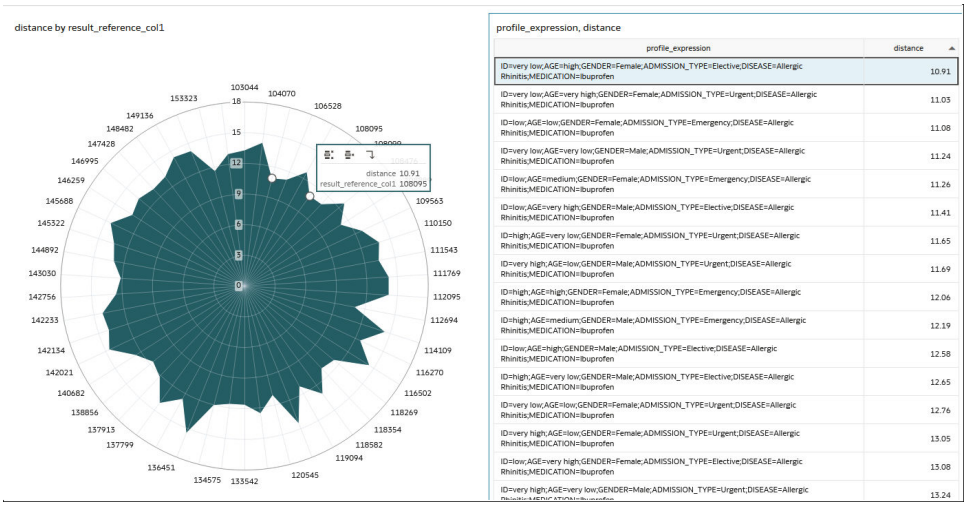
Dataset columns generated by the similarity analysis model:

- **source_value** - Returns the column with a single value within that column that was selected in the data flow as the source object. Your vector distance is measured by this value against all other values in this column.
- **source_reference_column1** - Returns the selected value of the reference column (as set in the data flow node properties) for records that have been selected at source records for similarity analysis. This output will help you now what is the source record for which you have found the closest or furthest records.
- **results_reference_column1, 2 and 3** - Returns the value of respective reference columns (as set in the data flow node properties) for records that have been identified as closest or furthest by similarity analysis.
- **distance** - The computed distance between your source value and the result record. That is, how similar or different is the data in source_reference_col1, source_reference_col2, and source_reference_col3 to result_reference1, result_reference2, and result_reference3.
- **profile_expression** - The concatenated expression of all columns used in your similarity analysis model into a single string. These are the columns for which values have been vectorized by the embedding model.

> **Note**
>
> Attributes columns that you selected are part of the profile string, whereas measures in metric columns are first dynamically categorized into low, medium, and high bins so that they are properly represented in the vectors.

- Create a workbook based on the output dataset generated by your similarity analysis data flow.
- Create visualizations to analyze the results. For example:

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Tip: For enhanced visualizations and insights, add the original dataset and join in to the model output data using the member ID. This provides you with an additional level of detail in measuring the vector distance to some of the original dataset attributes.

Use Oracle Cloud Infrastructure Vision Models in Oracle Analytics

Use pretrained Oracle Cloud Infrastructure (OCI) Vision models to analyze images and videos. This enables you to build image recognition and text recognition into your applications without machine learning (ML) or artificial intelligence (AI) expertise.

For example, when you use OCI pretrained Vision models, you can detect objects such as cars and faces in photographs and then blur the images to protect identities of the individuals.

Oracle Analytics supports these models:

- Image Classification for images.
- Face Detection for images and videos.
- Text Detection for images and videos.
- Label Detection for videos.
- Object Detection for images and videos.

Prerequisites:

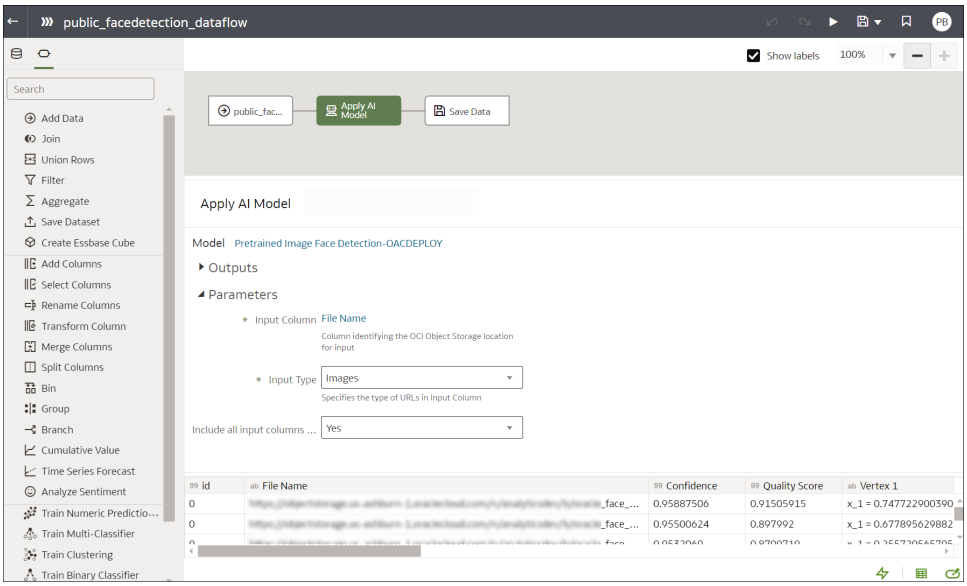
- See Integrate Oracle Analytics with Oracle Cloud Infrastructure Vision.
- See Prepare Images or Videos for Analysis with an OCI Vision Model.

> **Note**
>
> OCI face detection with Oracle Analytics can identify a maximum of 250 faces per image.

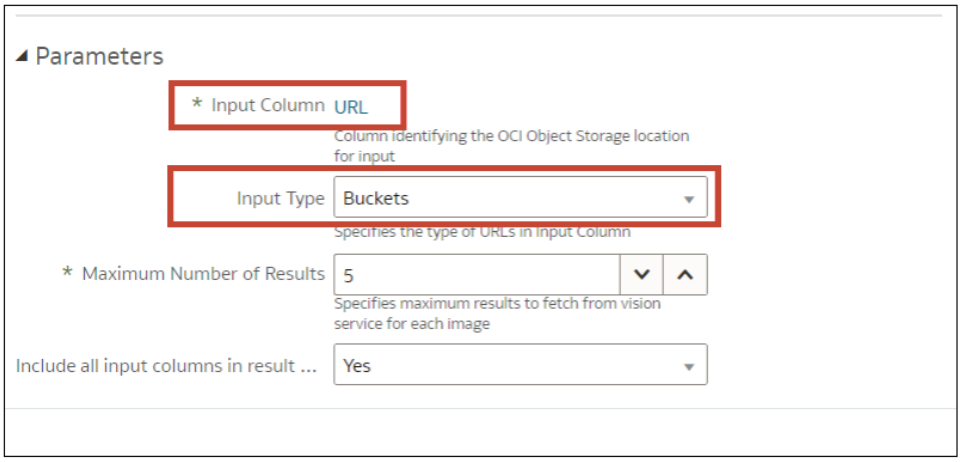
1. On your home page, click **Create**, and then click **Data Flow**.
2. Select the prepared dataset that references the images or videos and click **Add**.

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3. From the Data Flow Steps pane, double-click **Apply AI Model**.
4. In Select AI Model, select a model, and then click **OK**.
5. Use the **Outputs** and **Parameters** options to configure the model.



6. In Apply Model, expand **Parameters** and configure **Input Column** and **Input Type**.
   - **Input Column** - Click **Select a column** and select the dataset column that contains the bucket URL or URIs of the images or videos. For example, if the dataset column is named URL, select URL.



   - **Input Type**:
     - If you're referencing your source images by bucket, select **Buckets**.
     - If you're referencing your source images individually, select **Images**.
     - If you're referencing your source videos individually, select **Videos**.

   See Parameter Options for Object Detection, Image Classification, and Text Detection Analysis Models.
7. From the Data Flow Steps pane, double-click **Save Data**.

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8. Enter a name for the dataset and select a location for saving the dataset.

   For example, you might call the dataset 'Car Parking Analysis Results'.

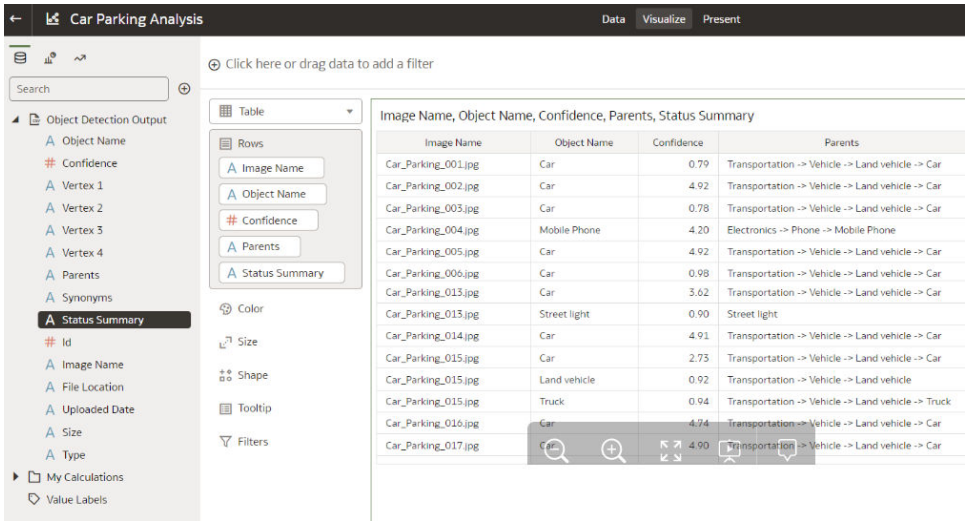
9. Click **Save**, enter a name for the data flow, and click **OK** to save the data flow.

10. Click **Run Data Flow** to analyze the images and output the results in a new dataset.

11. On your home page, click **Data**, and open the dataset that you specified in Step 8.

    Use the dataset to analyze the results. See Output Data Generated for Face Detection, Object Detection, Image Classification, and Text Detection Analysis Models.

If you have fewer than 20,000 images, you can process them in a single data flow. If you have more than 20,000 images, create a separate data flow to process each bucket (that is, using a separate dataset for each bucket), and use a Sequence to sequentially process multiple data flows. See Process Data Using a Sequence of Data Flows.
To locate the generated dataset, from your home page, navigate to **Data**, then **Datasets**.



For more detail about the generated results, see Output Data Generated for Face Detection, Object Detection, Image Classification, and Text Detection Analysis Models.

Parameter Options for Object Detection, Image Classification, and Text Detection Analysis Models

When you invoke an OCI Vision model from a data flow in Oracle Analytics, you configure the model using parameters.

For example, you use a parameter to specify whether your source dataset references images individually or by bucket. See Prepare Images or Videos for Analysis with an OCI Vision Model.

Parameters

Parameter	Description
Input Column	Specifies the OCI Object Storage location for the images or videos that you're processing. Click **Select a column** and select the dataset column that contains the bucket URL or URIs of the images or videos. For example, if the dataset column is named URL, select URL.

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Parameter	Description
Input Type	Specifies the type of URLs in input columns. • If you're referencing your source or videos images by bucket, select **Buckets**. • If you're referencing your source images individually, select **Images**. • If you're referencing your videos individually, select **Videos**.
Maximum Number of Results	(Only for Object Detection and Image Classification) Specifies the maximum number of results (between 1 and 100) to fetch from the OCI Vision service for each image. For videos, the maximum number of results only applies to Video Face Detection, Video Label Detection, Video Object Detection.
Include all input columns in result	Option to include all the input columns in the result.

Output Data Generated for Face Detection, Object Detection, Image Classification, and Text Detection Analysis Models

When you analyze images using an OCI Vision model, the Oracle Analytics data flow generates data about the images. For example, each prediction has a confidence score and a status summary.

Tip: To locate generated datasets, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**

Output Data for Images

Face Detection for Images

Output Column	Type	Description
Confidence	Number	Specifies the confidence level of the prediction that the image contains a face.
ID	Number	Specifies a unique ID for each face identified in each image. For example, faces might have IDs 1.00, 2.00, and 3.00.
Image File from Bucket	String	Specifies the object storage URL of the image from the bucket specified. This column is included only when Input type is Bucket.
Left/Right Edge Of Mouth Landmark	String	Specifies the location of the edge of the mouth.
Left/Right Eye Landmark	String	Specifies the location of left and right eyes.
Line Vertex 1, Line Vertex 2, Line Vertex 3, Line Vertex 4	String	Specifies the location (x and y coordinates) of the face.
Nose Tip Landmark	String	Specifies the location of the tip of the nose.
Quality Score	String	Specifies the quality score that is determined by whether the face is clear and unobstructed.
Status Summary	String	Specifies a summary of the model's output, for example, "unsupported image type". This column is blank on successful output.

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Image Classification for Images

Output Column	Type	Description
Confidence	Number	Specifies the confidence score of the object detection on the scale of 0 to 1.
Image File from Bucket	String	Specifies the object storage URL of the image from the bucket specified. This column is included only when Input type is Bucket.
Object Name	String	Specifies the identified object's name.
Parents	String	Specifies the categorization of the identified object name.
Status Summary	String	Specifies a brief summary of the model's output, for example, "unsupported image type". This column is blank on successful output.
Synonyms	String	Not used.

Object Detection for Images

Output Column	Type	Description
Confidence	Number	Specifies the confidence score of the object detection on the scale of 0 to 1.
Image File from Bucket	String	Specifies the object storage URL of the image from the bucket specified. This column is included only when Input type is Bucket.
Object Name	String	Specifies the identified object's name.
Parents	String	Specifies the categorization of the identified object name.
Status Summary	String	Specifies the a brief summary of the model's output, for example, "unsupported image type". This column is blank on successful output.
Synonyms	String	Not used.
Vertex 1, Vertex 2, Vertex 3, Vertex 4	String	Specifies the highest points of the highlighted box surrounding an identified object. For example, x_1 = 0.001; y_1 = 0.0013333333333333333, and so on.

Text Detection for Images

Output Column	Type	Description
Image File from Bucket	String	Specifies the object storage URL of the image from the bucket specified. This column is included only when Input type is Bucket.
Line Confidence	Number	Specifies the confidence score of the line of words detected on the scale of 0 to 1.
Line Vertex 1, Line Vertex 2, Line Vertex 3, Line Vertex 4	String	Specifies the vertices (x and y coordinates) of the highlighting box of the line, for example, x_1 = 0.001; y_1 = 0.0013333333333333333.
Line Words	String	Specifies the words detected and extracted as line.
Status Summary	String	Specifies brief summary of the model's output, for example, "unsupported image type". This column is blank on successful output.
Word	String	Specifies the words detected.
Word Confidence	String	Specifies the confidence score of the words detected on the scale of 0 to 1.

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Output Column	Type	Description
Word Vertex 1, Word Vertex 2, Word Vertex 3, Word Vertex 4	String	Specifies the points of a box surrounding an identified word. For example, x_1 = 0.001; y_1 = 0.0013333333333333333.

Output Data for Videos

Face Detection for Videos

Output Column	Type	Description
Frame Confidence	String	Specifies the confidence level of the prediction. For example, 0.97930855.
Frame Time Offset ms	String	For example, 2500.
Frame vertex 1, 2, 3, and 4	String	For example, x_1 = 0.2583038330078125; y_1 = 0.03305579291449653, x_2 = 0.6563463687896729; y_2 = 0.03305579291449653, x_3 = 0.6563463687896729; y_3 = 0.8938908894856771, x_4 = 0.2583038330078125; y_4 = 0.8938908894856771
ID	String	The unique ID of the video, as specified in the input dataset. For example, 1.
Quality Score	String	For example, 0.89911604.
Segment Confidence	String	For example, 0.93692553.
Segment End Time Offset ms	String	For example, 3500.
Segment Start Time Offset ms	String	For example, 2500.
Status Summary	String	A brief summary of the model's output, for example, "unsupported video type". This column is blank on successful output.
URL	String	For example, https://<server>.objectstorage.us-ashburn-1.oci.<customer>-oci.com/n/analyticsdev/b/video_analysis/o/Video_MyVideo.mp4.

Label Detection for Videos

Output Column	Type	Description
Confidence	String	Specifies the confidence level of the prediction. For example, 0.97930855.
ID	String	The unique ID of the video, as specified in the input dataset. For example, 1.
Segment Confidence	String	For example, 0.93692553.
Segment End Time Offset ms	String	For example, 3500.

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Output Column	Type	Description
Segment Start Time Offset ms	String	For example, 2500.
Status Summary	String	A brief summary of the model's output, for example, "unsupported video type". This column is blank on successful output.
URL	String	For example, https://<server>.objectstorage.us-ashburn-1.oci.<customer>-oci.com/n/analyticsdev/b/video_analysis/o/Video_MyVideo.mp4.
Video Label	String	The label identified in the video. For example, "Fashion accessory".

Object Detection for Videos

Output Column	Type	Description
Frame Confidence	String	Specifies the confidence level of the prediction. For example, 0.97930855.
Frame Time Offset ms	String	For example, 0.
Frame vertex 1, 2, 3, and 4	String	For example, x_1 = 0.6046875; y_1 = 0.19166666666666668, x_2 = 0.65859375; y_2 = 0.19166666666666668, x_3 = 0.65859375; y_3 = 0.5708333333333333, x_4 = 0.6046875; y_4 = 0.5708333333333333
ID	String	The unique ID of the video, as specified in the input dataset. For example, 1.
Segment Confidence	String	For example, 0.93692553.
Segment End Time Offset ms	String	For example, 2000.
Segment Start Time Offset ms	String	For example, 0.
Status Summary	String	A brief summary of the model's output, for example, "unsupported video type". This column is blank on successful output.
URL	String	For example, https://<server>.objectstorage.us-ashburn-1.oci.<customer>-oci.com/n/analyticsdev/b/video_analysis/o/Video_MyVideo.mp4.
Video Objects	String	The object identified in the video. For example, a candle.

Text detection for Videos

Output Column	Type	Description
Frame Confidence	String	Specifies the confidence level of the prediction. For example, 0.97930855.
Frame Time Offset ms	String	For example, 0.
Frame vertex 1, 2, 3, and 4	String	For example, x_1 = 0.6046875; y_1 = 0.19166666666666668, x_2 = 0.65859375; y_2 = 0.19166666666666668, x_3 = 0.65859375; y_3 = 0.5708333333333333, x_4 = 0.6046875; y_4 = 0.5708333333333333
ID	String	The unique ID of the video, as specified in the input dataset. For example, 1.

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Output Column	Type	Description
Segment Confidence	String	For example, 0.93692553.
Segment End Time Offset ms	String	For example, 2000.
Segment Start Time Offset ms	String	For example, 0.
Status Summary	String	A brief summary of the model's output, for example, "unsupported video type". This column is blank on successful output.
Video Text	String	The text identified in the video. For example, "Happy Birthday to you".
Video URLs	String	For example, https://<server>.objectstorage.us-ashburn-1.oci.<customer>-oci.com/n/analyticsdev/b/video_analysis/o/Video_MyVideo.mp4.

Use Oracle Cloud Infrastructure Data Science Models in Oracle Analytics

You can incorporate Oracle Cloud Infrastructure (OCI) Data Science models in Oracle Analytics to build machine learning (ML) into your applications without requiring ML expertise.

Topics:

- Apply an OCI Data Science Model to a Dataset

Before you start, make sure that you've followed the prerequisites for Data Science integration, and registered the models in Oracle Analytics. See Prerequisites for Integrating OCI Data Science Models with Oracle Analytics and Make an OCI Data Science Model Available in Oracle Analytics.

Apply an OCI Data Science Model to a Dataset

Apply an OCI Data Science model to a dataset in Oracle Analytics to analyze your data and store the results in another dataset. For example, with healthcare data, a predictive model can help you identify risk factors and predict the risk of patient readmission after discharge.

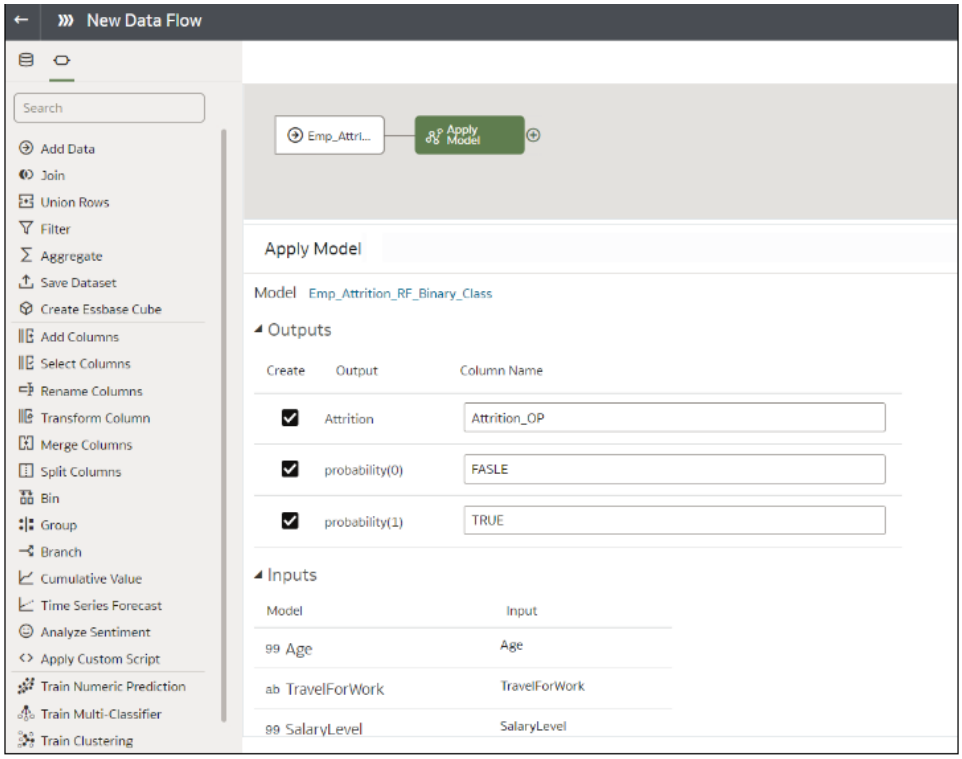
Prerequisites:

- Make sure that your Oracle Analytics instance is integration with OCI Data Science. See Integrate Oracle Analytics with Oracle Cloud Infrastructure Data Science.
- Register an OCI Data Science model in Oracle Analytics Cloud. See Make an OCI Data Science Model Available in Oracle Analytics.
- Prepare a dataset that contains the data that you want to analyze.

1. On your home page, click **Create**, and then click **Data Flow**.
2. Select the dataset that you want to analyze, then click **Add**.
3. In the Data Flow editor, click **Add a step (+)**.
4. From the Data Flow Steps pane, double-click **Apply Model** to display the Select Model dialog.

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5. Select a model, then click **OK**.
6. In the Apply Model dialog, configure the model using the settings under **Outputs** and **Inputs**.

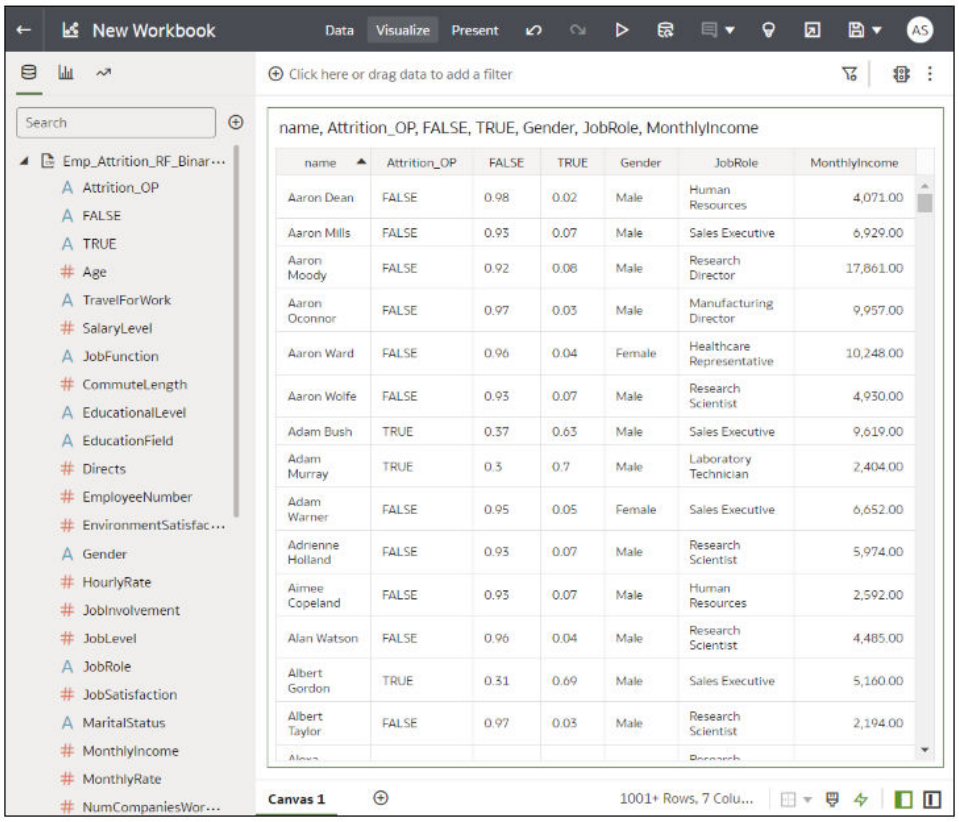


7. In the data flow editor, click **Add a step (+)** and select **Save Data**.
8. Enter the name of the dataset in which to store the output results.

   For example, you might call the dataset 'Employee Attrition Results'.
9. In the **Save data to** field, specify the location for saving the output data.
10. Click **Save**, enter a name for the data flow, and click **OK** to save the data flow.
11. Click **Run Data Flow** to apply the Data Science model and save the results in the output dataset for further analysis.
12. When the data flow run completes, click **Navigator**, click **Data**, and then open the generated dataset from the Datasets page.

You can now visualize the data in a workbook.

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Use Oracle Cloud Infrastructure Document Understanding Models in Oracle Analytics

Use pretrained and custom Oracle Cloud Infrastructure (OCI) Document Understanding models to build document classification and key value extraction into your applications without machine learning (ML) or artificial intelligence (AI) expertise. For example, you might use document classification to identify passports, driver licenses, receipts, or invoices.

Topics:

- Overview to Document Classification and Key Value Extraction
- Prepare Documents to Analyze with an OCI Document Understanding Model
- Perform Document Classification and Key Value Extraction

Overview to Document Classification and Key Value Extraction

In Oracle Cloud Infrastructure (OCI), Document Understanding provides pretrained AI models that can extract text, tables, and other key data from document files. You perform document classification or key value extraction on a document, then use that extracted data as part of your analysis in Oracle Analytics.

Document Understanding also lets you create custom models for key value extraction and document classification.

In Oracle Analytics, you use data flows to apply the Document Understanding AI models to your data.

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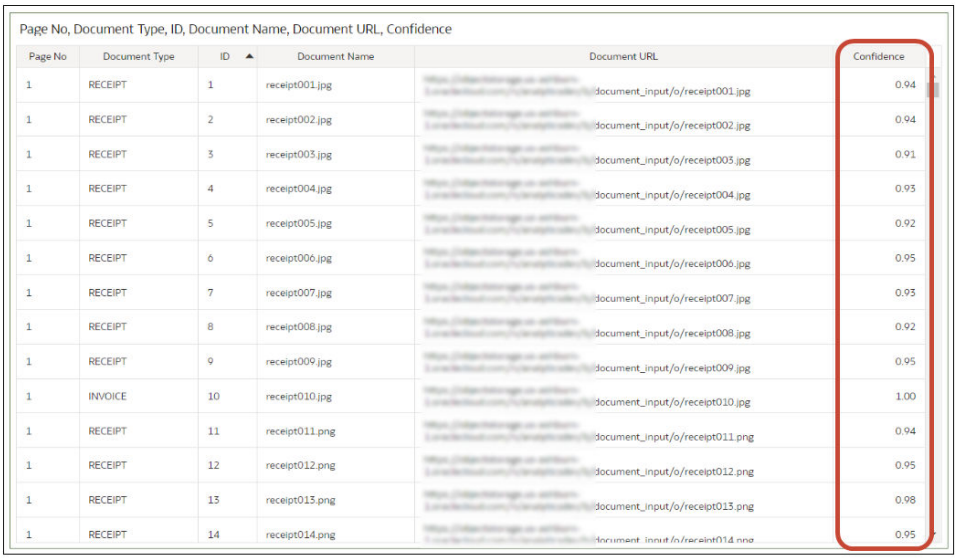
Oracle Analytics supports several pretrained and custom AI models available from Document Understanding:

- **Pretrained Models Supported in Oracle Analytics**
  - Document Classification
  - Key Value Extraction (for receipts, invoices, driver IDs, and passports)
- **Custom Models Supported in Oracle Analytics**
  - Custom Document Classification
  - Custom Key Value Extraction

You must set up and build custom models in OCI Console before you can use them in Oracle Analytics. First, you use OCI Data Labeling to create a good dataset that you can use to train the model and then you build your custom model. See OCI Document Understanding - Custom Models.

Example Output From a Document Classification Model

In this example, a data flow applies a pretrained document classification model to documents in JPG format to predict whether they are receipts, and outputs the analysis results to a dataset. The dataset includes a RECEIPT value for "Document Type", and a "Confidence" prediction level for each document.



Page No, Document Type, ID, Document Name, Document URL, Confidence

Page No	Document Type	ID	Document Name	Document URL	Confidence
1	RECEIPT	1	receipt001.jpg	[redacted]document_input/o/receipt001.jpg	0.94
1	RECEIPT	2	receipt002.jpg	[redacted]document_input/o/receipt002.jpg	0.94
1	RECEIPT	3	receipt003.jpg	[redacted]document_input/o/receipt003.jpg	0.91
1	RECEIPT	4	receipt004.jpg	[redacted]document_input/o/receipt004.jpg	0.93
1	RECEIPT	5	receipt005.jpg	[redacted]document_input/o/receipt005.jpg	0.92
1	RECEIPT	6	receipt006.jpg	[redacted]document_input/o/receipt006.jpg	0.95
1	RECEIPT	7	receipt007.jpg	[redacted]document_input/o/receipt007.jpg	0.93
1	RECEIPT	8	receipt008.jpg	[redacted]document_input/o/receipt008.jpg	0.92
1	RECEIPT	9	receipt009.jpg	[redacted]document_input/o/receipt009.jpg	0.95
1	INVOICE	10	receipt010.jpg	[redacted]document_input/o/receipt010.jpg	1.00
1	RECEIPT	11	receipt011.png	[redacted]document_input/o/receipt011.png	0.94
1	RECEIPT	12	receipt012.png	[redacted]document_input/o/receipt012.png	0.95
1	RECEIPT	13	receipt013.png	[redacted]document_input/o/receipt013.png	0.98
1	RECEIPT	14	receipt014.png	[redacted]document_input/o/receipt014.png	0.95

Before you start:

- Ask your administrator to integrate your Oracle Analytics service with OCI Document Understanding. See Integrate Oracle Analytics with Oracle Cloud Infrastructure Document Understanding.
- In Oracle Analytics, create a connection to your OCI Document Understanding service. See Create a Connection to Your Oracle Cloud Infrastructure Tenancy.

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Prepare Documents to Analyze with an OCI Document Understanding Model

You use buckets in OCI Object Storage to store the documents that you want to analyze, then create a dataset to access these documents in Oracle Analytics.

You typically store input documents and AI models in the *same* Oracle Cloud account (tenancy), which makes it easier to setup in Oracle Analytics.

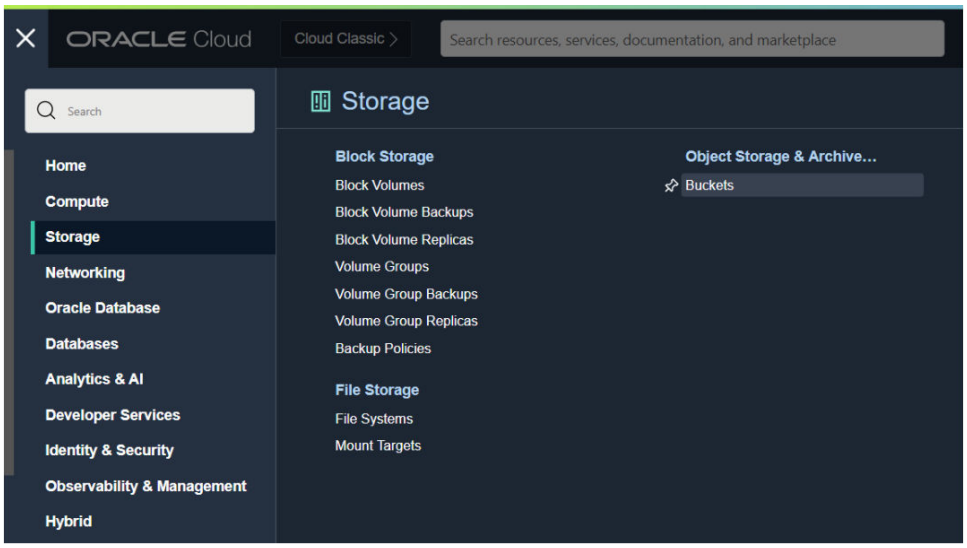
If your input documents and AI models are stored in *different* tenancies:

- Make sure that the visibility of the storage bucket containing your input documents is **public**. See Change the visibility of a bucket.
- Populate the input dataset for the data flow with individual document URLs instead of a single URL for the OCI bucket where documents are stored.

In a single run, Oracle Analytics data flows can process up to 10,000 documents for pretrained models and 2,000 documents for custom models. If you have more than the maximum number documents that can be processed in one run, in OCI's Object Storage & Archive Storage, create multiple buckets containing no more than the maximum number of documents in each one. Then, create a separate dataset and data flow for each bucket, and use a sequence to sequentially process the data flows.

You can use a private or public bucket that is accessible by the OCI user and that complies with OCI's generic limits on documents. See OCI documentation.

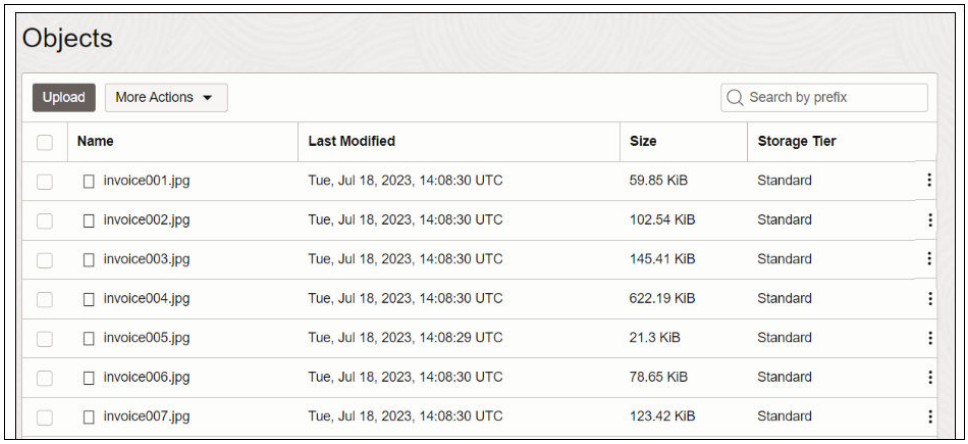
1. In OCI Console, navigate to **Object Storage & Archive Storage**, and create a bucket to store your documents.



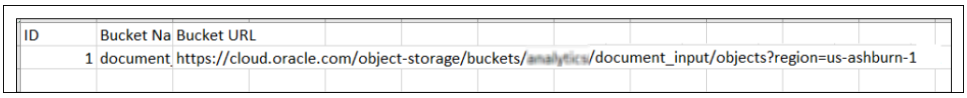
2. In the **Object Storage & Archive Storage** area, click a bucket name, then under the **Objects** region of the page click **Upload** and upload your documents.

   Make sure that the bucket contains no extraneous files that you don't want to process. Oracle Analytics processes every file in the bucket.

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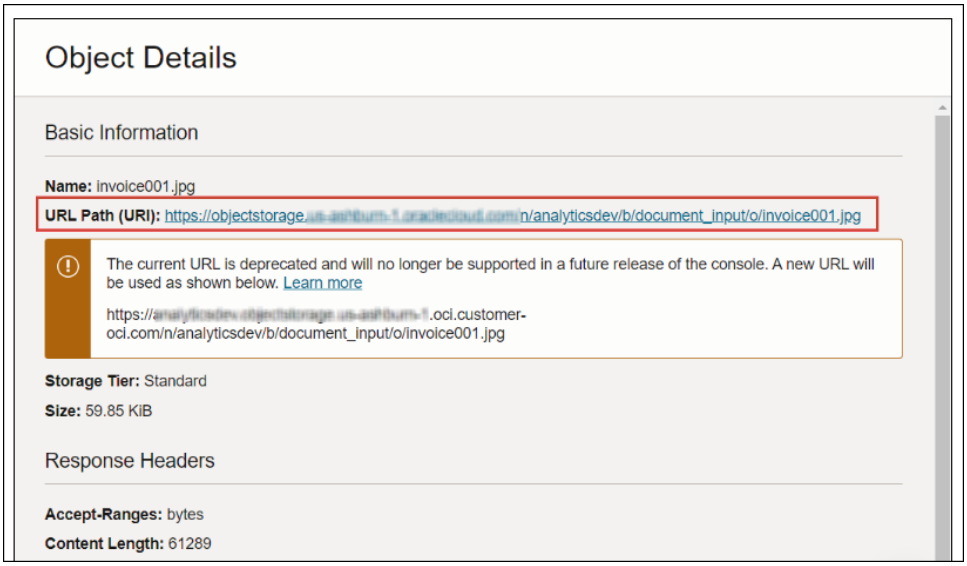


3. For each bucket, add the bucket URL to a comma-separated values (CSV) file.
   a. In Object Storage, select the bucket to display the documents in the Objects dialog.
   b. Copy the URL from the browser's URL bar.
   c. Create a CSV file with fields for `ID`, `Bucket Name`, and `Bucket URL`.
   d. Paste the bucket URL into the CSV file as the `Bucket URL` value.



Alternatively, if your input documents and AI models are stored in *different* tenancies, add them individually to the CSV file.

Create a CSV file with fields for `ID`, `Document Name`, and `Document URL`. For each document in Object Storage, click the ellipsis icon ⋮, and select **View Object Details**, and copy the **Name** value and **URL Path (URI)** value.



Paste the Name value as Document Name, and paste the URL Path (URI) value as Document URL.

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ID	Document	Document URL
1	receipt001	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt001.jpg
2	receipt002	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt002.jpg
3	receipt003	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt003.jpg
4	receipt004	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt004.jpg
5	receipt005	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt005.jpg
6	receipt006	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt006.jpg
7	receipt007	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt007.jpg
8	receipt008	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt008.jpg
9	receipt009	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt009.jpg
10	receipt010	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt010.jpg
11	receipt011	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt011.png
12	receipt012	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt012.png
13	receipt013	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt013.png
14	receipt014	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt014.png
15	receipt015	https://objectstorage.us-ashburn-1.oraclecloud.com/n/analyticsdev/b/document_input/o/receipt015.png

4. In Oracle Analytics, for each bucket that you're using to store your documents, click **Create**, then **Dataset**.
5. Upload the CSV file that you created in Step 3, and save the dataset.

   Repeat steps 4 and 5 for each bucket. If you have more than 10,000 documents, create multiple buckets of up to 10,000 documents and create a separate dataset for each bucket.

Perform Document Classification and Key Value Extraction

Use pretrained OCI Document Understanding models to build document classification and key value extraction into your applications without machine learning (ML) or artificial intelligence (AI) expertise. For example, you might use document classification to identify passports, driver licenses, receipts, and invoices.

Note: OCI Document Understanding currently supports only English. See Limits for Document Understanding.

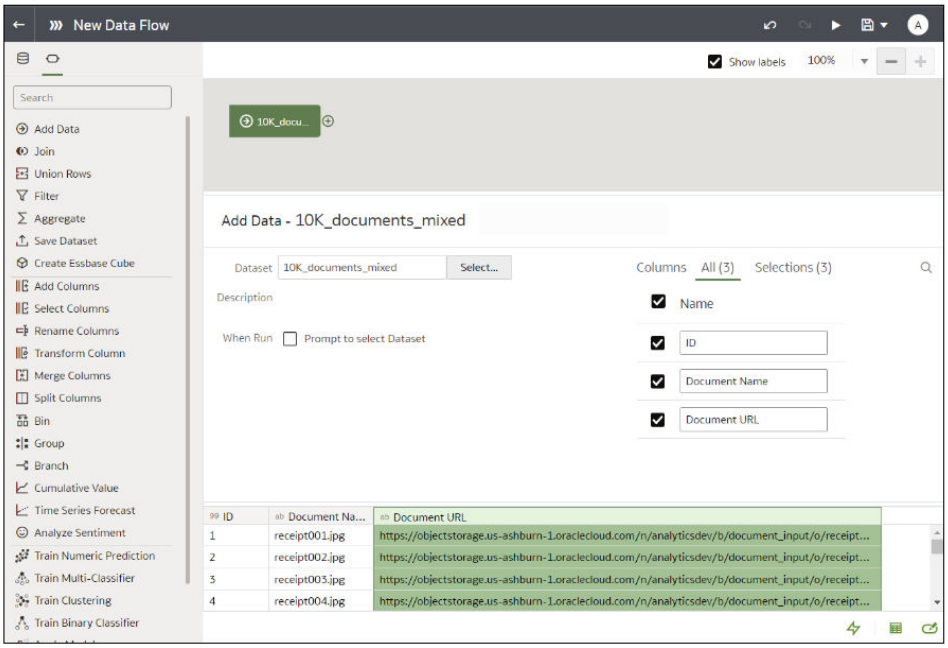
If you have fewer than 10,000 documents for a pretrained model or 2,000 documents for a custom model, you can process them in a single data flow. If you have more than these limits, then create a separate data flow to process each bucket (that is, using a separate dataset for each bucket), and use a Sequence to sequentially process the data flows. See Process Data Using a Sequence of Data Flows.

Prerequisites:

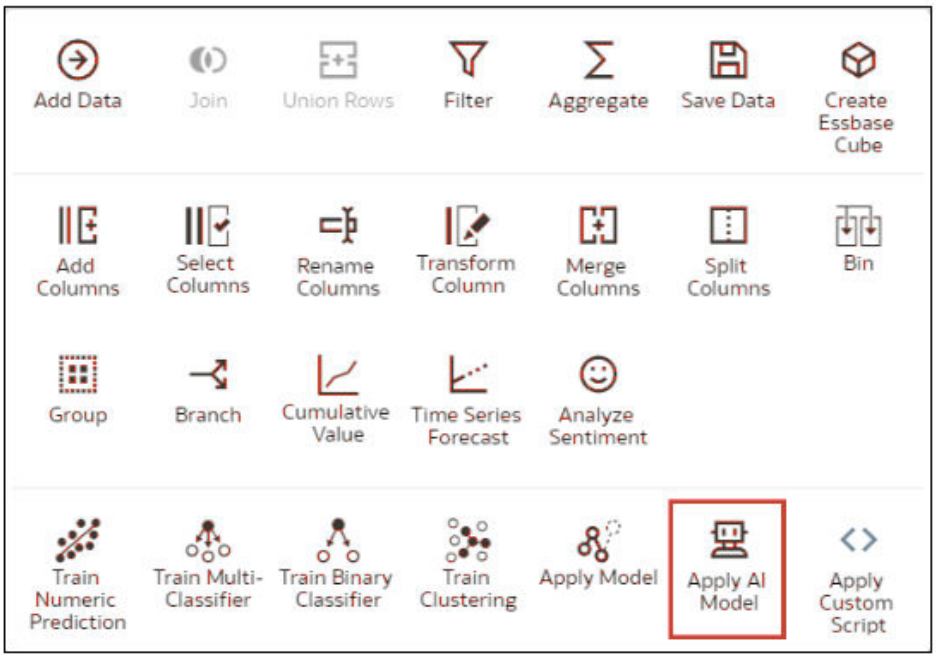
- Ask your administrator to make sure that your Oracle Analytics instance is integrated with OCI Document Understanding.
- Prepare a dataset that references the documents that you'd like to analyze and upload it to Oracle Analytics. See Prepare Documents to Analyze with an OCI Document Understanding Model.

1. On your home page, click **Create**, and then click **Data Flow**.
2. Select the dataset linking to the documents you want to analyze, then click **Add**.

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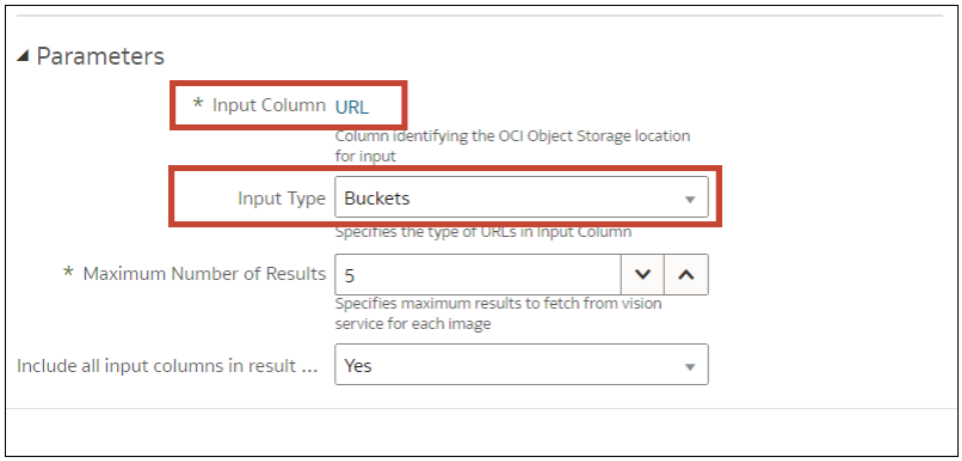
3. In the Data Flow editor, click **Add a step (+)**.
4. From the Data Flow Steps pane, double-click **Apply AI Model**, and then select the model to use.



For example, you might select Pretrained Document Classification to identify passports.

5. In Apply AI Model, go to the Inputs section, and configure the **Input Column** and **Input Type** parameters.
   - If you're referencing your source documents by bucket, in **Input Column** select **URL**, and in **Input Type** select **Buckets**.

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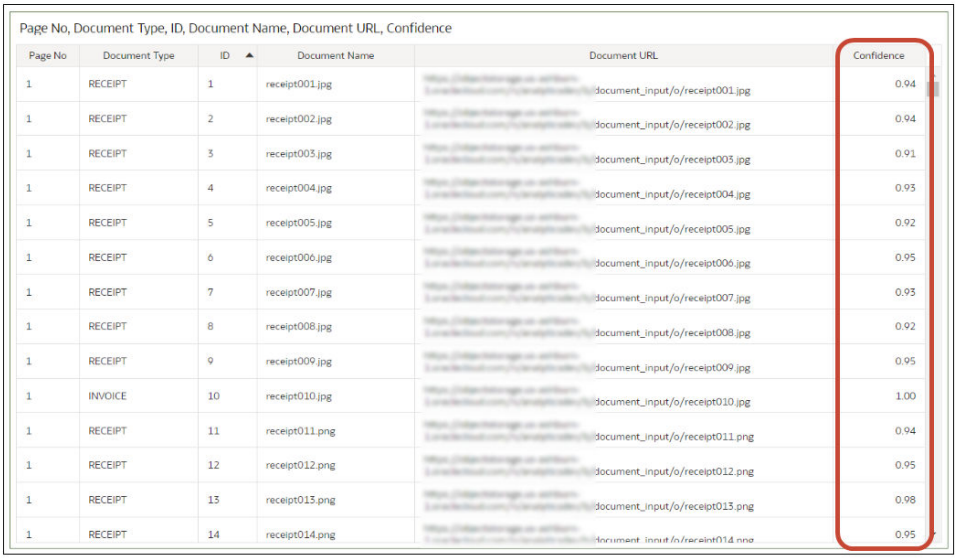
- If you're referencing your source documents individually, in **Input Column** select **File Location**, and in **Input Type** select **Documents**.

See Parameter Options for OCI Document Understanding Models .

6. In the data flow editor, click **Add a step (+)** and select **Save Data**.
7. In **Name**, enter a name for the output dataset.

   For example, you might call the dataset 'Passport Identification Analysis Results'.
8. In the **Save data to** field, specify the location for output dataset.
9. Click **Save**, enter a name for the data flow, and click **OK**.
10. Click **Run Data Flow**.

When the data flow completes the analysis, open the dataset that you specified in Step 7. To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**.



Page No	Document Type	ID	Document Name	Document URL	Confidence
1	RECEIPT	1	receipt001.jpg	document_input/o/receipt001.jpg	0.94
1	RECEIPT	2	receipt002.jpg	document_input/o/receipt002.jpg	0.94
1	RECEIPT	3	receipt003.jpg	document_input/o/receipt003.jpg	0.91
1	RECEIPT	4	receipt004.jpg	document_input/o/receipt004.jpg	0.93
1	RECEIPT	5	receipt005.jpg	document_input/o/receipt005.jpg	0.92
1	RECEIPT	6	receipt006.jpg	document_input/o/receipt006.jpg	0.95
1	RECEIPT	7	receipt007.jpg	document_input/o/receipt007.jpg	0.93
1	RECEIPT	8	receipt008.jpg	document_input/o/receipt008.jpg	0.92
1	RECEIPT	9	receipt009.jpg	document_input/o/receipt009.jpg	0.95
1	INVOICE	10	receipt010.jpg	document_input/o/receipt010.jpg	1.00
1	RECEIPT	11	receipt011.png	document_input/o/receipt011.png	0.94
1	RECEIPT	12	receipt012.png	document_input/o/receipt012.png	0.95
1	RECEIPT	13	receipt013.png	document_input/o/receipt013.png	0.98
1	RECEIPT	14	receipt014.png	document_input/o/receipt014.png	0.95

For more detail about the generated results, see Output Data Generated for OCI Document Understanding Models.

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Parameter Options for OCI Document Understanding Models

When you invoke an OCI Document Understanding model from a data flow in Oracle Analytics, you configure the model using parameters.

For example, you specify whether the source dataset is configured to link to a bucket or to individual documents. See Prepare Documents to Analyze with an OCI Document Understanding Model.

Parameters for Document Classification models

Parameter	Description
Input Column	Specifies the OCI Object Storage location for the documents you're processing. • If you're referencing your source documents by bucket, select the column with bucket URLs. • If you're referencing your source documents individually, select the column with document URLs.
Input Type	Specifies the type of URLs in input columns. • If you're referencing your source documents by bucket, select **Buckets**. • If you're referencing your source documents individually, select **Documents**.
Maximum Number of Document Types	(Document Classification only) Specifies the maximum number of results (between 1 and 100) to fetch from the OCI Document Understanding service for each document.
Include all input columns in result	Option to include all the input columns in the result.

Parameters for Key Value Extraction models

Parameter	Description
Input Column	Specifies the OCI Object Storage location for the documents you're processing. • If you're referencing your source documents by bucket, select the column with bucket URLs. • If you're referencing your source documents individually, select the column with document URLs.
Input Type	Specifies the type of URLs in input columns. • If you're referencing your source documents by bucket, select **Buckets**. • If you're referencing your source documents individually, select **Documents**.

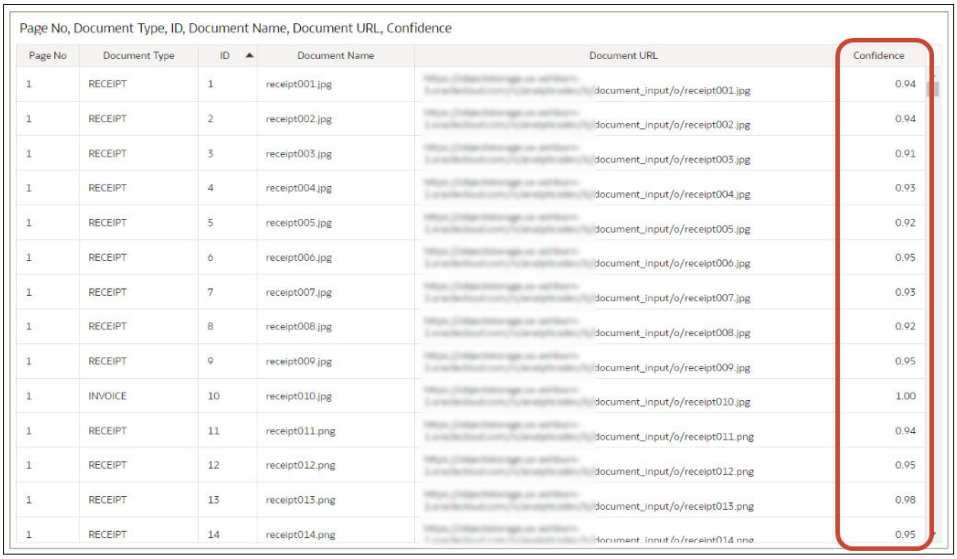
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Parameter	Description
Output Type	(Invoice and Receipts only) Specifies the set of columns to include in the output. For Receipts, Output Type can either be selected as Field Items or Line Items. Field Items are the common details such as merchant info, billing total, tax and so on. Line items are the details of purchased items. This option determines the output columns that're captured by the OCI Document Understanding service. For Invoices, Output Type can either be selected as Field Items or Line Items. Field Items are the common details such as customer details, Vendor details, billing total, tax and so on. Line items are the details of purchased items. This option determines the output columns that're captured by the OCI Document Understanding service.
Include all input columns in result	Option to include all the input columns in the result.

Output Data Generated for OCI Document Understanding Models

When you analyze documents using an OCI Document Understanding model, the Oracle Analytics data flow generates data about the documents and saves the results in a separate dataset.

To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**, and open the dataset. For example, here's an output dataset generated using a document classification model. Here, "Document Type" is the predicted document type, and "Confidence" is the confidence level of the prediction.


Page No, Document Type, ID, Document Name, Document URL, Confidence

Page No	Document Type	ID	Document Name	Document URL	Confidence
1	RECEIPT	1	receipt001.jpg	document_input/o/receipt001.jpg	0.94
1	RECEIPT	2	receipt002.jpg	document_input/o/receipt002.jpg	0.94
1	RECEIPT	3	receipt003.jpg	document_input/o/receipt003.jpg	0.91
1	RECEIPT	4	receipt004.jpg	document_input/o/receipt004.jpg	0.93
1	RECEIPT	5	receipt005.jpg	document_input/o/receipt005.jpg	0.92
1	RECEIPT	6	receipt006.jpg	document_input/o/receipt006.jpg	0.95
1	RECEIPT	7	receipt007.jpg	document_input/o/receipt007.jpg	0.93
1	RECEIPT	8	receipt008.jpg	document_input/o/receipt008.jpg	0.92
1	RECEIPT	9	receipt009.jpg	document_input/o/receipt009.jpg	0.95
1	INVOICE	10	receipt010.jpg	document_input/o/receipt010.jpg	1.00
1	RECEIPT	11	receipt011.png	document_input/o/receipt011.png	0.94
1	RECEIPT	12	receipt012.png	document_input/o/receipt012.png	0.95
1	RECEIPT	13	receipt013.png	document_input/o/receipt013.png	0.98
1	RECEIPT	14	receipt014.png	document_input/o/receipt014.png	0.95

Document Classification

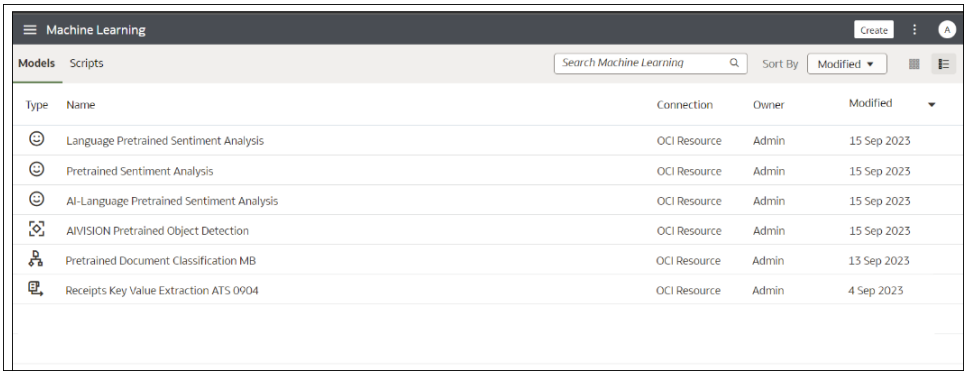
Output Column	Type	Description
Document Type	String	Identified document type. For example, receipt.

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Output Column	Type	Description
Confidence	Number	Confidence score of the prediction, on the scale of 0 - 1. For example, a score of 0.94 gives 94% confidence.
Page No	Number	Page number of the result.
Media Type	String	Media or file type of the document.
Status Summary	String	Brief summary of the model's output. This column is blank on successful output, or for unsuccesful output it indicates the issue (for example, unsupported file type).
Document URL	String	The object storage URL of the document from the bucket specified. This column is only populated when the **Input Type** option is set to bucket in the data flow step configuration.

Key value extraction

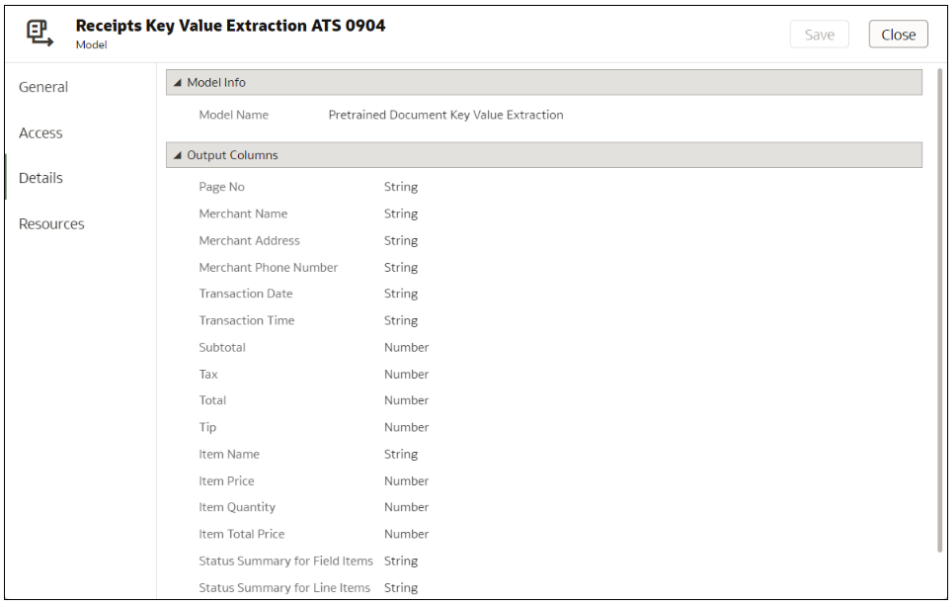
To review output columns for key value extraction models, from the Oracle Analytics home page, navigate to **Machine Learning**, then **Models**.



Hover over a model, click **Actions**.

Click **Inspect**, then click **Details** to review the output columns that are generated for that type of model.

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Click **Resources** to review and update the staging bucket compartment and the staging bucket.

Use Oracle Cloud Infrastructure Language Models in Oracle Analytics

Use Oracle Cloud Infrastructure (OCI) Language models to build key phrase extraction, sentiment analysis, classification, named entity recognition, language recognition, and obfuscation into your applications without requiring artificial intelligence (AI) expertise.

Topics:

- Apply an OCI Language Model to a Dataset
- Obfuscate Sensitive Data in a Dataset

Before you start, make sure that you've followed the prerequsites for Data Science integration, and registered the models in Oracle Analytics. See Prerequisites for Integrating OCI Language Models with Oracle Analytics and Make an OCI Language Model Available in Oracle Analytics.

Oracle Analytics supports these models:

- Custom Named Entity Recognition (uses asynchronous APIs)
- Custom Text Classification (uses asynchronous APIs)
- Key phrase extraction
- Language detection
- Name entity recognition
- Personal Identifiable Information (PII) identification
- Sentiment analysis
- Text classification

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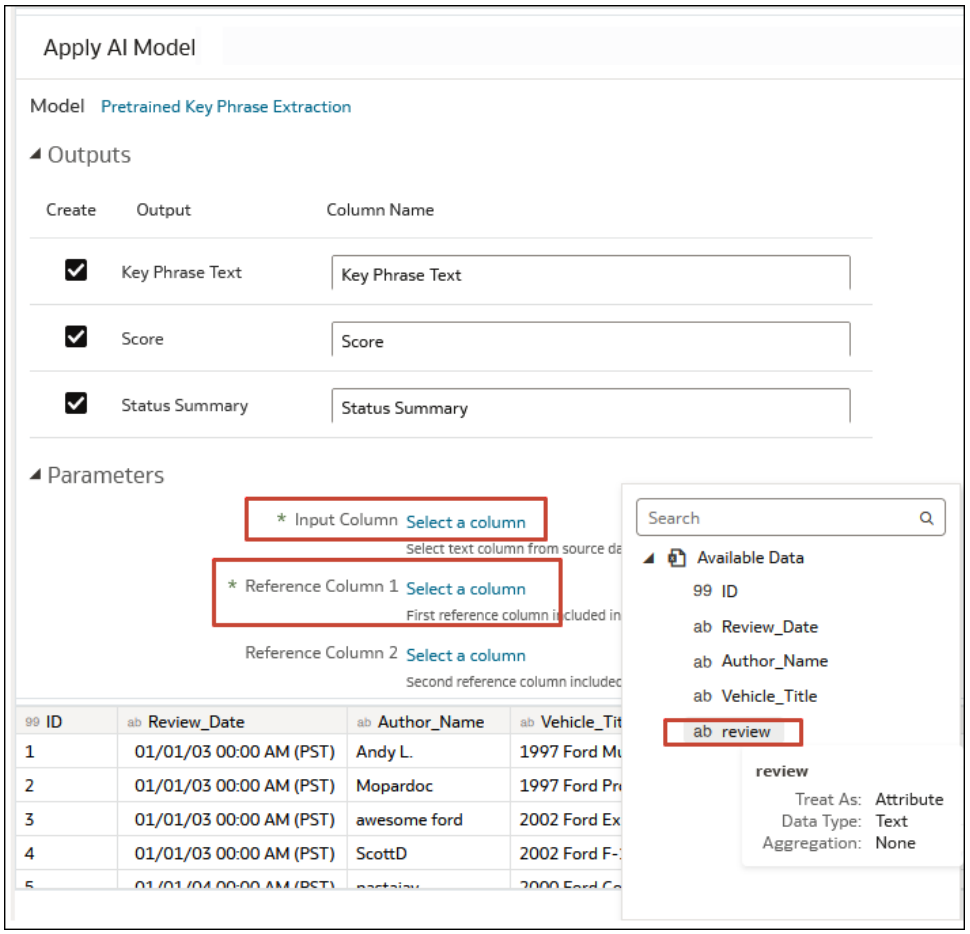
Apply an OCI Language Model to a Dataset

Apply an OCI Language model to a dataset in Oracle Analytics to analyze your data and store the results in another dataset. For example, with customer data, sentiment analysis can help you analyze customer reviews that they've typed into a feedback portal.

Prerequisites:

- Make sure that your Oracle Analytics instance is integrated with OCI Language. See Integrate Oracle Analytics with Oracle Cloud Infrastructure Language.
- Register an OCI Language model in Oracle Analytics Cloud. See Make an OCI Language Model Available in Oracle Analytics.
- Prepare a dataset that contains the data that you want to analyze.

1. On your home page, click **Create**, and then click **Data Flow**.
2. Select the dataset containing the text you want to analyze, then click **Add**.
3. In the Data Flow editor, click **Add a step (+)**.
4. From the Data Flow Steps pane, double-click **Apply AI Model**, and then select the model to use.
5. In the Apply AI Model dialog, go to the Inputs section, and configure the parameters.



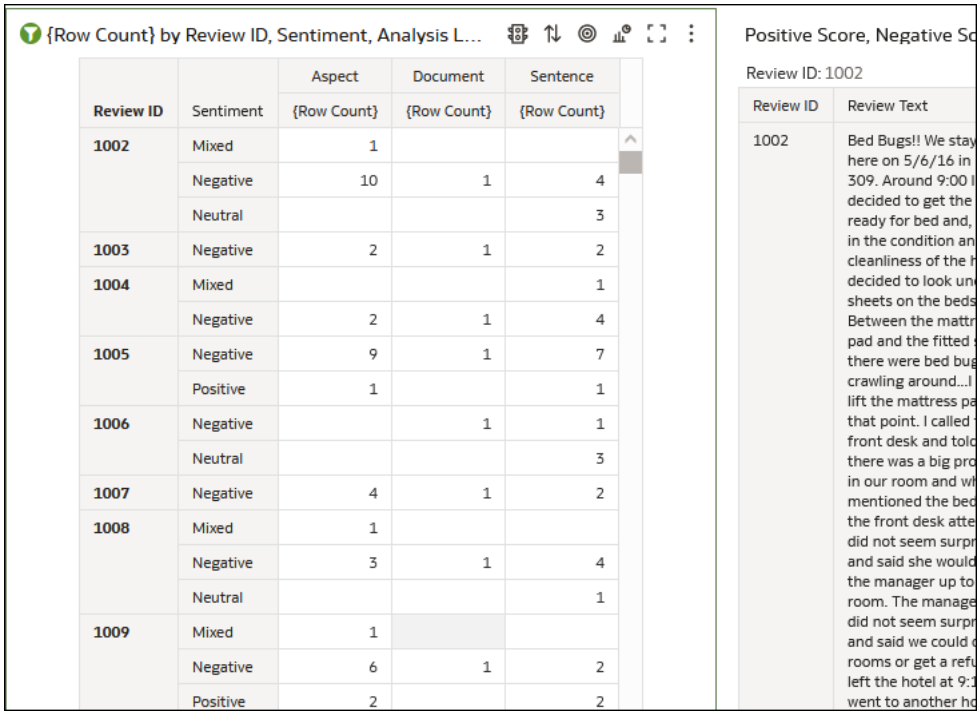
At a minimum, configure **Input Column** and **Reference Column 1**.

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You can optionally assign values to Reference Columns 2 and 3 to further enhance the output dataset. For example, you might select two additional columns from your source dataset that will included in the AI model output dataset.

6. In the data flow editor, click **Add a step (+)** and select **Save Data**.
7. Enter the name of the dataset in which to store the output results.
8. In the **Save data to** field, specify the location for saving the output data.
9. Click **Save**, enter a name for the data flow, and click **OK** to save the data flow.
10. Click **Run Data Flow** to analyze the images and output the results in a new dataset.

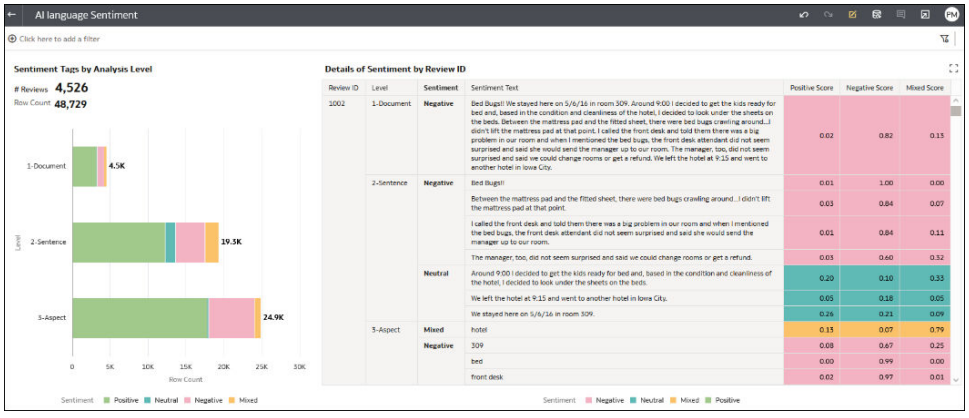
When the data flow completes the analysis, open the dataset that you specified in Step 7. To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**



Review ID	Sentiment	Aspect {Row Count}	Document {Row Count}	Sentence {Row Count}
1002	Mixed	1		
	Negative	10	1	4
	Neutral			3
1003	Negative	2	1	2
1004	Mixed			1
	Negative	2	1	4
1005	Negative	9	1	7
	Positive	1		1
1006	Negative		1	1
	Neutral			3
1007	Negative	4	1	2
1008	Mixed	1		
	Negative	3	1	4
	Neutral			1
1009	Mixed	1		
	Negative	6	1	2
	Positive	2		2

.

You can now visualize the data in a workbook.



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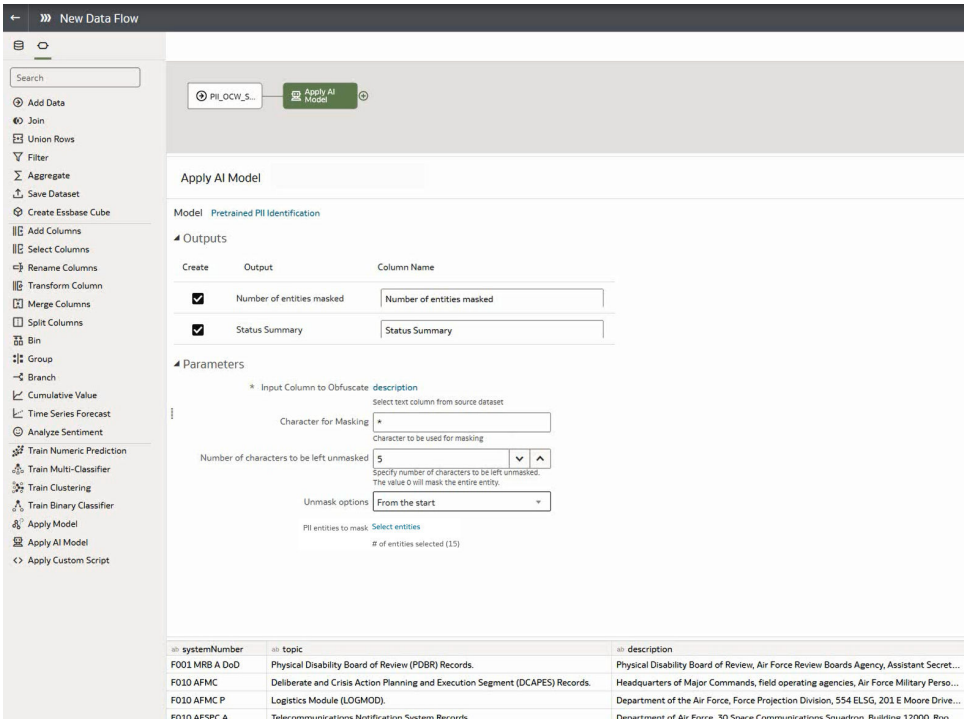
Obfuscate Sensitive Data in a Dataset

Apply a Personal Identifiable Information (PII) model to a dataset to mask or hide sensitive data in a dataset. For example, you might partially mask customer address details in a description column so that workbook users don't have access to customers' personal details.

Before you start, perform these prerequisite steps:

- Make sure that your Oracle Analytics instance is integrated with OCI Language. See Integrate Oracle Analytics with Oracle Cloud Infrastructure Language.
- Register an OCI Language model in Oracle Analytics Cloud. See Make an OCI Language Model Available in Oracle Analytics.
- Prepare a dataset that contains the data that you want to obfuscate.

1. On your home page, click **Create**, and then click **Data Flow**.
2. Select the dataset containing the text you want to analyze, then click **Add**.
3. In the Data Flow editor, click **Add a step (+)**.
4. From the Data Flow Steps pane, double-click **Apply AI Model**, and then select the pretrained PII Identification model that is registered in your Oracle Analytics Cloud environment.



5. In the Apply AI Model dialog, in the Parameters section, configure these options:
   - **Input Column to Obfuscate** - Select the column containing the sensitive details that you want to mask or hide.
   - **Character for Masking** - Enter the character to use to obfuscate. For example, enter "*" to obfuscate data with an asterisk.

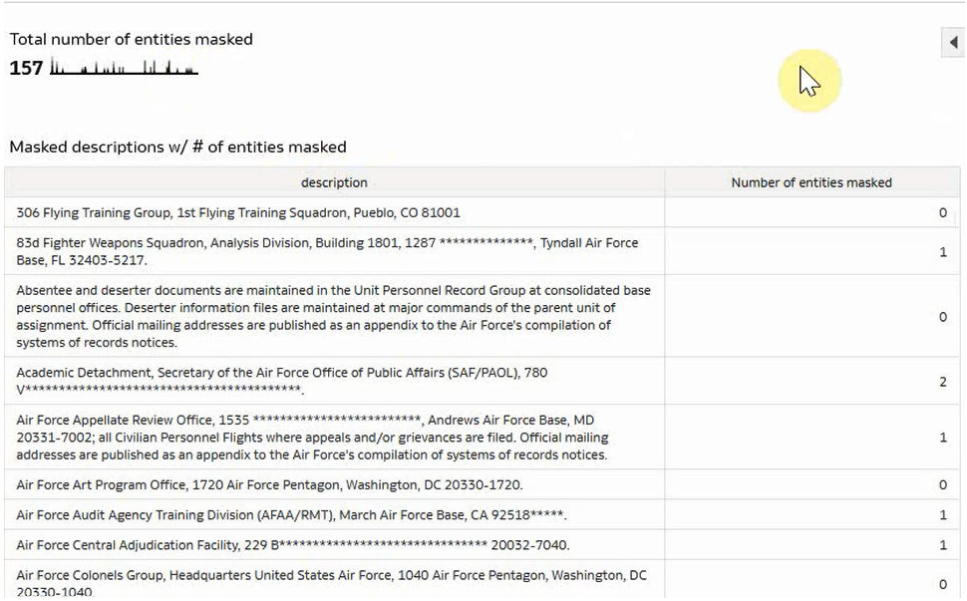
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- **Number of characters to be left unmasked** - Enter 0 to mask or hide all data, or enter a number of characters to leave visible. For example, enter "5" to leave the first five characters unchanged (if you choose **From the start** in **Unmask options**).
- **Unmask options** - Specify where to start obfuscating. For example, from the start of address details.
- **PII entities to mask** - Click **Select entities** to select or deselect entities to obfuscate. By default, all entities are obfuscated.

6. In the data flow editor, click **Add a step (+)** and select **Save Data**.
7. Enter the name of the dataset in which to store the output results.
8. In the **Save data to** field, specify the location for saving the output data.
9. Click **Save**, enter a name and description for the data flow, and click **OK** to save the data flow.
10. Click **Run Data Flow** to analyze the images and output the results in a new dataset.

When the data flow completes the analysis, open the dataset that you specified in Step 7. To locate the generated dataset, from the Oracle Analytics home page, navigate to **Data**, then **Datasets**.

You can now visualize the data in a workbook.


Total number of entities masked

157

Masked descriptions w/ # of entities masked

description	Number of entities masked
306 Flying Training Group, 1st Flying Training Squadron, Pueblo, CO 81001	0
83d Fighter Weapons Squadron, Analysis Division, Building 1801, 1287 **********, Tyndall Air Force Base, FL 32403-5217.	1
Absentee and deserter documents are maintained in the Unit Personnel Record Group at consolidated base personnel offices. Deserter information files are maintained at major commands of the parent unit of assignment. Official mailing addresses are published as an appendix to the Air Force's compilation of systems of records notices.	0
Academic Detachment, Secretary of the Air Force Office of Public Affairs (SAF/PAOL), 780 V**********.	2
Air Force Appellate Review Office, 1535 **********, Andrews Air Force Base, MD 20331-7002; all Civilian Personnel Flights where appeals and/or grievances are filed. Official mailing addresses are published as an appendix to the Air Force's compilation of systems of records notices.	1
Air Force Art Program Office, 1720 Air Force Pentagon, Washington, DC 20330-1720.	0
Air Force Audit Agency Training Division (AFAA/RMT), March Air Force Base, CA 92518*****.	1
Air Force Central Adjudication Facility, 229 B********** 20032-7040.	1
Air Force Colonels Group, Headquarters United States Air Force, 1040 Air Force Pentagon, Washington, DC 20330-1040.	0

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20

Import, Export, and Share

These topics describe how to import, export, and share your workbooks and visualizations with other users.

Topics:

- Import a Workbook File
- Export Workbook Content in Various Formats
- Share Your Content
- Share a Workbook
- Share a Workbook URL with a Specific Canvas Selected
- Share a Workbook URL with Persisted Filter Values
- Export a Workbook or Folder as a File
- Export a Visualization
- Post a Visualization or Canvas on Content-Sharing Platforms
- Delete Links Shared on Content-Sharing Platforms
- Email a File of a Visualization, Canvas, or Dashboard
- Print a Visualization, Canvas, or Dashboard
- Share Visualizations Using Workbook Email Schedules

Import a Workbook File

You can import workbook files (.dva file) that are exported from Oracle Analytics Cloud, Oracle Analytics Desktop, and Oracle Fusion Cloud Applications Suite.

If the workbook file was exported with a password, Oracle Analytics prompts for that password when you import the file.

The workbook file can include the data used in the workbook if the **Include Data** option was selected when the workbook was exported to DVA format. See Export Workbook Content in Various Formats.

You can import a workbook file exported from the same version (or earlier version) as your Oracle Analytics environment. For example, if you exported a workbook from an Oracle Analytics environment that includes the May 2025 update, then you can import it into other Oracle Analytics environments that include the May 2025 update or a later update such as July 2025.

You might experience unexpected results if you import a workbook that was exported from a more recent update of Oracle Analytics. For example, if you export a workbook from an Oracle Analytics environment that includes the September 2025 update, then Oracle doesn't recommend that you import this workbook into an Oracle Analytics environment that includes an earlier update such as June 2025.

1. On your home page, click the **Page Menu**, and then select **Import Workbook/Flow**.

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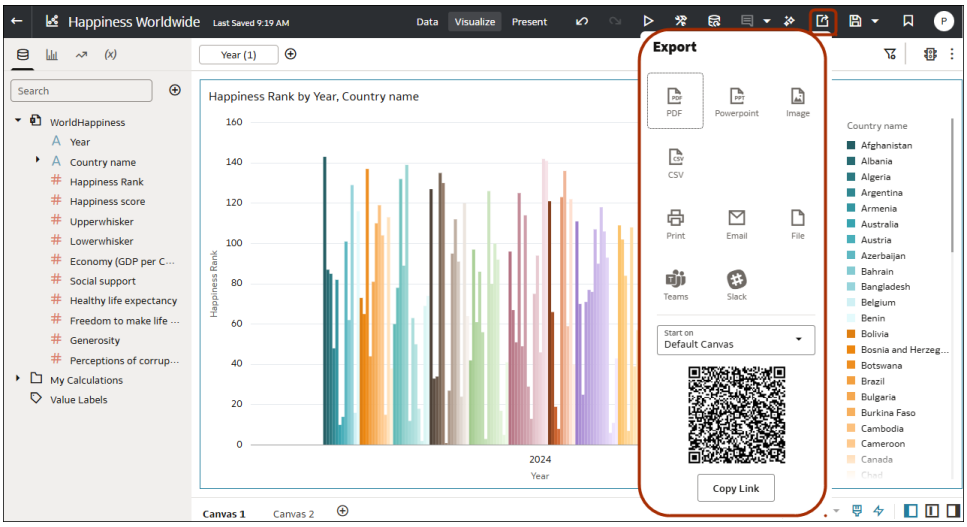
2. In the Import Workbook/Flow dialog, click **Select File**, navigate to the appropriate file, then click **Import**.
3. In Import Successful, click **OK**. Oracle Analytics adds the imported workbook to the Home page. After the import is successful, open the workbook.
4. Click **Change File** and navigate to a different .dva file to import a different workbook.

Export Workbook Content in Various Formats

You can export workbook content to various formats, including PDF, Powerpoint, Image, CSV, DVA format, as well as print, email, and collaboration platforms.

The data in the export filter is the same as the visualization. You can export a visualization with up to 25,000 rows.

1. On your home page, select a workbook, click **Actions**, and select **Open**.
2. On the Visualize or Present canvas, click **Export** on the workbook toolbar.



3. In the Export dialog, select the format you want.
   - PDF - Export to Portable Document Format.
   - Powerpoint - Export to Microsoft Powerpoint format.
   - Image - Export to PNG format.
   - CSV - Export data to comma-separated values format.
   - Print - Print one or more canvases in the workbook.
   - Email - Send one or more canvases in the workbook in an email.
   - File - Export the workbook in a package (DVA) format, or one of the other formats (you must open the workbook in Edit mode to see this option). You can include data, credentials, and permissions, and optionally password protect the file.
   - Slack - post content to the Slack messaging platform.
   - Teams - post content to the Microsoft Teams messaging platform.
4. Use the pop-up dialog to configure the export type that you selected.

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5. Click **Save.**

Share Your Content

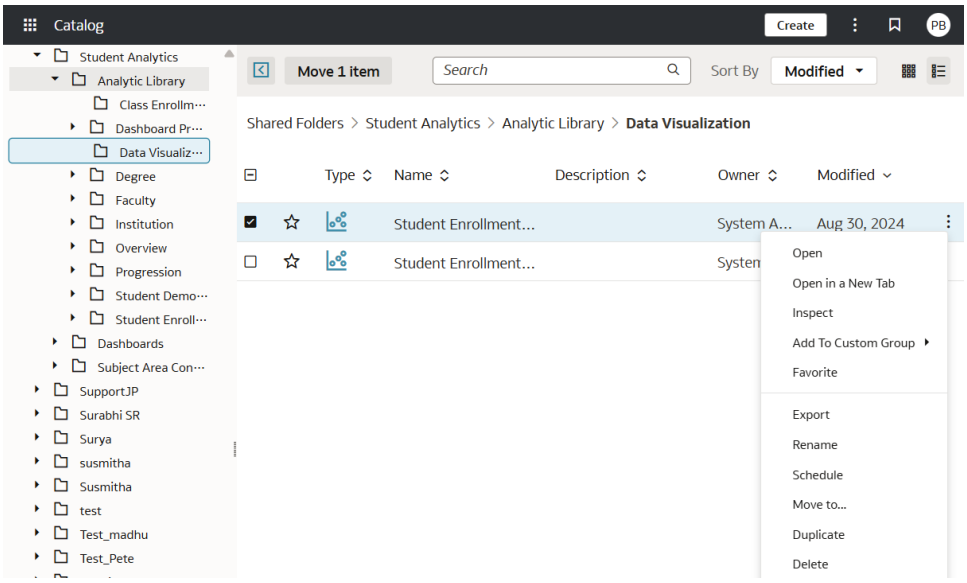
In Oracle Analytics, you can share analytics content such as workbooks, connections, datasets and so on with colleagues. You can share with specific user-roles or named users, or a combination of both.

If you're only sharing a small number of items, you can simply save them in the Shared Folders area of the catalog and fine-tune the item permissions if necessary. If you're sharing a lot of content, it's best to create a folder in the Shared Folders area and set permissions on the folder so that items saved there inherit the required permission settings.

You specify access permissions for workbooks using either the Share tab or Access tab on the Inspect dialog. For other types of items, you use the Access tab (they don't have a Share tab). If you create content in \Shared Folders and move it to another folder in \Shared Folders, the access setting on the items being moved are retained. You might need to modify the parent folder access settings if you want the same users and roles to have access. See Catalog Access Inheritance Rules and Workbook Permissions Rules.

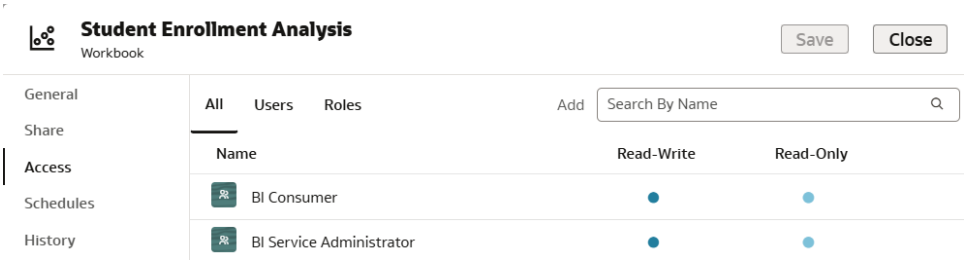
Share Individual Items in the Catalog

1. Save an item to the Shared Folders area of the catalog.
   For example, you might save a machine learning model in \Shared Folders\ML_Models. By default, the item has read-access for users with the BI Consumer role, and read-write access for the content author and administrator user-roles.
2. Optionally change the default item permissions to fine-tune who can access the item.
   a. In Catalog, navigate to the folder where you saved the item.
   b. Select the item, click Actions ⋮, then select **Inspect**.



   c. Display the **Access** tab, and provide read-write or read-only access for users and roles.

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Share Multiple Items in the Catalog

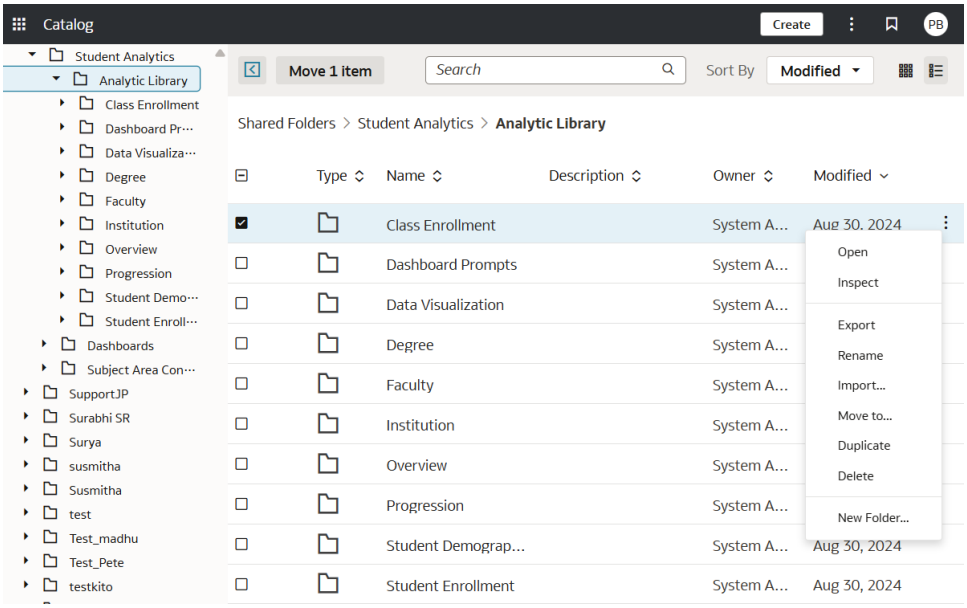
1. In the Shared Folders area, create a folder to store your content.

   By default the folder has read-access for content consumers and read-write access for content authors and administrators.

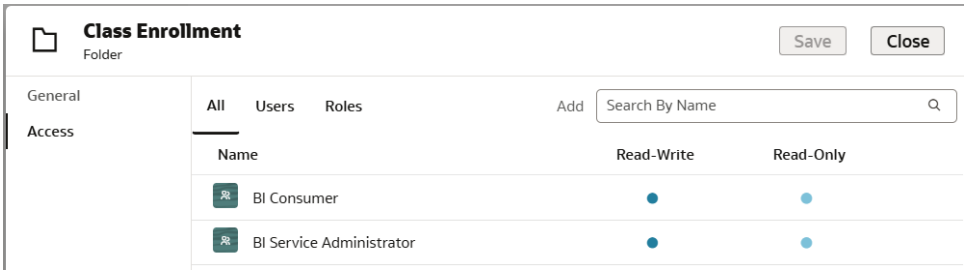
2. Configure the access settings for the folder.

   a. In Catalog, navigate to the folder in the Shared Folders area.

   b. Select the folder, click Actions ⋮, then select **Inspect**.



   c. Display the **Access** tab, and provide read-write or read-only access for users and roles.



3. Move your content into the new folder.

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For example, you might move connections, datasets, and workbooks into the new folder. The items inherit the folder-level permissions, which enables analytics users to access this content.

Catalog Access Inheritance Rules

Find out how access permissions are inherited when you move content around in the Oracle Analytics catalog.

Moving from My Folders to Shared Folders

The items moved receive the access setting of the parent folder it's moved to.

Moving from Shared Folders to My Folders

The access setting is removed for the content being moved and will no longer be accessible by anyone except from the user who moved the items to My Folders.

Moving from one Shared Folders to Another

The access setting on the items being moved is retained. You might need to modify the parent folder access setting if you want the same users and roles to have access.

Share a Workbook

When a workbook is saved in a shared folder and user permissions are set for sharing, you can copy the workbook's URL and share it with those users.

LiveLabs Sprint

You must save the workbook in a shared folder and grant appropriate privileges to the workbook.

How the workbook is displayed when the user opens it depends on the user's permissions and how the workbook was set up.

- If the shared workbook contains a dashboard and the user has read-only permissions, then the workbook's dashboard is displayed and the user can't access the workbook in the Visualize page.
- If the shared workbook is displayed as a presentation flow in the Present page, then how the dashboard and canvas preferences are set determines how the user can interact with the presentation flow or dashboard in Preveiw. See Open the Presentation Flow.
- If the workbook doesn't contain a dashboard and the user has read-only permission, then the workbook is displayed in the Visualize page. The user can change filter values, add filters, export, sort, and drill in the Visualize page.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Save the workbook to a shared folder.

   If you don't have a shared workbook folder, open the workbook in Edit mode, click **Save As**, then click **New Folder**, enter a name, and click **Create**.
3. Grant roles to the shared workbook to enable users with the same roles to view or edit the workbook as appropriate.

   a. On your home page, click **Navigator**, and then click **Catalog**.

   b. Click **Shared Folders**, and then navigate to the shared workbook.

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c. Hover over the workbook, click **Actions**, and click **Inspect**.

d. Click the **Share** tab.

e. Add or edit roles as appropriate.

Role	Description
BI Consumer	Enables users with this role to view workbooks and control which filters they use.
BI Content Author	Enables users with this role to edit workbooks.

4. Copy the workbook URL and share with your users.

   Users can now access the workbook from the catalog.

Share a Workbook URL with a Specific Canvas Selected

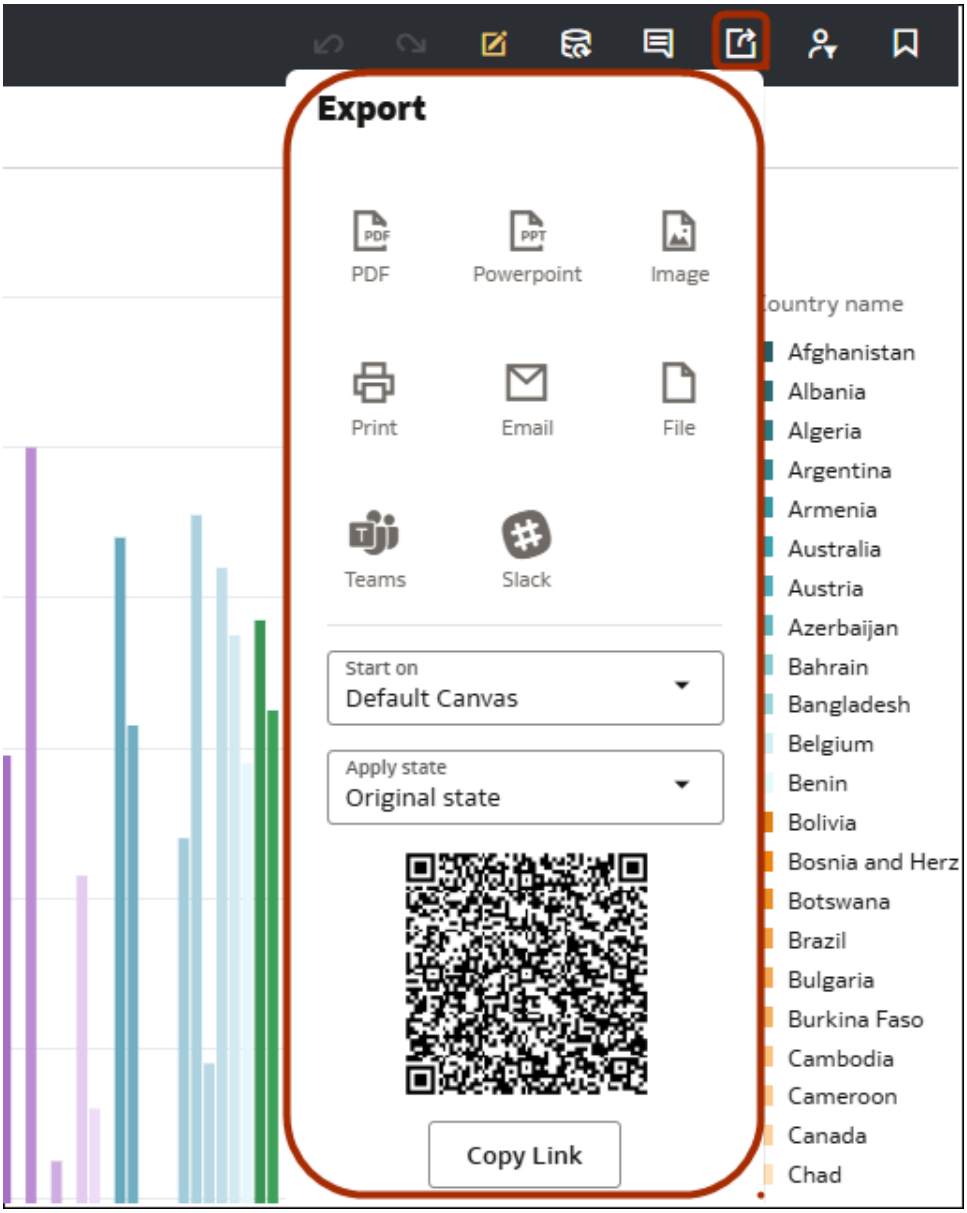
You can create a URL that displays a specific workbook canvas and then share the URL so that other users can display the workbook canvas without having to use the user interface to navigate to the specific workbook canvas.

You can also share the canvas URL by embedding it into an application or a portal's iFrame. See Embed Oracle Analytics Content With iFrames.

1. On your home page, hover over the workbook containing the canvas that you want to share, click **Actions**, and select **Open**.

2. On the Visualize or Present canvas, click **Export**  in the workbook toolbar.

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3. Use the **Start on** options to configure which canvas is presented.
4. Click **Copy Link** and share the URL with other users.
5. Optional: Share the QR code to scan and open the workbook URL on a mobile device.

Share a Workbook URL with Persisted Filter Values

Create and share a workbook URL that persists selected filter values in a workbook.

When you share the URL with other users, they can use it to view the workbook with your filter values already applied instead of selecting the values themselves.

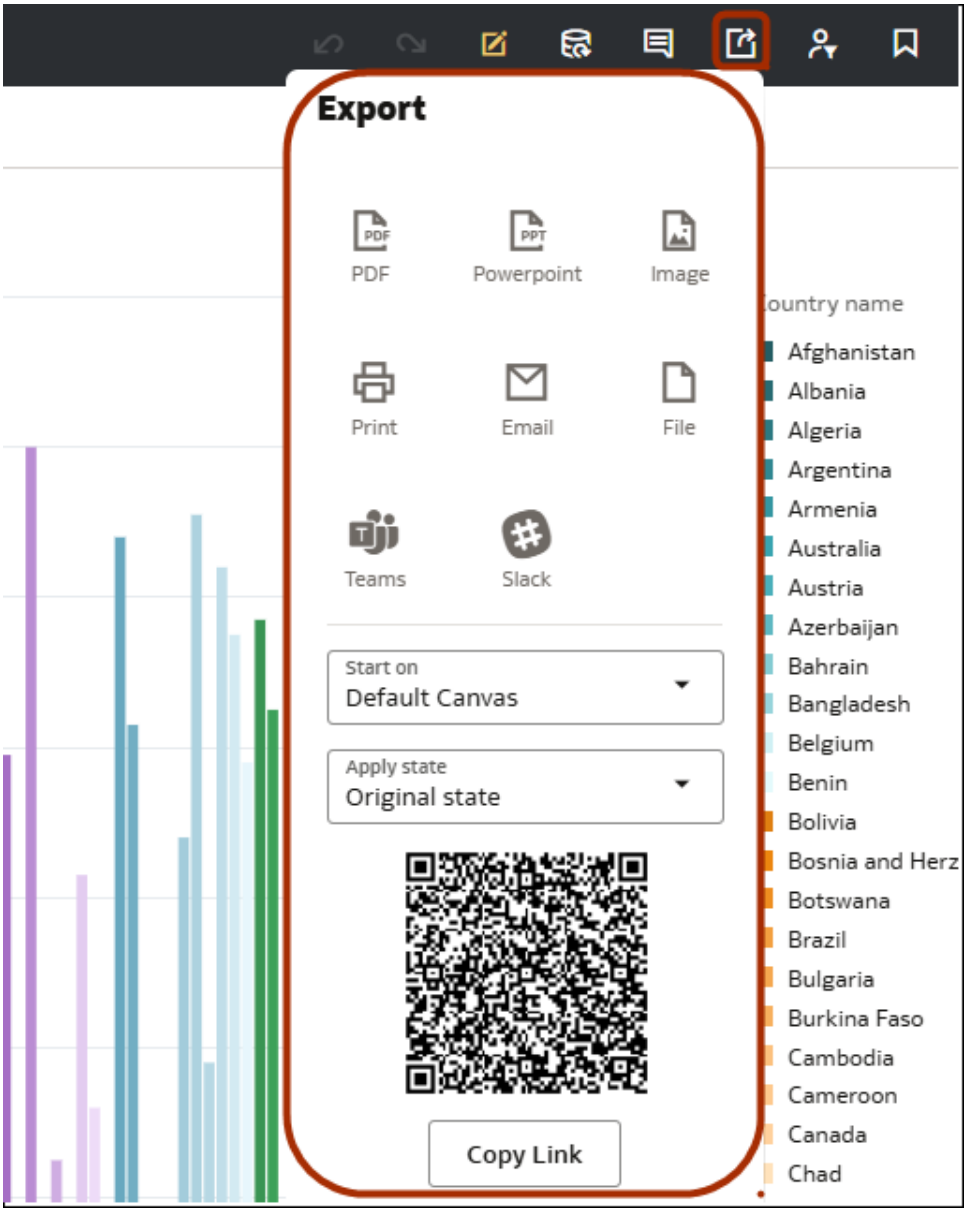
All dashboard filter and visualization filter selections are persisted, including parameters used as dashboard filter controls and parameters bound to dashboard or visualization filters. Filter selections made in the filter bar aren't persisted.

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You can also specify which canvas displays when the user clicks the URL to open the workbook. See Share a Workbook URL with a Specific Canvas Selected.

You can share a maximum of 50 workbook URLs and the retention period is up to one year. When you reach these limits, the older and least-used links are automatically purged by cleanup jobs.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. Add a filter to the canvas and select the filter values you want to persist when you create the URL.
3. Click **Export** in the workbook toolbar.



4. From the **Apply state** list, select a state.
   - Use **Original state** to persist the filter values that were selected when you opened the workbook, before you made any new selections.

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- Use **Current state** to persist the filter values that are currently selected.

5. Click **Copy Link** and share the URL with other users.

Export a Workbook or Folder as a File

You can export a workbook or folder as an archive file (.DVA) for backup purposes or to provide to another user for import into their instance of Analytics Cloud or Oracle Analytics Desktop.

Exporting is a way to share workbooks and files with other users or move workbooks and files between Analytics Cloud and Oracle Analytics Desktop. The archive file is for export and import, and you can't open it with an application other than Analytics Cloud or Oracle Analytics Desktop.

The archive file includes items that you specify such as the associated datasets, connection strings, connection credentials, and stored data.

1. On your home page, click **Navigator**  , and then click **Catalog**.
2. In the Catalog page, select the item to share. Click **Actions**, and select **Export** to open the Export dialog.
3. For **Name**, keep the default name or enter a new name for the export file (.DVA file).
4. Disable the **Include Data** option to exclude the data when sharing a workbook or folder.
5. Disable the **Include Connection Credentials** option so that users must sign in to open the workbook. Use the following guidelines to set this field:
   - **Excel, CSV, or TXT data sources** - These data sources don’t use a data connection, therefore you can clear the **Include Connection Credentials** option.
   - **Database data sources** - If you enable the **Include Connection Credentials** option, the users must provide a valid user name and password to load data into the imported workbook.
   - **Oracle Fusion Cloud Applications Suite, Oracle Analytics Cloud – Essbase or Oracle Essbase data sources** - make sure that you also select the **Always use these credentials** option in the **Authentication** field on the Create Connection dialog.

     If you clear the **Include Connection Credentials** option or specify the **Require users to enter their own credentials** option in the **Authentication** field, then users must provide a valid user name and password to load data into the imported workbook.
6. If you enable **Include Data** or **Include Connection Credentials**, enter and confirm a password that the user must provide to import the workbook or folder and decrypt its connection credentials and data.
7. Enable **Include Permissions** to include access permission details so that shared connections work when users import the workbook.
8. Click **Save**. Select a location for the file, and then click **Save**.

Export a Visualization

You can export visualizations in a variety of formats to view, store, and share with others.

You can export data from a visualization that's embedded in another application or web page. See About Embedding Oracle Analytics Content into Applications and Web Pages.

You can specify the following output options when you export a visualization:

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- For **Powerpoint (pptx)**, **PDF**, and **Image (png)** — Specify the file name, paper size, and orientation.
  When you share any of these visual formats, the visualization is re-rendered based on the size and orientation you select. So if you're sharing a table, then your output file might not contain all of the table's rows and columns displayed in your visualization.

  When you export to PDF format, you can optionally specify a password to protect the PDF file.
- For **Data (csv)** — Specify the output file name. This option only includes the data used in the workbook. The output file uses the data delimiter for your computer's locale. For example, if your locale is set to Brazil, then the delimiter for numeric decimals is a comma instead of a period, which is used when your locale is set to United States.
- For **Excel (xlsx)** — Specify the output file name for table and pivot table data. Oracle Analytics exports data and time values exactly as they appear in the data source. Oracle Analytics applies no time zone conversions during export, for example, time zone system settings or the user's time zone settings.
- For **Package (dva)** — Specify whether to include workbook data, connection credentials, and access permissions. To export the workbook as a self-contained file with data, connection details, and permissions, choose **File** from the export options, then select **Package (dva)** in the **Format** field. To password-protect the file, specify a password in the **Protect Password** fields.

1. On your home page, hover over a workbook containing the visualization that you want to export, click **Actions**, and select **Open**.
2. Click **Edit** to display the workbook for editing.
3. On the Visualize canvas, hover over the visualization that you want to export, and click **Export**  on the visualization toolbar.
4. Select a format from the drop-down list.
5. Use the File dialog to specify the output options.
6. Click **Save**.

Tips on Exporting Data in CSV Format

Here're some tips on getting the best results when exporting a visualization in CSV format.

Limit the amount of data to avoid export issues:

If your data exceeds the maximum number of rows allowed in an export (which includes displayed rows and hidden rows), apply filters to data in a canvas or visualization to reduce the amount of data being exported. For example, you might apply a filter to a visualiztion to display only data for the months January, February, and March to reduce the amount of data.

If export exceeds five minutes you might see errors such as "connection lost contact", "end-of-file on communication channel", "0 - error", or "error 500".

The size of your Oracle Analytics Cloud instance determines the maximum number of rows you can export to CSV and Excel. For more information, see the "Limits Exporting Data (Data Visualization Workbooks)" section in What Sizing Options are Available to You?

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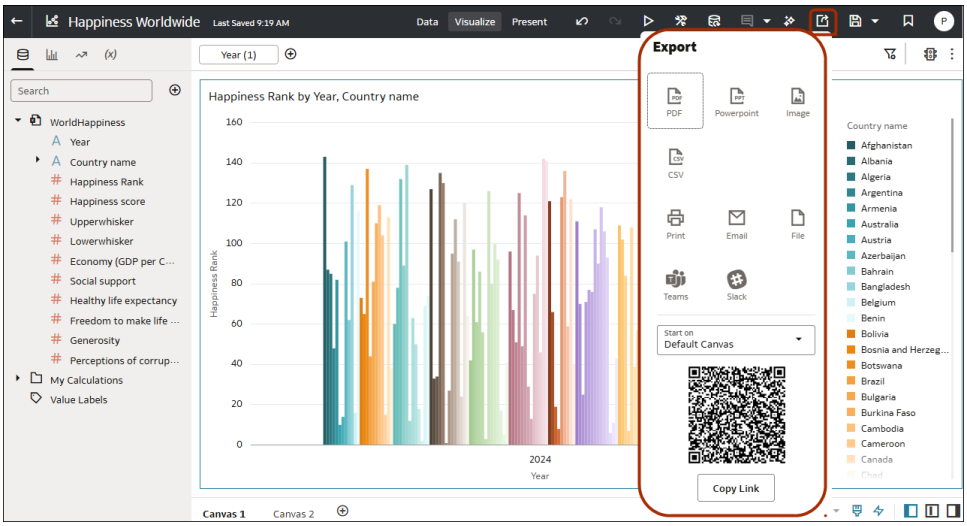
Post a Visualization or Canvas on Content-Sharing Platforms

You can post visualizations and canvases to content-sharing platforms such as Slack or Microsoft Teams.

Contact your administrator if the content-sharing platform you want isn't available.

The links you share are listed on the Shared Links page in your user profile. Use the Shared Links page to manage your links. See Delete Links Shared on Content-Sharing Platforms.

1. On your home page, hover over a workbook, click **Actions**, then select **Open**.
2. On the Visualize or Present canvas, click **Export** on the workbook toolbar, then select the option for the content-sharing platform to use. For example, Slack or Teams.



If you're a workbook consumer user, the **Export** option is located on the workbook toolbar.

3. If prompted, specify your organization's workspace, and sign-in.

   For example, for Slack you might specify `myorganization.enterprise.slack.com`.
4. Specify sharing options for the content-sharing platform you selected.
5. Click **Send**.

Delete Links Shared on Content-Sharing Platforms

You can view and delete the links to files that you shared to content-sharing platforms such as Slack and Microsoft Teams.

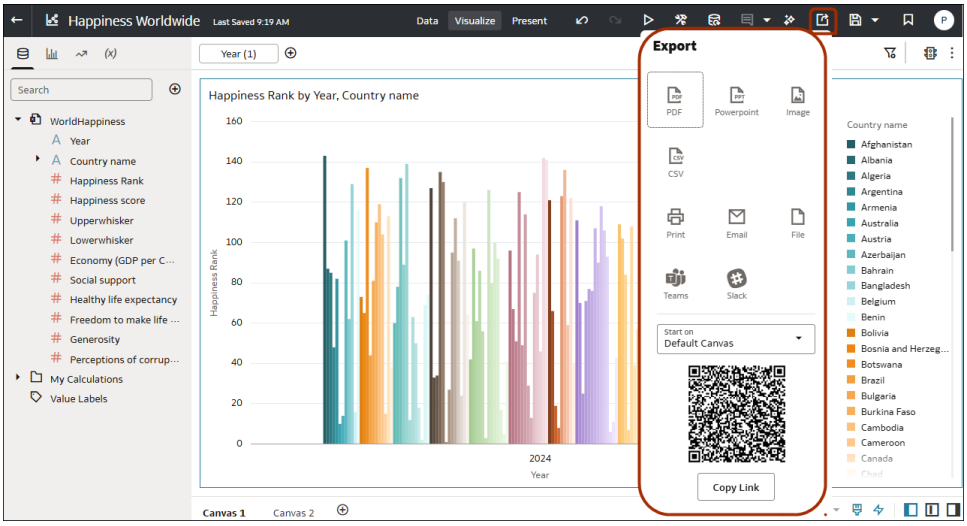
1. On your home page, click your user name or name badge with your initials, then click **Profile**.
2. In the User Profile page, click the **Shared Links** tab.
3. Review your list of shared file links. Delete links as needed.

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Email a File of a Visualization, Canvas, or Dashboard

You can email visualizations, canvases, or dashboards in formats like Powerpoint (PPTX), Acrobat (PDF), Image (PNG), CSV (data only), or Package.

1. On your home page, hover over a workbook containing the visualization or canvas, click **Actions**, and select **Open**.
2. On the Visualize or Present canvas, click **Export** on the workbook toolbar, then click click **Email**.



3. Use the **Format** option to select the output format you want, and specify output options:
   - For **Powerpoint (pptx)**, **Acrobat (pdf)**, and **Image (png)** - Specify the file name, paper size, and orientation.
     When you email any of these visual formats, the visualization or pages are re-rendered based on the size and orientation you select. So if you're emailing a table, then your output file might not contain all of the table's rows and columns included in your visualization, canvas, or dashboard.
   - For **Data (csv)** - Specify the output file name. This option only includes the data used in the workbook. The outputted file uses the data delimiter for your computer's locale. For example, if your locale is set to Brazil, then the delimiter for numeric decimals is a comma instead of a period, which is used when your locale is set to United States.
   - For **Package (dva)** - Specify whether to include workbook data, connection credentials, and access permissions). To enable users to open the workbook DVA file without having to enter a password, click **Include Connection Credentials** and specify the password.
4. Click **Email**.

   Your email client opens a new partially composed email with the selected file type attached.

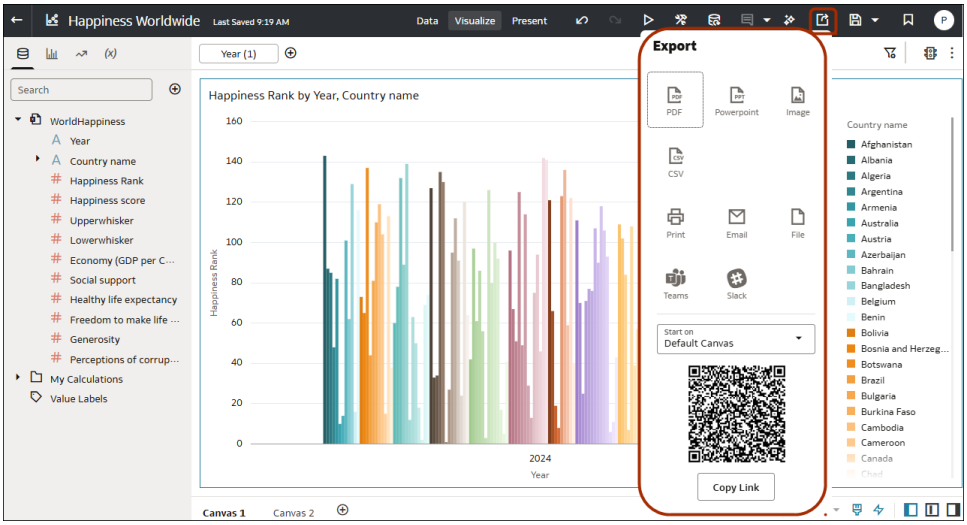
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Print a Visualization, Canvas, or Dashboard

You can print your workbook's visualizations, canvases, or dashboards.

When you print, the visualization or pages are re-rendered based on the size and orientation you selected. So if you're printing a table, then your printed copy might not contain all of the table's rows and columns included in your visualization, canvas, or dashboard.

1. On your home page, hover over a workbook containing the visualization, canvas, or dashboard to print, click **Actions**, and select **Open**.
2. On the Visualize or Present canvas, click **Export** on the workbook toolbar, then click **Print**.



3. Use the Print dialog to configure the output. For example:
   - **Include** - You can select to print the Active Visual, Active Canvas, or All Canvases. You can also click **Include Filters** (if there are filters), and **Include Title** to include them in the printed output.
   - **Size** - You can use the **Custom** setting (the default size) to print using the height and width displayed on your screen, and optionally select **Scale Proportionally**, or you can select a different size option (for example, US Letter, A4).
   - **Orientation** - You can select whether to print in landscape or portrait format.
4. Optional: If filters are in the visualization, workbook, or dashboard, and you want to include them, click **Include Filters**.
5. Optional: If you want to include the title, click **Include Title**.
6. Optional: From the **Size** list, select the paper to use. When using **Custom**, specify the width and height in inches (in), pixels (px), or millimeters (mm).
7. Optional: Select the print format orientation.
8. Click **Print**.

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Share Visualizations Using Workbook Email Schedules

Use scheduled emails to share data visualizations from a workbook and keep recipients up-to-date with the latest data.

Topics:

- About Workbook Email Schedules
- Create a Workbook Email Schedule
- Create a Bursting Workbook Email Schedule
- Manage Workbook Email Schedules and Jobs

About Workbook Email Schedules

You can share a visualization from a workbook by creating a schedule to email an Acrobat (pdf), Image (png), or Excel (xlsx) version of the visualization, depending on the visualization type. Use the workbook email schedule to set up the delivery to selected recipients.

Your administrator must configure email to enable delivering visualizations using an email schedule. See Set Up an Email Server to Deliver Reports and Email Delivery Limits.

- You can create schedules for a workbook if you have the BI Service Administrator application role (or any role with the Schedule Workbooks permission), plus Read-Write access for that workbook. If you're not sure whether you have the required application roles, check with your administrator.
- Delivery schedules for workbooks use the file name and workbook path. If a workbook is moved or renamed, delete the existing schedule and create a new schedule. See Manage Workbook Email Schedules and Jobs.
- You can create schedules for workbooks in Shared Folders. Workbooks in My Folders aren't accessible by others.
- You can set a schedule to repeat hourly, daily, weekly, monthly, or yearly.
- You can use the system variables `CURRENT_TIMESTAMP` and `USER` in the subject and message of the email to display current values when the email is sent.
- Custom Plugin extensions, Filter Bar objects, and Trending Lines aren't supported for workbook email schedules.
- The workbook email schedule uses the original workbook state as saved by the workbook author. If the emails are going to any consumer users, it's important to note that their filter personalizations and saved custom workbook states are ignored.
- Only English-US is supported for output.

Bursting Schedules

Create a bursting schedule to deliver workbook data visualizations to recipients if the data visualizations contain confidential data that is accessed by specific application roles and user groups configured in Oracle Analytics. Each recipient receives a customized data visualization based on their data access configuration instead of the data access configuration of the administrator user who creates the schedule. See Create a Bursting Workbook Email Schedule

- Bursting is available for schedules created from workbooks saved in Shared Folders.
- By default, bursting is disabled when you begin creating a new schedule.

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- Bursting doesn't allow you to send visualizations to external recipients that are not already configured in Oracle Analytics.
- When using bursting, you can add up to 100 recipients that are individual users or application roles configured in Oracle Analytics. For example, if you add an application role *BI Consumer* as a recipient where more than 100 users are assigned this role, the schedule will fail to send the visualizations to any recipient after the 100 recipients.

Managing Schedules

You can manage existing workbook email schedules and check the status of scheduled jobs, view, edit, or delete schedules. See Manage Workbook Email Schedules and Jobs.

- A workbook email schedule is edited by the schedule's author or any user with the same access and edit permissions for the workbook. The data visualizations shared with recipients are based on the data access configuration of the administrator user who edits and saves changes to the schedule.
- When the data visualizations in a workbook are edited once a workbook email schedule is created from the workbook, the saved changes to the workbook's data visualizations are reflected in the scheduled emails based on the data access configuration of the administrator user who saved the schedule.
- Bursting workbook email schedules with more than one recipient trigger jobs for each recipient in the schedule whether they are an individual user or part of an application role. Each recipient receives a customized version of a data visualization based on their data access configuration in Oracle Analytics.

Referencing System Variables

When creating a workbook email schedule, you can use system variables in the subject and message.

Use the following system variables:

- `CURRENT_TIMESTAMP` – Displays the date and time of the email delivery, depending on the format.
- `USER` – For non-bursting schedules, displays the username of the user running the schedule. For bursting schedules, displays the username of the email recipient.

For the `USER` variable, Oracle Analytics supports the format `{{USER}}`. For the `CURRENT_TIMESTAMP` variable, Oracle Analytics supports the Oracle Java date and time formats.

Supported Format	Output
`{{CURRENT_TIMESTAMP}}`	`2025-03-19`
`{{CURRENT_TIMESTAMP:yyyy-MM-dd HH:mm}}`	`2025-03-19 14:30`
`{{CURRENT_TIMESTAMP:EEEE, MMM dd, yyyy HH:mm:ss}}`	`Monday, May 5, 2025 14:30:15`

For example, suppose your user name is Tom B and you create a non-bursting email schedule:

In the Subject field, enter "Sales Dashboard for `{{CURRENT_TIMESTAMP:yyyy-MM-dd HH:mm:ss}}` from `{{USER}}`".

The recipient sees:

Sales Dashboard for 2025-03-19 13:35:09 from Tom B

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In the Message field, enter "This is the weekly update for the Sales Dashboard on `{{CURRENT_TIMESTAMP: EEEE, MMM dd, yyyy}}` from `{{USER}}`."

The recipient sees:

This is the weekly update for the Sales Dashboard on Wednesday, Mar 19, 2025 from Tom B.

Create a Workbook Email Schedule

You can set up a schedule to share data visualizations from selected canvases in the workbook with your intended recipients. You can send data visualizations as PDF files, XLSX files, or PNG format image files attached to scheduled emails.

You can create schedules for a workbook if you have the BI Service Administrator application role or any role with the Schedule Workbooks permission, plus Read-Write access for that workbook. If you're not sure whether you have the required application roles, check with your administrator.

Note: When you share to Excel format, you can include one visualization from any canvases that include table or pivot table visualizations. When you share to PDF or Image format, you can include a maximum of five canvases.

1. On your home page, hover over a workbook, click **Actions**, and select **Schedule**.
2. In the Schedule tab, click **New**.
3. In the Format tab, use the **Name** field to change the default name of the schedule if required.
4. Use the **Format** field to select a format in which to share the content:
   - **Acrobat (pdf)** - For Acrobat (PDF) files, use the **Canvas** field to select up to five canvases to share, and use the **Size** field to change the default page size.
   - **Image (png)** - For Image (PNG) files, use the **Canvas** field to select up to five canvases to share.
   - **Excel (xlsx)** - For Excel (XLSX) files, use the **Canvas** field to select one canvas with table or pivot table visualizations, and use the **Visual** field to select the visualization that you want to share.
5. In the **Schedule** tab, select a start date and time.
6. Optional: Select **Repeat** to create a recurring schedule.
7. In the Email tab, enter the recipients.

   You can add Oracle Analytics users, application roles, and email addresses for external recipients. Separate multiple email addresses with a comma, for example, *jane.white@abc.com*,*steve.brown@abc.com*. All recipients receive the visualizations based on the data access configuration of the administrator user who creates the schedule.
8. Optional: Enable **Bursting** if your data visualizations are configured for bursting and the visualizations contain confidential data accessed by specific application roles and user groups.
9. Enter a subject and message. In the email message click **Link** and select:
   - **Add a URL link to the workbook**
   - **Add a URL link to download output**

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> **Note**
>
> If your organization sets up a vanity URL for Oracle Analytics Cloud, your administrator can opt to use the vanity URL in the links to your visualizations (instead of the standard URL) through a system setting. See System Settings - Use Vanity URL to Share Content in Email.

You can also add a PNG image of your data visualizations to the body of the email message by clicking **Output Image**.

You can resize the added image for optimal display, by placing your cursor over the image, then click and drag the right corner to increase or decrease the size.

10. Optional: Use system variables to show the current date, time, and sender in the subject or message. Hover over the Subject or Message label to see a preview of the text as it will appear in the email.
11. Click **Save**.

Create a Bursting Workbook Email Schedule

Create a bursting workbook email schedule to deliver data visualizations to recipients if the data visualizations contain confidential data that is accessed by specific application roles and user groups configured in Oracle Analytics. Each recipient receives a customized data visualization based on their data access configuration instead of the data access configuration of the administrator user who creates the schedule.

You can create schedules with bursting for a workbook if you have the BI Service Administrator application role (or any role with the Schedule Workbooks with Bursting permission), plus Read-Write access for that workbook. If you're not sure whether you have the required application roles, check with your administrator.

1. On your home page, hover over a workbook containing the canvas and visualizations that you want to share, click **Actions**, and then select **Schedule**.
2. Create a schedule or edit an existing schedule.
3. In the Email tab, enable **Bursting** and enter the recipients.
4. Optional: Enter a subject and message.
5. Click **Save**.

Manage Workbook Email Schedules and Jobs

You can check the status of scheduled jobs and view, edit, or delete schedules of workbook emails.

You can manage schedules for a workbook if you have the BI Service Administrator application role (or any role with the Schedule Workbooks permission), plus Read-Write access for that workbook. If you're not sure whether you have the required application roles, check with your administrator.

1. On your home page, hover over a workbook containing the canvas and visualizations that you want to share, click **Actions**, and select **Schedule**.
2. Click the name to edit a schedule.
3. Optional: Click **Actions** and select **Run** to manually run a schedule at the present time.

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4. To delete a schedule, select the schedule, click **Actions**, and click **Delete**.
5. Optional: Click the **History** tab to check the status of previously scheduled jobs.
6. Click **Save**.
7. Optional: To inspect the progress of your scheduled jobs, on your home page, click **Navigator**  , click **Jobs**, click **Filters**, and then select **Workbook**. Select a schedule's job and click **Inspect**.

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21

Manage Visualization Content

This chapter describes how to manage your visualization content in the catalog.

Topics:

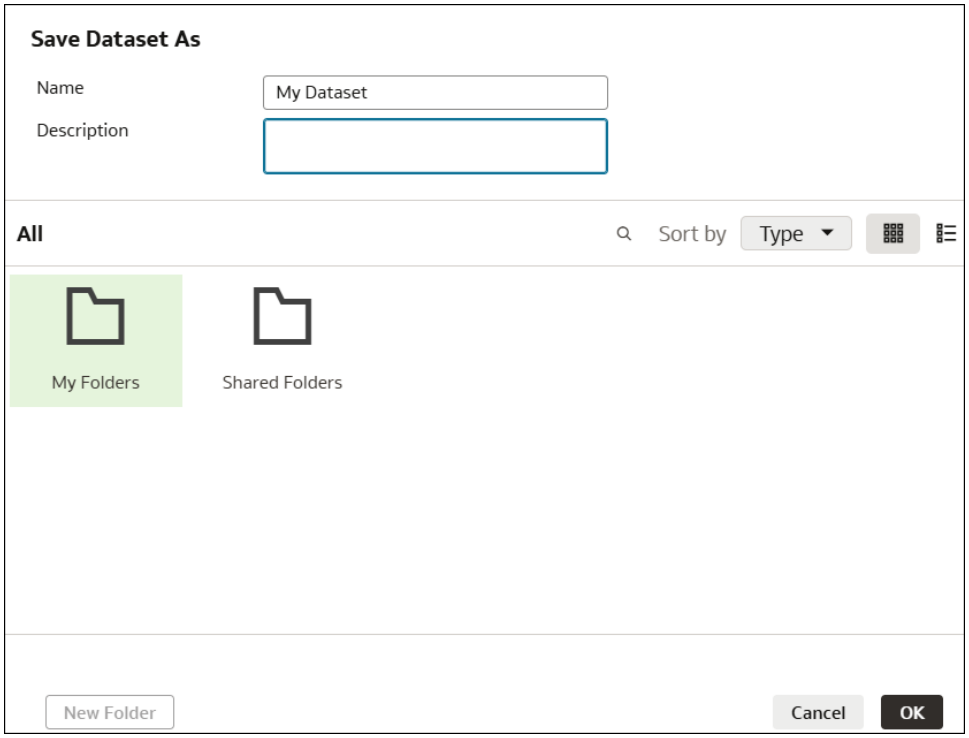
- Overview to Managing Content
- About Accessing the Catalog
- About Managing Existing Content
- Creating and Managing New Items
- Verifying an Item's Location in the Catalog
- Adding an Alias to Support Legacy References
- Create a Catalog Folder
- Move Catalog Folders and Contents
- Assign Shared Catalog Folder and Workbook Permissions
- FAQs Managing Data and Machine Learning Items in the Catalog

Overview to Managing Content

Find out about managing your content in the Oracle Analytics catalog.

You store analytics content in the catalog. When you save new items, you save them in **My Folders** or **Shared Folders** in the catalog.

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You can also create subfolders in the catalog to organize your content. For example, you might create a folder structure based on users, projects, or geographies, or a combination of each.

About My Folders and Shared Folders

My Folders

Use the My Folders area to store private and draft content.

Shared Folders

Use the Shared Folders area to store content placed here is accessible to other users or groups, based on permissions set by the content owner.

If you move content around in the catalog, the folder you move content to determines who can access it. See Catalog Access Inheritance Rules.

About Accessing the Catalog

In Oracle Analytics catalog, content authors develop content and make it accessible to other content authors and content consumers.

Content Consumers

Content consumer access workbooks and related analytics content from the catalog, but typically can't make changes to the content, unless they've been given appropriate access.

Content Authors

Content authors can access and make changes to workbooks and related content in the catalog, unless permissions have been assigned to specific users or roles only.

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About Managing the Catalog

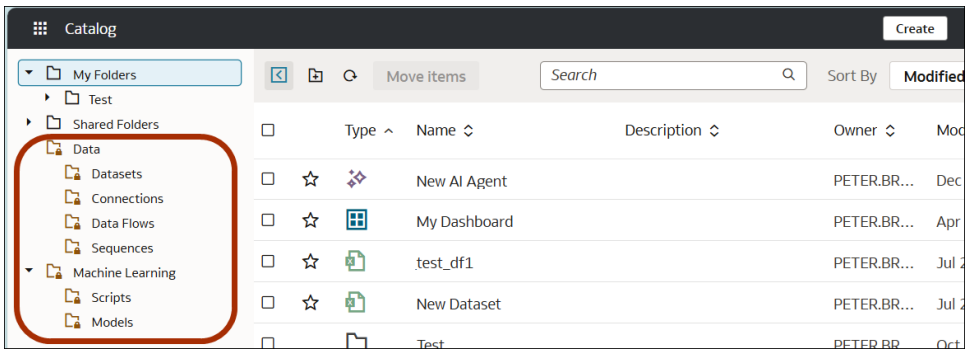
To navigate to the Catalog page, use the **Catalog** link on the Navigator menu.

About Managing Existing Content

Learn about how to manage connections, datasets, data flows, sequences, models, and scripts created before the January 2026 update of Oracle Analytics Cloud.

About Existing Content

Connections, datasets, data flows, sequences, models, and scripts created before the January 2026 update of Oracle Analytics Cloud are stored in the catalog in the read-only folders Data and Machine Learning. Move this read-only content from the Data and Machine Learning folders into My Folders or Shared Folders so that you can maintain and develop the content.



Note: The Data and Machine Learning folders and subfolders are read-only, so you can't save new items in them. Although you can edit existing items in these folders, we advise that you move items into My Folders or Shared Folders if you plan to maintain these items going forward.

Find out more:

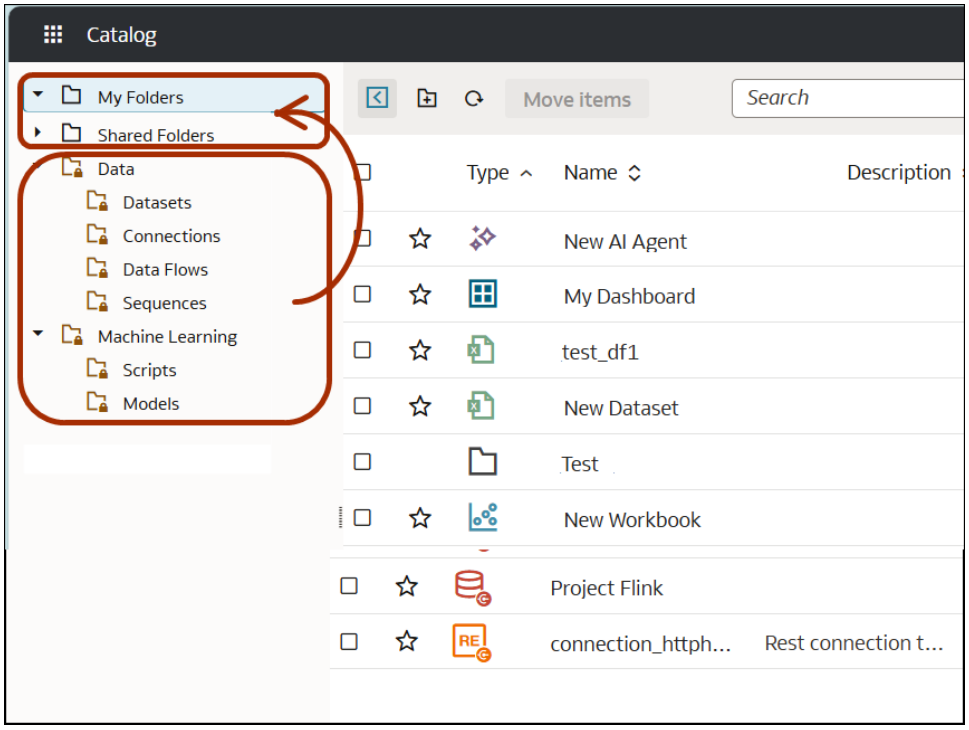
- FAQs General Questions
- Share Your Content

About Migrating Existing Content

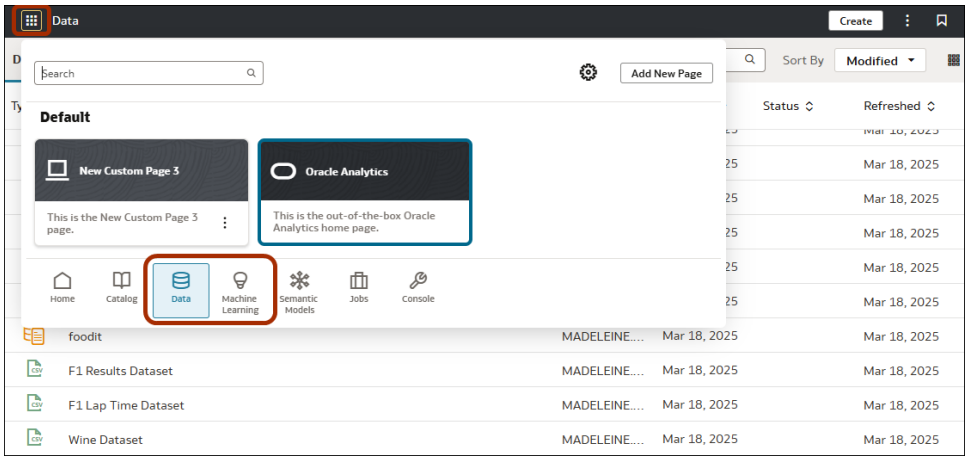
Using the Catalog page, administrators or content-creators move existing items from the legacy folders **Data** and **Machine Learning** into **My Folders** (for private content) or **Shared Folders** (for shared content).

You can multi-select items and use the **Move items** option or drag and drop them to a folder in the catalog. **Note**: You can't drag and drop folders themselves, only the contents.

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You can also access legacy items on the Data page and Machine Learning pages.



Use the Inspect dialog to determine where items are stored and what permissions are defined for them. See Verifying an Item's Location in the Catalog.

Creating and Managing New Items

Learn about how to manage your new and existing items, such as connections, datasets, data flows, sequences, models, and scripts in the Oracle Analytics Catalog.

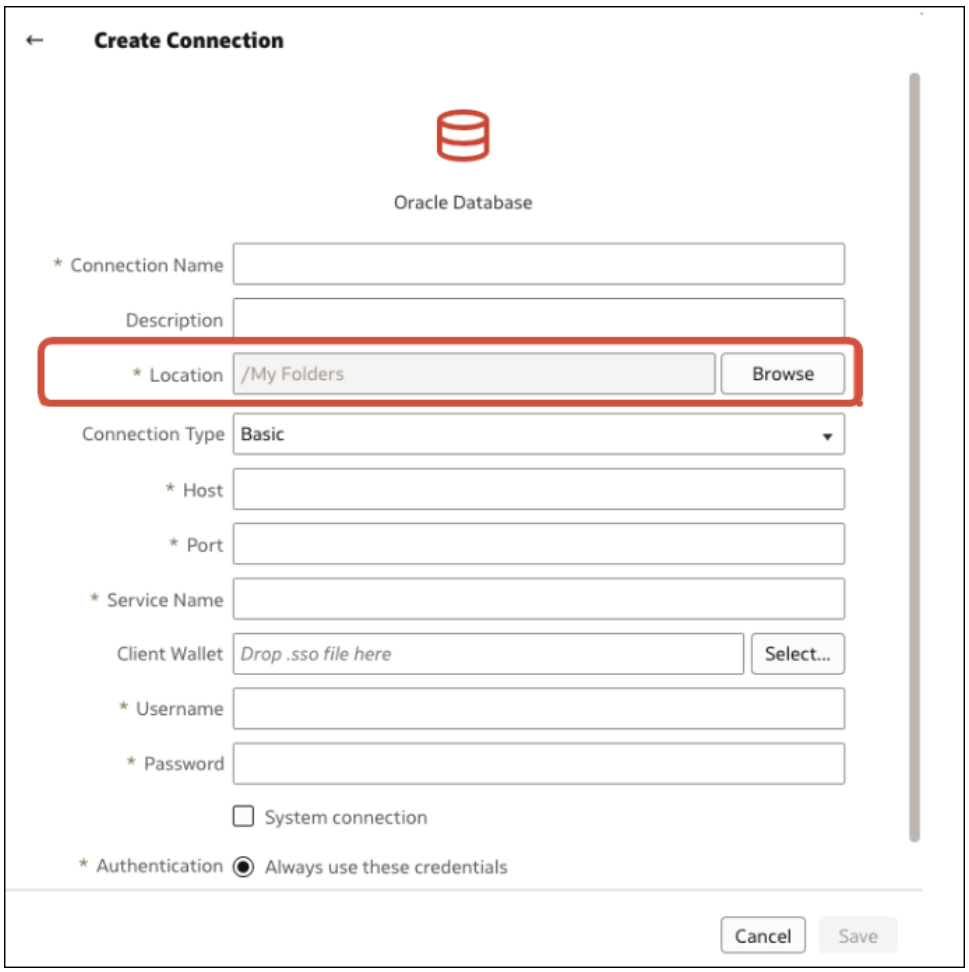
About creating and managing new items

Content authors save new items in the catalog in **My Folders** (for private content) or **Shared Folders** (for shared content).

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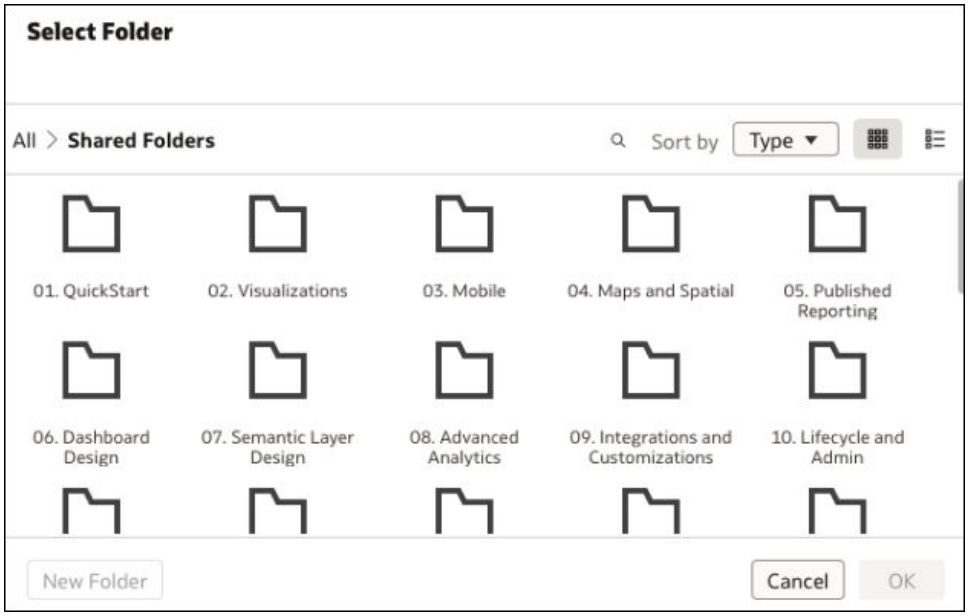
Connections

When you create a connection, use the new **Location** field on the Create Connection dialog to specify where to save it.



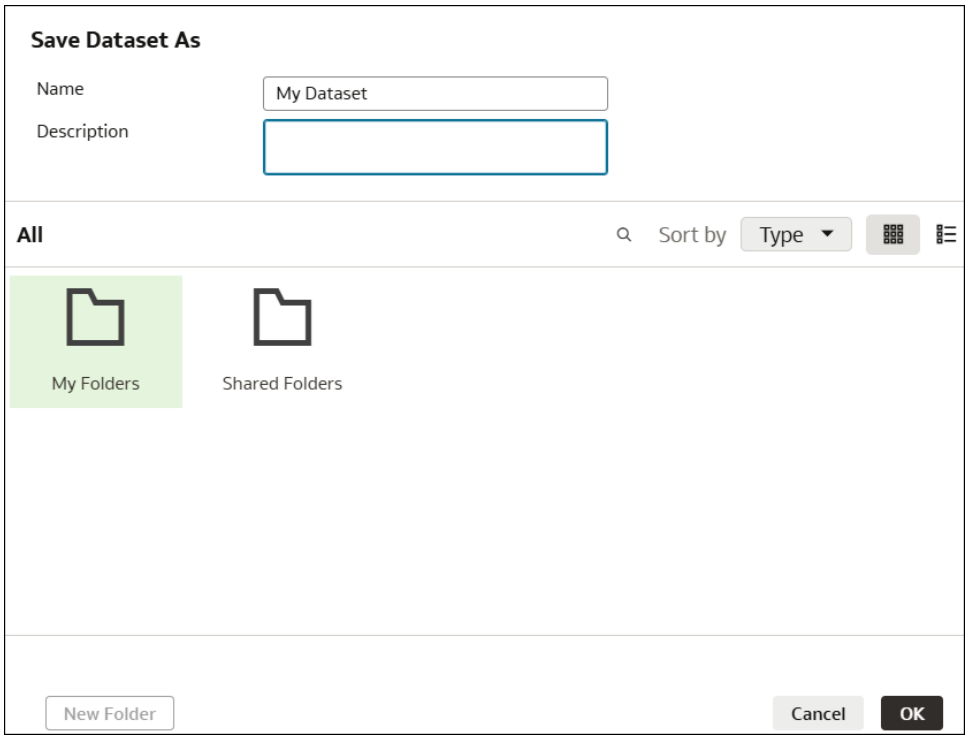
The default location is **/My Folders**, but you can select a different folder or create a new sub-folder in which to save the connection.

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Datasets, Data Flows, and Sequences

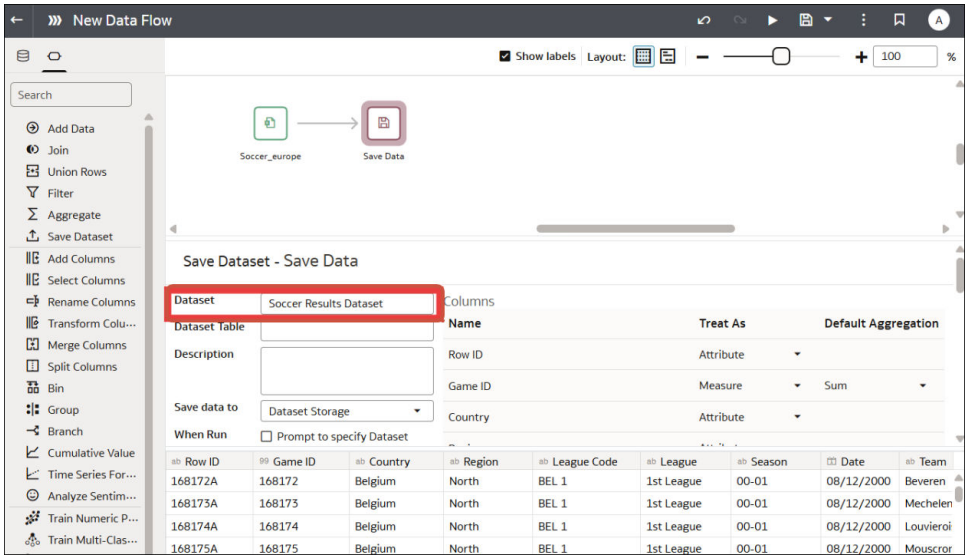
When you save a new dataset, data flow, or sequence, the save dialog displays a location browser, which enables you to specify where to save it.



Datasets Generated by Data Flows

Datasets generated by data flows are stored in the same folder as the data flow. If you haven't saved a data flow, you're prompted to save it in the catalog before you can run it.

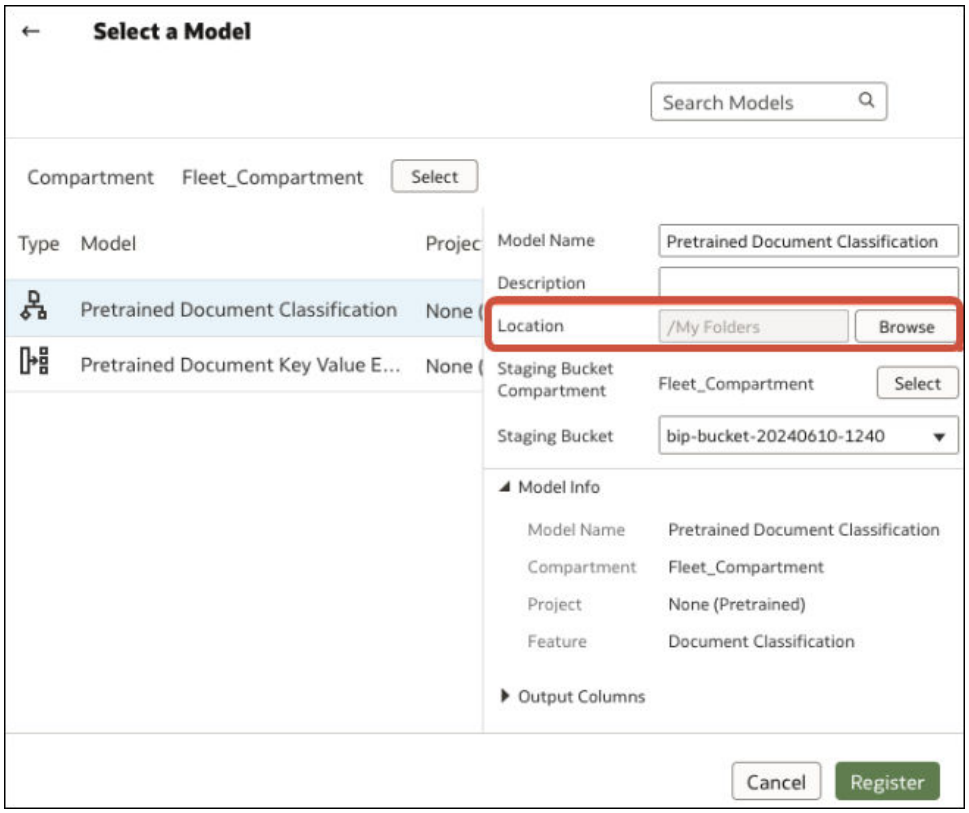
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You can move datasets to a different folder after they've been generated, and subsequent executions of the data flows will replace the datasets in their new location.

Models and Scripts

When you register a model or script, you use the **Location** field to specify where to save it.



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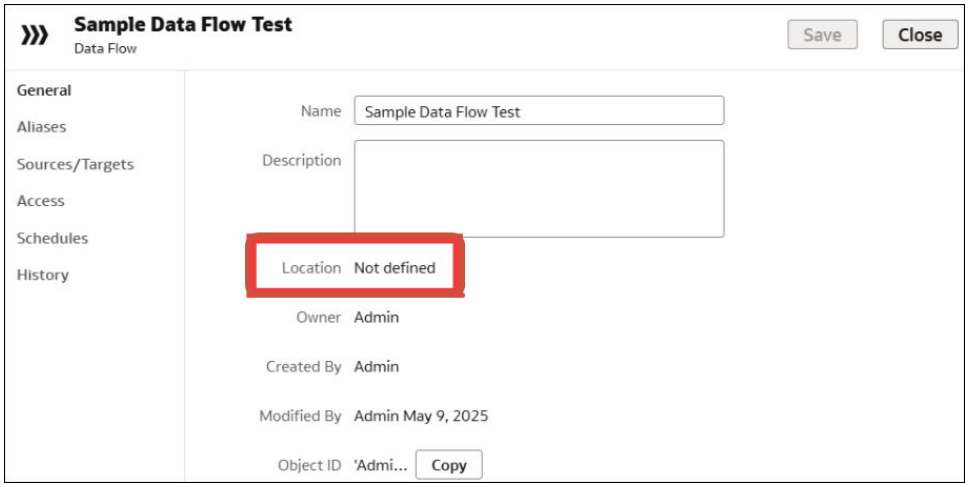
Verifying an Item's Location in the Catalog

Verify the location of an item to determine whether it's located in the read-only legacy area or in the read-write area in the catalog.

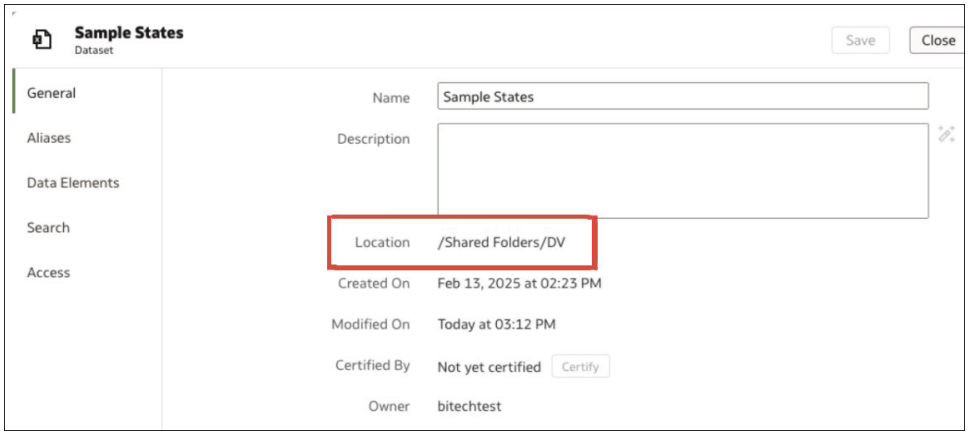
Verifying an item location using the Inspect dialog

Use the **Location** field on the General tab of the Inspect dialog to determine where an item is saved.

If an item is not yet moved to My Folders or Shared Folders in the catalog, the **Location** field displays "Not defined". You can edit items stored in the legacy area, but we advise that you to move production items to the My Folders or Shared Folders area.



If an item has been moved to My Folders or Shared Folders in the catalog, the **Location** field displays the name of the folder. You can edit and share items in My Folders and Shared Folders.



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Adding an Alias to Support Legacy References

Add an aliase for an item to support legacy references to data and machine learning items that have been deleted or lost.

When you create data and machine learning items in the catalog, they're given unique IDs, for example `'b5ea442f-cb70-4dfa-8d34-2bf6d8c3313d'.'Sample States'`. Add aliases to specify legacy references to data and machine learning items so that workbooks that accessed the original items can work with the new items.

For example:

- Old workbooks might use a dataset `'admin'.'Sample States'` that's been deleted or lost.
- When you recreate the dataset, it's assigned a unique ID, for example `'b5ea442f-cb70-4dfa-8d34-2bf6d8c3313d'.'Sample States'`.
- Inspect the dataset, display the Aliases page, and add the alias `'admin'.'Sample States'`.



- Workbooks that referenced the original dataset reference the new dataset.

Create a Catalog Folder

You can create catalog folders that only you can access (in My Folders) or that other users can access (in Shared Folders). Catalog folders help you to organize, find, and manage the workbooks that you create or modify.

You need the DV Content Author application role to create folders and subfolders in My Folders and Shared Folders.

You need to assign permissions to the shared catalog folders that you create. A shared catalog folder's permissions determine which users and roles can access the shared catalog folder. See Add or Update Shared Catalog Folder Permissions and Add or Update a Shared Workbook's Permissions.

1. On your home page, click **Navigator**, and then click **Catalog**.
2. Click **My Folders** or **Shared Folders** to navigate to where you want to create the catalog folder.

   Make sure that you have content author privileges for the area you select.

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3. Click Create Folder  on the options bar at the top of the page.

   If you Create Folder option is greyed out, ask the administrator to assign you content author privileges for the area where you'd like to create the folder.

4. In New Folder, enter a catalog folder name and click **Create**.
5. Optional: To create a subfolder within a catalog folder, locate the catalog folder where you want to add the subfolder, click **Actions**, then select **New Folder**. In New Folder, enter a catalog folder name and click **Create**.

Move Catalog Folders and Contents

You can move catalog folders and their contents to improve catalog folders organization. For example you can drag and drop a folder and it's contents to move it into a different folder.

You need the DV Content Author application role to move folders and their contents in My Folders and Shared Folders.

1. On your home page, click **Navigator**  , and then click **Catalog**.
2. In the navigation pane, navigate to **My Folders** or **Shared Folders**.
3. Select the catalog folder or catalog folder contents that you want to move and use one of these options:
   - Drag and drop the selected folder or contents to another folder.
   - Right-click individual folders or items and select **Move to**, then in Move <folder name>, select a folder location, and click **OK**.
   - Multi-select (Ctrl + click) folders or items, click the **Move n items** box, then select a new location, and click **OK**.

Assign Shared Catalog Folder and Workbook Permissions

You can view, modify, and add access permissions for catalog folders and workbooks. Permissions determine the actions a user can perform when working with shared folders and workbooks.

Topics:

- Add or Update Shared Catalog Folder Permissions
- Add or Update a Shared Workbook's Permissions
- Workbook Permissions Rules

Add or Update a Shared Workbook's Permissions

You can assign users and roles, access permissions (Read-Write and Read-Only), and share permissions (View and Edit) to a workbook that you create or administer.

The shared catalog folder's permissions default into the workbook's Access and Share tabs. You can set permissions on the workbook to fine-tune the default permissions. See Workbook Permissions Rules.

A workbook's default permissions are based on roles. Roles and the permissions you assign in the **Access** tab determine who can access the workbook and what they can do with it. For

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example, open, open in a new tab, inspect, favorite, rename, export, move to, duplicate, and delete.

The permissions you assign in the **Share** tab determine which actions users can perform on the workbook, such as rename, move to, save and save as.

A workbook contains artifacts, which are stand-alone Oracle Analytics objects that you can include in other workbooks (for example, datasets). Sometimes these artifacts aren't already shared. In such cases, when you add or update a workbook's permissions Oracle Analytics displays the Shared Related Artifact dialog where you can specify if you want to share these artifacts with the users who can access the workbook.

Sometimes you might choose to not share the artifacts, such as when you want to review and assign the artifact's permissions manually, or when the user must select a different artifact in the workbook that you are adding or updating permissions for (for example, select a different dataset).

Oracle recommends that you use the Oracle Analytics home page and not the Classic home page to update workbook permissions.

1. On your home page, click **Navigator**, and then click **Catalog**.
2. Click **Shared Folders**, and then navigate to the workbook.
3. Hover over the workbook, click **Actions**, and then click **Inspect**.
4. Click the **Access** tab to add or update users and roles and permissions. The permissions in this tab default from the access permissions set on the shared catalog folder.
5. Click the **Share** tab to add or update users and roles and permissions. The permissions that default into this tab are the same permissions that default into the **Access** tab.
6. Click **Save**.
7. If the Shared Related Artifact dialog is displayed, then specify if you want to share the artifacts included in the workbook (for example, the workbook's datasets) and click **Apply**.

Add or Update Shared Catalog Folder Permissions

You can assign users and roles and access permissions (Read-Write or Read-Only) to the shared catalog folders you create or administer.

A shared catalog subfolder's default permissions are based on roles. Roles and the permissions you assign in the **Access** tab determine who can access the shared catalog subfolder and what then can do with it. For example, open, inspect, rename, move to, duplicate, or delete.

The users and roles and permissions you specify are applied to any shared catalog subfolders that you create and the workbooks that you save to the shared catalog subfolder. You can fine tune permissions on shared catalog subfolders and workbooks.

A shared catalog folder can contains artifacts, which are stand-alone Oracle Analytics objects (for example, datasets). When you add or update a shared catalog folder's permissions Oracle Analytics displays the Shared Related Artifact dialog where you can specify if you want to share these artifacts with the users who can access the shared catalog folder.

Sometimes you might choose to not share the artifacts, such as when you want to review and assign the artifact's permissions manually.

1. On your home page, click **Navigator**, and then click **Catalog**.
2. Click **Shared Folders**, and then navigate to the shared catalog folder that you want to update permissions for.

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3. Hover over the shared catalog folder, click **Actions**, and then click **Inspect**.
4. Click the **Access** tab to add users and roles and permissions, or update permissions for the existing users and roles.
5. Click **Save**.
6. If the Shared Related Artifacts dialog is displayed, then specify if you want to share the artifacts included in the shared catalog folder (for example, datasets) and click **Apply**.

Workbook Permissions Rules

Use these rules to help you set a workbook's permissions.

Access (Read-Only and Read-Write) Rules:

- Permissions are evaluated by hierarchies configured for roles.
- Permissions set for roles closest to the top level in the role hierarchy are superseded by permissions set for roles at a lower level in the role hierarchy.
- If there are multiple rules at the same level, the permission set for the first role in the Oracle BI Presentation Catalog list supersedes other roles.
- User permissions always override role permissions.

Share (Edit and View) Rules:

- If a user is a member of any role with edit permission, that user can edit the workbook.
- If a user has edit permission, that user can edit the workbook.
- If a user is a member of any role with view permission, that user can view the workbook.
- If a user has view permission, that user can view the workbook.

How Share and Access Permissions Affect Saving a Workbook Opened by a DVConsumer User

Share	Access: Read-Only	Access: Read-Write
View	**Save** and **Save As** aren't enabled.	**Save** and **Save As** aren't enabled.
Edit	**Save** and **Save As** aren't enabled.	**Save** and **Save As** aren't enabled.

How Share and Access Permissions Affect Saving a Workbook Opened by a DVContentAuthor User

Share	Access: Read-Only	Access: Read-Write
View	**Save** and **Save As** aren't enabled.	**Save** and **Save As** aren't enabled.
Edit	**Save** isn't enabled, but **Save As** is enabled.	**Save** and **Save As** are both enabled.

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FAQs Managing Data and Machine Learning Items in the Catalog

Find answers to frequently asked questions (FAQs) about managing your data and machine learning artifacts in the Oracle Analytics Catalog.

Topics:

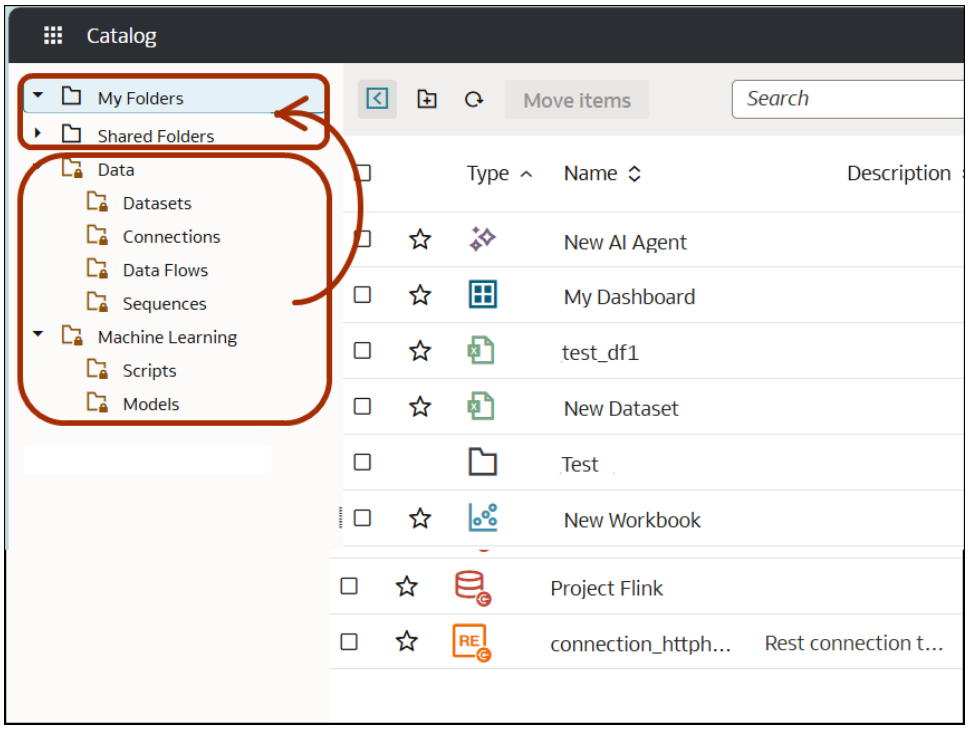
- FAQs General Questions
- FAQs Export Items in DVA Format

FAQs General Questions

This topic provides answers to frequently asked questions (FAQs) about managing your data and machine learning artifacts in the Oracle Analytics Catalog.

How do I move existing Data and Machine Learning items to the catalog?

Navigate to the Catalog pane, and drag and drop items from sub-folders in **Data** or **Machine Learning** to **My Folders** or **Shared Folders**.



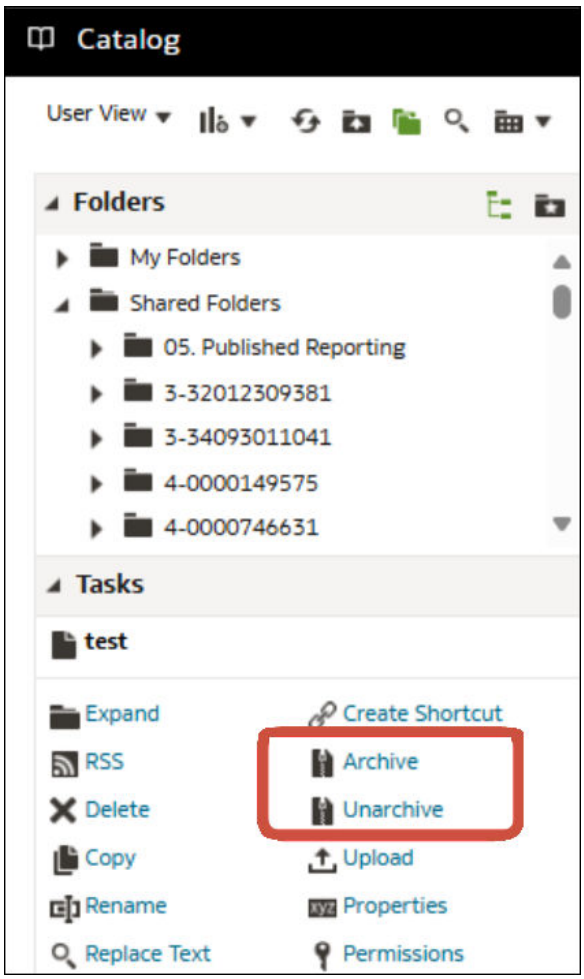
What happens if I don't move existing Data and Machine Learning items to the catalog?

They remain in the legacy **Data** or **Machine Learning** folders. If you open an existing item located in the **Data** or **Machine Learning** folders and save it, it remains in its original location. If you open an existing item located in the **Data** or **Machine Learning** folders and choose the Save As option, you have to save it in a folders in the catalog.

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Are there differences between Catalog and Classic Catalog?

Generally, no. Classic Catalog enables you to manage all items in the same way. Exceptions in Classic Catalog are **Archive** and **Unarchive** for folders, which don't include connections, datasets, data flows, sequences, models, and scripts. They only include Classic items such as dashboards, analyses, briefing books, agents, an so on.



If I move existing Data and Machine Learning items around in the catalog, will this affect my workbooks, connections, data flows, and so on?

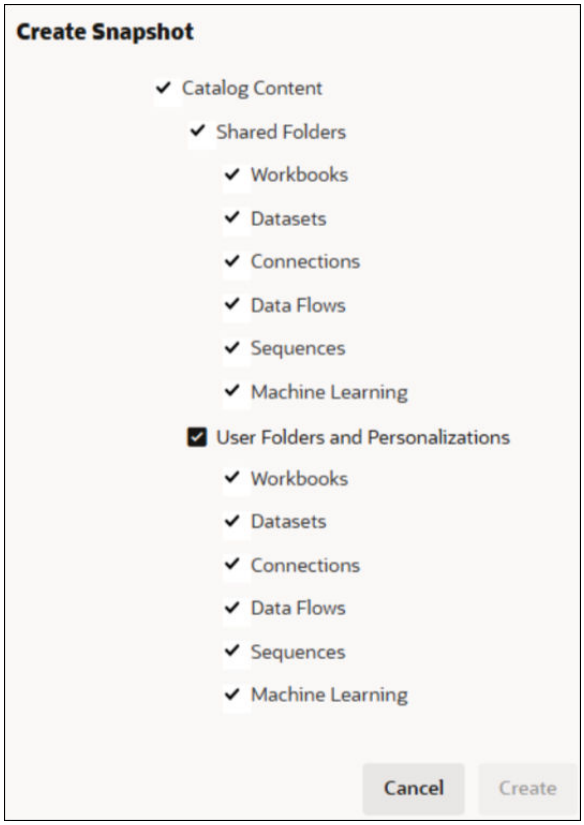
No. Everything will continue to work as normal.

If you see a warning message when you try to move other Catalog items, follow the guidance in the message.

If I create a snapshot in Oracle Analytics Console, can I include Data and Machine Learning items in Shared Folders and User Folders?

Yes. In the Create Snapshot dialog you can select which catalog items to include in your snapshot.

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Can I recreate old data or machine learning items that've been lost or deleted?

Yes. First recreate the item, for example a dataset. Then, use the Inspect dialog to display the Aliases page and add the old item ID as an alias.



FAQs Export Items in DVA Format

This topic provides answers to frequently asked questions (FAQs) about exporting analytics content in DVA format. Oracle Analytics uses the DVA format to import and export analytics items and their related items. For example, if you export a data flow in DVA format, you can include input and output datasets in the export file.

What items can I export as a DVA?

DVA export can be initiated from the following items:

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- Workbooks
- Data flows
- Sequences
- Folders
  A folder can only be exported if it contains a workbook anywhere in the folder hierarchy. When exporting a folder, all artifacts regardless of type are exported.

How are dependent items determined when exporting a DVA?

A DVA can contain the following dependent item types.

- Workbooks
- File based and connection based Datasets (not Subject Areas)
- Connections
- Data flows
- Sequences

For example if you create a DVA from a workbook, depending on the options selected when exporting, the DVA will contain the workbook and the datasets referenced in the workbook. If any of these datasets were created via a data flow then it will also include that dataflow and possibly more datasets.

- Exporting a Dataflow - DVA will contain the dataflow and all input and output datasets. Other dependencies on these any of these artifacts will also be included.
- Exporting a Workbook - DVA will contain the workbook add the datasets used in the workbook. Other dependencies on these any of these artifacts will also be included.
- Exporting a Workbook (with a dataset that is the output of a data flow) - DVA will contain the workbook add the datasets used in the workbook along with the data flow that created the output dataset. Other dependencies on these any of these artifacts will also be included.
- Exporting a Sequence - DVA will contain the sequence and all the datasets, sequences, and data flows contained in the sequence. Other dependencies on these any of these artifacts will also be included.

I imported a DVA from the home page, where did the items in the DVA go?

When a DVA file is imported from the home page or any page where a catalog path cannot be determined, these items are imported to the user /My Folders directory. If you access the catalog, select a folder, then import, all the items in the DVA will be in the selected folder.

When I was importing my DVA I received the following message "filename.dva contains content with the same name as existing content. Do you want to continue and replace the existing content?". What does this mean?

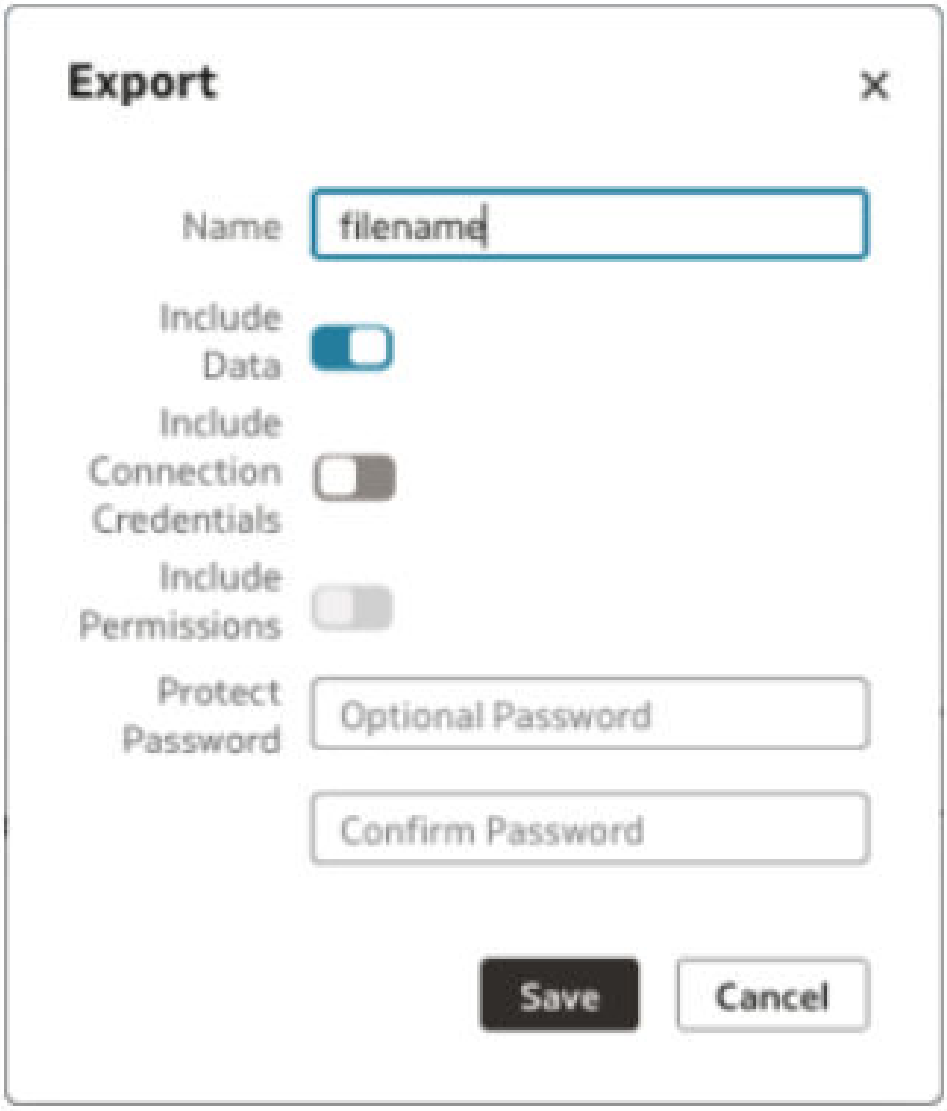
This means that the DVA file contains items that already exist in the location where you are importing and if you continue those items will we overwritten. If they are overwritten the object IDs of the target items are retained. If you do not wish to replace these items the DVA can be imported into a new folder and all items from that DVA will be contained within a single folder.

What items can I optionally include when I export a DVA?

When creating a DVA import there are few options that allow to use to control what is being exported. Of the options there is only one that will control what items are included, "Include

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Data". This option will include any file based or connection based datasets, connections and their dependencies. There is no way to control the items exported it at a finer grain.



Note: When an export contains a connection, if the Connection Credentials are included, the credential (normally password) is included, but in the case of a connection to ADW, the wallet is not included.

What is an object ID and how do they impact DVA imports?

When importing content with a DVA it is important to understand object ID and how they are treated on import. An object ID is a two-part string consisting of a prefix string, a period (to delineate the two parts), and an object name. e.g. '<guid>.dataset1'. The object ID prefix is a GUID (Globally Unique Identifier) so when importing a DVA the target system will generate new GUIDs for each of the items like datasets that require them. Any other items imported in the same DVA will have their references updated so they point to the new object ID. Object IDs is no non-deterministic, and in the case of an overwrite the object ID of target items will be retained.

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Prior to the One Catalog feature (where datasets, data flows, sequences and connections become part of the catalog and can leverage folders), the object ID prefix is was the user ID of the creating user. When a user imported a DVA they are effectively creating the objects from the DVA in the target environment. Therefore all object IDs on the objects being imported will use the prefix based on the user ID of the importing user. e.g if user2 imports a DVA containing dataset1, the resulting object ID on this dataset will be 'user2.dataset1' even if the object ID in the source environment was 'user1.dataset1'. Any other items imported in the same DVA will have their references updated so they point to the new object ID. As a result this could have resulted in issues:

- If the target environment already contains an object with the object ID 'user2.dataset' this will be overwritten by the object being imported. If the target environment contains an object with object ID 'user1.dataset' this object will remain unchanged. This is a common cause for multiple copies of datasets and connections inadvertently being created.
- When moving items to a target environment using DVA export/import, if user who originally created the objects also performs the import, the object IDs do not change and the import behaves intuitively. When different users create the object that have object IDs, or a different user (not the object creator) imports a DVA, undesirable consequences can be experienced.

What if import the same DVA into two different folders?

In this case you will have duplicate versions of all the same items. The duplicate items will have different object IDs.

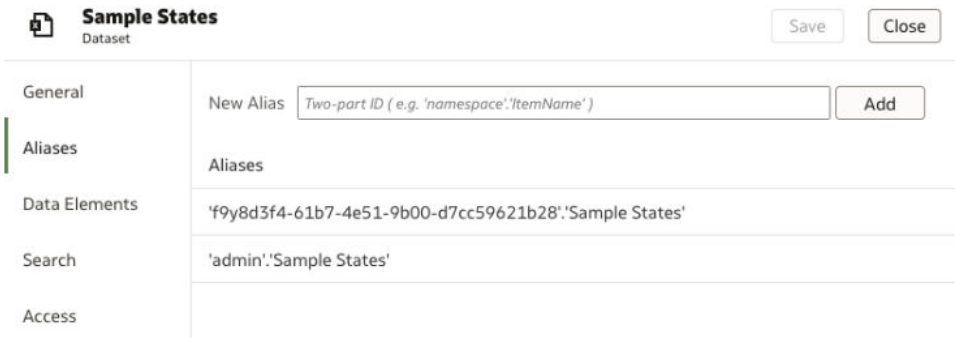
Do I have to import a DVA into a folder?

Yes, all DVA imports target a folder.

I want to point existing item to a new item I just imported, how can this be done?

The newly imported item will have a new object ID and it may become necessary to create aliases for old IDs. For example, let's say you have a workbook that references the dataset 'username'.'MyDataset'. If at some point MyDataset is deleted or lost in migration, it is a common practice to recreate the dataset with the same name so that the workbook will use it again. However, when you recreate the dataset, it will get a new globally unique ID like 'b5ea442f-cb70-4dfa-8d34-2bf6d8c3313d'.'MyDataset'. The old reference ID in the workbook will not find this new dataset and it will be broken. To fix this, you can create an alias for the old object ID in your new dataset. Add an alias 'username'.'MyDataset', and now the dataset can be found by that ID in addition to its new globally unique ID. The workbook will work again.

To create an alias, open the inspect dialog for the item, go to the Aliases tab, and add your old object ID there. You can add more than one alias if necessary. And you can delete aliases that are no longer necessary.



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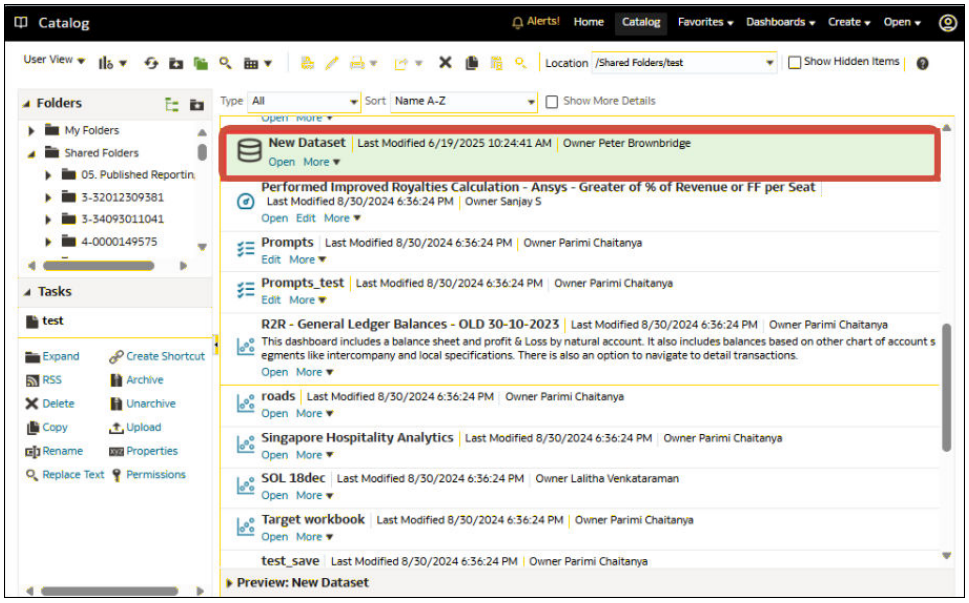
Using Classic Catalog

Classic Catalog is the catalog tool that you access from Oracle Analytics Cloud Classic to manage your reporting dashboards, analyses, and classic content.

Using Classic Catalog

Classic Catalog enables you to manage dashboards, analyses, briefing books and so on. For example, you can copy, move, delete, view or update ACLs and properties for items.

Although you can access connections, datasets, data flows, sequences, models, and scripts in Classic Catalog, there are limitations about using Archive and Unarchive. See FAQ *Are there differences between Catalog and Classic Catalog?*



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Part IV
Report Data

This part explains how to work with data reports.

Chapters:

- Create Analyses
- View Data in Different Ways
- Build Dashboards
- Filter and Select Data for Analyses
- Prompt in Analyses and Dashboards
- Make Analyses Interactive
- Manage Reporting Content

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22

Create Analyses

This chapter describes how to create an analysis.

Video

Topics:

- Typical Workflow to Create Analyses
- Create Your First Analysis
- Set Properties for Columns
- Export Content from Analyses and Dashboards
- Edit Formulas or Calculated Measures
- Set Properties for Analyses
- Set Your Preferences
- Advanced Techniques: Import Formatting from Another Analysis
- Advanced Techniques: Format with HTML Tags
- Advanced Techniques: Combine Columns to Display Data Differently
- Advanced Techniques: Set Caching Options for Your Analysis
- Advanced Techniques: Examine the Logical SQL Statements for Analyses
- Advanced Techniques: Reference Stored Values in Variables
- Advanced Techniques: Issue Direct Database Requests

Typical Workflow to Create Analyses

Here are the common tasks to start creating analyses.

Task	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Your First Analysis
Set properties for columns	Specify properties such as heading and value formats, display of data, and conditional formatting.	Set Properties for Columns
Work with the data in the analysis	Add formulas and calculated measures to the analysis.	Edit Formulas or Calculated Measures
Affect the values of data in the analysis	Specify filters, selection steps, groups, and calculated items for the analysis.	Filter and Select Data for Analyses

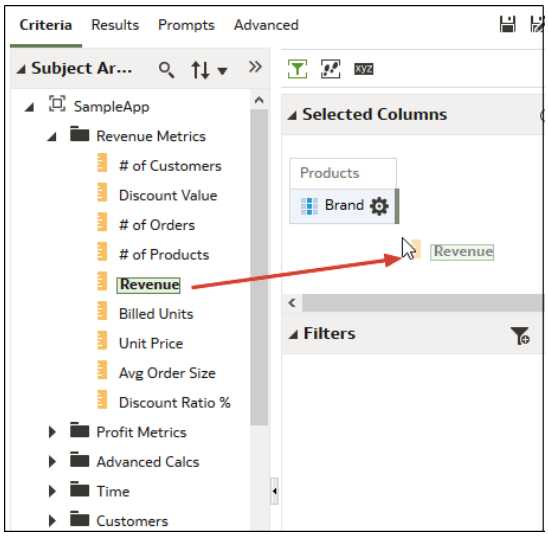
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Create Your First Analysis

You can quickly create an analysis to query against your organization's data. The analysis results help you answer your business questions. For example, you can create an analysis using the SampleApp subject area Brand and Revenue columns.

Video

1. On the Classic Home page, in the **Create** pane, click **Analysis**.
2. Use the Select Subject Area dialog to search for and select a subject area.
3. Add the columns that you want to include in the analysis by dragging and dropping them from the Subject Areas pane to any position within the Selected Columns pane. You can select multiple non-contiguous columns by using the Ctrl key, selecting each column to include, and then dragging the columns to the Selected Columns pane.

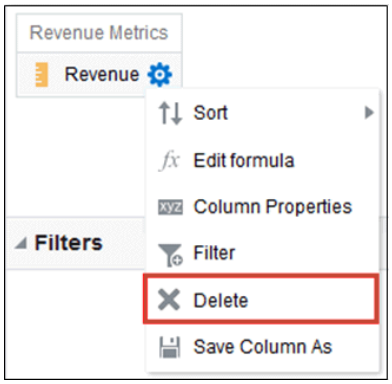


4. To change the column order, use the crosshairs on the column to drag and drop the column to a different position.



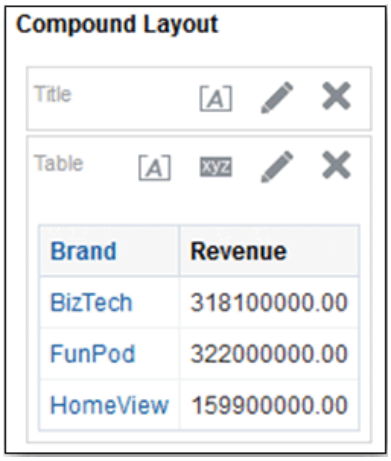
5. To save a column to the catalog, in the Selected Columns pane, click **Options** beside the column name, and click **Save Column As**.
6. In the Save As dialog, specify the folder, name, and description for the column and click **OK**.
7. To remove a column, in the Selected Columns pane, click **Options** beside the column name, and click **Delete**.

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To remove all columns, click **Remove all columns from criteria**. Note that there is no undo action available for this option. Instead of removing columns, you can hide the columns whose appearance adds no value to the analysis.

8. Click the Results tab to see the results of the analysis in a table or pivot table.



9. Click **Save Analysis** to display the dialog to save the analysis.
10. In the Save As dialog, select a folder, and specify a name, and optional description for the analysis.

    If you want others to be able to view the analysis, then save it in the shared folder area. If your analysis contains other objects, then you'll be prompted to assign access permissions to those objects.

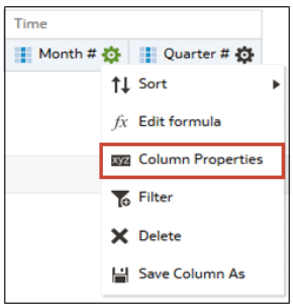
    If you don't want anyone else but yourself to be able to view the analysis, then save it in `My Folders`.
11. Click **Refresh** at the bottom of the pane to double-check that the analysis is listed under the folder in which you saved it.

Set Properties for Columns

When you build an analysis, you can edit column properties to control the look and feel of the column. For example, you can specify that values in the Revenue column are displayed with two decimal places and a dollar sign.

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1. Open the analysis for editing.
2. In the Selected Columns pane, click **Options** beside the column name, and then select **Column Properties**.



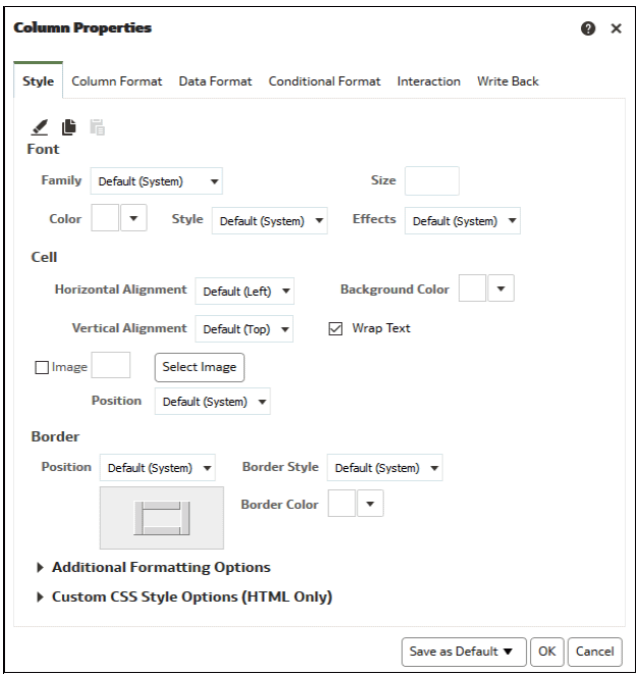
3. Specify how you want column values to be displayed.
4. Format column headings and custom text, and add data display conditions.
5. Specify what action you want to happen when a user clicks a column heading or value.
6. Set default column formatting.
7. Click **OK**.

Apply Formatting to Content

You can apply basic formatting to values in many types of content including columns, views, and dashboard page sections.

For example, you might want region names in a column to be displayed as Arial 14 point and red. You might also want state names to be displayed as Calibri 12 point and blue.

1. In the Selected Columns pane, click **Options** beside the column name, and then select **Column Properties**.
2. Specify the style characteristics of the column such as font, cell alignment, and border.



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3. Click **OK**.

Format Columns

When you create an analysis, you can edit properties for columns to control their appearance and layout. You can also specify formatting to apply only if the contents of the column meet certain conditions.

For example, you can specify that values that exceed $1 million in the Revenue column are displayed with a green background.

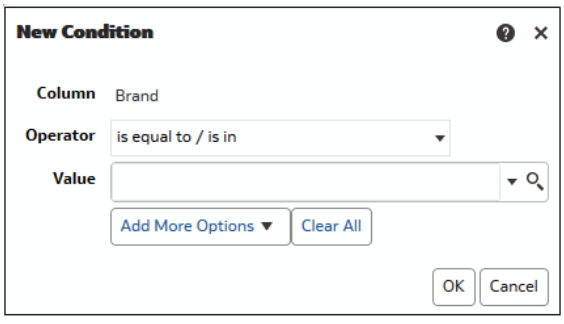
1. In the Selected Columns pane, click **Options** beside the column name, and then select **Column Properties**.
2. In the Column Properties dialog, click the Column Format tab.
3. To hide the column in the analyses without affecting value aggregation, select the **Hide** check box.

   For example, you might want to build an analysis that includes only Illinois customers. You can hide the Customers.State column because you only added this column for filtering purposes.
4. To enter your own values in the **Folder Heading** and **Column Heading** fields, select **Custom Headings** . You can use these fields to reference variables and format the heading values. These values identify the column in the analysis.
5. If enabled and you have administrator privileges, you can customize headings with HTML markup, including JavaScript. Select **Custom Heading**, then select **Contains HTML Markup**, and then enter the HTML markup you want to apply.

   To enable this option, ask an administrator to set Allow HTML/JavaScript/CSS Content option in the Console (under **Security** in **Advanced System Settings**).
6. To affect the display of repeating data values for the column, select one of the **Value Suppression** options.

   When the same value occurs in multiple consecutive rows, you can specify to show that value only once.
7. To override the default display of data for the column, click the Data Format tab.

   The options on the tab differ depending on the data type.
8. To specify if column values are displayed in a certain way based on certain criteria, click the Conditional Format tab. Conditional formats can include colors, fonts, images, and so on, for the data and for the cell that contains the data. You can't apply conditional formatting to the data cell background or font color in a heat matrix.
9. Click **Add Condition**, and then select a column.



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10. Select an operator such as **is equal to / is in** or **is greater than**.
11. Specify a value for the operator by either entering a value directly (such as 1000000) or by selecting a value from the list.
12. Optional: Click **Add More Options** to add a variable to the condition.
13. Specify the formatting to apply when the condition is true.
14. Click **OK**.

Make Your Analyses Dynamic

You can specify what you want to happen when a user clicks a column heading or value in an analysis. For example, you could specify that when a user clicks the Product column value, it drills down into the data that was summed to create the column value.

Video

Topics:

- Add Interactivity to Analyses
- Make Interactions Available

Add Interactivity to Analyses

You can make views more interactive by adding interactions that are available to users who left-click in a view or right-click to display a popup menu. For example, you might specify the default primary interaction (the left-click action) for a geographical region column as **Drill**. This enables users to drill down to sub-regions.

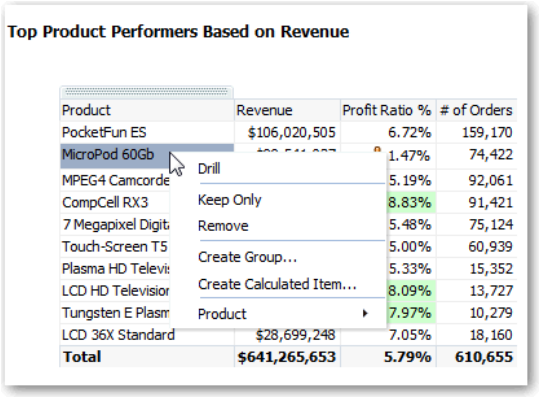
For hierarchical data, the default left-click interaction is to drill down to detail in the data. You can add right-click options that display a web page or link to a view.

1. Open the analysis for editing.
2. In the Selected Columns pane, click **Options** beside the column name, and then select **Column Properties**.
3. In the Column Properties dialog, click the Interaction tab.

   You can specify interactions for the column heading and data values.
4. Click **Primary Interaction** next to **Column Heading** or **Value** and select the behavior you want. For example, select None to disable the action or select Drill to display more detail.
   - Use None to disable all interactions on the column.
   - Use **Drill** to display a deeper level of detailed content if the data is hierarchical. If no hierarchy is configured for the column, then drilling isn't enabled.
   - Use **Action Links** to opens a web page or navigates to supporting BI content.
   - Use **Send Master-Detail Events** to connect views so that one view drives changes in one or more other views.
5. Click **OK**.

   You can specify the interactions that are available at runtime when you right-click a dashboard column or data cell. Here's an example of the available interactions when you right-click a product name in the Products column. This column is in a Top Product Performers Based on Revenue table.

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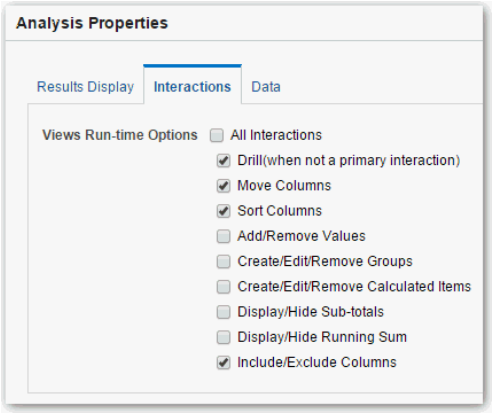


Of the selections shown, you can set **Drill**, **Create Group**, and **Create Calculated Item**.

Make Interactions Available

When you add interactions to analyses, you then make those interactions available to others in popup menus.

1. Open the analysis for editing.
2. Click either the Criteria tab or the Results tab.
3. Click **Edit Analysis Properties** on the toolbar.
4. Click the Interactions tab.



5. Select the interactions that you want to make available for that analysis.
6. Click **OK**.

Set Default Formats for Your System

You can save system-wide default column formats when you have appropriate privileges. When you save a system-wide default, it provides users with a more consistent experience and saves them time when working with analyses.

For example, you might set Times New Roman as the system-wide default for text columns.

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A best practice is to change the default value rather than overriding the default with specific values.

1. Open an analysis for editing.
2. In the Selected Columns pane, click **Options** beside the column name, and then select **Column Properties**.
3. In the Column Properties dialog, specify how you want columns to be formatted by default.
4. Click **Save as Default**.
5. Click **OK**.

Export Content from Analyses and Dashboards

You can export content from analyses and dashboards.

Topics:

- Export the Results of Analyses
- Export Dashboards and Dashboard Pages
- Tips for Exporting

Export the Results of Analyses

You can export analyses results to various formats, including data and formatting in Microsoft Office Excel, Adobe PDF, and CSV formats, and various data-only formats (that is, with no formatting).

For example, you can export a Stock Control analysis, so that one of your suppliers can see the results in Microsoft Excel.

If you're exporting data with over one million rows, ask your administrator about the maximum number you're allowed to export.

1. Open the analysis for editing.
2. To export data and formatting, click **Export this analysis** then **Formatted**, and choose an output format.
3. To export just data, click **Export this analysis** then **Data**, and choose an output format.

Export Dashboards and Dashboard Pages

You can export an entire dashboard or a single dashboard page to Microsoft Excel 2007+. When you export dashboard content to Microsoft Excel, the state of the dashboard (such as prompts or drills) won't change.

For example, you can export the dashboard page that contains the Brand Revenue analysis. This enables brand managers to review this data in Microsoft Excel.

1. Open the dashboard or dashboard page that you want to export.
2. On the Dashboard page toolbar, click **Page Options**, select **Export to Excel**, and select either **Export Current Page** or **Export Entire Dashboard**.

   If you export an entire dashboard:

   - Each page is included on its own sheet in an Excel workbook.

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- Each sheet is given the name of its corresponding dashboard page.

3. Use the File Download dialog to open or save the dashboard or dashboard page as a spreadsheet file.

Tips for Exporting

Here are some tips on exporting data from analyses, dashboards, and dashboard pages.

- If you're exporting data with over one million rows, ask your administrator about the maximum number you're allowed to export.
- By default, the **Value Suppression** option in the Column Properties dialog:Column Format tab determines if the cells in tables or pivot tables that span rows and cells that span columns are repeated when exporting to Excel (rather than always repeated). Don't suppress values when exporting to Excel if those who use the Excel spreadsheets want to manipulate the data.
  - If **Value Suppression** is set to **Suppress**, then cells that span rows and cells that span columns aren't repeated. For example, in a table that has Year and Month values, Year is displayed only once for Month values. This value suppression is useful if you want to simply view data in Excel spreadsheets.
  - If **Value Suppression** is set to **Repeat**, then cells that span rows and cells that span columns are repeated. For example, in a table that has Year and Month values, Year is repeated for all Month values.
- In PDF format, rows are split across page breaks rather than kept together.
- Action links aren't included in exported formats.
- When exporting to Excel, numbers and dates are exported in raw format with full number precision and format mask, rather than as a string in the data format specified.
- When exporting analysis results to formatted Excel spreadsheets, you can choose whether to export full precision values or export abbreviated values that display in a performance tile. In the Performance Tile Properties dialog, select the **Abbreviate Values** option, which determines the level of abbreviation used in the performance tile, that is, thousands, millions, and so on. To export abbreviated values to Excel, select the **Abbreviate in formatted Excel** option.
- While you can export directly to an Excel format, you might notice better performance during the export of large numbers of rows if you export first to CSV, and then import that file into Excel.

Edit Formulas or Calculated Measures

You can fine-tune the columns in an analysis by editing the formulas of columns or editing calculated measures.

Topics:

- Edit the Formula for a Column
- Edit Calculated Measures

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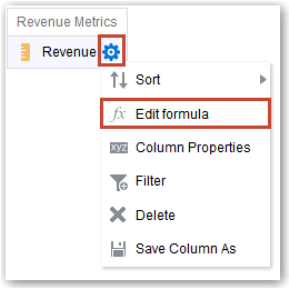
Edit the Formula for a Column

You can edit the formulas for attribute columns and measure columns when you specify the criteria for an analysis. This editing affects the column only in the context of the analysis and doesn't modify the formula of the original column in the subject area.

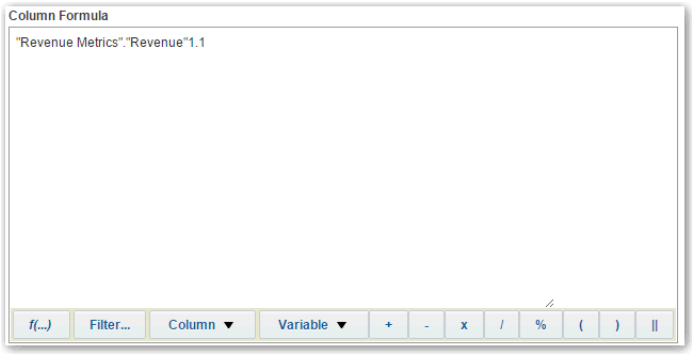
Video

A column formula specifies what the column values represent. In its most basic form, such as "Revenue Metrics"."Revenue", a column takes the data from the data source as is. You can edit the formula to add functions, conditional expressions, and so on. This editing enables you to present analysis results in a variety of ways. For example, you can edit the formula of a Revenue column to display values after a 10% increase in revenue. You can do this by writing a formula that multiplies the Revenue column by 1.1.

1. Open the analysis for editing.
2. In the Selected Columns pane, click **Options** beside the column name, and then select **Edit Formula**.



3. On the Column Formula tab of the Edit Column Formula dialog, enter a formula in the Column Formula pane.



By default, the name of the column on the Selected Columns pane is displayed in the Column Formula pane.

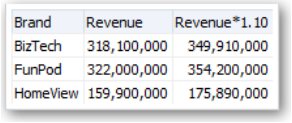
- Use the operator and character buttons on the bottom of the Column Formula pane to help build the formula.
- Use the **f(...)** button to display the Insert Function dialog that enables you to include a function in the column formula. For example, you can build a formula based on a SQL function, such as RANK("Sales Measures"."Dollars"). See Expression Editor Reference.

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- Use the **Filter...** button to display the Insert Filter dialog that enables you to include a filter expression in the column formula. Start the filter expression with at least one measure column. Include a Boolean expression that contains no measure columns or nested queries.

  For example, you can build a formula that uses the SQL FILTER function to filter the data, such as FILTER("Sales Measures"."Dollars" USING ("Markets"."Region" = 'EASTERN REGION').
- Reference a column name in the formula using the form *Folder-Name*.*Column.Name*. If either the folder name or the column name includes non-alphanumeric characters (such as spaces or underscores), then enclose each name in double quotes. You can enclose the names in double quotes even if they have all alphanumeric characters.
- Use single quotes to include literals or constants that have a data type of string. For example, you can include constants such as ‘John Doe’ or ‘Best Selling Product’ in a formula.

4. Click **OK**. On the Results tab, the column displays its values with the formula applied.



Brand	Revenue	Revenue*1.10
BizTech	318,100,000	349,910,000
FunPod	322,000,000	354,200,000
HomeView	159,900,000	175,890,000

Edit Calculated Measures

You can use calculated measures that are derived from other measures and created by using formulas.

For example, you might need to find the value after discounts are taken off the revenue. You create a calculated measure that subtracts the Discounted Amount from the Revenue value.

1. Open the analysis for editing.
2. On the Results tab, click **New Calculated Measure** on the toolbar to display the dialog.
3. If you have administrator privileges and want to customize folder and column headings with HTML markup, including JavaScript, select **Contains HTML Markup**, and then enter the HTML markup you want to apply. For examples, see Advanced Techniques: Format with HTML Tags.
4. Edit the formula for the calculated measure.
5. Click **OK**.

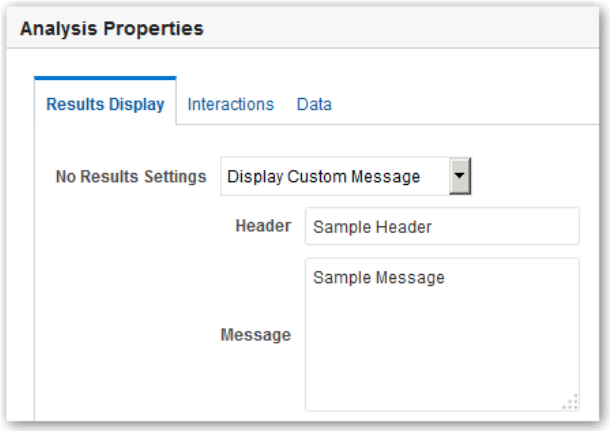
Set Properties for Analyses

You can set analysis properties to specify how results are displayed and how data is handled. You can also set which actions are available when users right-click in a pivot table, table, heat matrix, treemap, or trellis view.

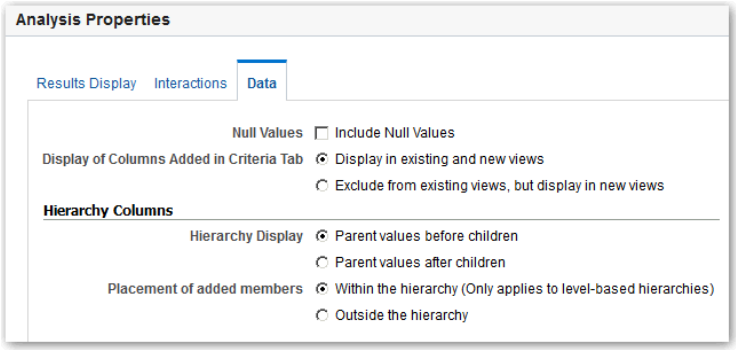
For example, you can create a custom message for the Brand Revenue analysis. This message could display when a filter on the Revenue column is too restrictive and no results are displayed.

1. Open the analysis for editing.
2. In the Criteria tab toolbar or the Results tab toolbar, select **Edit Analysis Properties** to display the Analysis Properties dialog.

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3. On the Results Display tab, select options to affect the display of results. For example, in the **No Results Settings** field, specify the default or custom message that displays if no results are returned when you run the analysis. You might see the message, for example, if you have a very restrictive filter placed on the columns in the analysis. You don't see the custom message if you simply create the analysis without including columns.
4. If you have administrator privileges and want to customize messages with HTML markup, including JavaScript, select **Display Custom Message** in the **No Results Settings** field, then select **Contains HTML Markup**, and then enter the HTML markup you want to apply.
5. In the dialog, click the Interactions tab.
6. Specify which actions (for example, **Drill**) are available when you right-click in a pivot table, table, graph, heat matrix, treemap, or trellis view.
7. In the dialog, click the Data tab.



8. Click **OK**.

Set Your Preferences

You can set account preferences to reflect where you live and to support how you work.

For example, you might select a specific Sales Dashboard as your starting page and Pacific Standard Time as your time zone. By specifying a starting page, you can start working with your dashboard right away.

1. In the Classic Home page, click **My Profile *username*** and select **My Account**.

   If you can't see **Signed In As**, first select **Open Classic** from the **Page Menu**.
2. Use the tabs of the My Account dialog to specify preferences, such as your starting page, locale, and time zone.

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3. Click **OK** to save your changes.

Advanced Techniques: Import Formatting from Another Analysis

You can quickly format new or existing analyses by importing the format of a saved analysis and its views. Most people don't need to perform this task.

For example, suppose you applied different colors to the Store, City, and Product columns of the Last Year's Brand Revenue analysis. You can apply the same colors to the This Year's Brand Revenue analysis by importing the column color format.

- To import formatting to all views in an analysis, click **Import formatting from another analysis** in the Compound Layout toolbar.
- To import formatting just to the view you're editing, click **Edit View**, then click **Import formatting from another analysis**.

Formatting is applied slightly differently depending on whether you import formatting applied to columns, views, or view containers in the Compound Layout.

About Applying Formatting from Columns

Applying formatting from columns works best for views when the saved analysis has the same number of columns as the target analysis.

For a single column, formatting is applied to all columns in the tables, pivot tables, and trellises of the target analysis.

For multiple columns, formatting is applied from left to right for column headings and values. If there are fewer columns in the saved analysis than in the target analysis, the format of the last column in the saved analysis is repeated in the subsequent columns of the target.

For example, suppose the saved analysis contains four columns in the following color order: red, green, blue, yellow. When applied to the six columns in the target analysis, the color order would be: red, green, blue, yellow, yellow, yellow.

About Applying Formatting from Views

When you import the format of one type of view, that format gets applied to all the views of the same type in the target analysis.

For example, suppose you import the custom formatting of a table to a target analysis containing three tables. The custom format gets applied to all three.

About Applying Formatting from Containers

In the Compound Layout, you can specify formatting properties for view containers, including background color, borders, and padding.

When you import container formatting, the views in the target analysis inherit the exact container formatting properties as the views in the saved analysis.

However, the layout of the views in the two analyses don't have to be exactly the same. If the target analysis contains more views than the source analysis, the extra views also inherit the imported formatting.

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For example, suppose that a saved analysis contains two tables that are stacked on top of each other in one layout column and that the target analysis contains four tables divided between two layout columns. When you import the formatting, the two tables in each of the first and second layout columns of the target analysis inherit the formatting.

Import Formatting from a Saved Analysis to a Target Analysis

You can import formatting from one analysis to another.

For example, suppose you have an analysis that contains one column to which you have applied formatting, such as font family, horizontal alignment, and background color. You can save the analysis and apply the same formatting to all the columns in another analysis.

1. Open the analysis for editing.
2. Display the target analysis in the Results tab, or edit the view.
3. Click **Import formatting from another analysis** on the toolbar.
4. In the Select Analysis dialog, navigate to the saved analysis.
5. Click **OK**.

Advanced Techniques: Format with HTML Tags

If enabled and you have administrator privileges, then you'll see the option **Contains HTML/JavaScript/CSS Markup** on some dialogs.

> **Note**
>
> Administrators must enable the Allow HTML/JavaScript/CSS Content option in the Console (under **Security** in **System Settings**).

This option allows you to format content with valid HTML markup, including JavaScript, and CSS. If you include additional formatting, prefix the HTML markup with "@". Devices that don't support custom formatting just ignore markup after "@" and display the content without formatting .

For example, this HTML markup sets the width and height of a column in tables and pivot tables. The prefix @[html] means to apply HTML.

```
@[html]<span style="width:200px; height:50px>@</span>
```

The **Contains HTML/JavaScript/CSS Markup** option is available wherever you can apply formatting:

- For analyses:
  - In the analysis editor.
  - In the Analysis Properties dialog.
  - In the Column Properties dialog.
  - In the New Calculated Measure dialog.
- For dashboards:
  - In the Dashboard Properties dialog.

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Here are some examples. If you find an example that is similar to what you want to do, copy and paste the example and tailor it to your needs.

HTML Element	Usage Notes and Examples

Text	Any HTML tags can be used to control the format of the text. For example:
	• To center the text in the section:
	`<CENTER>Centered Text</CENTER>`
	• To make the text bold:
	`<B>Bold Text</B>`
	• To set font size and color:
	`<FONT SIZE="4" COLOR="red">Red Text</FONT>`
	You can also combine tags for additional effects:
	`<CENTER><B><FONT COLOR="red">Bold Centered Red Text</FONT></B></CENTER>`

JavaScript	Use self-contained scripts supported by the browser. Paste or type the script into the HTML text window, including the begin and end tags `<script>` and `</script>`. Specify JavaScript in the opening <SCRIPT> tag: `<SCRIPT LANGUAGE="javascript">` .

Advanced Techniques: Combine Columns to Display Data Differently

You can combine columns based on set operations such as Union or Intersect. By combining columns, you create a column for displaying the data in a different way.

For example, you can combine a Region column with a City column and create a column named Regions and Cities.

The analysis must meet certain criteria if you want to use set operations:

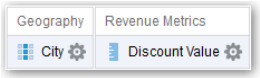
- The number and data types of the columns must be the same.
- You can't use hierarchical columns, selection steps, or groups when you combine criteria.

1. Open the analysis for editing.
2. On the Criteria tab of the analysis editor, in the Selected Columns pane toolbar, click **Combine results based on union, intersection, and difference operations**.

   The Set Operations area is displayed in the Selected Columns pane. Boxes with a dotted line border indicate columns that you must combine with other columns in the analysis.



3. In the Subject Areas pane, select the columns to combine with the original columns. Note that the dotted line borders and contents have been replaced.



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4. In the Result Columns area on the Set Operations pane, click on the **Union** button and select a set operation.
   - Use **Union** to specify that only nonduplicate rows from all columns are returned.
   - Use **Union All** to specify that rows from all columns, including duplicate rows, are returned.
   - Use **Intersect** to specify that only rows common to all columns are returned.
   - Use **Minus** to specify that only rows from the first column that aren't in the second column are returned.
5. Click the **Result Columns** link. The Selected Columns pane shows the newly combined columns.
6. To rename the heading of the column:
   a. Click the **Options** button for the column.
   b. Select **Column Properties**.
   c. Select **Column Format**.
   d. Ensure that **Custom Headings** is selected.
   e. In the **Column Heading** box, enter the new heading.
   f. Click **OK**.
7. Click the Results tab to view the columns in a table view.

Advanced Techniques: Examine the Logical SQL Statements for Analyses

You can examine the logical SQL code to see the XML code and logical SQL statement that's generated for an analysis. If you're logged into Oracle Analytics with administrator privileges, you can optionally create an analysis based on that SQL statement using the Advanced tab of the analysis editor or using the **Create Analysis from Simple Logical SQL** option.

When you create an analysis using this method, the list of subject areas isn't displayed in the left-hand pane. Instead you see the message Invalid Subject Area displayed. The removal of the list of subject areas ensures that the changes made to the logical SQL code are honored.

Before using the Advanced tab, keep in mind that this tab is only for advanced users and developers who have the appropriate responsibilities to access the Advanced tab. You must understand advanced SQL statements and have expertise working with the metadata for analyses. You must also understand the content and structure of the underlying data sources.

1. Open the analysis for editing.
2. Click the Advanced tab of the analysis editor.
3. Use the read-only box in the SQL Issued area to examine and copy the SQL statement that's used for executing the analysis.
4. Click **New Analysis** to create an analysis based on the SQL code.

   You must be logged into Oracle Analytics with administrator privileges to see the **New Analysis** option.

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Advanced Techniques: Set Caching Options for Your Analysis

You can specify whether cached data is displayed in your analysis if it's available.

1. Open the analysis for editing.
2. Click the Advanced tab of the analysis editor.
3. Use the **Bypass BI Presentation Services Cache** option to specify a caching policy.

   Clear this option to improve performance by displaying cached data if it's available. Cached data might be stale if the source data changes rapidly. Select this option to always pull fresh data from the data source, even if cached data is available in the system cache. The analysis might take longer to display if it contains a large amount of data.

Advanced Techniques: Reference Stored Values in Variables

You might want to create an analysis whose title displays the current user's name. You can do this by referencing a variable.

You can reference several different types of variable in your analyses, dashboards, and actions: *session*, *semantic model (repository)*, *presentation*, *request*, and *global*. Content authors can define presentation, request, and global variables themselves but other types (session and semantic model (repository) are defined for you in the semantic model.

Note: Oracle Analytics doesn't support the variables :user and :password in data source connection credentials.

Type of Variable	Defined in	Defined by	More Information
Session • System • Nonsystem	Semantic model	Data model authors	About Session Variables
Semantic Model (Repository) • Dynamic • Static	Semantic model	Data model authors	About Semantic Model (Repository) Variables
Presentation	Prompts for analyses and dashboards	Content authors	About Presentation Variables
Request	Prompts for analyses and dashboards	Content authors	About Request Variables
Global	Analyses	Administrators	About Global Variables and Create Global Variables

About Session Variables

Session variables are initialized when a user signs in.

These variables exist for each user for the duration of their browsing session and expire when the user closes the browser or signs out. There are two types of session variable: system and non-system.

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System Session Variables

There are several system session variables that you can use in your reports and dashboards.

The system session variables have reserved names so you can't use them for any other kind of variable.

System Session Variable	Description	Example SQL Query Value (Variable dialog)
PORTALPATH	Identifies the default dashboard a user sees when they sign in (they can override this preference after signing in).	To display 'mydashboard' when a user signs in: `select '/shared/_portal/mydashboard' from dual;`
TIMEZONE	Specifies the default time zone for a user when they sign in. A user's time zone is typically populated from the user's profile. Users can change their default time zone through preferences (My Account).	To set the time zone when a user signs in: `select '(GMT-08:00) Pacific Time (US & Canada)' from dual;`
DATA_TZ	Specifies an offset from the original time zone for data. This variable enables you to convert a time zone so that users see the appropriate zone.	To convert time data to Eastern Standard Time (EST): `select 'GMT-05:00' from dual;` This example means Greenwich Mean Time (GMT) - 5 hours
DATA_DISPLAY_TZ	Specifies the time zone for displaying data.	To display Eastern Standard Time (EST): `select 'GMT-05:00' from dual;` This example means Greenwich Mean Time (GMT) - 5 hours

Non-System Session Variables

The non-system session variables are named and created in your semantic model.

For example, your data modeler might create a SalesRegion variable that initializes to the name of a user's sales region when they sign in.

About Semantic Model (Repository) Variables

A semantic model (repository) variable is a variable that has a single value at any point in time.

Semantic model (repository) variables can be static or dynamic. A static semantic model (repository) variable has a value that persists and doesn't change until the administrator

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changes it. A dynamic semantic model (repository) variable has a value that is refreshed by data returned from queries.

About Presentation Variables

You create a presentation variable when creating a column prompt or a variable prompt.

Type	Description
Column prompt	A presentation variable created as part of a column prompt is associated with a column, and the values that it can take come from the column values. To create a presentation variable as part of a column prompt, in the New Prompt dialog, you must select **Presentation Variable** in the **Set a variable** field. Enter a name for the variable in the **Variable Name** field.
Variable prompt	A presentation variable created as part of a variable prompt isn't associated with any column, and you define the values that it can take. To create a presentation variable as part of a variable prompt, in the New Prompt dialog, you must select **Presentation Variable** in the **Prompt for** field. Enter a name for the variable in the **Variable Name** field.

The value of a presentation variable is populated by the column or variable prompt with which it was created. That is, each time a user selects one or more values in the column or variable prompt, the value of the presentation variable is set to the value or values that the user selects.

About Request Variables

A request variable enables you to override the value of a session variable but only for the duration of a database request initiated from a column prompt. You can create a request variable as part of the process of creating a column prompt.

You can create a request variable as part of the process of creating one of the following types of dashboard prompts:

- A request variable that is created as part of a column prompt is associated with a column, and the values that it can take come from the column values.

  To create a request variable as part of a column prompt, in the New Prompt dialog, you must select **Request Variable** in the **Set a variable** field. Enter the name of the session variable to override in the **Variable Name** field.

- A request variable that is created as part of a variable prompt isn't associated with any column, and you define the values that it can take.

  To create a request variable as part of a variable prompt, in the New Prompt dialog (or Edit Prompt dialog), you must select **Request Variable** in the **Prompt for** field. Then enter a name of the session variable that you want to override in the ***Variable Name*** field.

The value of a request variable is populated by the column prompt with which it was created. That is, each time a user selects a value in the column prompt, the value of the request variable is set to the value that the user selects. The value, however, is in effect only from the time the user presses the **Go** button for the prompt until the analysis results are returned to the dashboard.

Certain system session variables (such as, USERGUID or ROLES) can't be overridden by request variables. Other system session variables, such as DATA_TZ and DATA_DISPLAY_TZ (Timezone), can be overridden if configured in Model Administration Tool.

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Only string and numeric request variables support multiple values. All other data types pass only the first value.

About Global Variables

A global variable is a column created by combining a specific data type with a value. The value can be a Date, Date and Time, Number, Text, and Time.

The global variable is evaluated at the time the analysis is executed, and the value of the global variable is substituted appropriately.

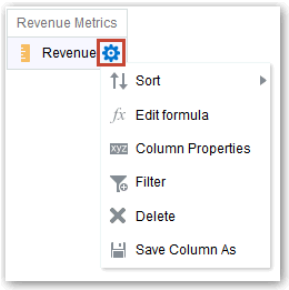
Only users with the BI Service Administrator role can manage (add, edit, and delete) global variables.

You create a global value during the process of creating an analysis by using the Edit Column Formula dialog. The global variable is then saved in the catalog and made available to all other analyses within a specific tenant system.

Create Global Variables

You can save a calculation as a global variable then reuse it in different analyses.

1. Open the analysis for editing.
2. In the Selected Columns pane, click **Options** beside the column name.



3. Select **Edit Formula** to display the Column Formula tab.
4. Click **Variable** and select **Global**.
5. Click **Add New Global Variable**.



6. Enter the value for the **Name**. For example, gv_region, date_and_time_global_variable, or rev_eastern_region_calc_gv.

   The name for a global variable must be fully qualified when referencing the variable, and therefore is prefixed by the text "global.variables". For example, a global variable set to calculate revenue is displayed in the Column Formula dialog as follows:
   `"Base Facts"."1- Revenue"*@{global.variables.gv_qualified}`

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7. Enter values for the **Type** and **Value**.
   - If you're selecting "Date and Time" as the data type, then enter the value as in the following example: `03/25/2004 12:00:00 AM`
   - If you're entering an expression or a calculation as a value, then you must use the Text data type, as in the following example: `"Base Facts"."1- Revenue"*3.1415`
8. Click **OK**. The new global variable is added to the Insert Global Variable dialog.
9. Select the new global variable that you just created, and click **OK**. The Edit Column Formula dialog is displayed with the global variable inserted in the Column Formula pane. The **Custom Headings** check box is automatically selected.
10. Enter a new name for the column to which you have assigned a global variable to reflect the variable more accurately.
11. Click **OK**.

Syntax for Referencing Variables

You can reference variables in analyses and dashboards.

How you reference a variable depends on the task that you're performing. For tasks where you're presented with fields in a dialog, you must specify only the type and name of the variable (not the full syntax), for example, referencing a variable in a filter definition.

For other tasks, such as referencing a variable in a title view, you specify the variable syntax. The syntax that you use depends on the type of variable as described in the following table.

Type	Syntax	Example
Session	@{biServer.variables['NQ_SESSION.*variablename*']} where *variablename* is the name of the session variable, for example DISPLAYNAME.	@{biServer.variables['NQ_SESSION.SalesRegion']}
Semantic Model (Repository)	@{biServer.variables.*variablename*} or @{biServer.variables['*variablename*']} where *variablename* is the name of the variable, for example, prime_begin	@{biServer.variables.prime_begin} or @{biServer.variables['prime_begin']}

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Type	Syntax	Example
Presentation or request	@{variables.*variablename*}[*format*] {*defaultvalue*} or @{*scope*.variables['*variablename*']} where: *variablename* is the name of the presentation or request variable, for example, MyFavoriteRegion. (optional) *format* is a format mask dependent on the data type of the variable, for example #,##0, MM/DD/YY hh:mm:ss. (Note that the format isn't applied to the default value.) (optional) *defaultvalue* is a constant or variable reference indicating a value to be used if the variable referenced by *variablename* isn't populated. *scope* identifies the qualifiers for the variable. You must specify the scope when a variable is used at multiple levels (analyses, dashboard pages, and dashboards) and you want to access a specific value. (If you don't specify the scope, then the order of precedence is analyses, dashboard pages, and dashboards.) When using a dashboard prompt with a presentation variable that can have multiple values, the syntax differs depending on the column type. Multiple values are formatted into comma-separated values and therefore, any format clause is applied to each value before being joined by commas.	@{variables.MyFavoriteRegion} {EASTERN REGION} or @{dashboard.MyFavoriteRegion} {EASTERN REGION} or @{dashboard.variables['MyFavoriteRegion']} or (@{myNumVar}[#,##0]{1000}) or (@{variables.MyOwnTimestamp}[YY-MM-DD hh:mm:ss]{}) or (@{myTextVar}{A, B, C})
Global	@{global.variables.*variablename*} where *variablename* is the name of the global variable, for example, gv_region. When referencing a global variable, you must use the fully qualified name as indicated in the example. The naming convention for global variables must conform to ECMA Scripting language specifications for JavaScript. The name must not exceed 200 characters, nor contain embedded spaces, reserved words, and special characters. If you're unfamiliar with JavaScripting language requirements, consult a third party reference	@{global.variables.gv_date_n_time}

You can also reference variables in expressions. The guidelines for referencing variables in expressions are described in the following topics:

- Session Variables
- Presentation Variables
- Semantic Model (Repository) Variables

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Session Variables

You can use the following guidelines for referencing session variables in expressions.

- Include the session variable as an argument of the VALUEOF function.
- Enclose the variable name in double quotes.
- Precede the session variable by NQ_SESSION and a period.
- Enclose NQ_SESSION in double quotes.
- Enclose both the NQ_SESSION portion and the session variable name in parentheses.

For example:

```
"Market"."Region"=VALUEOF("NQ_SESSION"."SalesRegion")
```

Presentation Variables

You can use the following guidelines for referencing presentation variable in expressions.

When referencing a presentation variable, use this syntax:

@{*variablename*}{*defaultvalue*}

where *variablename* is the name of the presentation variable and *defaultvalue* (optional) is a constant or variable reference indicating a value to be used if the variable referenced by *variablename* isn't populated.

To type-cast (that is, convert) the variable to a string or include multiple variables, enclose the entire variable in single quotes, for example:

```
'@{user.displayName}'
```

If the @ sign isn't followed by a {, then it's treated as an @ sign. When using a presentation variable that can have multiple values, the syntax differs depending on the column type.

Use the following syntax in SQL for the specified column type in order to generate valid SQL statements:

- Text — (@{*variablename*}['@']{'*defaultvalue*'})
- Numeric — (@{*variablename*}{*defaultvalue*})
- Date-time — (@{*variablename*}{timestamp '*defaultvalue*'})
- Date (only the date) — (@{*variablename*}{date '*defaultvalue*'})
- Time (only the time) — (@{*variablename*}{time '*defaultvalue*'})

For example:

```
'@{user.displayName}'
```

Semantic Model (Repository) Variables

You can use the following guidelines for referencing semantic model (repository) variables in expressions.

- Include the variable as an argument of the VALUEOF function.
- Enclose the variable name in double quotes.

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- Refer to a static semantic model (repository) variable by name.
- Refer to a dynamic semantic model (repository) variable by its fully qualified name.

For example:

```
CASE WHEN "Hour" >= VALUEOF("prime_begin") AND "Hour" < VALUEOF("prime_end") THEN
'Prime Time' WHEN ... ELSE...END
```

Advanced Techniques: Issue Direct Database Requests

You can create and issue a direct request to the back-end database using a connection pool and a database-specific SQL statement, if the administrator has granted you the appropriate privileges

You can also review and change the result columns of the database request by changing the SQL statement. After making the changes and retrieving the required results, you can incorporate the results into dashboards and agents.

Topics:

- Privileges Required for Direct Database Requests
- Create and Execute Direct Database Requests

Privileges Required for Direct Database Requests

Administrators can use the Manage Privileges page in the Classic Administration page to view and set access permissions for direct database requests.

To create and issue a direct database request, you must have been granted the following privileges:

- Edit Direct Database Analysis - You can create and edit direct database requests.
- Execute Direct Database Analysis - You can issue direct requests and see the results

Oracle recommends that you keep the default privileges because they’re optimized for Oracle Analytics. Editing privileges might cause unexpected behavior or access to features.

Create and Execute Direct Database Requests

You can create a direct request to the database from the Classic home page.

Security rules for data are bypassed and can’t be applied when creating direct database requests.

1. On the Classic Home page, in the **Create** pane, click **Analysis** (or click **New** and select **Analysis**).
2. In the Select Subject Area dialog, click **Create Direct Database Query**.
3. In the Criteria tab, enter a connection pool and a query statement.
   - Use **Connection Pool** to specify the name of the connection pool to use for the query.
   - Use **SQL Statement** to specify the database-specific SQL statement for retrieving data from the database.
4. Click **Validate SQL and Retrieve Columns** and review the retrieved columns in the Results Columns field.

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5. Click the **Results** tab to issue the request and see the results. The Results Columns field sometimes doesn't display any columns, because the SQL statement you provided in the Criteria tab retrieved no data from the database.

There are some functions you can't perform in analyses whose columns originated from direct database requests:

- Select columns in the Subject Areas pane, because you aren't working with columns from a semantic model.
- Create groups or selection steps for this analysis.
- Specify conditional formatting for the columns.
- Sort the values in the retrieved columns using the **Sort Ascending** and **Sort Descending** options in the column header of a pivot table, table, or trellis view.

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23

View Data in Different Ways

This chapter describes how views enable you to view data in different ways.

The result of an analysis is represented visually in a view. Depending on your needs and preferences, you can use different types of views to view the same data in different ways.

Topics:

- Typical Workflow to View Data in Different Ways
- About Views
- Add Views
- Edit Views
- Edit Various Types of Views
- Graph Data in Analyses
- Save Views
- Rearrange Views
- Refresh the Results in Views
- Print Views
- Change Print Options for Views
- Preview How Views Are Displayed on Dashboards
- Remove Views
- Sort Values in Views
- Clear Sorts in Views
- Drill in Results
- Resize Rows and Columns in Views
- Suppress Null Values in Views
- Assemble Views for Display
- Link Views in Master-Detail Relationships
- Modify the Layout of Data in Views
- About Drop Targets in the Layout Pane

Typical Workflow to View Data in Different Ways

Here are the common tasks to start adding views to analyses to view data in different ways.

Task	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Your First Analysis

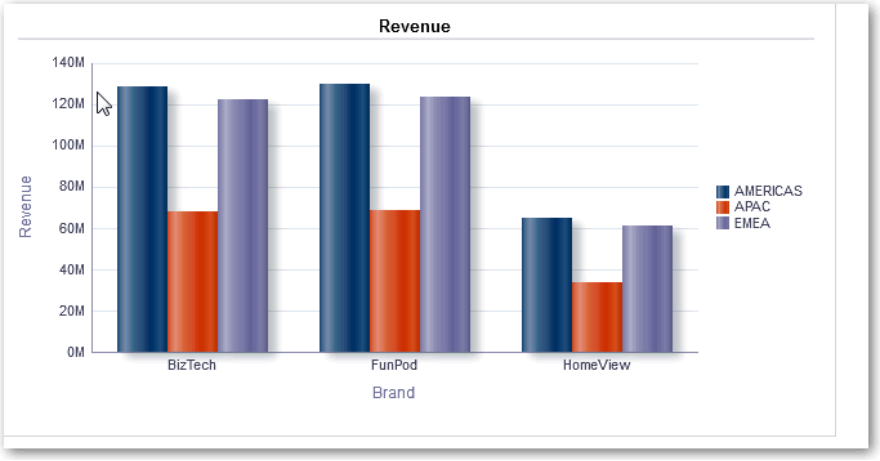
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Task	Description	More Information
Add a view	Add views to an analysis to visualize data in different ways.	Add Views
Edit a view	Use the editor that is available for each type of view to edit that view.	Edit Views
Remove a view	Delete a view from a compound layout or from an analysis.	Remove Views
Save a view	Save a view by saving the analysis.	Save Views
Print a view	Print a single view or group of views in printable HTML or printable PDF.	Print Views
Visualize your data	Visualize data in your analysis.	Visualize Data in an Analysis

About Views

A view is a visual representation of the results of an analysis. Views give you different ways of looking at your data to help you discover patterns, trends, outliers, and other interesting characteristics.

You can add a variety of views to the results, such as graphs and pivot tables that allow drilling down to more detailed information, such as explanatory text, filter controls, and more. This example shows the results of a revenue analysis displayed in a bar graph view.



This table describes the view types that you can use to present your data (if you have the required privileges).

View Name	Description
Column Selector	Adds a column selector in the results. A column selector is a set of drop-down lists that contain pre-selected columns. Users can dynamically select columns and change the data that is displayed in the views of the analysis.
Filters	Displays the filters in effect for an analysis. Filters, like selection steps, allow you to constrain an analysis to obtain results that answer a particular question. Filters are applied before the query is aggregated.

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View Name	Description
Funnel	Displays results as a three-dimensional graph. Typically, funnel graphs represent data that changes over time. For example, funnel graphs are often used to represent the volume of sales over a quarter. In funnel graphs, the thresholds indicate a percentage of the target value, and colors provide visual information for each stage. You can click one of the colored areas to drill down to more detailed information.
Graph	Displays numeric information on a background, called the graph canvas. When precise values are needed, graphs should be supplemented with other data displays, such as tables.
Gauge	Displays a single data value on a background, called the gauge canvas. Due to its compact size, a gauge is often more effective than a graph for displaying a single data value. A gauge view might consist of multiple gauges in a gauge set. For example, if you create a gauge view to show the sales data for the last twelve months, the gauge view consists of twelve gauges, one for each month. If you create one to show the total sales in the US, then the gauge view consists of one gauge.
Heat Matrix	Displays a two-dimensional depiction of data in which values are represented by a gradient of colors. Heat matrixes structure data similarly to pivot tables in that they are formed by grouping rows and columns.
Legend	Adds a legend to the results, which enables you to document the meaning of special formatting used in results, such as the meaning of custom colors applied to gauges.
Map	Displays results overlain on a map. Depending on the data, the results can be overlain on top of a map as formats such as images, color fill areas, bar and pie graphs, and variably sized markers.
Narrative	Displays the results as one or more paragraphs of text. You can type in a sentence with placeholders for each column in the results, and specify how rows should be separated.
Performance Tile	Displays a single piece of aggregate data. Performance tiles use color, labels, and limited styles to show status and use conditional formatting of the background color or measure value to make the tile visually prominent. For example, if revenue isn't tracking to target, the revenue value may appear in red.
Pivot Table	Pivot tables structure data like standard tables, but can display multiple levels of both row and column headings. Unlike regular tables, each data cell in a pivot table contains a unique value. They are ideal for displaying a large quantity of data, for browsing data hierarchically, and for trend analysis.
Table	Display data organized by rows and columns. Tables provide a summary view of data and let you see different views of data by dragging and dropping rows and columns.
Ticker	Displays the results as a ticker or marquee, similar in style to the stock tickers that run across many financial and news sites on the Internet. You can control what information is presented and how it scrolls across the page.
Title	Displays a title, a subtitle, a logo, a link to a custom online help page, and timestamps to the results.
Treemap	Displays hierarchical data by grouping the data into rectangles (known as tiles). Treemaps display tiles based on the size of one measure and the color of the second measure. Treemaps are limited by a predefined area and display two levels of data. They are similar to a scatter plot graphs in that the map area is constrained, and the graph allows you to visualize large quantities of data and quickly identify trends and anomalies within that data.

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View Name	Description
Trellis	Displays a type of graph view that displays a grid of multiple graphs, one in each data cell. A trellis view can be simple or advanced. A simple trellis displays a core inner graph multiplied across row sets and column sets, displaying many small multiples that are ideal for comparing and contrasting. An advanced trellis displays a grid of small spark graphs that are ideal for monitoring trends and spotting patterns in a dataset.
Selection Steps	Displays the selection steps in effect for an analysis. Selection steps, like filters, allow you to obtain results that answer particular questions. Selection steps are applied after the query is aggregated. See Edit Selection Steps.
Static Text	Adds static text in the results. You can use HTML to add banners, tickers, ActiveX objects, Java applets, links, instructions, descriptions, graphics, and so on, in the results.
View Selector	Adds a view selector in the results. A view selector is a drop-down list from which users can select a specific view of the results from among the saved views.

Add Views

By default when you create an analysis, you see either a table or pivot table view, depending on the columns that you selected. You can add other views to the analysis that let you visualize the data in different ways.

For example, you can analyze trends for your Sales Forecast analysis by creating a new view and selecting **Recommended Visualization** and the **Analyzing Trends** option.

1. Open the analysis for editing.
2. On the Results tab, click **New View** , and select a view type. 
3. To format the container for the views in the analysis, click **Format Container**.
4. Complete the fields in the Format Container dialog to specify options such as alignment, colors, and borders.
5. Click **OK**.
6. Click **Save Analysis**.

Edit Views

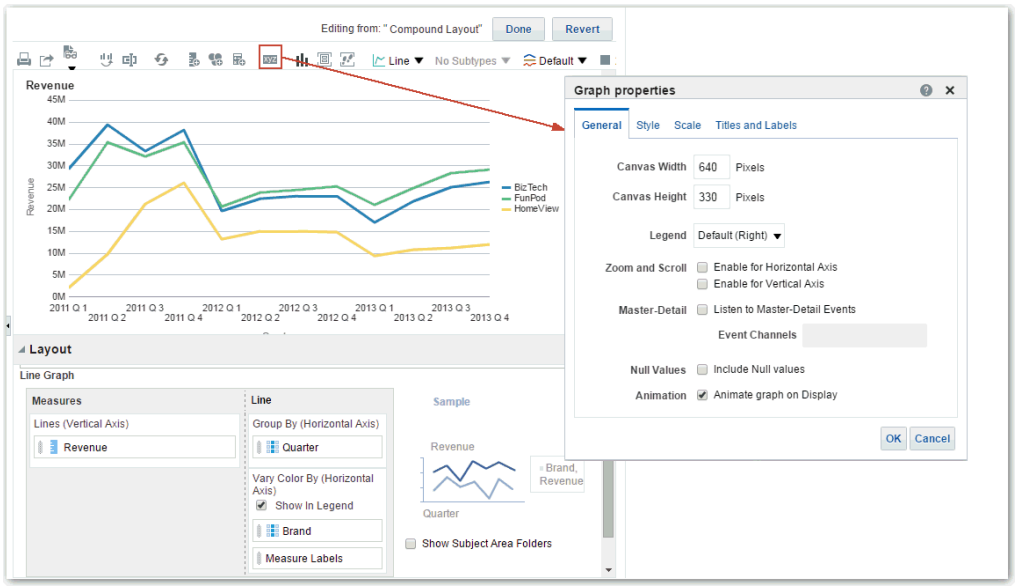
Each type of view has its own editor. The editors include both common functionality across views and view-specific functionality.

For example, you can edit a graph in a Brand Revenue analysis in the Graph editor to show the legend.

The following procedure provides general information on editing views.

1. Open the analysis for editing.
2. Click the Results tab.
3. To edit the view, click **Edit View**.
4. In the view editor (such as the Graph editor) make the appropriate edits, such as showing the legend.

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5. Click **Done**.
6. Save the view. Click **Save Analysis** or **Save As** in the toolbar of the Results tab.

Edit Various Types of Views

This topic identifies additional information for editing various types of views.

Topics:

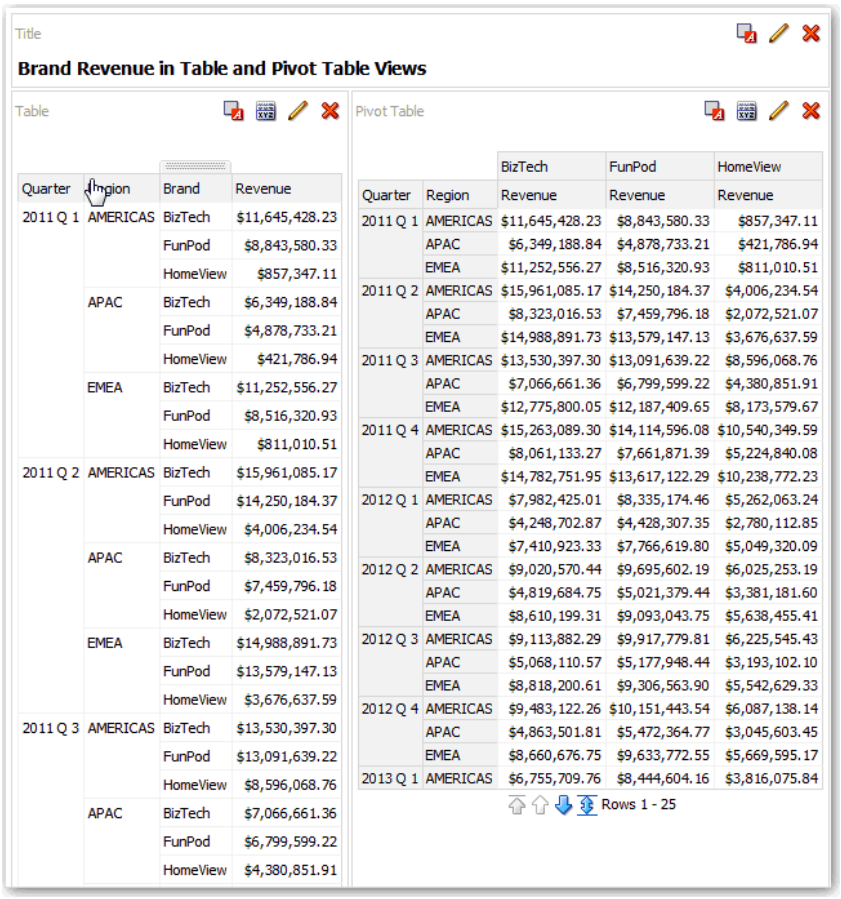
- Edit Table and Pivot Table Views
- Edit Performance Tile Views
- Edit Treemap Views
- Edit Heat Matrix Views
- Edit Trellis Views
- Edit Gauge Views
- Edit Map Views
- Edit Narrative Views
- Edit Non-Data Views

Edit Table and Pivot Table Views

Tables and pivot tables are commonly used views, and you can edit them in similar ways to display data the way you want.

For example, you can edit a pivot table in an analysis by moving the Brand column to the row edge to display its corresponding Revenue data for each Quarter and Region. You could also display the same data in a more conventional way by adding a table next to the pivot table in a compound layout, as shown below.

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Quarter	Region	Brand	Revenue
2011 Q 1	AMERICAS	BizTech	$11,645,428.23
		FunPod	$8,843,580.33
		HomeView	$857,347.11
	APAC	BizTech	$6,349,188.84
		FunPod	$4,878,733.21
		HomeView	$421,786.94
	EMEA	BizTech	$11,252,556.27
		FunPod	$8,516,320.93
		HomeView	$811,010.51
2011 Q 2	AMERICAS	BizTech	$15,961,085.17
		FunPod	$14,250,184.37
		HomeView	$4,006,234.54
	APAC	BizTech	$8,323,016.53
		FunPod	$7,459,796.18
		HomeView	$2,072,521.07
	EMEA	BizTech	$14,988,891.73
		FunPod	$13,579,147.13
		HomeView	$3,676,637.59
2011 Q 3	AMERICAS	BizTech	$13,530,397.30
		FunPod	$13,091,639.22
		HomeView	$8,596,068.76
	APAC	BizTech	$7,066,661.36
		FunPod	$6,799,599.22
		HomeView	$4,380,851.91

		BizTech	FunPod	HomeView
Quarter	Region	Revenue	Revenue	Revenue
2011 Q 1	AMERICAS	$11,645,428.23	$8,843,580.33	$857,347.11
	APAC	$6,349,188.84	$4,878,733.21	$421,786.94
	EMEA	$11,252,556.27	$8,516,320.93	$811,010.51
2011 Q 2	AMERICAS	$15,961,085.17	$14,250,184.37	$4,006,234.54
	APAC	$8,323,016.53	$7,459,796.18	$2,072,521.07
	EMEA	$14,988,891.73	$13,579,147.13	$3,676,637.59
2011 Q 3	AMERICAS	$13,530,397.30	$13,091,639.22	$8,596,068.76
	APAC	$7,066,661.36	$6,799,599.22	$4,380,851.91
	EMEA	$12,775,800.05	$12,187,409.65	$8,173,579.67
2011 Q 4	AMERICAS	$15,263,089.30	$14,114,596.08	$10,540,349.59
	APAC	$8,061,133.27	$7,661,871.39	$5,224,840.08
	EMEA	$14,782,751.95	$13,617,122.29	$10,238,772.23
2012 Q 1	AMERICAS	$7,982,425.01	$8,335,174.46	$5,262,063.24
	APAC	$4,248,702.87	$4,428,307.35	$2,780,112.85
	EMEA	$7,410,923.33	$7,766,619.80	$5,049,320.09
2012 Q 2	AMERICAS	$9,020,570.44	$9,695,602.19	$6,025,253.19
	APAC	$4,819,684.75	$5,021,379.44	$3,381,181.60
	EMEA	$8,610,199.31	$9,093,043.75	$5,638,455.41
2012 Q 3	AMERICAS	$9,113,882.29	$9,917,779.81	$6,225,545.43
	APAC	$5,068,110.57	$5,177,948.44	$3,193,102.10
	EMEA	$8,818,200.61	$9,306,563.90	$5,542,629.33
2012 Q 4	AMERICAS	$9,483,122.26	$10,151,443.54	$6,087,138.14
	APAC	$4,863,501.81	$5,472,364.77	$3,045,603.45
	EMEA	$8,660,676.75	$9,633,772.55	$5,669,595.17
2013 Q 1	AMERICAS	$6,755,709.76	$8,444,604.16	$3,816,075.84

1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties** on the table you want to edit.
4. Edit the table properties.
5. Click **OK**.
6. Click **Edit View** to display the Table View editor.
7. For a pivot table view, click the **Graph Pivoted Results** button on the toolbar to display the results of the pivot table in a graph view, which is displayed alongside the pivot table.
8. Click **Done**.

Edit Performance Tile Views

Performance tile views focus on a single piece of aggregate data. They use color, labels, and limited styles to show status and use conditional formatting of the background color or measure value to make the tile visually prominent.

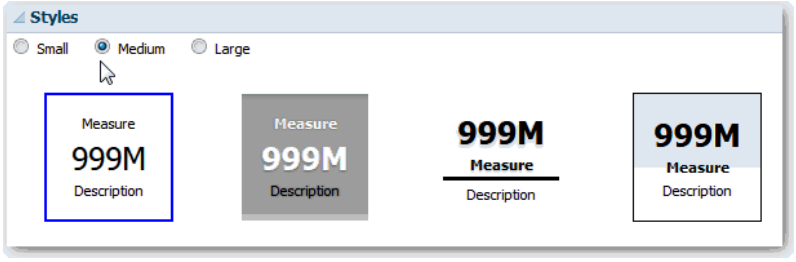
By default, the first measure in the analysis on the Criteria tab is selected as the performance tile measure. To ensure the correct measure value is displayed in the tile, set up aggregation and filters on the Criteria tab. To include additional performance tile views for each measure in an analysis, add a separate view for each measure.

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For example, you might want to edit a performance tile view to use Revenue as the measure. You can specify that the values and labels utilize the available space. This example shows performance tiles on a dashboard page.



1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties**. You can set the following properties:
   - The size of the tile — You can select predefined options **Small**, **Medium**, or **Large**, or you can select **Custom** and then set the height and weight in pixels. Other options allow you to autofit the tile to the value that is displayed.
   - The position of the tile — Options include **Fixed Position**, which sets (or "fixes") the positions of the labels, meaning the label text is displayed in fixed positions (recommended for layouts with multiple performance tiles of the same size in a row) and **Utilize available space**, which evenly spaces the label text on the performance tile vertically. The label text utilizes all available space on the performance tile. Note that when you have multiple tiles placed beside each other, the labels might be displayed at different heights and look uneven based on the varying label content.
   - The use of abbreviated values — A performance tile can show a value using its measure's default formatting or the value can be abbreviated to the nearest thousand, million, and so on. For example, using abbreviated values, the default formatting of "123,456.50" would be displayed as "123K". Select the **Abbreviate in formatted Excel** option if you want to display abbreviated values when you export analysis results to a formatted Excel spreadsheet.
   - The appearance of the tile, such as the background and border colors — Click the **Edit Conditional Formatting** link to apply conditional formatting to the tile.
4. Click **OK**.
5. Click **Edit View** to display the Performance Tile editor.
6. In the Styles pane, change the tile size to **Small**, **Medium**, or **Large**.



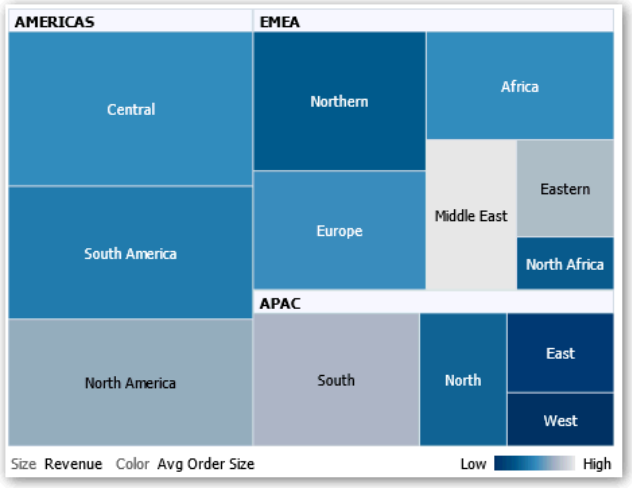
7. Select a themed (or stylized) tile located below the **Tile Size** option buttons to change the theme for the performance tile.
8. Click **Done**.

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Edit Treemap Views

Treemaps organize hierarchical data by grouping the data into rectangles (known as tiles). Treemaps display tiles based on the size of one measure and the color of the second measure.

The following figure shows an example of a treemap view. The country names are grouped by region and area. This treemap shows the correlation of revenue for a country (based on average order size) across different regions for an area.



By default, the first measure of the analysis in the Criteria tab is selected as the Size By measure, and the second measure is selected as the Color By measure. If there is only one measure in the analysis, this measure is the default for both Size By and Color By options. Additionally, the Style element defaults to Percentile Binning with "quartile" as the value for the number of bins.

Treemaps have the following characteristics:

- Tiles are colored by percentile bins or continuously.
- First Group By dimension is displayed as the group (header) label.
- The order of the Group By dimensions implies the nesting order within the treemap. The last dimension in the Group By is the lowest level and this dimension name is displayed as the tile label. If the label is too long to fit on the tile, then it’s truncated. Full values for the labels display in the tooltip.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties**. You can set properties such as the following ones:
    - The size of the treemap.
    - Whether a legend is to be displayed to show the continuous color variations or binning for the treemap tiles.
    - The background color and fill of the legend.
    - The border colors of the groups and tiles.
4. Click **OK**.

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5. Click **Edit View** to display the treemap view editor.
6. In the Layout pane, select the **Percentile Binning** or **Continuous Color Fill** options to change the color palette of the view.
   - Use **Percentile Binning** to specify that the color of the tiles within the treemap is displayed as a percentile bin. In the **Bins** list, select the number of bins to display in the treemap. You can select an integer, Quartile (4), or Decile (10). Values range from 2 to 12. The number of bins selected corresponds to the number of colors in the treemap. For example: You create a treemap for Region and Area. You specify Revenue as the Size By measure and Avg Order Size as the Color By measure. Then, you select Percentile Binning as the Style with 4 (Quartile) bins. The First Quartile represents those areas within the region that are under performing for the average order size by revenue. The **Binning Properties** area displays the percentage for the bin based on a total of 100% and is calculated based on the number of bins selected. Each percentage is color-coded and corresponds to the Color selection.
   - Use **Continuous Color Fill** to specify that the tiles within the treemap are displayed as a gradient color scheme. The low value gradient color is the minimum value for the selected Color By measure. The high value gradient color is the maximum value for the selected Color By measure.
7. Change the measures and attribute and hierarchal (excluding skip-level) columns to visualize the new data in more meaningful ways by using **Group By**, **Size By**, and **Color By** options.
8. Click **Done**.

Edit Heat Matrix Views

A heat matrix view visually represents the relationship between data values as a gradient of colors in a table format. You can edit properties such as view size, the display of header and data cells, and the display of a legend.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties** on the heat matrix you want to edit.
4. Edit properties as needed.
   - Use **Data Viewing** to control the size of the view in the layout. Options include scrolling with optional maximum width and height or paging with optional number of rows per page.
   - Use **Legend** to display a legend showing the continuous color variations or binning for the heat matrix.
   - Use Master-Detail to link the table to a master view. In the **Event Channels** field, enter the case-sensitive name of the channel the table listens to for master-detail events. Separate multiple channels with commas.
   - Use **Display Folder & Column Headings** to specify how to display headings for the columns and the view. Select the Folder.Column option to display the fully qualified folder name from the Subject Area and column name as the row or column title (for example, Offices.D1 Offices).
5. Click **OK**.
6. Left-click to drill in a cell.

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When drilling in multiple-level hierarchies, all members from the lowest levels are displayed as cells, and the detail level data replaces the current data. For example, when you drill in a country name, such as United States, the heat matrix displays data for the state (or provinces) in that country, but not for the country itself.

7. Right-click the outer edges to display a context menu of options, such as **Drill**, invoke actions, **Keep Only**, **Remove**, or focus on a specific cell.
8. Click **Edit View** to display the Heat Matrix editor.
9. In the Layout pane:
    a. In the **Style** box, select **Percentile Binning** or **Continuous Color Fill** to change the color palette of the view.
    b. Change the measures and columns to visualize the data in more meaningful ways by using **Rows**, **Columns**, and **Color By** drop targets.
10. To specify sorting, right-click a cell in the view and click **Sort**. The interactions that are available in the Sort dialog depend on the location in which you right-click within the view.
11. Click **Done**.

About Heat Matrix Views

A heat matrix view shows you a two-dimensional depiction of data in which values are represented by a gradient of colors. A simple heat matrix provides an immediate visual summary of information that is well suited for analyzing large amounts of data and identifying outlier values.

A heat matrix displays data from one measure. Colored cells are formed by the grouping and intersection of the columns and rows placed in the Prompts, Sections, Rows, Columns, and Color By drop targets. Cells are displayed as percentile bins or as a continuous color. You can hover over a cell to display its value or display values in cells all the time.

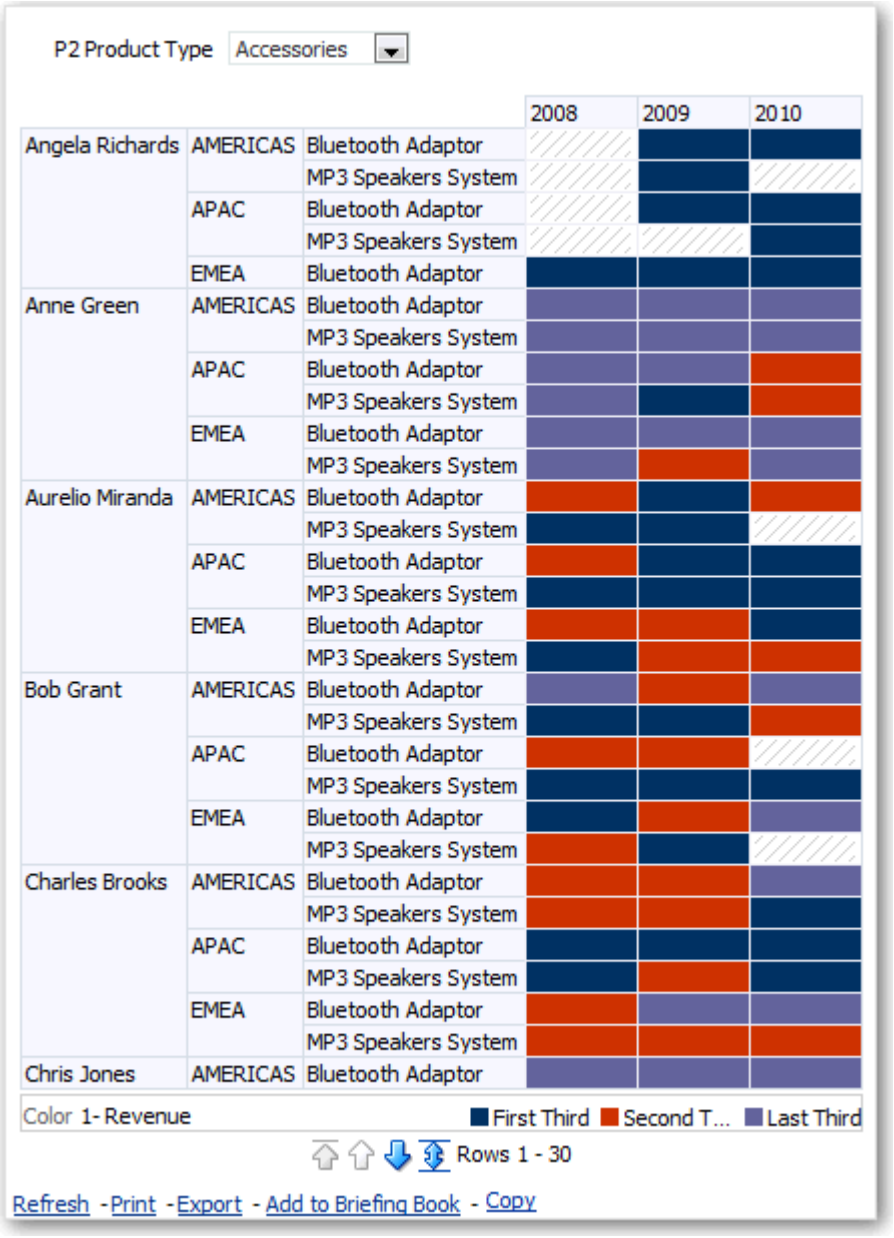
By default, the first measure of the analysis in the Criteria tab is selected as the Color By measure and represents the measure's value. The Style element defaults to Percentile Binning with "quartile" as the value for the number of bins. Cells display uniformly, in that each cell has the same width and the same height. Cell height and width don’t have to be the same. A "transparent" diagonal pattern of stripes indicates null values.

You can display a legend below the heat matrix that includes:

- One measure (selected in the Color By list) and its corresponding label.
- The number of specified bins (for example, quartile), color-coded and labeled, or a gradient bar that is displayed as a continuous color fill and is labeled "low" to "high."

Here is an example of a heat matrix view on a dashboard page. Each sales representative's revenue is displayed by region and product and prompted by product type. Sales revenue is binned by year. This heat matrix depicts the product revenue outliers for each sales representative (for example, in 2008, Angela Richards has no sales revenue for Bluetooth Adaptors or MP3 Speakers Systems for any region.)

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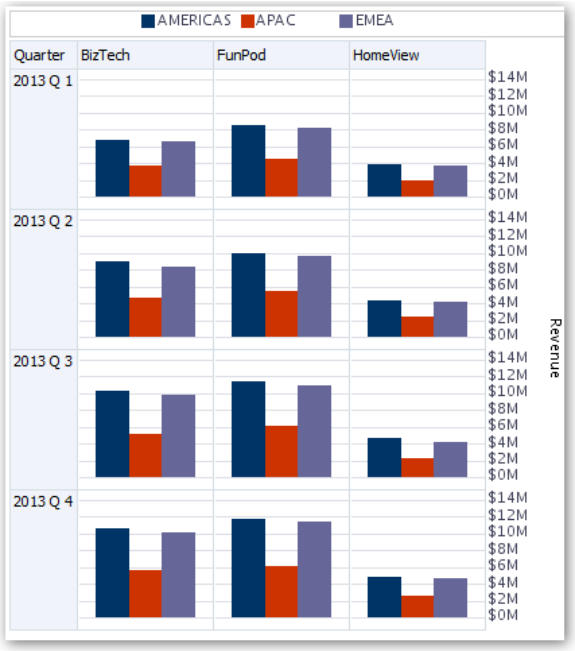
Edit Trellis Views

A trellis view is a type of graph view that displays a grid of multiple graphs, one in each data cell.

A trellis view can be simple or advanced. A simple trellis displays a core inner graph multiplied across row sets and column sets, displaying many small multiples that are ideal for comparing and contrasting. An advanced trellis displays a grid of small spark graphs that are ideal for monitoring trends and spotting patterns in a dataset.

The following figure shows a simple trellis view:

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The trellis view (also referred to as a trellis graph) is similar to a pivot table except that the data cells within the trellis contain graphs. Whereas a standalone graph type such as a single bar graph or a single scatter graph works on its own, the trellis graph works only by displaying a grid of nested graphs, known as inner graphs. So a bar graph trellis view is actually comprised of multiple bar graphs.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties** to edit properties.

   You can set the following kinds of properties:

   - Related to the grid canvas, such as legend location (simple trellis views only).
   - Related to graph size for the visualizations that are included in the trellis.
   - That specify the method to be used to browse data — either scrolling or paging controls.
   - That control the appearance of the trellis's grid and its visualizations, such as various style choices and the way that legends are displayed.
   - That control the type of scale and the appearance of scale markers for each of the trellis's visualizations (simple trellis views only).
   - That control the display of titles and labels (simple trellis views only).
4. Click **OK**.
5. Click **Edit View** to display the Trellis editor.
6. In the Layout pane:
   a. Drag and drop columns into the Columns and Rows fields to specify how data is arranged in the trellis.
   b. Select the type of graph you want to display for each of the cells in the trellis.
   c. Drag and drop columns to indicate how to color the graphs.

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7. Right-click a view heading, and click **Sort Column** to specify how values are sorted in the view.
8. Click **Done**.

About the Functions of Trellis Views

For the most part, a trellis view behaves like a pivot table. The main difference between a trellis and a pivot table is the way the data cells are displayed.

In the row and column label cells of a trellis, you can:

- Right-click to hide or move measure labels.
- Right-click to sort data.
- Drag to reposition rows and columns.

In the data cells of a trellis, you can hover the mouse pointer to display related contextual information. Numeric data cells in a trellis behave the same as numeric data cells in a pivot table. The ways in which the behavior of a trellis view differs from the behavior of a pivot table are the following:

- Graph data cells — There is no right-click functionality for the data cells in simple trellises, nor drilling in trellis graph data cells (left-click functionality).
- Microchart data cells — When you hover the cursor over the data cells in spark graphs, you're shown contextual information (such as first, last, minimum, and maximum values) that otherwise isn't displayed as it's in a pivot table view.

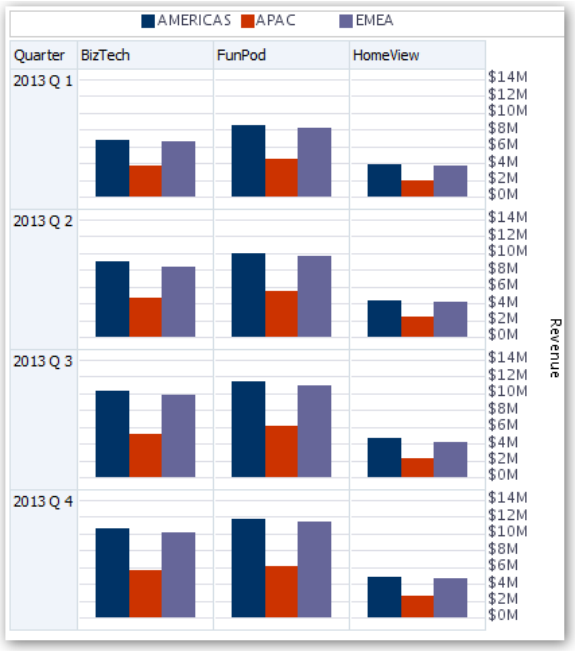
About Simple Trellis Versus Advanced Trellis

A trellis view can be a Simple Trellis or an Advanced Trellis.

The Simple Trellis displays a single type of inner visualization, for example, all bar graphs. The inner visualization always uses a common axis, so that all inner graphs are viewed on the same scale. Having a common axis makes all graph markers easy to compare across rows and columns.

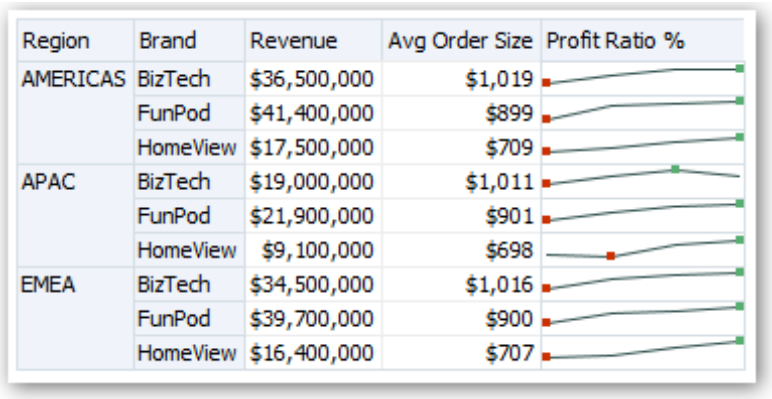
This figure shows a simple trellis view:

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The Advanced Trellis accommodates the display of multiple visualization types within its grid. An advanced trellis that illustrates sales trends might show a grid that contains numbers in the cells of one column (revenue, for example). Another column alongside the numbers column displays Spark Line graphs in its cells. Next to that column, a different microchart might be displayed, such as a column of Spark Bar graphs that visualize a different measure, such as unit totals.

This figure shows an advanced trellis view:



Region	Brand	Revenue	Avg Order Size	Profit Ratio %
AMERICAS	BizTech	$36,500,000	$1,019	
	FunPod	$41,400,000	$899	
	HomeView	$17,500,000	$709	
APAC	BizTech	$19,000,000	$1,011	
	FunPod	$21,900,000	$901	
	HomeView	$9,100,000	$698	
EMEA	BizTech	$34,500,000	$1,016	
	FunPod	$39,700,000	$900	
	HomeView	$16,400,000	$707	

Each measure that is visualized is assigned a different inner graph type. Each cell of the grid is scaled independently.

Think of an advanced trellis as a pivot table with spark graphs inside its data cells. But, for each measure that you add, you can optionally associate a dimension and display it as a microchart visualization. This makes an advanced trellis very different from a simple trellis. In a simple trellis, all of the measures are displayed in the same visualization, along with additional dimensions.

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Design Considerations for Trellis Views

Consider the following points when designing trellis views.

For all trellis views:

- For comparisons, select the Simple Trellis.
- For trend analysis, select the Advanced Trellis.
- Make the inner graphs that comprise a trellis readable and not too dense. A trellis view isn't especially useful for displaying multiple series or multiple groups. If you can't easily target a data point with the mouse (to display a tooltip), then the inner graph is likely too dense to be readable.
- For the Simple Trellis:
  - The total number of cells displayed is less than in a pivot table.
  - You can associate one or two of the dimensions with the visualization. You add fewer dimensions to the outer edge than in a pivot table.
  - Try to use a small number of outer-edge dimensions. The entire graph series should be visible at once (for easy comparison of like to like) with no need to scroll. If you must show additional dimensionality, then consider adding the dimensions to the graph prompt.
  - When determining which data to show in column headers and row headers, make sure that the column headers show one or two dimensions (each dimension with a small number of members).
- For the Advanced Trellis:
  - A common use case for an advanced trellis is to show trend graphs alongside numeric values, in a compressed form. So a typical advanced trellis contains a combination of spark graphs alongside number representations of the same measure.
  - Ideally, include no dimensions in the column headers. Include the measure in the column headers.
  - The dimensionality typically associated with a spark graph is time. Because a spark graph includes no visible labels, it's important that the data visualized is intrinsically ordered. For example, a spark graph that visualizes regions is meaningless, because the ordering of the regions (which would be the specific bars, in a spark bar graph) isn't intuitive.
  - Just as when designing pivot tables, you generally display time on the horizontal axis, with the other dimensions displayed on the vertical axis. The eye then scans from left to right to see how the dimensionality changes over time.
- Hierarchical columns don't work well with the simple trellis. When a hierarchical column is displayed on the outer edge, parents and children (such as Year and Quarter) are shown by default using a common axis scale. However, because Year and Quarter have different magnitudes, the markers in child graphs might be extremely small and hard to read against the parent scale. (Hierarchical columns do work well with the advanced trellis, because each data cell is a different scale.)

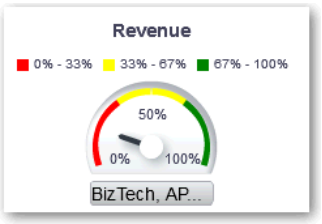
Edit Gauge Views

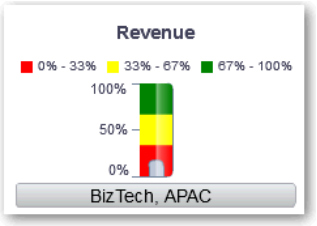
You use gauge views to compare performance to goals. Due to their compact size, gauges can be more effective than graphs for showing a single data value. Results show as a dial, bar, or

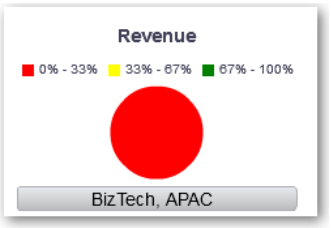
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bulb gauge. For example, you can use a gauge to see whether Actual Revenue falls within predefined limits for a brand.

The following figures show the same value in a dial, bar, and bulb gauge:







1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties** on the gauge you want to edit.
4. Edit the gauge properties.
    - Use **Gauges Per Row** to specify the number of rows of gauges to display and placement of labels.
    - Use **Listen to Master-Details Events** to link the gauge to a master view. In the **Event Channels** field, enter the case-sensitive name of the channel the gauge view listens to for master-detail events. Separate multiple channels with commas.
    - Use **Gauge Style** to change the width and height of gauges.
    - Use **Marker Type** to specify the marker type for a dial gauge, such as Needle, Line or Fill.
    - Use **Gauge Limits** to specify the scale of gauge limits. For example, you can specify a custom gauge limit. You can specify a static value such as 1000 as either an actual value or as a percentage. The value that you specify depends on the range of data points. You must ensure that the maximum gauge limit is more than the maximum data point. Do so to ensure that all data points are displayed on the gauge.
    - Use **Titles and Labels** to schange the appearance of titles and footers and the format of labels.

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5. Click **OK**.
6. Click **Edit View**.
7. Click the **Gauge Type** button on the toolbar and select the type of gauge.
8. Optional: Define thresholds for the gauge.
9. Click **Done**.

Set Thresholds

You can set thresholds for display in gauges and funnel graphs.

Each threshold has a high and a low value and is associated with a color in which the range identified by the threshold is displayed in the gauge, such as green for acceptable, yellow for warning, and red for critical.

1. Click **Edit View** to display the view editor.
2. In the Settings pane, select either **High values are desirable** or **Low values are desirable**.

   For example, selecting **High values are desirable** lists the statuses in order from the most desirable indicator (such as Excellent) at the top to the least desirable indicator (such as Warning) at the bottom. Generally with columns such as Revenue, high values are desirable. With columns such as Expenses, low values are desirable.
3. In the Threshold list, specify the data values that highlight a particular range of values.

   The values must be between the minimum and maximum values set for the view's limits. The range that a threshold identifies is filled with a color that differs from the color of other ranges.

   To specify a data value, you can enter a static value directly in a Threshold field, or you can click **Threshold Options** to set the value based on a measure column, a variable expression, or the results of a SQL query. Select **Dynamic** to enable the system to determine the threshold value.
4. Enter the labels for the ranges in the Status area.
   - Select **Threshold Values** to use the current threshold values as the label for the range.
   - Select **Specify Label** to use text that you specify as the label for the range, such as Excellent.

Edit Map Views

Map views present data in spatial form and use location context to uncover trends and transactions across regions. For example, a map view can show a map of the United States with the states color-coded by sales performance.

Tutorial

You create a map view after selecting columns to display in that view. The administrator can specify multiple background maps. Initially, the map view is displayed with the first background map that has at least one layer associated with a column that you selected. You can edit a map view by selecting a different background map, applying layers to the background map, and formatting the layers.

1. Open the analysis for editing.

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2. Click the Results tab.
3. Click **View Properties**.
4. On the Canvas tab, specify the map size.
   - Use **Canvas Size** to specify the map size within its container. You can select either **Default**, **Custom**, or a predefined size. If you select **Default** or a predefined size, then no other options are available and the map is sized to fit its container. The container is whatever area is holding the map, such as the area in the Map editor or the section of a dashboard page.
   - Use **Map Wrap-Around** to specify a "wrap-around" feature when you include line formats on a map. Lines are the only format that cross map borders, such as an airplane flight from San Francisco to Tokyo. When this feature is turned on, you can pan the map so that lines aren't broken.
5. On the Labels tab, specify whether to show labels for all layers or specific layers on the map view.

   The tab includes a box for each layer on the map view. The labels are displayed in the same order as that of the layers listed in the Map Formats area of the Map editor. Custom point layers have labels hidden by default.
6. On the Interaction tab, in the Initial Map View section, choose the initial center of the map and zoom level.
7. On the Tools tab, specify which tools are available with the map such as the zoom slider and the distance indicator.
8. Click **OK**.
9. Apply formats to the layers.
10. Click **Edit View**.
11. Modify formats and layers.
12. Click **Done**.
13. Drill in values.

About Map Views

You use map views to display data on maps in several different formats and to interact with the data.

When data is visualized on a map, relationships among data values that might not have been obvious previously can be displayed in a much more intuitive manner. For example, a map view can show a map of a city with the postal codes color-coded by sales performance, while an image marker displays the average discount given per order.

Map Components

A map consists of numerous components including a background or template map and a stack of layers that are displayed on top of each other in a window. A map has an associated coordinate system that all layers in the map must share. The map can be an image file, the object representation of an image file, or a URL that refers to an image file.

- **Main Content** - The main content is the background or template map, which provides the background geographic data and zoom levels. The main content can be an image such as the floor maps of office buildings or the appearance and presence of items such as countries, cities, and roads.

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- **Layers** - One or more interactive or custom layers can overlay the main content.
- **Toolbar** - The toolbar is visible by default and you can click its buttons to manipulate map contents directly. The map view itself has a toolbar. The content designer specifies whether to display the toolbar for the map view on a dashboard page. On a dashboard page, the toolbar is displayed directly over the map and contains only the **Pan**, **Zoom Out**, and **Zoom In** buttons.
  The toolbar in the Map editor contains additional options for modifying the map view.
- **Zoom Controls** - These controls adjust the detail of the geographic data that is shown in the map view. For example, zooming in from a country might show state and city details. The administrator specifies which zoom levels each layer is visible for. You can have multiple zoom levels for one layer, and you can have a single zoom level associated with multiple layers. When you zoom, you change the map information at that zoom level, but you do not affect the display of BI data at that level. You affect the display of data by drilling.

  The zoom controls include a zoom slider that is displayed in the upper left-hand corner of the map view with a thumb for large scale zooming and buttons for zooming a single level. When the zoom control is zoomed-out all the way, the zoom level is set to 0 and the entire map view is displayed.

  You determine the visibility of the zoom control. When you create a map view, by default the map is initially zoomed into the highest zoom level that fits the entire contents of the top-most layer. For example, if the highest ordered layer contains data only in the state of California, then the map zooms to the highest zoom level that still shows all of California.
- **Scale Tool** - Also known as the Distance Indicator, this tool provides a key to distance interpretation of the map and consists of two horizontal bars that display in the lower left-hand corner of the map view below the information panel and above the copyright. The top bar represents miles (mi) and the bottom bar represents kilometers (km). Labels are displayed above the miles bar and below the kilometers bar in the format: [distance] [unit of measure]. The length and distance values of the bars change as the zoom level changes and as the map is panned.
- **Legend** - The legend is a semi-transparent area in the upper right-hand corner of the map view that you can display and hide. The legend shows the information that relates to the current zoom level. The legend provides a read-only visual key for symbols, layers, and formatting on the map and displays all visible formats that are applied to the map. If a format is turned off, then the corresponding legend item is hidden also. If a format is turned on but zoomed out of view, then it is not displayed in the legend. The legend displays text such as "No formats defined for current zoom level" if you have no formats defined at the current zoom level.
  When you select a format on the map, the corresponding legend item is highlighted. Highlights have varying granularity, depending on the selected formats (for example, a pie graph does not have the level of granularity that color fill has).

  Use the **Expand Map Legend** and **Collapse Map Legend** buttons in the upper right-hand corner to control the display of the legend.
- **Overview Map** - The overview map consists of a miniature view of the main map that is shown in the lower right-hand corner of the main map. This overview map provides regional context.
  The reticule displays as a small window that you can move across a miniature view of the main map. The position of the reticule in the miniature map determines the viewable area of the main map. As you move the reticule, the main map is updated automatically. You can also pan in the overview map without using the reticule.

  The overview map is automatically hidden if the reticule can't be shown. This hiding generally happens when the scale difference between successive zoom levels is too small to show the miniature view in the overview map.

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- **Interactive Panel** - The top section of the interactive panel enables you to create and edit BI data formats in the analysis editor. If a format has editable thresholds, then a slider is displayed in the Map editor that enables you to edit thresholds by dragging the slider. The interactive panel enables you to rearrange formats within a geographic layer. For example, if the States layer has three formats, then you can select the order in which the formats are displayed.
  When displaying a tooltip by hovering the cursor over a map area, the corresponding detail is updated and highlighted in the interactive panel.

  Dashboard users can control the visibility of formats (by turning them on or off) and can adjust format thresholds if the content designer has allowed them to.

  The lower section of the panel includes the Feature Layer area, where you can select non-BI layers to add to the map. A non-BI layer is one that has not been associated with a BI column. You can't apply formats to non-BI layers.

About Formats and Layers in Map Views

These topics describe how formats and layers interact in map views.

Topics:

- About Layers in Map Views
- About Formats in Map Views

About Formats in Map Views

A format for a map view defines display properties for a feature such as a point or a line that represents a city or a river.

For example, if the feature is a polygon that shows a county, then the format can define the fill color for the county or can define a pie graph to be drawn over the county. Formats are tied to a particular geographic level such as continent, country, region, state, or city.

About the Types of Formats that Apply to Map Layers

A map view uses columns of BI data. Each column has a set of properties that define its characteristics, such as for formatting and interaction. Any formatting that is applied to a column isn’t applied to the map, except for the settings for interaction. Any formatting that originates from the map thresholds is applied.

You can apply various kinds of formats to map views and BI layers. You can’t apply formats to non-BI layers. You can define various formats to apply to BI layers.

Field	Description
Color Fill	Displays the Color Fill (*Layer*) dialog, which you use to display areas in fill colors that indicate that an area meets a particular condition. Color fill formats apply to regions or polygons. For example, a color fill format might identify a range of colors to represent the population in the states of a region or the popularity of a product in the states of a region. A map view can have multiple color formats visible at different zoom levels. For example, a color fill format for the layer at zoom levels 1-5 might represent the population of a state, and the county median income for the layer at zoom levels 6-10. You can also specify different colors to identify a range of data values.

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Field	Description
Bar Graph	Displays the Bar Graph (*Layer*) dialog, which you use to display a series of data as a bar graph within an area. Graph formats can show statistics related to a given region such as states or counties. For example, a graph format can display the sales values for several products in a state. Even though you can create multiple graph formats for a particular layer, such creation isn't recommend as the formats might overlap on the layer and the displayed results might be undesirable.
Pie Graph	Displays the Pie Graph (*Layer*) dialog, which you use to display a series of data as a pie graph within an area.
Shape	Displays the Variable Shape (*Layer*) dialog, which you use to display a measure column that is associated with an area by drawing markers or shapes within the region. You can also specify different colors for the shape to identify a range of data values.
Bubble	Displays the Bubble (*Layer*) dialog, which you use to display a bubble within an area, similar to the shape format.
Image	Displays the Image (*Layer*) dialog, which you use to display an image within an area, similar to the shape format. You can specify different images to identify a range of data values. You select images that have been specified by the administrator.
Line	Displays the Line (*Layer*) dialog, which you use to display a line on a map. You can include lines on maps to display paths such as highways, railway lines, and shipping routes. You can specify the width of lines and you can use the Map Wrap-Around feature on the Map Properties dialog to allow lines to be unbroken, such as when showing an airline flight path from San Francisco to Tokyo. You can vary the width of a line by each measure to accentuate a feature.
Custom Point	Displays the *Format* Custom Point (*Layer*) dialog, which you use to display a point format, such as a bubble, image, or shape in a layer. Custom points are displayed at all zoom levels and on top of all other map formatting. When you create a Custom Point format, you select columns to specify the latitude and longitude

About the Visibility of Formats in Map Views

The visibility of a format in a map view depends on various factors.

The factors on which visibility of a format depends:

- The zoom level on the map and the "zoom range" of the format. For example, a Color Fill format for States is visible when state boundaries are visible and it's turned on, but is no longer visible when the map is zoomed out to the Continent level.
- The data point limit. Formats are generally visible when they are zoomed into view and are turned on, but they might not be displayed if a particular layer has exceeded its maximum number of data points.

Custom point formats are unique in that they are displayed on the map always, for all zoom levels.

Format data is displayed in the legend only when the format is both turned on and zoomed into view. A format is turned on when the box beside its name is selected in the Map Formats area.

The map can't display multiple non-point formats at a time (at a single zoom level) but can display multiple point formats simultaneously, if they don't share the same latitude and longitude location. If multiple graph formats are specified at the same geographic layer, then they are displayed on top of each other.

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About the Application of Formats in Map Views

There are various guidelines which apply to formats in map views.

- The Color Fill, Bubble, Pie Graph, and Bar Graph formats apply to geographic areas such as polygons.
- The Bubble, Variable Shape, Image, and Custom Point formats are based on a single latitude and longitude location (a point).
- The line format is displayed only when a line geometry is present. Line formats are the only format that you can create for line geometries.
- When you define formats, you can specify that different formats apply to different measure columns in a layer.

About Layers in Map Views

A layer in a map view is any collection of features and formats that have a common set of attributes and a location.

For example, a layer that shows US states can include color coding of states by sales, and a pie graph that shows sales per brand for that state. In addition to the US states layer, you can use a layer that displays stores within a state as individual points, with popup notes that show sales for each store.

Layers are displayed on a background or template map. When you zoom in and out on the map, various layers are hidden or displayed. Some layers must be enabled for data, so you can display it in the map. Other layers, such as one that shows roads, aren't related to data.

Layers can be either predefined or custom. A predefined layer is one whose geometry is defined in a spatial table in an Oracle Database. The administrator makes predefined layers available, as described in Configuring How Data Is Displayed on Maps. A custom point layer is one that you define while editing a map view.

Layers can be of different types. A polygon layer represents regions, such as states. An example is a New England layer for the United States that consists of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

A point layer represents specific points on a map, based on a coordinate system. For example, a point layer might identify the locations of warehouses on a map. The layer can use a different image for the type of inventory (electronics, housewares, garden supplies) in a set of warehouses to differentiate them from each other.

You can create a custom point layer that applies points to a map using longitude and latitude coordinates. For example, suppose that your company is headquartered in New York City. You can create a custom point layer that displays your company icon over New York City, and that icon is always displayed whenever a map that includes New York City is shown. The custom point layer is always on top of the other layers and isn't affected by zoom levels. The custom point layer is used only by the current map view in the current analysis; it isn't used by other map views, even for the same analysis.

You can select layers to be visible or hidden on a map, but you can't modify predefined layers. You also create formats to apply to the layers, such as colored regions, bubbles, points, lines, or bar or pie graphs. Not all formats are available for all layer types. For example, point layers can't have color fill formats.

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Edit Formats and Layers in Map Views

You can edit the formats that are displayed on layers of a map view.

1. Open the map view for editing.
2. Click **Edit View** to display the Map editor.
3. Click **New**, select a format type, then select a layer to display the appropriate dialog for defining that format.
4. If no layers are specified in the map formats area, then click **New Map Format**. The map prompts you to import the geo-encoded columns for displaying a format for a particular geo-layer, if the columns aren't part of the analysis.
5. Hover over a layer name in the list to display options for modifying the layer.
6. Hover over a format name under a layer name in the list to display options for reordering, editing, and deleting formats.
7. Click the box beside a format name to make the format visible or invisible on the map.
8. Click **Done**.

Apply Formats to Layers in Map Views

You can format a map view, including with colors, bar graphs, pie graphs, variably sized bubbles, images, lines, or colored shapes that help you to apply binning and other formatting options.

- Click the **Create a new map format** link, if no layers are specified in the Map Formats list.
- Click the **Add new map formats** button, either in the Map Formats title bar or beside a layer name.

Move Around in Map Views

This topic describes various techniques in map views for moving around, modifying thresholds, and showing and hiding formats.

Topics:

- Pan in Map Views
- Zoom in Map Views
- Modify Thresholds for Formats on a Map View
- Show or Hide Formats on a Map View

Pan in Map Views

You pan using the map's toolbar and can pan on the main map or on the overview map. You can also use the reticule in the overview map to move around.

Pan is the default mode for the map view, and the pan mode is indicated by a hand cursor. With the Pan tool selected, you can move in various ways:

- Click and drag on the map background.

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- Hover over a region of the map to display an information window for that region for the data that is directly below the cursor.
- Click to display an information window. The information window can be used to drill or update a detail view.
- Double-click the map to zoom.

To pan in a map view, using the Pan tool, click the **Pan** button on the toolbar, then click the map background and drag and drop it to the appropriate location.

Zoom in Map Views

Zooming the map adjusts the detail of the geographic data that is shown on the map.

Zooming in from a country level might show state and city details. Zooming out from a street-level view might show cities but not street-level information. For master-detail linking, the map view focuses on the detail feature that was selected in the master view.

You can zoom in various ways:

- Click on the map background. To zoom by clicking, you must first select the zoom mode from the toolbar. The default mode is pan, which is indicated by a hand cursor. When you're in zoom mode, the mouse pointer changes to a magnifying glass and you can click-zoom directly on the map itself.

  When you're zooming in, you can either single-click or click and drag to use marquee zoom. You can draw a box that delineates the area in which you want to zoom.
- Hover over a region of the map to display an information window for that region for the data that is directly below the cursor.
- Click to zoom in and out. When you click, the map zooms in one "increment" using the click location as the center point.

Zooming and drilling aren't synonymous. When you zoom, no drill is performed (that is, no new query is issued). However, if you drill on a map layer, that drill likely results in a new zoom level being displayed, if a new layer is added to the map. If a new layer isn't added, then the zoom level doesn't change.

You can zoom using either the buttons on the toolbar or the zoom slider. When you use the zoom slider, you zoom in or out of the map as it's currently displayed. When you hover over the zoom slider, the names of the map layers are displayed beside their mid-range zoom level. Click the names to zoom the map to that level. When you zoom, a new query isn't issued.

You can zoom in map views with toolbar buttons, or you can use the slider:

- To zoom using the tools, click the **Zoom In** or **Zoom Out** button on the toolbar, then click the map background to zoom in that spot.

  If you're zooming in, then you can click and drag to draw a rectangle to specify the area in which to zoom.
- To zoom using the buttons on the slider, click the plus or minus sign on either end of the slider.

  You can also hover over the slider, then click the name of the level to zoom.

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Modify Thresholds for Formats on a Map View

You can modify the thresholds that are used for displaying formats on the map view.

You know that you have this ability if you see a slider under a format name in the Map Formats pane. Modifying thresholds is sometimes referred to as "what-if analysis." Format ranges are displayed as color fills on the slider background, with a "thumb" for each threshold that you can edit.

- Hover over a thumb to display the value under that thumb.
- Drag the thumb to adjust the threshold.
- Click a section on the slider to move the thumb to that section.
- Right-click the slider to display a menu with various options.
  - **Edit Color** — Displays a dialog, in which you select a predefined or custom color for the threshold.
  - **Add Threshold** — Adds another threshold to the slider, including a thumb to indicate the threshold. This addition creates a new formatting bin with a new color. For example, if three bins exist (with colors red, yellow, and green) and you create a threshold, then four bins now exist. A maximum of 12 bins is allowed.
  - **Remove Threshold** — Removes the threshold above where you right-clicked, including removing the thumb from the slider and a formatting bin.
- Click on a slider thumb number value to display a text box in which you can edit the number that corresponds to the threshold value. Press Enter or click outside the box to update the threshold value and the thumb position.

Show or Hide Formats on a Map View

Content designers can superimpose multiple layers of information (sometimes known as themes) on a single map view. They can create formats to enhance the layers. You can display or hide the formats for a map.

- In the Map Formats pane, from the View menu, select either **View All Formats** or **View Visible Formats**.
- In the Map Formats pane, deselect the box beside a format's name.

Set the Initial View Ports for Map Views

You can set the initial view port (the initial center of the map and zoom level) when a map view is first loaded or refreshed in a browser.

1. Open the map view:
   a. Open the analysis for editing.
   b. Click the Results tab of the analysis editor.
   c. Click **View Properties**.
2. In the Initial Map View section of the Interaction tab, select the appropriate value:

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Field	Description
Dynamic	Specifies that the map is zoomed or panned to the actual data on the map. This option focuses on the content that the user has added to the map view. This option is preferable for the initial displaying of the map view and for refreshing the map view, because it tries to display all BI content. This setting doesn't affect the printing of maps, because the coordinates and zoom level control all WYSIWYG interaction. The map is zoomed to the maximum zoom-level that still allows the content to fit on the map. This zoom-level might exceed the minimum and maximum visible zoom-levels that are specified for this layer in the Edit Background Map dialog. If the minimum and maximum visible zoom-levels are exceeded, then the format is hidden.
Last Saved	Specifies that the map is displayed at the last saved map center and zoom level. This option focuses on the last map window that was viewed. The display is based on the X (longitude) and (Y) latitude center coordinates and on the zoom level. While you can select this option for the initial view port, this option is preferable and is always used for printing maps and other WYSIWYG interactions.

3. Click **OK**.

Edit Narrative Views

A narrative view displays data results as one or more paragraphs of text. You use a narrative view to provide information such as context, explanatory text, or extended descriptions along with column values.

You can perform various tasks in the narrative view editor:

- Type a sentence with placeholders for each column in the results.
- Specify how rows are separated.
- Apply cosmetic formatting to the fonts used in the narrative view, or import the font formatting from a previously saved view.
- Add references to variables.

1. Open the analysis for editing.
2. Click the Results tab.
3. Click **Edit View** to display the narrative view editor.
4. If you have administrator privileges and want to format content in the narrative view with valid HTML markup, including JavaScript, select **Contains HTML Markup**.
5. In the **Prefix** field, enter the header for the narrative.

   This text is displayed at the beginning of the narrative.
6. In the **Narrative** box, enter the narrative text that is displayed for each row in the results.

   You can include both text and column values. Include a line break code at the end of this field to force each line of text and values onto its own line.

   To include column values, use an at sign (@), optionally followed by a number. Use an at sign by itself to indicate the first column. If you include multiple at signs, then the first occurrence of the sign corresponds to the first column, the second occurrence corresponds to the second column, and so on.

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Use @*n* to include the results from the designated column in the narrative. For example, @1 inserts the results from the first column in the analysis, and @3 inserts the results of the third column.

For example, for an analysis that returns the region name in the second column, specify `@2` to include the following values in the view: East Region and West Region.

7. In the **Row separator** field, enter a row separator for each line from the Narrative field that contains values. For example you might enter a string of plus signs (+) between each line.
8. In the **Rows to display** field, enter the number of rows from the column to return.

   For example, enter 5 to display values from the first 5 rows of the column. For a hierarchical column, you can use selection steps to display hierarchy levels with the hierarchical column. For example, create a step to select members based on hierarchy and add members of the specified level. A hierarchy level is considered a row.
9. In the **Postfix** field, enter the footer for the narrative. Ensure that the narrative ends in a line break, or that the footer begins with a line break.
10. Click **Done**

Edit Non-Data Views

You usually edit views that display data, such as tables, graphs, and gauges, but you can also edit views that don't contain data.

You can include the following types of non-data views in analyses and dashboards:

- Column Selector
- Filter
- Selection Step
- Static Text
- Title
- View Selector

About Column Selector Views

A column selector view is a set of drop-down lists that contain pre-selected columns. Users can dynamically select columns and change the data that is displayed in the views of the analysis.

One drop-down list can be attached to each column in the analysis, and multiple columns can be attached to each drop-down list. Updates that you make in the column selector view affect all the data views in the analysis.

You add columns to drop-down lists from the Subject Areas pane. When you add columns in this way, they aren't added to the Criteria tab for the analysis. Instead, when you display the Criteria tab, you see that the column is now referred to as a "Column Group" with the default column for the list specified also. The default column is the one on which you created the drop-down list.

About View Selector Views

A view selector view enables users to select a specific view of the results from among the saved views for an analysis. When placed on a dashboard, the view selector is displayed as a list from which users can choose the view that they want to display below the selector.

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Generally, you include views in the view selector that aren't being displayed in the Compound Layout view. For example, you might create a table, graph, gauge, and view selector view for an analysis, but include only the table and view selector view on the Compound Layout view. When the analysis is displayed on a dashboard page, users can select the graph or gauge view from the view selector view.

About Filters Views

A filters view displays the filters in effect for an analysis.

Filters, like selection steps, allow you to constrain an analysis to obtain results that answer a particular question. Filters are applied before the query is aggregated. See Creating Filters for Columns.

About Selection Steps Views

A selection steps view displays the selection steps in effect for the analysis. Selection steps, like filters, enable you to obtain results that answer particular questions. Selection steps are applied after the query is aggregated.

You don't modify selection steps from this view editor. To modify the selection steps, exit the Selection Steps editor and use the Selection Steps pane. See Refining Selections of Data.

About Static Text Views

A static text view adds static text to be displayed with the analysis results.

You can include variables in a static text view, as shown in the following example. See Advanced Techniques: Referencing Stored Values in Variables.

```
[u] Static Text View [/u][br/]
Region: @{variables.myFavoriteRegion} - Year:
@{variables.myFavoriteYear}[br/]
System Time: @{system.currentTime}[dddd,MMMM dd,yyyy][br/]
Product Version: @{system.productVersion}[br/]
[br/]
```

About Title Views

A title view displays a title, a subtitle, a logo, and timestamps to the results.

If you don't specify a title, then the name of the saved analysis is used as the title. For unsaved analyses, the **Title** text box is blank. You can reference variables in the text fields of the Title editor.

Graph Data in Analyses

This topic identifies additional information for graphing data in analyses.

Topics:

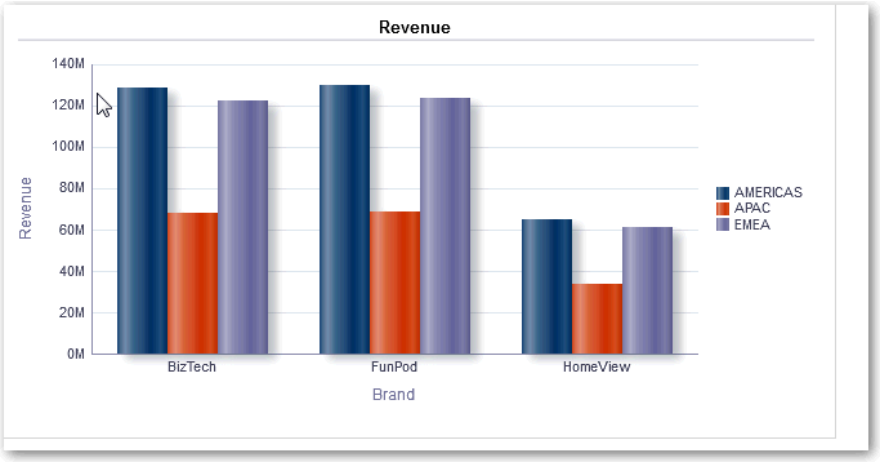
- Edit Graph Views
- Zoom and Scroll in Graphs
- Format the Visual Appearance of Graphs
- Limit Data Displayed in Graphs and Gauges

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Edit Graph Views

You can use graphs of various types for analyzing and displaying data.

For example, in the Brand Revenue analysis, you can edit a bar graph to compare the product revenue for three different regions, as shown below.



1. Open the analysis for editing.
2. Click the Results tab.
3. Click **View Properties** on the graph view you want to edit.
4. In the Graph Properties dialog, edit properties as needed.
5. On the Scale tab of the properties dialog, select **Click to edit Scale Markers** to display the Scale Markers dialog.

   Scale markers are accenting lines or shaded background ranges that mark key points, thresholds, ranges, and so on in a graph. Use a Line scale marker to draw a line across the graph at a specified position on the scale. Use Range to add a shaded background area behind the graph.

   You can apply line or range scale markers on one or more axes depending on the type of graph.
6. Click **OK**.
7. Click **Edit View** to display the Graph editor.
8. Use various toolbar buttons to affect the display of the graph.
9. Optional: Define thresholds for a funnel graph.
10. Optional: Drill in data in the view.
11. Click **Done**.

Zoom and Scroll in Graphs

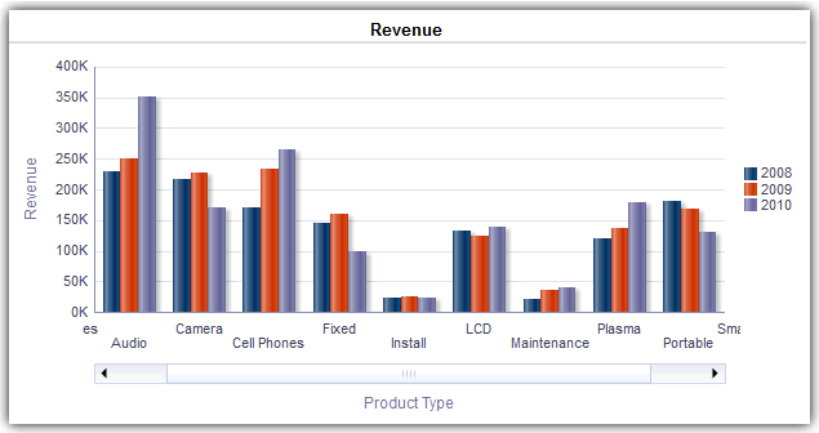
If zooming and scrolling has been enabled for a graph, then the graph includes a Zoom button. You can use the Zoom button to zoom in and out of a graph's plot area using its axes.

After you zoom in on an axis, you can scroll the axis. Enable zooming and scrolling with the General tab of the Graph Properties dialog.

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For example, while viewing a graph in results of a Brand Revenue analysis, you can zoom in on the Product Type axis. Doing so enables you to scroll the axis and view more data by product type.

To zoom and scroll in a graph, hover the cursor over the graph to reveal the **Zoom** button and click **Zoom**. If only one axis is enabled, select **Zoom In** or **Zoom Out**.



If both axes of the graph are enabled for zooming and scrolling:

- Select **Horizontal Axis**, then either **Zoom In** or **Zoom Out**.

  A zoom and scroll slider is displayed on the X axis.

  To unzoom the X axis, select **Actual Size**.
- Select **Vertical Axis**, then either **Zoom In** or **Zoom Out**.

  A zoom and scroll slider is displayed on the Y axis.

  To unzoom the Y axis, select **Actual Size**.
- To unzoom both the X and Y axes, select **Actual Size**.

Optionally, use other zoom features:

- Use **Zoom** to zoom in and out incrementally.
- Drag the scroll thumb on an axis to dynamically scroll the graph, revealing portions of the graph that are out of view.
- Click the scroll buttons on an axis to scroll left and right (on the X axis), or up and down (on the Y axis).
- Use the resize handles to zoom in and out on an axis.

Format the Visual Appearance of Graphs

You can format the visual appearance of graphs.

Formatting the visual appearance is based on two settings:

- The position of the graph elements (such as lines or bars in a line-bar graph or slices in a pie graph).
- Conditions applied to columns.

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Format Graphs Based on Position

Positional formatting enables you to customize the appearance of a graph based on the position of graph elements; that is, the numeric sequence in which graph elements (for example, bars) are displayed in a group.

A group is determined by the attribute columns that are displayed in the Group By drop target area.

You can format the visual appearance of a graph based on position in terms of its color, line width, and line symbols. You can't use positional formatting with waterfall graphs.

Format Graphs Based on Columns

Conditional formatting enables you to customize the appearance of a graph based on conditions applied to columns. The formatting is applied to the column values that meet the condition.

You can specify a color in which to display graph data based upon a specific column value, or range of column values that meet the condition specified for the column. For example:

- Conditionally changing the color of a graph based on specific column values.

  You want to create a bar graph to compare sales between two beverages, Lemonade and Cola. When creating a bar graph, you specify two conditions, one where the bar representing Lemonade sales is yellow and another where the bar representing Cola sales is blue.
- Conditionally changing the color of a graph based on a range of column values.

  A sales manager wants to create a bar graph to compare sales for all representatives across two sales bands. When creating a bar graph the sales manager specifies two conditions, one where the bar is red for all sales representatives with sales less than $250,000, and another where the bar is green for all sales representatives with sales greater than $250,000.

1. Click **Edit Graph Properties** on the toolbar of the graph editor.
2. Click the Style tab of the Graph Properties dialog.
3. Click **Style and Conditional Formatting**.
4. Click the Style Formatting tab to format the appearance of a graph based on the position of the graph elements. To add a custom formatted position:
   a. Select the tab for the graph element (for example, bar) to which you want to add a custom formatted position.
   b. Click **Add new position**. A new position entry is displayed in the Custom Formatted Positions table.
   c. Specify the formatting. For example, to select the color to be applied to the position, click the down arrow next to the **Color** box to access the Color Selector dialog. (Note that the formatting options depend on the element.)

      If you specify 0 for the width of a line, then the legend marker changes from the default line marker to symbol markers for the line and for other lines in the graph. For example, the symbol markers are shown as the legend markers for all the lines in the graph.
5. Click the Conditional Formatting tab to format the appearance of a graph based on a condition that is applied to columns. To add a condition to a column:

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a. Click **Add Condition Format** and select the column to which you want to apply a condition.

b. Select the operator and enter a column value, or a range of column values for this condition.

c. Click **OK**.

d. To select the color to be applied to column values when the condition is met, click the down arrow next to the **Color** box to display the Color Selector dialog.

6. Click **OK**.

Rules to Apply Conditional Formats in Graphs

Follow these rules when building and using conditions in graphs.

- You can create conditions only from columns that are being used by the graph.
- When format conditions conflict with each other, conflicting conditions are prioritized in the following order:
  1. Conditional formatting on attributes.
  2. Conditional formatting on measures
  3. Style formatting based on the positions of graph elements.
- When a user drills on a graph that has conditional formatting applied, the following rules apply:
  - A conditional format based on measures isn't carried to the next level. (It doesn't make sense to carry the conditional format to a different level; for example if, in a geographic hierarchy, from Region to City.)
  - A conditional format based on attributes is carried to the next graph if it hasn't been drilled on.

    For example, if you had the conditional format "Lemonade = Blue" and only drill on years, then "Lemonade = Blue" stays in place.
- Conditional formatting isn't supported on subtotals and totals for waterfall graphs.

Graph Exceptions for Conditional Formatting on Columns

This reference lists the graph exceptions that apply to conditional formatting based on columns.

Graph Type	Exception
Line Line-Bar Radar Time Series Line	Only symbol formatting is allowed for the line.
Pareto	Formatting is applied only to the bars, not to the Pareto line.

Limit Data Displayed in Graphs and Gauges

You can limit the data that is shown in graphs or gauges using section sliders. A section slider displays members of one or more attribute or hierarchical columns as values on a rectangular bar.

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The slider also provides mechanisms to select a value for that column such as increase and decrease buttons. The play button sequentially moves through the slider values.



Topics:

- Define Section Sliders in Graphs and Gauges
- Use Section Sliders in Graphs and Gauges

Define Section Sliders in Graphs and Gauges

You can define a section slider to limit the data that is shown in a graph or gauge.

For example, you can limit the data that is shown in a graph to a specific quarter in the year 2013.

1. Open the analysis for editing.
2. Click the Results tab.
3. Create the graph or gauge.
4. Click **Edit View** on the graph or gauge view.
5. In the Layout pane, drag columns to the Sections drop target.
6. Select **Display as Slider**.
7. Click **Section properties**.
8. Specify the maximum number of values to display in the section slider, and then click **OK**.
9. To close the editor, click **Done**.
10. To save the changes, click **Save Analysis**.

Use Section Sliders in Graphs and Gauges

You can use a section slider in a graph or gauge.

- Move the slider thumb to the desired value.
- Click the decrease button to move the slider thumb to the left.
- Click the increase button to move the slider thumb to the right.
- To sequentially move the slider through all the values, click the play button.

  The play button changes to a pause button that enables you to stop on a particular value.

The data in the graph or gauge is limited by the current value indicated by the slider thumb.

Save Views

You can save a view that you're working with at any time.

To save a view, you must save the new or existing analysis. For example, you can create a Brand Revenue analysis, edit its table view, and decide to save it for the first time.

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Click **Save Analysis** or **Save As** in the toolbar of the Results tab of the analysis editor.

Rearrange Views

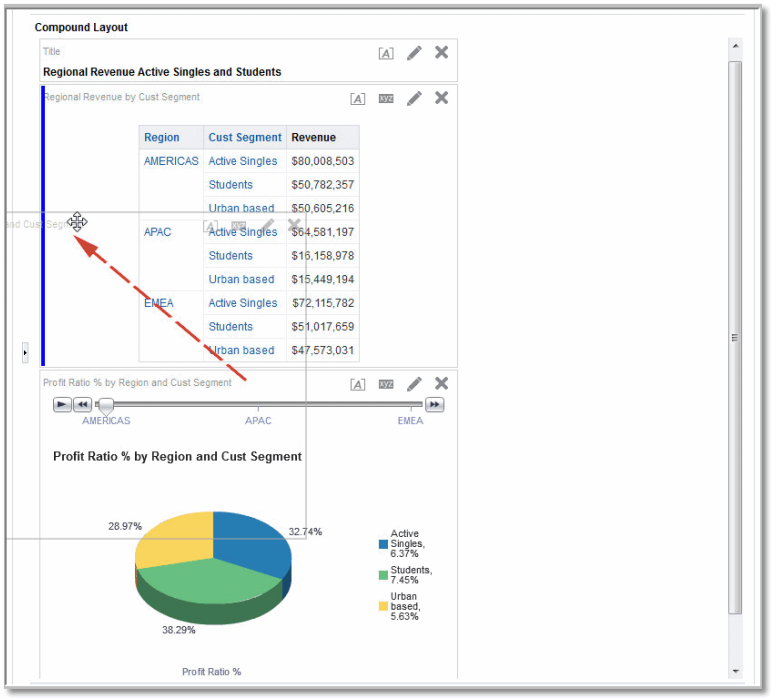
You can rearrange a view within a compound layout to be alongside the boundary of another view or to the outer boundary of the compound layout (where the view is displayed across the length or breadth of the compound layout).

For example, you can rearrange the views in the Brand Revenue analysis. You can arrange the bar graph of Projected Revenue to be displayed before the line graph of Actual Revenue.

1. Place the cursor just inside the top edge of the view that you want to rearrange.
2. Click and hold the left mouse button on the view.

   The view is displayed as a transparent, movable object.
3. Drag and drop the view to the position that you want.

   The view is displayed in a position marked by a blue bar (the drop target).



Refresh the Results in Views

When you work with views that show results data, such as the table and pivot table, you can refresh the results of the current analysis.

For example, you can add a filter in the Brand Revenue analysis. After doing so, you might want to see the effects of your change.

On the toolbar of the Results tab, click **Refresh the results of the current analysis**.

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Print Views

You can print views using HTML or Adobe PDF (Portable Document Format).

For example, you can display and print the Brand Revenue analysis in a new browser window by selecting the **Printable HTML** option.

1. Print one or more views.
   - To print a single view, click **Print this analysis** on the toolbar of the view's editor.
   - To print a group of views that displayed in the Compound Layout, click **Print this analysis** on the toolbar of the Results tab.
2. Select **Printable HTML** or **Printable PDF**.
   - For HTML, a new browser window displays the view or views to print.

     From the File menu of the new browser window, select **Print**.
   - For PDF, an Adobe Acrobat window displays the view or views to print.

     Select the options in the window to save or print the file.

Change Print Options for Views

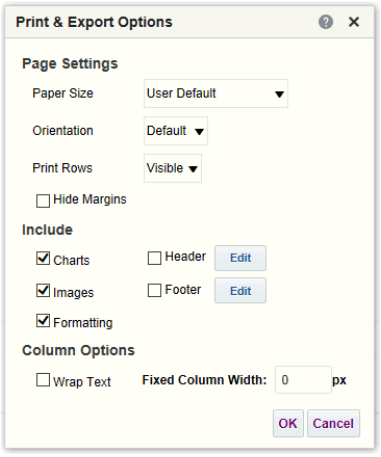
You can specify settings for printing dashboard pages and views.

For example, when printing the Revenue Dashboard that contains many views side-by-side on each page, you can set the Orientation to Landscape.

The print selections that you specify apply to PDF output only. If you then print the PDF file on a local or network printer, then the print selections specified in the browser are in effect. For example, the selection for paper size for the browser is in effect.

1. On the toolbar of the Results tab, click **Print & Export Options**.

   The Print & Export Options dialog is displayed.



2. Specify the appropriate options on the dialog. For example, specify the paper size and orientation and whether to include a header and footer.
3. Click **OK**.

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Preview How Views Are Displayed on Dashboards

You can preview views to see how they are displayed on a dashboard page.

For example, you can select **Show how results will look on a dashboard**. Doing so previews how results from a group of views are displayed in a dashboard.

1. If you want to preview a single view:

   On the toolbar of the view's editor, click **Show how results will look on a dashboard**.

2. If you want to preview a group of views that is displayed in the Compound Layout:

   On the toolbar of the Results tab, click the **Show how results will look on a dashboard**.

   The dashboard preview is displayed in a new window. Prompts are displayed and applied in the preview.

Remove Views

You can remove a view from a compound layout or analysis.

For example, you might find that the trellis view isn't the best way to show the results of the Brand Revenue analysis. You can remove that trellis view.

- To remove a view from a compound layout, click **Remove View from Compound Layout** on the view's toolbar. Removing a view from a compound layout doesn't remove it from the analysis.
- To remove a view from an analysis, select the view, then click **Remove View from Analysis** in the Views pane on the Results tab. Removing a view from an analysis removes it from the analysis and any compound layout to which it was added.

Sort Values in Views

You can sort values in table, pivot table, graph, heat matrix, and trellis views. You can sort on members, measures, and rows (where you see sideways triangles). You can't sort on page or section edges.

In pivot table and trellis views, values in columns are sorted on an edge from left to right. You can't sort values in ascending or descending order in any of the columns.

You can use many options to sort in views. For example, when you sort a column, you can select from the following options:

- **Sort Ascending** — Enables you to sort the values in the column by ascending order, as a first-level sort. For example, string values sort alphabetically A through Z, numbers sort lowest to highest, and dates sort earliest to latest.
- **Sort Descending** — Enables you to sort the values in the column by descending order, as a first-level sort.
- **Add Ascending Sort** — Specifies that an ascending sort for this column is added as another sort for the analysis.
- **Add Descending Sort** — Specifies that a descending sort for this column is added as another sort for the analysis.
- **Clear Sort** — Removes the sort specification for the specified column. This option works differently in the Selected Columns pane than in other places. If you make sort

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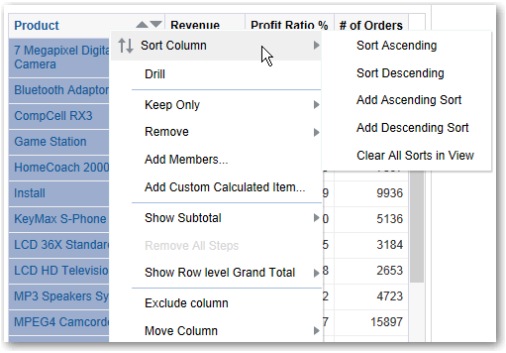
specifications in both the Selected Columns pane and in the view itself, then you return to the Selected Columns pane and click **Clear Sort**, only the sort that you specified in the Selected Columns pane is removed. A sort that you specified in the view remains.

- **Clear All Sorts in All Columns** — Removes all sort specifications that you have made. This option works differently in the Selected Columns pane than in other places, as described for **Clear Sort**.

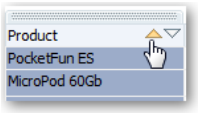
For example, in a table in the Brand Revenue analysis, you can select an ascending sort on the Revenue column. Doing so sorts revenue values from the lowest to highest.

You can sort values in the following ways:

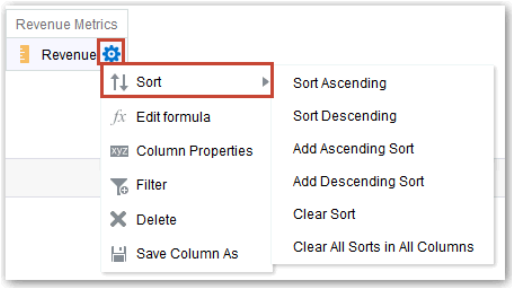
- Right-click in a view heading, click **Sort Column**, and select the appropriate option.



- Click the upwards and downward triangles that are found in column headings.



- Right-click a cell in a view and click **Sort** to display the Sort dialog. The interactions that are available in the Sort dialog depend on the type of data view (for example, graph or table) and the location in which you right-click within the view.
- From the Selected Columns pane of the Criteria tab, click **Options** beside a column, click **Sort**, and select the appropriate option.



Clear Sorts in Views

You can clear sorts that you have applied to columns in a view or analysis.

For example, you can clear all sorts in the Time column of the Brand Revenue analysis.

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To clear sorts that you have applied in a pivot table, table, heat matrix, or trellis view, right-click in the view heading and click **Clear All Sorts in View**.

1. Display the Selected Columns pane of the Criteria tab.
2. Click **Options** beside the column.
3. Select **Sort**, then **Clear Sort**.

When you clear sorts from the Criteria tab, you clear only the sorts that were defined from the Column Options menu. You don't clear the sorting done within a specific view.

To remove the primary sort from the column to which it now applies and apply it to the column whose button you just clicked, click a sort button in an unsorted column.

Drill in Results

You can drill in results.

Topics:

- About Drilling
- Drill in Tables and Other Views
- Drill in Graphs
- Drill in Map Views

About Drilling

Drilling enables you to navigate through hierarchical levels of data in views quickly and easily.

Many of the results that are displayed in views represent hierarchical data structures. The metadata specifies these hierarchies, and this enables you to access the different levels of detail within them.

- Drill down to display data in more detail, which displays more members.
- Drill up to display less data.

For example, in the results of the Brand Revenue analysis, you can drill for more data in the graph of Revenue by Product. To do this you can click on the MobilePhones data point. More data is displayed in the graph, such as the MobilePhones revenue per sales office for each of the last three years.

Drill in Tables and Other Views

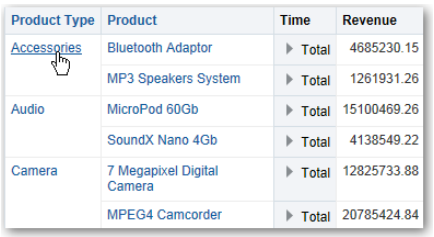
When you drill down in a table, pivot table, heat matrix, or trellis, the detail level data is added to the current data.

For example, when you drill from a continent, the table displays data for the continent and for the countries in that continent.

1. Hover over a value in a view.

   The value is underlined.

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Product Type	Product	Time	Revenue
Accessories	Bluetooth Adaptor	Total	4685230.15
	MP3 Speakers System	Total	1261931.26
Audio	MicroPod 60Gb	Total	15100469.26
	SoundX Nano 4Gb	Total	4138549.22
Camera	7 Megapixel Digital Camera	Total	12825733.88
	MPEG4 Camcorder	Total	20785424.84

2. Click the heading or member in which you want to drill.

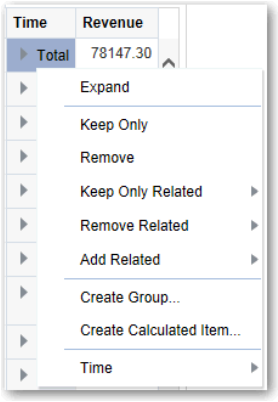
   More detail is added to the table or trellis.



Product Type	Item Description	Product
Accessories	8 X Zoom Optical LensBlack	Bluetooth Adaptor
	8 X Zoom Optical LensBlue	Bluetooth Adaptor
	8 X Zoom Optical LensPink	Bluetooth Adaptor
	8 X Zoom Optical LensSilver	Bluetooth Adaptor
	CompCell All in One Laser Jet F400Black	Bluetooth Adaptor

To drill in a hierarchical column in tables, pivot tables, and trellises, click the **Expand** or **Collapse** icon beside a member.

You can also use the right-click menu to expand and collapse columns.



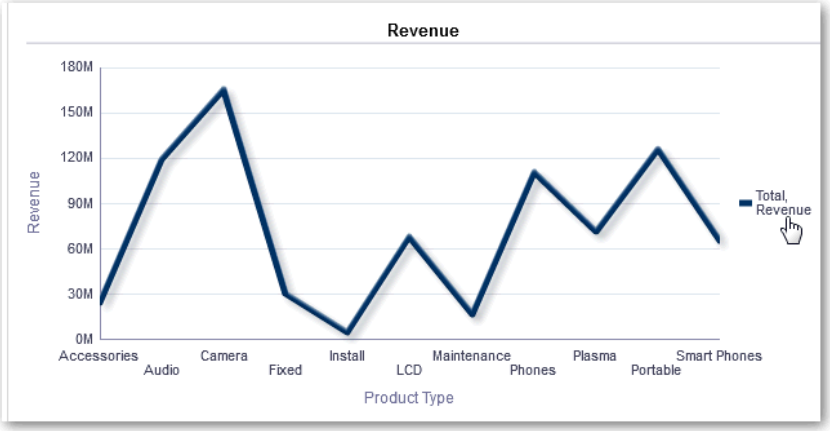
Drill in Graphs

When you drill down in a graph, the detail level data replaces the current data.

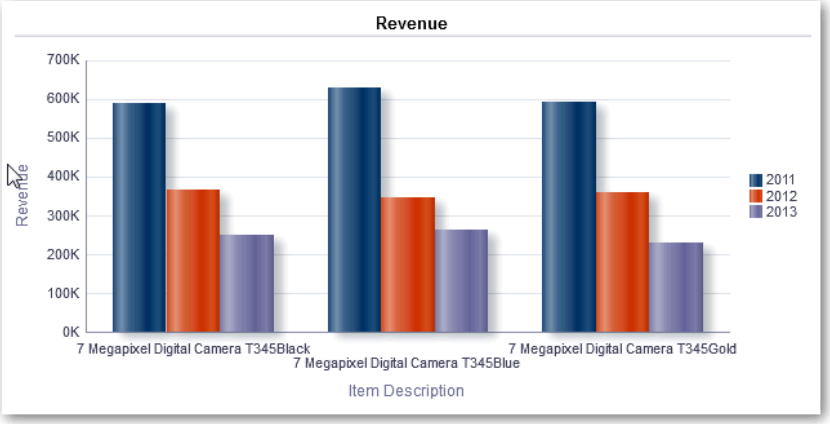
For example, when you drill down from a continent, the graph displays data for the countries in that continent, but not for the continent itself.

- Click a label on any axis or in the legend.

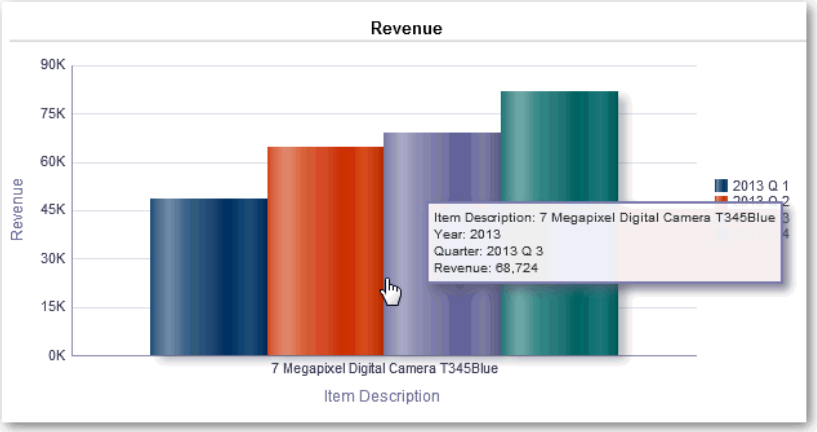
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- Click on a data point.



- More detail is shown in the graph.



Drill in Map Views

Drilling in a map enables you to navigate through the data. Drilling is available when the Pan tool is selected, as indicated by a hand cursor. If you hover over map data, then an information window is displayed with various information about that location.

When you click a region or a point on the map:

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- If the column is configured as a master for another view, then that view is updated with the latest information.
- If the column or map is configured to drill into a column or to perform a single action, then the drill or action is immediately initiated.
- If the column is configured to perform multiple actions or if multiple drills are possible, then the information window that is displayed contains a list of the actions or links for the multiple columns.

All columns in which you can drill are displayed in the information window as link text. When you click the link for a simple drill, you drill in the data, the map is redrawn with a different layer, and the information window is closed. If action links are defined, then you see a popup window that shows additional links.

Drilling updates map formatting to reflect the newly drilled data. For some drills (such as drilling on a State), the map zooms to the specified region while simultaneously updating the formatting. How you zoom and the formats and geographic levels that the map contains affect what is displayed. Formats have particular "zoom ranges" and are visible at different zoom levels. Zooming back up might display a new format, if you zoom out past the zoom level of the drilled format.

After you have drilled down, use the zoom slider to drill back up. Use the **Return** button on a dashboard page to display the original map view at the zoom or drill level that was in place before you started drilling.

Resize Rows and Columns in Views

You can resize the row and column edges of table, pivot table, and advanced trellis views.

For example, you can resize the Time column in a table of results of the Brand Revenue analysis.

Note that the resizing of rows and columns:

- Isn’t persisted if you resize rows and columns interactively. If you leave a table, then display it again, the interactive resizing is lost. If you set columns widths using properties, those widths are persisted.
- Is ignored if you export the view to PDF.

Topics:

- Configure to Resize in Views
- Resize in Views

Configure to Resize in Views

You must configure views to use scrolling as the method for browsing data before resizing can occur.

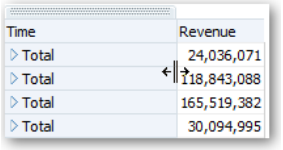
1. On the view's toolbar, click **View Properties**.
2. Select **Fixed headers with scrolling content** in the properties dialog.
3. Click **OK**. The scroll bar is displayed on the view, and rows and columns can be resized.

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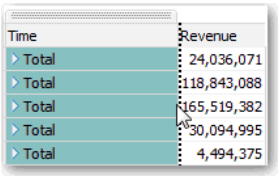
Resize in Views

You can resize a row or column edge in a table view, pivot table view, or advanced trellis.

1. Hover the mouse pointer over the border of the column or row edge.



2. Click and hold the mouse button down.



3. Drag the dotted line to the required size.
4. Release the mouse button.

Suppress Null Values in Views

You can select whether to include null values in an analysis when an entire row or column contains all null values. By default, null measure values are suppressed for all analyses.

For example, you might decide to display null values in the Revenue column of a Sales analysis.

1. Display the Results tab for the analysis that includes the view.
2. Click **View Properties**.
3. Select the appropriate **Include Null Values** options for the view.

   For example, suppose that you want to turn off null suppression for both rows and columns in a pivot table. Select **Include rows with only Null values** and **Include columns with only Null values**.

   This setting displays corresponding dimensions that have data, as well as null values. Note that if the view contains prompts or section edges, then they also inherit the null suppression value from either the row or column edge.

> **Note**
>
> Turning null suppression off might increase the volume of the data returned and impact performance. Contact your administrator for additional information.
>
> If results for analyses that include null values aren't as you expect, then contact your administrator. Verify that data in your sources is consistent.

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Assemble Views for Display

You use a compound layout to assemble different views for display on a dashboard. The views are displayed in separate containers within a compound layout.

- You can create additional compound layouts to vary presentation of analyses. You can use different compound layouts for different dashboards or for different devices. For example, a Brand Revenue dashboard might have one compound layout that shows a table and a graph, and another that shows a pie chart.
- You can duplicate a compound layout as a shortcut to creating a new compound layout. Views from the original compound layout are preserved. You can add views in addition to views that are already there, and delete views you don't want. For example, suppose you have a duplicate compound layout for the Brand Revenue analysis. You can keep the table, graph, pie chart, and gauge views, and add a performance tile view.
- You can rename a view so that the name is more meaningful to you. For example, for a Brand Revenue analysis, suppose a western region now consists only of California. You can rename the Western Region compound layout to California.
- You can delete compound layouts that are no longer useful for you. For example, for a Brand Revenue analysis, you might not need views for the Western region. You can delete the compound layout that contains those views.

1. Open the analysis for editing.
2. Click the Results tab, and use the toolbar options to assemble the view:
   - To create a compound layout, click on **Create Compound Layout**.
     A compound layout tab is displayed with only a title view. You can add views as needed.
   - To duplicate a compound layout, click on **Duplicate Compound Layout**.
     A compound layout tab that contains the same views as the selected compound layout is displayed. You can add or delete views as needed.
   - To rename a compound layout, click **Rename Compound Layout**.
     On the Rename dialog, type a new name for the compound layout and click **OK**.
   - To delete a compound layout, click on **Delete Compound Layout**.

Link Views in Master-Detail Relationships

You can link views so that one view drives changes in other views.

For example, when you select 2011 as a 'Year' value in the master view, you see 2011 data in a chart in the detail view .

You define two views to link:

- A master view that drives data changes in one or more detail views.

  The following types of views can be master views: funnel graph, gauge, graph, heat matrix, map, pivot table, table, and trellis. In a trellis view, only on the outer edges, can be master views, not the inner visualizations.

  Master views can be the same analysis as the detail view or in a different analysis.

  A master view contains a master column, where you set up the interaction that sends master-detail events on a channel. A channel carries master-detail events to the detail

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view. The master view must be displayed in the body of the view; it can't display on the page edge or section slider.

- A detail view that responds to events such as clicking on a value in a master view table.

  The following types of views can be detail views: funnel graph, gauge, graph, heat matrix, map, pivot table, table, and trellis. In a trellis view, only the outer edge can be detail views, not the inner visualizations.

  A detail view:

  – Can listen for events from multiple master views.

  – Can be in the same analysis as the master view or in a different analysis.

  – Can't act as a master view to another view.

Topics

- Define Master Views
- Define Detail Views

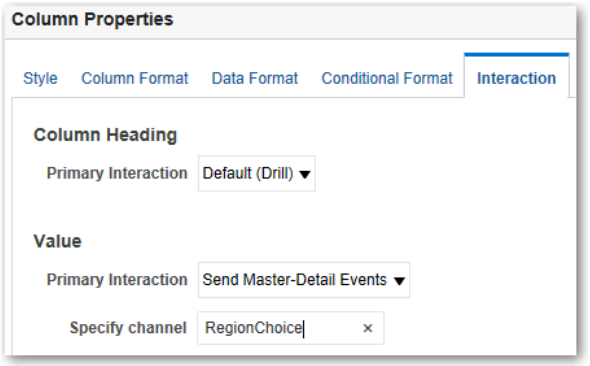
Define Master Views

As part of the process of linking views in master-detail relationships, you define the master view that sends changes to the detail views.

1. Open the analysis for editing.
2. For the column that is to be the master column, in the Criteria tab, click the **Options** button and select **Column Properties**.

   Make sure that you use one of the supported types for master views.
3. On the Column Properties dialog, click the **Interaction** tab.
4. In the **Primary Interaction** box in the **Value** area, select **Send Master-Detail Events**.
5. In the **Specify channel** field, enter a name for the channel on which the master view sends master-detail events.

   For example, if you're selecting a geographical region, you might name the channel "RegionChoice".



6. Click the Results tab to view the default table or pivot table view.
7. Click **OK**.

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Define Detail Views

As part of the process of linking views in master-detail relationships, you define the detail views that receive changes from the master view.

Note: Make sure that you position the master view column (that is, the column in the master view with **Primary Interaction** set to “Send Master-Detail Events”) on the Prompts or Sections area of the detail view.

1. Open the analysis for editing.
2. Click the Results tab.
3. Create the view that you want to use as the detail view.

   Make sure that you use one of the supported types for detail views.
4. On the view's toolbar, click **Edit**.
5. Drag the master view column (with **Primary Interaction** set to “Send Master-Detail Events” in the master view) to either the **Prompts** box or the **Sections** box, then click **Done**.
6. Click the **View Properties** button on the toolbar of the view's editor. The view's property dialog is displayed.
7. Select **Listen to Master-Detail Events**.

   The location of the **Listen to Master-Detail Events** option depends on the view type, as follows:

   - Gauge Properties dialog: General tab
   - Graph Properties dialog: General tab (for a graph or funnel graph)
   - Heat Matrix Properties dialog: General tab
   - Map Properties dialog: Interaction tab
   - Pivot Table Properties dialog: Style tab
   - Table Properties dialog: Style tab
8. In the **Event Channels** field, enter the name of the channel that you defined in Step 5 in Define Master Views.

   For example, you might have named a geographical region channel "RegionChoice".

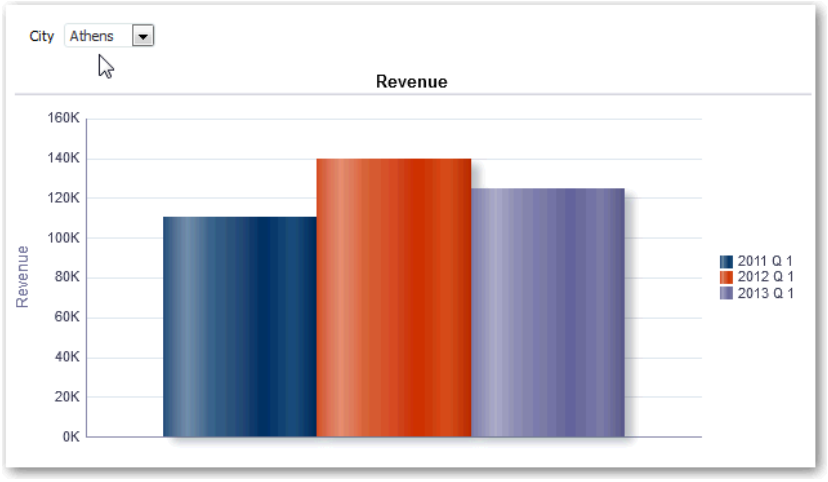
   Channel names are case-sensitive and must match exactly the channel names specified in the master view. Separate channels with commas, for example, channel a, channel b.
9. Click **OK**.

In the following example, a table view of a City Revenue analysis is linked to a bar graph through a master-detail relationship.

In the graph view, the City column is configured as the master view. The City column sends events to the graph view through the specified CityChoice channel.

The graph view has a prompt that enables users to choose a city. Data on the graph is displayed based on the city choice.

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The graph is the detail view, with the City prompt listening for events from the table view on the specified CityChoice channel. Suppose the user clicks on a value in the City column in the table view. The prompt in the graph view is set to that city, and the graph is refreshed.

Modify the Layout of Data in Views

Use the Layout pane to modify the way that data is arranged in a view.

Perform tasks such as adding and rearranging columns and adding totals.

Topics:

- Add and Rearrange Columns in Views
- Set Properties for Sections of Data in Views
- Add Totals to Tables and Pivot Tables
- Display Running Sums and Relative Values in Pivot Tables

Add and Rearrange Columns in Views

You can add and rearrange columns in views.

Topics

- Add Columns to Views
- Remove Columns from Views
- Rearrange Columns in Views

Add Columns to Views

This topic explains how to add a column to a view.

- Drag the column from the Subject Areas pane to the appropriate location in the view editor.
- Drag the column from the Subject Areas pane and drop it on a drop target on the Layout pane of the view's editor.

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For example, suppose you want to include the Office column in a table of the Brand Revenue analysis. You can drag the Office column from the Subject Areas pane to a drop target after the Product column.

Remove Columns from Views

You can remove columns from views.

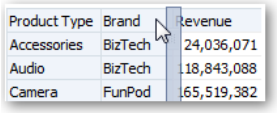
Removing a column from a particular view doesn't remove it from the underlying analysis or remove it from other views. If you want to remove the column from the analysis and all views, remove it using the **Criteria** tab.

1. Open the view for editing.
2. In the Columns and Measures section of the Layout pane, click **More Options**.
3. Select **Remove Column**.

Rearrange Columns in Views

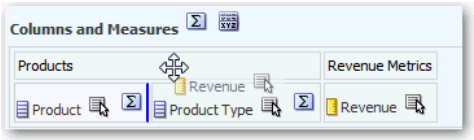
You can rearrange columns in views.

1. Open the view for editing.
2. Drag the column using the column handles and drop the column at a drop target.



To rearrange columns in the Layout pane:

1. Open the view for editing.
2. In the Layout pane, drag and drop the column to the required location.



This procedure provides the most basic steps for using the Layout pane to rearrange columns. Many options are available for arranging columns in the Layout pane. See About Drop Targets in the Layout Pane.

Set Properties for Sections of Data in Views

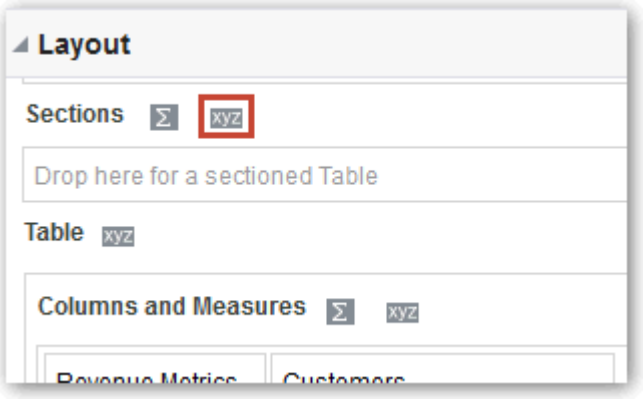
You can specify properties for the view body (such as a pivot table) or drop target (such as a section).

For example, you can set the background color to light green and insert a page break in a long table of revenue values.

1. Open the view for editing.

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2. In the view editor, display the Layout pane.
3. Click **Section Properties** next to the view body or drop target.



4. Set the appropriate properties.
   - Use **Insert Page Break** to specify whether to create a page break before the section, so that every time a value changes in the section drop target, the new section for that column is displayed on a new page. Page breaks are visible when you export an analysis to PDF. This is useful for data-driven detail analyses. Choose from:
   - – No Page Break — Don't break pages.
     – Innermost Column — Break at the innermost column, which inserts a page break between every section.
     – Outermost Column — Break at the outermost column, which inserts a page break when the section label in the outermost column changes.
     When the value of an outermost column changes, the value of the inner column is also considered changed. Therefore, setting page breaks at the outermost column inserts manual page breaks between every section.
     – Folder.Column — For example, Markets.Region, or Products.Brand. Inserts a page break when the section label in the specified column changes. This option is available only when the Sections drop target contains a column.
   - Use **Show Blank Rows** to specify whether to display rows that have no data in the section. Select this option to display all rows, even if a row is an empty text string and contains no value. Deselect the option to hide rows when there are no results to display. This option might be useful for example, to hide empty address lines.
   - Use **Maximum number of section slider values** on graphs to specify the maximum number of values to display on a section slider bar, but not to exceed the system maximum. The administrator configures the system maximum. If you enter a number that exceeds the system maximum, then it's ignored.
5. Click **OK**.

Add Totals to Tables and Pivot Tables

In the Layout pane, you can add column totals in tables and pivot tables.

You can position the totals at various locations in the view. You can add totals for columns that are displayed on the various edges. For each measure, the total uses the aggregation rule for that measure.

If you specify a total in the Rows or Columns drop target of a pivot table, then the totals that are displayed are the result of the columns that are specified in the Measures drop target. Total

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values aren't displayed on the Columns or Rows edges of the pivot table but rather in the data in the center of the pivot table.

1. Display the Layout pane for the view.
2. To add grand totals to the entire table, in the Columns and Measures drop target, click the **Totals** button, then click the location such as **Before**.

   For an entire pivot table, in the Rows or the Columns drop target, click **Totals**, then the location.
3. To turn on and off the totals that apply to all the values in the drop target, click the **Totals** button beside the drop target name, such as Sections.

   Then select the location for the total, such as **Before** the data items. A totals area is added to the view.
4. To specify custom text to insert into a total heading in tables and pivot tables, enter text in the **Caption** box.
   - Use `@` to display the data value. Suppose a total is specified for the Region column, and you enter the following text into the **Caption** box for the total heading: `- All values in the @`. The total heading displays the following text for the Western Region: `- All values in the Western Region`.
   - Use "@" to display the @ symbol.
   - Use "\" to display double quote. The double quote syntax isn't limited to a single character. In general, you can use a backslash escaped string inside double quotes. For example: `"1234567890\\abc\\d\"x\"yz!@#$%^&*()-+=_{}[];:'|?/><,.` ~" is display as `1234567890\abc\d"x"yz!@#$%^&*()-+=_{}[];:'|?/><,.` ~
   - Use \ to display the \ symbol.

Display Running Sums and Relative Values in Pivot Tables

You can use the Layout pane to display running sums or the relative value of measure columns in pivot tables.

Topics

- Display Running Sums for Measure Columns in Pivot Tables
- Display Relative Values for Measure Columns in Pivot Tables

Display Running Sums for Measure Columns in Pivot Tables

In a pivot table, you can display numeric measures as running sums, where each consecutive cell for the measure displays the total of all previous cells for that measure. This option is a display feature only that has no effect on actual pivot table results.

Typically, running sums are displayed for duplicated attribute columns or for measure columns for which the option to show data as a percentage of the column has been selected, with the last value being 100 percent. For example, you can display a running sum and percentage, to view progress toward next year's revenue target of $2 million. Running sums apply to all totals. The running sum for each level of detail is computed separately.

Column headings aren't affected when the running sum option is selected. You can format the column heading if you want it to indicate that the running sum option is in effect.

The following usage rules are in effect for running sums:

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- A running sum is incompatible with the SQL RSUM function (the effect would be a running sum of the running sum).
- All running sums are reset with each new section. A running sum doesn't reset at a break within a section or continued across sections.
- If a measure doesn't display in a single column or in a single row, then the measure is summed left to right and then top to bottom. (The lower right cell contains the grand total.) A running sum doesn't reset with each row or column.

1. Open the pivot table view in the view editor.
2. In the Layout pane, in the Measures area, click **More Options** for the row or column to be summed.
3. Select **Display as Running Sum**.

Display Relative Values for Measure Columns in Pivot Tables

In a pivot table, you can dynamically convert a stored or calculated measure into a percent or an index.

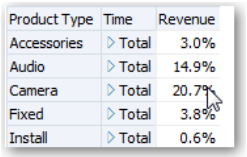
This shows the relative value of the item, compared to the total, without the need to explicitly create a calculated item for it. You can view the measure as a percentage between 0.00 and 100.00, or as an index between 0 and 1.

For example, if you're using a pivot table to examine sales by product, then you can duplicate the sales measure and view it as a percentage of the total. This enables you to see the actual sales, and the percentage of sales, that each product accounts for.

1. Open the pivot table in the view editor.
2. In the Layout pane, click **More Options** for the item that you want to show as a relative value.
3. Optional: To duplicate the measure column, select **Duplicate Layer**.

   The item is displayed in the pivot table, with the same name.
4. Select **Show Data As**.
5. Select **Percent of** or **Index of**.
6. Select the appropriate value such as **Column**, **Row**, or **Section**.

   The column is displayed in the pivot table view.



7. To rename the column, click **More Options** then **Format Headings**.

   In the Edit Format dialog, enter a value in the **Caption** field.

About Drop Targets in the Layout Pane

Drop targets enable columns in a data view to be displayed in the Layout pane. Drop targets indicate where you can insert, move, or drop a column. They represent a valid position for a column.

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Each drop target has properties that you can set. You use drop targets to modify the way data is arranged in a data view by dragging and dropping columns to different targets within the view. Each editor for a data view contains the Layout pane. The Layout pane is displayed slightly differently for each view type, such as graphs, performance tiles, and pivot tables. The Layout pane shows how the data in a view is laid out.

Concepts

- About the Types of Drop Targets
- About the Excluded Drop Target
- About the Guidelines for Drop Targets for Various Views

About the Types of Drop Targets

A data view can contain one or more drop targets, depending on the type of view.

Target	Description
<*view-type*> Prompts	Provides an interactive result set that enables you to select the data to view. The values from the columns that are displayed in this drop target are used as the initial criteria. In a view, these values are displayed in a drop-down list for selection, which is often referred to as the "page edge."
Sections	Populates the areas that divide the view into sections. If you select the **Display as Slider** option in this drop target, then the values of the columns that are dropped in the Sections drop target are displayed as a section slider rather than as unique views.
<*view-type*> area	Simulates the plot area or the body of the view itself and assists you in seeing what the view looks like. You can drag and drop columns to and from this area.

In addition to the drop targets explained in the table, the Layout pane shows excluded drop targets. The Layout pane includes other drop targets that are specific to the type of view. For example, the Layout pane for the radar graph includes a Radar Sections drop target that shows the columns values as points on each line along a radius of a circle.

About the Excluded Drop Target

To modify the layout of data, you must understand the Excluded drop target. A column in the Excluded drop target isn't included in the view results but still remains as part of the analysis.

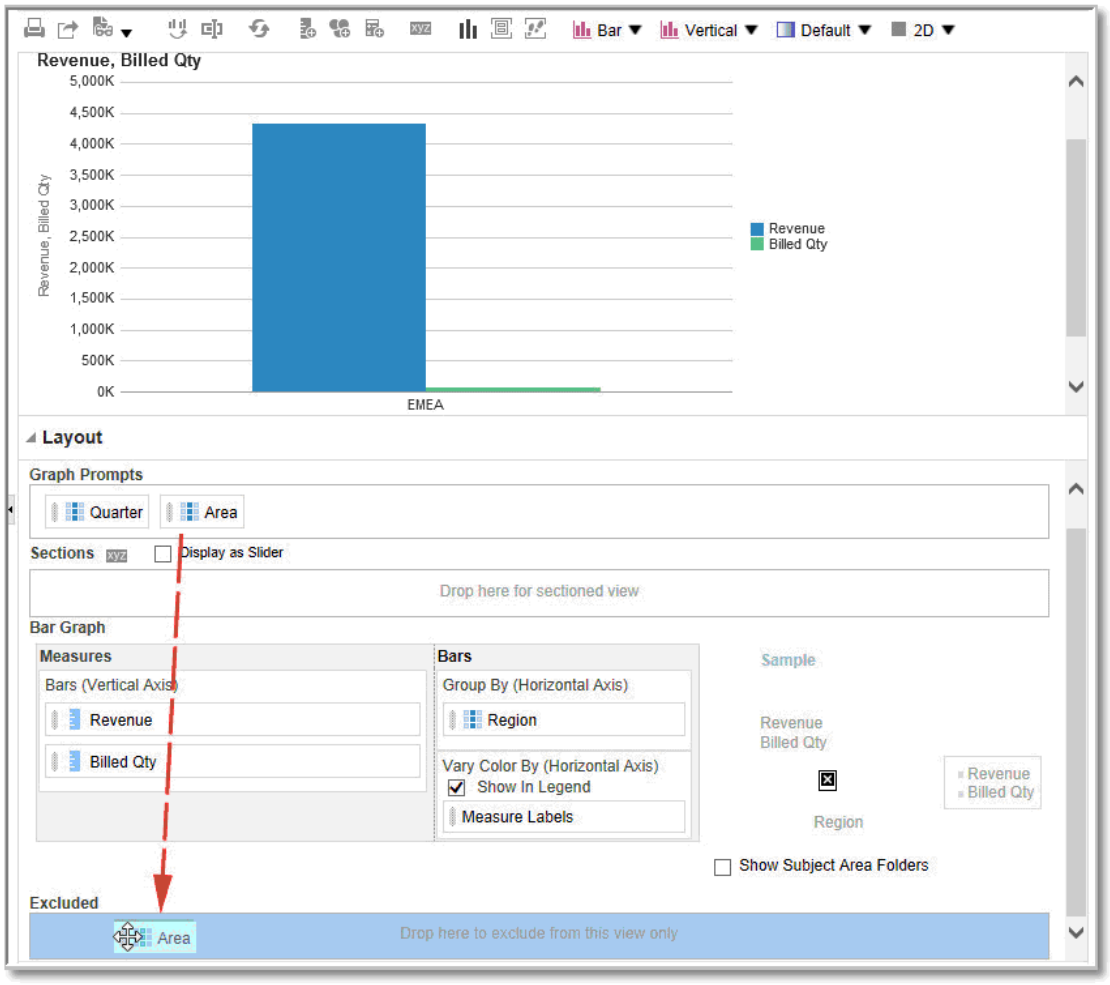
A general rule is that a column is placed in the Excluded drop target for a view if it isn't added explicitly to one or all views.

If you want a column that is in the Excluded drop target to be displayed in a view, then you can easily move it. Simply display the Layout pane for the view, and drag and drop the column from the Excluded drop target to the desired one.

Excluding columns differs from removing columns. You can use the **Remove Column** option from the **More Options** button in the Layout pane for a view to remove a column entirely from the analysis.

You place a column in the Excluded drop target after views have been created for the analysis in various ways. For example, you can select **Exclude Column** from the right-click menu of a view. Suppose that you're editing a view in its editor and you add a column to that view from the Subject Areas pane. The column is placed in the Excluded drop target for all other views in the analysis.

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About the Guidelines for Drop Targets for Various Views

As you modify the layout of views, there are guidelines that you need to bear in mind for drop targets in the Layout pane.

- Drop Target Guidelines for Graphs and Funnel Graphs
- Drop Target Guidelines for Heat Matrices
- Drop Target Guidelines for Trellises
- Drop Target Guidelines for Treemaps

Drop Target Guidelines for Graphs and Funnel Graphs

This reference describes the restrictions and guidelines that apply to dragging columns from one drop target and dropping them in another in graphs and funnel graphs.

- A bubble graph requires at least three measures. Plot one measure on the horizontal axis, another measure on the vertical axis, and a third measure on the bubble size axis.
- A pareto graph can have only one measure.

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If you drop another measure on the Measures drop target, then the measures are swapped; that is, the existing measure is replaced by the newly dropped measure and is moved automatically to the Excluded drop target.

- A time series line graph requires a single date or date-time data column to be selected on the horizontal axis. It has a single vertical axis, but supports multiple data series.
- A scatter graph requires at least two measures. For example, you can plot one measure column on the horizontal axis and another measure column on the vertical axis. These measures are plotted for values on the Group By axis.
- A funnel graph uses two measures but only one is required. If you don't select a second measure, then the first measure is used for the second measure. If you have selected two measures and then select a new measure, then the new measure replaces the measure currently in the Actual Measures drop target.
- A stacked bar graph requires at least two measures to allow comparison of values.

Drop Target Guidelines for Heat Matrixes

You use the Layout pane areas to visualize heat matrixes. You can quickly spot anomalies in large quantities of data and study individual values.

The Layout pane for heat matrixes is composed of various drop target areas:

Area	Guidelines
Prompts	Select an attribute or hierarchical column by which to filter the heat matrix. The Prompts area is initially empty. You can drag and drop one or more columns from the Sections, Rows, or Columns area or from the Subject Areas pane to the Prompts area.
Sections	Select an attribute or hierarchical column by which to section the heat matrix. The Sections area is initially empty. You can drag and drop one or more columns from the Prompts, Rows, or Columns area or from the Subject Areas pane to the Sections area.
Rows	Represents a column displayed in row alignment. All attribute and hierarchical columns defined on the Criteria tab are initially displayed in the Rows area in the order in which they were added to the Criteria tab. You can drag one or more attribute or hierarchical columns from the Subject Areas pane to the Rows drop target, or you can double-click one or more attribute or hierarchical columns to include in the Rows drop target. You can also drag and drop one or more attribute or hierarchical column from the Columns, Prompts, or Sections areas. If you add an attribute or hierarchical column to the heat matrix view after displaying the analysis results, then the new column is added as a subordinate column to the Rows drop target.
Columns	Represents a column displayed in column alignment. The Columns drop target is initially empty. You can drag one or more attribute or hierarchical column from the Subject Areas pane to the Columns drop target. You can also drag and drop one or more attribute or hierarchical column from the Rows, Prompts, or Sections areas.
Color By	See the next section for details.

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Details of the Color By Area for Heat Matrixes

The Color By area represents the measure value for the grouping and intersection of the row and column for heat matrixes.

- The first measure added in the Criteria tab is displayed as the Color By measure.
- You can select a measure from the **Color By** list. This list initially contains all measures added to the analysis in the Criteria tab.
- You can drag and drop a measure column from the Subject Areas pane to the Color By drop target. The current Color By measure is replaced with the new measure, and the heat matrix redraws to reflect the new measure.
  If you add a measure column to the heat matrix view after displaying the analysis results, then the new column replaces the existing column in the view and in the Color By drop target.
- If you remove the Color By measure column in the Criteria tab, then it's removed from the Color By list. The new measure value for the Color By list defaults to the last measure value added to the analysis.
  The Color By drop target is divided into two options:
  - **Style**: Select the style for the heat matrix. Style contains two options: **Percentile Binning** and **Continuous Color Fill**. If you select Percentile Binning as an option, then you can enter the number of bins, choose a color palette, and enter a custom label for the bins. If you select Continuous Color Fill, then the heat matrix tiles are displayed as a gradient color scheme.
  - **Color**: Select the color palette for the heat matrix.

Drop Target Guidelines for Trellises

This reference describes the guidelines that apply to working with drop targets in trellises.

- In advanced trellis views, measures comprise the innermost column headers of the trellis.
- When moving measures from the Color By drop target to or from the Group By drop target:
  - Dragging a single measure moves all the measures along with it. (This is known as sticky behavior.)
  - Dragging a new measure into the view moves all existing measures to wherever you place the new measure.
- To place a measure on the non-measure edge of a visualization, or in the Rows target or Columns target, you must first convert the measure to an attribute column. For information, see Editing the Formula for a Column.
- Attribute columns can be dragged out of the Measures drop target without causing the drop target or the measures inside it to move with the attributes.

Drop Target Guidelines for Treemaps

You use the Layout pane areas to visualize treemaps, which are constrained, hierarchical data. You can quickly spot trends and anomalies in large quantities of data and study individual values.

The Layout pane for treemaps is composed of various drop-target areas:

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Area	Guidelines
Prompts	Select an attribute or hierarchical column (excluding ragged and skip-level) by which to filter the treemap.
Sections	Select an attribute or hierarchical column (excluding ragged and skip-level) by which to section the treemap. For example, region that is grouped by year might be the container to display a treemap that is sized by revenue and colored by year-ago revenue.
Group By	Represents the top level of the hierarchical data that is sliced to produce or describe a container of aggregated values. The aggregated values display as tiles. The group area creates a header or group for the measure columns that are specified in the Size By and Color By areas. If more than one column of data is represented in the treemap, then a title bar is displayed for the grouping. For example, region that is grouped by year might be the container to display a treemap that is sized by revenue and colored by year-ago revenue. Region displays in the title bar.
Size By	Represents the distribution of the tiles within their parent. The size of the children is always equal to the size of the parent. Each rectangle's area is the aggregated value for the associated measure based on the applied filters (for example, prompted or filtered by region).
Color By	Represents a distribution of values across all of the tiles at the same level and adds additional scope to the analysis providing a "qualitative" perspective to the treemap.

Visualize Data in an Analysis

You can visualize data in analyses.

From the Home page

1. In the Home page, locate the analysis you want to visualize.
   For example, click the **Workbooks and Reports** search tag below the Search bar, or click the Search bar and select **Analysis**.
2. Hover over the analysis, click **Actions**, and select **Explore As Workbook**.
   You'll see the analysis displayed as a visualization. You can visualize the data, make changes, and save it as a visualization workbook.

From the Classic Home page

1. Navigate to the Classic Home page.
   If you're in the Oracle Analytics Home page, from the **Page Menu**, click **Open Classic**.
2. In the Recent pane or Catalog page, locate the analysis you want to visualize.
3. Click **More**, then **Explore As Workbook**.
   You'll see the analysis displayed as a visualization in a new browser tab or page. You can visualize the data, make changes, and save the workbook as a visualization.

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24

Build Dashboards

This chapter describes how to build dashboards to provide personalized views of corporate and external information.

Video

Topics:

- Typical Workflow to Build Dashboards
- Create Your First Dashboard
- Edit Dashboards
- Add and Delete Pages in Dashboards
- Create and Manage Layouts for Dashboards and Dashboard Pages
- Print Dashboards
- Organize Dashboard Pages in Briefing Books
- Save and Restore Dashboard State
- Publish Dashboard Pages
- Link to Dashboard Pages

Typical Workflow to Build Dashboards

Here are the common tasks to start building dashboards.

Task	Description	More Information
Create multiple analyses	Build analyses on which you can create views that you display on a dashboard.	Create Your First Analysis
Create a dashboard	Create a dashboard to display data from analysis.	Create Your First Dashboard
Add content to a dashboard page	Add content to dashboard pages to display items such as views and prompts.	Add Content to Dashboard Pages
Add prompts to dashboard pages	Add prompts to dashboard pages to drive the content on the pages.	Add Prompts to Dashboard Pages
Add pages to a dashboard	Optionally add one or more pages to the dashboard to display the data in various ways.	Add Pages to Dashboards
Recall personal settings for dashboards	Create customizations that enable you to view pages in their current state or with your favorite choices already selected.	Save and Restore Dashboard State
Run the dashboard	Try out the completed dashboard. Click **Run**.	

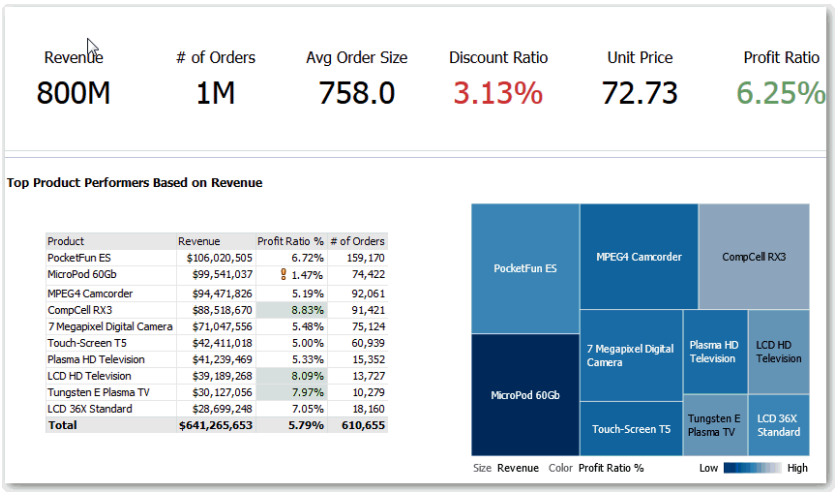
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Create Your First Dashboard

You can create dashboards to provide personalized views of corporate and external information. A dashboard consists of one or more pages that display results of an analysis.

Video

For example, you can create a Sales Performance dashboard and add content to track your team's revenue. Suppose you create three views for an analysis: performance tile view, a table view, and treemap view. You can create a dashboard that displays these three views. You can include prompts on the dashboard to enable users to specify the values to display in the views. See Create Column Prompts.



1. On the Classic Home page, in the **Create** pane, click **Dashboard**.
2. In the New Dashboard dialog, enter a short name and description for the dashboard.
3. Under **Location**, select where to save the dashboard. Where you save a dashboard determines whether the dashboard is private to you or shared with others.
   - To save for your personal use and private to you, save the dashboard in `/My Folders`.
   - To share with others, save the dashboard in `/Shared Folders`.
     To share a dashboard with others and to not list the dashboard in the **Dashboard** menu in the global header, save the dashboard in any level (such as `/Shared Folders/Company/Sales/Eastern`).

     To share a dashboard with others and to list the dashboard in the **Navigation Menu** on the Home page, save the dashboard in the `/Shared Folders/`*first level subfolder*.

     If you specify a shared folder in which no dashboards have been saved, then a new Dashboards subfolder is created automatically.

     For example, if you select a folder named /Shared Folders/Company/Sales in which no dashboards have been saved, a new Dashboards folder is created. The Location entry changes to `/Shared Folders/Sales/Dashboards`. (A new Dashboards folder isn't automatically created if you choose a folder at any other level.)

     Dashboards saved in `/Shared Folders/`*first level subfolder*`/Dashboards/` are included as links in the Home page's **Navigation Menu**.

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4. Specify that you want to add content to the new dashboard now.
5. Click **OK**.

The new dashboard, which contains one blank page, is displayed in the Dashboard builder for editing.

Edit Dashboards

You can edit dashboards to which you have appropriate permissions and privileges. You can add or delete dashboard pages, add content such as columns and sections, and edit properties and settings such as print options.

For example, you can add content to a Sales Performance dashboard to track your team's progress by adding a Brand Revenue analysis from the catalog.

1. Open the dashboard.
2. Click **Page Options**, then select **Edit Dashboard**, and make your changes.

Add and Delete Pages in Dashboards

Build your dashboards and configure content.

Topics:

- Add Pages to Dashboards
- Add Subpages to Dashboards
- Add Content to Dashboard Pages
- Understand How Dashboard Pages and Oracle Analytics Publisher Reports Interact
- Configure the Style and Behavior of Dashboards and Pages
- Change the Properties of Objects Added to Dashboard Pages
- Make Dashboard Sections Collapsible In Accessibility Mode
- Delete Objects on Dashboard Pages
- Delete Dashboard Pages
- Delete Dashboard Subpages

Add Pages to Dashboards

You can add new pages to organize content of a dashboard.

For example, you can first add a new dashboard page that contains regional sales data in a table and in a bar graph. Then, you can add another that contains links to various competitors' web sites.

1. Open the dashboard for editing.
2. On the toolbar of the Dashboard builder, click **Add Dashboard Page** and select the Add Dashboard Page menu option.
3. Follow the on-screen instructions.

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Print Dashboards

You typically view dashboards in electronic form. You can easily print a dashboard if you want to see its pages in PDF or HTML format.

For example, you can print a Stock Control dashboard page so you can refer to it during a visit to a supplier's factory. At this location, no external computing devices are permitted.

1. Open the dashboard.
2. Navigate to the dashboard page to print.
3. Click **Page Options**, then select **Print**.
4. Select **Printable PDF** or **Printable HTML**.
5. Open Adobe Acrobat or a browser window and print from there.

Add Subpages to Dashboards

You can add a new subpage to a dashboard to display additional information.

Adding subpages allows a second level of information to be presented to users. For example, you can first add a new dashboard page that contains regional sales data in a table and in a bar graph. Then, you can add a subpage that contains links to various competitors' web sites.

1. Open the dashboard for editing.
2. On the toolbar of the Dashboard builder, click **Add Dashboard Page** and select the **Add Subpage** menu option.
3. Follow the on-screen instructions.

Add Content to Dashboard Pages

You can add dashboard objects (any of the objects from the Dashboard objects pane) to dashboard pages. You can also add objects that you have saved in the catalog.

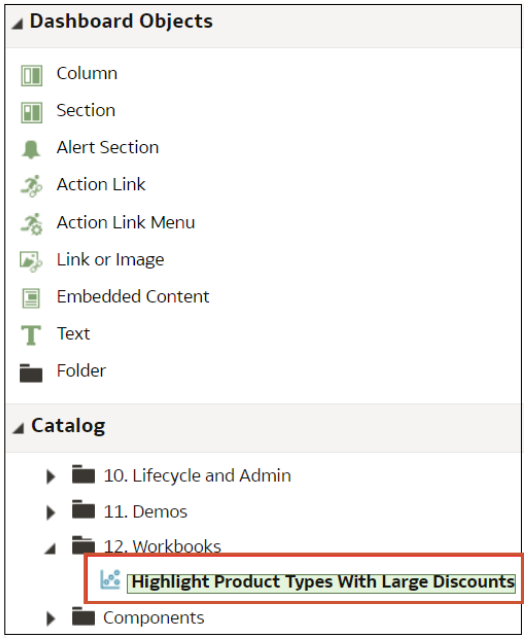
For example, you can add content to the newly created Sales Performance dashboard to track your team's progress. To do so, you can add a Brand Revenue analysis from the catalog.

1. Open the dashboard for editing.
2. Navigate to the page to which you want to add content.
3. In the Dashboard Builder, select the objects to analyze in the Dashboard Objects pane or the Catalog pane and drag and drop them to the Page Layout area.
   - Use **Column** to add a column to align content on a dashboard. You can create as many columns on a dashboard page as you need. You can place columns horizontally or vertically.
   - Use **Section** to add sections within columns to hold the content for the page, such as action links and analyses. You can include as many sections as you need for a column.
   - Use **Link or Image** to add links to content to your dashboard. Drag **Link or image** to the dashboard design, then click Properties to configure it.
     Use the **Destination** options to specify the URL to a workbook, dashboard, or analysis.

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To add an image or graphic for the link, use the **Image** options to select, upload, and position images. Use the **Description** field to provide alternative text (known as Alt Text) to be used by screen readers to make the image accessible.

- Use Publisher Report to add one or more reports to make them available to other users. You can use a report to add configured analyses to a dashboard page. You can add a report as embedded content for display on the dashboard page or as a link to open the report in Oracle Analytics Publisher. If you modify in Oracle Analytics Publisher a report you added to a dashboard page and save your changes, then you must refresh the dashboard page to see those modifications.
- Use Visualizations to embed visualizations and canvases in dashboards to share them with analysts. Drag the project onto the canvas, then choose which canvas or insight to display.



4. Set the properties of each object, as appropriate by clicking **Properties**.
5. Click **Save**.

Understand How Dashboard Pages and Oracle Analytics Publisher Reports Interact

You can run, view, and interact with a Publisher report on a dashboard page.

When you add a Publisher report to a dashboard page, the report includes a toolbar that provides these options:

- Analyze the data in the report.
- Select the layout template of the report.
- Change the output format of the report.
- Export the report.
- Send the report to an available destination such as a printer, fax, email, or FTP.
- Schedule the report.

When you configure an agent for a dashboard page that contains a Publisher report, be aware of these criteria:

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- The output format of the Publisher report must be PDF.
- The agent must be set to deliver content in PDF format.

You can print a dashboard page or a briefing book that contains a Publisher report in certain formats.

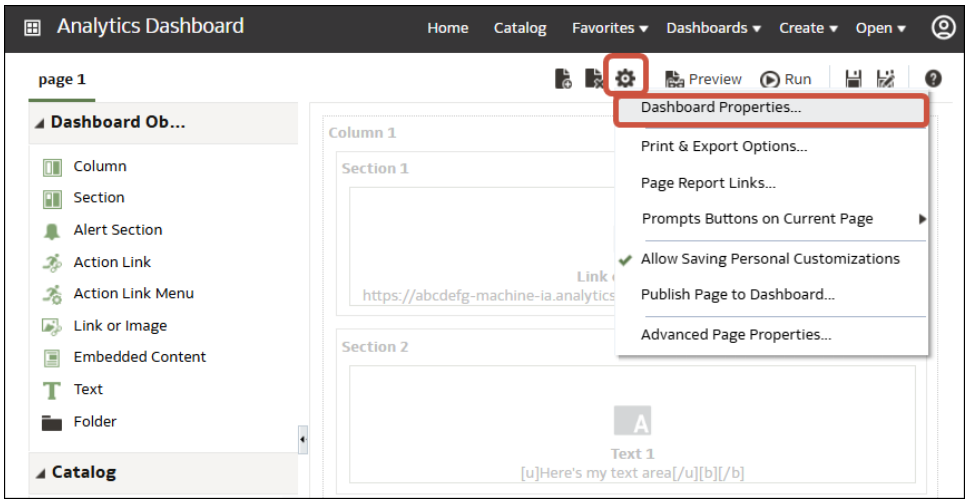
If you want to print a dashboard page that contains a Publisher report or to include the page in a briefing book, then you must keep the following points in mind:

- If you print the briefing book as PDF and if the output format of the Publisher report is PDF, then the Publisher report is printed after the other objects on the page. If you print a dashboard page that contains a Publisher report as PDF, but the dashboard page isn't part of a briefing book, then the Publisher report isn't printed.
- If you print the dashboard page or briefing book as MHTML, then the Publisher report isn't printed.

Configure the Style and Behavior of Dashboards and Pages

Use dashboard properties to configure style and behavior of dashboards and pages. For example, you might specify whether your team members can export, refresh, or print pages in a dashboard.

1. Open the dashboard for editing.
2. To specify the dashboard style and behavior, click **Tools** and select **Dashboard Properties**.



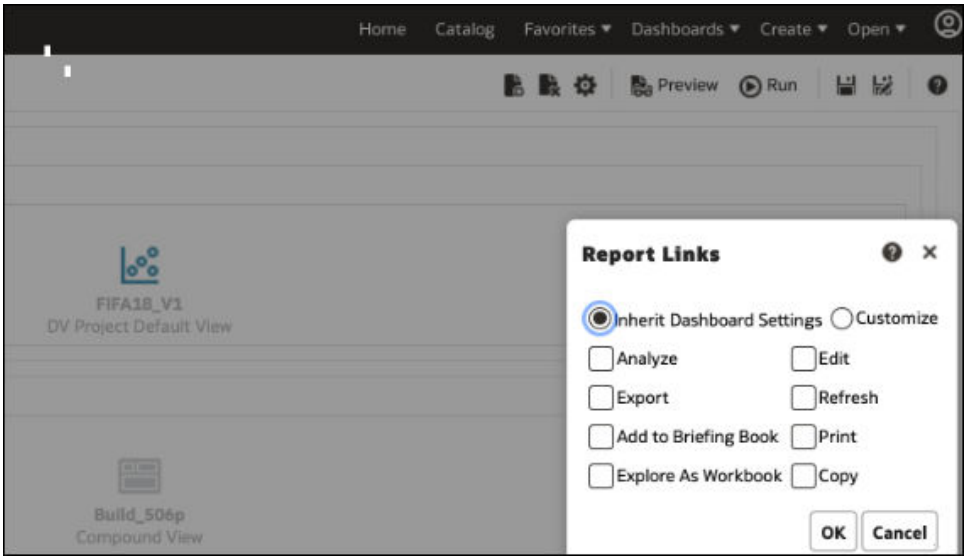
In the Dashboard Properties dialog, make the property changes that you want. For example:

- Use **Style** to select from a list of available dashboard styles if you want to change dashboard properties, such as logo, branding, page color, and link color. Administrators create styles and make them available to dashboard builders and users. If you want to use a style that isn't listed, ask your administrator to create a new style for you then start a new browser session and try again.
- Use **Dashboard Report Links** to specify which report links (Analyze, Edit, Refresh, Print, Export, Add to Briefing Book, and Copy) to include with analyses at the dashboard level. You can set these links at the dashboard page level or the analysis level (which overrides dashboard level links).

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- Use **Contains HTML Markup** if you have administrator privileges to format content with valid HTML markup, including JavaScript.
- Use **Hidden Page** to show the page heading of a hidden page when you navigate to it.
- Use **Section Collapsible in Accessibility Mode** to enable dashboard users to collapse and expand sections of the dashboard, including when in Accessibility Mode.

3. To specify the options displayed when content is embedded in an application, click **Tools**, then select **Page Report Links** to display the Report Links dialog. Select **Inherit Dashboard Settings** to embed dashboards with the same options as displayed in Oracle Analytics Cloud, or click **Customize** to change the options.



For example, you might click **Customize**, then click **Explore As Workbook** to display a link at the bottom of an embedded analysis that enables the dashboard user to explore the report as a visualization.

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4. To specify how a dashboard handles incoming navigation parameters, click **Tools** and select **Advanced Page Properties** to review navigation options.

   Incoming navigation parameters control the behavior of Oracle Analytics content shared to external portals or applications. For example, navigation parameters might direct users to a particular page in a dashboard, and format the content for PDF output. In the Advanced Page Properties dialog, you use the **Incoming Navigation Options** to specify whether navigation parameters are applied to all pages in the dashboard or just the landing page.

   You can configure the behavior of these navigation links:

   - **Prompted URL** - These links direct users to a specific dashboard page and can include formatting parameters. For example, a Prompted URL might go straight to a particular page, and format the content for PDF output.
   - **Go URL** - These links include parameters to control how content looks and behaves. For example, a Go URL might include a username and password, and a command to refresh the results on a page.
   - **"Navigate to BI Content" Actions** - These links use the Action Framework to direct users to specific areas of content.

5. For each type of navigation link, select the scope of the navigation parameters.
   - Click **Dashboard** to apply the navigation parameters to all pages in the dashboard. For example, if a prompted URL link formats the content for PDF output (using &Action=Print), then you format all pages in the dashboard for output to PDF.
   - Click **Page** to to apply the navigation parameters to the landing page only. For example, if a prompted URL link formats the content for PDF output (using &Action=Print), then you format just the landing page for output to PDF.

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6. Click **OK**, then click **Save**.

Change the Properties of Objects Added to Dashboard Pages

You can change the properties of objects that have been added to a dashboard page.

For example, you can change the column properties of the Brand Revenue analysis to specify the heading display in 14-point bold Helvetica font.

1. Open the dashboard for editing.
2. Navigate to the page that contains the object.
3. Hover the mouse pointer over the object in the Page Layout area to display the object's toolbar and click **Properties**.

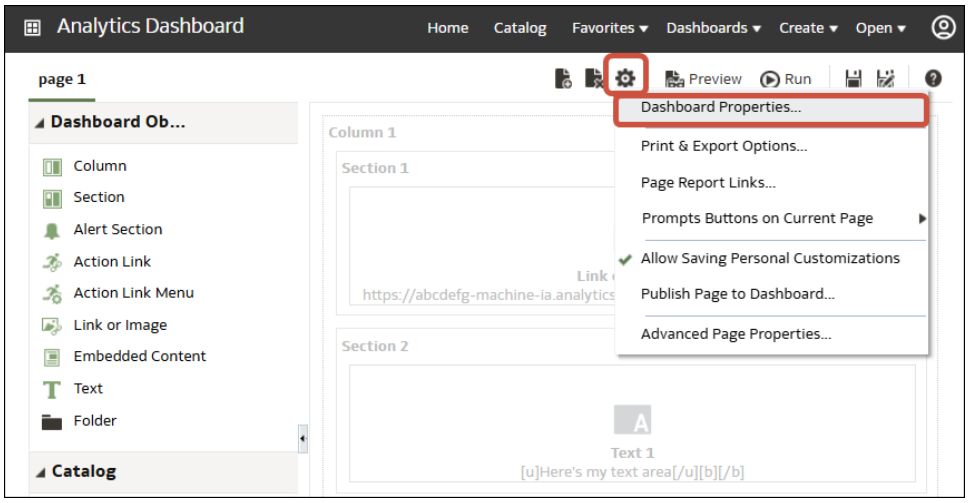
   Depending on the object type, you'll either display a menu of editing options or a properties dialog.
4. Make the property changes that you want.

   For example, for a dashboard section, you might select **Rename** to change the default section name, or for a dashboard web link you might change the caption or target URL.
5. Save your changes.

Make Dashboard Sections Collapsible In Accessibility Mode

Use dashboard properties to enable dashboard users to collapse and expand sections of a dashboard.

1. Open the dashboard for editing.
2. Click **Tools** and select **Dashboard Properties**.



3. Select **Section Collapsible in Accessibility Mode**.
4. Click **OK**, then click **Save**.

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Delete Objects on Dashboard Pages

If you add an object that you later decide that you don't want, then you can delete it.

For example, you can delete last year's Brand Revenue analysis from the Sales Performance dashboard, to replace it with the current year's analysis.

1. Open the dashboard for editing.
2. Navigate to the page that contains the object to delete.
3. Hover the mouse pointer over the object in the Page Layout area to display the object's toolbar and click **Delete**.

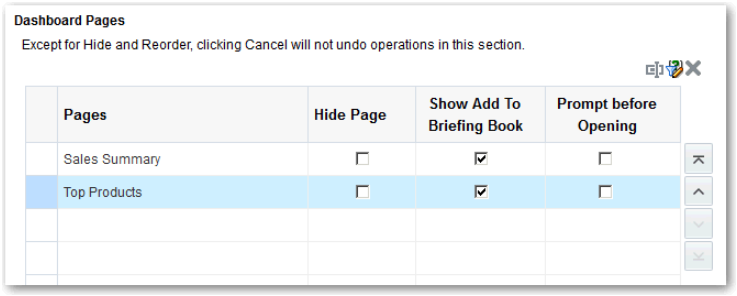
Delete Dashboard Pages

You can delete the current dashboard page, or one or more dashboard pages.

For example, you can delete pages 2 and 3 from the Sales Performance dashboard to retain only the page with the most recent Brand Revenue analysis.

You can delete one or more dashboard pages:

1. Open the dashboard for editing.
2. Click **Tools** and select **Dashboard Properties**.
3. For each page to delete:
   a. In the **Dashboard Pages** area of the dialog, select the page.
   b. On the Dashboard Pages toolbar, click **Delete.**



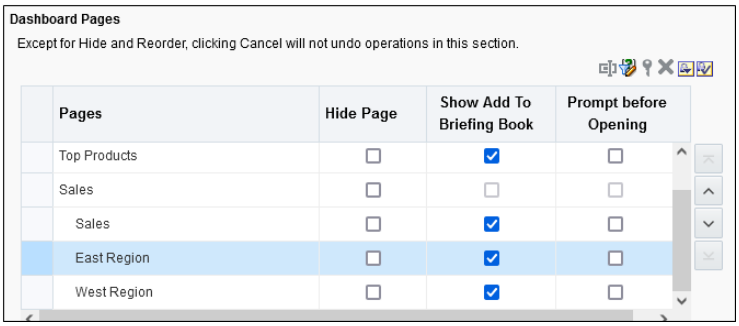
   c. Confirm the deletion.
4. Click **OK**.

Delete Dashboard Subpages

You can delete one or more dashboard subpages from within a dashboard page.

1. Open the dashboard for editing.
2. Click **Tools** and select **Dashboard Properties**.
3. For each subpage that you want to delete:
   a. In the **Dashboard Pages** area of the dialog, select the dashboard subpage that you want to delete.

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b. On the Dashboard Pages toolbar, click **Delete**.

c. Confirm the deletion.

4. Click **OK**.

Create and Manage Layouts for Dashboards and Dashboard Pages

You can specify and manage dashboard layouts for printing or exporting.

- About Custom Print and Export Layouts
- Create Custom Layouts
- Edit, Replace, or Remove Custom Layouts
- Items Not Supported for Custom Print Layouts in Oracle Analytics Publisher

About Custom Print and Export Layouts

You can create and define custom layouts for printing and exporting an entire dashboard or a single dashboard page.

Custom layouts allow you to:

- Produce high-quality printed dashboard content.
- Export dashboard content customized for Excel.

When you create a custom layout:

- The dashboard page is exported to Publisher, and the following items are auto-generated:
  - A Publisher report with a layout based on the exported dashboard layout.
  - A data model to retrieve data for the dashboard page components.
- The Publisher Report Editor opens in a new browser window with the auto-generated layout displayed as a thumbnail. The report editor allows you to edit, delete, or add a layout.

When you're creating a print layout, Publisher doesn't support some of the customizations and views such as hierarchical columns and map views.

After you've saved the custom layouts in Publisher, they're available for that dashboard and appear in the Custom Print & Export Layouts area of the Print & Export Options dialog.

If you delete the data model or the layouts manually from the Catalog, then the associated Publisher report won't work, and the layouts aren't available. If you delete an analysis, then the data model and layout are available but fail when run.

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Create Custom Layouts

You can create one or more custom layouts for printing and exporting an entire dashboard or a single dashboard page.

The administrator can control the display of the Custom Print & Export Layouts component.

1. Open the dashboard or dashboard page that you want to print or export.
2. On the Dashboard page toolbar, click **Tools** and select **Print & Export Options**.
3. In the Custom Print & Export Layouts area, click the gear icon, then select **Create Layouts**.

   The BI Publisher Report Editor opens in a new browser window with the auto-generated layout displayed as a thumbnail.
4. Make your changes in BI Publisher, and save the changes.
5. Close BI Publisher and save the dashboard.
6. To make the custom layouts available to users, do the following:
   a. Open the Print & Export Options dialog and go to the Custom Print & Export Layouts area.
   b. For each custom layout that you want to make available, select the following:
      - **PDF** - To make the layout available in the Print menu of a dashboard page.
      - **Excel** - To make the layout available in the Export to Excel menu of a dashboard page.
   c. Click **OK** to close the Print & Export Options dialog.
   d. Save the dashboard.

The analysis and dashboard font size is in pixels, but the Excel font size is in points. Therefore, when you export to Excel from an analysis or dashboard, the font size decreases to 75% of the analysis or dashboard font size.

Edit, Replace, or Remove Custom Layouts

You can edit, replace, or remove custom print and export layouts that you've created. For example, you might want to remove a custom print layout if the dashboard page to which the layout is associated has changed.

1. Open the dashboard or dashboard page.
2. On the Dashboard page toolbar, click **Tools** and select **Print & Export Options**.
3. In the Print & Export Options dialog, go to the Custom Print & Export Layouts area and click the gear icon, then select one of the following:
   - **Create and Edit Layouts** - A warning message is displayed indicating that the existing print layouts may not work properly if the dashboard page has been modified. Select one of the following and click **OK**:
     – **Keep existing layouts** - The BI Publisher Report Editor opens in a new browser window, where you can edit the existing layouts.
     – **Remove existing layouts and create new layouts** - The BI Publisher Report Editor opens in a new browser window, where you can create new layouts.

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- **Replace Layouts** - A warning message is displayed indicating that all the existing layouts will be replaced. Click **OK** to delete the associated BI Publisher report and data model, and auto-generate new layouts. The BI Publisher Report Editor opens in a new browser window, where you can create new layouts.
- **Remove Layouts** - A warning message is displayed indicating that all the existing layouts will be removed. Click **OK** to remove the layouts and the associated BI Publisher report and data model.

4. When you've finished editing, replacing, or removing layouts, click **OK** to close the Print & Export Options dialog.
5. Save the dashboard.

Items Not Supported for Custom Print Layouts in Oracle Analytics Publisher

Custom print layouts support a limited set of items.

If Publisher doesn't support an item, that item is removed from the layout and you see a message that indicates the reason for the unsupported item.

Print Dashboards

You typically view dashboards in electronic form. You can easily print a dashboard if you want to see its pages in PDF or HTML format.

For example, you can print a Stock Control dashboard page so you can refer to it during a visit to a supplier's factory. At this location, no external computing devices are permitted.

1. Open the dashboard.
2. Navigate to the dashboard page to print.
3. Click **Page Options**, then select **Print**.
4. Select **Printable PDF** or **Printable HTML**.
5. Open Adobe Acrobat or a browser window and print from there.

Organize Dashboard Pages in Briefing Books

You can organize dashboard pages in briefing books.

Topics:

- Add Content to New or Existing Briefing Books
- Edit the Content of Briefing Books
- Download Briefing Books
- Add a List of Briefing Books to a Dashboard Page

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Add Content to New or Existing Briefing Books

You can add the content of dashboard pages or individual analyses to new or existing briefing books. A briefing book is a collection of static or updatable snapshots of dashboard pages and individual analyses.

For example, you might add the contents of a Regional Revenue analysis to a briefing book each quarter so that you can review quarterly revenue.

1. Open the dashboard for editing.
2. Navigate to the page to add or that contains the analysis to add.
3. To add the results of an individual analysis to a briefing book:
   a. Edit the dashboard, and select **Tools**, then **Page Report Links**.
   b. Select the **Customize** option and click **Add to Briefing Book**.
   c. Click **OK**.
4. To add the contents of the dashboard page to a briefing book:
   a. Click **Page Options** and select **Add To Briefing Book**.
   b. In the Save Briefing Book Content dialog, click **Browse**.
   c. In the Save As dialog, choose where to save content, then click OK.

Edit the Content of Briefing Books

You can edit briefing books to reorder content, delete content, and change the content type, navigation link properties, and content description.

For example, you can edit a briefing book to change the content description to reflect the periods of Brand Revenue analysis data.

1. In the global header, click **Catalog** to display the Catalog page.
2. Navigate to the briefing book to edit and click **Edit**.
3. In the Edit Briefing Book dialog, change the content:
   a. Select the content.
   b. Click **Edit Page** and change the content type, the number of navigation links to follow for updatable content, or the content description.
   c. Click **OK**.
4. Click **OK**.

Download Briefing Books

You can download briefing books to share them for viewing in different formats.

You can:

- Download briefing books to your computer in MHTML format and then share them for offline viewing.
- Download briefing books in PDF format and print them (you'll need Adobe Reader). The PDF version of a briefing book contains an automatically generated table of contents.

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For example, you can download a briefing book that contains all the Brand Revenue analyses for the year. After downloading, you can view the briefing book in Adobe Reader and print it in preparation for a sales presentation.

1. In the global header, click **Catalog** to display the Catalog page.
2. Navigate to the briefing book to download.
3. Perform one of the following actions:
   - To download the briefing book in PDF format, click **PDF** and open or save the file.
   - To download the briefing book in MHTML format, click **Web Archive (.mht)** and open or save the file.
     Downloaded briefing books are saved with an .mht file extension and can be opened in a browser. You can then email or share the briefing book.

Add a List of Briefing Books to a Dashboard Page

You can add a list of briefing books to a dashboard page.

For example, you can add a list of briefing books that contain Brand Revenue analyses to a Sales Performance dashboard page.

1. Open the dashboard for editing.
2. Navigate to the page to which you want to add a list of briefing books.
3. From the Dashboard Objects pane, drag and drop a folder object into a section.
4. Hover the mouse pointer over the folder object in the Page Layout area to display the object's toolbar and click **Properties**.
5. In the Folder Properties dialog, in the **Folder** field, enter the folder that contains the briefing books to list.
6. In the **Expand** box, specify whether to show an expanded view of the folder.
7. Click **OK** and click **Save** to save the dashboard.

Save and Restore Dashboard State

You can save personalized settings that you make for a dashboard page and later apply these settings to any dashboard.

As you work with dashboard pages, you frequently make the following types of settings:

- Filters
- Prompts
- Column sorts
- Drills in analyses
- Section expansion and collapse

If you save the settings as a customization, you don’t have to make these choices manually each time you access the dashboard page.

Topics:

- Save Customizations of Dashboard Pages
- Apply Saved Customizations

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- Edit Saved Customizations
- Clear the Current Customization

Save Customizations of Dashboard Pages

You can save customization for use by you or by others who have author, but not a consumer, role. You can also specify whether the customization is to be the default customization for a dashboard page, for you or for others.

For example, you can save a customization of the Sales Performance dashboard. The customization enables sales managers with permission to see a customized view of the Brand Revenue analysis.

1. Open the dashboard.
2. Navigate to the page on which you want to save a customization.
3. Make your personalized settings.
4. Click **Page Options** and select **Save Current Customization**.
5. Enter a descriptive name for the customization and specify for whom the customization is to be saved.
6. Click **OK**.

Apply Saved Customizations

You can apply customizations that you have saved for your own personal use. You can also apply customizations that have been saved by someone else for your use.

For example, you can apply a shared Sales Team customization that was created for customized viewing of a Brand Revenue analysis by members of the sales team.

1. Open the dashboard.
2. Navigate to the page that contains the customization to apply.
3. Click **Page Options** and select **Apply Saved Customization**.

   Your personal saved customizations are shown, followed by shared saved customizations.
4. Click a saved customization in the list to apply it to the dashboard page.

Edit Saved Customizations

You can rename and delete customizations and change which customization to use as your default.

For example, you can change your default customization to one that you just saved for the Sales Performance dashboard.

1. Open the dashboard.
2. Navigate to the page that contains the customization to edit.
3. Click **Page Options** and select **Edit Saved Customizations**.
4. Rename or delete customizations or change the default customization, as appropriate.
5. Click **OK**.

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Clear the Current Customization

You can clear the current customization if you decide that the choices for items such as filters, prompts, column sorts, drills in analyses, and section expansion and collapse aren't what you want.

For example, you can clear a customization that collapses the display of the Brand Revenue analysis.

To clear the current customization, click **Page Options** and select **Clear My Customization**. The current customization is cleared.

Publish Dashboard Pages

You can publish your dashboard pages to a shared dashboard and make them available to other users.

When you publish a dashboard page:

- Contents on the dashboard page are copied to the destination dashboard, and their references are updated.
- References to the shared content are retained.
- Unsaved contents on the dashboard page are published with the saved contents.
- Ensure that other users who might display the published dashboard have the appropriate privileges for the objects on those pages. For example, if a page contains a BI Publisher report, then users must have privileges to view that report.

1. Open the dashboard for editing and navigate to the page you want to publish.
2. Click **Tools** (), then select **Publish Page to Dashboard**.

   A message is displayed if you have unsaved contents on the dashboard page. Click **OK** to publish them.
3. In the Publish Page to Dashboard dialog, specify the destination dashboard in the Dashboard field.

   A message is displayed if contents such as a page, analyses, and prompts exist in the destination dashboard. Click **OK** to replace the existing content in the destination dashboard.
4. 5. Click **OK** to publish the page to the destination dashboard.

Link to Dashboard Pages

You can create links to dashboard pages so that you can easily enable other users to display those pages.

For example, you can create a link to the Sales Performance dashboard and send the link to team members in an email.

Topics:

- About Bookmark Links
- Create Bookmark Links to Dashboard Pages

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About Bookmark Links

A bookmark link is a URL that captures the path to a dashboard page and all aspects of the page state.

After you create a bookmark link, you can:

- Save the link as a bookmark so that you can return to the exact same page content at a later time.
- Copy and send the link to other users who then can view the exact same content that you're viewing. They can do this providing they have the same permissions as you and have access to the page.

When you create a bookmark link, the state of a dashboard page is saved in the catalog as a hidden bookmark object. The default number of days to save the object is 30.

Create Bookmark Links to Dashboard Pages

You can create bookmark links to dashboard pages that you can revisit or share with others.

1. Open the dashboard.
2. Navigate to the page for which you want to create the link.
3. From the Page Options menu, select **Create Bookmark Link**.

The link is displayed in the Address Bar of the browser. If the link is a bookmark link, then you can save it as a bookmark or copy and send it to other users.

You can drill in an analysis that has been set to replace the dashboard with the new results. You can do the replacement rather than showing the new results directly on the dashboard. In this case, the **Create Bookmark Link** option is displayed as a link below the new results. This option isn't displayed on the Page Options menu.

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25

Filter and Select Data for Analyses

This chapter describes how to filter and select data for analyses.

Topics:

- Typical Workflow to Filter and Select Data
- About Filters and Selection Steps
- Create Filters for Columns
- Edit Filters for Columns
- Reuse Filters
- Use a Saved Analysis as a Filter
- Advanced Techniques: How Dashboard Prompts and Analysis Prompts Interact
- Refine Selections of Data
- Manipulate Members with Groups and Calculated Items

Typical Workflow to Filter and Select Data

Here are the common tasks to start filtering and selecting data to display in analyses.

Task	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Your First Analysis
Create a filter	Limit the results that are displayed when an analysis runs.	Create Filters for Columns
Edit a filter	Change the operator and values in a filter.	Edit Filters for Columns
Save a filter	Save filters in the catalog or with the analysis.	Save Inline and Named Filters
Create a selection step	Select members, new groups, existing groups, new calculated items and conditions for displaying data.	Create Selection Steps
Create a group	Group column values for display in an analysis.	Create Groups and Calculated Items
Create a calculated item	Apply a function to column values to calculate a new value.	Create Groups and Calculated Items

About Filters and Selection Steps

You use both filters and selection steps to limit the results in an analysis. For example, you might list the top ten sales performers, or the most profitable customers. A filter is applied to a column before selection steps are applied.

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- Filters are applied directly to columns before the query is aggregated. Filters affect the query and thus the resulting values for measures. For example, suppose that you have a list of members in which the aggregate sums to 100. Over time, more members meet the filter criteria and are filtered in, which increases the aggregate sum to 200.
- Selection steps are applied after the query is aggregated and affect only the members displayed, not the resulting aggregate values. For example, suppose that you have a list of members in which the aggregate sums to 100. If you remove one of the members using a selection step, then the aggregate sum remains at 100.

About Prompted Filters

A prompted filter's operator is set to **is prompted**. This operator is valid for a column that contains text, numbers, or dates.

When you select the **is prompted** operator for a filter's column, you flag the column as ready to be filtered by a prompt. When a prompt is used, results include only records where the data in the column that is prompted matches the user's choices.

The **is prompted** operator is required for columns that are included in prompts where no prefiltered values are wanted.

Create Filters for Columns

You can create filters for columns.

Video

Topics:

- Create Inline and Named Filters
- Specify Values for Filters
- Embed an EVALUATE_PREDICATE Function in a Filter
- Combine and Group Filters
- Save Inline and Named Filters

A filter limits the results that are displayed when an analysis is run. Together with the columns that you select for the analysis, filters determine what the results contain. You specify filter criteria to display only the results that you want to show.

Create Inline and Named Filters

In most cases, you create and include a filter "inline" for use in only one analysis. You can also create a named filter to reuse the filter across all analyses and dashboards. Unless you want to reuse the filter, create an inline filter.

For example, as a sales consultant, you can analyze revenue for only those brands for which you're responsible.

Create an inline filter from the Selected Columns pane on the Criteria tab

1. Open the analysis for editing.
2. On the Selected Columns pane of the Criteria tab, click **Options** beside the column name and select **Filter**.

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Create an inline filter from the Filters pane on the Criteria tab

1. Open the analysis for editing.
2. On the Filters pane of the Criteria tab, click **Create a filter for the current Subject Area**.
3. Select a column name from the menu.

Create a named filter from the Home page

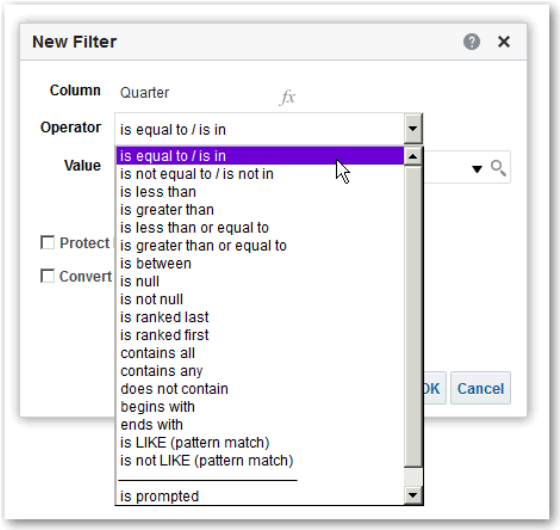
1. From the Classic Home page, in the **Create** pane, click **More** under **Analysis and Interactive Reporting**, then click **Filter**.
2. In the Select Subject Area dialog, select the data source that you want to filter. The New Filters dialog is displayed.

Specify Values for Filters

You can specify the values for a filter that displays in an analysis only those values in which you're interested.

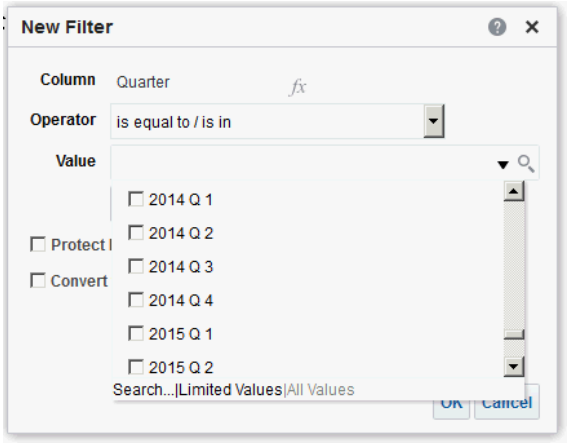
For example, in the Brand Revenue analysis, a filter can limit the analysis results to only the first quarter values in three years. As a result, you can discover how revenue performed year-to-year in these quarters.

1. In the New Filter dialog, select the appropriate operator such as **is equal to / is in**.



2. Select values from the list or click the **Search** icon to find more values from which to select.

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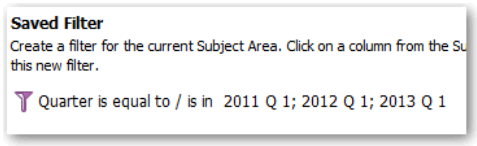


3. Optional: Select **Protect Filter** to prevent prompts from overwriting the filter.
4. Optional: Select **Convert this Filter to SQL**.
5. Click **OK**.

- For inline filters, the filter is displayed in the Filters pane on the Criteria tab.



- For named filters, the filter is displayed in the Saved Filters pane.



After specifying values, save the filter as named or inline.

Embed an EVALUATE_PREDICATE Function in a Filter

You can add an EVALUATE_PREDICATE function as an inline filter clause.

You can use this function when you can't create the required inline filter clause with filter operators. Use this function only for SQL functions and for database functions with a return type of Boolean. You can't use this function with hierarchical columns, XML data sources, and all multidimensional data sources. You need the Add EVALUATE_PREDICATE Function privilege granted by an administrator to embed this function in a filter.

1. Open the analysis for editing.
2. On the Filters pane of the Criteria tab, click **More options** and select **Add EVALUATE_PREDICATE Function**.
3. Enter the function's formula in the New EVALUATE_PREDICATE Function dialog.
4. Click **OK** to add the EVALUATE_PREDICATE function in the Filters pane.

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For example, you can add the following filter clause using an EVALUATE_PREDICATE function to exclude values with less than six letters in the Products.P4 Brand column.

```
SELECT
0 s_0,
"A - Sample Sales"."Products"."P3 LOB s_1,
"A - Sample Sales"."Products"."P4 Brand" s_2,
"A - Sample Sales"."Base Facts"."1- Revenue" s_3
FROM "A - Sample Sales"
Where EVALUATE_PREDICATE('length(%1)>6',"A - Sample Sales"."Products"."P4
Brand").
ORDER BY 1,2,3
```

Combine and Group Filters

You can combine and group multiple inline filters to create complex filters without using SQL statements.

You group or combine filters to establish the precedence in which data in an analysis is filtered. When you add two or more inline filters to an analysis or named filters, by default, the inline filters are combined using the **AND** Boolean operator. The **AND** operator indicates that the criteria specified in all the inline filters must be met to determine the results when an analysis is run.

You use the **OR** Boolean operator to indicate that the criteria specified in at least one of the filters must be met to determine the results of the analysis. The **OR** operator helps you to create a group of multiple filters using alternate criteria.

1. Open for editing a named filter or an analysis that contains inline filters.
2. On the Filters pane of the Criteria tab, confirm that the analysis contains two or more inline filters. Alternatively, on the Saved Filter pane, confirm that the named filter contains two or more inline filters.
3. On the Saved Filter pane or in the Filters pane of the Criteria tab, notice how the inline filters are combined using **AND** or **OR** operators.
4. Click the word **AND** before an inline filter to change an **AND** operator to an **OR** operator. You can toggle between the **AND** and **OR** operator in this way.
5. Change the **AND** and **OR** operators for other inline filters to create the required filter combinations. Alternatively, create more inline filters and change the **AND** and **OR** operators.
6. Click **Save Analysis** or **Save Filter** to save the filter combinations.

Save Inline and Named Filters

You can save inline filters and named filters.

When you create an inline filter in the Filters pane, you can optionally save the inline filter as a named filter. When you save an inline filter as a named filter, other people on your team can use this filter in a new analysis. You can also create a named filter as a standalone object from the global header.

For example, you can save a filter for the Quarter column in a shared folder in the catalog. As a result, your manager has access to that filter. Suppose that you save the filter that limits quarters to 2011 Q1, 2012 Q1, and 2013 Q1. Your manager can use this filter in a Product Revenue analysis to find how products performed only during these quarters.

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To save a named filter, simply click **Save As** on the toolbar, specify folder in the catalog, and click **OK**.

To save an inline filter as a named filter, do the following:

1. On the Filters pane on the Criteria tab, click **More options** and select **Save Filters**.
2. Specify a folder in the Oracle BI Presentation Catalog.
3. Click **OK**.

Edit Filters for Columns

You can edit an inline filter when you need to make changes to it. When you edit and save a named filter, the changes that you make to the filter propagate to wherever the filter is used.

For example, you can edit the filter for the Quarter column to include data for the "2010 Q1" quarter. This data is propagated to every analysis where the filter is applied.

1. Display the Edit Filter dialog.

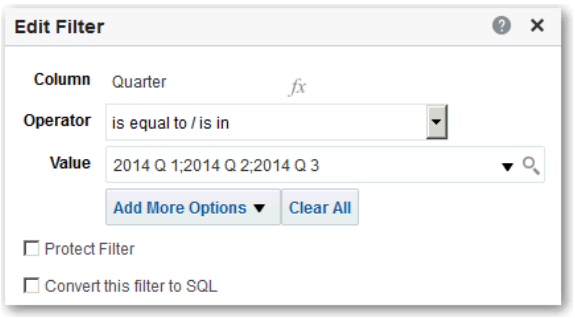
   For example, on the Saved Filter pane or in the Filters pane of the Criteria tab, hover the cursor over the filter, then click **Edit Filter**.



2. In the Edit Filter dialog, change the selection for any of the options that are described in the following table:

Option	Description
Operator	Select an operator to apply to the values that are specified in the **Value** field. The **Operator** list is populated based on the function that you're performing (such as creating a filter or creating a dashboard prompt). It's also populated based on the type of column that you selected. For example, you can choose **is greater than** to use only values greater than the value that you select in the **Value** list. If you select 100,000 from the **Value** list, then the filter uses values from the column that are greater than 100,000. You can use this information in an analysis to focus on products that are performing best.
Value	Specify a value or values from the list that contains members of the column that you select. You can also enter the value into the field manually or search. For example, suppose that you want to edit a filter that you have created for the Products column of an analysis. The **Value** field contains a list of products from the column. Depending on the operator that you chose, you can select one or more products to include in the analysis.
Protect Filter	Select this option to prevent prompts from overwriting the filter.
Convert this Filter to SQL	Select this option to convert the filter to a SQL WHERE clause that you can edit manually. After you convert a filter to SQL code, you can no longer view and edit the filter in the Edit Filter dialog.

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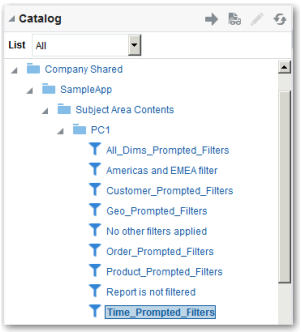
3. Click **OK**.

Reuse Filters

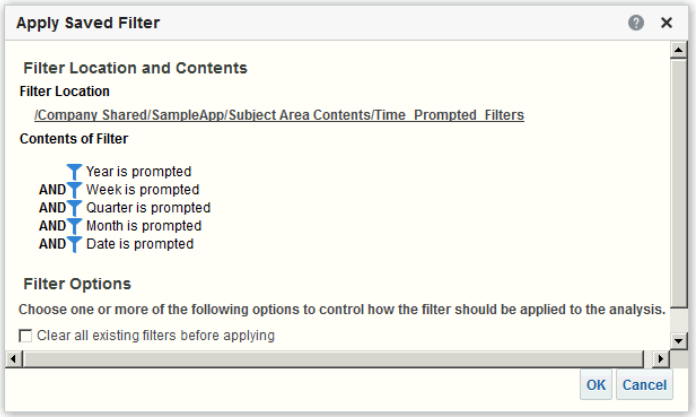
You can reuse a filter that you have saved as a named filter in the catalog. You can apply a saved filter to an existing analysis.

For example, you can apply a filter for the Quarter column to the Brand Revenue analysis.

1. On the Catalog pane on the Criteria tab, select a named filter.



2. Click **Add More Options**.



3. Click **OK**.

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Use a Saved Analysis as a Filter

You can create a filter based on the values that are returned by another analysis. You can use any saved analysis that returns a column of values to filter the matching column in an analysis.

For example, you can create a filter that is based on the results of the Brand Revenue analysis.

1. Create or open a named filter or analysis to which you want to apply an inline filter.
2. Find the filter.
   - If you're working with a named filter, then locate the Saved Filter pane. From the Subject Areas pane, select the column for which you want to create a filter.
   - If you're working with an inline filter, then locate the Filters Pane. From the Filters Pane toolbar, click **Create a filter for the current Subject Area**. Select the column for which you want to create the filter.
3. In the **Operator** field of the New Filter dialog, select **is based on the results of another analysis**.
4. In the **Saved Analysis** field, enter the path to the analysis or click **Browse** to locate it.
5. Select a column name from the **Use Values in Column** menu.
6. In the **Relationship** field, select the appropriate relationship between the results and the column to be filtered.
7. Click **OK**.

Advanced Techniques: How Dashboard Prompts and Analysis Prompts Interact

You can combine dashboard prompts and analysis prompts to quickly display precise, meaningful data.

There are various ways that you can combine prompts.

Wiring Method	Description
Auto wiring	Auto wiring assumes that you intended to create a functioning prompt for the column and, therefore, activates and applies the prompt. Auto wiring is applied when you create an analysis and add a column prompt. This method doesn't require the **is prompted** filter operator. Any unprotected filter can be used. Setting the filter operator to **is prompted** provides a more precise level of control between prompts and filters than the auto wiring method. See the "Filter operator is set to **is prompted**" row in this table.
Constrained prompts	Use this method with several columns in a prompt to constrain the user's prompt choice based on subsequent choices. Constrained prompts can be set up on the Prompt options dialog to specify which prompt narrows the choices. For example, suppose one column filters on region and the next column filters on city. Then, the city column can be constrained to show only cities in the selected region.

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Wiring Method	Description
Filter operator is set to **is Prompted**.	Use this method to build complex prompts that interact with filters. When you use this method, you have full control over how the dashboard prompts, inline prompts, and filters apply to the embedded analysis. See About Prompted Filters.
Selection Steps Override with Prompts Option	Use this method to use an analysis or dashboard column prompt to provide the data choices for a specific member selection step. Because you can't use filters with hierarchical columns, selection steps are the only way that you can use prompts with hierarchical columns. Only one selection step per column selection step set can be overridden with a prompt. All selection steps before and after the overridden step are processed as specified. See Refining Selections of Data and Overriding a Selection Step with a Prompt.
Protected versus Unprotected filters	Use this method to determine whether the dashboard prompt can supply the inline prompt's value when the corresponding column's filter value is set to something other than **Is prompted**. The unprotected and protected filter settings can be used when a dashboard prompt and inline prompt reside on the same dashboard. Also, both prompts must have been created for the same column. When the column's filter value is unprotected, the dashboard prompt value determines the analysis' results. Suppose the filter value is set to something other than **Is prompted** (for example, **Is equal to/is in**) and the filter is set to protected filter. Then, the dashboard prompt can't determine the report results.

Refine Selections of Data

As you specify which data members to include in an analysis, you create selections of data from the data source. Each selection specifies the criteria for a set of members for a particular column, such as Product or Geography.

Each selection consists of one or more steps. A step is an instruction that affects the selection, such as add Product members whose values contain the text "ABC." The order in which steps are performed affects the selection of data. Each step acts incrementally on the results from previous steps, rather than acting on all the members for that column.

Topics:

- Create Selection Steps
- Edit Selection Steps
- Save Selection Steps for Reuse
- Advanced Techniques: Create Condition Steps

Create Selection Steps

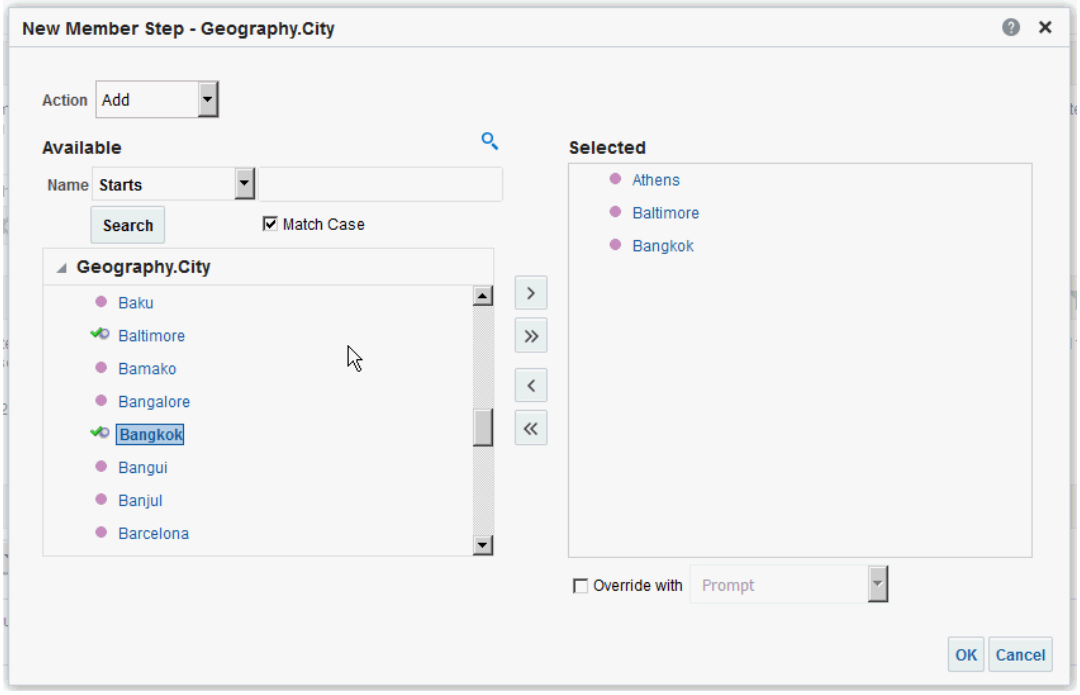
Selection steps help users display the data they want to analyze. When you add a column to an analysis, an implicit "Start with all members" step is added. The "all" implies all the members of the column after filters are applied.

For example, you can create a selection step to specify criteria for the following members in an Office column: Baltimore, Austin, and Athens.

1. Open the analysis for editing.

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2. Select the Criteria tab.
3. Display the Selection Steps pane by clicking **Show Selection Steps Pane** on the toolbar.
4. Click **Then, New Step**, and select the kind of step to create. For example, you can specify a list of selected members for the step.
5. For a member step, select **Add**, **Keep Only**, or **Remove** from the **Action** list.
6. If you're creating a member step, then move the members to include in the step from the Available area to the Selected area.



7. Specify the appropriate values for the condition such as the action, measure, and operator to use for the values of the column.
8. Click **OK**.

Edit Selection Steps

You can edit a selection step for an analysis or a selection step that has been saved as a group object.

For example, you can edit a member step for the Offices column in the Brand Revenue analysis. You can add then add another city to the list of cities.

1. Open the analysis for editing.
2. Click on the Results tab.
3. On the Selection Steps pane, hover the mouse pointer over the selection step that you want to edit.
4. Click the pencil icon on the toolbar.
5. Perform the appropriate edits. For example, add one or more members from the column to the step.
6. Click **OK**.

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Save Selection Steps for Reuse

If you have created a set of selection steps, then you can reuse them if you save them as a group in the catalog.

For example, you can reuse the selection steps for the Offices column as a group object. Doing this enables the set to be used inline with the Brand Revenue analysis.

1. Open the analysis for editing.
2. On the Results tab, display the Selection Steps pane.
3. Click **Save Selection Steps** to the far right of the column name.
4. In the **Save In** field, save it in /My Folders/*subfolder* (for personal use) or /Shared Folders/*subfolder* to share it with other users.
5. Enter a name for the saved selection steps.
6. Click **OK**.

Advanced Techniques: Create Condition Steps

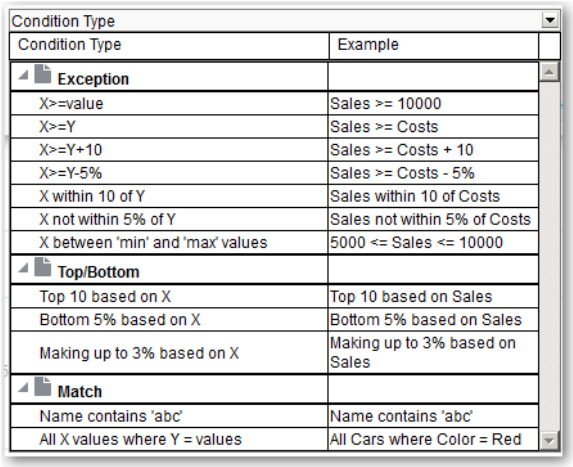
One type of selection step that you can create is a condition step. Most people don't need to perform this task.

You specify that members are selected from a column based on a condition. The condition can be one of various types including based on measures or on top/bottom values. This member list is dynamic and determined at runtime. For example, you can select the top 5% of members based on Brand Revenue.

1. Open the analysis for editing.
2. Select the Criteria tab.
3. Display the Selection Steps pane by clicking **Show Selection Steps Pane** on the toolbar.
4. Click **Then, New Step**, then select **Apply a Condition**.
5. In the New Condition Step dialog, select the type of condition to create, as described in the following table.

Type	Description
Exception	Select members using comparison values for measure columns. A sample condition is "Sales > Cost +10%."
Top/Bottom	Select the specified number of members after ranking the members by the specified measure column. You can specify an exact number of members or a percentage of the total members. Sample conditions are "Top 10 based on Sales" and "Top 5% based on cost.
Match	Select members based on matches with text strings and attribute values. A sample condition is "Name contains abc." This type is available only for columns that have a data type of string.
Time/Ordinal	Select members based on ranges of time and on hierarchical levels. A sample condition is "From July 2012 to December 2012." This type is available only for columns with a data type that relates to time.

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The components in this dialog differ slightly, depending on which type you select.

6. In the **Action** box, select the type of action to create for the members. You can select to add the selected members to the selection, keep only the selected members and remove all others. Or, you can select to remove the selected members from the selection.
7. In the box beside the action type, select the column for whose members you're creating the condition step.
8. Enter the appropriate values for the various fields of the dialog.

   For example, select the **Operator** based on the type of condition. For example, select Within for the Exception type.
9. Use the **Override with** box to specify whether an analysis prompt, a dashboard prompt, or a variable can override the values that you specify in this condition.

   Depending on what you're overriding, you can override certain values with a prompt, a presentation variable, a session variable, or a semantic model (repository) variable.

   If you select a variable type, then enter the name of the variable in the field. For example, suppose that you have a column called EMPLOYEE_ID. You can specify USER as the session variable with which to override the value of that column. When a user signs in, the column value is set to his user name. See Advanced Techniques: Reference Stored Values in Variables.

   In a list of steps, specify that only one step in the list can be overridden by a prompt or presentation variable.
10. In the **For** area, qualify all of the dimensions of the analysis other than the dimension whose members you want to select.

    Do this when creating condition steps of type Exception or Top/Bottom. For each dimension, you select which of its members to include. You can select specific members, or All, which specifies to aggregate the members when creating the condition. For example, suppose that you're qualifying the Region dimension. You can select a specific region, such as East, whose value is used in the New Condition Step dialog condition. If you select All, then the values of all regions are aggregated and used in the condition.

    You can use the **For** area to create a qualified data reference (QDR). A QDR is a qualifier that limits one or more of the dimensions to retrieve a single value for a measure column. A QDR is useful when you want to temporarily reference a measure column value without affecting the current status of the dimensions. The following is an example of a QDR:

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```
Add members of Total Products (Rgd Sk Lvl) where "A - Sample Sales"."Base
Facts"."1- Revenue", For: Cust Segments Hier: 'Active Singles', 'Baby Boomers'
is greater than "A - Sample Sales"."Base Facts"."1- Revenue", For: Cust
Segments"
```

When you specify a QDR, you can specify multiple members for limiting the dimensions. When you specify multiple members, the measure column value is aggregated using the default aggregation. For example, suppose that you want to create a condition for displaying those Regions in which Units is greater than 100. Suppose that you create a QDR for the Year dimension that specifies 2010 and 2011 and that the default aggregation is Sum. If the values for 2010 and 2011 for the Central region are 50 and 60 respectively, then both those years are displayed. Their sum exceeds the 100 units that were indicated.

11. Click **OK**.

Manipulate Members with Groups and Calculated Items

You can manipulate members using groups and calculated items.

Topics:

- About Groups and Calculated Items
- Create Groups and Calculated Items
- Edit Groups and Calculated Items
- View Group Contents
- Save Groups and Calculated Items
- Reuse a Group or Calculated Item in an Analysis
- Delete Groups and Calculated Items

About Groups and Calculated Items

You can create a group or calculated item as a way to display data in a table, pivot table, trellis, heat matrix, or graph.

Groups and calculated items enable you to add new "members" to a column, when those members don’t exist in the data source. These members are also known as "custom members."

Use a group to define members of a column, as a list of members or a set of selection steps that generate a list of members. A group is represented as a member.

A calculated item is a computation between members, which is represented as a single member that can’t be drilled. When you create a calculated item, you add a new member in which you have selected how to aggregate the item. You can aggregate using Sum or Average or custom formula.

Create Groups and Calculated Items

Use a group or calculated item to add new "members" to a column.

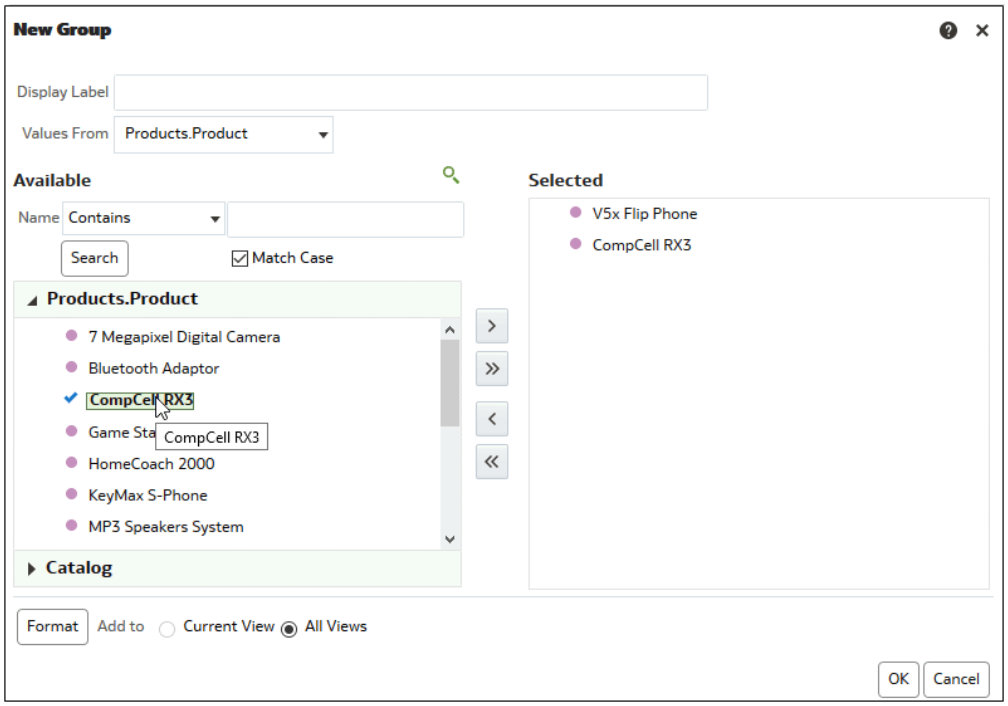
For example, you can review how much revenue was generated for mobile devices and compare that number to other product types. You can create a group called Mobile Devices for the Product column that includes Flip Phones and Smart Phones.

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Video

1. Open the analysis for editing.
2. On the toolbar of the Results tab, click **New Group** or **New Calculated Item**.

   The New Group or New Calculated Item dialog is displayed.
3. Enter a value for **Display Label** for the group or calculated item when it's displayed in a view.
4. In the **Values From** list, select the column whose values you want to include in the group or calculated item.
5. If you're creating a calculated item, select the function for the calculated item.
6. Move the appropriate column values from the Available area to the Selected area.

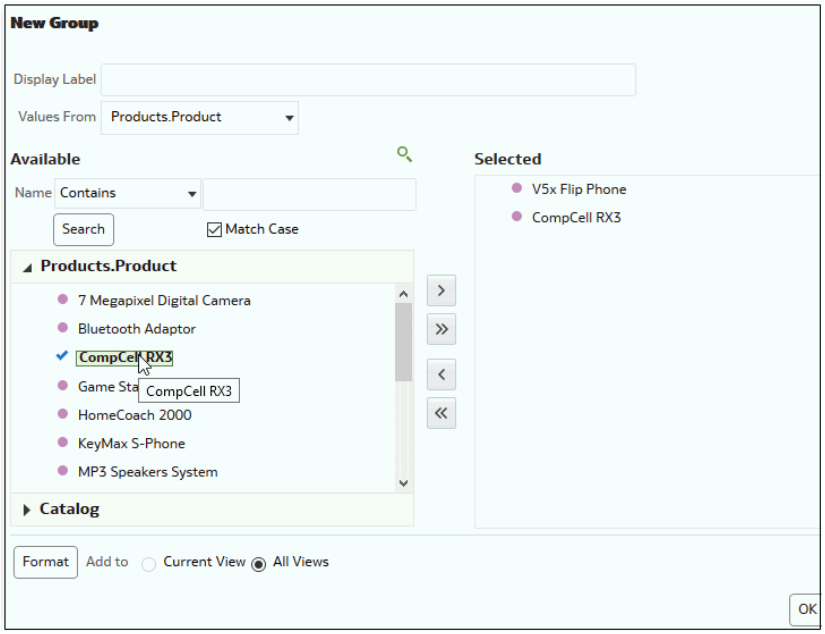


7. For a calculated item with **Custom Formula** selected as the function, select mathematical operators to include in the function using the toolbar. You can also use these functions: Absolute, Ceiling, Floor, Round, and Sqrt.

   A formula creates a dynamic custom grouping within the view. All measures referenced in a formula must be from the same column and must be present in the results. Formulas can be inserted into, or combined with, other calculated items.

   Instead of specifying a named item for columns, you can specify $n or $-n. Here, *n* is an integer that indicates the item's row position. If you specify $n, then the measure is taken from the *n*th row. If you specify $-n, then the measure is taken from the *n*th to the last row.

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8. Optional: If you're creating a calculated item, select **Remove calculated item members from view**.

   Use this box to suppress the display of members that you have included in the calculated item in the view.

9. Click **OK**.

   By default, the new group or calculated item is created for all views in the analysis.

Edit Groups and Calculated Items

You can edit groups and calculated items through the Selection Steps pane or from the catalog pane. You can also edit groups and calculated items in a table, pivot table, heat matrix, or trellis.

For example, you can edit a group to include the Game Station and Plasma Television members.

Use one the following methods to edit a group or calculated item:

- In the Selection Steps pane, click the link to the group or calculated item, and then click **Edit**.
- In the Catalog pane (if you saved it in the Catalog), select the object, and click **Edit**.
- In a table, pivot table, heat matrix, or trellis (on an outside edge), right-click the group or calculated item and select **Edit Group** or **Edit Calculated Item**.

View Group Contents

You can view the contents of a group to verify that it contains the members that you want.

For example, suppose you created a group of categories in a Product Category column. You can view the group contents to verify that it contains the appropriate categories.

1. Open the analysis for editing.
2. Click on the Results tab.

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3. In the table view, right-click on the cell that contains the group.
4. Select **View Group Definition**.



5. Click **Close**.

Save Groups and Calculated Items

You can save a group or calculated item as either an inline object (with an analysis) or as a named object (a standalone object).

For example, you can save the Mobile Devices group as a named object in the catalog, for reuse in the Brand Revenue analysis.

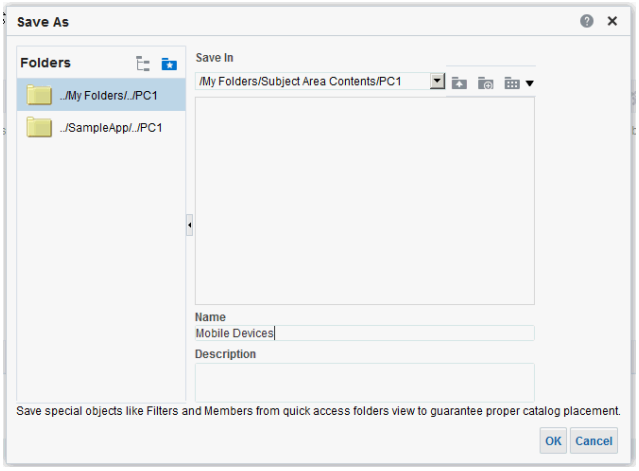
Save a group or calculated item as an inline object

- To save the analysis and the group or calculated item that it contains, click **Save Analysis**.

  The group or calculated item is saved as a part of the analysis.

Save a group or calculated item as a named object

1. On the Results tab, display the Selection Steps pane.
2. Click the link for the group or calculated item.
3. Select **Save Group As** or **Save Calc Item As**.



4. Enter a folder in the **Save In** field.
5. Click **OK**.

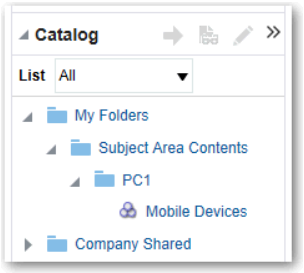
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Reuse a Group or Calculated Item in an Analysis

You can add a group or calculated item to the same column on which it was created in another analysis. The group or calculated item can be either a list of members or a set of selection steps.

For example, you can display the Brand Revenue analysis and add the group members from the Mobile Devices group. The members of the Mobile Devices group are included as an "Add" step in the Selection Steps pane.

1. On the Results tab, display an analysis containing the same column to which you want to apply the selections from a group or calculated item.
2. In the Catalog pane, select the group or calculated item.



3. On the toolbar of the Catalog pane, click **Add More Options**.
4. Select **Add** to add the group or calculated item itself. Select **Add Members** to add only the group or calculated item members.

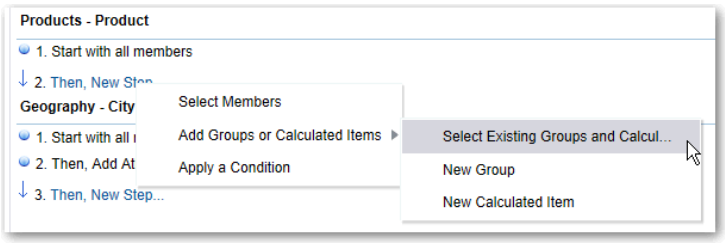
Reuse a group or calculated item from the Edit Member Step dialog:

1. On the Results tab, display an analysis containing the same column to which you want to apply the selections from a group or calculated item.
2. Display the Selection Steps pane.
3. In the entry for the column you want, click the pencil icon.
4. From the Action menu, select **Start with Group or Calculated Item**.
5. Move the saved group or calculated item from the Available area to the Selected area.
6. Click **OK**.

Reuse a group or calculated item from the Selection Steps pane:

1. On the Results tab, display an analysis containing the same column to which you want to apply the selections from a group or calculated item.
2. On the Selection Steps pane select **Then, New Step** for the appropriate column.
3. Select **Add Groups or Calculated Items**.
4. Select **Select Existing Groups and Calculated Items**.

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5. On the resulting dialog, select the group or calculated item from the Available area and move it to the Selected area.
6. Click **OK**.

Delete Groups and Calculated Items

You can delete inline and named groups and calculated items.

For example, suppose you no longer need the combination of Flip Phones and Smart Phones in the analysis. You can delete the Mobile Devices group.

Delete an inline group or calculated item:

1. On the Results tab, right-click on the cell that contains the group or calculated item that you want to delete.
2. Click **Remove**.

Delete a named group or calculated item:

1. On the global toolbar, click **Catalog**.
2. Locate the group or calculated item in the Catalog page.
3. Click **More** on the group or calculated item.
4. Select **Delete**.

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26

Prompt in Analyses and Dashboards

This chapter describes how to create prompts for soliciting values to display in analyses and dashboards.

Topics:

- Typical Workflow to Create Prompts in Analyses and Dashboards
- Create Prompts
- Edit Prompts
- Add Prompts to Dashboard Pages
- Add Hidden Prompts to Dashboard Pages

Typical Workflow to Create Prompts in Analyses and Dashboards

Here are the common tasks to start creating prompts for soliciting values to display in analyses and dashboards.

Tasks	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Your First Analysis
Create a column prompt	Create a prompt to filter the data that you see displayed.	Create Column Prompts
Edit a prompt	Edit the prompt to change it in every place where it's used.	Edit Prompts
Add a column prompt to a dashboard page	Add a prompt to a new or existing dashboard.	Add Prompts to Dashboard Pages
Create a currency prompt	Create a prompt to display money data in a different currency.	Create Currency Prompts

Create Prompts

You create prompts to enable analysts to display the data they're interested in.

Topics:

- Create Column Prompts
- Create Variable Prompts
- Override a Selection Step with a Prompt
- Create Currency Prompts

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Create Column Prompts

A prompt enables you to filter the data that you see. A column prompt enables users viewing a dashboard to select a value for a column that affects what they see on the dashboard.

Video

Use the following procedure to create:

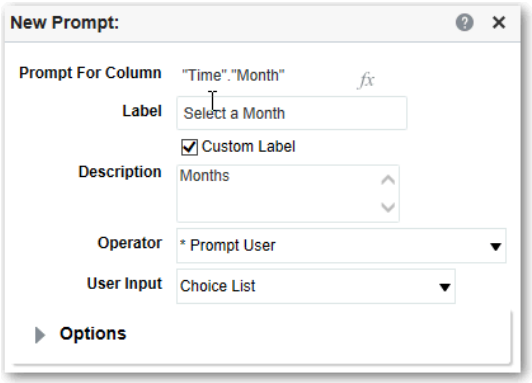
- A named column prompt that you can apply to one or more dashboards.
- An inline column prompt that is embedded in an analysis. For example, you can add a prompt to the Brand Revenue analysis so that the analysis can be reviewed for specific brands. You add a prompt directly to a column in the analysis (an inline prompt).

1. Open the analysis for editing.
2. On the Definition pane of the Prompts tab, click **New** to access the prompt type selection list. Select **Column Prompt** and select the appropriate column.
3. Click **Custom Label** and enter a caption for the column filter prompt. The caption displays as the field label for the prompt.

   For example, "Select a currency."
4. In the **Description** field, enter a short description for the prompt.

   This description becomes tooltip text, which is displayed when the user hovers the mouse pointer over the prompt's label in the dashboard or analysis.
5. From the **Operator** list, select the operator to use, such as "is greater than." If you want the user to select the operator at runtime, then select the ***Prompt User** operator.

   If you're creating a prompt that includes a group in the prompt's value selection list, then you must set the Operator to either **is equal to/is in** or **is not equal to/is not in**. See About Groups and Calculated Items.
6. In the **User Input** field, select how you want the prompt interface to ask the user for input. For example, prompt the user with a radio button to select only one prompt value.

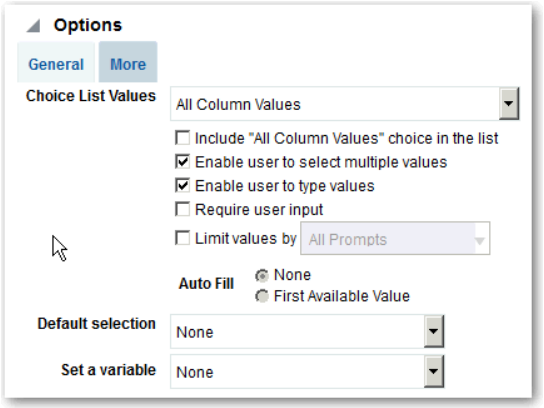


7. Depending on the type of user input that you specified, enter the appropriate values in the **User Input** field.

   For example, select **Custom Values** to indicate that users can select from a list of prompt values that you created rather than the values supplied by the column.

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8. Within the Options section, select prompt options to specify the display of list values and user interaction with the prompt. The prompt options vary depending on the user input type and list values type that you selected.



9. In the **Default selection** field, select the prompt value or values that users see initially.

   If you select a default type, then a field is displayed where you can either select specific values, or specify how you want the default values to be determined. For example, if you select SQL Results, you must then supply a SQL statement to generate the list of values.

10. Click **OK**.
11. Click **Save Prompt** in the editor or save the analysis.
12. Use the arrow buttons in the Definition pane to reorder the selected prompt. Reordering the prompts controls the order in which the choices are displayed to users at runtime.
13. Select the type of layout you want on the prompts page by clicking **New Row** or **New Column** in the Definition pane.

    A row-based layout saves space because it organizes prompts horizontally. A column-based layout aligns prompts into neat columns. Click the boxes in the New Column or New Row column in the Definition table that correspond to where you want to add a new column or row to the prompts page.

14. Preview the prompt with sample data using the Display pane, or click **Preview** (if available) in the Definition pane toolbar to view the prompt with actual prompt values.

Create Variable Prompts

A variable prompt enables the user to select a value that is specified in the variable prompt to display on the dashboard.

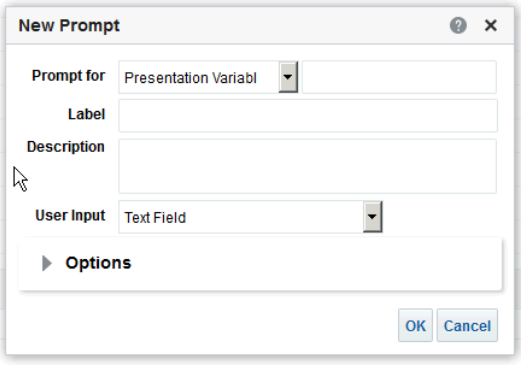
A variable prompt isn't dependent upon a column, but can still use a column. You can use variable prompts to enable the user to specify existing data to perform sales projections.

For example, you can create a variable prompt called Sales Projections and specify the variable prompt values as 10, 20, and 30 percent. Then you create an analysis that contains the Region and Dollars columns. Within the Dollars column formula, you select the multiply operator and insert the Sales Projection variable. When users run this analysis, they can select a percentage by which to recalculate the Dollars column.

1. Open the analysis for editing.
2. Display the Prompts tab.

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3. On the Definition pane of the Prompts tab, click **New** then **Variable Prompt** to display the New Prompt dialog.



4. In the **Prompt for** field, select the variable type that you're creating and then enter the name of the variable.

   This variable name is the name that you add to the analysis or dashboard where you want the variable prompt's value specified by the user to display. Currently, you can create only presentation variables.

5. In the **Label** field, enter a caption for the variable filter prompt. The caption is displayed as the prompt's field label.
6. In the **Description** field, enter a short description for the prompt. This description is displayed as tooltip text, which is displayed when the user hovers the mouse pointer over the prompt's label in the dashboard or analysis.
7. In the **User Input** field, select how you want the prompt interface to ask the user for input. For example, prompt the user with a radio button to select only one prompt value.
8. If you selected either the **Choice List**, **Check boxes**, **Radio buttons**, and **List box** user input type, then you must also specify the prompt's list of values.
9. Within the Options section, select the prompt options. The prompt options vary depending on the user input type that you selected.

   The prompt options enable you to further specify how you want the user to interact with the prompt. For example, whether user input is required.

10. In the **Default selection** field, select the prompt value that users see initially. If you select a specific value, then the **Default Value** field is displayed in which you can enter a value.
11. Click **OK** to display the prompt is displayed in the Definition pane.
12. Save your changes.

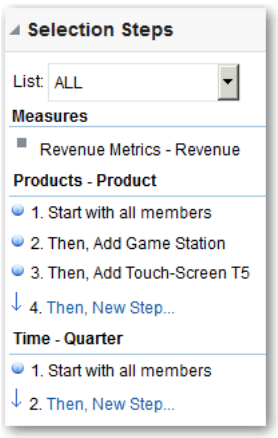
Override a Selection Step with a Prompt

You can override a selection step with either a dashboard prompt or an inline prompt.

For example, you can specify that the Products.Brand selection step be overridden with a column prompt specifying the BizTech and FunPod members.

1. Open the analysis for editing.
2. In Results tab, select the columns for the analysis and then navigate to the Selection Steps pane by selecting **Show/Hide Selection Steps Pane**.
3. Specify the selection steps for the analysis.

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4. Determine which selection step you want to override with a column prompt and click **Edit**.
5. In the dialog, select **Override with prompt**, if it's available for that type of step.
6. Click **OK** and save the analysis.

Create Currency Prompts

A currency prompt enables users to change the currency type that is displayed in a dashboard or analysis.

Use this procedure to create a currency prompt that you can apply to one or more dashboards, or to create a currency prompt that's embedded in an analysis.

1. Open the analysis for editing.
2. Display the Prompts tab.
3. In the Definition pane, click the **New** button and select **Currency Prompt**.
4. In the **Label** field, enter a caption.
5. In the **Description** field, enter a short description. This description is displayed as tooltip text, which is displayed when the user hovers the mouse pointer over the prompt's label in the dashboard or analysis.
6. Click **OK**.
7. Save the prompt.
   - If you're creating a dashboard prompt, then click the **Save** button in the prompt's editor, specify the folder in which you want to save the prompt, and give the prompt a descriptive name. Dashboard prompts that are saved in personal folders are available only to you. Dashboard prompts that are saved in shared folders are available to other users that have permission to access the object.
   - If you're creating an inline prompt, then save the analysis.
8. Use the arrow buttons in the Definition pane to reorder the selected prompt. Reordering the prompts controls the order in which the choices are displayed to users at runtime, so ensure that the order is logical, especially if you're creating constrained prompts.
9. If you want to add a new row or column to the prompts page, then click the **New Row** button or **New Column** button in the toolbar. In the Definition table, click the check box corresponding to the prompt that you want to display in a new row or column.

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10. To preview how the prompt is displayed on the dashboard, either use the Display pane to preview the prompt with sample data, or click the **Preview** button in the toolbar to view the prompt with actual prompt values.

Edit Prompts

You can edit a saved dashboard prompt or inline prompt, to propagate its changes to wherever the prompt is used.

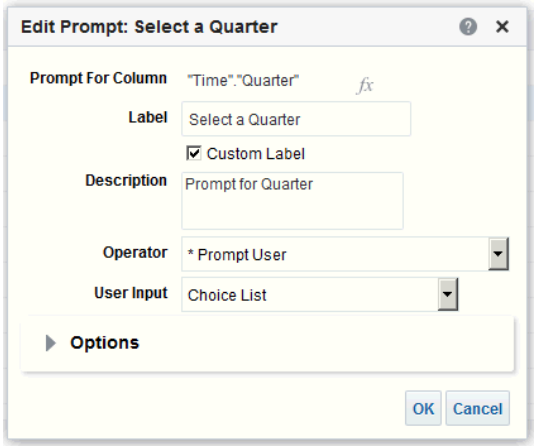
For example, you can edit the prompt for the Brand column to change the user input to a choice list. This change is propagated to the Brand Revenue analysis where the prompt is used.

1. In the Definition pane on the Prompts tab, double-click to open the appropriate prompt.

   Alternatively, in the Definition pane on the Prompts tab, select the appropriate prompt and click **Edit**.

2. Make the appropriate changes in the Edit Prompt window.

   For example, change the label for the prompt or change the user input to a choice list.



3. Click **OK**.
4. Click **Save Prompt**.

   The changes are propagated to wherever the prompt is used.

Add Prompts to Dashboard Pages

You can add a prompt to a dashboard or dashboard page.

Video

For example, you can create a dashboard prompt for the Brand column. You add the prompt to the Sales Performance dashboard, to drive the content on the dashboard page. You add a filter for Brand that uses the "is prompted" operator to flag the column as ready to be filtered by a prompt. When the prompt is used, the results include only records where the data in the column that is prompted matches the user's choices.

1. Open the dashboard for editing.
2. In the Dashboard builder's Catalog pane, locate and drag and drop an object such as an analysis onto a section in the dashboard page.

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3. Add a new or pre-created prompt:
   - To add a new prompt, click **New**, then **Dashboard Prompt**, and follow the on-screen instructions.
   - To add a pre-created prompt, in the Dashboard builder's Catalog pane, locate and drag and drop the dashboard prompt onto a section in the dashboard page.

   The dashboard prompt is added to the dashboard page.
4. To specify whether to include the prompt's **Apply** and **Reset** buttons on the dashboard page, in the toolbar of the Dashboard builder, click **Tools**. Then select **Prompts Buttons on Current Page** and either **Apply Buttons** or **Reset Buttons**.
5. Click **Save** in the dashboard toolbar.
6. To preview the dashboard page, click **Preview** in the dashboard toolbar.

Add Hidden Prompts to Dashboard Pages

You can add a hidden prompt to a dashboard or dashboard page.

1. Create and save a prompt to use as a hidden prompt.
2. Open a dashboard for editing.
3. On the Dashboard page toolbar, click **Tools** and select **Dashboard Properties**.
4. In the Dashboard Properties dialog, click the **Filters and Variables** pencil icon to add a hidden prompt to the entire dashboard.

   Alternatively, to add a hidden prompt to a page, locate the page in the Dashboard Pages area and click **Select a prompt to capture default filters and variables** icon.
5. In the Dashboard Filters and Variables dialog, click the **Embed new hidden dashboard prompt** plus icon to browse for and select the prompt. Click **OK** to add the hidden prompt.
6. Click **OK** to save the dashboard properties.
7. Click **Save** in the dashboard toolbar.
8. To preview the dashboard page, click **Preview** in the dashboard toolbar.

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27

Make Analyses Interactive

Make your analyses and dashboards more interactive. Embed hyperlinks to some related business intelligence content or add links to other web pages.

Video

Topics:

- Typical Workflow to Make Analyses Interactive
- Create Named Actions for Reuse
- Create Inline Actions
- Add Actions to Analyses
- Add Actions to Dashboard Pages
- Edit Named Actions
- Edit and Delete Action Links in Analyses
- Edit and Delete Action Links in Dashboard Pages
- Save Inline Actions in Analyses to the Catalog
- Save Inline Actions in Dashboards to the Catalog

Typical Workflow to Make Analyses Interactive

Here are the common tasks to start making analyses more interactive.

Task	Description	More Information
Create an analysis	Select and arrange columns that you want to use in an analysis.	Create Analyses
Create a named action	Create an action and save it to the catalog.	Create Named Actions for Reuse
Create an inline action	Create an action and save it with an analysis.	Create Inline Actions
Add an action to an analysis	Add an action to a column value in an analysis.	Add Actions to Analyses
Add an action to a dashboard	Add an action or an action menu to a dashboard.	Add Actions to Dashboard Pages

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Create Named Actions for Reuse

Create action links so users can navigate to related BI content such as websites and reports, or perform business tasks. You save named actions to the catalog to that they're available to your analysts and business users.

Users can click an analysis that is embedded within column headings and column values. Users can also click links in views such as graphs, and on grand totals within tables and pivot tables.

1. From the Classic Home page, go to **Create** and click **Action** under **Actionable Intelligence**.
2. Click the option for the type of action you want to create.
3. Optional: Change the default parameters to change the information that is displayed when the action executes.
   - **Navigate to BI Content** - Display an analysis or dashboard stored in the My Folders or the shared folder area.
   - **Navigate to a Web Page** - Display a web page.
   - **Invoke a Web Service** - Invoke a web service operation or any Service-Oriented Architecture (SOA) service that is exposed as a Web Service (for example, a Business Process Execution Language (BPEL).
   - **Invoke a HTTP Request** - Invoke an external system command that is exposed by a URL API. This sends a HTTP request through the server to a target URL.
   - **Invoke a Browser Script** - Invokes a JavaScript function that the administrator has made available to you. Click **Browse** to see a list of functions that the administrator has made available, or type the name of a function in the **Function Name** field. For example, you might specify `USERSCRIPT.mycurrencyconversion`.
4. Click **Save Action** and choose where to save the action.
5. Verify that the action runs properly:
   a. Navigate to the named action in the catalog.
   b. Click **Execute**.
   c. Respond to any request for more information or any confirmation prompt that is displayed.

Create Inline Actions

An inline action is a link that you define for a particular analysis or dashboard and don't save by name in the catalog.

For example, in the Brand Revenue analysis, you might decide to create a link to an Opportunity Detail web site.

- Analyses – Add actions to column headings, column values, or hierarchy level values using an action link. See Add Actions to Analyses.
- Dashboard page - Add action links or action link menus to the page. See Add Actions to Dashboard Pages.

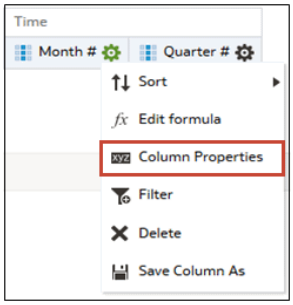
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Add Actions to Analyses

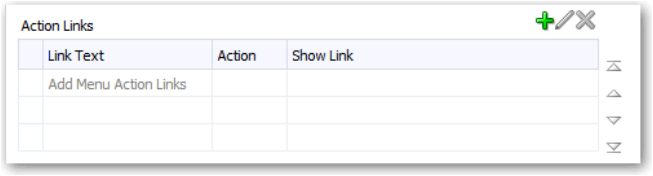
You can use an action link to add actions to a column heading, column value, or hierarchy level value in an analysis.

For example, in the Brand Revenue analysis, you can include an action that contains an action link to an Opportunity Detail web site. Sale consultants can query the site for an opportunity by responding to a prompt for Opportunity Name or Opportunity ID.

1. Open the analysis for editing.
2. On the Criteria tab, open the **Options** menu for a column and select **Column Properties**.



3. Click the **Interaction** tab.
4. In the Primary Interaction box in the Column Heading area or the Value area, select **Action Links**.



5. Click **Add Action Link**.
6. In the **Link Text** field, enter the text you want the link to display.
7. To create an action, click **Create New Action**, select the type of action you want, and specify the settings for the action.

   See Create Named Actions for Reuse.

   Alternatively, click **Select existing action**, select the action you want, and specify any associated parameters in the Edit Parameter Mapping dialog.
   If you chose to show the link conditionally, then in the visualization, you must place the column containing the action link at a more detailed grain than the columns used in the condition.
8. Save your changes.

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Add Actions to Dashboard Pages

You can add actions to dashboard pages using action links and action link menus.

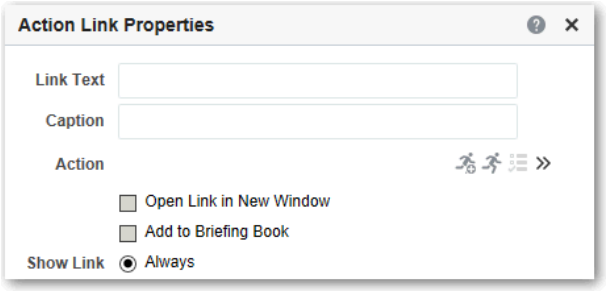
Topics

- Add Actions to Dashboard Pages with Action Links
- Add Actions to Dashboard Pages with Action Link Menus

Add Actions to Dashboard Pages with Action Links

Link a related report or a useful web site to your dashboard. For example, give sales consultants a direct link to an Opportunity web site from the Sales Performance dashboard so they can query opportunities by responding to a prompt for Opportunity Name or Opportunity ID.

1. Open the dashboard page for editing.
2. From the Dashboard Objects pane, drag and drop an Action Link object on the dashboard page.
3. Click **Properties** for the new link.



4. Complete the fields in the dialog.
5. Click **OK**.
6. In Dashboard builder, click **Save**.

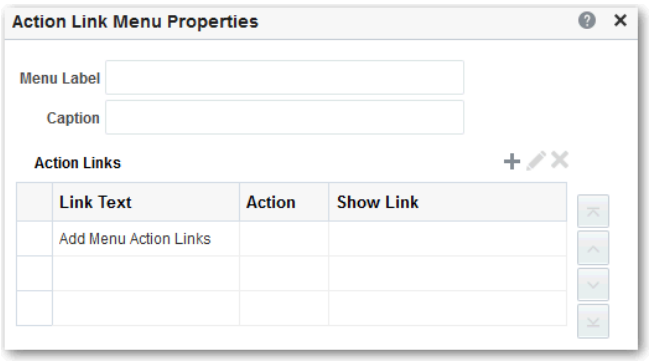
Add Actions to Dashboard Pages with Action Link Menus

You may want to offer several action links on your dashboards. Use menus to group your links together and keep things organized.

For example, you can give sales consultants a Related Information menu on the Sales Performance dashboard with useful links, such as an external Opportunity web site or a related Brand Revenue dashboard.

1. Open the dashboard for editing.
2. From the Dashboard Objects pane, drag and drop an Action Link Menu object on the dashboard page.
3. Click **Properties** for the new menu.

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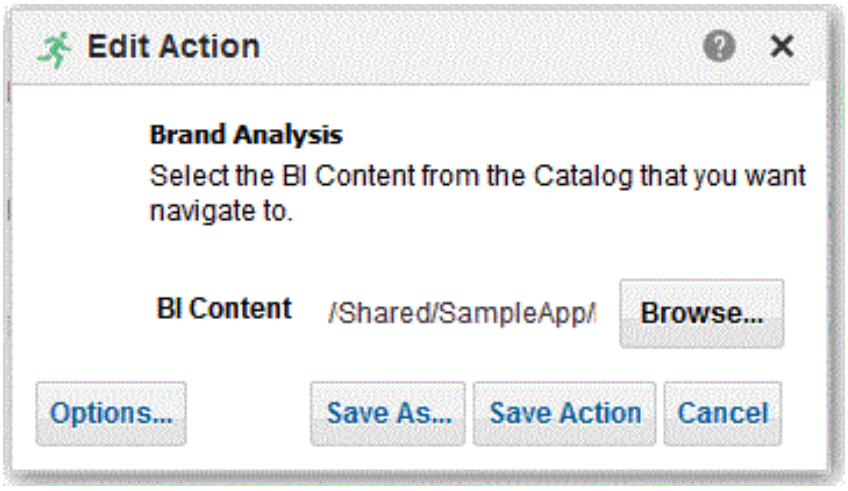


4. Add the action links to the menu.
5. Click **OK**.
6. In Dashboard builder, click **Save**.

Edit Named Actions

You can edit existing named actions. For example, you can edit the Brand Analysis action in the Sales Performance dashboard to navigate to a newly created analysis.

1. Navigate to the action in the catalog.
2. Click **Edit**.



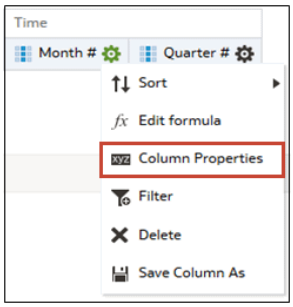
3. Edit the action and click **OK**.
4. Click **Save Action**.

Edit and Delete Action Links in Analyses

You can edit action links or delete action links you don't want any more. So, if an action link navigates to an obsolete analysis or web site you can point somewhere new or remove the link.

1. Open the analysis for editing.
2. On the Criteria tab, open the **Options** menu for a column and select **Column Properties**.

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3. Click the **Interaction** tab.
4. To edit an action or action link:
   a. In the Action Links area, select the action to edit and click **Edit Action Link**.
   b. Make the changes you want.
   c. To edit the associated action, click **More** and select **Edit Action**.
   d. Make the changes you want.
5. To delete an action link:
   a. In the Action Links area, select the action link that you want to delete.
   b. Click **Delete**.
6. Click **OK**.
7. Click **Save Analysis** in the Criteria tab.

Edit and Delete Action Links in Dashboard Pages

You can edit action links or delete those you don't want any more. For example, if the URL to an "Opportunity" site changes you can point to the new URL.

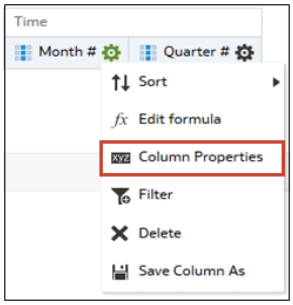
1. Open the dashboard for editing.
2. If the action and action link are associated with an action link menu:
   a. Click **Properties** for the action link menu.
   b. Make the appropriate changes to the menu label and caption.
   c. In the Action Links area, select the action you want and click **Edit**.
3. To edit an action that isn’t part of a menu, click **Properties** for the action link.
4. Update the action link.
5. Click **More** and select **Edit Action** to edit the action.
6. Edit the action and click **OK**.
7. Click **OK** in the Action Link Properties dialog, and in the Action Link Menu Properties dialog (if displayed).
8. Click **Save**.
9. Click **Delete** on the action link (or action link menu) toolbar to remove actions you don't want any more.

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Save Inline Actions in Analyses to the Catalog

You can save useful inline actions to the catalog and reuse them in other analyses and dashboards.

1. Open the analysis for editing.
2. On the Criteria tab, open the **Options** menu for a column and select **Column Properties**.



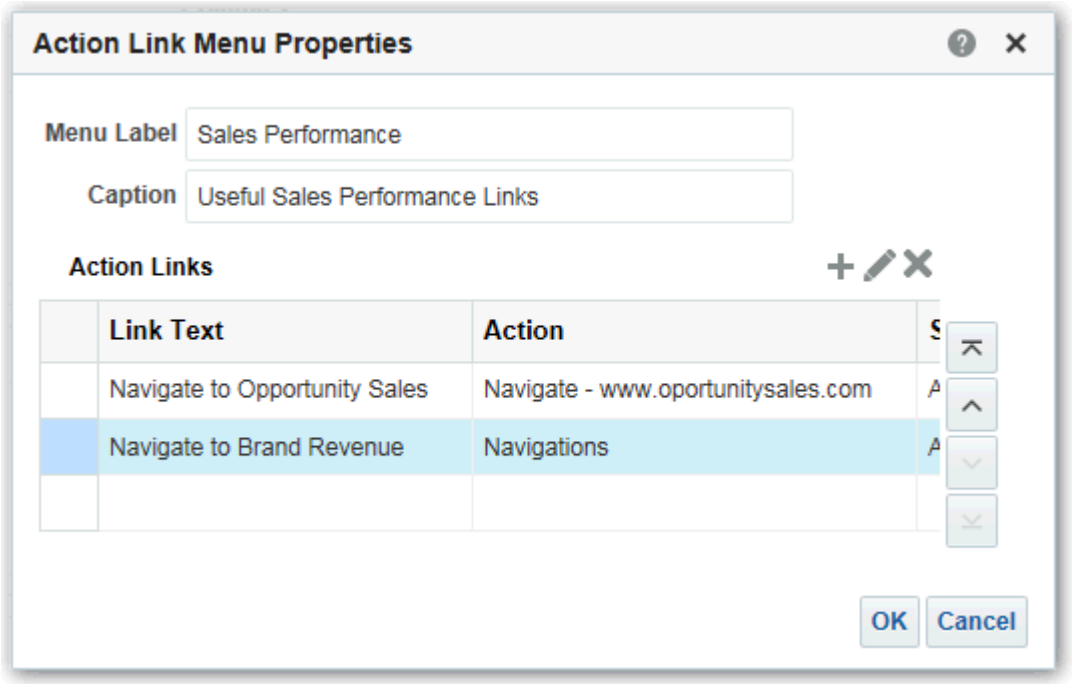
3. Click the **Interaction** tab.
4. In the Action Links area, select the action you want and click **Edit Action Link**.
5. Click **More** and select **Save Action As**.
6. Specify how the action appears in the catalog, then click **OK** to save it.

Save Inline Actions in Dashboards to the Catalog

You can save useful inline actions to the catalog and reuse them in other analyses and dashboards.

1. Open the dashboard for editing.
2. If the action and action link are associated with an action link menu:
   a. Click **Properties** for the action link menu.

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b. Make the appropriate changes to the menu label and caption.

c. In the Action area, select the action you want to save to the catalog.

3. To save an action that isn't part of a menu, click **Properties** for the action link.
4. Click **More** and select **Save Action As**.
5. Specify how the action appears in the catalog and click **OK**.
6. Click **Save**.

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28

Manage Reporting Content

This chapter describes how to manage your Reporting content in Oracle Analytics Classic.

Topics:

- Typical Workflow to Manage Reporting Content
- About Naming Restrictions for Items in the Catalog
- Rename Reporting Content
- Search for and Replace Text in Classic Catalog Items
- Access Favorites Easily
- Access Properties
- Assign Access Permissions
- Send Email Reports and Track Deliveries
- Automate Business Processes with Agents
- Assign Ownership of Items in Classic Catalog
- Assume Ownership of Items in Classic Catalog
- About Embedding External Images and Other External Resources in Your Content
- Access Your Reporting Content in Smart View
- Perform Advanced Catalog Management in Classic Catalog

Typical Workflow to Manage Reporting Content

Here are some common tasks that you perform to access and organize Reporting content in Oracle Analytics Classic.

Task	Description	For More Information
Find and explore your content	Exploring your content, including searching for items that you need to edit.	Use the Search Bar to Find Your Content
Rename content	Improve or update the naming of your content.	Rename Reporting Content
View or set content properties	Display information about your content or change various content options and properties.	Access Properties
Give access to others	Assign permissions so that others can access your content	Assign Access Permissions
Email reports and track deliveries	Email reports to anyone inside or outside the organization. Keep everyone up to date with daily or weekly reports.	Send Email Reports and Track Deliveries

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Task	Description	For More Information
Automate business processes	Create agents that deliver analyses, dashboards, and briefing books to targeted audiences on-demand or on a regular schedule.	Automate Business Processes with Agents
Configure devices and delivery profiles	Configure the devices and delivery profiles to be used to reach you when an alert is generated by an agent.	Configure Your Devices and Delivery Profile
Change content ownership	Assign another user as the content owner.	Assign Ownership of Items in Classic Catalog
Analyze using Smart View	Analyze reporting content in Smart View.	Access Your Reporting Content in Smart View
Perform advanced catalog management	Generate advanced reports about your catalog, review the underlying XML for individual items, and more.	Perform Advanced Catalog Management in Classic Catalog

About Naming Restrictions for Items in the Catalog

In Oracle Analytics, you can't use special characters when naming items in the catalog, such as workbooks, dashboards, and datasets.

Don't use these special characters when you save items in the catalog:

Name	Special Character
Ampersand	&
Asterisk	*
Caret	^
Colon	:
Comma	,
Dollar sign	$
Double backslash	\\
Exclamation mark	!
Forward slash	/
Greater than sign	>
Hash	#
Less than sign	<
Percent sign	%
Plus	+
Question mark	?
Quotation mark	"
Single quotation mark	'
Tilda	~
Vertical bar	|

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Rename Reporting Content

You can rename items and views to make their names more meaningful to you.

Topics:

- Rename Items
- Rename Views

Rename Items

You can rename items to make their names more meaningful to you. For example, you can change the name of the "High Products" filter to "Top 3 Products."

1. On the Classic Home page, click **Catalog**.
2. In the Catalog page, search for the item that you want to rename.
3. In the search results for the item, click **More**, and then **Rename**.
4. Give the item a new name.
5. Optional: Click **Preserve references to the old name of the item**, if the option is available for the item.

   Use this option to specify that existing references to the previous name of the item are maintained. This creates a shortcut with the old name that points to the renamed item in the catalog. If you don’t select this option, then existing references break.
6. Click **OK**.

Rename Views

You can rename views to make their names more meaningful to you. For example, you can change the name of a view from "Sales Forecast 2014" to "Forecast 2014."

1. Open the analysis for editing.
2. On the Results tab, click **Edit View**.
3. In the view editor toolbar, click **Rename View**.
4. In the Rename View dialog, give the view a new name.
5. Click **OK**.

Search for and Replace Text in Classic Catalog Items

In Oracle Analytics Classic, you can search for specific text in the catalog and replace it with other text.

This allows a power user with the catalog privilege Can Replace Text, and read/write permissions on catalog objects, to do plain text replacement on selected catalog objects and folders. You can perform single or multiple text searches on the selected content.

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> **⚠ Caution**
>
> Replacing text in this way doesn't guarantee correctness of the new change, and you must ensure the change is carefully reviewed and validated. Oracle recommends that you back up the catalog before making text replacement changes, as these changes can render artifacts invalid or unusable.

You can replace text in the following catalog object types:

- Dashboard
- Dashboard Prompt
- Analysis
- Filter
- Agent
- Action

Specifically, you can search for and replace:

- A simple text string, as described in Search for and Replace a Simple Catalog Text String.

  For example, suppose that an object contains the string "My Misspeled Wirds." You can search and replace that string with the proper text of "My Misspelled Words."

- Multiple or complex text strings all at the same time using an JSON file, as described in Search for and Replace Multiple Catalog Text Strings.

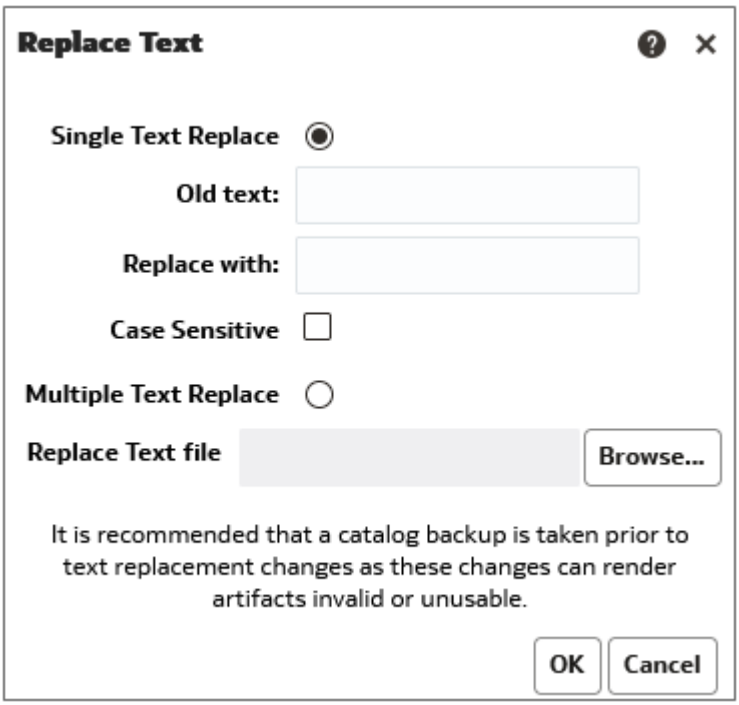
  For example, suppose that the administrator renames a workbook, subject area, a table, or column. The table "Sales" might be renamed "MySales." You can search and replace all uses of that object throughout the catalog.

Search for and Replace a Simple Catalog Text String

You can search for a simple text string in the catalog and replace it with other text.

1. On the Classic Home page, click **Catalog**.
2. In the Catalog page, select a folder or an object to perform text replacement on.
3. In the search results for the item, click **More**, and then click **Replace Text**.

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4. Click **Single Text Replace**.
5. In the **Old text** field, enter the text string to search for.
6. In the **Replace with** field, enter the replacement text.
7. To make the search case insensitive, deselect **Case Sensitive**.
8. Click **OK**.
9. You can review the progress of the job from the Classic Home page, by clicking **My Profile**, **Background Tasks**, and **Replace Text Tasks**.

About Search and Replace of Multiple Catalog Text Strings

You can perform more powerful search and replace operations on multiple catalog text strings all at the same time by importing a JSON file that identifies each text string to search for and replace.

JSON File Format to Search for and Replace Text Strings

In the search and replace JSON file, you use an items element to identify all of the text strings to search for and replace.

The action elements are contained in a commands element.

- `items` — Specifies the section containing the text items to replace.
- `oldValue` — Specifies the text string to search for.
- `newValue` — Specifies the replacement text.
- `ignoreCase` — Ignores case when set to true, but becomes case-sensitive when set to false. The default value is false.

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Example JSON File for Searching for and Replacing Text Strings

The following is a partial example of an JSON file for searching for and replacing a text string.

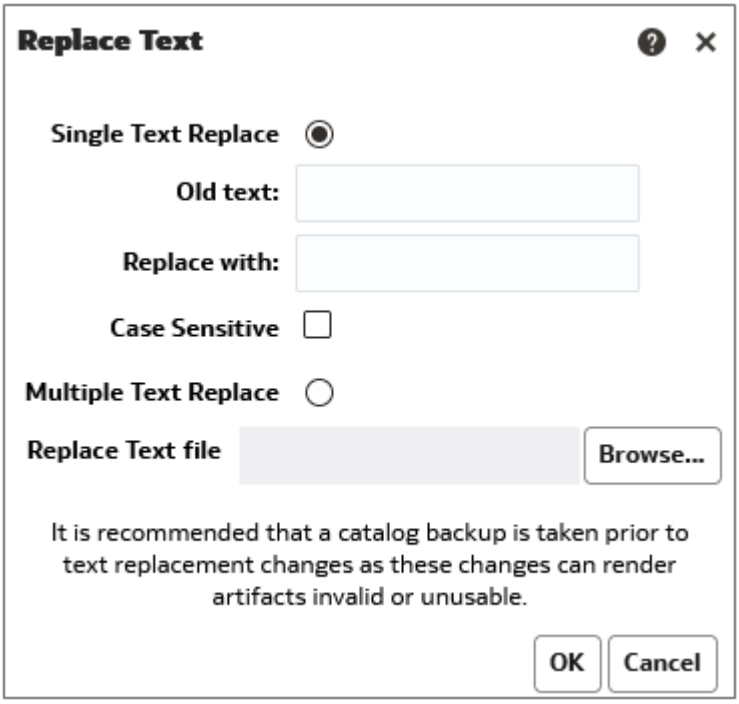
```
{
  "Items": [
    {
      "oldValue": "Text1"
      "newValue": "New Value1"
      "ignoreCase": true
    },
    {
      "oldValue": "text2"
      "newValue": "New Value2"
      "ignoreCase": false
    }
  ]
}
```

Search for and Replace Multiple Catalog Text Strings

Use this procedure to search for and replace multiple catalog text strings all at the same time.

1. Create the JSON file for searching for and replacing multiple text strings.

   See About Search and Replace of Multiple Catalog Text Strings.
2. On the Classic Home page, click **Catalog**.
3. In the Catalog page, search for the item for which you want to replace the text.
4. In the search results for the item, click **More**, and then click **Replace Text**.



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5. Click **Multiple Text Replace**.
6. In the **Replace Text File** field, enter the path or click **Browse** to specify the JSON file that you created in Step 1.
7. Click **OK**.

   Text replacement triggers a background job to complete the task.
8. Review the progress of the replace text job by following these steps:
   a. Display the Classic Home page.
   b. Click **My Profile**, **Background Tasks**, and then click **Replace Text Tasks**.

Access Favorites Easily

You can access your favorite content easily using the **Favorites** option on the Home page.

Topics:

- Add Content to Your Favorites List
- Remove Content from Your Favorites List

Add Content to Your Favorites List

You can bookmark as favorites the content that you work with the most. Your favorites are displayed with a gold star, and you can view all of your favorites by clicking **Favorites** on the Home page.

For example, you might regularly view the "Box Plot & Bar" project. You can flag the project as a favorite to help you quickly access it.

1. Display the Classic Home page, Catalog page, or Favorites page where the content is displayed.
2. Locate the content that you want to mark as a favorite.
3. Click **More**, and then **Add to Favorites**.

Remove Content from Your Favorites List

You can remove content from your favorites list that you no longer need to access as often. For example, you might remove the "Box Plot & Bar" project from your favorites because it's out-of-date.

1. Display the Classic Home page, Catalog page, or Favorites page where the content is displayed.
2. Locate the content that you want to remove from your favorites.
3. Click **More**, and then **Remove from Favorites**.

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Access Properties

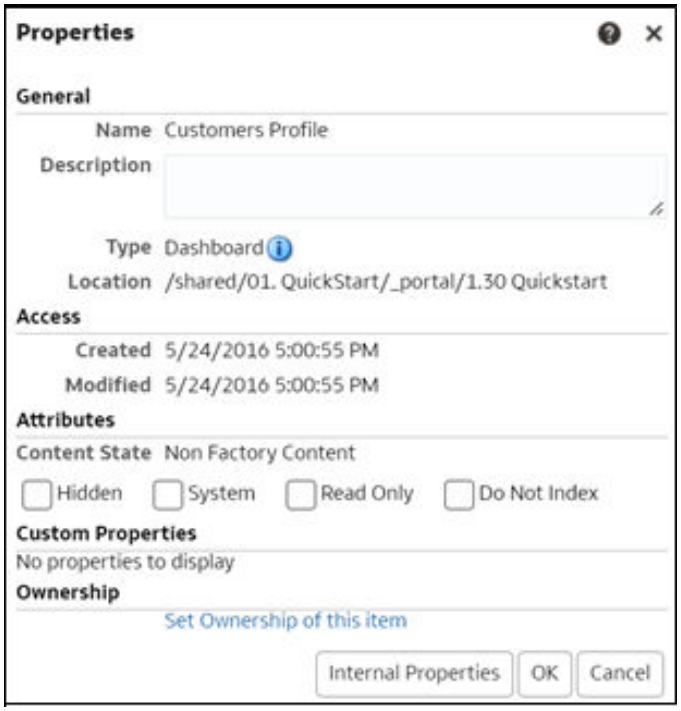
Administrators can access the properties of any item or folder to perform tasks such as view system information or change access levels. All other users can access and modify the properties for only those items that they create or own.

For example, you might want to change the Brand Revenue analysis to be read-only so that other users can't modify it.

1. On the Classic Home page, click **Catalog**.
2. In the Home page or Catalog page, locate the catalog item that you want to edit.

   You can locate a catalog item in the Recent or Others list on the Home page, or use the Search tool to locate a catalog item. For example, you might locate an analysis named 'Revenue by Region'.
3. Click **More**, then **Properties**.
4. Review or change the settings in the Properties dialog.

   For example, you can set an item as read-only or take ownership of an item.



5. Click **OK** to save changes or click **Cancel**.

Assign Access Permissions

You can give others access to items in the catalog and to dashboard sections. This helps you to control the content that users can view or edit.

Topics:

- Add or Update Item Permissions

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- Add or Update Dashboard Section Permissions

Add or Update Item Permissions

You give catalog item access permissions to application roles.

The permissions that you can assign to others vary depending on the type of content. To change permissions, the application role that you are assigned to must have the Change Permission privilege.

1. On your home page, click **Navigator**, and then click **Catalog**.
2. In the Catalog page, search for the content to which you want to assign permissions.
3. In the search results for the item, click **More** and **Permissions**.



4. In the Permissions dialog, click **Add users/roles** to access the Add Application Roles and Users dialog to add any required accounts.

   The roles and users inherit permissions from the roles of which they are members. For example, you can grant Full Control permission to the BIServiceAdministrator application role on the Sales Revenue analysis. This enables any user or application role with that role to have Full Control on the item. You can see the permissions that users and roles have on items (either granted directly or inherited). Click the **Click to see effective permissions** button in the Add Application Roles and Users dialog to display or hide a Permissions column to see the effective permissions for each row in the **Selected Members** table.
5. In the Permissions dialog, click the **Permissions** list. Most of the items in the list are parent permissions and contain several child permissions.
6. Optional: To build a specific list of permissions, click **Custom**. This option gives the user authority to bypass any permissions set on the folder that prevent the user from accessing the item from the Catalog or a dashboard. This option doesn't change the folder permissions.

   For example, you can grant users the Traverse permission for the Test folder in the shared folder area. Then, they *can* access items embedded in dashboards stored in this folder. Also, they can access embedded items in dashboards stored in subfolders, such as /<*shared folder area*>/Test/Guest folder. However, users can't access (meaning view, expand, or browse) the folder and subfolders from the Catalog.
7. Click **OK** twice.

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Add or Update Dashboard Section Permissions

You can give others access to dashboard sections, thereby controlling which users have access to those sections. To grant access, you assign permissions to users of the dashboard.

For example, you assign permissions for the Project Costs section of the dashboard to the BI administrator. You can restrict access to BI consumers to prevent unwanted changes.

1. Open a dashboard for editing.
2. Select **Properties** in the section toolbar.
3. Select **Permissions**.
4. In the Section Permissions dialog, click the **Permissions** list to grant or deny section permissions to specific users and roles. You can also add or delete users and roles.
5. Click **OK**.

Send Email Reports and Track Deliveries

Send email reports to anyone inside or outside the organization or use agents to send reports to a range of other devices. Keep everyone up-to-date with regular daily or weekly reports.

Topics

- Send Email Reports Once, Weekly, or Daily
- Track the Reports You Distribute By Email or Through Agents
- View and Edit Recipients for Deliveries
- Suspend and Resume Deliveries
- Restore and Enable Delivery Schedules
- Change the Owner or Time Zone for Deliveries
- Generate and Download a Deliveries Report (CSV)
- Email Security Alert

Send Email Reports Once, Weekly, or Daily

Send Email reports to one or more recipients directly from the catalog. It's easy to distribute reports this way and quicker than downloading a report and mailing it from your email client. To keep everyone up-to-date, schedule daily or weekly emails.

For information about email limits and how to optimize email delivery, see What are the limits for email delivery?

1. On the Classic Home page, do one of the following:
   - Navigate to the item you want to email, click **Edit**, and in the **Results** tab, click **Email**.
   - Click **Catalog**, navigate to the item you want to email, click the **More** action menu, and select **Email**.
2. Enter the email address for one or more recipients.

   Separate multiple email addresses with a comma. For example: `jane.white@abc.com, steve.brown@abc.com`.

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3. Customize the **Subject** line.
4. Send the email **Now** or click **Later** to set a date and time in the future.
5. To email report updates on a daily or weekly basis, click **Repeat** and then select **Daily** or **Weekly**.

You can check the status of email deliveries from the Console.

Track the Reports You Distribute By Email or Through Agents

Track the reports you've chosen to send to people by email from the Console. Quickly see when reports were sent and which items are pending (scheduled to run in the future). Review, change, or delete your deliveries (scheduled or completed) from the same page.

Any agents that you set up to deliver content are displayed in the Console too. This way, all your delivery information is in one place.

You can filter the deliveries by their status to track deliveries most important to you. The various status messages are explained here.

Delivery Status	Description
Canceled	Someone canceled the delivery. Users can cancel any delivery that they own.
Completed	Delivery ran successfully.
Disabled	Users can temporarily disable any delivery or agent that they own through the catalog. For example, you might stop a job running on its defined schedule if you want to edit the report or change who sees the report.
Failed	Delivery ran as scheduled but it didn't complete successfully. Click **Show details...** after the error icon ( ) to find out what went wrong so you can fix it.
Not Scheduled	No one has set up a schedule for the delivery or the scheduled run date is for a date in the past (rather than a future date).
Running	Delivery is in progress.
Suspended	Administrators can temporarily suspend deliveries that other users set up. For example, before you migrate from a test environment to a production environment, your administrator might suspend deliveries in the test environment, and resume them in the production environment.
Timed Out	Delivery timed out because it took too long to complete.
Try Again	Something went wrong. Try to run the delivery again.
Warning	Delivery ran as scheduled but it wasn't 100% successful. For example, the delivery specifies 10 recipients but only 9 of them received it because 1 of the email addresses was incorrect. Click **Show details...** after the warning icon ( ) to find out more.

To track deliveries from the Console:

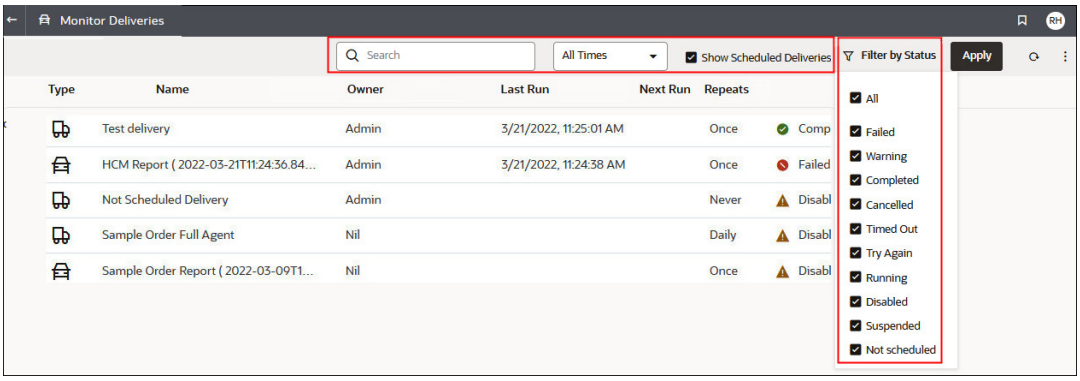
1. On your home page, click **Navigator** , then click **Console**.
2. Click **Monitor Deliveries**.

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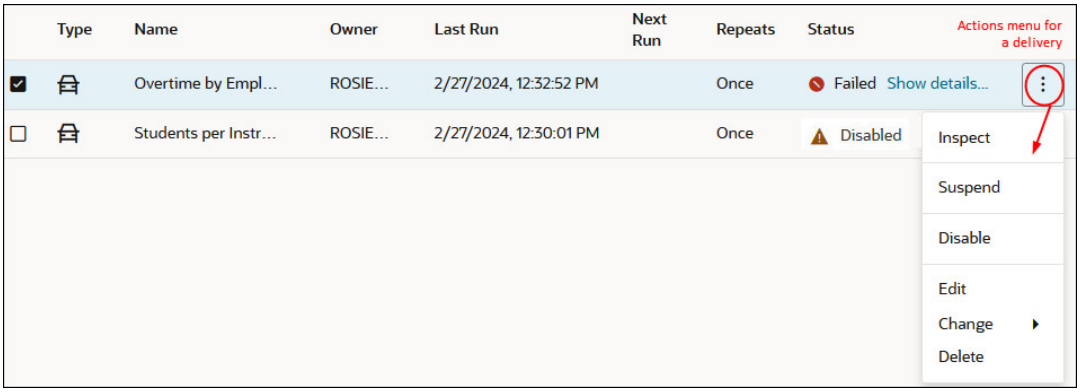
Deliveries are listed by run date, with the most recent delivery displayed first. Initially, you see only the deliveries sent in the last 24 hours (**Last Day**). To see deliveries for the last week or all deliveries, select **Last 7 Days** or **All Times**.

Click **Show Scheduled Deliveries** (then **Apply**) to show deliveries that are scheduled to run in the future. For example, you might schedule a delivery to run tomorrow at 9am. If you look at the Deliveries page the night before or at 8am, you'll see the delivery only when you select **Show Scheduled Deliveries** as the delivery hasn't run yet.

3. Filter the list of deliveries by name, time, or status, and then click **Apply**.
   - **Name**: To filter by name, start typing the name of the delivery you're looking for in the search box, and then press **Enter**.
   - **Time**: To filter by time, click the time filter. Select from **Last Day**, **Last 7 Days**, **All Times**.
   - **Status**: To filter by status, click **Filter by Status**. Select one or more from **Failed, Warning, Completed, Canceled, Timed Out, Try Again, Running, Disabled, Suspended, Not Scheduled**.
   - **Show Scheduled Deliveries**: Select to include deliveries that are scheduled to run in the future. Deselect to show only deliveries that have run or are running.



4. Click **Actions** for a delivery to review or manage a single delivery.



5. To preview the content, click **Actions** for the delivery, and select **View Report**.

   This option isn't available if the delivery is generated by an agent.

6. To see details about a delivery, such as the date of last and next run, delivery frequency, history, agent path, and so on, click **Actions** for the delivery and select **Inspect**.
   - **History**: Click **History** to view and search for historical job runs. Use the name, time, and status filters to help you find the delivery you want.

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- **Recipients**: Click **Recipients** to view details about the users who will receive the delivery.

7. To edit a delivery, click **Actions** for the delivery, and select **Edit**.
   - Email deliveries — Update the email options.
   - Agent deliveries — Edit the agent associated with the delivery.
8. To troubleshoot a delivery that fails or completes with a warning, click **Show details...**.

   Failed - Click **Show details...** to find out what went wrong so you can fix it.

   Warning - Click **Show details...** to find out more.
9. To disable a delivery, click **Actions** for the delivery, and select **Disable**.

   If you want to enable the delivery later on, click **Actions** for the delivery, and select **Enable**.
10. To delete a delivery and all future scheduled deliveries, select **Delete**, then **OK** to confirm.
11. To delete, resume, or suspend multiple deliveries, Ctrl-click to select them and then right-click to select the action you want to perform (**Delete**, **Resume**, **Suspend**).

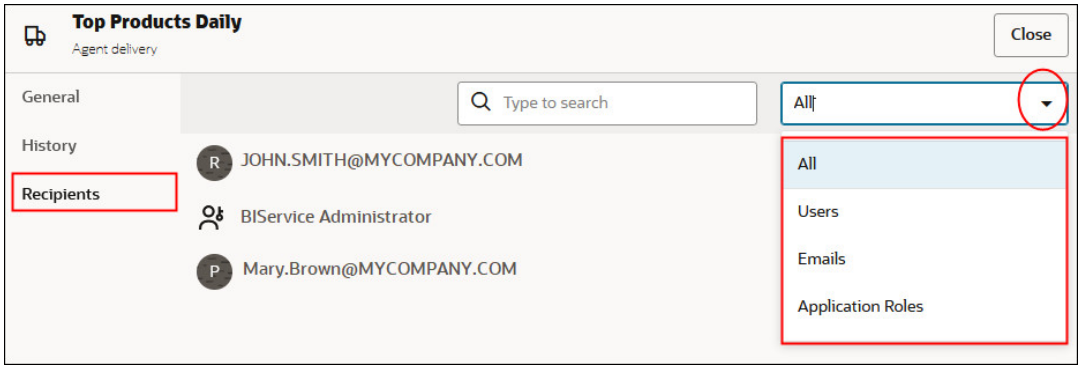
View and Edit Recipients for Deliveries

You can review and edit the recipients of all your deliveries and agents from the Monitor Deliveries page. If you need to make recipient changes across multiple deliveries, the Monitor Deliveries page offers a convenient way to do it.

1. On your home page, click **Navigator**, then click **Console**.
2. Click **Monitor Deliveries**.
3. To view the current recipients for a delivery, click the Action menu for the delivery, and select **Inspect**.
4. Click **Recipients**.
5. Review the current recipient list.

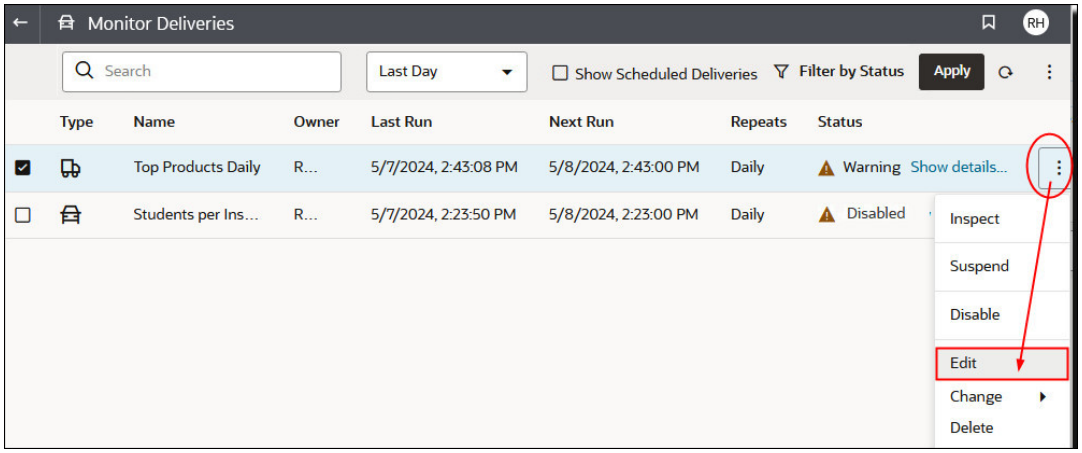
   To filter the list, click the down arrow and select the type of recipient you want to view. Either **Users**, **Emails**, or **Application Roles**. The Application Role filter doesn't show you the users assigned to each application role. If needed, administrators can obtain this information from the **Users and Roles** page in the Console.

   To search for a particulate recipient, start typing the name of the user, email address, or application role in the search box.



6. To edit the recipients, click the Action menu for the delivery, and select **Edit**.

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7. Modify the list of recipients for the agent or email delivery.
   - For agents, click **Recipients** and modify the recipient list.
   - For email deliveries, edit the email addresses in the **To** field.

Suspend and Resume Deliveries

Administrators can temporarily suspend any delivery, at any time.

1. On your home page, click **Navigator**, then click **Console**.
2. Click **Monitor Deliveries**.
3. To access everyone's deliveries in addition to your own, click the Action menu for the page, and select **Admin View**.
4. To suspend a delivery, click the Action menu for the delivery and select **Suspend**.

   To suspend multiple deliveries at once, select **Shift** + click or **Ctrl** + click to select all the deliveries you want to suspend, then right-click and select **Suspend**.
5. To resume a delivery, click the Action menu for the delivery and select **Resume**.
6. To resume or suspend multiple deliveries, Ctrl-click to select them, and then right-click to select the action you want to perform (**Resume** or **Suspend**).

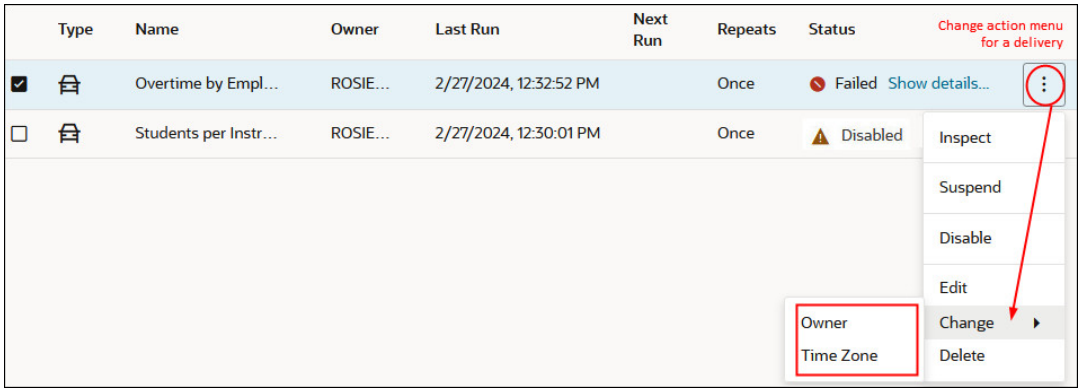
Change the Owner or Time Zone for Deliveries

If you're an administrator, you can change the owner or time zone for one or more deliveries. You can make yourself the new owner or select a different user. This is useful when the original owner changes, leaves your organization, or after migration from a different environment. The change time zone option also comes in handy if you need to change the time zone for multiple deliveries, and this is especially useful when you migrate deliveries from a different environment with a different time zone.

For example, you might migrate deliveries from an on-premises Oracle Analytics Server environment where the time zone is correctly set to your local US time to an environment with a different time zone. If you migrate to Oracle Analytics Cloud where the time zone changes to UTC, your deliveries arrive too early. In this scenario, you need an easy way to update the time zone for all your deliveries.

1. On your home page, click **Navigator**, then click **Console**.
2. Click **Monitor Deliveries**.

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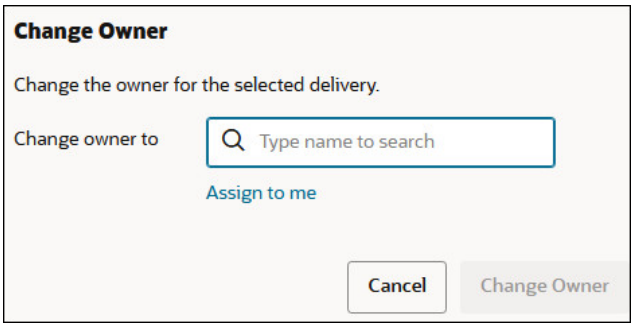
The **Change** menu is available only to administrators. If you don't have the required permissions, ask your administrator to make the changes for you.

3. To change the owner of a delivery, click the Action menu for the delivery, select **Change**, and then **Owner**.

   To change multiple deliveries at once, select **Shift** + click or **Ctrl** + click to select all the deliveries you want, then right-click and select **Change**, then **Owner**.

   a. Start typing the name of the new owner to find the user. Use * as a wildcard.

      Alternatively, click **Assign to Me** to make yourself the new owner.



   b. Click **Change Owner**.

   c. If the current owner and the RunAs user for a delivery are the same, the new owner becomes the new RunAs user. Click **OK** to acknowledge and allow changes to the RunAs user, where required.

      When the RunAs user changes, take care to review the new RunAs user's data and object security to ensure the required access levels are applied.

4. To change the time zone of a delivery, click the Action menu for the delivery, select **Change**, and then **Time Zone**.

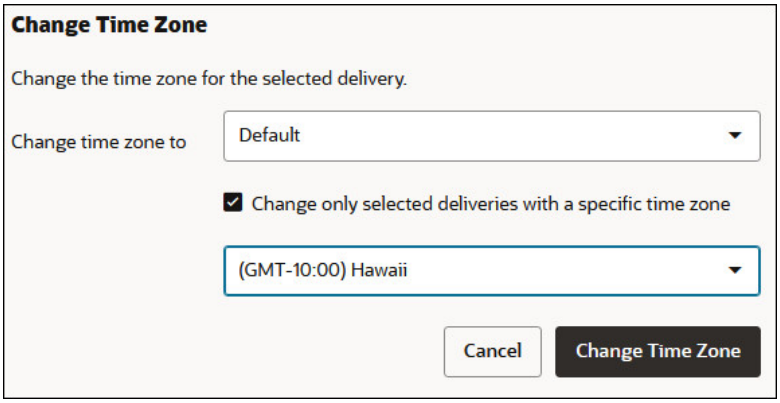
   To change multiple deliveries at once, select **Shift** + click or **Ctrl** + click to select all the deliveries you want, then right-click and select **Change**, then **Time Zone**.

   a. Select the new time zone for the deliveries you selected.

   b. To only change a specific time zone, click **Change only selected deliveries with a specific time zone** and then select the time zone you want to change.

      Don't select the checkbox if you want all deliveries to use the new time zone.

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c. Click **Change Time Zone**.

Restore and Enable Delivery Schedules

When you restore content from a snapshot or migrate content from a different environment, delivery schedules defined for agents, analyses, and dashboards in the snapshot aren't restored or activated right away. When you're ready to restore deliveries on your system, you can decide whether to enable or disable delivery schedules on your system. This is useful as you might not want to immediately start delivering content.

For example, if you're restoring a production environment, you probably want to restart deliveries as soon as possible. Whereas in a test environment, you might prefer to disable deliveries after restoration and activate them at a later date.

1. On your home page, click **Navigator**, then click **Console**.
2. Click **Monitor Deliveries**.
3. To restore deliveries, click the **Action** menu for the page and select **Restore Deliveries**.
4. Select whether to restore and activate deliveries or restore deliveries only. Select one of the following:
   - **Maintain Delivery Schedule Status**

     All delivery schedules maintain their status (enabled or disabled).

     – Existing delivery schedules remain unchanged.

     – New delivery schedules created during the restore process inherit the schedule status that's defined in the corresponding agent, analysis or dashboard.

     For example, this option is useful when you restore deliveries in a production environment where you want deliveries to be active immediately.
   - **Disable Delivery Schedules for New Deliveries**

     Delivery schedules that are created during the restore process for agents, analyses, and dashboards are disabled. Existing delivery schedules remain unchanged.

     For example, this option is useful when you restore deliveries in a test environment where you don't need to activate deliveries immediately.
   - **Disable All Delivery Schedules And Delete All History (Not recommended)**

     All delivery schedules are disabled during the restore process and any delivery history is deleted.

     – Existing delivery schedules are disabled.

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- New delivery schedules created for agents, analyses, and dashboards during the restore process are disabled.
- Historical delivery details no longer available.

This option is not recommended. If you do select this option, you must manually enable delivery schedules for all agents, analyses, and dashboards.

5. Click **Restore**.
6. To activate a delivery, click the Action menu for the delivery, and select **Enable**.

   To activate multiple deliveries at once, select **Shift** + click or **Ctrl** + click to select all the deliveries you want to activate, then right-click and select **Enable**.

   If necessary, click **Edit** to redefine the delivery schedule.

Generate and Download a Deliveries Report (CSV)

If you're an administrator, you can generate a report that contains details about your deliveries and download the report in CSV format for analysis. You can customize the report so it only contains information you want to see. For example, if you're interested in active deliveries, there's an option to exclude deliveries that are disabled or suspended from the report. You can also control the detail that's included and whether to include everyone's deliveries or just your own.

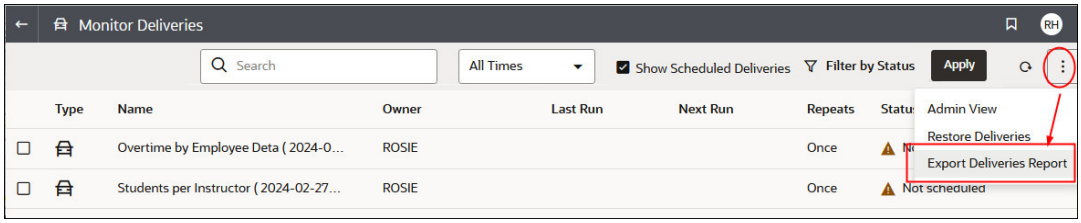
Delivery reports can include the following information:

- **Name** - Name of the agent delivering the report.
- **Agent Path** - Location of the agent delivering the report.
- **Content Data** - Name of the report being delivered.
- **Content Type** - Type of content in the report.
- **Owner** - User who created the delivery.
- **Repeats** - Delivery frequency. For example, once, daily, weekly, and so on.
- **Run As User** - User running the report.
- **User Recipients** - Users receiving the report.
- **Email Recipients** - Email addresses of users receiving the report.
- **Application Role Recipients** - Application roles receiving the report, that is, users assigned to these application roles receive the report.
- **Disabled** - Specifies whether the delivery is disabled: TRUE or FALSE
- **Suspended** - Specifies whether the delivery is suspended: TRUE or FALSE

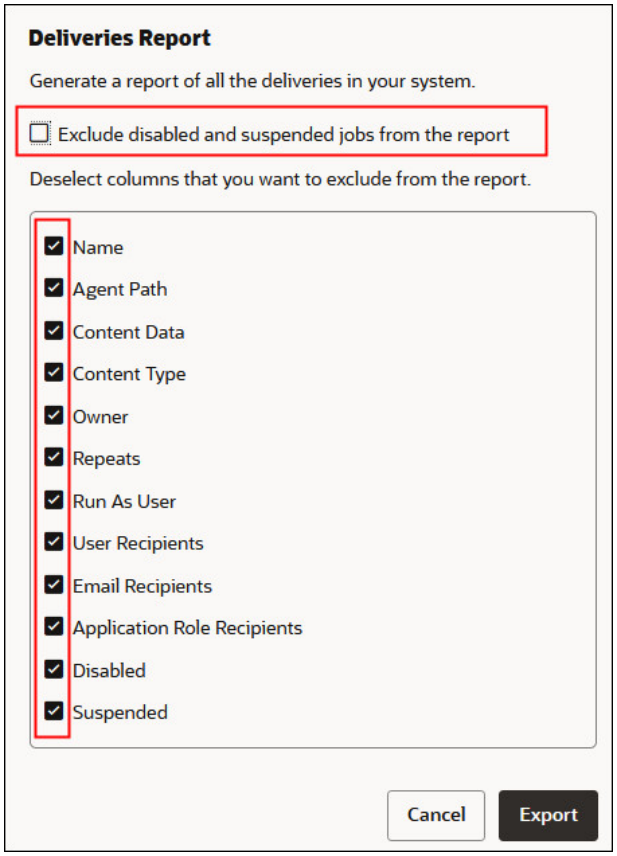
1. On your home page, click **Navigator**  , then click **Console**.
2. Click **Monitor Deliveries**.
3. Click the Action menu for the page, and select **Export Deliveries Report**.

> **Note**
>
> To include everyone's deliveries in the report rather than only deliveries that you own, click **Admin View** before you click **Export Deliveries Report**.

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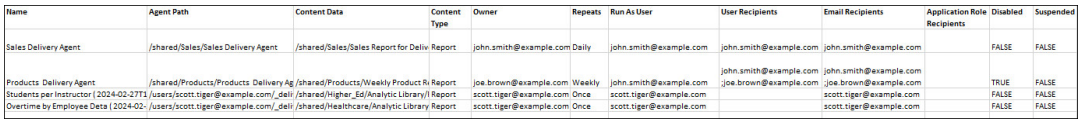


4. Customize the report.
   - Select **Exclude disabled and suspended jobs from the report** if you want the report to contain only jobs that are active.
   - Deselect information to exclude it from the report.



5. To generate the report and download the CSV file to your local file system, click **Export**.
6. Navigate to your download folder and open the report in your favorite editor.

   Look for a CSV file with the name: `DeliveriesReport<timestamp>`. For example, `DeliveriesReport20240620100144854.csv`.



Name	Agent Path	Content Data	Content Type	Owner	Repeats	Run As User	User Recipients	Email Recipients	Application Role Recipients	Disabled	Suspended
Sales Delivery Agent	/shared/Sales/Sales Delivery Agent	/shared/Sales/Sales Report for Deliv	Report	john.smith@example.com	Daily	john.smith@example.com	john.smith@example.com	john.smith@example.com		FALSE	FALSE
Products Delivery Agent	/shared/Products/Products Delivery Ag	/shared/Products/Weekly Product R	Report	joe.brown@example.com	Weekly	john.smith@example.com	john.smith@example.com ;joe.brown@example.com	john.smith@example.com ;joe.brown@example.com		TRUE	FALSE
Students per Instructor (2024-02-27T1	/users/scott.tiger@example.com/_deli	/shared/Higher_Ed/Analytic Library/I	Report	scott.tiger@example.com	Once	scott.tiger@example.com		scott.tiger@example.com		FALSE	FALSE
Overtime by Employee Deta (2024-02-	/users/scott.tiger@example.com/_deli	/shared/Healthcare/Analytic Library	Report	scott.tiger@example.com	Once	scott.tiger@example.com		scott.tiger@example.com		FALSE	FALSE

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Automate Business Processes with Agents

Content authors can create agents that deliver analyses, dashboards, and briefing books to targeted audiences on-demand or on a regular schedule.

Topics:

- Create Agents to Deliver Content
- Schedule an Agent to Deliver Content Directly from an Analysis
- Disable and Enable the Schedule for an Agent
- Subscribe to Agents
- List Agents You Subscribe To or Own
- Access and Manage Your Alerts

Create Agents to Deliver Content

You can create agents that deliver analyses, dashboard pages, and briefing books to specific recipients and subscribers. These agents can deliver content on-demand or on a regular schedule.

Oracle Analytics can run up to 20 agents simultaneously. To avoid exceeding this limit, don't schedule too many agents to run at the same time or try to update agents while many agents are running.

1. On the Classic Home page, click **Create** and select **Agent**.
2. Optional: Set some general options for the agent.
   a. Set a priority level for the agent.

      Consider the importance of the content you want to deliver.

   b. Define how you want to generate the content, that is, which user do you want to run report queries as.
3. Set up a delivery schedule.
   a. Click the **Schedule** tab.
   b. Select whether you want the agent to run on a schedule, how often it runs, when to start, and when to stop.

      When you select the date and time, for time zones where daylight savings applies, the time zone reflects the daylight savings time. For example, if, during the summer months, you select **(GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London**, this means BST (British Summer Time).

      The minimum frequency for daily run by delivery agent is 15 minutes.
4. Optional: Click the **Condition** tab, and select **Use a condition** if you want the agent to only run under certain conditions.
   - Click **Create** to define the condition.
   - Click **Browse** to select an existing condition from the catalog.

   Keep the default (**Do not use a condition**), if you want the agent to always deliver its content.
5. Select the content you want to deliver, such as a dashboard page or an analysis.

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a. Click the **Delivery Content** tab.

b. Enter a name in the **Subject** field.

c. Select the content that you want to deliver.

d. Select the format that you want to deliver the content in.

e. Select the option for how you want to deliver the content when the agent runs.

- **Deliver results directly** - Delivers the results in an email.
  This option displays if you have the **Deliver Content in Email** privilege. This privilege is assigned to everyone by default (Authenticated User).
- **Deliver as attachment** - Delivers the results as an email attachment.
  This option displays if you have the **Deliver Content in Email** privilege. This privilege is assigned to everyone by default (Authenticated User).
- **Deliver link to results** - Delivers a link that you click to sign into Oracle Analytics where you can view the results.
  This option displays when an administrator grants you the **Deliver Content Link in Email** privilege. This privilege is denied to everyone by default (Denied: Authenticated User).

Recipients of an agent must have the same privileges as the delivery agent. For example, if the recipient of an agent delivering a link doesn't have the **Deliver Content Link in Email** privilege, the recipient is shown as invalid.

6. Specify who you want the content to be delivered to and who else is allowed to subscribe to this agent.

a. Click the **Recipients** tab.

b. Click **Add Recipient** to add users individually or add users by their application role.

c. Click **Add Email Recipient** to enter the email address of one or more recipients.

d. Click **Get Recipients from the Analysis Used in the Agent Condition**, and select analysis columns from a condition used by this agent. If the **Condition** tab doesn't contain a condition, then you can't select this option. At runtime this adds recipients whose email addresses are configured for the selected columns used in the condition.

If you select this option the agent must be saved under Shared Folders.

e. Click **Only Return Rows Relevant to the User Running the Agent** to only return data available to the user.

f. To allow other people to subscribe to this agent, select **Publish Agent for Subscription** and then define who can subscribe, by selecting their user name or an application role.

This option is only available for agents or reports saved in Shared Folders.

7. Specify how you want content to be delivered to the recipients. You can send deliveries to Oracle Analytics, by email, and to devices such as mobile phones and pagers.

a. Click the **Destinations** tab.

b. Click **Home Page and Dashboard** to deliver content. Users receive alerts in Oracle Analytics whenever deliveries are sent to them.

c. Click **Devices** to deliver the content in other ways.

- To let users decide how they receive deliveries, select **Active Delivery Profile**.
- To restrict the types of devices that deliveries can be sent to, select **Specific Devices** and select only the device types you want.

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Users set up their deliveries profile through **Delivery Options** preferences (My Account).

8. Save the agent.

   If you want other people to subscribe to the agent, you must save it in a subfolder under `/Shared Folders` so they can find it. For example, `/Shared Folders/MySharedAgents/Sales/MonthlySalesTarget_Agent`.

   After saving the agent, you can run the agent by clicking the **Run Agent Now** button. This is helpful, for example, if you want to test the agent.

The Actions tab is reserved for future use.

Schedule an Agent to Deliver Content Directly from an Analysis

You can set up an agent to deliver content directly from an analysis. When you create an agent in this way, Oracle Analytics sets the **Content** property for you and creates a delivery condition for the agent to help you get started.

1. Navigate to the analysis in the catalog.
2. Click the **More** action menu, and select **Schedule**.
3. Further define the agent, as required.

Disable and Enable the Schedule for an Agent

You can temporarily disable (and then enable) an agent's schedule.

Disabling an agent's schedule stops the agent from running on its defined schedule. It doesn't stop you from running it by other means, for example, by the **Run Agent Now** button in the agent editor.

1. On the Classic Home page, click **Catalog** and navigate to the agent whose schedule you want to disable or enable.
2. Click the **More** action menu, and select **Disable Schedule** to disable the agent's schedule.
3. Click the **More** action menu, and select **Enable Schedule** to run the agent on schedule again.

You also can disable and enable an agent's schedule by using the **Enabled** box in the Schedule tab of the agent editor.

Subscribe to Agents

Subscribe to an agent if you want to receive the most up-to-date information generated by the agent. You can only subscribe to agents if the owner allows you to do so.

1. On the Classic Home page, click **Catalog**.
2. Navigate to the agent you want to subscribe to.
3. Click the **More** action menu, and select **Subscribe**.

   To make an agent available for subscription, the owner must select **Publish Agent for Subscription** (**Recipients** tab) and identify who's allowed to subscribe.
4. To unsubscribe at any time, click the **More** action menu, and select **Unsubscribe**.

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List Agents You Subscribe To or Own

You can display a list of agents that you subscribe to and any agents that you own.

1. On the Classic Home page, click **Catalog**.
2. Click **Search**.
3. To find all the agents, enter ***** (asterisk) in the Search box, select **All** from the Location list, and then select **Agent** from the Type list.

   Alternatively, enter the name or part of the name of an agent in the **Search** field, select a specific **Location**, and then select **Agent** from the Type list.
4. Click **Search**.

Access and Manage Your Alerts

Alerts notify you when content arrives from an agent.

1. On the Classic Home page, click **Alerts!**
2. View and manage your alerts.
   - View the content for an alert.
   - Clear an alert and all its occurrences.
   - Edit the agent that generated the alert, if you have permission to do so.
   - Run the agent that generated the alert, if you have permission to do so.
   - Subscribe to the alert.
   - Clear all your alerts and all their occurrences.

Configure Your Devices and Delivery Profile

You use the Delivery Options tab of the My Account dialog to configure the devices and delivery profiles to be used to reach you when an alert is generated by an agent.

- About Devices and Delivery Profiles
- Configure Your Devices
- Configure Your Delivery Profiles

About Devices and Delivery Profiles

Devices and delivery profiles control how best to reach you when an alert is generated by an agent and on which devices you want to receive the content.

- **Device** — A device is the medium used to deliver content to you. The content of an agent can be delivered to you in different ways, such as, an email or SMS message.
- **Delivery profile** — A delivery profile specifies which devices to use to deliver content to you, based on the priority of the content. You can define several delivery profiles to meet your needs, and switch among them. However, only one profile can be active at any given time.

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For example, you might have an **In the Office** delivery profile that delivers content to an office email, and an **On the Road** profile that delivers content to your cell phone, depending on the priority of the information.

You configure your devices and your delivery profiles from the Delivery Options tab of the My Account dialog.

Your administrator manages the types of devices that are available to you. See Manage the Types of Devices That Deliver Content in *Configuring Oracle Analytics Cloud*.

Depending on the destinations that are specified for an agent, content can be delivered to the:

- Home page and dashboard (Alerts section).
- Active delivery profile or specific devices.

  When the destinations are specific devices, content is delivered to the devices that you have configured rather than to the devices in your active delivery profile. For example, if an agent is defined to be delivered by email devices, then the default email device that you configured is used rather than any email devices that you configured in your active delivery profile.

Delivery content is assigned a specific priority. The default priority is normal. When you select devices for your active profile, you can indicate what priority content should be sent to that device. For example, if you have added a cell phone to your delivery profile, then you might associate it with high priority content only.

Configure Your Devices

You can configure one or more devices where you want alerts to be delivered.

1. On the Classic Home page, click **Signed In As *Your-Username*** and then select **My Account**.
2. Click the **Delivery Options** tab.
3. In the **Devices** area, click **Create Device** to add a device.

   Some agents are set up to deliver alerts according to your active delivery profile but some agents only deliver to specific devices and you define those here. For example, if an agent is set up to deliver to email devices, then the email device that you specify here is used rather than any email devices that you specify in your active delivery profile.
4. For **Name**, enter a name for the device that's easy to recognize. For example, **My Work Email** or **My Work Mobile**.
5. Select the device category. For example, **Email**.
6. For **Device Type**, specify the type that describes your device.
7. For **Address/Number**, enter the address or number associated with your device. For example, your work email address or work mobile phone number.

   Don't use punctuation such as spaces, dashes, or parentheses when you enter a number.
8. Click **OK** to return to the Deliver Options tab of the My Account dialog.

   The device is displayed in the Devices list for the appropriate category (for example, **Email**).
9. If you want this device to be the default device, then select the **Default** option to the right of the device name.
10. To edit a device, perform the following steps:

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a. Select the device in the list.

b. Click the **Edit Device** button to display the Edit Device dialog.

c. Make your edits and click **OK** to return to the Deliver Options tab of the My Account dialog.

11. Click **OK**.

Configure Your Delivery Profiles

You can set up one or more delivery profiles to say where you want alerts to be delivered.

1. On the Classic Home page, click **Signed In As *Your-Username***, and then select **My Account**.
2. Click the **Delivery Options** tab.
3. In the **Delivery Profile** area, click **Create Delivery Profile**.
4. For **Name**, enter a name for the delivery profile that's easy to recognize. For example, **In the Office** or **On the Road**.
5. For each delivery device you want to use when this is the active profile, select one or more priority options — **High**, **Normal**, or **Low**.

   These priorities are used together with the priority of the delivery content to determine which device the content is delivered to.

   Don't set the priority for devices that you don't want to use. Devices that don't have a priority selected aren't used by the profile.
6. Click **OK**.
7. If you want this delivery profile to be your active profile, select the **Active** option.

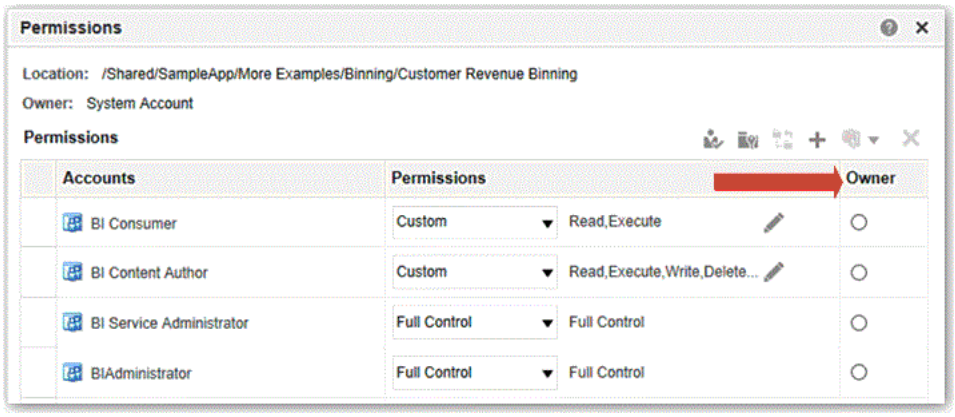
Assign Ownership of Items in Classic Catalog

When you create content in the catalog, you can grant ownership of the content to others. Also, a user who has been granted the proper privileges can take ownership of content.

For example, you can create a Brand Revenue analysis and grant ownership to a Regional Sales Analyst tasked with maintaining the analysis going forward.

1. On the Classic Home page, click **Catalog**.
2. In the Catalog page, search for the content to which you want to assign ownership.
3. In the search results for the item, click **More** and **Permissions**.
4. In the Permissions table, click the **Owner** column to specify the new owner.

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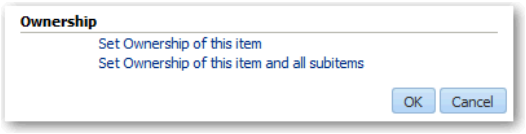
5. Click **OK**.

Assume Ownership of Items in Classic Catalog

As a user or a member of a role, you can take ownership of shared folder content if you're assigned the BIServiceAdministrator role.

For example, if you're a user of the Sales group, you can assign properties to the Sales Forecast analysis to mark yourself as an owner.

1. On the Classic Home page, click **Catalog**.
2. In the Catalog page, search for the content that you want to own.
3. In the search results for the item, click **More** and **Properties**.



4. In the Ownership area, select whether to take ownership of just the item or of the item and its child items.
5. Click **OK**.

About Embedding External Images and Other External Resources in Your Content

You can embed external images and other external resources in reports if your administrator considers it safe to do so.

If you try to add an image from an unapproved source, an invalid image error prompts you to contact your administrator to configure a safe domain for the image.

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Your administrator maintains a list of safe domains. For example, if you want to embed images from *.example.org, ask your administrator to add this domain to the safe list. See Register Safe Domains.

In addition to images, your administrator can authorize or restrict access to other web resources, such as frames, scripts, fonts, stylesheets, audio, video, and connections.

Access Your Reporting Content in Smart View

Oracle Smart View for Office (Smart View) provides a common Microsoft Office interface designed specifically for Oracle's Enterprise Performance Management (EPM) and Business Intelligence (BI).

Using Smart View, you can view, import, manipulate, distribute and share data in Microsoft Excel, Word and PowerPoint interfaces. It’s a comprehensive tool for accessing and integrating EPM and BI content from Microsoft Office products.

For detailed information about making your dashboards and reports available to your BI consumers in Smart View, refer to Smart View and Oracle Analytics Cloud.

Perform Advanced Catalog Management in Classic Catalog

You can use the Catalog page in Oracle Analytics Classic to perform most management tasks for your catalog. You can also use Catalog REST APIs to programmatically perform searches, manage access control lists, move and copy catalog objects, manage folders, and so on. See Catalog REST Endpoints.

If you want to perform advanced tasks, you can deploy and use the Catalog Command Line Interface on a local Windows or Linux machine. For example, the Catalog Command Line Interface enables you to create advanced catalog reports and diagnose catalog issues by viewing the underlying XML code of catalog objects.

Topics:

- Download, Install, and Start Oracle Analytics Client Tools
- Use the Catalog Manager Command Line Interface
- CLI Example: Find and Replace Catalog Text
- CLI Example: Unarchive a Catalog Archive
- CLI Example: Generate a Catalog Report

Download, Install, and Start Oracle Analytics Client Tools

Download and install Oracle Analytics Client Tools to enable remote connections from reporting dashboards and analyses. And you can use Model Administration Tool (one of the

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client tools available for Microsoft Windows) to edit a semantic model (.rpd file) that contains a data source that isn't supported by Semantic Modeler.

> **Note**
>
> After you've installed Oracle Analytics Client Tools, apply the latest database update patch and Web Logic Server patch set. See Apply the Latest Patches for Oracle Analytics Client Tools.

You can install Oracle Analytics Client Tools on Windows or Linux platforms.

- `V1048278-01.zip Oracle Analytics Client March2025-Win for (Microsoft Windows x64 (64-bit))` - For Windows, the software pack installs the graphical user-interface version of Model Administration Tool, as well as command line utilities such as runcat.cmd (for catalog management).
- `V1048279-01.zip Oracle Analytics Client March2025-Linux for (Linux x86-64)` - For Linux, the software pack installs `runcat.sh` and `datamodel.sh` command line utilities.

> **Note**
>
> Oracle updates Oracle Analytics Client Tools with each Oracle Analytics Cloud update. Make sure that you're using the latest update of Oracle Analytics Client Tools. Using mismatched versions leads to incompatibility issues.

1. Navigate to the download page for Oracle Analytics Client Tools.
2. Click the latest **Oracle Analytics Client Tools Latest Update** link to display the Oracle Software Delivery Cloud page.
3. Click the **Platforms** down arrow, click **All**.
4. In the Software column of the table, select the download pack for your platform (Windows or Linux).
   - For Windows, select `V1048278-01.zip Oracle Analytics Client March2025-Win for (Microsoft Windows x64 (64-bit))`.
   - For Linux, select `V1048279-01.zip Oracle Analytics Client March2025-Linux for (Linux x86-64)`.

   Make sure that other components are de-selected (for example, Data Gateway and Power BI Connector).
5. In the Oracle Software Delivery Cloud page, click the license agreement checkbox.
6. Click **Download**.
7. Navigate to the downloaded installer (.exe) file on your computer.
8. Run the installer file as Administrator.
9. Start the Oracle Analytics Client Tools:
   - For Windows, go to the Windows Start menu, click **Oracle Analytics Client Tools**, and select the name of the tool you want to use. For example, to edit your semantic model, click **Model Administration Tool**.
   - For Linux, run the `runcat.sh` and `datamodel.sh` command line utilities. See Using Oracle Analytics Client Tools on Linux.

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Use the Catalog Manager Command Line Interface

You use the Catalog Manager command line interface to perform advanced catalog management. For example, you can create, delete, rename, and view catalog objects.

1. On Windows, from the Start menu, select **Oracle Analytics Client Tools**, then **Catalog Manager CLI**.
2. When using the command line, change to the following directory:

   `BI_DOMAIN\bitools\bin`
3. Run the appropriate script:
   - `runcat.cmd` (on Windows)
   - `runcat.sh` (on Linux)
   - For assistance about commands run:
     `runcat.cmd - help | runcat.sh -help`
4. Enter a command.

   For example, to generate a report that lists the contents of the catalog, enter `runcat.sh -cmd report`.

CLI Example: Find and Replace Catalog Text

You can find and replace text for catalog objects programmatically using the Catalog Manager command line interface. For example, you can write a script to rename folders, files, workbooks, and other objects in the catalog.

Syntax to Find and Replace Text

```
runcat.sh -cmd replace -online <Oracle Analytics Cloud URL>
-folder <root folder to start find>
textreplace -old "<string to replace> -new "<new string>"
-credentials <file with login username and password>
```

Example

In this example, you rename a catalog folder with the name **Revenue**. The new folder name is **Sales Reports**:

```
runcat.sh -cmd replace -online "https:/myoac.ocp.oraclecloud.com/analytics-
ws" -folder "/Shared/North America" textreplace -old "/Shared/North America/
Revenue" -new "/Shared/North America/Sales Reports" -credentials /scratch/
mycredentials.txt
```

Where the credentials file contains the rows:

```
login=<userid>
pwd=<password>
```


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CLI Example: Unarchive a Catalog Archive

You can unarchive a catalog archive programmatically using the Catalog Manager command line interface. For example, you can write a script to unarchive a catalog that you want to migrate to your production system.

Syntax to Unarchive a Catalog Archive

```
runcat.sh -cmd unarchive -online <Oracle Analytics Cloud URL>
-inputfile <path to catalog archive>
-folder <target catalog folder>
-credentials <file with login username and password>
```

Example

In this example, you unarchive the catalog archive `sales.catalog` to the `/Shared` folder:

```
runcat.sh -cmd unarchive -online "https:/myoac.ocp.oraclecloud.com/analytics-
ws" -inputfile /scratch/catalog/sales.catalog -folder "/Shared" -credentials /
scratch/mycredentials.txt
```

Where the credentials file contains the rows:

```
login=<userid>
pwd=<password>
```

CLI Example: Generate a Catalog Report

You can generate a report that contains specific data about objects in your catalog using the Catalog Manager command line interface. For example, you might create a report that shows the SQL statement sent to Oracle Analytics for each object.

Syntax to Generate a Report

```
runcat.sh -cmd report -online <Oracle Analytics Cloud URL>
-outputfile "<output file path>"
-excelformat
-folder "/Shared"
-type "All"
-fields "<colon separated list of fields in the report>"
-credentials <file with login username and password>
```

Example

In this example, you generate a report in Excel format for all catalog objects in the `/Shared` folder. The report contains only the fields that you specify, that is Path, Name, Signature, and so on.

```
runcat.sh -cmd report -online "https:/myoac.ocp.oraclecloud.com/analytics-ws"
-outputfile /scratch/Object.xls -excelformat -folder "/Shared" -type "All"  -
```


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```
fields  "Path:Name:Signature:Content State:Owner:Creator:Created:ACL" -
credentials /scratch/mycredentials.txt
```

Where the credentials file contains the rows:

```
login=<userid>
pwd=<password>
```


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Part V
Publish Data

This part explains how to view and schedule pixel-perfect reports.

Chapters:

- Introduction to Pixel-Perfect Publishing
- View Pixel-Perfect Reports
- Create Pixel-Perfect Report Jobs
- View and Manage Pixel-Perfect Report Jobs
- View and Manage Pixel-Perfect Report History
- Manage Pixel-Perfect Reports

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29

Introduction to Pixel-Perfect Publishing

This topic introduces the features specific to viewing and scheduling pixel-perfect reports.

Topics:

- Overview of Pixel-Perfect Reporting
- Tasks for Report Consumers
- Set Your Account Preferences
- About the Catalog
- Download Desktop Tools

Overview of Pixel-Perfect Reporting

You can use Oracle Analytics Publisher, the pixel-perfect reporting solution for authoring, managing, and delivering all your highly formatted documents, such as operational reports, electronic funds transfer documents, government PDF forms, shipping labels, checks, sales and marketing letters.

The tasks that are available to you depend on the permission that is assigned to you by your administrator. This guide describes how report consumers can view and schedule reports.

Role	Sample Tasks
Administrator	Configure system settings Set up data sources Configure connections to delivery servers Configure the scheduler Diagnose and monitor system processes
Data Model developer	Fetch and structure the data to use in reports
Report designer	Create report definitions and design layouts

Tasks for Report Consumers

Report consumers can run, view and schedule reports.

A report consumer performs the following tasks:

- Run and view reports in real-time from the catalog.
- Schedule reports to run at selected intervals and to various destinations such as printer, fax, or e-mail.
- View the history and the saved output of the report job.

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Set Your Account Preferences

Use the My Account dialog to set or view your account preferences and groups.

1. In the BI Publisher home page, click **My Profile *username*** and select **My Account**.
2. Set or view your account preferences in the **General** tab.
   - **Accessibility Mode**
   - **Email Addresses**
   - **Default Printer**
3. View the groups assigned to you in the **My Groups** tab.

   Your user groups are the application roles to which you're assigned. You can't modify this list.

About the Catalog

The catalog stores the BI Publisher objects, such as reports, data models, and style templates.

Use the Catalog page to locate objects in the catalog and perform tasks specific to those objects. The objects and options that are available to you are determined by your system privileges and the permissions assigned to individual folders and objects.

> **Note**
>
> When you create folders in the catalog, don't use special characters (~, !, #, $, %, ^, &, *, +, `, |, :, ", \\, <, >, ?, ,, /) in the names of the folder.

You can use the Catalog page to perform more specialized tasks such as:

- Setting object-level permissions
- Downloading and uploading objects
- Exporting and importing catalog translations

Browse the Catalog

You can browse the catalog and view the contents of a folder.

Use the Folders pane to display and navigate the content of personal, `My Folders`, and `Shared Folders`. All users can access the content in `Shared Folders`.

1. In the header, click **Catalog**.
2. Select a folder to view its contents in the display area.

Search the Catalog

Use the search feature to quickly locate an object by type and name from anywhere in the catalog.

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1. From the **Search** menu, select the object type and enter all or part of the object's name in the search field.
2. Click the **Search** button to display the results that match your criteria.

From the results page you can select and perform an action on an object from the results, filter the search results, or start a new search.

Download Desktop Tools

Download the Publisher desktop tools to use the Template Builder and the Template Viewer.

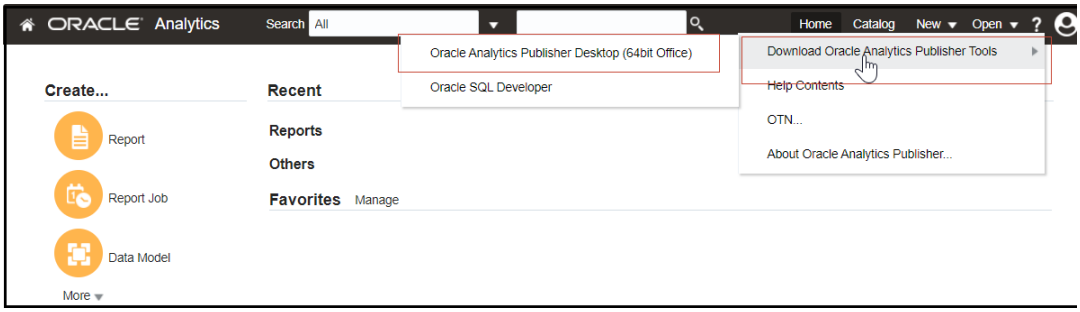
The Publisher desktop tools contain additional products that you can download and install. If you're designing Publisher RTF or Excel templates, select the Template Builder for Word, which downloads the Publisher Desktop installer.

Choose the latest version of the Oracle Analytics Publisher Desktop tool based on your version of Microsoft Office - 32-bit or 64-bit.

Download the Oracle Analytics Publisher Desktop tool directly from the Publisher Tools Downloads page or from:

- Analytics Home page - From **Download Desktop Tools**, select **Template Builder for Word**, and then click **Downloads** in the Oracle Analytics Publisher page.
- BI Publisher **Home** page

  Navigate to Publisher help and select the option to download the Oracle Analytics Publisher Tools, and then click **Downloads** in the Oracle Analytics Publisher page.



Publisher Desktop includes:

- Template Builder for Microsoft Word
- Template Builder for Microsoft Excel
- Template Viewer

This add-in for Microsoft Word facilitates the design of RTF templates.

The Template Builder for Excel is included in the Template Builder for Word installation. The Template Builder for Excel is an add-in for Microsoft Excel that facilitates the design of Excel Templates.

The Template Viewer enables the testing of most template types from your desktop.

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30

View Pixel-Perfect Reports

This topic describes how to view pixel-perfect reports, interact with the report components, view the alternative layouts, and change the output options of the reports.

Topics:

- View a Report
- Configure Pixel-Perfect Reports Using Report Viewer

View a Report

All reports reside in the catalog. The Home page displays the recently viewed reports and your favorite reports for quick access.

The catalog displays two main reports folders:

- **Shared Folders** contains the reports and folders you've been granted access to based on your role.
- **My Folders** contains the reports and folders you've created.

You can view a report using the report viewer. Depending on the report properties and your user permissions, you can select and view the different layouts, interact directly with displayed data, change the output type, or send the report to someone else.

For reports that aren't configured for online viewing, you can schedule a job to run the report.

1. Navigate to the report in the Catalog.
2. Click the report name or click the **Open** link for the report.
3. If the report requires parameter values, provide values for the parameters, and then click **Apply**.

Configure Pixel-Perfect Reports Using Report Viewer

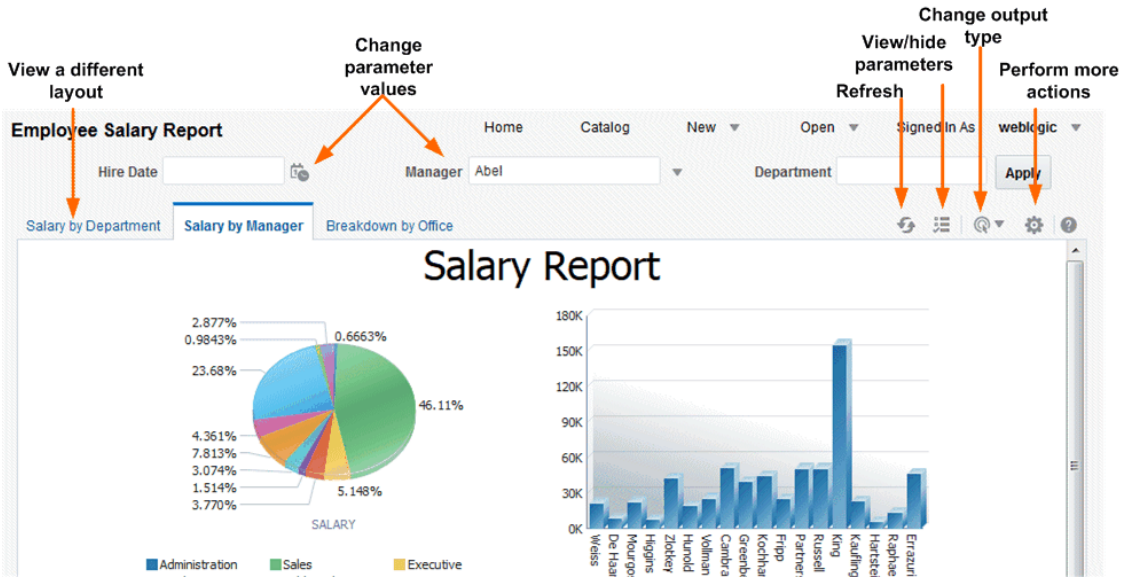
Use the illustrated Report Viewer to configure pixel-perfect reports.

The following options are available in Report Viewer. Not all options are available for all reports.

- Specify parameters
- Select layout
- Select output type
- Perform actions

The image shows the Report Viewer options.

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Specify Parameters

Reports that require parameter value input present the parameter selection prompts in the report viewer. The presentation of the prompts varies according to the report configuration.

Parameters can be presented on the top of the report viewing area, to the left side of the report viewing area, as a pop-up dialog, or as prompts on the page before the report is displayed. Use the report editor to configure the parameter settings specifically for each report.

1. Click **Parameters** in the upper right area of the report viewer to display or hide parameter prompts.
2. Input the parameter values.

   Depending on the report configuration, the following prompt types are available to you for providing the parameter values:

   - Calendar to select a date.
   - Text box to type a value. Separate multiple values with a comma.
   - Choice list to select a value. Some lists support multiple selections. Lists with many values support search. Click **Search** at the bottom of the scroll list to open the **Search** dialog.
   - Check box to make multiple selections.
   - Radio button to make a single selection.
3. Click **Apply** to re-display the report after selecting parameters. If there's no **Apply** button, the report is regenerated automatically after you make a new value selection.

   The display of the **Apply** button is a parameter property setting.

Search for a Parameter Value

Use the parameter search option to search for a parameter value in a list.

To search for a parameter value in a list:

1. Click **Search** at the bottom of the parameter scroll list to launch the Search dialog.

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2. Enter a search string and then choose whether the value you're looking for starts with, ends with, or contains the entered string.

   You can use % and _ as wild cards in your search string:

   - % allows you to match any string of any length, including zero length.
   - _ allows you to match on a single character.

   For parameters that support multiple value selections, the Search dialog includes a shuttle interface to select multiple returned values.

Select a Layout

When multiple layouts are available, they're displayed as separate tabs in the Report Viewer page. Different layouts can have different output types.

1. Open the report in the Report Viewer.
2. Select the report layout tab you want to view.

Select an Output Type

You can select an output option from the menu in the Report Viewer.

1. Open the report in the Report Viewer .
2. Select the output option for the report from the output type menu.

   The output automatically renders either in the browser or in a spawned application.

Output Types

The View Report list contains the output types that are available for a pixel-perfect report.

Output Types

Output Type	Description
Interactive	Enables pop-up chart value displays, navigable and filterable tables, and other interactive features for a report. This output is only available for layouts designed using the Layout Editor.
HTML	Generates the report as an HTML (Hypertext Markup Language) file for browser viewing.
PDF	Generates the report as a PDF (Portable Document Format) file and opens the report in Adobe Acrobat reader. This output type is optimized for printing.
RTF	Generates the report as a RTF (Rich Text Format) file . If you've a word processing application installed, such as Microsoft Word or OpenOffice.org, then you're prompted to open the application for viewing.
Word	Generates the report as a Microsoft Word document in the .docx format.

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Output Type	Description
Excel (*.xlsx)	Generates the report as an Excel.xlsx (Excel XML format) file. If you've Excel 2007 or later installed, this option provides the best preservation of layout and formatting. For output format Excel 2007, that uses the xlsx file extension, Publisher doesn't apply any formatting for number and date. Publisher saves the formatting mask and the actual value (date or number) into the XLSX output file. The formatting is handled by Microsoft Excel. For example: • If the Microsoft Windows Region and Language of the client computer is set to English (United States), then the numbers and dates are formatted in en-US locale in the Excel output file. • If the Microsoft Windows Region and Language of the client computer is set to French (France), then the numbers and dates in the same Excel output file are formatted in fr-FR locale.
MHTML	Generates a MHTML (Mime HyperText Markup Language) file. This option enables you to save a Web page and its resources as a single MHTML file (.mht), in which all images and linked files are saved as a single entity. Use this option to send or save HTML output and retain the embedded images and stylesheet formatting.
PDF/A	Generates a PDF file, which has an archiving standard to support reports that require long-term preservation. PDF/A is a specialized subset of the PDF standard that prohibits elements that may interfere with the preservation of the file as a self-contained document.
PDF/X	Generates a PDF file, which supports pre-press graphics exchange. PDF/X is a specialized subset of the PDF standard that streamlines documents for high-quality print production output and restricts content that doesn't serve the print production, such as signatures, comments, and embedded multimedia.
Zipped PDFs	Generates a zip file containing the report PDF output and index files. This option is only available for reports that have been designed to enable zipped PDF output.
FO Formatted XML	Generates an XML file with the XSL-FO information.
Data (XML)	Generates the XML data. For Safari browser users, the Safari browser renders XML as text. To view the XML generated by the data engine as XML, right-click inside the frame displaying the data and then click **View Frame Source**. This is a display issue only. The data is saved properly if you choose to export the data.
Data (CSV)	Generates the data in comma separated value format. The data must be in a simple `<rowset>/<row>` structure.

Perform Actions

The Actions menu provides more commands and operations that you can perform on a report.

1. Open the report in the Report Viewer.
2. Select the action from the **Actions** menu.

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Actions

The options available to you in the Actions menu depend on your user privileges and properties set for the report.

Menu Option	Description
Add to My Favorite	Adds the report to your **My Favorites** list on your Home page.
Edit Report	Enables you to update the report definition. For example, you can add or create new layouts, update the report properties, or change the default parameter values.
Edit Layout	Enables you to update the layout you're viewing. When the layout was created using the Publisher **Layout Editor**, the Layout Editor launches in the browser. If the layout is based on another supported template type such as RTF, PDF, or Excel then you're prompted to save the template file. You can then open it in the appropriate application.
Export	Exports the report to the default application for the output type you select, for example, Adobe Acrobat for PDF output or Microsoft Excel for Excel output.
Send	Enables you to schedule the report for immediate delivery to an e-mail address, printer, or other destination. The **Send** action launches the Schedule Report Job page where you can select the output, destination, and notification options. You can't send a report in Interactive mode. You must select a different output type such as PDF or HTML from the **View Report** list, and then click **Send**.
Schedule	Creates a job to run and distribute the report.
Jobs	Enables you to view and manage currently scheduled jobs for this report.
Job History	Enables you to view completed and running report jobs.
Republish from History	Enables you to select a previously scheduled, completed job and specific output for viewing in the report viewer.
Share Report Link	Enables you to generate a link that you can copy and reuse, based on the report that you're currently viewing. When you select an option, a dialog displays the URL to the report. You can control what the URL displays as follows: • **Current Page** displays the current page as shown. • **No Header** displays the current report without the Publisher logo, tabs, or navigation path. • **No Parameters** displays the current report without the header or any parameter selections. The **Actions**, **Export**, and **View Report** menus are still available. • **Document Only** displays the URL to the current report document only. Displays no other page information or options. Use the `/xmlpserver` URL (for example: `https://hostname.com:7001/xmlpserver`) to directly access the Publisher report page, and then use the **Share Report Link** option. If you use the `/analytics` URL to browse the catalog and share the report link, the **Share Report Link** option doesn't work.

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31

Create Pixel-Perfect Report Jobs

This topic describes how to create and monitor pixel-perfect report jobs. You can schedule report jobs to run at defined intervals and deliver reports to multiple destinations.

Topics:

- Navigate to the Schedule Report Job Page
- Set General Options
- Set Output Options
- Define the Schedule for a Job
- Configure Notifications
- Submit and Monitor a Job
- Create a Job from an Existing Job
- Create a Bursting Job
- Advanced Topics

Navigate to the Schedule Report Job Page

Navigate to the Schedule Report Job page to schedule a report job.

1. Navigate to the Report Job page from the Home page, the catalog, or the Report Viewer.
   - From the Home page, under **Create**, select Report Job.
   - From the **Catalog**, navigate to the report you want to schedule, then select the **Schedule** link.
   - From the **Report Viewer**, click **Actions** and then click **Schedule**.
2. Use the Schedule Report Job tabs to define the options for your report job.

Set General Options

Use the **General** tab to enter the general information in the table for a report job.

Before you a schedule a report job, make sure you have designed the data model and the layout for the report. If the you have defined parameters in the data model, specify the parameter values for the report job.

1. Select the **General** tab.
2. Enter the following information for the report job.
   - **Report** - If you accessed the Schedule page from the report, this field displays the report path and name. If you accessed the Schedule page from the **Create** region or the global header, click **Choose** to browse for and select the report to schedule.

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- **Parameters** - Any parameters defined for the report are displayed. Enter the values for this job. For parameters that allow text entry, separate multiple values with a comma. For date parameters, you can use an expression to increment the date for each run.

Set Output Options

Each scheduled job can have multiple output files with distinct characteristics. Each output file can have multiple destinations.

The **Output** tab has two regions: **Output** and **Destination**.

1. Select the **Output** tab.
2. Select the output options required for the job.
   - Select **Use Bursting Definition to Determine Output and Delivery Destination** to use the report bursting definition for output and delivery. If you select this option, all other fields on this page are disabled for selection. This option is only available when bursting is enabled for the report.
   - Select **Use XML Data Chunking** to chunk XML data for processing large reports. If you select this option, the job can have only one output. This option is available only if you've enabled XML data chunking for the report.
   - Select **Enable XML Pruning** to prune large non-binary datasets. This setting isn't affected by the setting to prune XML data in the data model.
     XML data pruning isn't supported for:
     - XPT template
     - Bursting reports
     - Chunking XML data
   - Select **Make Output Public** to make this job output available to all users with permission to access this report. Users with access can view the report from the Report Job History page.
   - Select **Save Data for Republishing** to save the XML data that is generated for this job. Access the saved data from the Report Job History page where you can republish it, selecting a new layout and output options.
   - Select **Compress output prior to delivery** to compress each report (all report formats except HTML) before delivery. The format for the file name of each compressed report is *Name_Output Format*.zip. For example, if the delivery destination is email for Order.pdf and Invoice.xlsx reports, the order_PDF.zip and Invoice_XLSX.zip reports are attached to the email.
     Supports email, HTTP, Content Server, and Documents Cloud Service (Oracle Content Management) delivery channels.

     In the Report Job History page, if you view the details of a job that was configured with the **Compress output prior to delivery** option, and then click **Send** in the Output & Delivery section, the delivered output isn't compressed.

Add Destination Types to Report Output

Enter delivery details in the report's Destination region to deliver a report to multiple destinations.

Administrator must set up the delivery servers in the Administration page.

1. From an existing report in the Report Viewer, select **Actions**, and then select **Schedule**.

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2. In Schedule Report Job, click the **Output** tab.
3. In the **Output** tab, open Destinations, and from the **Destination Type** list, choose a destination type.

   Only those destination types set up by your administrator are displayed in the **Destination Type** list.
4. For each destination, from the **Output** list, select the documents to send to the destination.
5. Click **Add Destination** to deliver a report document to multiple destinations.
6. Select **Save Output** to view the output from the Report Job History page.

Report Output Destination Types

Select and define the destination types for your report's output in the Schedule Report Job page.

Only the destination types configured by the administrator are available for selection. You can add multiple destinations for the report's output.

Destination Type	Description
Email	Enter multiple email addresses separated by a comma. Enter any message text to include with the report. To format the message text, you can use HTML 4 elements such as fonts, lists, table cells, hyperlinks, and embedded GIF images. Use these options to configure a notification for email receipt and email read. • **Request Delivery Status Notification** Select this option to email a notification message to the sender when the email delivery is successful, delayed, or failed. • **Request Read Receipt** Select this option to email a notification message to the sender when the recipient opens the email message.
Printer	Select the printer group and the printer, enter the number of copies, and then select single sided or double sided (the printer must support duplex printing for this option to take effect). Optionally, select the printer default tray from which to print the report, and the print range pages.
Fax	Enter the fax number to which to send the report.
FTP	Skip the username and password fields to use the FTP delivery settings configured by the administrator. Only if you want to override the configuration of the FTP server and use password-based authentication, enter the valid username and password credentials for the FTP server. Specify the following properties: • **Remote Directory** (Required) Enter the delivery directory location, for example, `/pub/`. To deliver the document to the user's home directory, enter `.` (period). • **Remote File Name** (Required) Enter the file name for Publisher to assign to the delivery document on the remote server, for example, myreport.pdf. You must include the file extension in the name, for example, .pdf . You can assign a file name dynamically using a date expression.

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Destination Type	Description
Content Server	Select the content server and the destination folder. To limit access to the report on the content server, assign a Security Group and Account to the report. Publisher retrieves the Security Group and Account values configured for the content server.
Content and Experience	Select the Oracle Content Management server and the destination folder.
Object Storage	Select the Object Storage where you want to deliver the report, enter the prefix text, and the file name for the report. The prefix helps in organizing the reports in the Object Storage. When you want to download the report output from an Object Storage, the prefix helps you identify the reports. Prefix defines the folder path in Object Storage. You can provide an existing prefix or a new prefix. You can use job ID or report name as the prefix. If you don't provide a prefix, `BIP` is used as the prefix by default.

Content Server Destination Type Properties

Content Server is one of the destination types to deliver your report document. Select the content server where you want the report delivered.

Use the information in this table to enter appropriate values for the Content Server properties.

Property Name	Description
Security Group	(Optional) Select the Content Server security group to assign to the report.
Account	(Optional) Select an account within the Security Group to assign to the report. You can enter values for the following required metadata fields. If you don't enter values for these fields, the values from the default report information apply.
Author	(Optional) Enter the name of the report's author. you leave this field blank, your user ID is used for the Author metadata field on the Content Server. If the administrator selected **Use Logged in user as Author** for the Content Server, Publisher sets the logged in user as the author in the Author metadata field on the Content Server.
Title	(Optional) Enter a title for the report. If you don't enter a title, the layout name is used for the title on the Content Server.
File Name	Enter the file name to assign to the delivered document on the remote server, for example, myreport.pdf. The file name is used as the Native File Name on the Content Server. If you don't supply a file name value, the Output name is used.
Comments	(Optional) Enter a description to include with the document on the Content Server.
Include Custom Metadata	The **Include Custom Metadata** option is only available if the data model for the report includes a Custom Metadata component. When you select the Include Custom Metadata option, the delivered document includes the custom metadata fields specified in the data model.

When you can configure an embedded parameterized report to display online, the parameters display the appropriate values from an analysis or a direct connection to a subject area. When you schedule a an embedded parameterized report, the parameters from the analysis aren't passed to the report. As a result, the report displays default values of the parameters used in

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the analysis. For a direct connection with a scheduled report, the parameters are passed and the values are displayed correctly in the report.

Add Outputs

You can create multiple report documents for one or more layouts using a combination of output format, locale, time zone, and calendar.

1. From an existing report in the Report Viewer, select **Actions**, and then select **Schedule**.
2. In Schedule Report Job page, click the **Output** tab.
3. In the **Output** tab, click **+** to add an output.
4. In **Name**, type a name for the output.

   The length of the report job output file name must be less than 100 characters.
5. Select the options to use from the **Layout**, **Format**, **Locale**, **Timezone**, and **Calendar** lists.
   - For Output Format, specify the type of document generated such as PDF, HTML, or XLS. The available outputs are specified in the report definition.
   - For Locale, the locale defaults to the `Report Locale` defined in the user **Preferences**. If the layout doesn't have an available translation for the selected locale, Publisher applies a locale fallback logic to select the layout. The appropriate number and date formatting are applied independently of the template translation.
   -
6. Click **Save Output**.

Define the Schedule for a Job

You can define a schedule for executing a report job.

1. From the Oracle BI Publisher Home page, under Create, select **Report Job**.
2. In Schedule Report Job, on the General tab, click search next to the **Report** field.
3. In Open, navigate to and select the report, and then click **Open**.
4. In Schedule Report Job, click the **Schedule** tab.
5. In the **Frequency** list, select the option to use for this report.
6. Complete the options for the specified frequency.
7. Click **Submit**.
8. In Submit, in the **Report Job Name** field, type a name, and click **OK**.

Define a Recurrence Pattern

In the Schedule Report Job page's Schedule tab, define the when the report is run from these recurrence pattern options.

Option	Description	Values
Frequency	Defines when to run the report job using the scheduler from the **Frequency** list.	NA

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Option	Description	Values
Frequency	**Once**	Use the **Run Now** option or use the date selector to enter the specific **Start** date and time
Frequency	**Hourly/Minute**	Use the following values: • **Every** - Select Hour(s) or Minute(s) and enter the appropriate integer value for the increment. • **Start** - Use the date selector to enter the date and time to start running this job. • **End** - (optional) Use the date selector to enter an end date and time for this job.
Frequency	**Daily**	Use the following values: • **Every** - Enter the increment in days, for example, to run the report every day enter 1, or to run the report every other day, enter 2. • **Start** - Use the date selector to enter the date and time to start running this job. The time selected determines when (hour of the day) the job is run. • **End** - (Optional) Use the date selector to enter an end date and time for this job.
Frequency	**Weekly**	Use the following values: • **Every** - Enter the increment in weeks and select the desired day or days of the week. For example, to run the report every Tuesday and Thursday, enter 1, and then select Tuesday and Thursday. To run the report every other Wednesday, in the **Schedule** tab, select **Frequency** = Daily, **Every** =14, **Start** = first Wednesday when you want to run the report, and **End** = future end date. • **Start** - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is processed for each run. • **End** - (optional) Use the date selector to enter an end date for this job.
Frequency	**Monthly**	Use the following values: • **Every** - Select each month that the job runs. • **On** - Select either a day of the week, for example, 1st Monday of every month; or select a specific day of the month, for example, 15. • **Start** - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is processed for each run. • **End** - (Optional) Use the date selector to enter an end date for this job.

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Option	Description	Values
Frequency	**Annually**	Use the following values: • **Every** - Enter the increment in years that the job runs. • **On** - Select either a day in a month, for example, Day 1 of January, or select a day of the week for the month, for example, First Monday of January. • **Start** - Use the date selector to enter the date and time to start running this job. The time selected determines the time that the job is processed for each run. • **End** - (Optional) Use the date selector to enter an end date for this job.
Frequency	**Specific Dates**	Use the **Add Date** option to specify the date and time to run the job. Add multiple specific dates as needed.
Run Now	This option depends on the selection made from the **Frequency** options.	NA
Start	This option depends on the selection made from the **Frequency** options. Specifies the date and time to start the report job.	NA

Use Schedule Triggers

You can associate a job with a schedule trigger that is defined in any data model.

A schedule trigger enables you to execute a report when the trigger condition is met. You can configure one trigger per report job. The schedule trigger that you associate with a report job can reside in any data model in the catalog. You don't need to create the schedule trigger in the data model of the report for which you want to execute the trigger. You can reuse schedule triggers across multiple report jobs.

About Schedule Triggers

A schedule trigger tests for a condition which if met, runs a job.

If the trigger condition returns a result, the specified job runs. If the trigger condition isn't met, the job instance is skipped. You can also set up a repeat schedule for the trigger to keep checking for the condition. If the condition isn't met, you can set the time interval, in minutes, to wait before the trigger is processed again.

You could use a schedule trigger when:

- A report job should only run after the successful completion of an extract, transfer, and load process.
- Account management wants a report triggered if any of the receipts from the previous day exceed a specified amount.
- Human resources needs a report only when new hires entered the system in the previous week.

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Set the triggers in the data model and then they're available for selection from the **Schedules** tab.

Enable a Schedule Trigger

You can enable a trigger defined in the data model.

1. Select **Use Trigger**.
2. Optional: Set the **Retry Limit** value to specify the maximum number of times to process the schedule trigger to check for the condition. The default value is 1 and only positive integer values are allowed in this field.
3. Optional: Set the **Pause Time** value to specify the number of minutes to wait before re-processing the schedule trigger. If the **Retry Limit** value is set to a value greater than 1, this field is enabled. Only positive integer values are allowed in this field.

   The retry limit and pause time should not exceed the recurrence schedule time interval. If the condition returns false when the maximum number of attempts is reached, then the job status is displayed as Skipped.
4. Select the **Data Model** that defines the schedule trigger.
5. Select an option from the **Trigger** list.
6. If the schedule trigger includes parameters, select values to use.

Configure Notifications

You can configure email and HTTP notifications.

Make sure the administrator configures the delivery email servers or HTTP servers to send the notifications.

A notification is a message that a job has finished processing. Publisher supports the following notification statuses:

- Report completed
- Report completed with warnings
- Report failed
- Report skipped

- Select the **Notification** tab.
  - To enable email notification, perform these steps:
    1. For **Notify By**, select **Email**.
    2. Select the report completion statuses for which to send the notification.
    3. Enter a comma-separated list of addresses.
  - To enable HTTP notification, perform these steps:
    1. For **Notify By**, select **HTTP**.
    2. Specify the HTTP server to which to send the notification.
    3. Specify the user name and password for the HTTP server, if required.
    4. Select the report completion statuses for which to send the notification.

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Submit and Monitor a Job

Use the Submit Job dialog to review the confirmation details of the job.

1. Select **Submit** to invoke the Submit Job dialog with confirmation details for you to review.
2. Enter a name for this job and click **Submit**.
3. Optional: On the global header, click **Open** and then click **Report Jobs** to suspend, edit, or delete a job.
4. Optional: On the global header, click **Open** and then click **Report Job History** to monitor a running job or to see the results.

Create a Job from an Existing Job

You can create a job from an existing job in the Manage Report Jobs page.

1. From the Oracle BI Publisher Home page, under **Browse/Manage**, click **Report Jobs**.
2. In Manage Report Jobs select filter criteria to find the existing job.
3. In the results table, click **Edit** to open the job for editing.
4. Enter the details for the new job definition. When finished, click **Submit as new**.
5. Enter a name for the new job and click **Submit**.

Create a Bursting Job

You can create a bursting job if the report is configured for bursting.

Bursting is splitting of the report data into multiple blocks based on a key field in the data and then applying specific parameters for the layout and delivery for each block of data. For example, a customer invoice report can be burst to deliver each customer's invoice to their own email address.

You must configure the bursting definition for a report in the report's data model.

1. Make sure the report is enabled for bursting.
2. From the Oracle BI Publisher Home page, under Create, select **Report Job**.
3. Select the **Use Bursting Definition to Determine Output & Delivery Destination** box on the **Output** tab.

Advanced Topics

You can increment date parameters and dynamically define a destination file name.

Topics:

- Increment Date Parameters
- Define a Destination File Name Dynamically with a Date Expression

Increment Date Parameters

You can provide expressions in the report's date parameter fields.

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If the scheduled report includes date parameters, when you enter values for the schedule dates, you can't change the date values. Every time a scheduled instance of the report is run, the same date parameters are used. If changing the date parameters is required for each run, you can enter an expression in the date parameter field of the scheduler to calculate the date each time the report job runs.

For example, if you create a schedule for a report that runs every Monday to capture data from the previous week, you need to update the date parameters for the report to increment to the first and last days of the previous week.

Enter one of the following functions using the syntax shown to calculate the appropriate date at the scheduled runtime for the report:

- {$SYSDATE()$} - Current date, the system date of the server on which BI Publisher is running.
- {$FIRST_DAY_OF_MONTH()$} - First day of the current month
- {$LAST_DAY_OF_MONTH()$} - Last day of the current month
- {$FIRST_DAY_OF_YEAR()$} - First day of the current year
- {$LAST_DAY_OF_YEAR()$} - Last day of the current year

The date function calls in the parameter values aren't evaluated until the report job is processed by the Scheduler.

You can also enter expressions using the plus sign (+) and minus sign (-) to add or subtract days as follows:

- {$SYSDATE()+1$}
- {$SYSDATE()-7$}

For this example, to capture data from the previous week, each time the schedule runs, enter the following in the report's date parameter fields:

- Date From: {$SYSDATE()-7$}
- Date To: {$SYSDATE()-1$}

You can set up the date functions as default parameter values in the data model. In this case, every time a user views the report from the report viewer, the date parameter is calculated according to the expression supplied for the default value.

Define a Destination File Name Dynamically with a Date Expression

When entering the remote file name for a Web folder or FTP destination, you can enter a date expression to dynamically include in the file name. The date is set at runtime, using the server time zone.

The date expressions are described in the following table.

Expression	Description
%y	Displays the year in four digits: Example: 2011
%m	Displays the month in two digits: 01-12 (where 01 = January)
%d	Displays the date in two digits: 01-31
%H	Displays the hour in two digits based on 24-hour day: 00-24
%M	Displays the minute in two digits: 00 - 59

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Expression	Description
%S	Displays the number of seconds in two digits: 00 - 59
%I	Displays milliseconds in three digits: 000 - 999

Examples

Use these examples to create a file name that appends a date and a file name that prefixes a date and appends a time.

To create a file name that appends the day, month, and year such as:

```
myfile_01_11_2010.pdf
```

Enter the following:

```
myfile_%d_%m_%y.pdf
```

To create a file name that prefixes the day, month, and year and appends the hour and minute such as:

```
01_01_2010_myfile_22_57.pdf
```

Enter the following:

```
%d_%m_%y_myfile_%H_%M.pdf
```

If the file name includes an undefined expression such as `my_file_%a%b%c.pdf`, the file is created as named *my_file_%a%b%c.pdf*.

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32

View and Manage Pixel-Perfect Report Jobs

This topic describes how to view and manage pixel-perfect report jobs submitted to Publisher.

Topics:

- About the Manage Report Jobs Page
- View Jobs for a Specific Report
- Search for Report Jobs
- Set the Time Zone for Viewing Jobs
- View Job Details
- Pause Jobs
- Resume Jobs
- Delete Jobs
- Edit Jobs

About the Manage Report Jobs Page

The Manage Report Jobs page displays information about future scheduled and recurring report jobs and enables you to take actions on these jobs.

Use the Manage Report Jobs page to:

- View the future scheduled and recurring jobs for your private, shared, and public reports.
- Select the time zone in which you want to view the job start and end time.
- Refresh the display page to display the recently submitted jobs.
- Link to the report history to view the output of completed job runs.
- Edit a report job.
- Delete a report job.
- Suspend/Resume a report job.
- View the job details.

Access the Manage Report Jobs Page

You can access the Manage Report Jobs page and then search for the report jobs to manage; or, you can access this page from the context of a specific report.

1. To search for jobs to manage, navigate to the Manage Report Jobs page in one of the following ways:
    - On your home page, select **Browse/Manage**, then **Report Jobs**.
    - On the global header, click **Open**, and then click **Report Jobs**.

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2. To access the Manage Report Jobs page from the context of a specific report perform one of the following:
   - From the catalog, navigate to the report in the catalog and click **Jobs**.
   - From the **Report Viewer** page, click **Actions**, and then click **Jobs**.

View Jobs for a Specific Report

In the Manage Report Jobs page, you can specify the search criteria and view jobs of a specific report.

If you navigate to Manage Report Jobs from the context of a specific report, the jobs for that report are automatically displayed in the table with the default filters applied.

Following are the default filters applied:

- **Report Name** - The name of the report from which you launched the Manage Report Jobs page
- **Owner** - Your user ID
- **Scope** - All (public and private jobs)
- **Status** - All (active and suspended jobs)

1. With a report open, from the Catalog or Report Viewer, go to Manage Report Jobs.
2. Specify the search criteria to further filter the results.
3. View the reports listed under **Report Jobs**.

Search for Report Jobs

You can specify a search criteria and search for report jobs.

You can sort the report jobs search results table by a particular column by clicking the column heading and selecting the up arrow or down arrow for ascending or descending.

1. On the header, click **Open**, and then click **Report Jobs**.
2. In the Filters section, enter values for the **Filter** criteria to search for a specific job or group of jobs.
3. Click **Search**. The jobs that meet the filter criteria are displayed in the **Report Jobs** table.

   The Report Jobs table displays the general information about the job as well as the status.

   Possible status values are:

   - **Active** - The job runs when the schedule event occurs.
   - **Paused** - The job is suspended. The report job doesn't run again until it's been resumed. Paused jobs are displayed when searching for **Suspended** jobs using the filter criteria.

Set the Time Zone for Viewing Jobs

You can select the time zone for viewing the job start and end times on the Manage Report Jobs page.

1. Navigate to the Manage Report Jobs page in one of the following ways:

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- On your home page, select **Browse/Manage**, then **Report Jobs**.
- On the global header, click **Open**, and then click **Report Jobs**.

2. Select the time zone from the **Select time zone to view jobs** list.
3. Click **Refresh**.

   The **Report Jobs** table refreshes and displays job start and end times in the selected time zone.

View Job Details

You can view the details of a job listed in the Manage Report Jobs page.

1. On the header, click **Open**, and then click **Report Jobs**.
2. Click the **Report Job Name** to view the details of the job.
3. To view the delivery information for each output, click the expand icon next to the output name.
4. Click **Return** to return to the Manage Report Jobs page.

Pause Jobs

You can search for report jobs in the Manage Report Jobs page and pause jobs.

1. On the header, click **Open**, and then click **Report Jobs**.
2. In the Manage Report Jobs page, select the job by clicking anywhere except the job name link in the table row that lists the job information.

   You can select multiple jobs by pressing **Ctrl** or **Shift** and then selecting the additional rows. Deselect a row by clicking it again.
3. Click **Pause**.

Resume Jobs

You can search for report jobs and change the status of a paused job to active.

You can select multiple jobs by pressing `Ctrl+Shift` and then clicking the additional rows. Deselect a row by clicking it again.

1. On the header, click **Open**, and then click **Report Jobs**.
2. In the Filters section, specify the criteria to search for a specific job or group of jobs, and then click **Search**.
3. In the Report Jobs table, select the job by clicking anywhere except the job name link in the table row of the paused job.
4. Click **Resume**.

   The status of the job changes to *Active*.

Delete Jobs

You can search for report jobs in the Manage Report Jobs page and delete a job.

1. On the header, click **Open**, and then click **Report Jobs**.

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2. In the table row that lists the job information, select the job by clicking anywhere except the job name link.

   You can select multiple jobs by clicking additional rows.

3. Click **Delete**.

Edit Jobs

You can search for report jobs in the Manage Report Jobs page and edit a job.

1. On the header, click **Open**, and then click **Report Jobs**.
2. In the Manage Report Jobs page, do one of the following:
   - Click the **Edit** icon for the job in the results table.
   - Click the **Report Job Name** to view the detail page for the report job, and then click the **Edit** icon next to the report job name.
3. Edit the job details using the **General**, **Output**, **Schedule**, and **Notification** tabs.
4. Click **Submit Job** to save your changes to this job or, to save the edited job as a new job, click **Submit as New** and enter a name for the new report job.

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33

View and Manage Pixel-Perfect Report History

This topic describes the job history features including republishing data from history, sending the job output to new destinations, and getting error information on report jobs that didn't complete successfully.

Topics:

- View Report Job History and Saved Output
- View Job History for a Specific Report
- Search for Report Job History
- View Details of a Job History
- Download Data from a Report Job
- Republish a Report from History
- Send an Output to a New Destination
- Monitor Running Jobs
- Cancel a Running Job
- Get Error and Warning Information for Reports
- Delete a Job History

View Report Job History and Saved Output

The Report Job History page displays information about running and completed report jobs.

You can access the Report Job History page and then search for the report job history. You can also access this page from the context of a specific report. Use one of the following to select **Report Job History**.

- **Browse/Manage** in the Home page.
- **Open** on the global header.

Use the **Report Job History** page to:

- View the status and details of running and completed report jobs.
- Identify the critical jobs.
- Cancel a running job.
- Monitor a running job.
- View job submission details.
- Download or view the XML data produced from the report, if you selected **Save Data** for the report.
- Download or view the report document, if you selected **Save Output**.
- Republish the report data using other formats or templates, if you selected **Save Data for Republishing** for the report.

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- Delete report jobs from history.

BI Publisher automatically deletes the records of scheduled jobs that haven't been updated in the last 90 days. Recurring jobs that are active and old jobs with active child jobs aren't deleted. If you want to retain some reports and report data beyond 90 days, download and archive those reports and XML data for future reference.

View Job History for a Specific Report

If you navigate to the Report Job History page from the context of a specific report, then the jobs for that report are automatically displayed with the default filters applied.

1. Perform one of the following:
   - From the **Catalog**, navigate to the report, and click **Job History**.
   - From the **Report Viewer**, navigate to the report, and click **Job History**.
2. In the Report Job History page, specify the filters if required and click **Search**.

   Following are the default filters:
   - *Report Path* - The path to the report from which you launched the Report Jobs History page.
   - *Start Processing* - Equals to or later than one week ago.
   - *Owner* - User ID.
   - *Scope* - All Histories including Private Job Histories and Public Job Histories.
   - *Status* - The possible values for status:
     - Success - The job completed without error.
     - Failed - The job failed to complete.
     - Running - The job is currently running.
     - Output has error - The job completed with errors.
     - Canceled - The job was cancelled
     - Cancelling - The job is in the process of being cancelled.
     - Delivery has error - The job couldn't deliver the report to the specified destination.
     - Update status has error - The instance Job ID is null or empty because of an issue and the scheduler can't set the job status.
     - Deleted - The job is deleted.
     - Scheduled - The job is scheduled.
     - Skipped - The job was skipped. When there's an event trigger associated with the data model used in the report and if that trigger execution either returns False or throws an exception, the scheduler skips that job and sets the status to Skipped and halts processing.
     - Suspended - The job execution is suspended for some reason.
     - Unknown - The job is in an undefined state that's not matching the other statuses.
     - Waiting - The job is in queue for reasons such as the threads aren't available for JMS Processor. In this case, the scheduler doesn't start processing the job.

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Search for Report Job History

Specify the filter criteria for searching a report job history.

1. Enter values for the **Filter** criteria to search for a specific job history or group of completed report jobs.
2. Click **Search**. The jobs that meet the filter criteria are displayed in the Report Job Histories table.

   You can sort the table by a particular column by clicking the column heading and selecting the up arrow or down arrow for ascending or descending.

View Details of a Job History

Use the Report Job History page to view the details of a job history.

1. In the Report Job History page, click the **Report Job Name** to view a detail page for the job.
2. To view delivery information for each output, click the expand icon next to the output name.
3. Click **Return** to return to the Report Job History page.

Download Data from a Report Job

You can view the details of a report job, download the XML data, and save the file to your preferred location.

You must enable the **Save Data for Republishing** option when you create the job to make the data available for republishing.

While the output download or XML data download from a report job is in progress, you can download the output or XML data from another report job. You can't download the output or XML data from the same report job for which the download is in progress except in these cases:

- If the subsequent request to download the output or XML data from the same job is handled by a different node in the cluster.
- If the report job has multiple outputs, you can download the output in different formats in parallel in different browser tabs or sessions.

1. In the Report Job History page, click the report job name in the Report Job Histories table to view the job detail page.
2. In the **Output & Delivery** section, click the **XML Data** download button.
3. When prompted, select the location to save the file.

Republish from History in Report Viewer

In Report Viewer, you can use your job history to republish data.

On successful completion of the jobs that save data for republishing, you can republish data using any of the supported output formats for the layout templates included in the report. You can apply a new layout, choose a different output format, or export the report. Because you're using the data retrieved from a previous report run, you can't update the parameters.

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1. Select the report in the BI catalog.
2. Click **Open** to run the report in Report Viewer.
3. On the **Actions** menu, click **Republish from History**.
4. In the Open dialog, select the job name and specify the output format.

   In the **Job Name** drop-down list, you can view only ten jobs. To view all the jobs submitted by you in the Report Job History page, click **View full history for this report**.
5. Click **Okay**.

Republish a Report from History

You can republish a report from history.

You must enable the **Save Data for Republishing** option when you create the job to make the data available for republishing.

1. In the Report Job History page, click the **Report Job Name** to view the job detail page.
2. From the **Output & Delivery** section, click **Republish**  . This launches the **Report Viewer**.
3. From the **Report Viewer** you can now apply a new layout, choose a different output type or export the report. Because you're using data the retrieved from the previous report run, you can't update the parameters.
4. To return to the Report Job History page, click the **Actions** menu and select **Return**.

Send an Output to a New Destination

You can send the output of a report to a new or the same destination.

You must enable the **Save Output** option when you create the job to make the output available in the history table. It simply sends the output to the destination selected.

1. In the Report Job History page, click the **Report Job Name** to view the job detail page.
2. In the **Output & Delivery** section, locate the output that you want to send to a new destination or to the same destination, and click **Send**.
3. In the Send dialog, do the following:
   a. Select the delivery type.
   b. Click **Add Destination**.
   c. Enter the appropriate fields for your delivery type.
4. After you finish adding the destinations, click **OK**.

After you close the delivery submission notification, you can select a destination type and click **Add Destination** to get the **OK** button to submit another report delivery. In the Job History Details page, you can view the delivery status of report deliveries.

Monitor Running Jobs

You can monitor the stages of the report processing when a job is in running status.

1. In the Report Job History page, hover over the **Running** status indicator in the Report Job Histories table.

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The status displays with the instance ID of the cluster instance handling the processing.

2. To check the latest status, refresh the page. The status doesn't automatically update while you're viewing the page.

Process Stages of Jobs

This topic lists the processing stages of a job.

Processing Stage	Substages
Job Processor	Sending to Job Queue In job queue In job processor Job processor completed Job processor caused exception
Data Fetching	Fetching XML Data XML Data Fetched Before calling data model pre-trigger After calling data model pre-trigger Before calling data model post-trigger After calling data model post-trigger
Fetching Bursting Control File (for bursting jobs only)	Fetching bursting control XML Bursting control xml fetched
Data Processor	In data processor Parsing control file (applies only to bursting jobs) Control file parsed (applies only to bursting jobs) Cutting data based on split key (applies only to bursting jobs) Data cutting completed (applies only to bursting jobs) Total sub-jobs (applies only to bursting jobs) Data processor completed
Report Processor	In report processor Rendering report document Report document rendering completed Report processor completed Error rendering report document
Delivery Processor	In <delivery> processor Delivering to <delivery> processor Document delivered to <delivery> server <Delivery> processor completed

Cancel a Running Job

You can cancel a running job.

1. In the Report Job History page, click anywhere within the table row for the report job to select it (except the job name link).

   You can select multiple jobs by pressing **Ctrl** or **Shift** and then clicking the additional rows. Deselect a row by clicking it again. You can only cancel a job that has the status, *Running*.

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2. Click the **Cancel Running Jobs** icon at the top of the table.
3. Click **OK** in the confirmation message.

Get Error and Warning Information for Reports

If a report job fails or completes with warnings, you can view the error and warning information.

- In the Report Job History page, hover over the error or warning status indicator in the results table

  The job details page also displays error and warning.

  For more complete diagnostic information on errors or warnings, you can view the diagnostic log files for the job.

Delete a Job History

You can delete a job history.

1. In the Report Job History page, click anywhere within the table row for the report job to select it (except the job name link).

   You can select multiple rows.
2. Click the **Delete** icon at the top of the table.
3. Click **OK** on the Confirmation dialog.

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34

Manage Pixel-Perfect Reports

This topic describes how to manage the pixel-perfect report components in the folders. It includes setting permissions, downloading and uploading reports and folders, and moving report components in the catalog.

Topics:

- Overview of Folders
- Reporting Components Stored in the Catalog
- Create a Folder or Subfolder
- Perform Tasks on Catalog Objects
- Download and Upload Catalog Objects
- Understand the Impact of Taking Actions on Objects Referenced by Reports
- Export and Import Catalog Translation Files

Overview of Folders

The catalog folders store the reports, data models, style templates, and sub templates, that you create.

You and every other user have their own personal folders, **My Folders**. Reports in personal folders can only be accessed by the user who created and saved the content into the folder. You can add subfolders to **My Folders** to organize the content in the way that's most logical to you.

You can also save reports in shared folders where other users or groups can access them. User permissions determine which folders are available to which users. Permissions are assigned at the object-level and determine who can view, edit, and schedule reports within that folder. Your administrator creates and maintains the shared folder structure.

Reporting Components Stored in the Catalog

Each reporting component has an identifying icon and lists the creation and modification information. Next to each item is a list of actions you can take.

The following reporting components are shown in the catalog:

- Folders
- Reports
- Data Models
- Style Templates
- Sub Templates

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Create a Folder or Subfolder

You can create a subfolder within your `My Folders` or, if you've the required permissions, you can create a shared system folder.

1. Navigate to the desired location in the Folders pane in Catalog.
2. On the **Catalog** toolbar, click **New** and select **Folder**.
3. Optional: In New Folder, enter the folder name and enter a description.
4. Click **Create**.

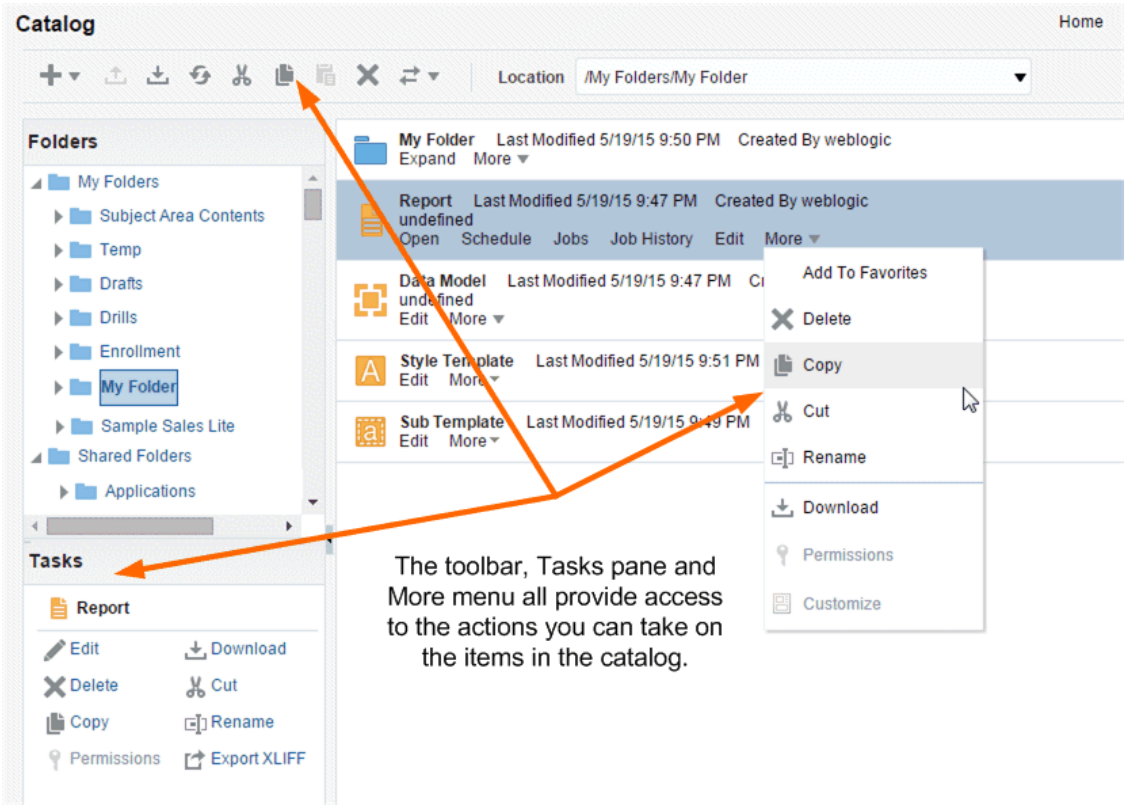
Perform Tasks on Catalog Objects

You can perform tasks on catalog objects such as edit, copy, paste, rename, download, and set permissions.

You can perform tasks on objects in a number of ways such as:

- By using the links next to the object.
- By using the catalog toolbar.
- By selecting the object and choosing the task from the Tasks region.

The image shows the Catalog page.



Your access to these actions depends on the permissions granted to you by your administrator.

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Download and Upload Catalog Objects

The download feature of the BI Publisher catalog enables you to bundle and download multi-component objects such as reports in an archive file. You can then use the upload feature to unarchive the data to another location in the catalog.

The ability to download and upload catalog objects enables you to transfer objects across environments. For example, you can use this feature to transfer BI Publisher objects from a development environment to a production environment.

Extensions for Archived Objects table lists the file extensions that BI Publisher assigns to each type of archived object when downloaded.

Catalog Object	Extension Assigned to Downloaded Files
Data Model	.xdmz
Folder	.xdrz
Report	.xdoz
Style Template	.xssz
Subtemplate	.xsbz

Understand the Impact of Taking Actions on Objects Referenced by Reports

When you move, cut, rename, or delete a Data Model, a Sub Template, or a Style Template that's used as a resource for a report, the references to the resource are broken and the report can't run as expected.

For example, if you've a report that was created with a data model that resides in a folder called **My Data Models**, and you move the data model to another folder, the report can't run because the report definition is expecting to find the data model in the **My Data Models** folder.

If moving a resource object is unavoidable, then you must edit each report that references the object to refer to the object in its new location.

Export and Import Catalog Translation Files

Export and import catalog translation files function enables administrators to export an XLIFF file that contains the translation strings.

For users with administrator privileges, the catalog toolbar includes the Export XLIFF and Import XLIFF function. See Translate Catalog Objects, Data Models, and Templates.

This function enables administrators to export an XLIFF file that contains the translation strings the selected catalog object or group of objects. The XLIFF strings can then be translated to the desired target language. After the XLIFF file is translated, the administrator can import the XLIFF file back to the catalog and assign it the appropriate locale.

1. Select the files in the Catalog.
2. Use the Export XLIFF and Import XLIFF function.

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Part VI
Reference

This part provides reference information.

Chapters:

- Frequently Asked Questions
- Troubleshoot
- Design Tips
- Data Preparation Reference
- Expression Editor Reference
- Certification Information

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35

Frequently Asked Questions

This reference provides answers to frequently asked questions about visualizing and reporting data.

Topics:

- What's my dataset storage limit?
- What are the view display limits for analyses and dashboards?
- What are the display limits for prompts?
- What's the maximum number of rows allowed in a query or download?
- What's the maximum access control list (ACL) entry limit for a single artifact?
- What are the limits for email delivery?
- What's the maximum number of column values that display when I use a parameter as a filter?
- Can I use presentation variables and parameters in analyses, dashboards, and workbooks?
- What's the maximum size map layer file that I can upload?
- What's the size limit for shared images?
- What's the limit for the number of data points I can plot in network visualizations?
- When I want to save an object, where does the default location come from?
- Can I enable other users to access my analyses, dashboards, and workbooks?
- Can I make analyses and dashboards interact with prompts and other analyses?
- I have interacted with a dashboard drilling and applying filters. How do I save the state of my dashboard and share the dashboard with others?
- How do I remove the Diagnose link displayed on my analyses and dashboards?
- Can I migrate analyses between different environments?
- Can I delete data files uploaded by a deleted user from my Cloud service?
- Can BI users access reporting dashboards and reports in Smart View?
- Can I change default logo and dashboard style?
- Can I use initialization blocks in Oracle Analytics Cloud?
- Why don't I see images from background maps when I print pages or when I export images in formats such as PDF, PPT, and PNG?
- Why do some users have permissions that I didn't assign?
- What is read-only mode?
- What time zone does Oracle Analytics use to export a visualization's data to Excel?
- Does Oracle Analytics generative AI use more than one model or a system of interdependent models?

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- What category of models are used in the product? Is the model developed in-house or by a third party?
- Is the model monitored and tested on an ongoing basis? How frequently?
- Does Oracle have processes to communicate changes to their models and output?
- Does Oracle's AI Policy include a review process for legal and risk functions?
- Does Oracle collect user data or similar metrics to measure differences for input and output data relative to test environments?
- Does Oracle incorporate any external inputs or third-party tools with its model?
- Is the model dependent on any third-party tools or solutions that could make it difficult to migrate the model to a different environment?
- How does Oracle respond to AI system incidents?
- How does Oracle test the quality of systems explanations?
- How does Oracle assess system outputs for trustworthiness and fairness?
- Is there a disaster recovery and contingency plan for instances when the model is unavailable?
- How does Oracle test the model for consistency in different environments?
- Does Oracle have an established governance policy for the model?
- Has Oracle established policies and procedures that define roles and responsibilities for human oversight of deployed models?

FAQs to Explore and Report

This topic provides answers to frequently asked questions about exploring and reporting data.

Where do I store my analytics content?

In Oracle Analytics Cloud, you store content in the catalog in either the My Folders area or the Shared Folders area. See Saving Your Content in the Catalog.

What's my dataset storage limit?

Oracle Analytics Cloud has a fixed 250 GB storage quota for data files that's shared across all users. The limit for an individual user is 50GB. Oracle recommends that you delete unused datasets to free up storage space. When users leave the organization, administrators can delete their unused datasets to free up storage space for others.

What are the view display limits for analyses and dashboards?

Analysis and Dashboard Limits	Limit	View Type	Alternative Options
Maximum number of view prompt values	10,000	All view types that support view (page edge) prompts	None
Maximum number of rows displayed	40,000	Narrate, Ticker	None

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Analysis and Dashboard Limits	Limit	View Type	Alternative Options
Maximum number of sections	300	All view types that support sections except Simple Trellis	• Place fewer columns on the section edge of the analysis view. • Move one or more of the columns on the section edge to the row or page edge. • Reduce the number of data values in the section edge of the analysis view by applying dashboard or analysis filters to the columns on the section edge.
Maximum number of sections in a simple trellis	10	Simple Trellis	None
Maximum number of visible columns in a pivot table	300	Pivot Table	• Place fewer columns on the column's edge of the pivot table view. • Move one or more of the columns on the column's edge to the rows, page, or sections edge. • Reduce the number of data values in the column's edge by applying dashboard or analysis filters to the columns on the column's edge.
Maximum number of visible rows per page in a pivot table	5,000	Pivot Table	Use the Data Viewing option of **Fixed headers with scrolling content** instead of **Content Paging**.
Maximum number of visible rows per page in a table view	5,000	Table	Use the Data Viewing option of **Fixed headers with scrolling content** instead of **Content Paging**.

What are the display limits for prompts?

Prompt Limits	Limit	More Information
Maximum number of choice values	1000	Applies to: • Choice lists, check boxes, list boxes, and radio buttons in prompts. • List of values displayed in the Select Values dialog when you select the Search option in a prompt values list.
Maximum number of default values	1000	Applies to dashboard prompts.

What's the maximum number of rows allowed in a query or download?

See *Limits Querying, Displaying, and Exporting Data* in Plan Your Service.

What's the maximum access control list (ACL) entry limit for a single artifact?

The maximum number of entries (users or roles) allowed in the permission dialog for an individual artifact is 128. An artifact can be a workbook, data flow, sequence, watchlist, and so on.

> **Note**
>
> ACL entries impact performance. Oracle recommends that you use role-based access control and avoid directly assigning individual users to ACL entries.

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What are the limits for email delivery?

The compute size of your Oracle Analytics Cloud deployment determines the maximum number of rows you can deliver in a single email. The row limit also depends on whether the report you're delivering is formatted or unformatted. See *Limits Delivering by Email (Classic Analyses and Dashboards)* in Plan Your Service.

> **Note**
>
> Content delivery by email is an expensive operation and has a direct impact on the overall system performance. The impact on system performance increases with the number of recipients, the number of rows and columns that you send, and the delivery format. Oracle recommends that you schedule deliveries during non-peak hours or change the delivery format to reduce any performance impact.

What's the maximum number of column values that display when I use a parameter as a filter?

The maximum number of column values that display when you use a parameter as a filter is 10,000. This is because parameters have a limit of 10,000 available values that can be cached. Additionally, parameters are limited to 1,000 initial values.

Can I use presentation variables and parameters in analyses, dashboards, and workbooks?

No. You can only use presentation variables in prompts for Classic analyses and dashboards. You can only use parameters in workbooks.

What's the maximum size map layer file that I can upload?

The maximum file size that you can upload is 25MB.

What's the size limit for shared images?

The size limit for an individual shared image is 10MB. The overall limit for all shared images in cloud storage is 50GB.

What's the limit for the number of data points I can plot in network visualizations?

Network Visualization Type	Limit
Network	2,000 rows or 50 columns
Circular Network	1,000 rows or 100 columns
Sankey	500 rows or 50 columns
Tree Diagram	1,000 rows or 100 columns
Chord Diagram	500 rows or 50 columns
Parallel Coordinates	10,000 rows or 5,000 columns

When I want to save an object, where does the default location come from?

You can save any object in any location. However, the **Save In** field in the Save dialog sometimes recommends the best location based on the object type that you're saving. For example, you should save filters, groups, and calculated items within a subject area folder so that these items are available when you build an analysis for the same subject area. If a subject area folder doesn't exist in your `/My Folders` or within `/Shared Folders`, then a

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subject area folder is created automatically. The **Save In** field defaults a save path to `/My Folders/Subject Area Contents/<subject area>`; however, the dialog's Folders area displays all instances of the subject area folder in the catalog.

You can save other objects such as analyses and prompts in any folder. Bear in mind the distinctions between shared and personal folders, when deciding whether to share the object that you're saving with others.

Can I enable other users to access my analyses, dashboards, and workbooks?

Yes. To enable other users to access your analyses, dashboards, and workbooks, move or save the analysis, dashboard, or workbook to a shared folder and then give other users the required access permissions. See Assign Access Permissions and Assign Shared Catalog Folder and Workbook Permissions.

Can I make analyses and dashboards interact with prompts and other analyses?

Yes, analyses and dashboards interact with prompts. See Advanced Techniques: How Dashboard Prompts and Analysis Prompts Interact. You can link views such that one view drives changes in one or more other views. See Linking Views in Master-Detail Relationships.

I have interacted with a dashboard drilling and applying filters. How do I save the state of my dashboard and share the dashboard with others?

You can save and get back the settings that you make on a dashboard. See Save and Restore Dashboard State. You can share dashboard pages with other users by sharing links to those pages. See Link to Dashboard Pages.

How do I remove the Diagnose link displayed on my analyses and dashboards?

In Classic view, sign in as a user with the BI Service Administrator role and set the value of the configuration setting **Diagnose BI Server Query** to **Denied**. You can find this setting under **Administration\ Security - Manage Privileges\Admin: General**.

Tip: You can access the Administration page by clicking the *user* **My Profile** icon, then **Administration**.

Can I migrate analyses between different environments?

Yes. You can migrate analyses between service environments by copying and pasting the XML code for the analyses using the Advanced tab of the analysis editor. See Advanced Techniques: Examining the Logical SQL Statements for Analyses.

Can I delete data files uploaded by a deleted user from my Cloud service?

Yes. Reinstate the deleted user, then delete the dataset files.

Can BI users access reporting dashboards and reports in Smart View?

Yes. See Smart View and Oracle Analytics Cloud.

Can I change default logo and dashboard style?

Yes. On the Dashboard Properties page, choose a predefined theme that includes a custom logo from the **Style** list. Administrators create these themes and make them available to dashboard builders.

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Can I use initialization blocks in Oracle Analytics Cloud?

You can use initialization blocks to set session variables but you can't use them to set users, roles, or groups. When you sign-in to Oracle Analytics Cloud, the identity management system that your Oracle Analytics Cloud uses automatically populates values for the `USER` and `ROLE` (`GROUP`) session variables.

Why don't I see images from background maps when I print pages or when I export images in formats such as PDF, PPT, and PNG?

You or a visualization builder might have added an image to a background map by referencing that image with a URL. For the image to print or be exported in various formats, the external website hosting that image must have the Access-Control-Allow-Origin header from the host server. If a map background includes an image reference that's taken from an external website that doesn't have this header, you won't see the image.

For more information about this header, see `https://www.w3.org/wiki/CORS_Enabled`

Why do some users have read permissions that I didn't assign?

If you save or move a report, dashboard, or workbook containing an artifact (for example, a dataset) to a shared folder, and when prompted you share the related artifacts, then Oracle Analytics assigns the artifacts read permissions for the users who can access the report, dashboard, or workbook in the shared folder.

Without the read permission, users won't be able to access the correct content when they open the report, dashboard, or workbook.

Why does a workbook that I've shared with other users display as a dashboard, and why isn't the Visualize page available to the users?

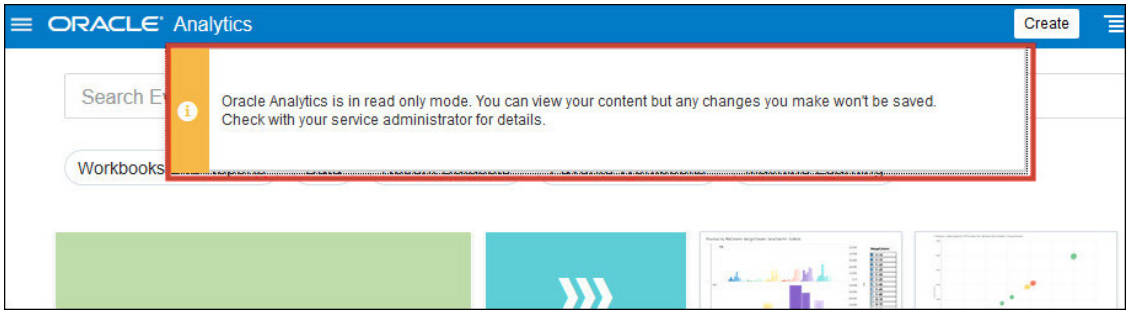
How the workbook is displayed when the user opens it depends on the user's permissions and how the workbook was set up.

- If the shared workbook contains a presentation flow and the user has read-only permissions to the workbook, then the workbook's dashboard is displayed only and the user can't access the workbook in the Visualize page. The presentation flow's dashboard and canvas preferences determine how the dashboard displays and the functionality it contains.
- If the shared workbook is displayed in presentation mode, then the workbook's presentation flow dashboard and canvas preferences determine how the user can interact with the presentation flow or dashboard. See Open the Presentation Flow.
- If the workbook doesn't contain a presentation flow and the user has read-only permission, then the workbook is displayed in the Visualize page. The user can change filter values, add filters, export, sort, and drill in the Visualize page.

What is read-only mode?

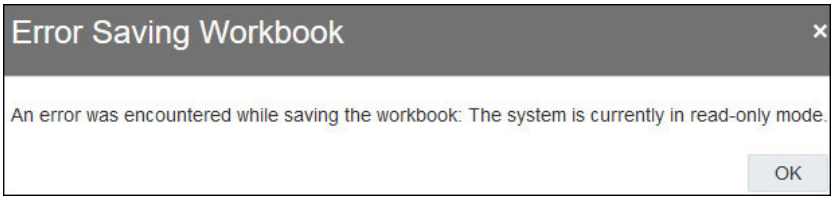
When Oracle Analytics Cloud is in read-only mode, users can view and report on their data but they can't add, edit or delete any data. In read-only mode, users will see a banner at the top of their browser window that says *Oracle Analytics is in read-only mode. You can view your content but any changes you make won't be saved*.

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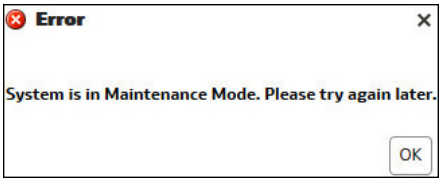


If you try to make or save any updates in read-only mode an error message is displayed. The message you see depends on the type of change you attempt to make. Here are some examples:

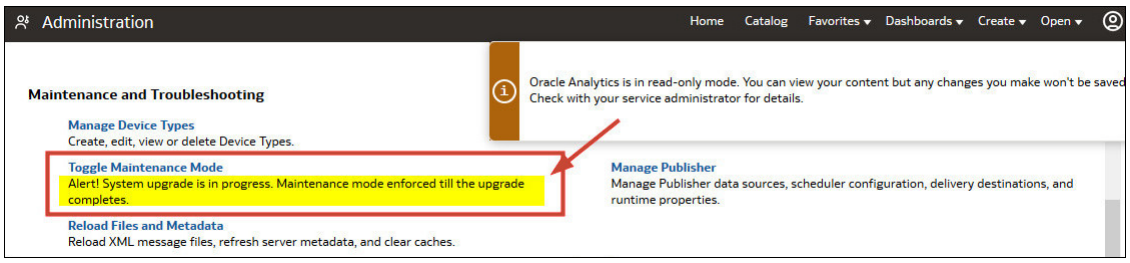
- Error if you try to create a new workbook.



- Error if you try to create a new analysis or dashboard.



If you're an administrator with access to the Classic Administration page, you might also notice that the option to switch maintenance mode on or off is disabled in read-only mode.



What time zone does Oracle Analytics use to export a visualization's data to Excel?

When you export data from a table or pivot table visualization to Excel, Oracle Analytics exports data and time values exactly as they appear in the data source. Oracle Analytics applies no time zone conversions during export, for example, time zone system settings or the user's time zone settings.

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FAQs to Publish Data

This topic provides answers to frequently asked questions about publishing data.

Where do I save my reports, data models, templates so that only I can access them?

Use My Folders as your personal storage. Only you can access the objects you stored in My Folders.

How do I configure a default printer?

Set your preferences for your account in the My Account dialog.

How do I cancel the jobs scheduled in Publisher?

Navigate to the Jobs History page, locate the job you want to cancel, and then click **Cancel**.

How do I schedule a job to burst reports to multiple destinations?

1. Make sure the administrator has configured the connections to data source connections and delivery channels.
2. Create a data model for the report.
3. Define bursting in the data model.
4. Use an appropriate report template and design the report layout.
5. View the report in Report Viewer.
6. When you schedule the bursting job, specify the output formats, bursting query, and the delivery destinations.

How do I apply the changes I made to my preferences?

In Publisher, if you changed your preferences such as time zone and locale, you can immediately apply the changes in your Publisher session.

1. Append the `&relogon=1` parameter to the end of the page URL and re-load the page.
2. Log out of Publisher and log in again.

How do I download Publisher Reports as PDF?

You might be unable to download Publisher reports as PDF in Chrome browsers due to the way that the PDF plug-in handles embedded content in iframes.

You have the following options to download reports as PDF:

- Click **Print** to download a report as PDF.
- Display the report in another browser such as Firefox and download it from there.
- Click **Export** or click **Share Report Link** (use `_xpt=1` parameter) to download the report directly.

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FAQs to Oracle Analytics Generative AI

This topic provides answers to frequently asked questions about how generative AI is used with Oracle Analytics.

Does Oracle Analytics generative AI use more than one model or a system of interdependent models?

Oracle Analytics doesn't implement chained or interdependent generative AI models. Each model operates as an independent component, which simplifies performance evaluation, access controls, and risk management processes. Oracle continuously evaluates the most suitable models and architectures for a wide range of analytics use cases and may update or change its preferred models and architecture over time.

What category of models are used in the product? Is the model developed in-house or by a third party?

Oracle Analytics generative AI capabilities leverage foundation models from established AI providers that are configured for enterprise deployments. For a current list of Oracle's generative AI models, see Pretrained Generative AI Models.

Is the model monitored and tested on an ongoing basis? How frequently?

Models are re-validated with each new release with performance issues addressed as identified. During development, Oracle uses standard machine learning metrics including precision, recall, and F1 scores to validate AI models before deployment. Oracle Analytics uses synthetic data for model evaluation combined with a set of manually curated data. Model evaluation focuses on accuracy and drift by assessing the model's ability to generate responses that match the established ground truth. Results are compared against established benchmarks to identify mismatches (previously successful utterances that now fail) and matches (previously failed utterances that now succeed). Any mismatch is classified as a regression and serves as a control gate for any code changes, model revisions, or deployment changes.

Does Oracle have processes to communicate changes to their models and output?

As part of the Oracle Analytics release process, we notify you of changes to AI models or outputs through What's New for Oracle Analytics Cloud. Tenancy administrators can also enable user subscriptions, ensuring broader awareness within the organization. In addition, anyone can stay informed about new features and upcoming releases by subscribing to the Oracle Analytics weekly email for Oracle Analytics through the Oracle Analytics Community site.

Oracle Analytics also uses the standard Oracle Cloud change management policies that are documented in Oracle Cloud Hosting and Delivery Policies.

Does Oracle's AI Policy include a review process for legal and risk functions?

Product development teams within Oracle follow guidance and mandatory directives from Global Product Security who maintain the Oracle Secure Coding Standards (SCS). A section of these standards is devoted to AI/ML, which in turn has a number of security directives. These directives are split into the following categories:

- AI Governance - directives cover steps for teams to ensure proper oversight procedures for their machine learning models.

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- AI Infrastructure - directives apply to teams configuring and using the infrastructure needed for machine learning model building and deployment.
- AI Development - directives apply to teams involved in the development of machine learning models, providing guidance on best practices for model development, testing, and deployment.
- AI Data - directives cover security steps for teams involved in collecting, processing, and managing data used in machine learning models.

As part of the above mandated Secure Coding Standards, Oracle product development teams regularly assess their projects for AI -specific security risks and vulnerabilities.

Security for the model, Oracle Analytics AI architecture, and integration into Oracle Analytics adheres to Cloud Security, Standards, and Architecture Program (CSSAP) security review. CSSAP is a comprehensive security review process developed by Corporate Security Architecture, Global Information Security, Global Product Security, Oracle Global IT, Oracle's IT organizations, and Oracle's AI Review Board to provide thorough information security management assessment. For additional information, see Corporate Security Architecture Oversight.

Does Oracle collect user data or similar metrics to measure differences for input and output data relative to test environments?

Currently, Oracle Analytics doesn't capture or collect explicit user feedback for this purpose. Since the model is not tuned or trained on customer data, testing is limited to default model benchmarks as noted above. To summarize: models are revalidated with each new release, and any identified performance issues are addressed accordingly. During development, Oracle applies standard machine learning metrics, such as precision, recall, and F1 scores, to validate AI models prior to deployment.

Does Oracle incorporate any external inputs or third-party tools with its model?

Oracle Analytics doesn't incorporate any external inputs in its interactions with the model. Model interactions are strictly confined to direct communication between Oracle Analytics and the model itself.

Is the model dependent on any third-party tools or solutions that could make it difficult to migrate the model to a different environment?

The model is deployed as an Oracle Cloud Infrastructure (OCI) service, with the same foundation model available across multiple service instances. No model migration is required between instances.

How does Oracle respond to AI system incidents?

Oracle Analytics uses the standard Oracle Cloud Incident Response policies that are documented in the Service Level Agreement section of Oracle Cloud Hosting and Delivery Policies.

How does Oracle test the quality of systems explanations?

Oracle Analytics subjects all code changes, model revisions, and deployment changes to a release gate that includes an assessment of generated responses matching the established ground truth as part of our evaluation benchmark. The benchmark includes all systems explanations generated as part of the response. Any mismatch is classified as a regression and serves as a control gate.

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How does Oracle assess system outputs for trustworthiness and fairness?

Oracle Analytics relies on the OCI Generative AI for its foundation models and doesn't explicitly train the models. OCI Generative AI uses best practices to ensure trustworthiness and preventing bias in its foundation models.

Additionally, Oracle Analytics currently offers coarse-grained control over the Large Language Model's (LLM) contribution to the response surfaced to end users. This mechanism ensures that the LLM doesn't directly surface information to end users, thereby ensuring that the generated responses are wholly produced by Oracle Analytics and hence trustworthy. In addition, the Oracle Analytics service administrator has the ability to disable any or all AI-driven features at the individual feature level. For more information, see About Generative AI Configuration.

Is there a disaster recovery and contingency plan for instances when the model is unavailable?

Oracle Analytics relies on the Generative AI service in OCI for its foundation models. Resiliency and fault tolerance of OCI is documented in Oracle Cloud Hosting and Delivery Policies. More details about OCI Generative AI dedicated clusters can be found in Creating a Dedicated AI Cluster in Generative AI for Hosting Models and Oracle PaaS and IaaS Public Cloud Services Pillar Document.

How does Oracle test the model for consistency in different environments?

All customer and development models are deployed on the same OCI framework. Internal testing environments, including pre-production and production testing environments, maintain the same configuration state as customer environments.

Does Oracle have an established governance policy for the model?

Oracle Analytics leverages foundation models deployed through the generative AI service in OCI. These models are used in their native state without modification. Oracle Analytics doesn't perform training, fine-tuning, or model customization on the underlying foundation models. Accordingly, model governance policies used by OCI Generative AI are applicable for Oracle Analytics as well.

Has Oracle established policies and procedures that define roles and responsibilities for human oversight of deployed models?

Oracle Analytics has a robust process for model assessment using synthetic data for model evaluation combined with a manually curated dataset. This process controls changes to code, models and deployments. Model assessment runs are evaluated by a combination of automation and human oversight.

FAQs about Data Preparation

This topic provides answers to frequently asked questions about data preparation in Oracle Analytics.

Are there any limits to how much data I can process using a data flow?

Yes. See Data Flow Limits.

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36
Troubleshoot

This topic describes common problems and how to solve them.

Topics:

- What Diagnostic Tools Are Available?
- Troubleshoot General Issues
- Troubleshoot Issues with Workbooks, Analyses, and Dashboards
- Troubleshoot Visualization Issues

What Diagnostic Tools Are Available?

There are several diagnostic tools available to help you troubleshoot issues.

Tool	Description	Reference
Browser session report	Record browser session information for Oracle Support.	I need to provide a HAR file for a Service Request
Client script error report	Record client script error information for Oracle Support.	I need to provide client script error details for a Service Request
Diagnostic pages in Oracle Cloud Infrastructure console	Drill into issues and view and configure log files.	Monitor Usage and Diagnostic Logs Monitor Instance Event Logs
Monitor Users and Activity Logs (Administrator)	See information about any users who are currently signed in and troubleshoot report queries from the Manage Session page.	Monitor Users and Activity Logs
Network Path Analyzer in Oracle Cloud Infrastructure console	Diagnose connectivity issues for an Oracle Analytics Cloud instance using the Console, API, or command line.	Do I have any tools to troubleshoot connection issues to my private data sources?
Other Tools to Diagnose Network Issues from Corporate Network	Use tools such as nslookup, netcat or cURL.	Do I have any tools to test or debug network issues from my corporate network?
Overview page in Oracle Cloud Infrastructure console	View recent issues with the system.	Monitor Status
Performance metrics	View performance metrics for your instance.	Monitor Metrics
Run test SQL queries (Administrator)	Enter a SQL statement directly to underlying data sources.	Run Test SQL Queries
Semantic model consistency	Check the validity of semantic models.	Work with the Consistency Checker

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Tool	Description	Reference
Usage tracking	Generate usage tracking statistics that can be used in a variety of ways such as database optimization, aggregation strategies, or billing users or departments based on the resources that they consume.	Track Usage
Workbook performance information	Use the performance tools in Developer Options to review performance statistics such as query time, server time, and streaming time for visualization components in a workbook.	Developer Options

Troubleshoot General Issues

This topic describes common problems that you might encounter and explains how to solve them.

I can’t sign in to Oracle Analytics Cloud

You’re likely trying to sign in using the incorrect credentials. You must sign in to Oracle Analytics Cloud using the Oracle Cloud Identity Domain credentials that were mailed to you from Oracle or provided by your administrator. You can’t sign in to Oracle Analytics Cloud using your account credentials for Oracle.com.

I'm having trouble resetting my password

When you sign up to use Oracle Analytics Cloud, you get an e-mail with a temporary password. Be careful if you copy and paste this password. If you accidentally include a blank space at the start or end of it when copying, then the password won't be recognized when you paste it in. Make sure that you paste only the password without any blank spaces.

I can’t access certain options from the home page

Check with your administrator to ensure that you have the correct permissions to access the options that you need.

I see a performance decrease when using Mozilla Firefox

If you use Mozilla Firefox and notice a decrease in the performance of the cloud service, then ensure that the **Remember History** option is enabled. When Firefox is set to not remember the history of visited pages, then web content caching is also disabled, which greatly affects the performance of the service. See Firefox documentation for details on setting this option.

I'm having trouble uploading data from a spreadsheet (XLSX) exported from Microsoft Access

Open your spreadsheet in Microsoft Excel and resave it as an Excel Workbook (*.xlsx).

When you export spreadsheets from other tools the file format can vary slightly. Saving your data again from Microsoft Excel can fix this.

Users can't see the **Auto Insights** option in the Visualize canvas in the workbook editor.

In Console, navigate to **Advanced System Settings**, then **Performance and Compatibility**, and enable the **Enable Auto Insights on Datasets** option. Then ask dataset developers to

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select the **Enable Insights** option on the Dataset Inspect dialog for datasets where they require insights. Workbook users can then use the **Auto Insights** option in the Visualize canvas in the workbook editor.

My analysis or workbook times out

You attempt to run an analysis or workbook and find that it times out. You see a message like this:

```
[nQSError: 60009] The user request exceeded the maximum query governing execution time.
```

This message is displayed when an Oracle Analytics query spends more than the allotted time communicating with the data source. For performance reasons, the limit for a single query to run is 11 minutes. If 11 minutes is too high for your organization, your administrator can select a lower query limit through system settings. See System Settings - Maximum Query Limit.

Try running the query again. To prevent this error, avoid long-running queries or split the query into multiple queries.

> **Note**
>
> The query limit automatically extends to 60 minutes to accommodate occasional, longer-running queries. To avoid excessive loads on the database, Oracle Analytics restricts the number of queries that are allowed to automatically extend at any one time. Administrators can disable occasional query limit extensions for your organization through system settings. See System Settings - Query Limit Extension.

Search results on the home page don't include the data I'm looking for

Datasets that users create from files must be indexed (and in some cases certified) to appear in search results on the home page.

- A file-based dataset must be indexed before you can use it to build visualizations from the home page.
- A file-based dataset must be indexed and certified before other users with permission to access the dataset can use it to build visualizations from the home page.

See About Indexing a Dataset and Visualize Data from the Home Page.

I need to provide a HAR file for a Service Request

If you log a Service Request (SR) to report user performance issues, you might be asked to record a browser session and provide a report to Oracle Support in HTTP archive format (HAR). HAR files log the web browser's interaction with Oracle Analytics Cloud.

You can use any supported browser to record the browser session but Oracle recommends that you use Chrome's Developer Tools. To record a browser session using Chrome:

1. In Chrome, select **Customize and control Google Chrome**, then **More tools**, then **Developer tools**.
2. Navigate to the Network tab.
3. Select **Disable cache** and **Preserve log**, then refresh the page.
4. If the recording hasn't already started, click **Record**.
5. Perform the steps that cause the performance issue.

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6. Click **Stop recording network log**.
7. Right-click the table or grid and select **Save all as HAR with content**.
8. Follow the onscreen instructions to save the HAR file locally.

I need to provide client script error details for a Service Request

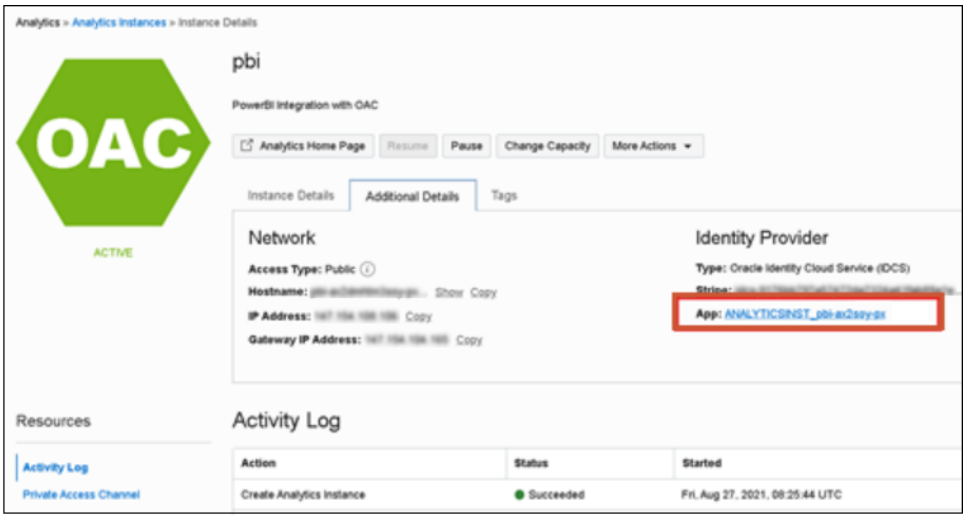
If you log a Service Request for client-side issues, you might be asked to send client script error details to Oracle Support.

You can use any supported browser to collect client script errors but Oracle recommends that you use Chrome's Developer Tools. To collect client script errors using Chrome:

1. In Chrome, sign into Oracle Analytics Cloud and navigate to the page where the issue occurs.
2. Select **Customize and control Google Chrome**, then **More tools**, then **Developer tools**.
3. Click the **Console** tab.
4. Click **Clear console** to remove any existing messages from the console.
5. Click **Show console sidebar**, then click the **Errors** option to display only errors (that is, the red circle containing a cross).
6. Reproduce the issue and verify that errors have occurred and are recorded in the console.
7. Right-click the error messages, select **Save As...**, and save the file to your computer.
8. Upload the error file to your SR.

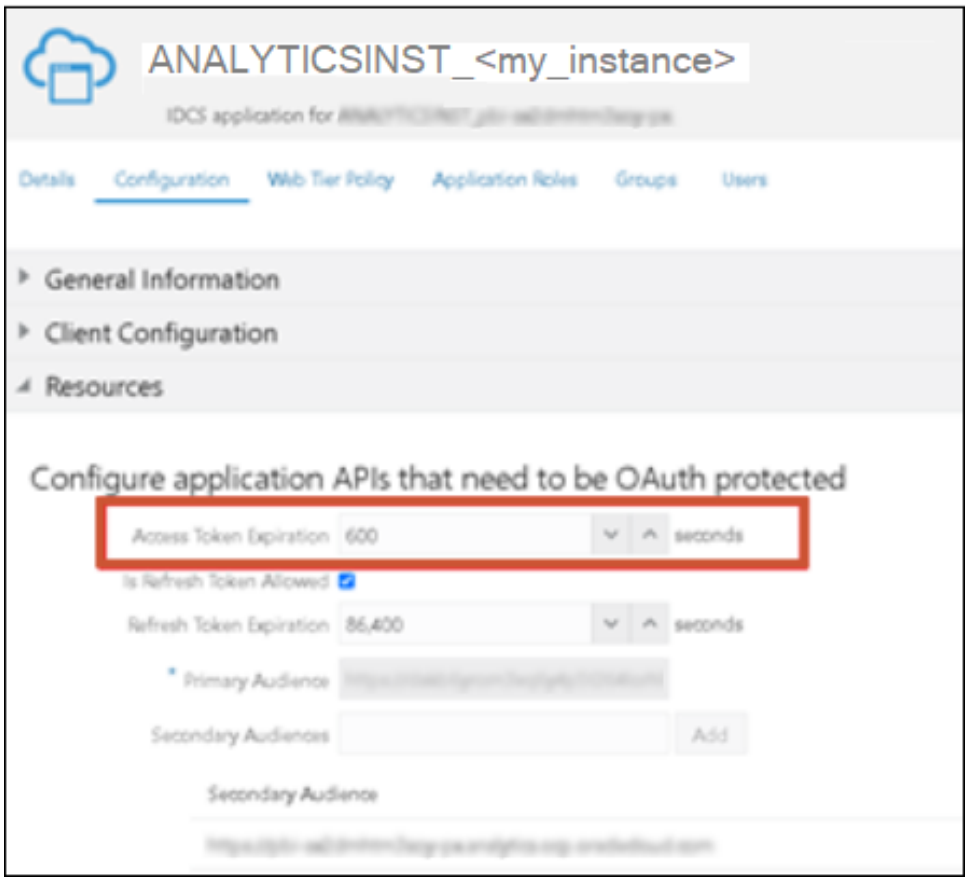
Users encounter an authentication error after approximately 100 seconds when using the MS Power BI Connector

Adjust the Expiry Time of the Access Token for Oracle Analytics Cloud. In Oracle Cloud Infrastructure Console, navigate to the Oracle Analytics Cloud instance you want Microsoft Power BI to connect to.



Click **Additional Details**, and then click the **App** link under **Identity Provider**. In the **Configuration** tab, expand **Resources**, and increase **Access Token Expiration Time** to 600 seconds (10 minutes).

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I'm having issues when I try to export an analysis or workbook

You attempt to export an analysis or workbook and you see a message similar to this:

The server is currently busy executing other requests. Please try again later.

The compute size of your Oracle Analytics Cloud deployment determines the maximum number of rows you can export, the maximum number of parallel exports, and the maximum queue size for export requests. Contact your administrator if you regularly exceed export limits. Your Oracle Analytics Cloud might need to scale up to a larger compute size. See Limits Exporting Data (Data Visualization Workbooks) and Limits Exporting Data (Classic Analyses and Dashboards).

Troubleshoot Issues with Workbooks, Analyses, and Dashboards

This topic describes common problems that you might encounter when using workbooks, analyses and dashboards, and explains how to solve them.

I can’t see data in an analysis or workbook

You open an analysis or workbook, but you don’t see any data in it.

There might be some temporary issue with the database. Contact your administrator for assistance.

You might not have the permissions needed to access the data. Contact the object's owner or administer and ask them to check your access permissions. You'll need read permissions to

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the analysis or workbook and any artifacts included in the analysis or workbook (for example, a dataset).

I can’t access a particular analysis, dashboard, or workbook

You attempt to display an analysis, dashboard, or workbook and find that you don’t have access.

Typically you can’t access an analysis, dashboard, or workbook if you lack the appropriate permissions or application role for accessing it. Contact the owner of the analysis, dashboard, or workbook or your administrator for assistance in obtaining the proper permissions or application role.

I can’t find an analysis, dashboard, or workbook

Try searching the catalog. You can search for analyses, dashboards, or workbooks by name (full or partial) and by folder location. The search isn’t case-sensitive. Searches of the catalog return only those objects that you have permission to see.

Contact your administrator if you still can’t find an analysis, dashboard, or workbook and you suspect that it was deleted by mistake. Your administrator can restore earlier versions of the catalog from recent snapshots, if required.

The analysis or workbook is running very slowly

You attempt to run an analysis or workbook and find that it takes a long time.

Various underlying circumstances can cause an analysis or workbook to run slowly. Contact your administrator and ask that he review log files associated with the analysis or workbook. After reviewing the log files with the administrator, make the appropriate adjustments in the analysis or workbook.

The workbook opens very slowly

Ask your administrator to check if the **Enable Lazy Load for Workbook Canvases** system setting is enabled. When this setting is enabled, only column information for the first canvas loads when you open a workbook, so the workbook opens faster. Column information for the other canvases only loads when you view them.

The analysis or workbook returned data that I didn’t expect

Various underlying circumstances can cause an analysis or workbook to return unexpected results. For an analysis, in the Subject Areas pane of the Criteria tab, click **Refresh** to ensure that you’re seeing the most recent information. For a workbook, refresh the source data.

Alternatively:

- Ask a data modeler or an administrator to reload underlying data to ensure that any recent changes to the semantic model are reflected in the analysis. For analyses, data modelers and administrators can access the **Reload Server Metadata** option when they click the **Refresh** icon in the Subject Areas pane of the Criteria tab.
- Ask your administrator to review log files for the analysis or workbook. After reviewing the log files with the administrator, make appropriate adjustments in the analysis or workbook.

I don’t understand why my analysis or workbook shows a view display error

When you display an analysis or workbook, you might see a message such as the following: "View Display Error. Exceed configured maximum number of allowed input records." This message indicates that you've selected more data than can be displayed in a view of that type.

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Add one or more filters to the analysis or workbook to reduce the amount of data. For example, add a filter that specifies a date range of only a few years.

The matched Year columns for a subject area and external data source don't work properly

This mismatch is generic to a column that contains numbers but that should be handled as if it contains characters. Microsoft Excel typically sets the data type of a column that contains only numbers to numeric. Numbers are then prefixed with a single quote that creates the problem of an added space at the start of the number. In the case of matches and filters, this leading space causes the match to fail.

To work around this issue, create a formula that concatenates a zero-length string (single quotes with nothing between them) to the column with the number. For example, if the column with numbers is in column A, you create a string equivalent by adding a column for each cell with the formula `=concatenate(A2,''), =concatenate(A3,'')`.

I can't see the Auto Insights option on the Visualize canvas in the workbook editor

Ask the Oracle Analytics administrator to enable auto insights.

The Auto Insights option is greyed out on the Visualize canvas in the workbook editor

On the Dataset Inspect dialog for datasets that require insights, select the **Enable Insights** option.

Troubleshoot Visualization Issues

This topic describes common problems that you might encounter when working with visualizations and explains how to solve them.

When I import a workbook, I get an error saying something went wrong and I'm unable to import my .dva file

This message displays for various reasons:

- A file in the archive is larger than the maximum upload size (100 MB).
- One or more data sources use a connection with the same name as a connection you're trying to import. Delete these data sources.

When I import a workbook, I get an error stating that the workbook, data source, or connection already exists

When you're trying to import a workbook, you might receive the following error message:

"There is already a workbook, data source or connection with the same name as something you're trying to import. Do you want to continue the import and replace the existing content?"

This error message is displayed because one or more of the components exported with the workbook is already on your system. When a workbook is exported, the outputted .DVA file includes the workbook's associated data sources and connection string. To resolve this error, you can either click **OK** to replace the components on your system, or you can click **Cancel** and go into your system and manually delete the components.

This error message is also displayed when the workbook you're trying to import contains no data. When you export a workbook without data, the workbook's and data sources' metadata are included in the .DVA. To resolve this issue, you can click **OK** to replace the components on

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your system, or you can click **Cancel** and go into your system and manually delete the data source or connection that's causing the error.

I have issues when I try to refresh data for file-based data sources

Keep in mind the following requirements when you refresh data for Microsoft Excel, CSV, or TXT data sources:

- To refresh an Excel file, ensure that the newer spreadsheet file contains a sheet with the same name as the original file you uploaded. If a sheet is missing, then you must fix the file to match the sheets in the original uploaded file.
- If the Excel, CSV, or TXT file that you reload is missing some columns, then you'll get an error stating that your data reload has failed. If this happens, then you must fix the file to match the columns in the original uploaded file.
- If the Excel, CSV, or TXT file you used to create the data source was moved or deleted, then the connection path is crossed out in the Data Source dialog. You can reconnect the data source to its original source file, or connect it to a replacement file, by right-clicking the data source in the Display pane and in the Options menu select **Reload Data**. You can then browse for and select the file to load.
- If you reloaded an Excel, CSV, or TXT file with new columns, then the new columns are marked as hidden and don't display in the Data pane for existing workbooks using the dataset. To unhide these columns, click the **Hidden** option.

Your Excel spreadsheets must have a specific structure. See About Files for Datasets.

I can't refresh data from a MongoDB data source

The first time you connect to MongoDB, the MongoDB driver creates a cache file. If the MongoDB schema was renamed and you try to reload a MongoDB data source or use the data source in a workbook, then you might get an error or Oracle Analytics doesn't respond.

To correct this error, ask your administrator to clear the MongoDB cache.

The visualizations that I embedded into a custom application or web page don't render correctly

If the visualizations aren't rendering correctly, then view or open the application or web page's HTML page and confirm that the DOCTYPE declaration exists and is set to <!DOCTYPE html>. See Prepare the HTML Page .

When I click Explain Selected for a visualization that uses data from a subject area, I get an error message

When you click **Explain Selected** for data points on a visualization using data from a subject area, you might receive the following error message: "We were unable to perform an analysis on this dataset due to a missing setting. Please correct the RPD configuration as described in the documentation."

This error message is displayed because the Contextual Insights algorithm needs to use the RAND function in the database. You can fix this by enabling the RAND_SUPPORTED feature in the physical layer of your semantic model.

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37

Design Tips

This chapter contains reference information to help you build visualizations and reports.

Topics:

- Find the SQL_ID for an Oracle Analytics Query
- Use the IndexCol Function
- Maintain Initialization Blocks
- Use Usage Tracking with Initialization Blocks
- Minimize Impact on Query Performance Due to Network Latency
- Assign the Aggregation Rule for Report Totals
- Select the Best Option to Render Dashboards
- Improve the Time to Display Dashboard Pages with Prompts
- Configure Timestamps
- Use Filter Functions Instead of Time Series Functions
- Tune Performance of Multidimensional Database Queries
- Tune Performance of Relational Database Queries
- Tune Performance with Excluded Columns
- Improve Results from Oracle Analytics AI Assistant

Find the SQL_ID for an Oracle Analytics Query

When you tune queries for Oracle Analytics, you look at the data model, report design, dashboard design, and network configuration, and sometimes you need to investigate the database.

For database investigations, you need to know the `SQL_ID` of the SQL statement so you can track the specific query through Active Session History (ASH), Automatic Workload Repository (AWR), and Oracle SQLTXPLAIN (SQLT).

This topic shows you how to find the `SQL_ID` by mining the Oracle Analytics usage tracking tables and the Oracle database system table called `V$SQL` (or `GV$SQL` for an RAC database).

The V$SQL Table

The `V$SQL` table is an Oracle database system table that tracks statistics for individual SQL queries. There's one row in the table for each SQL statement that you run and each row is uniquely identified by the `SQL_ID` column. You can use this `SQL_ID` to track a given SQL statement throughout the Oracle database.

You'll find a lot of useful information about your queries in the `V$SQL` table (or `GV$SQL` for an RAC database).

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Usage Tracking Tables

The usage tracking tables don't directly track the SQL_ID but you can easily trace the SQL_ID back to the V$SQL table (or GV$SQL for an RAC database).

When you enable usage tracking in Oracle Analytics, all the queries are tracked in two tables:

- S_NQ_ACCT: Contains logical queries
- S_NQ_DB_ACCT: Contains physical queries

The logical query is logged in the logical query table and the physical query (or queries spawned by the logical query) is logged in the physical query table.

You can join the logical and physical tables on the logical query ID column. The logical query ID column in the logical table is ID and in the physical table it's LOGICAL_QUERY_ID.

The key to finding the SQL_ID is the PHYSICAL_HASH_ID column in the physical table. The PHYSICAL_HASH_ID value is also written to the V$SQL table (or GV$SQL table) in the ACTION column.

The Oracle BI Server calculates a hash code from the text of the logical SQL query and the text of the physical SQL queries. The physical SQL hash code of any SQL queries run from the Oracle BI Server is recorded in the ACTION column in the V$SQL table. For more information, see Associate S_NQ_ACCT Record with the BI Query Log.

For more information about the various usage tracking columns, see Track Usage and Understand the Usage Tracking Tables.

Setup

Now that you know where to find the PHYSICAL_HASH_ID, you can write a SQL statement that correlates the SQL query running in the database with a specific analysis running in Oracle Analytics.

When the usage tracking tables are in the same database instance as the data warehouse, you can write a single query to find the SQL_ID.

If the usage tracking tables and your data warehouse are in different Oracle database instances, you need to run two queries. First, you run a query to pull the PHYSICAL_HASH_ID of the query you want to investigate from the usage tracking tables. Second, you pull the SQL_ID from the V$SQL table using the value of the PHYSICAL_HASH_ID to filter the ACTION column.

Example 1

In this example, assume that the usage tracking tables and the data warehouse are co-located. Any or all of the columns from the usage tracking and V$SQL tables can be used in the query, but in this example you select the following subset:

```
select

o.sql_id,

to_char(l.start_ts, 'YYYY-MM-DD HH24:MI:SS'),

l.id as l_id,

p.logical_query_id,
```


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```
l.hash_id,

l.saw_src_path,

l.query_src_cd,

l.success_flg,

l.num_db_query,

l.query_text,

p.query_text,

o.sql_text,

p.physical_hash_id,

o.action

from

usage_tracking.s_nq_acct l,

usage_tracking.s_nq_db_acct p,

v$sql o

where

l.id = p.logical_query_id and o.action = p.physical_hash_id and l.start_dt >
trunc(sysdate - 1) and l.end_dt < trunc(sysdate)

order by l.start_ts, l.id, l.hash_id, p.physical_hash_id, o.sql_id;
```

Example 2

In this example, assume that the usage tracking tables and the data warehouse are located in different Oracle databases.

First, write a query against the usage tracking tables to get the `PHYSICAL_HASH_ID`:

```
select

to_char(l.start_ts, 'YYYY-MM-DD HH24:MI:SS'),

l.id as l_id,

p.logical_query_id,

l.hash_id,

l.saw_src_path,

l.query_src_cd,
```


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```
l.success_flg,

l.num_db_query,

l.query_text,

p.query_text,

p.physical_hash_id

from

usage_tracking.s_nq_acct l,

usage_tracking.s_nq_db_acct p

where

l.id = p.logical_query_id and l.start_dt > trunc(sysdate - 1) and l.end_dt <
trunc(sysdate)

order by l.start_ts, l.id,l.hash_id, p.physical_hash_id;
```

Next, write a query against the `V$SQL` table to get the `SQL_ID`, using the values of `PHYSICAL_HASH_ID` as a filter:

```
select

o.action,

o.sql_id,

o.sql_text

from

v$sql o

where

o.action = '<physical_hash_id>'

order by o.sql_id;
```

If you have an RAC database, instead of the `V$SQL` table, you use the `GV$SQL` table to get the `SQL_ID`:

```
select

o.action,

o.sql_id,

o.sql_text
```


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```
from

gv$sql o

where

o.action = '<physical_hash_id>'

order by o.sql_id;
```

This method doesn't work if you're troubleshooting initialization blocks, because the initialization block usage tracking table (`S_NQ_INITBLOCK`) doesn't contain a physical hash ID.

Example 3

In this example, you use the A - Sample Sales subject area and select only a few columns from the usage tracking tables.

From A - Sample Sales, run the following query:

```
[2022-02-04T15:11:17.629+00:00] [OBIS] [TRACE:2] [USER-0] [] [ecid:
e49b96a8-33c4-4ba7-a877-e564d207eca1-00242531,0:1:38:3] [sik: bootstrap]
[tid: dd1bc700] [messageId: USER-0] [requestid: 33e30020] [sessionid:
33e30000] [username: oacadmin] ################################################
[[

-------------------- SQL Request, logical request hash:

cee7ec94

SET VARIABLE QUERY_SRC_CD='Report';SELECT

   0 s_0,

   "A - Sample Sales"."Offices"."D1  Office" s_1,

   "A - Sample Sales"."Base Facts"."10- Variable Costs" s_2,

   "A - Sample Sales"."Base Facts"."11- Fixed Costs" s_3

FROM "A - Sample Sales"

ORDER BY 2 ASC NULLS LAST

FETCH FIRST 125001 ROWS ONLY

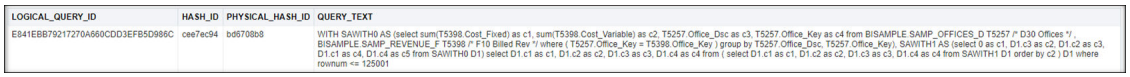
]]
```

When you select `start_ts`, `id`, `hash_id`, `query_src_cd`, and `query_text` from the usage tracking logical table, you get the `ID` value `E841EBB79217270A660CDD3EFB5D986C`.

START_TS	ID	HASH_ID	QUERY_SRC_CD	QUERY_TEXT
2/4/2022 3:11:17 PM	E841EBB79217270A660CDD3EFB5D986C	cee7ec94	Report	SELECT 0 s_0, "A - Sample Sales"."Offices"."D1 Office" s_1, "A - Sample Sales"."Base Facts"."10- Variable Costs" s_2, "A - Sample Sales"."Base Facts"."11- Fixed Costs" s_3 FROM "A - Sample Sales" ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY

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Next, select `logical_query_id`, `hash_id`, `physical_hash_id`, and `query_text` from the usage tracking physical table where `LOGICAL_QUERY_ID` is `E841EBB79217270A660CDD3EFB5D986C`.



LOGICAL_QUERY_ID	HASH_ID	PHYSICAL_HASH_ID	QUERY_TEXT
E841EBB79217270A660CDD3EFB5D986C	cee7ec94	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001

When you look at the Manage Sessions log, the logical query spawns the SQL code that's in the `QUERY_TEXT` column:

```
[2022-02-04T15:11:17.637+00:00] [OBIS] [TRACE:2] [USER-18] [] [ecid:
e49b96a8-33c4-4ba7-a877-e564d207eca1-00242531,0:1:38:5] [sik: bootstrap]
[tid: dd1bc700] [messageId: USER-18] [requestid: 33e30020] [sessionid:
33e30000] [username: oacadmin] -------------------- Sending query to database
named 01 - Sample App Data (ORCL) (id: <<62275>>), client type Oracle Call
Interface (OCI), connection pool named Sample Relational Connection, logical
request hash cee7ec94, physical request hash bd6708b8: [[

WITH

SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1,

     sum(T5398.Cost_Variable) as c2,

     T5257.Office_Dsc as c3,

     T5257.Office_Key as c4

from

     BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ ,

     BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */

where  ( T5257.Office_Key = T5398.Office_Key )

group by T5257.Office_Dsc, T5257.Office_Key),

SAWITH1 AS (select 0 as c1,

     D1.c3 as c2,

     D1.c2 as c3,

     D1.c1 as c4,

     D1.c4 as c5

from

     SAWITH0 D1)

select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from ( select D1.c1
as c1,

     D1.c2 as c2,
```


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```
     D1.c3 as c3,

     D1.c4 as c4

from

     SAWITH1 D1

order by c2 ) D1 where rownum <= 125001

]]
```

Finally, select `action`, `sql_id`, and `sql_text` from the `V$SQL` table where `Action` is `bd6708b8`.

ACTION	SQL_ID	SQL_TEXT
bd6708b8	1gxhc0acmztwk	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001

The query in the `sql_text` column is the same SQL code seen in the usage tracking physical table. From this, you see that the `sql_id` for the query in question is `1gxhc0acmztwk`.

If you run the same query again, another row is added to the usage tracking logical table with a new ID but the `hash_id` is the same.

START_TS	ID	HASH_ID	QUERY_SRC_CD	QUERY_TEXT
2/4/2022 3:11:17 PM	E841EBB79217270A660CDD3EFB5D986C	cee7ec94	Report	SELECT 0 s_0, "A - Sample Sales"."Offices"."D1 Office" s_1, "A - Sample Sales"."Base Facts"."10- Variable Costs" s_2, "A - Sample Sales"."Base Facts"."11- Fixed Costs" s_3 FROM "A - Sample Sales" ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY
2/4/2022 4:03:17 PM	83C58727041A10874BCFDE1EB521AC4E	cee7ec94	Report	SELECT 0 s_0, "A - Sample Sales"."Offices"."D1 Office" s_1, "A - Sample Sales"."Base Facts"."10- Variable Costs" s_2, "A - Sample Sales"."Base Facts"."11- Fixed Costs" s_3 FROM "A - Sample Sales" ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY

Similarly, another row is added to the usage tracking physical table with a new `logical_query_id`, but both the `hash_id` and `physical_hash_id` remain the same.

LOGICAL_QUERY_ID	HASH_ID	PHYSICAL_HASH_ID	QUERY_TEXT
E841EBB79217270A660CDD3EFB5D986C	cee7ec94	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001
83C58727041A10874BCFDE1EB521AC4E	cee7ec94	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001

Example 4

The `physical_hash_id` is also reused if you run a similar logical query against a subject area that's based on the same logical and physical models. For example, if you run a similar query against C - Sample Costs:

```
[2022-02-04T16:10:17.862+00:00] [OBIS] [TRACE:2] [USER-0] [] [ecid:
e49b96a8-33c4-4ba7-a877-e564d207eca1-00242ce7,0:1:15:3] [sik: bootstrap]
[tid: 58504700] [messageId: USER-0] [requestid: 13c9003c] [sessionid:
13c90000] [username: oacadmin] ################################################
[[

------------------- SQL Request, logical request hash:

7b5ea9b1

SET VARIABLE QUERY_SRC_CD='Report';SELECT

   0 s_0,
```


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```
   "C - Sample Costs"."Offices"."D1  Office" s_1,

   "C - Sample Costs"."Base Facts"."10- Variable Costs" s_2,

   "C - Sample Costs"."Base Facts"."11- Fixed Costs" s_3

FROM "C - Sample Costs"

ORDER BY 2 ASC NULLS LAST

FETCH FIRST 125001 ROWS ONLY

]]
```

This logical query spawns the same SQL code seen in the query you ran, run against A – Sample Sales:

```
[2022-02-04T16:10:17.866+00:00] [OBIS] [TRACE:2] [USER-18] [] [ecid:
e49b96a8-33c4-4ba7-a877-e564d207eca1-00242ce7,0:1:15:5] [sik: bootstrap]
[tid: 58504700] [messageId: USER-18] [requestid: 13c9003c] [sessionid:
13c90000] [username: oacadmin] ------------------- Sending query to database
named 01 - Sample App Data (ORCL) (id: <<52912>>), client type Oracle Call
Interface (OCI), connection pool named Sample Relational Connection, logical
request hash 7b5ea9b1, physical request hash bd6708b8: [[

WITH

SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1,

     sum(T5398.Cost_Variable) as c2,

     T5257.Office_Dsc as c3,

     T5257.Office_Key as c4

from

     BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ ,

     BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */

where  ( T5257.Office_Key = T5398.Office_Key )

group by T5257.Office_Dsc, T5257.Office_Key),

SAWITH1 AS (select 0 as c1,

     D1.c3 as c2,

     D1.c2 as c3,

     D1.c1 as c4,

     D1.c4 as c5
```


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```
from

     SAWITH0 D1)

select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from ( select D1.c1
as c1,

     D1.c2 as c2,

     D1.c3 as c3,

     D1.c4 as c4

from

     SAWITH1 D1

order by c2 ) D1 where rownum <= 125001

]]
```

First, use the usage tracking logical table to find the ID. You can see that the logical `hash_id` is different than the query run against A – Sample Sales.

START_TS	ID	HASH_ID	QUERY_SRC_CD	QUERY_TEXT
2/4/2022 4:10:17 PM	3A10DF1D047B20505630EE5EAB2A64CF	7b5ea9b1	Report	SELECT 0 s_0, "C - Sample Costs"."Offices"."D1 Office" s_1, "C - Sample Costs"."Base Facts"."10- Variable Costs" s_2, "C - Sample Costs"."Base Facts"."11- Fixed Costs" s_3 FROM "C - Sample Costs" ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY

In the usage tracking physical table, you see that even though the logical `hash_id` is different, the `physical_hash_id` is the same.

LOGICAL_QUERY_ID	HASH_ID	PHYSICAL_HASH_ID	QUERY_TEXT
E841EBB79217270A660CDD3EFB5D986C	cee7ec94	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001
83C58727041A10874BCFDE1EB521AC4E	cee7ec94	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001
3A10DF1D047B20505630EE5EAB2A64CF	7b5ea9b1	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001

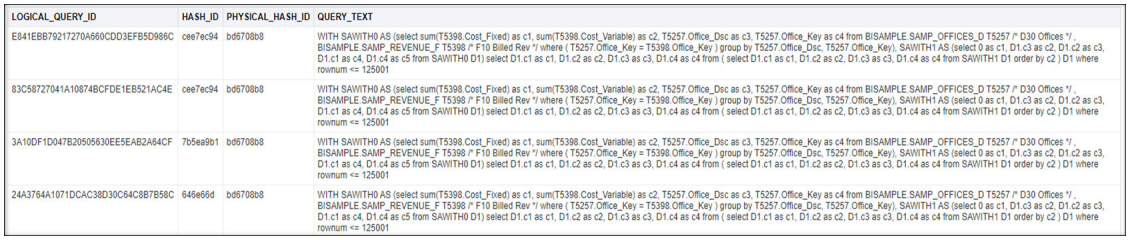
Example 5

In this example, you run the same queries, but this time you click **Refresh**. Notice the variable `OBIS_REFRESH_CACHE=1` to denote the refresh. As expected, another row is inserted into the usage tracking logical table but it has a different `logical hash_id`.

START_TS	ID	HASH_ID	QUERY_SRC_CD	QUERY_TEXT
2/4/2022 3:11:17 PM	E841EBB79217270A660CDD3EFB5D986C	cee7ec94	Report	SELECT 0 s_0, "A - Sample Sales"."Offices"."D1 Office" s_1, "A - Sample Sales"."Base Facts"."10- Variable Costs" s_2, "A - Sample Sales"."Base Facts"."11- Fixed Costs" s_3 FROM "A - Sample Sales" ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY
2/4/2022 4:03:17 PM	83C58727041A10874BCFDE1EB521AC4E	cee7ec94	Report	SELECT 0 s_0, "A - Sample Sales"."Offices"."D1 Office" s_1, "A - Sample Sales"."Base Facts"."10- Variable Costs" s_2, "A - Sample Sales"."Base Facts"."11- Fixed Costs" s_3 FROM "A - Sample Sales" ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY
2/4/2022 4:10:17 PM	3A10DF1D047B20505630EE5EAB2A64CF	7b5ea9b1	Report	SELECT 0 s_0, "C - Sample Costs"."Offices"."D1 Office" s_1, "C - Sample Costs"."Base Facts"."10- Variable Costs" s_2, "C - Sample Costs"."Base Facts"."11- Fixed Costs" s_3 FROM "C - Sample Costs" ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY
2/4/2022 4:17:10 PM	24A3764A1071DCAC38D30C64C8B7B58C	646e66d	Report	SET VARIABLE OBIS_REFRESH_CACHE=1:SELECT 0 s_0, "C - Sample Costs"."Offices"."D1 Office" s_1, "C - Sample Costs"."Base Facts"."10- Variable Costs" s_2, "C - Sample Costs"."Base Facts"."11- Fixed Costs" s_3 FROM "C - Sample Costs" ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY

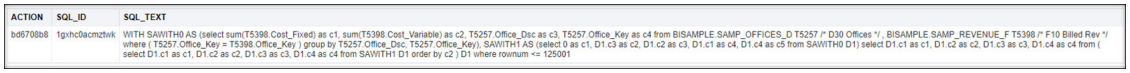
However, when you query the usage tracking physical table, you can see that all the queries have the same `physical_hash_id`.

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LOGICAL_QUERY_ID	HASH_ID	PHYSICAL_HASH_ID	QUERY_TEXT
E841EBB79217270A660CDD3EFB5D986C	cee7ec94	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001
83C58727041A10874BCFDE1EB521AC4E	cee7ec94	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001
3A10DF1D047B20505630EE5EAB2A64CF	7b5ea9b1	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001
24A3764A1071DCAC38D30C64C8B7B58C	646e66d	bd6708b8	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001

Because these four logical queries all have the same `physical_hash_id`, you see only a single record in the `V$SQL` table for this query.



ACTION	SQL_ID	SQL_TEXT
bd6708b8	1gxhc0acmztwk	WITH SAWITH0 AS (select sum(T5398.Cost_Fixed) as c1, sum(T5398.Cost_Variable) as c2, T5257.Office_Dsc as c3, T5257.Office_Key as c4 from BISAMPLE.SAMP_OFFICES_D T5257 /* D30 Offices */ , BISAMPLE.SAMP_REVENUE_F T5398 /* F10 Billed Rev */ where (T5257.Office_Key = T5398.Office_Key) group by T5257.Office_Dsc, T5257.Office_Key), SAWITH1 AS (select 0 as c1, D1.c3 as c2, D1.c2 as c3, D1.c1 as c4, D1.c4 as c5 from SAWITH0 D1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from SAWITH1 D1 order by c2) D1 where rownum <= 125001

Example 6

You can use the same method to troubleshoot data visualization queries based on a subject area (RPD) or a database connection. For database connections, this includes both data visualizations and queries used to populate datasets.

You can determine the query type, that is, data visualization, dataset, analysis, ODBC, and so on, from the value of the `QUERY_SRC_CD` column. For example, data visualization queries have a value `Visual Analyzer`, a query used to populate a dataset has the value `data-prep`, analyses have the value `Report`, and queries for some internal ODBC procedure calls have the value `Soap`.

To generate a SQL statement for a data visualization, you must change Data Access to Live for the underlying dataset.

In this example, you create a data visualization query (similar to the previous queries) against a dataset based on a connection to an Oracle database:

```
[2022-02-03T19:42:06.564+00:00] [OBIS] [TRACE:2] [USER-0] [] [ecid:
f95b5f1b-1e5c-4604-b82a-3eb3717f3aa6-002aa26e,0:1:1:3] [sik: bootstrap] [tid:
58b0a700] [messageId: USER-0] [requestid: ed830023] [sessionid: ed830000]
[username: oacadmin] ################################################ [[

-------------------- SQL Request, logical request hash:

3158b05

SET VARIABLE QUERY_SRC_CD='Visual Analyzer',SAW_SRC_PATH='{"viewID":"view!
1","currentCanvas":"canvas!1"}',ENABLE_DIMENSIONALITY = 1; SELECT

   0 s_0,

   XSA('oacadmin'.'BISAMPLE_OfficeRevenue')."SAMP_OFFICES_D"."OFFICE_DSC" s_1,

   XSA('oacadmin'.'BISAMPLE_OfficeRevenue')."SAMP_REVENUE_F"."COST_FIXED" s_2,

   XSA('oacadmin'.'BISAMPLE_OfficeRevenue')."SAMP_REVENUE_F"."COST_VARIABLE"
s_3

FROM XSA('oacadmin'.'BISAMPLE_OfficeRevenue')

ORDER BY 2 ASC NULLS LAST
```


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```
FETCH FIRST 125001 ROWS ONLY

/* AdditionalDetail='VisualAnalyzer' */
```

Which spawns the following SQL code:

```
[2022-02-03T19:42:06.960+00:00] [OBIS] [TRACE:2] [USER-18] [] [ecid:
f95b5f1b-1e5c-4604-b82a-3eb3717f3aa6-002aa26e,0:1:1:5] [sik: bootstrap] [tid:
58b0a700] [messageId: USER-18] [requestid: ed830023] [sessionid: ed830000]
[username: oacadmin] ------------------- Sending query to database named
'oacadmin'.'BISAMPLE' (id: <<147945>>), client type OCI 10g/11g, connection
pool named 'oacadmin'.'BISAMPLE', logical request hash 3158b05, physical
request hash c48e8741: [[

WITH

SAWITH0 AS (select T1000005.OFFICE_KEY as c1,

     T1000005.OFFICE_DSC as c2

from

     BISAMPLE.SAMP_OFFICES_D T1000005),

SAWITH1 AS (select T1000008.OFFICE_KEY as c1,

     T1000008.COST_FIXED as c2,

     T1000008.COST_VARIABLE as c3

from

     BISAMPLE.SAMP_REVENUE_F T1000008),

SAWITH2 AS (select D1.c2 as c1,

     D2.c2 as c2,

     D2.c3 as c3

from

     SAWITH0 D1 inner join SAWITH1 D2 On D1.c1 = D2.c1),

SAWITH3 AS (select D102.c1 as c1,

     sum(D102.c2) as c2,

     sum(D102.c3) as c3

from

     SAWITH2 D102
```


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```
group by D102.c1)

select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from ( select 0 as
c1,

     D110.c1 as c2,

     D110.c2 as c3,

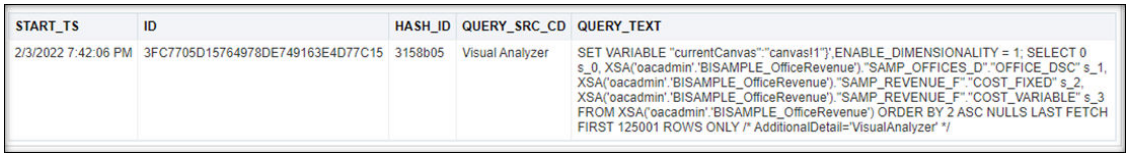
     D110.c3 as c4

from

     SAWITH3 D110

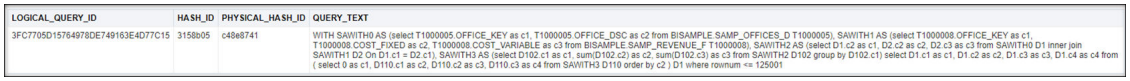
order by c2 ) D1 where rownum <= 125001
```

From the usage tracking logical table, you can find the `hash_id` that's used as a filter against the usage tracking physical table.



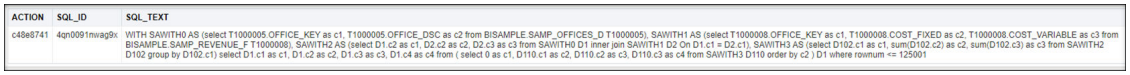
START_TS	ID	HASH_ID	QUERY_SRC_CD	QUERY_TEXT
2/3/2022 7:42:06 PM	3FC7705D15764978DE749163E4D77C15	3158b05	Visual Analyzer	SET VARIABLE "currentCanvas":"canvas!1"}',ENABLE_DIMENSIONALITY = 1; SELECT 0 s_0, XSA('oacadmin','BISAMPLE_OfficeRevenue')."SAMP_OFFICES_D"."OFFICE_DSC" s_1, XSA('oacadmin','BISAMPLE_OfficeRevenue')."SAMP_REVENUE_F"."COST_FIXED" s_2, XSA('oacadmin','BISAMPLE_OfficeRevenue')."SAMP_REVENUE_F"."COST_VARIABLE" s_3 FROM XSA('oacadmin','BISAMPLE_OfficeRevenue') ORDER BY 2 ASC NULLS LAST FETCH FIRST 125001 ROWS ONLY /* AdditionalDetail='VisualAnalyzer' */

From the usage tracking physical table, you can find the `physical_hash_id`.



LOGICAL_QUERY_ID	HASH_ID	PHYSICAL_HASH_ID	QUERY_TEXT
3FC7705D15764978DE749163E4D77C15	3158b05	c48e8741	WITH SAWITH0 AS (select T1000005.OFFICE_KEY as c1, T1000005.OFFICE_DSC as c2 from BISAMPLE.SAMP_OFFICES_D T1000005), SAWITH1 AS (select T1000008.OFFICE_KEY as c1, T1000008.COST_FIXED as c2, T1000008.COST_VARIABLE as c3 from BISAMPLE.SAMP_REVENUE_F T1000008), SAWITH2 AS (select D1.c2 as c1, D2.c2 as c2, D2.c3 as c3 from SAWITH0 D1 inner join SAWITH1 D2 On D1.c1 = D2.c1), SAWITH3 AS (select D102.c1 as c1, sum(D102.c2) as c2, sum(D102.c3) as c3 from SAWITH2 D102 group by D102.c1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select 0 as c1, D110.c1 as c2, D110.c2 as c3, D110.c3 as c4 from SAWITH3 D110 order by c2) D1 where rownum <= 125001

When you query the `V$SQL` table, you find the `SQL_ID` again.



ACTION	SQL_ID	SQL_TEXT
c48e8741	4qn0091nwag9x	WITH SAWITH0 AS (select T1000005.OFFICE_KEY as c1, T1000005.OFFICE_DSC as c2 from BISAMPLE.SAMP_OFFICES_D T1000005), SAWITH1 AS (select T1000008.OFFICE_KEY as c1, T1000008.COST_FIXED as c2, T1000008.COST_VARIABLE as c3 from BISAMPLE.SAMP_REVENUE_F T1000008), SAWITH2 AS (select D1.c2 as c1, D2.c2 as c2, D2.c3 as c3 from SAWITH0 D1 inner join SAWITH1 D2 On D1.c1 = D2.c1), SAWITH3 AS (select D102.c1 as c1, sum(D102.c2) as c2, sum(D102.c3) as c3 from SAWITH2 D102 group by D102.c1) select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from (select 0 as c1, D110.c1 as c2, D110.c2 as c3, D110.c3 as c4 from SAWITH3 D110 order by c2) D1 where rownum <= 125001

You can also find the logical `hash_id` and `physical_hash_id` in the Manage Sessions log (see the highlighted sections in the previous log examples). This means you can find the `SQL_ID` from the log itself. The benefit of using the usage tracking tables is that log entries in Manage Sessions are temporary so unless you're collecting hash IDs at the same time as running the query, they're lost.

However, data is only written to the usage tracking tables when a query completes. So, if you're troubleshooting a long-running query that hasn't completed yet and you want to determine the `sql_id`, you can get the logical `hash_id` and `physical_hash_id` from the Manage Sessions log.

If you're troubleshooting a SQL statement and you need to investigate the database, you can join information in the usage tracking tables and the `V$SQL` system table (or `GV$SQL`) to quickly find the `SQL_ID` for the SQL statement you're investigating.

Use the IndexCol Function

In Oracle Analytics, `CASE` statements are often used when a calculation branches based on a variable value. When a variable is referenced in a `CASE` statement, it's preferable to use the

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IndexCol function instead to improve the efficiency of the generated SQL code. This topic describes the IndexCol function and when to use it.

About the IndexCol Function

You use the IndexCol function when the columns or values in a calculation vary depending on the value of a session, repository, or presentation variable.

The syntax of the IndexCol function is:

```
INDEXCOL(<<integer_literal>>, <<expr_list>>)
```

Where the first argument resolves to an integer and the items that comprise the <<expr_list>> correspond to the number of possible values of the first argument. One of these items is then used in the SQL statement based on the value of the first argument.

For example, if the <<integer_literal>> argument has three possible values, then there must be three arguments in the <<expr_list>> argument, one for each possible value of <<integer_literal>>.

The first argument is often based on the value of a session variable or a CASE statement in reference to variables. You can model the IndexCol function in the repository (RPD) file or directly in a report column. You can nest multiple IndexCol functions to form a single statement.

Benefits of the IndexCol Function

A calculation using a <<case when>> statement is pushed to the physical SQL code in its entirety. By comparison, the IndexCol function pushes down only the required column or expression to the database. This is because the IndexCol function is evaluated before the physical SQL code is generated.

When combined with variable prompts, which allow selection in a list of values, you can significantly modify the report structure without any increased cost on performance.

One drawback of the IndexCol function is that you can't use it with like in integer calculations, although you can use like in the list of expressions. If an integer calculation requires a like, you must use a CASE statement instead.

Example

Assume there's a session variable called PREFERRED_CURRENCY that sets the preferred currency for a user. Then, based on the value of the session variable, Revenue is displayed in the currency specified by the user.

Two calculations have been created to return the correct currency based on the value of the session variable.

The first uses a CASE statement, like this:

```
CASE

WHEN VALUEOF("NQ_SESSION"."PREFERRED_CURRENCY") = 'USD' THEN "01 - Sample App
Data (ORCL)"."","BISAMPLE"."F19 Rev. (Converted)"."Revenue_Usd"

WHEN VALUEOF("NQ_SESSION"."PREFERRED_CURRENCY") = 'EUR' THEN  "01 - Sample
App Data (ORCL)"."","BISAMPLE"."F19 Rev. (Converted)"."Revenue_Eur"

WHEN VALUEOF("NQ_SESSION"."PREFERRED_CURRENCY") = 'AUD' THEN  "01 - Sample
```


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```
App Data (ORCL)"."."BISAMPLE"."F19 Rev. (Converted)"."Revenue_Aud"

ELSE NULL

END
```

The second uses the `IndexCol` function like this:

```
INDEXCOL(

CASE VALUEOF("NQ_SESSION"."PREFERRED_CURRENCY")

WHEN 'USD' THEN 0

WHEN 'EUR' THEN 1

WHEN 'AUD' THEN 2

END ,

"01 - Sample App Data (ORCL)"."."BISAMPLE"."F19 Rev.
(Converted)"."Revenue_Usd", "01 - Sample App Data (ORCL)"."."BISAMPLE"."F19
Rev. (Converted)"."Revenue_Eur", "01 - Sample App Data
(ORCL)"."."BISAMPLE"."F19 Rev. (Converted)"."Revenue_Aud")
```

Because the first argument of the `IndexCol` function must resolve to an integer, a `CASE` statement is used for the resolution.

When a query is run using the `CASE` statement calculation, the entirety of the `CASE` statement is pushed down to the database, because the `CASE` statement is evaluated at runtime. In some cases, this causes issues with the optimizer.

```
WITH

SAWITH0 AS (select sum(case  when 'USD' = 'USD' then T42437.Revenue_Usd when
'EUR' = 'USD' then T42437.Revenue_Eur when 'AUD' = 'USD' then
T42437.Revenue_Aud else NULL end ) as c1,

     T42412.Office_Dsc as c2,

     T42412.Office_Key as c3

from

     BISAMPLE.SAMP_OFFICES_D T42412 /* D30 Offices */ ,

     BISAMPLE.SAMP_REVENUE_CURR_F T42437 /* F19 Rev. (Converted) */

where  ( T42412.Office_Key = T42437.Office_Key )

group by T42412.Office_Dsc, T42412.Office_Key),

SAWITH1 AS (select 0 as c1,

     D1.c2 as c2,
```


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```
     D1.c1 as c3,

     D1.c3 as c4

from

     SAWITH0 D1)

select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3 from ( select D1.c1 as c1,

     D1.c2 as c2,

     D1.c3 as c3

from

     SAWITH1 D1

order by c2 ) D1
```

The same query run using the IndexCol function pushes down only the expression needed to satisfy the query, because the IndexCol function is resolved prior to SQL generation. This helps avoid issues with the Optimizer.

```
WITH

SAWITH0 AS (select sum(T42437.Revenue_Usd) as c1,

     T42412.Office_Dsc as c2,

     T42412.Office_Key as c3

from

     BISAMPLE.SAMP_OFFICES_D T42412 /* D30 Offices */ ,

     BISAMPLE.SAMP_REVENUE_CURR_F T42437 /* F19 Rev. (Converted) */

where  ( T42412.Office_Key = T42437.Office_Key )

group by T42412.Office_Dsc, T42412.Office_Key),

SAWITH1 AS (select 0 as c1,

     D1.c2 as c2,

     D1.c1 as c3,

     D1.c3 as c4

from

     SAWITH0 D1)

select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3 from ( select D1.c1 as c1,
```


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```
     D1.c2 as c2,

     D1.c3 as c3

from

     SAWITH1 D1

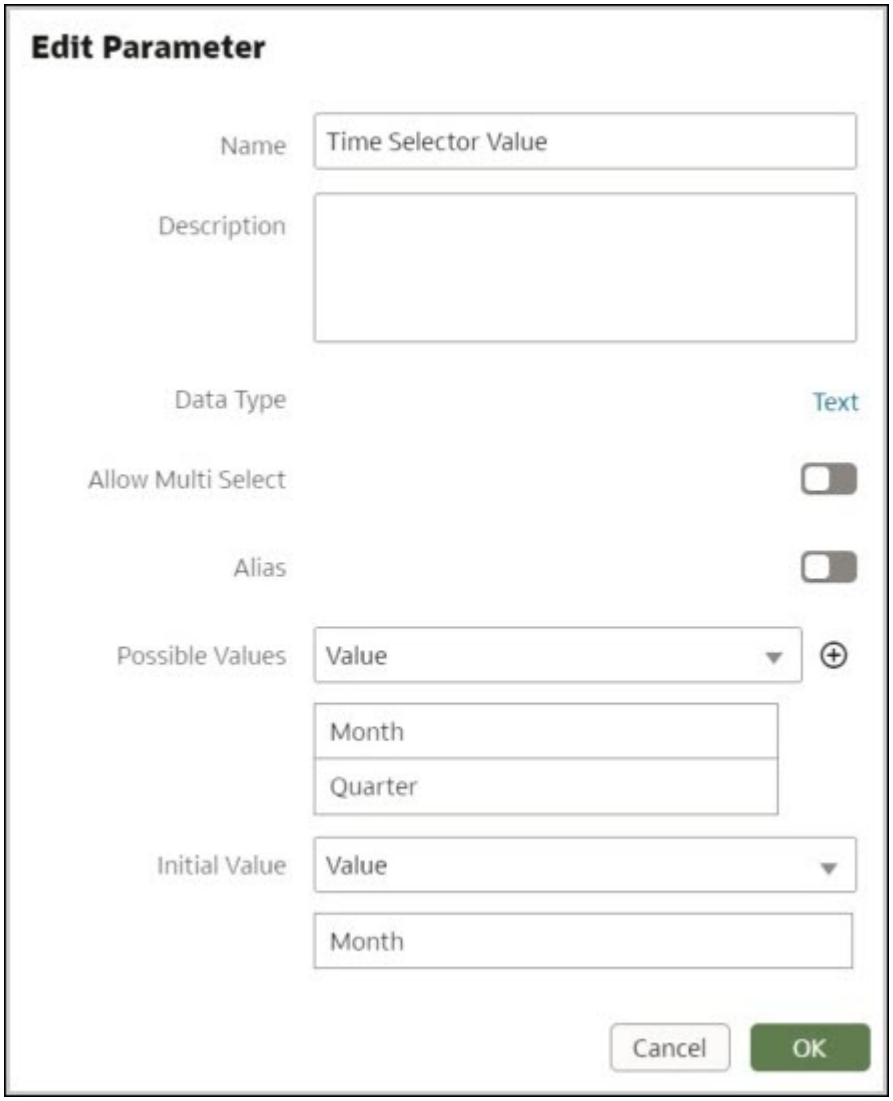
order by c2 ) D1
```

Workbooks and IndexCol

You can use the `IndexCol` function in workbooks.

In this example, the `IndexCol` function is used to change the period granularity in a visualization:

1. Create a parameter to use as the column selector to select the period grain, in this case, either Month or Quarter.



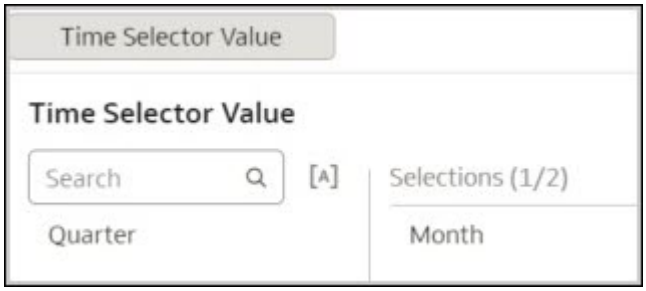
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2. Create a custom calculation to perform the `IndexCol` function. Here the calculation is:

```
indexcol(case when @parameter("Time Selector Value")('Month')='Month' then
0 else 1 end, "HCM - Workforce Core"."Time"."Month Name", "HCM - Workforce
Core"."Time"."Quarter")
```



3. Add the parameter to the filter bar of a workbook. Users can then change the granularity of a report by selecting either **Month** or **Quarter** from the column selector filter.



Maintain Initialization Blocks

When you use Data Gateway or Remote Data Connector with Oracle Analytics Cloud, there's a small overhead on the duration of each query execution.

You won't notice the additional duration when you run a report because it's less than 0.3 seconds. However, you might experience performance issues if you run many (the number depends on your performance requirements) initialization blocks whenever someone signs in because initialization block queries are executed serially. This topic suggests ways to reduce the number of session initialization blocks.

Using the deferred option for initialization blocks doesn't fix the issue because initialization blocks are executed when you open the first dashboard page.

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This is an issue if you use Oracle BI Applications, because it runs more than 200 initialization blocks. For Oracle Analytics Cloud, the best way to avoid these performance issues is to reduce the number of initialization blocks.

Oracle recommends the following ways you can reduce the number of session initialization blocks:

- Disable all the initialization blocks that you don't need.
  For example, in Oracle BI Applications, disable initialization blocks that refer to Oracle BI Applications modules that you don't use anymore.
- Except when there's precedence rule, merge all the `row_wise` initialization blocks that use the same connection pool and return the same data type using `UNION ALL` between their queries.
  For example:

  ```
  Init block 1: query1

  Init block 2: query2

  Merged init block: query1 union all query2
  ```

- Disable all the initialization blocks that select a hardcoded value from `dual` or `W_DUAL_G`, and put the hardcoded value in the default initializer of the corresponding variable.
- Merge the remaining initialization blocks that select data from dual into a single `select` statement.
- For Oracle BI Applications customers, disable all the initialization blocks used to retrieve the Oracle Human Capital Management custom attributes name and values if the corresponding attribute isn't used (if the standard default value `HIDE` is the current value for these variables) or if you don't use Oracle Human Capital Management as an Oracle BI Applications data source (there are 100 initialization blocks like that in Oracle BI Applications):

  ```
  HR xxx Attribute yyy
  ```

- Merge all the remaining initialization blocks together that aren't `row_wise` and use the same connection pool. For example:
  Init block 1 is based on query1: `select colA from tableA where….`

  Init block 2 is based on query2: `select colB from tableB where….`

  You can merge them into a single initialization block using a query such as:

  ```
  Select MAX(colA), MAX(colB) from (

  select cola as cola, null as colB from tableA where….

  Union all

  Select null, colB from tableB where…) tmp
  ```

  You can do as many unions as required to retrieve all the variables from the same connection pool in one single query.

  This isn't easy to implement or maintain, and you risk making mistakes when you create the queries and assign all the variables to a single initialization block.

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If you carefully implement and maintain your initialization block queries and variables, you can significantly reduce the time it takes to sign in and display the first dashboard page.

Use Usage Tracking with Initialization Blocks

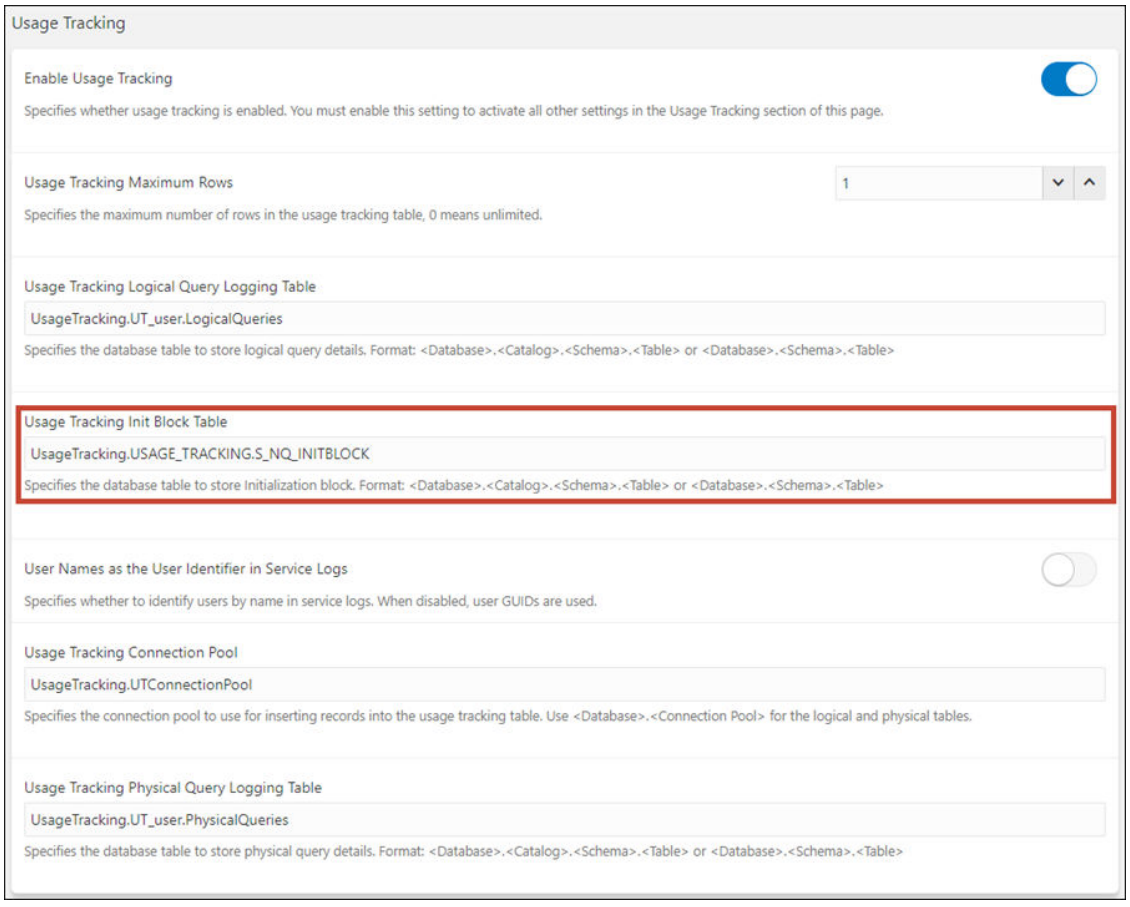
This topic covers tips for working with initialization blocks and usage tracking in Oracle Analytics.

Enable Usage Tracking

Once the initial round of optimizing session variable initialization blocks is complete, enable usage tracking for initialization blocks to understand their performance better. See Maintain Initialization Blocks.

Table names for usage tracking in Oracle BI Enterprise Edition (OBIEE) are shown in this topic. The actual names can be anything, but they should identify each table's contents, such as `PHYSICAL`, `LOGICAL`, or `INITBLOCK`.

Enable usage tracking in **System Settings** and restart the Business Intelligence (BI) Server to start usage tracking. See Usage Tracking Options.



Monitor Initialization Blocks

After enabling usage tracking, log in to Oracle Analytics. All session variable initialization blocks that aren't deferred run when you log in and populate the initialization block usage tracking table.

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Using SQL Developer, SQL*Plus, or another SQL entry tool, run the following query against the initialization block usage tracking table using a SESSION_ID obtained from a session log (for example, -1883570176).

```
SELECT USER_NAME, SESSION_ID, BLOCK_NAME,
TO_CHAR(START_TS,'DD-MM-YYYY HH24:MI:SS') START_TIME,
TO_CHAR(END_TS,'DD-MM-YYYY HH24:MI:SS') END_TIME
FROM USAGE_TRACKING.S_NQ_INITBLOCK
WHERE SESSION_ID = -1883570176
ORDER BY SESSION_ID, START_TS, END_TS
```

Don't filter using the USER_NAME. Instead, note the START_TIME and the USER_NAME of the row from a session log that you're interested in.

Filter the query using the SESSION_ID associated with the USER_NAME and optionally, the START_TIME.

The following figure shows the query result in a table.

USER_NAME	SESSION_ID	BLOCK_NAME	START_TS	END_TS
DBCooper	-1883570176	SIGNNING ON	11/14/22 16:40:25	11/14/22 16:40:37
DBCooper	-1883570176	SIGNED ON	11/14/22 16:40:25	11/14/22 16:40:37
BISystemUser	-1883570176	Get_S_YEAR_PREVIOUS_MTH	11/14/22 16:40:37	11/14/22 16:40:37
BISystemUser	-1883570176	Verify ORCL DSN	11/14/22 16:40:37	11/14/22 16:40:37
BISystemUser	-1883570176	get_DATES	11/14/22 16:40:37	11/14/22 16:40:37
BISystemUser	-1883570176	get_HR_JOB_NAME	11/14/22 16:40:37	11/14/22 16:40:37
BISystemUser	-1883570176	get_IRIS_USER	11/14/22 16:40:37	11/14/22 16:40:37
BISystemUser	-1883570176	get_MIF_USER	11/14/22 16:40:37	11/14/22 16:40:37
BISystemUser	-1883570176	get_HISTP_USER	11/14/22 16:40:37	11/14/22 16:40:37
BISystemUser	-1883570176	get_RAPID_USER	11/14/22 16:40:37	11/14/22 16:40:37
BISystemUser	-1883570176	get_EPRODR_USER	11/14/22 16:40:37	11/14/22 16:40:37
DBCooper	-1883570176	get_PROSP_USER_LEVEL	11/14/22 16:41:12	11/14/22 16:41:12
DBCooper	-1883570176	SIGNED OFF	11/14/22 16:40:25	11/14/22 17:01:42

This table shows that the SIGNING ON and SIGNED ON calls take twelve seconds. Then the SIGNED OFF call shows that the user logged off after 21 minutes of activity. Administrators can see exactly how long things are taking and where corrective action is needed.

Usage tracking for initialization blocks makes the following three system calls during a user session:

- SIGNING ON
- SIGNED ON
- SIGNED OFF

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> **Note**
>
> If you're not investigating specific login problems, ignore the three blocks named `SIGNING ON`, `SIGNED ON`, and `SIGNED OFF`. `SESSION_ID` can be a negative number. There are two different `USER_NAME` values for the same `SESSION_ID`: BISystemUser and the actual user name.

You can specify initialization blocks as deferred. These run as needed using the original user name. All session variable initialization blocks that aren't deferred run when a user logs in and populate the initialization block usage tracking table. They run using the BISystemUser user name.

Minimize Impact on Query Performance Due to Network Latency

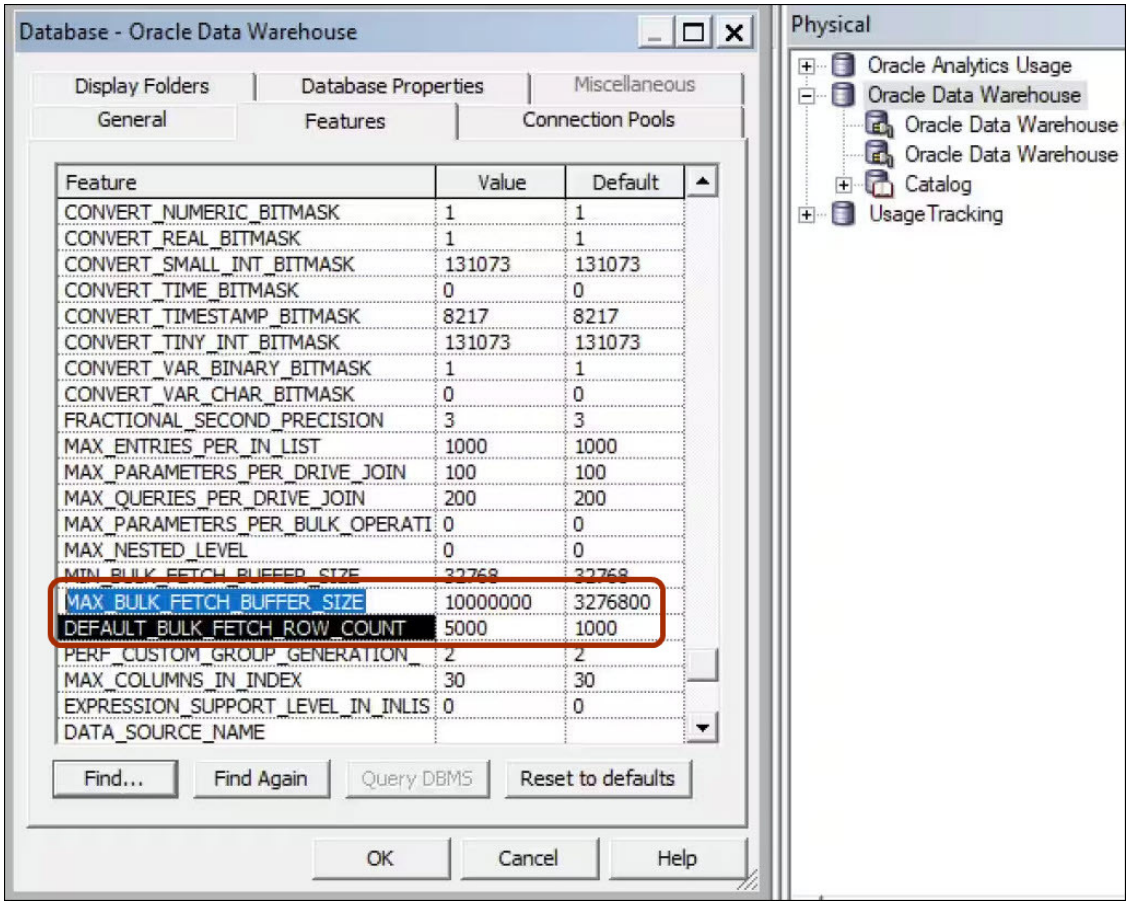
Network latency increases when Oracle Analytics connects to a database on a different data center. This topic explains how you can minimize the negative performance impact from this higher network latency by reducing the number of network roundtrips between Oracle Analytics and your data source. Making fewer network roundtrips reduces the response time of your database queries.

To achieve this, Oracle recommends that you increase the default bulk fetch row count and the size of the fetch buffer. You can modify both these settings in the data model file (RPD) for your Oracle Analytics:

- `DEFAULT_BULK_FETCH_ROW_COUNT`: Increase the bulk fetch row count value to 5,000. Because the number of rows in bulk fetches is limited by the size of the bulk fetch buffer, you need to increase the fetch buffer size too.
- `MAX_BULK_FETCH_BUFFER_SIZE`: Increase the buffer size to a larger value, such as 10,000,000.

If the buffer size isn't large enough, each bulk fetch contains fewer rows than expected by the `DEFAULT_BULK_FETCH_ROW_COUNT`. When network latency is high, this can degrade performance.

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Assign the Aggregation Rule for Report Totals

This topic describes ways to explicitly assign the aggregation rule for report totals, which helps improve performance and is intended specifically for technical developers writing reports with Oracle Analytics.

The following figure shows an example where the report definition is year, month, and customer region, with a metric `Count Distinct of Customers with Orders` that's defined as a count distinct of customers with orders.

C50 Region	Count Distinct Customers with Orders
AMERICAS	182
APAC	113
EMEA	185
Grand Total	**480**

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The logical query looks like this:

```
SELECT
   0 s_0,
   "A - Sample Sales"."Cust Regions"."C50  Region" s_1,
   "A - Sample Sales"."Counts"."32  # of Cust with Orders  (Cnt Distinct)"
s_2,
   REPORT_AGGREGATE("A - Sample Sales"."Counts"."32  # of Cust with Orders
(Cnt Distinct)" BY ) s_3
FROM "A - Sample Sales"
WHERE
("Time"."T02 Per Name Month" = '2011 / 11')
ORDER BY 2 ASC NULLS LAST
FETCH FIRST 500001 ROWS ONLY
```

The physical query that's generated looks like this:

```
WITH
SAWITH0 AS (select count(distinct T42433.Cust_Key) as c1,
     T42430.Region as c2
from
     BISAMPLE.SAMP_CUSTOMERS_D T42428 /* D60 Customers */ ,
     BISAMPLE.SAMP_ADDRESSES_D T42430 /* D62 Customers Addresses */ ,
     BISAMPLE.SAMP_TIME_MTH_D T42405 /* D02 Time Month Grain */ ,
     BISAMPLE.SAMP_REVENUE_F T42433 /* F10 Billed Rev */
where  ( T42405.Mth_Key = T42433.Bill_Mth_Key and T42405.Per_Name_Month =
'2011 / 11' and T42428.Cust_Key = T42433.Cust_Key and T42428.Address_Key =
T42430.Address_Key )
group by T42430.Region),
SAWITH1 AS (select count(distinct T42433.Cust_Key) as c1
from
     BISAMPLE.SAMP_TIME_MTH_D T42405 /* D02 Time Month Grain */ ,
     BISAMPLE.SAMP_REVENUE_F T42433 /* F10 Billed Rev */
where  ( T42405.Per_Name_Month = '2011 / 11' and T42405.Mth_Key =
T42433.Bill_Mth_Key ) )
select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from ( select D1.c1
as c1,
     D1.c2 as c2,
     D1.c3 as c3,
     D1.c4 as c4
from
     (select 0 as c1,
               D1.c2 as c2,
               D1.c1 as c3,
               D2.c1 as c4,
               ROW_NUMBER() OVER (PARTITION BY D1.c2 ORDER BY D1.c2 ASC) as c5
          from
               SAWITH0 D1,
               SAWITH1 D2
     ) D1
where  ( D1.c5 = 1 )
order by c2 ) D1 where rownum <= 500001
```

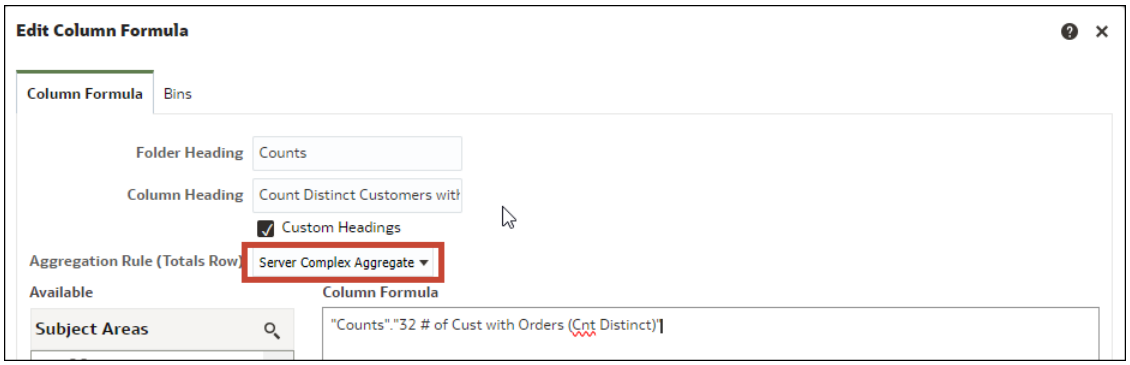

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The total value, 480, is the sum of the constituent values, 182 + 113 + 185. The logical query expression that calculates the total is: “REPORT_AGGREGATE("A - Sample Sales"."Counts"."32 # of Cust with Orders (Cnt Distinct)" BY) s_3”.

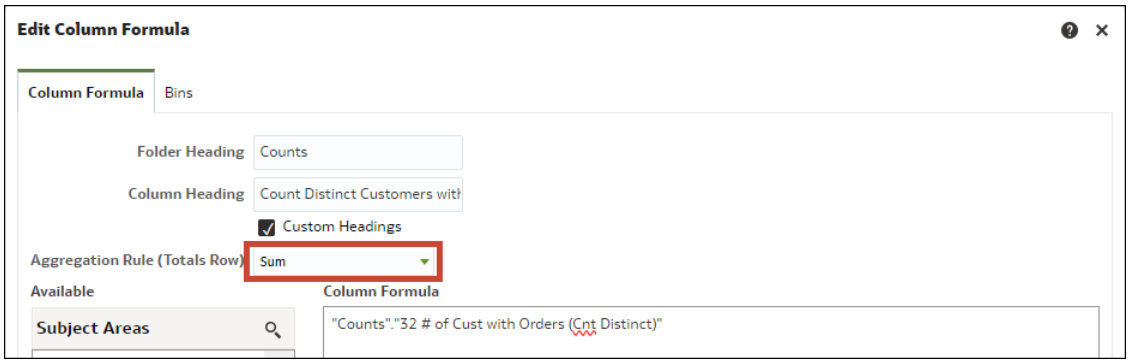
When REPORT_AGGREGATE is used, the total is calculated independently of the constituent values. But for this report design, the correct total can be calculated from the constituents for this report.

If you edit the column formula to change the **Aggregation Rule (Totals Row)** from **Server Complex Aggregate** to **Sum**, the logical and physical SQL query is changed.

The following figure shows the original aggregation.



The following figure shows the modified aggregation.



The modified logical SQL query now has REPORT_SUM:

```
SELECT
   0 s_0,
   "A - Sample Sales"."Cust Regions"."C50  Region" s_1,"A - Sample
Sales"."Counts"."32  # of Cust with Orders  (Cnt Distinct)" s_2,
   REPORT_SUM("A - Sample Sales"."Counts"."32  # of Cust with Orders  (Cnt
Distinct)" BY ) s_3
FROM "A - Sample Sales"
WHERE
("Time"."T02 Per Name Month" = '2011 / 11')
ORDER BY 2 ASC NULLS LAST
FETCH FIRST 500001 ROWS ONLY
```

This is the physical query that's generated:

```
WITH
SAWITH0 AS (select count(distinct T42433.Cust_Key) as c1,
```


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```
     T42430.Region as c2
from
     BISAMPLE.SAMP_CUSTOMERS_D T42428 /* D60 Customers */ ,
     BISAMPLE.SAMP_ADDRESSES_D T42430 /* D62 Customers Addresses */ ,
     BISAMPLE.SAMP_TIME_MTH_D T42405 /* D02 Time Month Grain */ ,
     BISAMPLE.SAMP_REVENUE_F T42433 /* F10 Billed Rev */
where  ( T42405.Mth_Key = T42433.Bill_Mth_Key and T42405.Per_Name_Month =
'2011 / 11' and T42428.Cust_Key = T42433.Cust_Key and T42428.Address_Key =
T42430.Address_Key )
group by T42430.Region),
SAWITH1 AS (select 0 as c1,
     D1.c2 as c2,
     D1.c1 as c3
from
     SAWITH0 D1)
select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4 from ( select D1.c1
as c1,
     D1.c2 as c2,
     D1.c3 as c3,
     sum(D1.c3) over ()  as c4
from
     SAWITH1 D1
order by c2 ) D1 where rownum <= 500001
```

The same option to explicitly set the aggregation is available in workbooks. See Format Numeric Values of Visualizations. For this example, for the column Count Distinct Customers with Orders, change **Aggregation Method** to **Sum**.

Review your reports to see that the best aggregation rule is being used for the report. Use an explicit aggregation rule when the report design allows it.

For more information about reports, see Create Analyses.

Select the Best Option to Render Dashboards

As an administrator or author in Oracle Analytics, you can select the best option for rendering content on dashboards for your users. This topic describes how dashboard content is rendered and the advantages of each option.

Consider an example of a dashboard that has multiple tabs, and each tab includes multiple visualizations. A dashboard construct has the following elements in it:

- Dashboard structure (layout) including organization of tabs, visualizations layout on each tab, prompts, and filters
- Information related to each visualization including subject areas, columns on the subject areas, and the visualization type (such as chart or table)

When a user opens a dashboard, the system starts to load the dashboard construct, determines where to place the tabs and visualizations, and runs the queries for each visualization as part of rendering the dashboard. You can decide whether users must wait for the dashboard metadata to load completely before any dashboard content is rendered.

Metadata generally loads quickly. For dashboards with many embedded objects (including conditions, dashboard prompts, and visualizations), the metadata can take some time to load and this can be sensitive to aspects of application design such as the availability and latency of the data source. As a result, the user might be waiting for the dashboard to render without any

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feedback and it might look like the dashboard is still loading or that the browser has stopped responding.

Administrator Controls

Administrators control how dashboards are rendered using the property **Enable Immediate Dashboard Rendering** in **System Settings**:

- **On**: Specifies to render dashboard content immediately, even if some content is unavailable.
- **Off** (default): Specifies to wait for all dashboard content to be loaded before rendering.

For more information, see Performance and Compatibility Options.

Author Controls

Authors can control how dashboards are rendered individually at the dashboard level using options on the **Dashboard Properties** dialog, available in the **Tools** drop-down list:

- **Render Content when Available** (default): Specifies to display the dashboard content immediately, even if some content is unavailable.
- **Wait for All Content**: Specifies to wait for all the dashboard content to load before displaying content.

When you specify to display dashboard content immediately, visualizations start to render and data is loaded when the respective dashboard elements are completed.

Improve the Time to Display Dashboard Pages with Prompts

You can improve the time that it takes to display dashboard pages by specifying prompt values before users open the dashboards.

Without prompting first, dashboard content executes with default values, which may or may not be the data your users are interested in. Additionally, users have to wait until all the content runs and the dashboard renders completely, or they may have to cancel each object individually.

To save time and reduce the query load on the database and Oracle Analytics, you can collect the prompt values before analyses content is displayed on dashboard pages. This confirmation in displaying content initially improves the wait time for displaying the page with default prompt selections. The content of analyses isn't displayed on the page until the user responds to prompts. Other objects (such as dashboard prompts, text, and so on) are displayed.

For example, you can prompt for which regions to include before displaying the Brand Revenue analysis on the Sales Performance dashboard page.

When you prompt users for values before displaying analyses, the following occurs:

- A message is displayed at the top of the page, which indicates that the page isn't fully loaded. The message also instructs the user to select prompt values and click **Continue**. Clicking **Continue** displays the content on the page using the prompt values that the user specifies. If the user doesn’t specify any prompt values, then the analysis is displayed with default prompt values.
- The page displays static information about the objects that haven't yet been displayed. The information includes the object name, an icon that represents the object view, the view name, and the object description (if available).

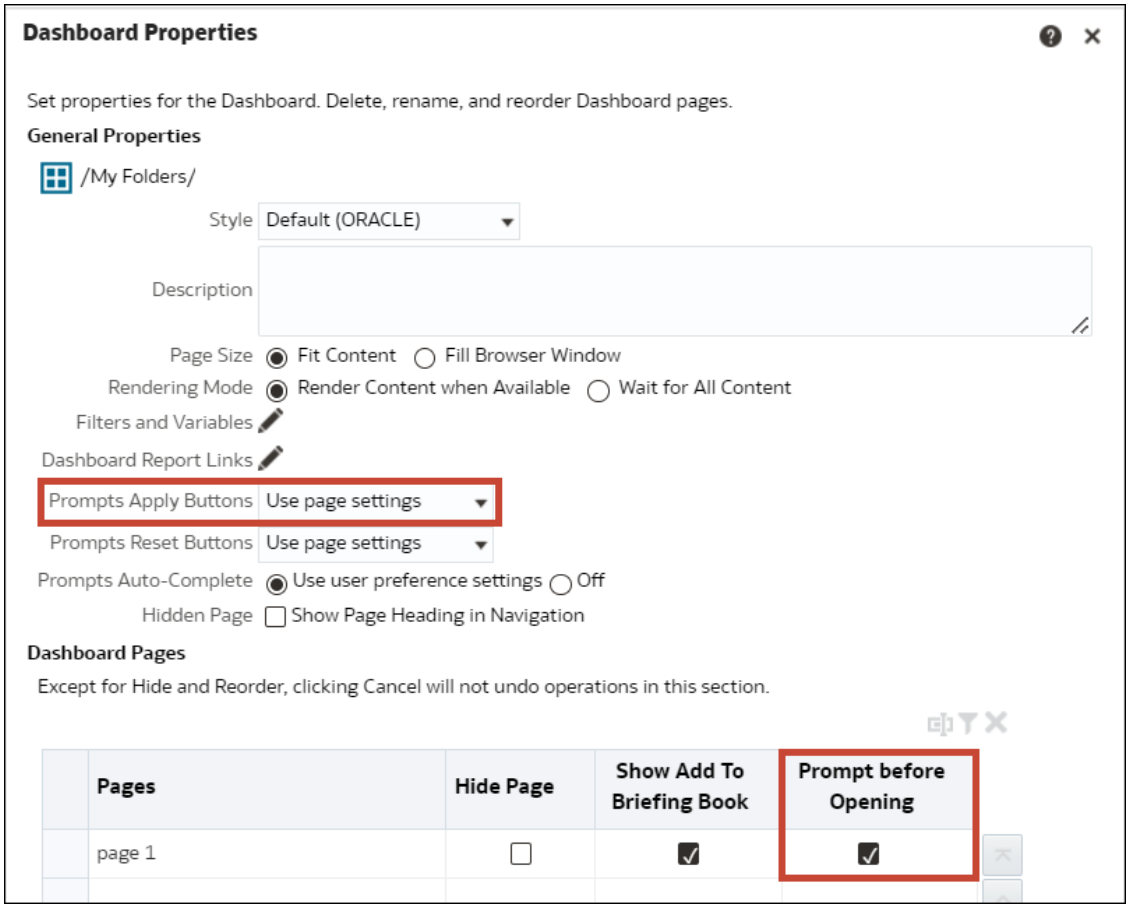
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- On the Page Options menu (displayed from **Page Options** on the Dashboard page toolbar), all options except **Edit Dashboard** are disabled.
- The **Apply** button on dashboard prompts isn't displayed. Instead any prompt values are applied automatically when the user clicks **Continue**.

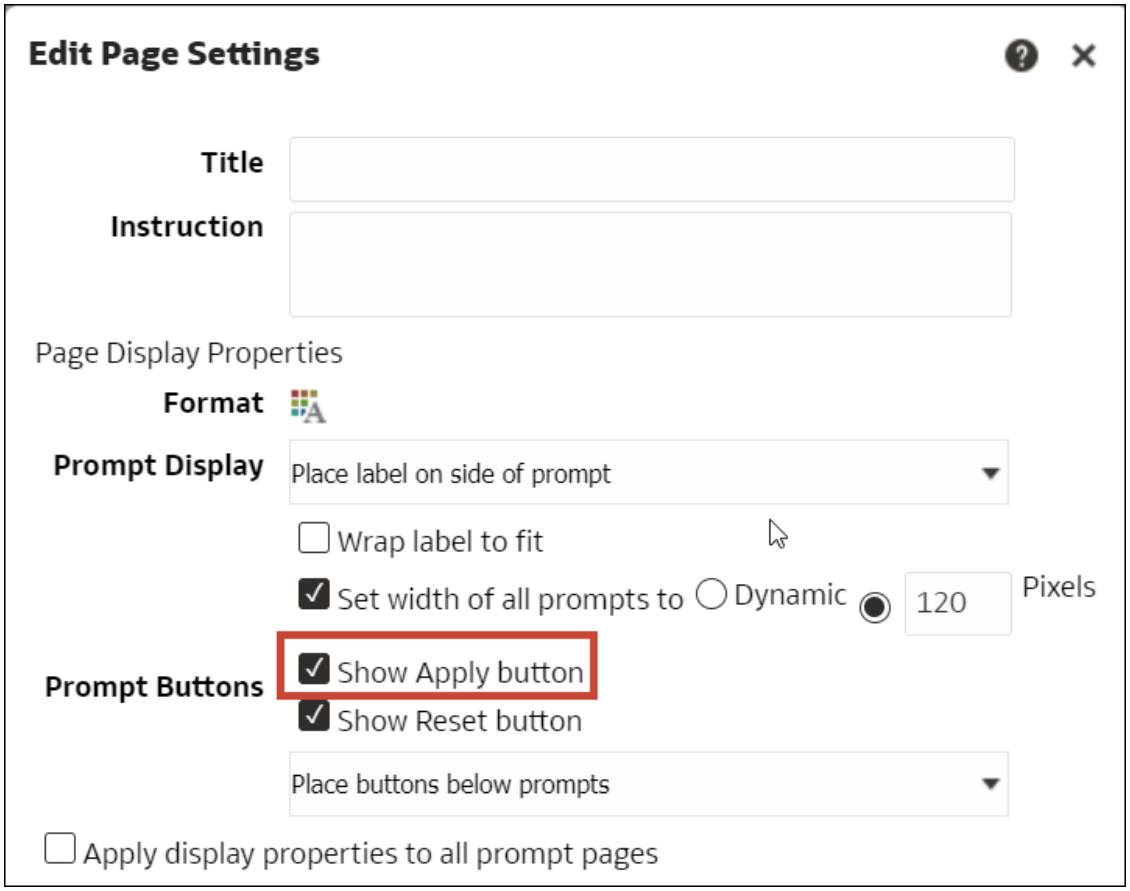
Prompts are a page-level property, so you need to activate them for each page in the dashboard for which you want to use **Prompt before Opening**. This allows you to set prompts for some dashboards and not others, which may be an appropriate experience depending on who's using the dashboard and how much data the reports are running against.

1. Open the dashboard for editing.
2. Click **Tools** and select **Dashboard Properties**.
3. Locate the page in the Dashboard Pages area and select **Prompt before Opening**.
4. Click **OK**.
5. Click **Save**.
   After the first execution of the dashboard, the **Continue** button is no longer displayed. You can also specify to select new prompt values without automatically executing the dashboard with each selection.
6. Click **Tools** and select **Dashboard Properties**.
7. For **Prompts Apply Buttons**, select **Use page settings** or **Show All Apply buttons**.
8. Click **OK**.
9. Click **Edit** to open the Edit Page Settings dialog.
10. For **Prompt Buttons**, select **Show Apply button**.
11. Click **OK**. The dashboard automatically gets the new prompt settings.
12. Click **Save**.

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Setting **Prompt before Opening** for a dashboard page is the best approach for streamlining your experience by reducing unnecessary steps, and for optimizing system performance. It also eliminates unproductive report executions. Because a single report can have more than one query, the system benefit can be significant.

For more information about creating prompts, see Create Prompts.

Configure Timestamps

In Oracle Analytics, administrators set the default time zone used for date and time calculations in **System Settings**. This global setting applies to all calculations. This topic explains how to use the `TIMESTAMPADD` function to specify another time zone if you want to use a different timestamp in a particular calculation.

Set the Default Time Zone for Calculations in System Settings

By default, the system time for Oracle Analytics Cloud is based on UTC time. The following functions return values using the UTC time or date:

- `CURRENT_DATE`
- `CURRENT_TIME()`
- `CURRENT_TIMESTAMP()`
- `NOW()`

As an administrator, you can change the timestamp used in calculations using the **Default Time Zone for Date Calculations** option in the Console, under **Advanced System Settings**.

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Select the desired time zone from the drop-down list and apply the changes for the new value to take effect.



For more information about global time zone settings, see System Settings - Format Options.

Use a Specific Time Zone for Timestamps in Calculations

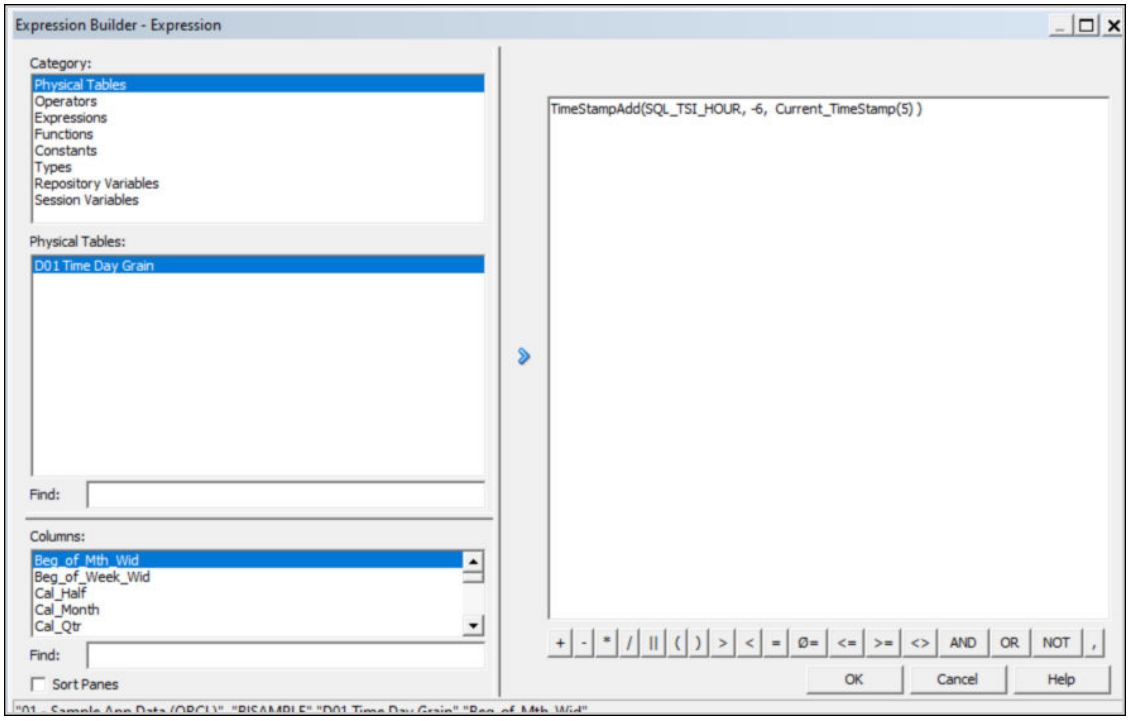
To generate a timestamp other than the system setting in your calculations, use the `TIMESTAMPADD` function in conjunction with `CURRENT_TIMESTAMP()` or `NOW()`. The basic `TIMESTAMPADD` calculation is:

`TIMESTAMPADD(SQL_TSI_<<interval>>, <<integer expression>>, <<timestamp expression>>)`

For timestamp calculations, `HOUR` is the interval and the time offset is the difference in hours between UTC and the time zone to be reported on. For example:

```
TIMESTAMPADD(SQL_TSI_HOUR, -6,CURRENT_TIMESTAMP(5))
```

This calculation returns the current timestamp in US Mountain time. You can create the new timestamp column as a derived column in the logical table source or map it directly to the database The difference is where the calculation is to be performed; that is, Oracle Analytics or the database. The following figure shows a calculation mapped directly to the database in the Expression Builder - Expression dialog.



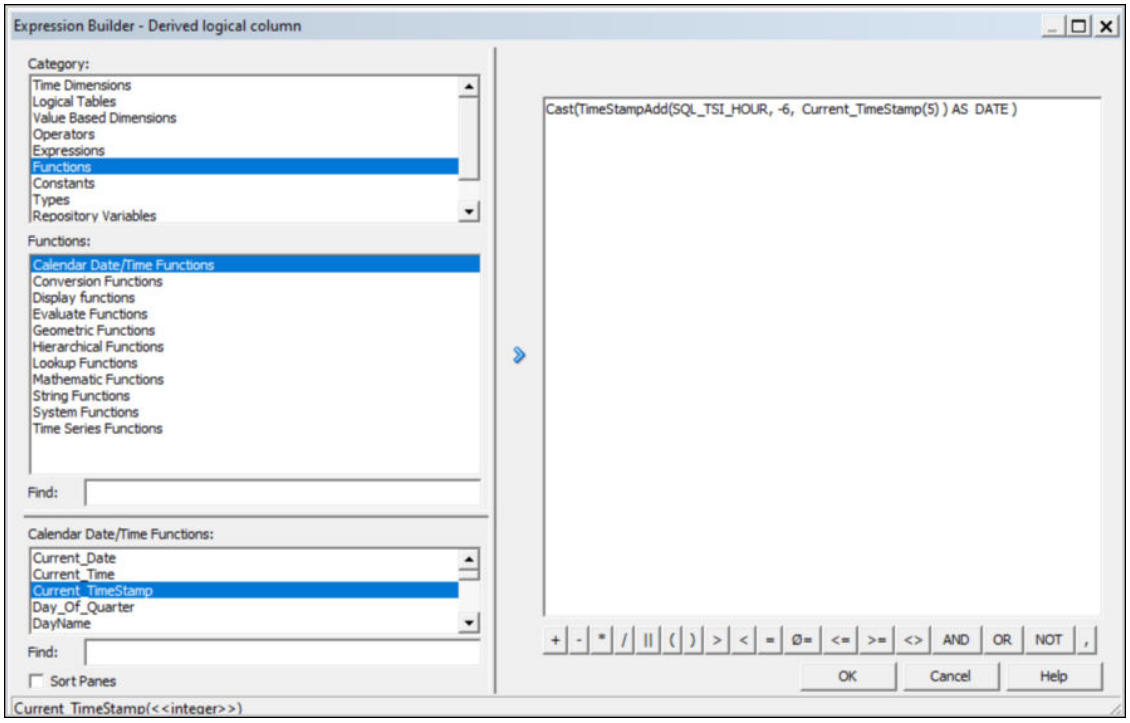
When the default time zone is set to UTC, the `CURRENT_DATE` function doesn't return the correct date for certain hours of the day relative to a user's time zone. For example, when it's midnight UTC, the local date doesn't match the UTC date for the duration of the time offset.

Casting the timestamp calculation as a date resolves this issue. For example:

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```
cast(TIMESTAMPADD(SQL_TSI_HOUR, -6,CURRENT_TIMESTAMP) as date)
```

The following figure shows a calculation that's created as a derived column in the Expression Builder - Derived logical column dialog.



For unique or singular reports, you can create timestamp calculations at the report level in either a data visualization or a classic analysis. If you plan to reuse the calculations, it's often easier to define them as columns in the semantic model (or RPD file).

For more information about the functions mentioned in this topic, see Date and Time Functions and Time Series Functions.

Use Filter Functions Instead of Time Series Functions

This topic explains the difference between time series functions and filter functions and explains how to implement filter functions. This information applies to both workbooks and classic dashboards.

Times Series Functions vs. Filter Functions

The times series functions `Ago` and `Todate` offer a simple way to create metrics to calculate `year-ago, year-to-date,` and so on. This method works well for business user reports; however, these functions generate complex queries that have a significant cost on performance. Also, each time that one of these functions is used in a report, an additional sub-query is generated using even more resources on the database.

In classic dashboards, instead of using time series functions, you can usually achieve the same result by using base metrics with the `Filter` function to filter on the appropriate time period. This method might be too complex for business user reports but it works well in dashboards predefined by the IT team. Using this method, the generated physical SQL code is much simpler and more efficient, and doesn't require an additional sub-query. This means the SQL query runs faster and uses fewer resources on the database, reducing the overall database CPU usage and input-output calls.

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The following figure shows an example of the physical query that's generated when you use both the base metric and month Ago metric in the same report. Two queries are generated.

```
[2022-05-19T15:52:15.425+00:00] [OBIS] [TRACE:2] [USER-18] [] [ecid
WITH
SAWITH0 AS (select T68."DAY_DT" as c2,
     T68."PER_NAME_MONTH" as c3,
     ROW_NUMBER() OVER (PARTITION BY T68."PER_NAME_MONTH" ORDER BY
from
     "CLOUD_TIME_SMALL" T68),
SAWITH1 AS (select Case when case D1.c4 when 1 then D1.c2 else NULL
     D1.c2 as c2,
     D1.c3 as c3
from
     SAWITH0 D1),
SAWITH2 AS (select min(D1.c1) over (partition by D1.c3)  as c1,
     D1.c2 as c2
from
     SAWITH1 D1),
SAWITH3 AS (select D1.c1 + 1 as c1,
     D1.c2 as c2
from
     SAWITH2 D1),
SAWITH4 AS (select T68."PER_NAME_MONTH" as c2,
     T68."DAY_DT" as c3,
     ROW_NUMBER() OVER (PARTITION BY T68."PER_NAME_MONTH" ORDER BY
from
     "CLOUD_TIME_SMALL" T68),
SAWITH5 AS (select Case when case D1.c4 when 1 then D1.c3 else NULL
```

The following figure shows the SQL code that's generated for a single query when you use a Filter function instead.

```
WITH
SAWITH0 AS (select sum(case  when T68."PER_NAME_MONTH" = '2019 / 08' then T63."REVENUE" end ) as c1,
     sum(case  when T68."PER_NAME_MONTH" = '2019 / 09' then T63."REVENUE" end ) as c2
from
     "CLOUD_TIME_SMALL" T68,
     "CLOUD_F_BILL_REV" T63
where  ( T63."TIME_BILL_DT" = T68."DAY_DT" and (T68."PER_NAME_MONTH" in ('2019 / 08', '2019 / 09')) ) )
select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3 from ( select distinct 0 as c1,
     D1.c1 as c2,
     D1.c2 as c3
from
     SAWITH0 D1 ) D1 where rownum <= 125001
```

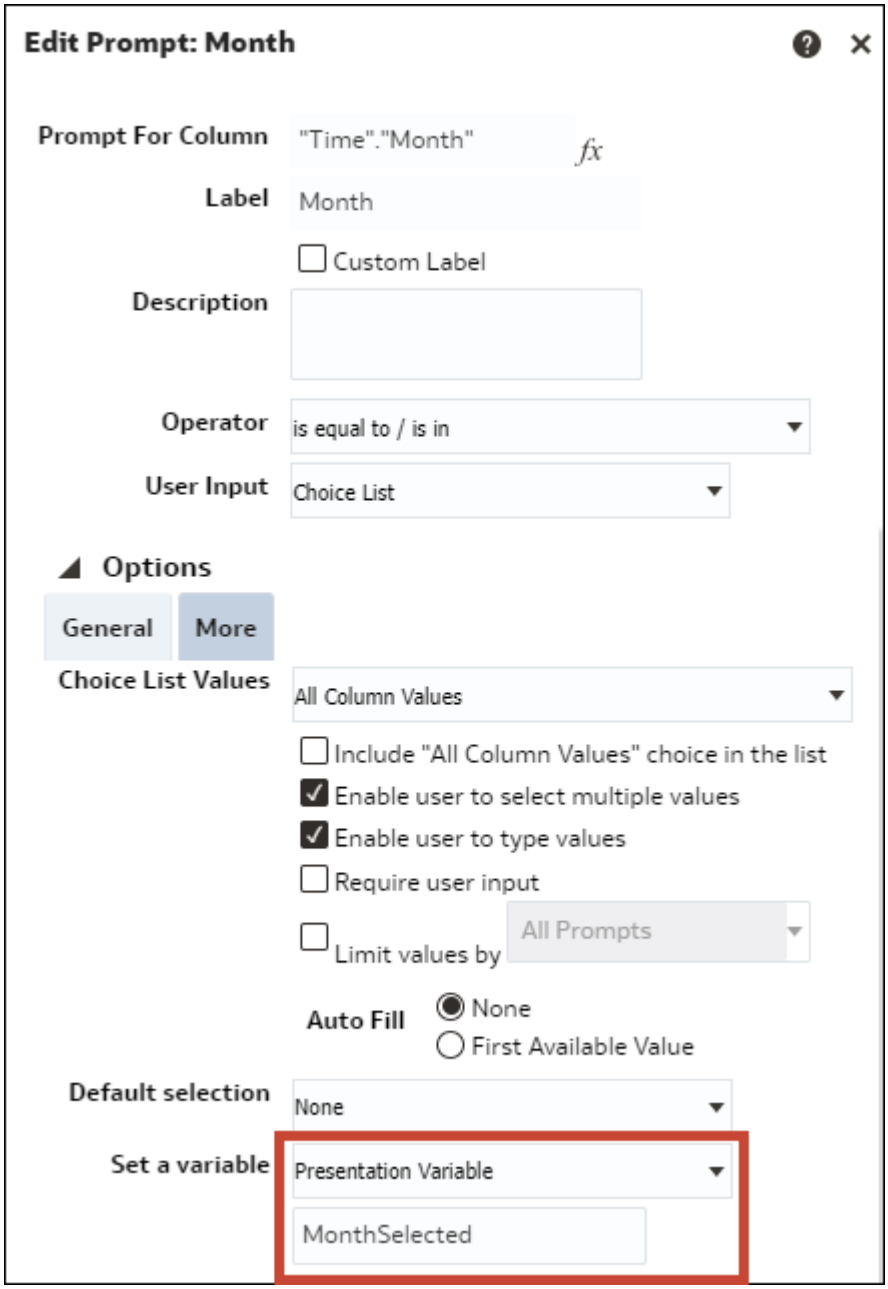
Implement Filter Functions in a Dashboard with Prompts

In most implementations, the dashboard already includes a prompt so users can select the month that they're looking for. The first step is to identify the time periods that you need to filter on based on a user's selection.

In this example, the calendar dimension includes the column Julian Period Number because it makes the calculation easier. This is also feasible without Julian Period Number but would require much more complex formulas to calculate the time period selected.

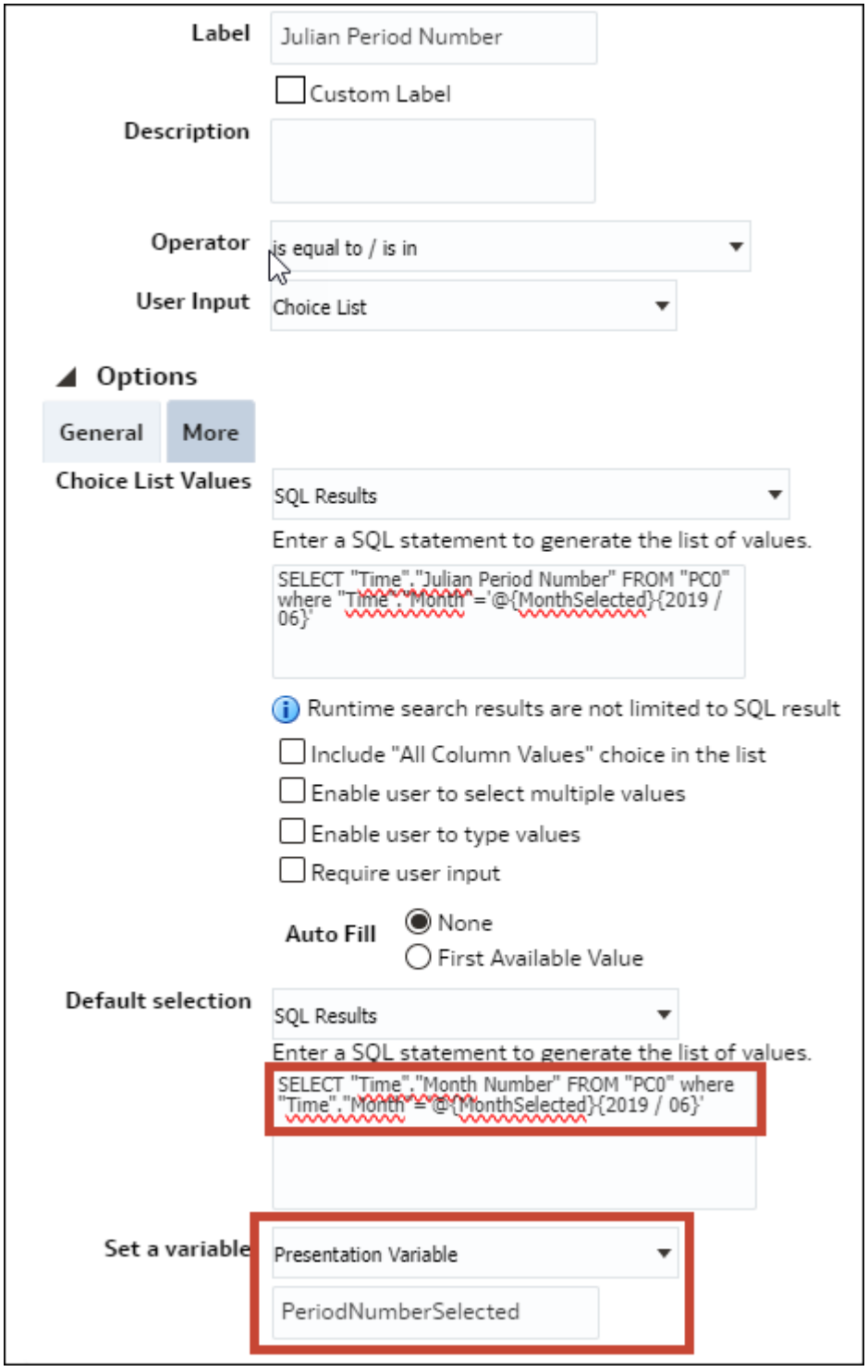
1. Modify the Month prompt to add the presentation variable (MonthSelected).

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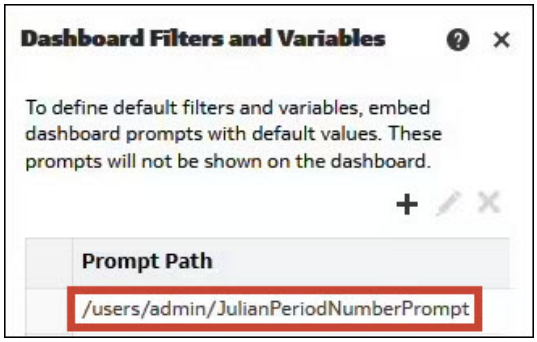
2. Create a separate dashboard prompt to retrieve the corresponding `Julian Period Number` and put it in another variable (`PeriodNumberSelected`). This second prompt isn't shown to the end user; instead it's hidden in the dashboard and the value is calculated automatically based on the variable `MonthSelected`.

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3. Edit your dashboard properties and click **Filters and Variables**.
4. Add the `Julian Period` prompt path.

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5. In the analysis, delete the global filter on the `Month` column, and use the column formulas filter functions based on `Julian Period Number` as required. Here are some examples:
   `Current Month: Filter("Revenue Metrics"."Revenue" using "Time"."Julian Month Number"=@{PeriodNumberSelected}{80800})`

   `Month Ago: Filter("Revenue Metrics"."Revenue" using "Time"."Julian Month Number"=@{PeriodNumberSelected}{80800}-1)`

   `Year Ago: Filter("Revenue Metrics"."Revenue" using "Time"."Julian Month Number"=@{PeriodNumberSelected}{80800}-12)`

   `Year to date: Filter("Revenue Metrics"."Revenue" using "Time"."Julian Month Number"<=@{PeriodNumberSelected}{80800} and “Time”.”Year”=@{YearSelected}{2019})`

Implement Filter Functions in a Workbook with Parameters

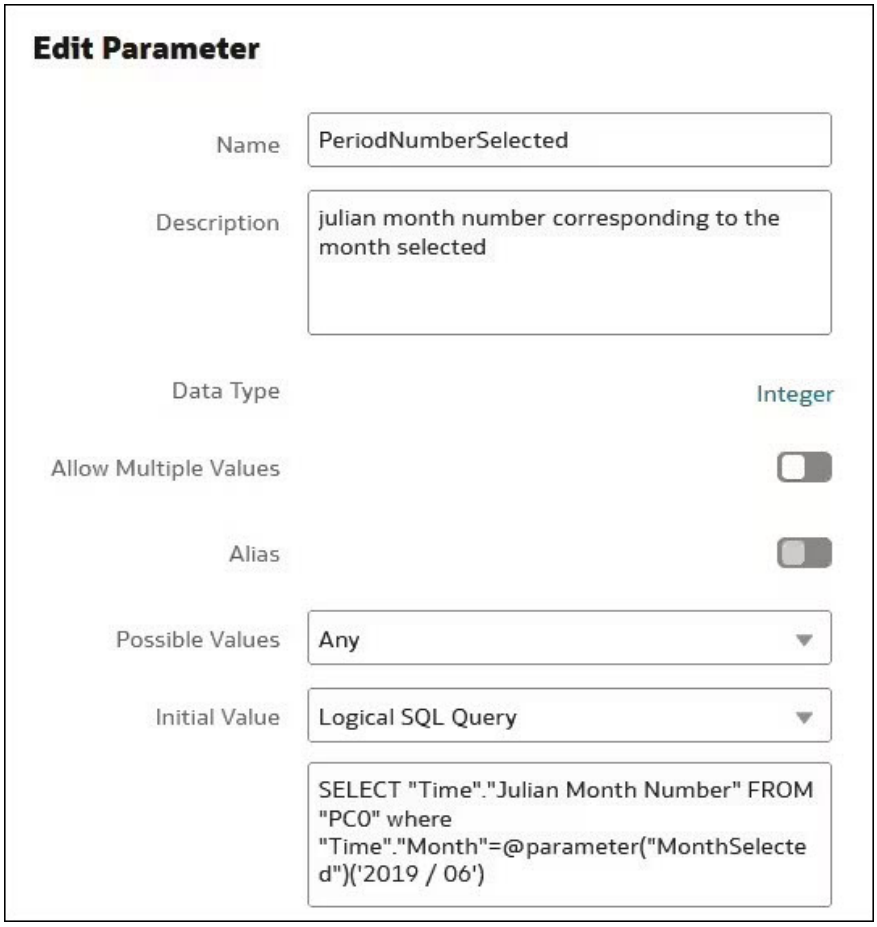
You can apply the same principle in a workbook. Prompts and presentation variables are replaced by a dashboard filter and parameters.

Create three parameters: MonthSelected, PeriodNumberSelected, and YearSelected. Only the parameter MonthSelected is displayed in the canvas in a dashboard filter.

The possible values for the parameter MonthSelected are defined based on a logical SQL query selecting all months.

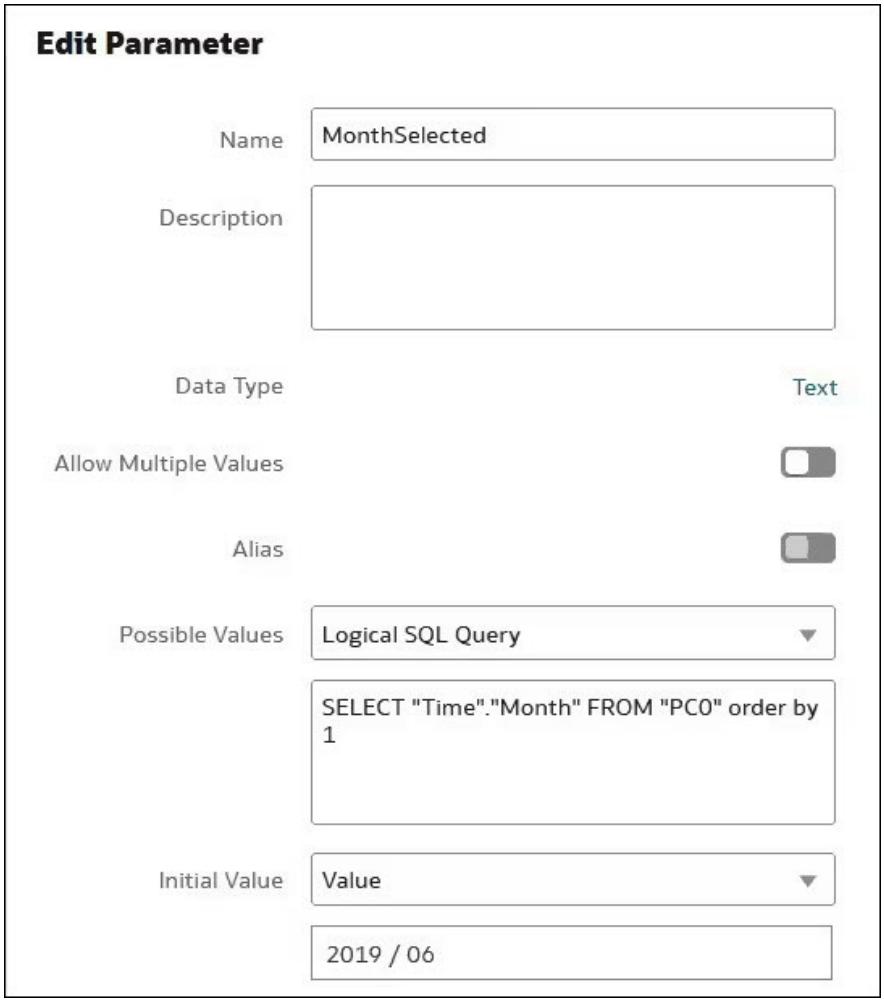
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For the parameters PeriodNumberSelected and YearSelected, the possible values aren't populated.



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Only the initial value is populated with a logical query filtered based on the value of MonthSelected.



Tune Performance of Multidimensional Database Queries

When you use a multidimensional database as a data source in Oracle Analytics, you may experience performance issues which result in suboptimal multidimensional expression (MDX) queries being generated.

By modifying the design, you can improve the MDX queries that Oracle Analytics generates. This can have a huge impact, not only on your report performance but also on the volume of resources used in the database. How you use supported or non-supported functions greatly impacts the MDX queries generated and therefore the performance.

Because each use case is unique, your development team should review the options, analyze the Oracle Analytics query logs, and select the best solution for your use case.

This topic doesn't address performance issues caused by your infrastructure, such as networks, browsers, or report presentation.

Methodology

Oracle recommends that you do the following tasks to increase performance. It's important that you understand MDX query structure as well as the query logs that Oracle Analytics generates.

- Simplify the MDX queries generated.

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- Reduce the number of MDX queries generated.
- Ensure that optimal filters and selections are applied in the MDX query.
- Performance tune with the database administrator (DBA) on the multidimensional database and verify why the source database is still performing poorly.
- Modify the analysis based on DBA feedback.

Selection Steps Optimization

When you optimize selection steps, you can simplify the MDX queries, reduce the number of MDX queries generated, and increase performance.

The following figure shows an example of a comparison of optimized and not optimized selection steps.

Optimized	**Sales Person - Sales Rep Hierarchy** 1. Start with all members 2. Then, Keep Leaves of Monica Velasquez Group	Selection steps are optimized to include all members and the keep only the relevant member.
Not optimized	**Sales Person - Sales Rep Hierarchy** 1. Start with Monica Velasquez Group 2. Then, Add Leaves of Monica Velasquez Group 3. Then, Remove Monica Velasquez Group	Selection step is poorly defined and complex MDX is generated.

CASE Statements

`CASE` statement functionality isn't supported in MDX queries and must always be applied in Oracle Analytics. The logic explained in this section with regards to `CASE` statements is valid for most functions that aren't supported in MDX queries (`if null`, and so on).

There are advantages and disadvantages when using `CASE` statements. When you include `CASE` statements in report formulas, they aren't included in the MDX query. This can simplify the MDX query and improve performance. However, the tradeoff is that you can't filter as effectively which means that the query might return more records than is necessary.

The following are restrictions for using `CASE` statement functionality:

- If the `CASE` statement doesn't combine multiple members, the base column used in the statement should be included in the query and the views as a hidden separate column.
- If the `CASE` statement combines multiple members, the base column can't be included in the view without impacting the level of aggregation. If this is the case:
  - If the aggregation rule of measure isn't External Aggregation, the base column must be excluded from the query.
  - If the aggregation rule of measure is External Aggregation, the base column must be included in the query and excluded from the view. You must change the aggregation rule of measure from the default into a simple internal aggregation rule (`SUM`, `MAX`, `MIN`). This works only if the internal aggregation rule is used to combine members and provides correct results.

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FILTER Function

Unlike the `CASE` statement functionality, the `FILTER` function can be shipped to the database for execution.

The main benefit of using the `FILTER` function in report formulas is that the selection is applied in the MDX query and the volume of data calculated and retrieved from the database is reduced.

The main drawback of using the `FILTER` function is that it may increase the number of MDX queries executed. By default, one query is executed for each `FILTER` function used.

CASE vs. FILTER Example

In this example, a user requests a report that shows profit by quarter and selected product SKU. In addition, the SKUs are grouped together into 12 categories. The category Other Cola has the following LOB's products assigned: Cola, Diet Cola, and Shared Diet Cola.

	Birch Beer	Caffeine Free Cola	Dark Cream	Diet Cream		Diet Root Beer		Grape	Old Fashioned	Orange	Other Cola			Sasparilla	Strawberry	Vanilla Cream
	Birch Beer	Caffeine Free Cola	Dark Cream	Diet Cream	Diet Cream	Diet Root Beer	Diet Root Beer	Grape	Old Fashioned	Orange	Cola	Diet Cola	Shared Diet Cola	Sasparilla	Strawberry	Vanilla Cream
	Root Beer	Colas	Cream Soda	Cream Soda	Diet Drinks	Root Beer	Diet Drinks	Fruit Soda	Root Beer	Fruit Soda	Colas	Colas	Diet Drinks	Root Beer	Fruit Soda	Cream Soda
Quarter	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit
Qtr1	908.00	593.00	2,544.00	2,695.00	2,695.00	2,963.00	2,963.00	2,838.00	1,697.00	2,283.00	5,096.00	1,359.00	1,359.00	1,153.00	-116.00	690.00
Qtr2	986.00	446.00	3,231.00	2,723.00	2,723.00	3,079.00	3,079.00	2,998.00	1,734.00	2,522.00	5,892.00	1,534.00	1,534.00	1,231.00	-84.00	815.00

Here's the `CASE` statement logical query:

```
SELECT

   0 s_0,

   CASE when XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU" in
('Cola','Diet Cola','Shared Diet Cola') THEN 'Other Cola' ELSE
XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU" END s_1,

   DESCRIPTOR_IDOF(XSA('Admin'.'Sample.BasicPM')."Product"."Category") s_2,

   DESCRIPTOR_IDOF(XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU") s_3,

   DESCRIPTOR_IDOF(XSA('Admin'.'Sample.BasicPM')."Year"."Quarter") s_4,

   SORTKEY(XSA('Admin'.'Sample.BasicPM')."Product"."Category") s_5,

   SORTKEY(XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU") s_6,

   SORTKEY(XSA('Admin'.'Sample.BasicPM')."Year"."Quarter") s_7,

   XSA('Admin'.'Sample.BasicPM')."Product"."Category" s_8,

   XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU" s_9,

   XSA('Admin'.'Sample.BasicPM')."Year"."Quarter" s_10,

   XSA('Admin'.'Sample.BasicPM')."Basic"."Profit" s_11

FROM XSA('Admin'.'Sample.BasicPM')

ORDER BY 8 ASC NULLS LAST, 11 ASC NULLS LAST, 5 ASC NULLS LAST, 2 ASC NULLS
```


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```
LAST, 7 ASC NULLS LAST, 10 ASC NULLS LAST, 4 ASC NULLS LAST, 6 ASC NULLS
LAST, 9 ASC NULLS LAST, 3 ASC NULLS LAST

FETCH FIRST 125001 ROWS ONLY
```

There's no grouping based on the `CASE` statement. A simple MDX query is generated, with the `CASE` statement processed by Oracle Analytics:

```
With
  set [_Product3]  as 'Descendants([Product], [Product].Generations(3),
leaves)'
  set [_Year2]  as 'Descendants([Year], [Year].Generations(2), leaves)'
select
  { [Measures].[Profit]
  } on columns,
  NON EMPTY {crossjoin({[_Year2]},{[_Product3]})} properties GEN_NUMBER,
[Product].[MEMBER_UNIQUE_NAME], [Product].[Memnor], [Year].
[MEMBER_UNIQUE_NAME], [Year].[Memnor] on rows
from [Sample.Basic]
```

The `CASE` statement is executed on the BI Server and this is seen by the database setting set to `database 0:0,0`:

```
 RqList <<11777451>> [for database 0:0,0]
                            D1.c6 as c6 [for database 0:0,0],
                            D1.c4 as c4 [for database 0:0,0],
                            case  when D1.c7 in ([ 'Cola', 'Diet Cola',
'Shared Diet Cola'] ) then 'Other Cola' else D1.c7 end  as c2 [for database
0:0,0],
                            D1.c5 as c5 [for database 0:0,0],
                            D1.c3 as c3 [for database 0:0,0],
                            D1.c1 as c1 [for database 0:0,0],
                            D1.c7 as c7 [for database 0:0,0],
                            D1.c8 as c8 [for database 0:0,0]
```

Alternatively, you can use a filter against the profit metric to retrieve only the required LOB members. In this scenario, you create three metrics with the corresponding filters applied.

Here's the `FILTER` statement logical query:

```
SELECT

   0 s_0,

   DESCRIPTOR_IDOF(XSA('Admin'.'Sample.BasicPM')."Product"."Category") s_1,

   DESCRIPTOR_IDOF(XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU") s_2,

   DESCRIPTOR_IDOF(XSA('Admin'.'Sample.BasicPM')."Year"."Quarter") s_3,

   SORTKEY(XSA('Admin'.'Sample.BasicPM')."Product"."Category") s_4,

   SORTKEY(XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU") s_5,
```


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```
   SORTKEY(XSA('Admin'.'Sample.BasicPM')."Year"."Quarter") s_6,

   XSA('Admin'.'Sample.BasicPM')."Product"."Category" s_7,

   XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU" s_8,

   XSA('Admin'.'Sample.BasicPM')."Year"."Quarter" s_9,

   FILTER(XSA('Admin'.'Sample.BasicPM')."Basic"."Profit" USING
XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU" in ('Cola','Diet
Cola','Shared Diet Cola')) s_10,

   FILTER(XSA('Admin'.'Sample.BasicPM')."Basic"."Profit" USING
XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU" in ('Sasprilla','Birch
Beer','Dark Cream')) s_11,

   FILTER(XSA('Admin'.'Sample.BasicPM')."Basic"."Profit" USING
XSA('Admin'.'Sample.BasicPM')."Product"."Product SKU" in ('xxxxx')) s_12

FROM XSA('Admin'.'Sample.BasicPM')

ORDER BY 7 ASC NULLS LAST, 10 ASC NULLS LAST, 4 ASC NULLS LAST, 6 ASC NULLS
LAST, 9 ASC NULLS LAST, 3 ASC NULLS LAST, 5 ASC NULLS LAST, 8 ASC NULLS LAST,
2 ASC NULLS LAST

FETCH FIRST 125001 ROWS ONLY
```

In this scenario, three queries, one for each filter, are generated and you experience performance issues.

Query 1:

```
With

  set [_Product3]  as 'Filter([Product].Generations(3).members,
((IIF(IsValid([Product].CurrentMember.MEMBER_ALIAS),
[Product].CurrentMember.MEMBER_ALIAS, [Product].CurrentMember.MEMBER_Name) =
"xxxxx")))'

  set [_Year2]  as 'Descendants([Year], [Year].Generations(2), leaves)'

select

  { [Measures].[Profit]

  } on columns,

  NON EMPTY {crossjoin({[_Year2]},{[_Product3]})} properties MEMBER_NAME,
GEN_NUMBER, property_expr([Product], [MEMBER_NAME],
Ancestor(currentaxismember(), [Product].Generations(2)),
"Category_Null_Alias_Replacement"), property_expr([Product], [Default],
Ancestor(currentaxismember(), [Product].Generations(2)), "Category"),
property_expr([Product], [MEMBER_UNIQUE_NAME], Ancestor(currentaxismember(),
[Product].Generations(2)), "Category - Member Key"), property_expr([Product],
[Memnor], Ancestor(currentaxismember(), [Product].Generations(2)), "Category
- Memnor"), [Product].[MEMBER_UNIQUE_NAME], [Product].[Memnor], [Year].
```


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```
[MEMBER_UNIQUE_NAME], [Year].[Memnor] on rows

from [Sample.Basic]

]]
```

Query 2:

```
With

  set [_Product3]  as 'Filter([Product].Generations(3).members,
((IIF(IsValid([Product].CurrentMember.MEMBER_ALIAS),
[Product].CurrentMember.MEMBER_ALIAS, [Product].CurrentMember.MEMBER_Name) =
"Birch Beer") OR (IIF(IsValid([Product].CurrentMember.MEMBER_ALIAS),
[Product].CurrentMember.MEMBER_ALIAS, [Product].CurrentMember.MEMBER_Name) =
"Dark Cream") OR (IIF(IsValid([Product].CurrentMember.MEMBER_ALIAS),
[Product].CurrentMember.MEMBER_ALIAS, [Product].CurrentMember.MEMBER_Name) =
"Sasprilla")))'

  set [_Year2]  as 'Descendants([Year], [Year].Generations(2), leaves)'

select

  { [Measures].[Profit]

  } on columns,

  NON EMPTY {crossjoin({[_Year2]},{[_Product3]})} properties MEMBER_NAME,
GEN_NUMBER, property_expr([Product], [MEMBER_NAME],
Ancestor(currentaxismember(), [Product].Generations(2)),
"Category_Null_Alias_Replacement"), property_expr([Product], [Default],
Ancestor(currentaxismember(), [Product].Generations(2)), "Category"),
property_expr([Product], [MEMBER_UNIQUE_NAME], Ancestor(currentaxismember(),
[Product].Generations(2)), "Category - Member Key"), property_expr([Product],
[Memnor], Ancestor(currentaxismember(), [Product].Generations(2)), "Category
- Memnor"), [Product].[MEMBER_UNIQUE_NAME], [Product].[Memnor], [Year].
[MEMBER_UNIQUE_NAME], [Year].[Memnor] on rows

from [Sample.Basic]

]]
```

Query 3:

```
With

  set [_Product3]  as 'Filter([Product].Generations(3).members,
((IIF(IsValid([Product].CurrentMember.MEMBER_ALIAS),
[Product].CurrentMember.MEMBER_ALIAS, [Product].CurrentMember.MEMBER_Name) =
"Cola") OR (IIF(IsValid([Product].CurrentMember.MEMBER_ALIAS),
[Product].CurrentMember.MEMBER_ALIAS, [Product].CurrentMember.MEMBER_Name) =
"Diet Cola") OR (IIF(IsValid([Product].CurrentMember.MEMBER_ALIAS),
[Product].CurrentMember.MEMBER_ALIAS, [Product].CurrentMember.MEMBER_Name) =
"Shared Diet Cola")))'
```


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```
  set [_Year2]  as 'Descendants([Year], [Year].Generations(2), leaves)'

select

  { [Measures].[Profit]

  } on columns,

  NON EMPTY {crossjoin({[_Year2]},{[_Product3]})} properties MEMBER_NAME,
GEN_NUMBER, property_expr([Product], [MEMBER_NAME],
Ancestor(currentaxismember(), [Product].Generations(2)),
"Category_Null_Alias_Replacement"), property_expr([Product], [Default],
Ancestor(currentaxismember(), [Product].Generations(2)), "Category"),
property_expr([Product], [MEMBER_UNIQUE_NAME], Ancestor(currentaxismember(),
[Product].Generations(2)), "Category - Member Key"), property_expr([Product],
[Memnor], Ancestor(currentaxismember(), [Product].Generations(2)), "Category
- Memnor"), [Product].[MEMBER_UNIQUE_NAME], [Product].[Memnor], [Year].
[MEMBER_UNIQUE_NAME], [Year].[Memnor] on rows

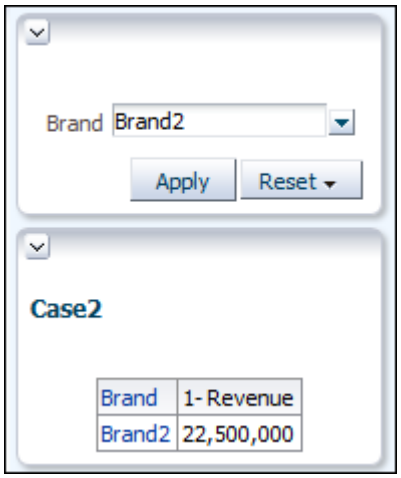
from [Sample.Basic]
```

Product Filter Applied Example

A better approach is to include the product column in the report with a single measure column without a filter. Then create a filter that includes the required products. If you want to group the products into different categories, use a `CASE` statement. In this scenario, a single MDX query is generated with the filtered rows and even though the `CASE` statement is applied by Oracle Analytics, it uses the subset of data and not all records.

Here's another scenario where `CASE` statements cause performance issues.

A developer applies a `CASE` statement to rename brands, and a dashboard prompt allows users to select the brand.



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```
SELECT
   0 s_0,
   "E - Sample Essbase"."Products"."P4  Brand" s_1,
   case "E - Sample Essbase"."Products"."P4  Brand" when 'BizTech' then 'Brand1' when 'FunPod' then
   'Brand2' else 'Brand3' end s_2,
   SORTKEY("E - Sample Essbase"."Products"."P4  Brand") s_3,
   "E - Sample Essbase"."Base Facts"."1- Revenue" s_4
FROM "E - Sample Essbase"
WHERE
(case  "Products"."P4  Brand" when 'BizTech' then 'Brand1' when 'FunPod' then 'Brand2' else 'Brand3'
end = 'Brand2')
```

Because the `CASE` statement isn't supported in the MDX, the filter on `Brand2` can't be applied in the MDX query. All brands are selected, and this isn't optimized.

```
With
  set [_Products2]  as '[Products].Generations(2).members'
select
  { [Measures].[Gross Revenue]
  } on columns,
  NON EMPTY {{[_Products2]}} properties GEN_NUMBER, [Products].[Memnor],
  [Products].[MEMBER_UNIQUE_NAME] on rows
from [BISAMPLE.Sample]
```

In this type of scenario, Oracle recommends you remove the `CASE` statement and rename members in the database or create aliases.

Tune Performance of Relational Database Queries

Many customers experience performance issues with data warehouse applications. In some cases, the SQL queries generated by Oracle Analytics are complex to analyze. This topic provides some guidelines for how to analyze and minimize performance issues that might originate from the SQL queries generated by Oracle Analytics.

This topic doesn't cover performance issues due to problems with your network, browser, or report presentation.

Analyze the Query Log for Oracle Analytics (Log Level 3 Required)

For information on how to find this log or understand the content, see Gather and Analyze Query Logs.

1. Compare the amount of time your query spends in Oracle Analytics with the time spent in the database, that is, response time versus physical query duration. Normally, the time spent in Oracle Analytics doesn't exceed a few seconds.
2. If the response time is more than a few seconds, analyze the individual steps taken in Oracle Analytics to find the cause (log level 5 required).

Analyze the Physical SQL Query

1. Check whether all the tables included in the query are necessary. Look for any tables that are joined but not included in the `SELECT` clause and don't have any filters applied (real filters, not join conditions).
2. Identify how many physical queries and sub-queries are generated. More precisely, how many times does the query read a fact table? In a perfect world, the query reads a single fact table and only once. When there's more than one fact table, find out why and see if you can remove some.

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3. Check for excluded columns, non-additive aggregation rules (`REPORT_AGGREGATE`, `count(distinct)...`), selection steps, a sub-query in the report, set operators (`UNION`), totals, subtotals, multiple views, and so on.
4. Check for any outer joins. Discover where they originate from and whether you can remove some by changing the design.

Analyze the Execution Plan

If optimizing the SQL query isn't enough, analyze the execution plan to find the root cause of your performance issue. Ask your database administrator (DBA) to help you. There are four main ways to improve performance at this point:

1. Reduce the volume of input-output calls by improving data access paths (indexes).
2. Reduce the volume of input-output calls by reducing the volume of data read. For example, you can review the filters applied or the data model structure (see the next section).
3. Increase parallelism (number of threads used to read big tables).
4. Improve the input-output call speed (infrastructure improvements, in-memory database, and so on).

Review and Improve the Data Model to Reduce the Volume of Data Read

1. Create aggregate tables.
2. Use fragmentation.
   For example, if users mostly select data from the current Year, Quarter, or Month, you might split the fact into two tables: current and archive. On the Oracle database, you can also use partitioning.
3. Use denormalization to reduce the number of joins.
4. Split up tables to reduce the number of columns.
   The volume of data read doesn't just depend on the number of rows in each table. Table volume also depends on the number and size of its columns. For example, you could split a big table with 500 columns into two tables; one table with the 50 most frequently used columns and the other with the remaining 450 columns that are rarely used.

Many performance issues in Oracle Analytics originate from poor design because this causes sub-optimal SQL queries to be generated. By modifying the design, you can improve the SQL queries that Oracle Analytics generates. This can have a huge impact, not only on the performance of your reports but also on the amount of resources used in the database.

Tune Performance with Excluded Columns

It's quite common for analyses to contain unused columns. Columns that aren't required but are still selected significantly impact performance. This topic explains how to improve performance by removing any column that isn't required.

Identify Unused Columns

When you include columns in the analysis that are excluded from the view (for example, `Year`), you impact performance by:

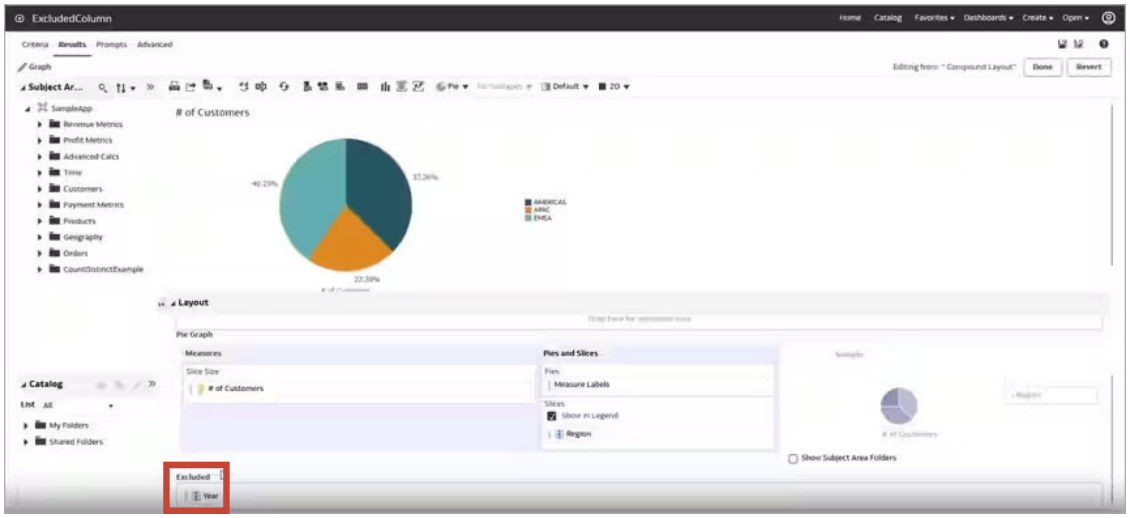
- Increasing the volume of data that needs to be retrieved from the database
- Increasing the number of columns to be retrieved and processed
- Forcing the analysis to compute results at multiple levels of aggregation

The following figure shows a simple report with the number of customers by region and year.

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The report that's displayed is a graph showing the number of customers by region. You can see that the `Year` column is excluded.



Logical Query with Unused Year Column

Even though the `Year` column isn't displayed in the view, it's still selected as part of the logical query.

```
SET VARIABLE OBIS_REFRESH_CACHE=1,QUERY_SRC_CD='Report',SAW_SRC_PATH='/shared/PerfTuningWebinars/ExcludedColumn';SELECT
   0 s_0,
   "PC0"."Geography"."Region" s_1,
   "PC0"."Time"."Year" s_2,
   "PC0"."Revenue Metrics"."# of Customers" s_3,
   REPORT_AGGREGATE("PC0"."Revenue Metrics"."# of Customers" BY "PC0"."Geography"."Region") s_4
FROM "PC0"
ORDER BY 2 ASC NULLS LAST
FETCH FIRST 125001 ROWS ONLY
```

Including the `Year` column in the analysis has the following impact:

- Additional columns are retrieved and processed.
- Additional rows are retrieved and processed, because the number of customer rows is selected not only by region, but also by year.
- Further aggregation is required.

Physical Query with Unused Year Column

If you review the physical query, you can identify areas where performance is impacted.

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```
WITH
OBICOMMON0 AS (select count(distinct T63."CUST_NUMBER") as c1,
     T59."REGION" as c2,
     T68."PER_NAME_YEAR" as c3,
     grouping_id(T59."REGION", T68."PER_NAME_YEAR") as c4
from
     "CLOUD_TIME_SMALL" T68,
     "CLOUD_D_GEOGRAPHY" T59,
     "CLOUD_F_BILL_REV" T63
where  ( T63."TIME_BILL_DT" = T68."DAY_DT" and T59."ADDR_KEY" = T63."ADDR_KEY" and T59."ADDR_KEY" = T26362."ADDR_KEY" )
group by grouping sets (
     (T68."PER_NAME_YEAR", T59."REGION"),
     (T59."REGION"))),
SAWITH0 AS (select D1.c1 as c1,
     D1.c2 as c2,
     D1.c3 as c3,
     D1.c4 as c4
from
     (select D1.c1 as c1,
               D1.c2 as c2,
               D1.c3 as c3,
               D2.c1 as c4,
               ROW_NUMBER() OVER (PARTITION BY D1.c2, D1.c3 ORDER BY D1.c2 ASC, D1.c3 ASC) as c5
          from
                    OBICOMMON0 D1 inner join
                    OBICOMMON0 D2 On D2.c2 = D1.c2
          where  ( D1.c4 = 0 and D2.c4 = 1 )
     ) D1
where  ( D1.c5 = 1 ) )
select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3, D1.c4 as c4, D1.c5 as c5 from ( select 0 as c1,
     D1.c2 as c2,
     D1.c3 as c3,
     D1.c1 as c4,
     D1.c4 as c5
from
     SAWITH0 D1
order by c2 ) D1 where rownum <= 125001
```

This example shows `SELECT count distinct` from the customer number aggregation rule. In some situations, it also impacts reports with a sum aggregation rule. The generated query in this scenario also uses a grouping set. At the database level, it might be selecting many rows (millions) and then having to group by `Year` and `Region`, as well as `Region`. This can consume significant, unnecessary database resources.

Remove Unused Columns

Remove the `Year` column and analyze the impact on the logical and physical queries that are generated.

Logical Query After Year Column Removed

Now, the logical query doesn't contain the `Year` column and, more importantly, the report aggregation is removed.

```
SET VARIABLE QUERY_SRC_CD='Report',SAW_SRC_PATH='/shared/PerfTuningWebinars/ExcludedColumn';SELECT
   0 s_0,
   "PC0"."Geography"."Region" s_1,
   "PC0"."Revenue Metrics"."# of Customers" s_2
FROM "PC0"
ORDER BY 2 ASC NULLS LAST
FETCH FIRST 125001 ROWS ONLY
```

Physical Query After Year Column Removed

The physical query is much simpler now that it doesn't include grouping sets, and the number of records selected is greatly reduced.

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```
WITH
SAWITH0 AS (select count(distinct T63."CUST_NUMBER") as c1,
     T59."REGION" as c2
from
     "CLOUD_D_GEOGRAPHY" T59,
     "CLOUD_F_BILL_REV" T63
where  ( T59."ADDR_KEY" = T63."ADDR_KEY" )
group by T59."REGION")
select D1.c1 as c1, D1.c2 as c2, D1.c3 as c3 from ( select 0 as c1,
     D1.c2 as c2,
     D1.c1 as c3
from
     SAWITH0 D1
order by c2 ) D1 where rownum <= 125001
```

By reviewing the analysis of non-performant reports, and in the first instance, simply removing redundant unused columns, you can achieve significant performance gains. The physical query generated has reduced complexity and fewer records are returned, therefore less processing is required.

Improve Results from Oracle Analytics AI Assistant

You can improve results from your Oracle Analytics AI Assistant with careful indexing and organization of your data.

Your Oracle Analytics AI Assistant is powered by a large language model (LLM). LLMs are better at understanding text than numbers, so change null values in your datasets to meaningful text like "Unknown" or "Not available". You can also optimize your results by binning numerical values, like binning customers into groups based on total sales, or binning order amounts into ranges of small, medium, and large. See Create a Bin Column When You Prepare Data.

Enriching and transforming your data with suggestions from Oracle Analytics can provide greater context to the Assistant. For example, transforming a dataset to include date part extractions where you extract the day of a week from a numeric date means the Assistant can more accurately respond to a prompt like "show sales for all Fridays in 2024". See Enrich and Transform Your Data.

You can reduce ambiguity in your indexed data by having clear column names that can be understood by anyone reading them, avoiding duplicate names, and leveraging synonyms. For example, datasets often have multiple date fields (order date, Ship date, invoice date). This can cause confusion when someone asks a question like “show sales by month”. You can avoid this by creating a synonym called "Date" on the column you want to assign as the default date. See Specify Synonyms for Dataset Columns.

When indexing your data, carefully select which columns you want indexed. Consider which columns users are most likely to ask the Assistant to provide insights and visualizations for, like metrics, regions, and dates. Avoid indexing high-cardinality columns, like customer IDs, SKUs, or addresses as these can add complexity without enhancing Assistant insights. Start by selecting **Use Recommended Index Settings** when indexing your dataset and refine individual column choices to optimize your search index from there. See About Recommended Index Settings.

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38

Data Preparation Reference

Learn about developer capabilities in Oracle Analytics for analyzing workbook performance and embedding content, and integration with a range of OCI services, for example OCI Data Science and OCI Language.

Topics:

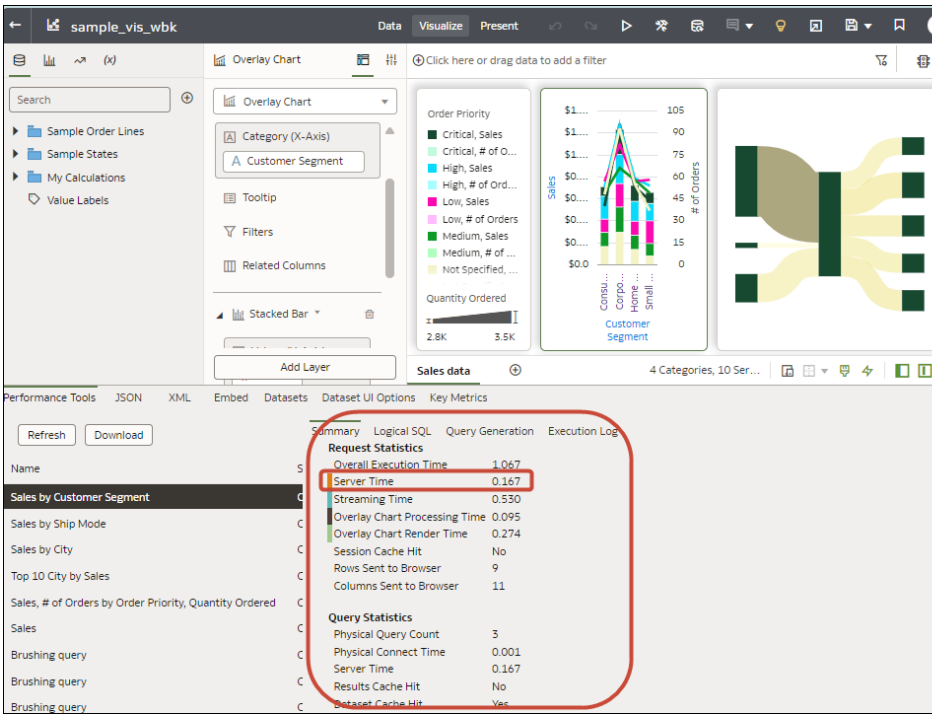
- Data Profiles and Semantic Recommendations
- General Custom Format Strings
- Transform Reference
- Data Flow Limits
- Developer Options
- Create a Connection to Your Oracle Cloud Infrastructure Tenancy
- Integrate Oracle Analytics with Oracle Autonomous AI Lakehouse 23ai Vector Search
- Integrate Oracle Analytics with Oracle Cloud Infrastructure Functions
- Integrate Oracle Analytics with Oracle Cloud Infrastructure Data Science
- Integrate Oracle Analytics with Oracle Cloud Infrastructure Document Understanding
- Integrate Oracle Analytics with Oracle Cloud Infrastructure Language
- Integrate Oracle Analytics with Oracle Cloud Infrastructure Vision

Developer Options

The Visualize canvas includes developer options that enable you to embed analytics content in other applications, and review performance statistics for visualization components. To use developer options, you need to be logged in with administrator or content author privileges.

To display Developer options, open a workbook, display the Visualize pane, and click **Menu** (⋮), then **Developer**.

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Tab	Description
Performance Tools	Review performance statistics such as query time, server time, and streaming time for visualization components in a workbook. Click **Refresh** to get the latest statistics. You can then use the following tabs to analyse performance: Summary, Logical SQL, Query Generation, Execution Log. **Tip**: When you're looking at metrics on the **Summary** tab, to see a more detailed definition of each metric, hover over a metric in the **Request Statistics** column or a legend on the adjacent chart. For example, hover over **Server Time** to find out more about how this statistic is calculated. 
Embed	Embed Oracle Analytics content in other applications. Use the **Copy** option to copy HTML code that you can paste into another application so that Oracle Analytics content is displayed.
JSON	Find out a column reference for embedded content that uses filters.
XML, Datasets, Prep Datasets, Prep UIOptions	Don't use these tabs. They're for internal diagnostics only.

Enable Developer Options

You enable developer options in Oracle Analytics to perform advanced tasks, such as accessing embedding links or analyzing workbook performance. You must have administrator or content author privileges to enable and use developer options.

Developer options aren't available if you log into Oracle Analytics with consumer privileges only. However, you can analyze the performance of a visualization canvas by appending a workbook URL in your browser with `&devtools=true`.

1. On your home page, click the user icon, then click **Profile**.
2. On the Admin page, click **Advanced**, and click **Enable Developer Options**.

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3. Click **Save**, then **Close**.

   If you have administrator or content author privileges, you can now display developer options below the Visualize pane in workbook designer (open a workbook, display the Visualize pane, and click **Menu** (⋮), then **Developer**).

Data Flow Limits

When you're using data flows in Oracle Analytics, note these limits.

Limit	Value
Maximum row fetch size	5 million - This applies to each data source in the data flow. If you hit this limit, use a filter to reduce the number of rows in the query.
Maximum execution time	60 minutes - This applies to a single data flow. If you hit this limit, either reconfigure the data flow to fetch fewer rows, or use separate data flows that fetch fewer rows and use a sequence to run them.

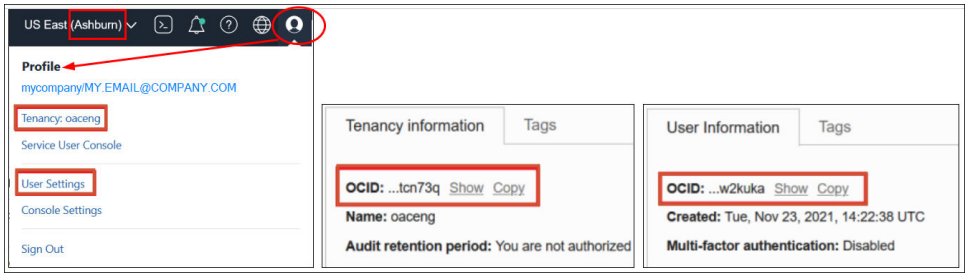
Create a Connection to Your Oracle Cloud Infrastructure Tenancy

In Oracle Analytics, you create a connection to Oracle Cloud Infrastructure (OCI) so that you can integrate Oracle Analytics with OCI functions, OCI Vision, OCI Data Science, or OCI Language. For example, you might register a language conversion function hosted in OCI so that you can convert English text into Spanish or German using an Oracle Analytics data flow.

You can connect to an OCI tenancy using an API key or a resource principal.

- Using an API key enables you to connect to OCI without having to log into Oracle Analytics as a user with BI Service Administrator privileges. However, you need the OCID details for the tenancy you're connecting to so that you can generate a public API key to register in OCI. To use this method, start with Step 1.
- Using a resource principal enables an OCI administrator to give Oracle Analytics permissions on OCI services without having to generate a public API key to register in OCI. Because the resource principal requires administrator permissions, you must be signed into Oracle Analytics with BI Service Administrator permissions to connect using this method. To use this method, start with Step 2.

1. In OCI Console, navigate to the OCI tenancy profile, and copy the Region, Tenancy OCID, and User OCID.
   - For Region, review the geographical region displayed at the top of the profile.
   - For Tenancy OCID, click the **Tenancy** name, and copy the **OCID**.
   - For User OCID, click **User Settings**, and copy the **OCID**.



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See Where to Get the Tenancy's OCID and User's OCID.

2. (In Oracle Analytics) On your home page, click **Create**, then click **Connection**.
3. At the Select Connection Type dialog, click **OCI Resource**.
4. For **Connection Name**, specify a user-friendly name to identify this connection in Oracle Analytics.
5. To connect using an API key:
   - For **Connect Using**, select **API Key**.
   - For **Tenancy OCID**, paste in the tenancy OCID that you copied in step 1.
   - For **Default Region**, select the region in which your OCI tenancy is located.
   - For **User OCID**, paste in the user OCID that you copied in step 1.
   - For **Public API Key**, click **Generate**, then click **Copy**.
   - In your OCI tenancy, paste the API key into the API Keys page under User Settings and click **Add**.
6. To connect using a resource principal:
   - For **Connect Using**, select **Resource Principal**.
   - For **Default Region**, select the region in which your OCI resource is located.
   - For **Compartment**, click **Select** and select the OCI compartment that you're connecting to.
   - For **Services**, select the OCI services that the connection will be used for. To select services, you must be logged into Oracle Analytics as a user with BI Service Administrator privileges.
7. In Oracle Analytics, in the Create Connection dialog, click **Save**.

   If you're connecting using an API key, wait a few seconds before saving the connection to avoid this error: `"Failed to save the connection. Invalid connection parameters specified"`.

Integrate Oracle Analytics with Oracle Autonomous AI Lakehouse 23ai Vector Search

Integrate Oracle Analytics with Vector Search in Oracle Autonomous AI Lakehouse 23ai so that you can perform similarity analysis on your data.

Topics:

- Overview to Performing Similarity Analysis in Oracle Analytics
- Make a Similarity Analysis Model Available in Oracle Analytics

Make a Similarity Analysis Model Available in Oracle Analytics

You register a vector embedding model in Oracle Analytics to enable you to perfom similarity analysis.

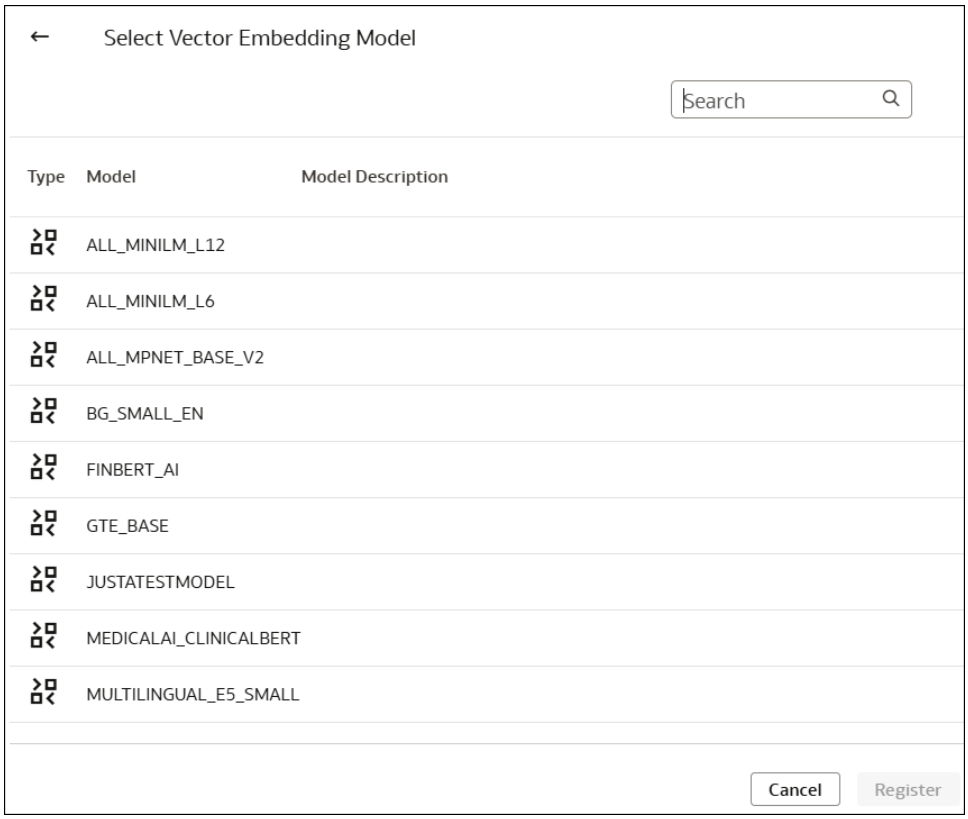
Repeat this process for each model that you want to deploy in Oracle Analytics.

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Before you start, create a connection to an Oracle Database V23ai or Oracle Autonomous AI Lakehouse V23ai or later data source. You must use the same user to create your connection and to register the similarity model.

1. On your home page, click **Page Menu** ⋮, select **Register Model/Function**, and then select **Vector Embedding Models**.
2. At the Register Vector embedding model dialog, under **From a Connection** click the connection that you created to access your Oracle Database V23ai or Oracle Autonomous AI Lakehouse V23ai data source.

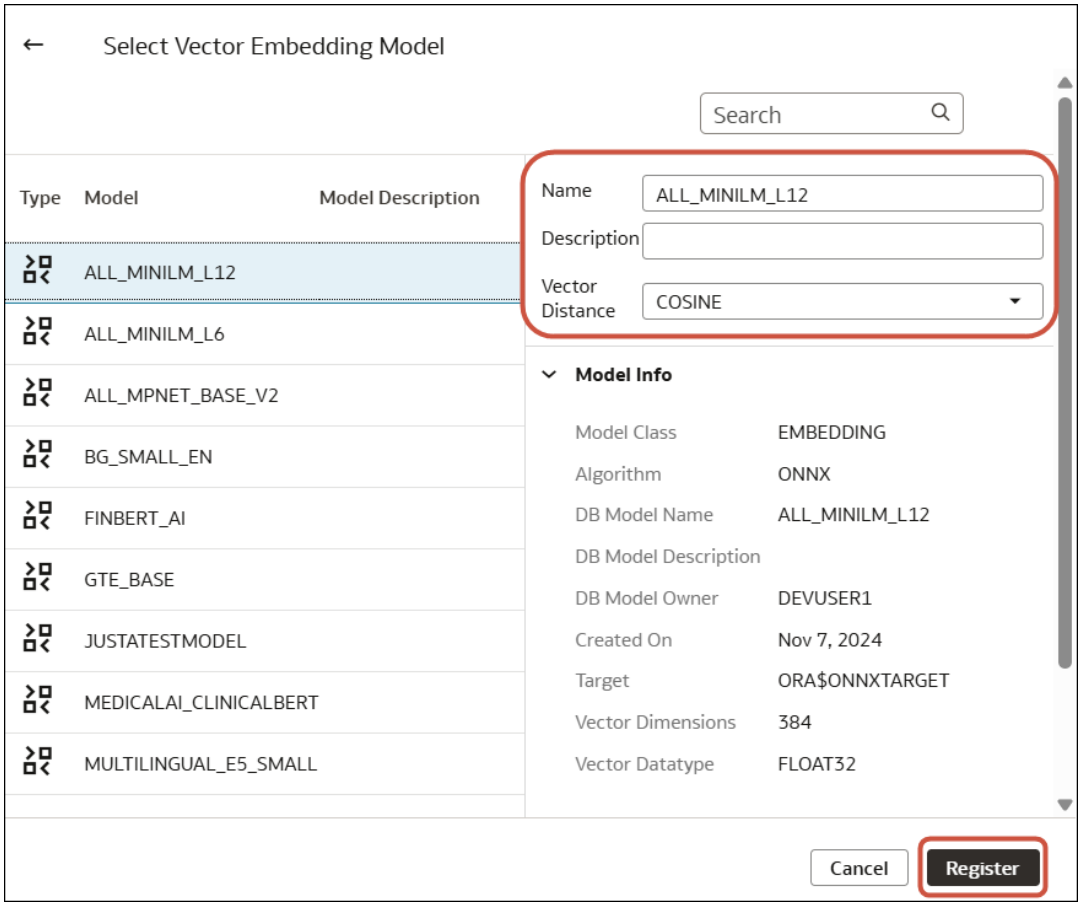
   A list of available vector embedding models is displayed, which depends on which models are registered to the data source that you're connecting to.



3. Select the vector embedding model you want to use.
4. In **Model Info** panel, use the options to configure the model.

   For example, with the ALL_MINILM_L12 model, you can choose a **Vector Distance** option.

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5. Click **Register**.

   Repeat steps 3, 4, and 5 for each model that you want to deploy in Oracle Analytics.

Tip: From the home page, you can inspect the model on the **Machine Learning** page on the **Models** tab. Use the Inspect dialog to confirm that your model is registered correctly.

Integrate Oracle Analytics with Oracle Cloud Infrastructure Functions

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) functions so that you can use them in data flows to transform data.

- About Using OCI Functions in Oracle Analytics
- About Configuring OCI Functions to Use in Oracle Analytics
- Policies Required to Integrate OCI Functions with Oracle Analytics
- Typical Workflow for Transforming Data Using OCI Functions
- Create a Connection to Your Oracle Cloud Infrastructure Tenancy
- Register OCI Functions in Oracle Analytics

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About Using OCI Functions in Oracle Analytics

You can transform data in Oracle Analytics using functions created in OCI. For example, you might use a language conversion function to convert English text into Spanish or German.

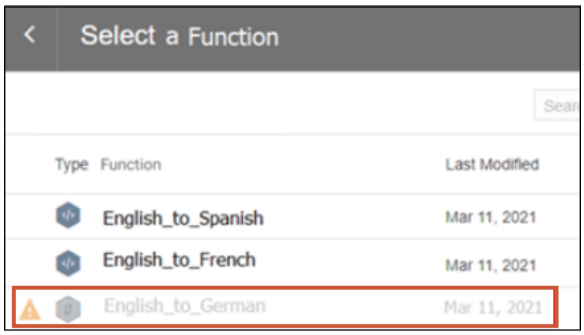
You register OCI functions in Oracle Analytics first, and then any Oracle Analytics user with BI Service Administrator or DV Content Author privileges can use them in data flows.

About Configuring OCI Functions to Use in Oracle Analytics

Create functions in OCI Console so that you can use them to transform data in Oracle Analytics data flows.

About Registering OCI Functions in Oracle Analytics

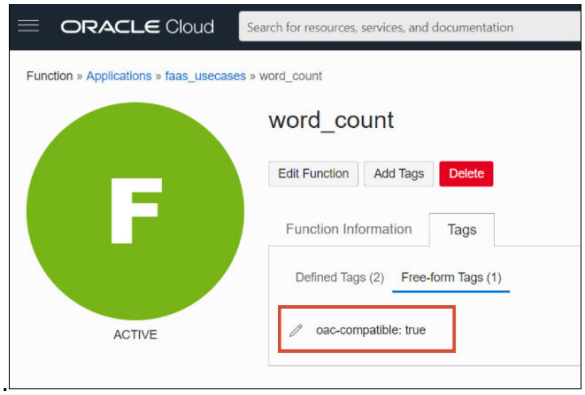
When you register an OCI function in Oracle Analytics, if it's grayed out in the Select a Function dialog, check that it's configured with the `oac-compatible` tag and invoked with the correct `funcMode` value.



About Configuring OCI Functions to use in Oracle Analytics

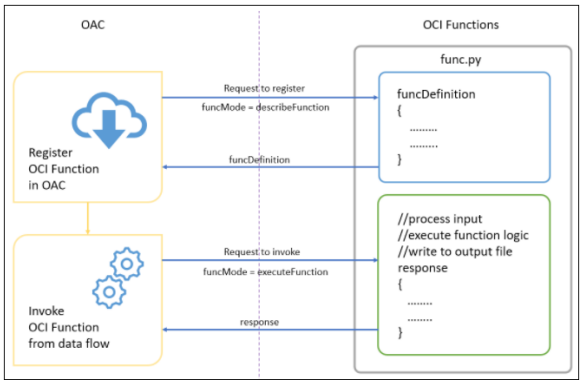
OCI functions that you want to use in Oracle Analytics must have an `oac-compatible` tag and the function code must include the `funcMode` variable. Configure these settings in OCI Console:

- **oac-compatible** - Add a free form tag to the function with the name `oac-compatible` and set the value to `true`.



- **funcMode** - Include the `funcMode` variable in your function code. `Oracle Analytics` sends a request to register an OCI function with `funcMode=describeFunction` and a request to invoke an OCI function with `funcMode=executeFunction`. The handler function in func.py should operate in describeFunction mode or executeFunction mode. This can be done based on the value of the input variable `funcMode` from the request as shown below.

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Here's the request and response format of OCI Functions for Word Count example in python.

funcMode = describeFunction

```
{ "funcMode": "describeFunction"}
```

When funcMode in the request is 'describeFunction', the function should return the function definition with status (returnCode & errorMessage), outputs(name, dataType of output column), parameters (name, description, type and so on of the input parameter), bucketName and so on as a JSON object in the following format (example of word count):

```
funcDefinition = {
    "status": {
        "returnCode": 0,
        "errorMessage": ""
    },
    "funcDescription": {
        "outputs": [
            {"name": "word_count", "dataType": "integer"}
        ],
        "parameters": [
            {"name": "textColumn", "displayName": "Text Column",
             "description": "Choose column to count words", "required":
True,
             "value": {"type": "column"}}
        ],
        "bucketName": "bucket-OCI-FAAS",
        "isOutputJoinableWithInput": True
    }
}
```

Add the following code in func.py to return funcDefinition when funcMode in the request is 'describeFunction'.

```
def handler(ctx, data: io.BytesIO = None):
    response_data = ""
    try:
        body = json.loads(data.getvalue())
        funcMode = body.get("funcMode")
        if funcMode == 'describeFunction':
           response_data = json.dumps(funcDefinition)
```


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```
    except (Exception, ValueError) as ex:
        response_data = json.dumps(
            {"error": "{0}".format(str(ex))})
    return response.Response(
        ctx, response_data,
        headers={"Content-Type": "application/json"}
    )
```

funcMode = executeFunction - When funcMode is 'executeFunction', the actual function logic should be executed and the response should be sent back to Oracle Analytics with the output. When the registered function is invoked from dataflow in Oracle Analytics, the request object will be in the following format with the column name in args, input(bucketName, fileName, fileExtension, fileName, method & rowID) and output(bucketName, fileName & fileExtension).

```
{
    "args":
    {
        "textColumn": "REVIEW"
    },
    "funcMode": "executeFunction",
    "input":
    {
        "bucketName": "bucket-OCI-FAAS",
        "fileExtension": ".csv",
        "fileName": "oac-fn-e99cd4fddb3844be89c7af6ea4bbeb76-input",
        "method": "csv",
        "rowID": "row_id"
    },
    "output":
    {
        "bucketName": "bucket-OCI-FAAS",
        "fileExtension": ".csv",
        "fileName": "oac-fn-e99cd4fddb3844be89c7af6ea4bbeb76-output"
    }
}
```

About Creating Functions in OCI

You can create functions using the OCI Console, command line (Fn Project CLI), or API. For example, in OCI Console, click **Developer Services**, then **Functions** and follow the on-screen instructions to create applications and one or more functions. For details, see Creating Functions in OCI Documentation. If you're creating functions for the first time, follow the steps in the end to end example Creating, Deploying, and Invoking a Helloworld Function. Any functions that you want to use in Oracle Analytics must include the free form tag `oac-compatible=true` (see *About Configuring OCI Functions to use in Oracle Analytics* above).

Tips on Creating Functions in OCI Console

- **Enable Logs** - By default, logs are disabled for functions. To enable logs for functions, on the **Applications** page, click **Logs**, and enable the log provided for the **Log Name**. Under **Resources**, you can now select **Explore Log**, and drill into log entries to debug and diagnose function issues.
- **Include Dependencies** - Include dependent packages in the requirements.txt file for the function.

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- **Follow Indentation Rules**- Follow the Python indentation rules while coding Python functions.
- **Use Function Response Errors** - Use the error details listed on the Dataflow page to diagnose issues.
- **Test Functions Locally First** - Before creating a function in OCI, test the function locally in your development environment to ensure that the function is syntactically and logically correct.
- **Test functions in OCI** - Before integrating functions with Oracle Analytics, make sure that you can deploy and invoke them successfully as standalone functions in OCI.
- **Increase the Timeout**- By default, functions have a timeout of 30 seconds. If necessary, increase the timeout setting (for example, change it to 300 seconds) in the Edit Function page in OCI Console.
- **Increase the Memory**- By default, functions have a memory limit of 1024 MB. If necessary, increase the memory limit in the Edit Function page in OCI Console.
- **Optimize Space** - Delete unused files immediately after use.
- **Beware of Network Latency** - Bear in mind that network latency might cause a slight delay in overall processing.

Policies Required to Integrate OCI Functions with Oracle Analytics

To integrate Oracle Analytics with OCI functions, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

> **Note**
>
> For resource principal, to include all Analytics instances under a compartment, specify: `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

API Key Policies	Resource Principal Policies
`Allow group <group_name> to use functions-family in compartment <compartment_name>`	`Allow any-user to use functions-family in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to read buckets in compartment <compartment_name>`	`Allow any-user to read buckets in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`

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API Key Policies	Resource Principal Policies
`Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'`	`Allow any-user to manage objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<staging_bucket_name>'}`
`Allow group <group_name> to read objectstorage-namespaces in tenancy`	`Allow any-user to read objectstorage-namespaces in tenancy where all {request.principal.id='<analytics_instance_ocid>'}`

Dynamic Group Policy	Description
`Allow dynamic-group <dynamic_group> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'`	Provides access to staging bucket for the dynamic group.

Example matching rule: `<dynamic_group>.{resource.type = 'fnfunc', resource.compartment.id = '<compartment_ocid>'}`, where `<compartment_ocid>` is the Oracle Cloud ID of the compartment that contains the functions.

Typical Workflow for Transforming Data Using OCI Functions

Follow these high-level tasks in the order listed below to transform data in Oracle Analytics using OCI functions.

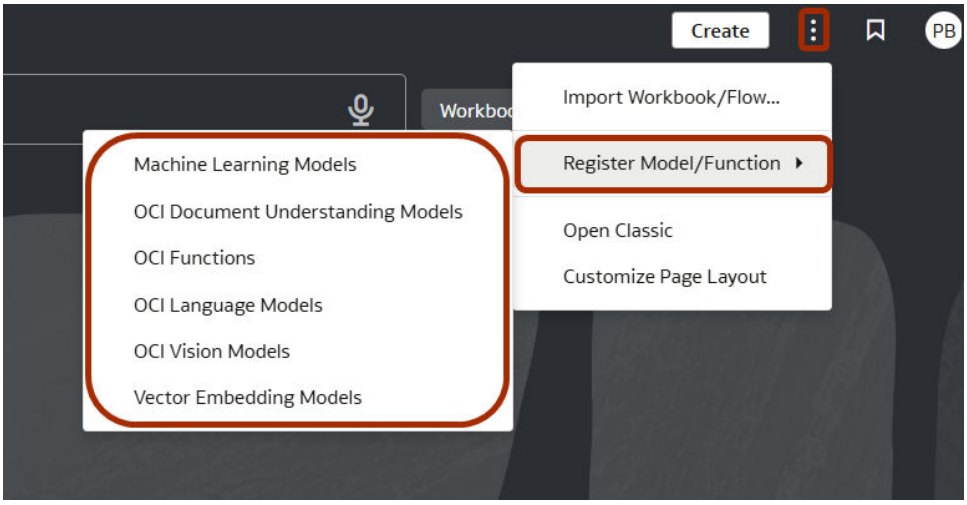
Task	Description	More Information
Create functions in OCI (requires functions developer privileges)	In your OCI tenancy, create your functions, and make sure that they comply with the prerequisites specified for use with Oracle Analytics.	About Configuring OCI Functions to Use in Oracle Analytics
Assign OCI policies	Make sure that you have the required OCI policies for connecting using API key or resource principal.	Policies Required to Integrate OCI Functions with Oracle Analytics
Connect Oracle Analytics to your OCI tenancy (requires admin or DV author privileges)	In Oracle Analytics, create a connection to your OCI tenancy.	Create a Connection to Your Oracle Cloud Infrastructure Tenancy
Register OCI functions in Oracle Analytics (requires admin or DV author privileges)	In Oracle Analytics, register your OCI functions so that you can call them from data flows.	Register OCI Functions in Oracle Analytics
Transform your data using the OCI functions (requires admin or DV author privileges)	Create a data flow, and use the **Apply Custom Script** step to invoke an OCI function.	Transform Data Using OCI Functions

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Register OCI Functions in Oracle Analytics

Register OCI functions in Oracle Analytics so that you can use them in data flows to transform data. For example, you might register a language conversion function so that data analysts can convert English text into Spanish or German.

1. On your home page, click **Page Menu**, then **Register Model/Function**, then **OCI Functions**.



2. At the Register a Custom Function dialog, select a connection to the OCI tenancy where your functions are located.
3. At the Select an Application dialog, click **Select** and select the compartment that contains your OCI functions.

   If you're not sure, ask the person who created the functions in OCI.
4. Select a function, then click **Register**.

   If the function you want to use is grayed out, ask the administrator to make sure that it's configured for Oracle Analytics. See About Configuring OCI Functions to Use in Oracle Analytics.

You can use registered OCI functions in data flows to transform data. To verify which functions are registered, you can view registered functions on the Scripts tab of the Machine Learning page (from your home page, click **Navigator**, then **Machine Learning**, then **Scripts**).

Integrate Oracle Analytics with Oracle Cloud Infrastructure Data Science

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) Data Science to perform machine learning and artificial intelligence without needing data scientist expertise. For example, with healthcare data, you might use a predictive model to identify risk factors and predict the risk of patient readmission after discharge.

Topics:

- Prerequisites for Integrating OCI Data Science Models with Oracle Analytics

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- Policies Required to Integrate OCI Data Science with Oracle Analytics
- Prerequisites for Integrating OCI Data Science Models with Oracle Analytics

Prerequisites for Integrating OCI Data Science Models with Oracle Analytics

You need these prerequisites to integrate OCI Data Science with Oracle Analytics.

- **Create a connection between your Oracle Analytics instance and your OCI service** - See Create a Connection to Your Oracle Cloud Infrastructure Tenancy.
- **In OCI, save the machine learning models in the OCI Data Science Model Catalog.** These models should be created and saved using Oracle Accelerated Data Science Software Development Kit 2.6.1 or higher to be compatible with Oracle Analytics.

Policies Required to Integrate OCI Data Science with Oracle Analytics

To integrate Oracle Analytics with OCI Data Science, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

> **Note**
>
> Oracle Cloud IDs (OCIDs) are resource identifiers used in OCI.

> **Note**
>
> For resource principal, to include all Analytics instances under a compartment, specify `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

API Key Policies	Resource Principal Policies
`Allow group <group_name> to read data-science-projects in compartment <compartment_name>`	`Allow any-user to read data-science-projects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to read data-science-models in compartment <compartment_name>`	`Allow any-user to read data-science-models in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to manage data-science-jobs in compartment <compartment_name>`	`Allow any-user to manage data-science-jobs in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`

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API Key Policies	Resource Principal Policies
`Allow group <group_name> to inspect instance-family in compartment <compartment_name>`	`Allow any-user to inspect instance-family in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to manage data-science-job-runs in compartment <compartment_name>`	`Allow any-user to manage data-science-job-runs in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to inspect virtual-network-family in compartment <compartment_name>`	`Allow any-user to inspect virtual-network-family in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow service datascience to use virtual-network-family in compartment <compartment_name>`	`Allow service datascience to use virtual-network-family in compartment <compartment_name>`
`Allow group <group_name> to manage log-groups in compartment <compartment_name>`	`Allow any-user to manage log-groups in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to read buckets in compartment <compartment_name>`	`Allow any-user to read buckets in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'`	`Allow any-user to manage objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<staging_bucket_name>'}`
`Allow group <group_name> to read objectstorage-namespaces in compartment <compartment_name>`	`Allow any-user to read objectstorage-namespaces in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`

Dynamic Group Policy	Description
`Allow dynamic-group <dynamic_group> to read data-science-models in compartment <compartment_name>`	Provides Data Science model access to the Data Science job run.
`Allow dynamic-group <dynamic_group> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'`	Provides Object Storage access to the Data Science job run.

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Dynamic Group Policy	Description
`Allow dynamic-group <dynamic_group> to use log-content in compartment <compartment_name>`	Provides Log access to the Data Science job run.

> **Note**
>
> When you specify `<dynamic_group>`, use a matching rule with this format: `all { resource.type='datasciencejobrun', resource.compartment.id='<compartment_ocid>' }`, where `<compartment_ocid>` is the Oracle Cloud ID of the compartment that contains the Data Science models.

Make an OCI Data Science Model Available in Oracle Analytics

Before you can use Oracle Cloud Infrastructure (OCI) Data Science models to analyze data, you register them in Oracle Analytics.

Register OCI Data Science Models in Oracle Analytics to build machine learning (ML) into your applications without requiring ML expertise.

Before you start, create a connection between your Oracle Analytics instance and your OCI service. See Create a Connection to Your Oracle Cloud Infrastructure Tenancy.

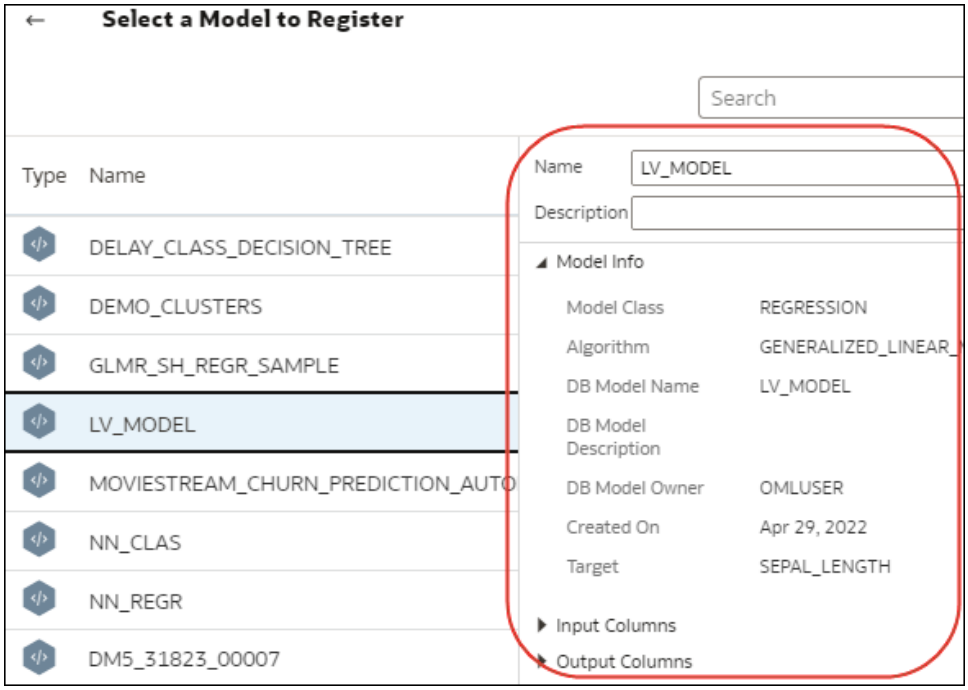
In addition, make sure that you log into Oracle Analytics as a user with the BI Service Administrator or DV Content Author role.

1. On your home page, click **Page Menu**, then **Register Model/Function**, then **Machine Learning Models**.

   This option is available for users with the BI Service Administrator or DV Content Author role.
2. On the Register an ML Model dialog, select the connection to your OCI tenancy.
3. In Select a Project page, click **Select.**
4. In Search Compartment, navigate to your stored model, and then click the model name.

   When you select a model, you can review the details in the right-hand panel, for example, name, description, algorithm, and input and output columns.

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5. Click **Next** to display the Enter Resource Parameters dialog, and configure the model:

   - **Staging Bucket Compartment** - Staging bucket's compartment name. Click **Select** to navigate to and select the compartment of the staging bucket.

     Staging Bucket - Staging bucket name is required for data transfer.

     Compute Shape - Compute shape is the virtual machine configuration, which is required for Data Science job creation.

     OCPUs - Required only if the compute shape is a Flex shape.

     Memory (GB) - Required only if the compute shape is a Flex shape.

     Storage (GB) - Size of block storage required for the Data Science job.

     Use default networking - Option to configure the network configuration. If you're not sure whether to use default networking, ask your Oracle Analytics administrator.

     – Select this option to use default networking, which provides default egress to the public internet. With a default network option, you can skip creating a network and setting up subnets and gateways. If you use the default network configuration, you can’t access or modify the provided default network for other purposes.

     – Deselect this option to configure subnets and Network Address Translation (NAT) gateways. For egress access to the public internet, OCI recommends a private subnet with a route to a NAT Gateway. A NAT gateway gives instances in a private subnet access to the internet. The Virtual Cloud Network (VCN) that is created in this step creates a private subnet with egress access to the internet through the VCN's NAT Gateway.

     VCN Compartment - Name of the compartment containing the VCN you want to use. Required only when **Use default networking** is deselected.

     VCN - The name of an existing VCN. Required only when **Use default networking** is deselected.

     Subnet Compartment - Name of the compartment containing the subnet you want to use. Required only when **Use default networking** is deselected.

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Subnet - Name of an existing subnet. Required only when **Use default networking** is deselected.

Enable Logging - Option to enable logging in OCI Data Science.

Log Group Compartment - Name of the compartment containing the log group in which Data Science logs are stored. Required only when logging is enabled.

Log Group - Name of an existing log group in which to store logs. Required only when logging is enabled.

6. Click **Register**.
7. Optional: To confirm that the model was registered successfully, from your home page, click **Navigator**, click **Models**, then click **Machine Learning** to display registered models and confirm that the model was registered successfully. Click **Inspect** to check that you've configured the model correctly.

Integrate Oracle Analytics with Oracle Cloud Infrastructure Document Understanding

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) Document Understanding to perform document classification and key value extraction without needing machine learning or artificial intelligence expertise. For example, you might want to identify passport numbers in documents.

Topics:

- Typical Workflow to Integrate Oracle Analytics with OCI Document Understanding
- Policies Required to Integrate OCI Document Understanding with Oracle Analytics
- Make a OCI Document Understanding Model Available in Oracle Analytics

Typical Workflow to Integrate Oracle Analytics with OCI Document Understanding

Perform these tasks to integrate Oracle Analytics with OCI Document Understanding.

When you've completed this integration, analysts can then use data flows to perform document classification and key value extraction. See Perform Document Classification and Key Value Extraction.

Task	Description	More Information
Review prerequisites	Make sure that the user connecting from Oracle Analytics to the OCI tenancy has the required security policies.	Policies Required to Integrate OCI Document Understanding with Oracle Analytics
Connect to OCI Document Understanding	Create a reusable connection to our OCI Tenancy.	Create a Connection to Your Oracle Cloud Infrastructure Tenancy
Make a model available in Oracle Analytics	Register an OCI Document Understanding model in Oracle Analytics to make it available to data flows.	Make a OCI Document Understanding Model Available in Oracle Analytics

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Policies Required to Integrate OCI Document Understanding with Oracle Analytics

To integrate Oracle Analytics with OCI Document Understanding, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

> **Note**
>
> Oracle Cloud IDs (OCIDs) are resource identifiers used in OCI.

> **Note**
>
> For resource principal, to include all Analytics instances under a compartment, specify `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

API Key Policies	Resource Principal Policies

`Allow group <group_name> to use ai-service-document-family in compartment <compartment_name>`
`Allow group <group_name> to manage ai-service-document-document-job in compartment <compartment_name>`
`Allow group <group_name> to manage ai-service-document-processor-job in compartment <compartment_name>`
	`Allow any-user to use ai-service-document-family in tenancy where all {request.principal.id='<analytics_instance_ocid>'}`
	`Allow any-user to manage ai-service-document-document-job in tenancy where all {request.principal.id='<analytics_instance_ocid>'}`
	`Allow any-user to manage ai-service-document-processor-job in tenancy where all {request.principal.id='<analytics_instance_ocid>'}`

`Allow group <group_name> to read buckets in compartment <compartment_name>`	`Allow any-user to read buckets in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'`	`Allow any-user to manage objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<staging_bucket_name>'}`

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API Key Policies	Resource Principal Policies
`Allow group <group_name> to read objects in compartment <compartment_name> where target.bucket.name='<document_bucket_name>'`	`Allow any-user to read objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<document_bucket_name>'}`
`Allow group <group_name> to read objectstorage-namespaces in tenancy`	`Allow any-user to read objectstorage-namespaces in tenancy where all {request.principal.id='<analytics_instance_ocid>'}`

Make a OCI Document Understanding Model Available in Oracle Analytics

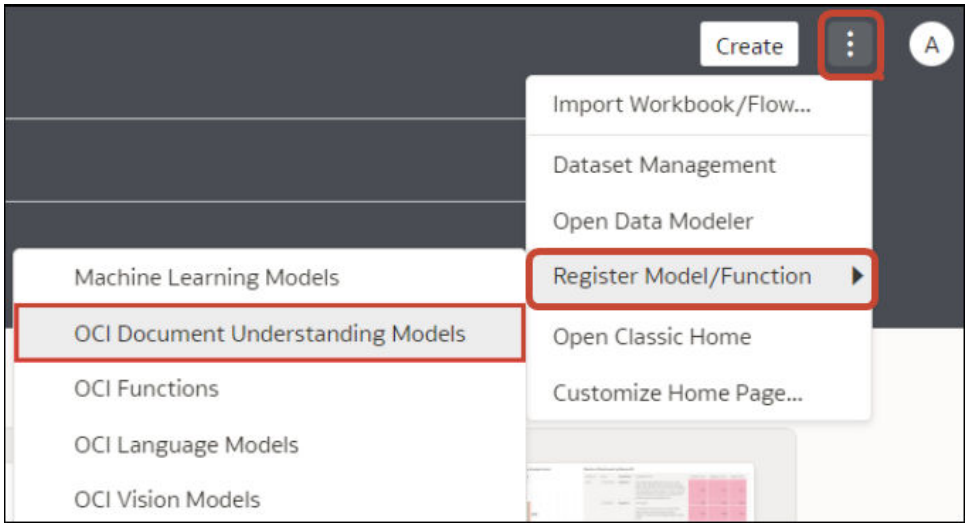
Make an OCI Document Understanding model available in Oracle Analytics so that you can perform document classification and key value extraction using data flows.

1. In OCI Object Storage, create a bucket in a compartment using a suitable name (for example, `MyDocumentsModelStagingBucket`).

   This staging bucket:

   - Must be created in the accessible compartment.
   - Must be created before registering a model.
   - Can have private visibility.
   - Can be used for multiple models.
   - Can be changed in the Inspect screen.

2. (In Oracle Analytics) On your home page, click **Page Menu** ⋮, select **Register Model/ Function**, and then select **OCI Document Understanding Models**.



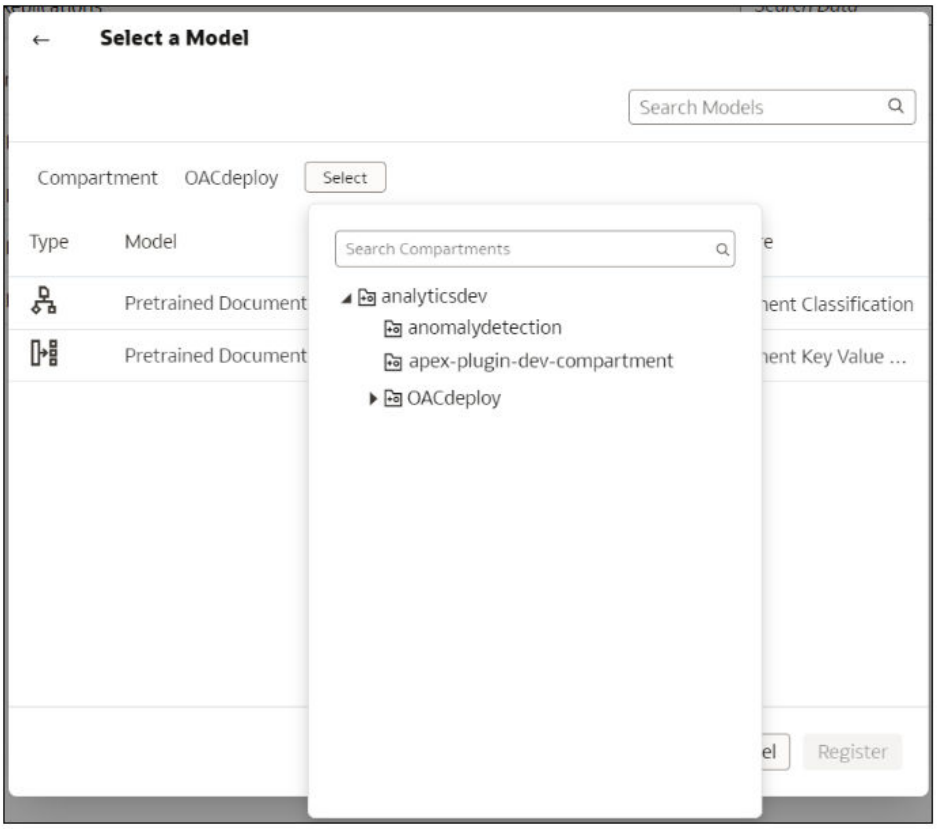
3. At the Register a Model dialog, under **From a Connection** click the connection that you created in Create a Connection to Your Oracle Cloud Infrastructure Tenancy.

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Oracle Analytics displays a list of available models in the default compartment.

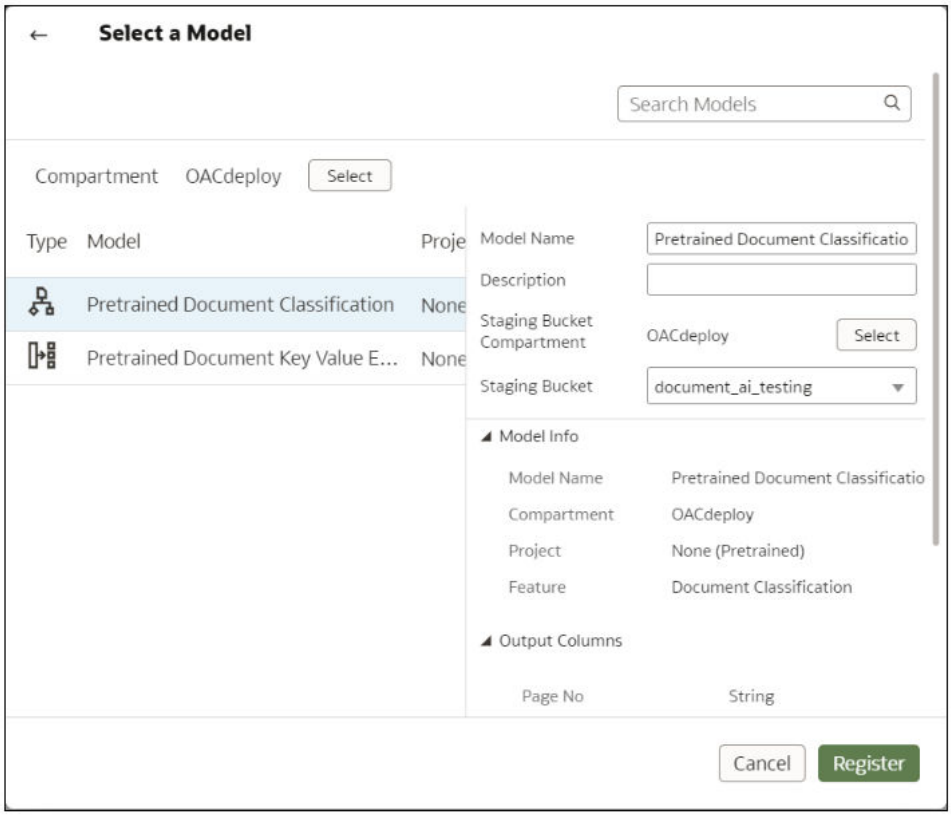
To register models in a different compartment, click **Select** adjacent to the compartment name, and select a different compartment.



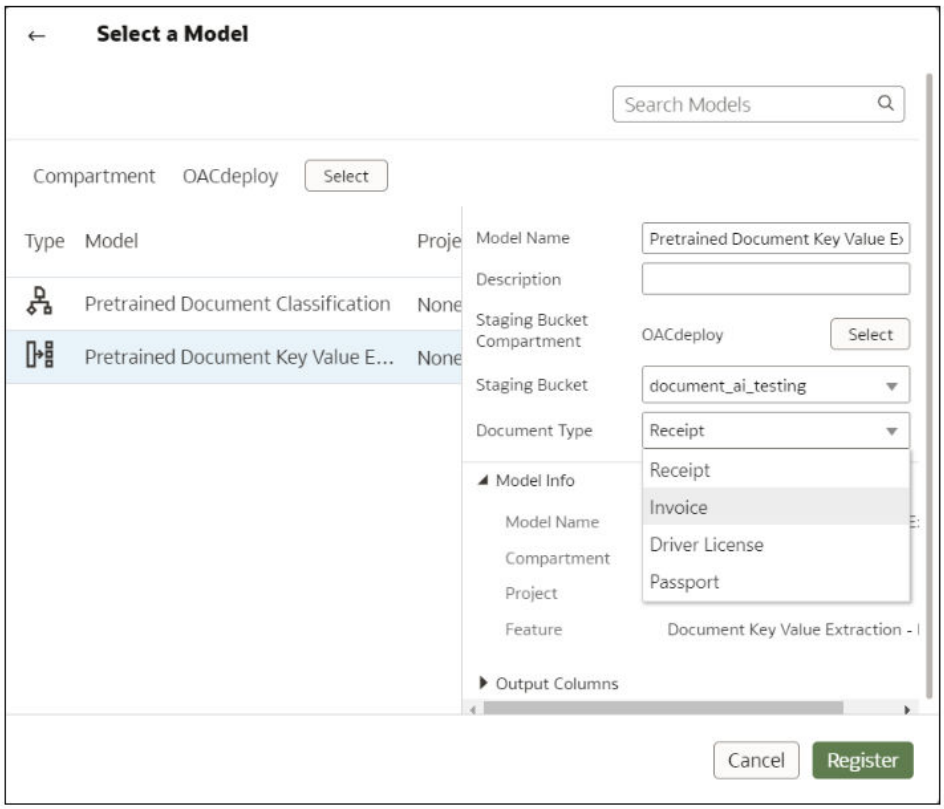
4. Select the model you want to use.

   Select a document classification model to identify documents.

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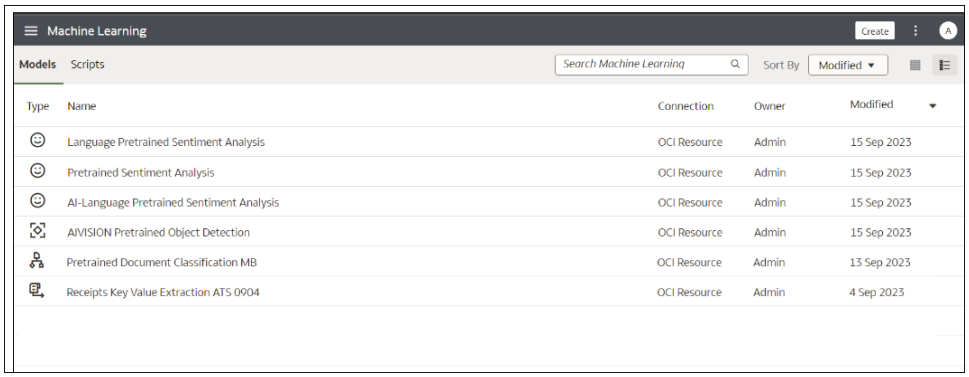
Select a key value extraction model to extract information from documents, then select **Receipt**, **Invoice**, **Driver License**, or **Passport** from the **Document Type** list.



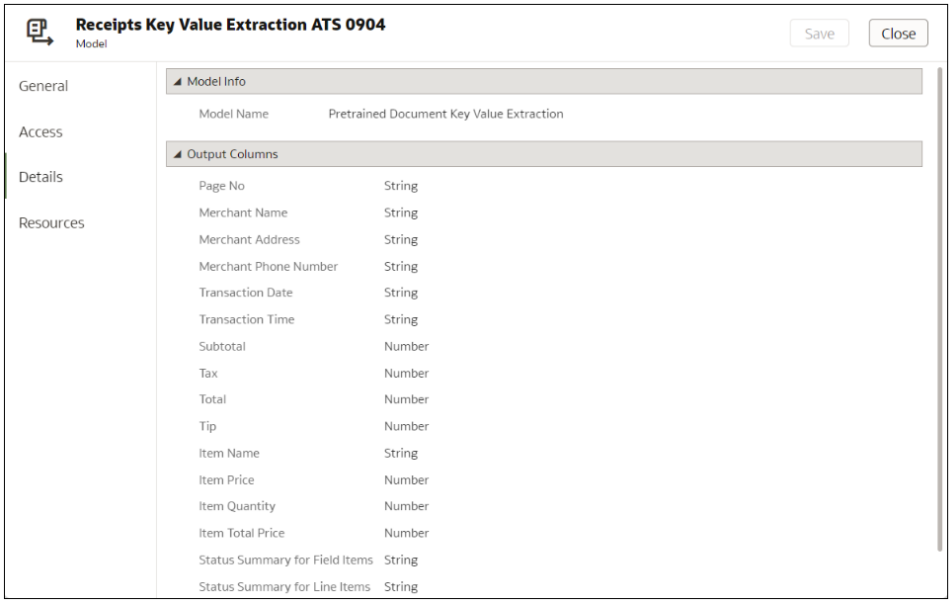
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5. In **Model Name**, specify a name to identify the model in Oracle Analytics.
6. In **Staging Bucket Compartment**, select the location of your staging bucket.
7. In **Staging Bucket Name**, select the bucket that you specified in Step 1 (for example, `MyDocumentsModelStagingBucket`).
8. Click **Register**.

To review the registered model, from the Oracle Analytics home page, navigate to **Machine Learning**, then **Models**.



Hover over a model, click ⋮, then click **Inspect** to review the model. For example, click **Details** to review the ouput columns that are generated for that type of model.



Integrate Oracle Analytics with Oracle Cloud Infrastructure Language

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) Language to perform machine learning and artificial intelligence without needing data scientist expertise. For

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example, with customer data, you might perform sentiment analysis to analyze reviews that customers have typed into a feedback portal.

Topics:

- Prerequisites for Integrating OCI Language Models with Oracle Analytics
- Policies Required to Integrate OCI Language with Oracle Analytics
- Make an OCI Language Model Available in Oracle Analytics

Prerequisites for Integrating OCI Language Models with Oracle Analytics

You need these prerequisites to integrate OCI Language with Oracle Analytics.

- **Create a connection between your Oracle Analytics instance and your OCI service** - See Create a Connection to Your Oracle Cloud Infrastructure Tenancy.

Policies Required to Integrate OCI Language with Oracle Analytics

To integrate Oracle Analytics with OCI Language, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

> **Note**
>
> Oracle Cloud IDs (OCIDs) are resource identifiers used in OCI.

> **Note**
>
> For resource principal, to include all Analytics instances under a compartment, specify: `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`, which will include all Analytics instances under compartmentA.

Policies Required to Integrate OCI Language with Oracle Analytics

Number	API Key Policy	Resource Principal Policy	Purpose
1	`allow group <group_name> to use ai-service-language-family in compartment <compartment_name>`	`allow any-user to use ai-service-language-family in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`	Provides access to OCI Language service.

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Number	API Key Policy	Resource Principal Policy	Purpose
2	`allow group <group_name> to manage ai-service-language-job in compartment <compartment_name>`	`allow any-user to manage ai-service-language-job in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`	Provides manage access to JOBS Language sub resource for Async processing.
3	`allow group <group_name> to read buckets in compartment <compartment_name>`	`allow any-user to read buckets in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`	Provides access to the bucket details.
4	`allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'`	`allow any-user to manage objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<staging_bucket_name>'}`	Provides read, write and delete access to objects in the staging bucket.
5	`allow group <group_name> to read objectstorage-namespaces in compartment <compartment_name>`	`allow any-user to read objectstorage-namespaces in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`	Provides access to object storage namespace. Used for validation purposes.

OCI Language - Dynamic Group policies (For Async processing)

Policy	Purpose
`allow dynamic-group <dynamic_group> to manage objects in compartment <compartment_name>`	Provides access to objects sub-resource in a specific compartment.

Make an OCI Language Model Available in Oracle Analytics

Before you can use Oracle Cloud Infrastructure (OCI) Language models to analyze data, you register them in Oracle Analytics.

Register OCI Language Models in Oracle Analytics to build key phrase extraction, sentiment analysis, classification, named entity recognition, and language recognition into your applications without requiring artificial intelligence (AI) expertise.

Oracle Analytics supports these models:

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- Custom Named Entity Recognition (uses asynchronous APIs)
- Custom Text Classification (uses asynchronous APIs)
- Key Phrase Extraction
- Language Detection
- Named Entity Recognition
- Personal Identifiable Information
- Sentiment Analysis
- Text Classification

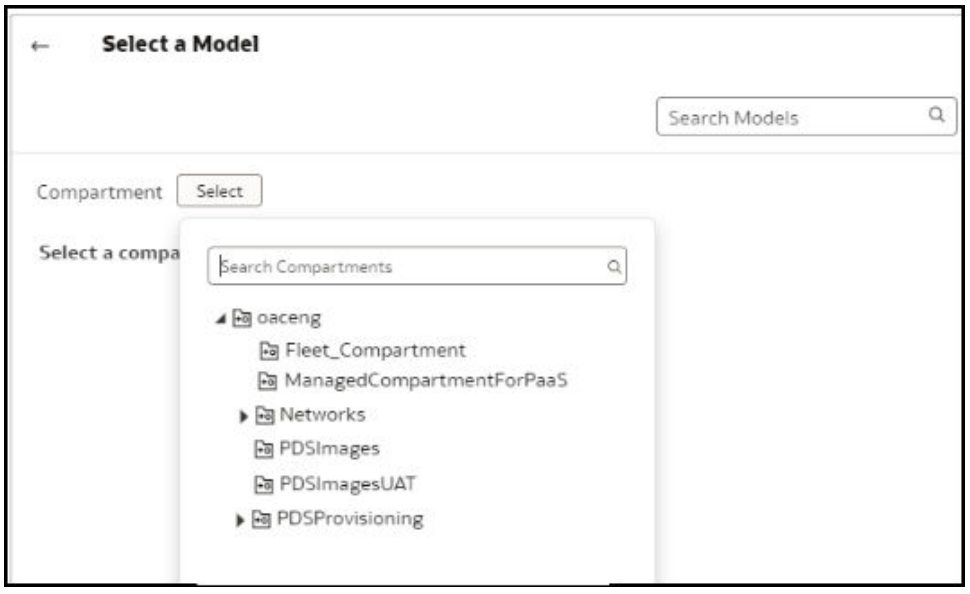
Note: While Language Detection supports 100+ languages, Key Phrase Extraction, Named Entity Recognition, and Sentiment Analysis support English and Spanish only. See OCI Language Pre-trained models.

Note: Oracle Analytics
Oracle Analytics supports custom models for Named Entity Recognition and Text Classification, but not for the other OCI Language models.

Before you start, create a connection between your Oracle Analytics instance and your OCI service. See Create a Connection to Your Oracle Cloud Infrastructure Tenancy.

In addition, make sure that you log into Oracle Analytics as a user with the BI Service Administrator or DV Content Author role.

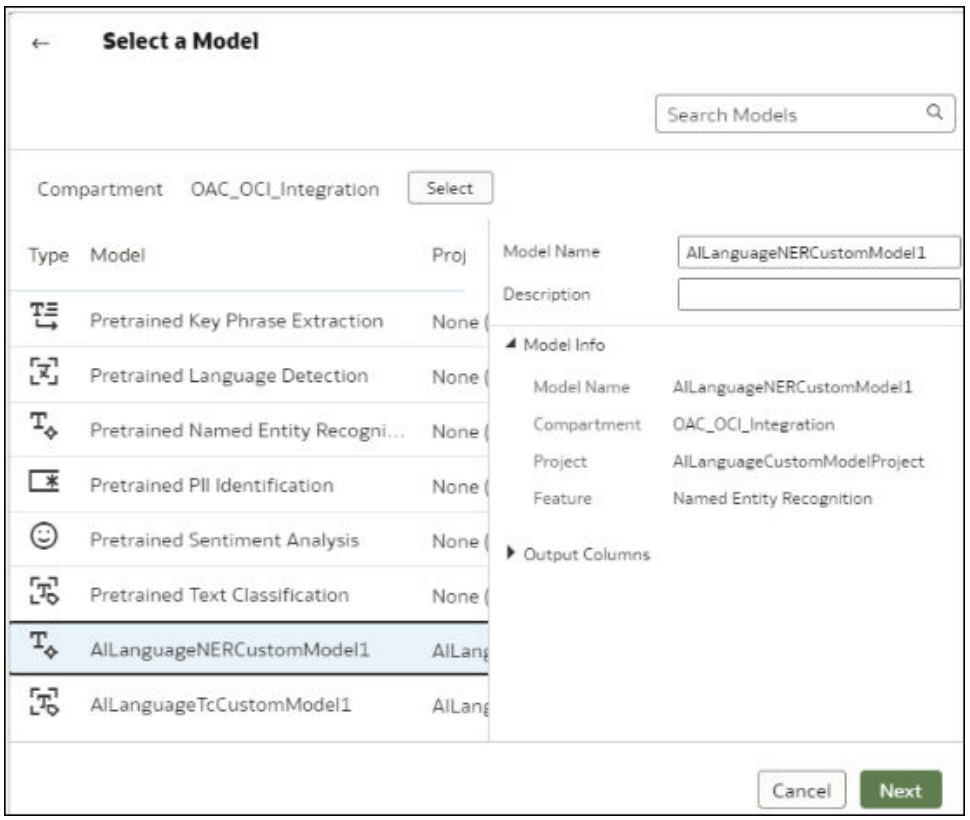
1. On your home page, click **Page Menu**, then **Register Model/Function**, then **OCI Language Models**.
2. On the Register a Language Model dialog, click the name of a connection to your OCI tenancy.
3. On the Select a Model dialog, navigate to the compartment where your AI language model resides.



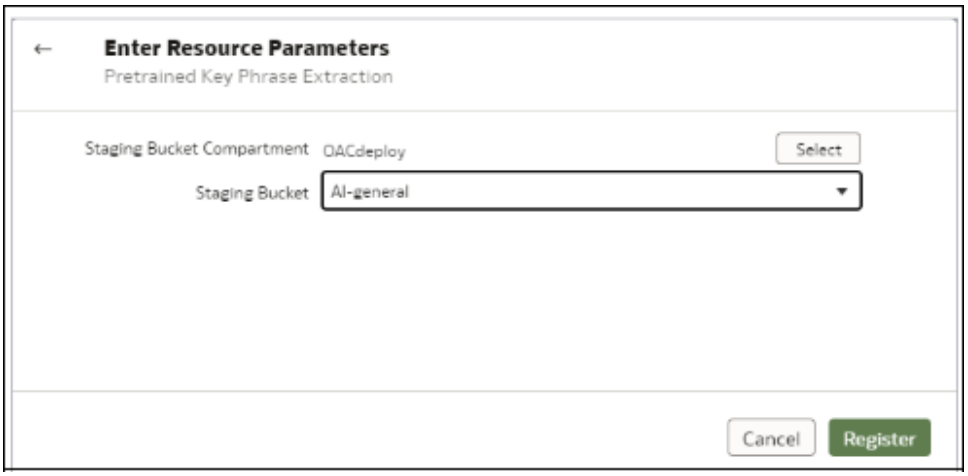
If you're registering a custom AI language model, you need to provide both a staging bucket and a dedicated end-point.

4. Select the model that you'd like to make available in Oracle Analytics.

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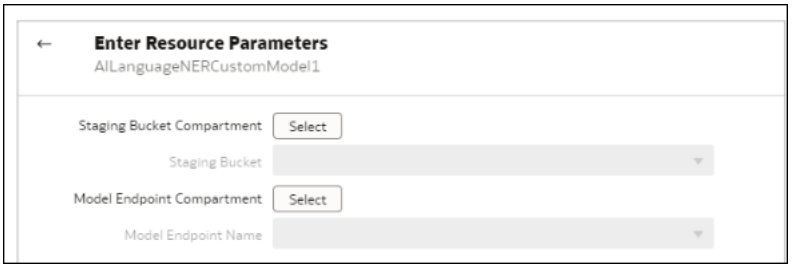


- If you're registering a pretrained model, select the staging bucket compartment for the model.



- If you're registering a custom model, select the staging bucket and model endpoint for the model.

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5. Click **Register**.
6. Optional: To confirm that the model was registered successfully, from your home page, click **Navigator**, click **Models**, then click **Machine Learning** to display registered models and confirm that the model was registered successfully. Click **Inspect** to check that you've configured the model correctly.

Integrate Oracle Analytics with Oracle Cloud Infrastructure Vision

Integrate Oracle Analytics with Oracle Cloud Infrastructure (OCI) Vision to analyze images or videos to detect faces, objects, or labels without needing machine learning or artificial intelligence expertise. For example, you might want to identify cars in photographs or faces in videos.

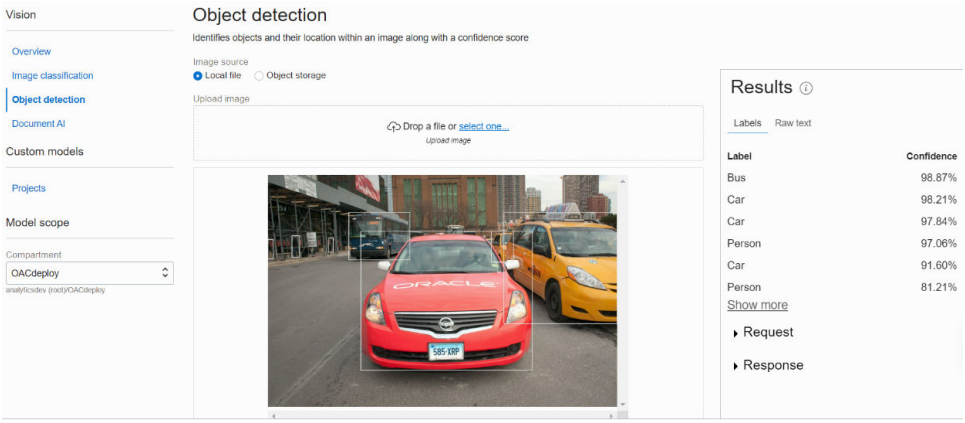
Topics:

- Overview to Integrating Oracle Analytics with Vision
- Policies Required to Integrate OCI Vision with Oracle Analytics
- Typical Workflow to Integrate Oracle Analytics with Vision
- Create a Connection to Your Oracle Cloud Infrastructure Tenancy
- Prerequisites for Images and Videos for Analysis with an OCI Vision Model
- Prepare Images or Videos for Analysis with an OCI Vision Model
- Make a Vision Model Available in Oracle Analytics

Overview to Integrating Oracle Analytics with Vision

Vision is one of several artificial intelligence (AI) services provided by Oracle Cloud Infrastructure. It gives you the power to apply machine learning and artificial intelligence without needing data science expertise.

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Integrating Oracle Analytics with Vision enables you to analyze images and videos to detect objects, text, faces, and so on. You perform this AI analysis by invoking a Vision service from a data flow in Oracle Analytics.

Oracle Analytics supports pre-trained models.

Summary

Analysis Type	Images	Videos
Classification	✓	✗
Faces	✓	✓
Label	✗	✓
Object	✓	✓
Text	✓	✓

Pre-trained models

- **Face Detection** - Identify the existence of faces in images or videos. For example, you might want to hide the identity of people in images by adding a blur to the image using face location information returned by this model.
- **Image Classification** - Use a fixed category set to assign labels to images (not videos).
- **Label Detection** - Identify the existence of labels in videos.
- **Object Detection** - Finds instance of real-world objects or specific patterns in images or videos, for example, cats, dogs, bicycles, aircraft, or labels.
- **Text Detection** - Detect text in images or videos. Convert printed or handwritten text into a digital format.

Custom-trained models

Custom-trained models are calibrated and fine-tuned to detect images and patterns for specific purposes. For example, whereas a pre-trained model might identify electric circuits, you can design a custom-trained model to identify the electric components that make up an electric circuit, for example, resistors, LEDs, diodes, and capacitors. See Vision Tutorials.

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Policies Required to Integrate OCI Vision with Oracle Analytics

To integrate Oracle Analytics with OCI Vision, make sure that you have the required security policies.

The OCI user that you specify in the connection between Oracle Analytics Cloud and your OCI tenancy must have read, write, and delete permissions on the compartment containing the OCI resources you want to use. Ensure that the OCI user belongs to a user group with the following minimum OCI security policies. When you connect to an OCI tenancy from Oracle Analytics, you can use either an OCI API key or resource principal.

> **Note**
>
> Oracle Cloud IDs (OCIDs) are resource identifiers used in OCI.

> **Note**
>
> For resource principal, to include all Analytics instances under a compartment, specify `{request.principal.type='analyticsinstance', request.principal.compartment.id='<compartmentA_ocid>'}` instead of `{request.principal.id='<analytics_instance_ocid>'}`.

API Key Policies	Resource Principal Policies
`Allow group <group_name> to manage ai-service-vision-family in tenancy`	`Allow any-user to manage ai-service-vision-family in tenancy where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to read buckets in compartment <compartment_name>`	`Allow any-user to read buckets in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>'}`
`Allow group <group_name> to manage objects in compartment <compartment_name> where target.bucket.name='<staging_bucket_name>'`	`Allow any-user to manage objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<staging_bucket_name>'}`
`Allow group <group_name> to read objects in compartment <compartment_name> where target.bucket.name='<images_bucket_name>'`	`Allow any-user to read objects in compartment <compartment_name> where all {request.principal.id='<analytics_instance_ocid>', target.bucket.name='<images_bucket_name>'}`
`Allow group <group_name> to read objectstorage-namespaces in tenancy`	`Allow any-user to read objectstorage-namespaces in tenancy where all {request.principal.id='<analytics_instance_ocid>'}`

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Typical Workflow to Integrate Oracle Analytics with Vision

Perform these tasks required to integrate Oracle Analytics with Vision and perform object detection, image classification, or text detection.

Task	Description	More Information
Review prerequisites	Make sure that the user connecting from Oracle Analytics to the OCI tenancy has the required security policies.	Policies Required to Integrate OCI Vision with Oracle Analytics
Connect to OCI Vision	Create a reusable connection to your Vision service.	Create a Connection to Your Oracle Cloud Infrastructure Tenancy
Prepare the images or videos to analyze	Review the prerequisites for images and videos. Then create a dataset that references the images or videos that you want to analyze, and upload it to Oracle Analytics.	Prerequisites for Images and Videos for Analysis with an OCI Vision Model Prepare Images or Videos for Analysis with an OCI Vision Model
Make a model available in Oracle Analytics	Register a Vision model in Oracle Analytics to make it available to data flows.	Make a Vision Model Available in Oracle Analytics
Process your images or videos	Use a data flow to apply the Vision to analyze the images or videos.	Use Oracle Cloud Infrastructure Vision Models in Oracle Analytics
Analyze the results	Use the dataset generated by your data flow to analyze the results.	Output Data Generated for Face Detection, Object Detection, Image Classification, and Text Detection Analysis Models

Prerequisites for Images and Videos for Analysis with an OCI Vision Model

Before you start processing images or videos using a Vision model in Oracle Analytics, follow these prerequisites.

Overview

You use buckets in OCI Object Storage to store the images that you want to analyze, then create a dataset to access these images in Oracle Analytics.

In most cases, input images and Vision models are stored in the *same* Oracle Cloud account (tenancy). If your input images and Vision model are stored on *different* tenancies, you must ensure that the visibility of the storage bucket containing your input images is **public** and the input dataset for the data flow contains individual image URLs (as described in step 4). To learn how to make a bucket public, see Change the visibility of a bucket.

Images

Data flows in Oracle Analytics can process up to 20,000 images in one run. If you have more than 20,000 images to process, in OCI's Object Storage & Archive Storage create multiple buckets containing no more than 20,000 images in each one. Then, create a separate dataset and data flow for each bucket, and use a Sequence to sequentially process multiple data flows.

Videos

- Supported video formats: .mov, .mp4, .h264, .mkv, .webm.
- Up to 20 GB and 10 hours duration.
- Individual videos can be up to 1GB.

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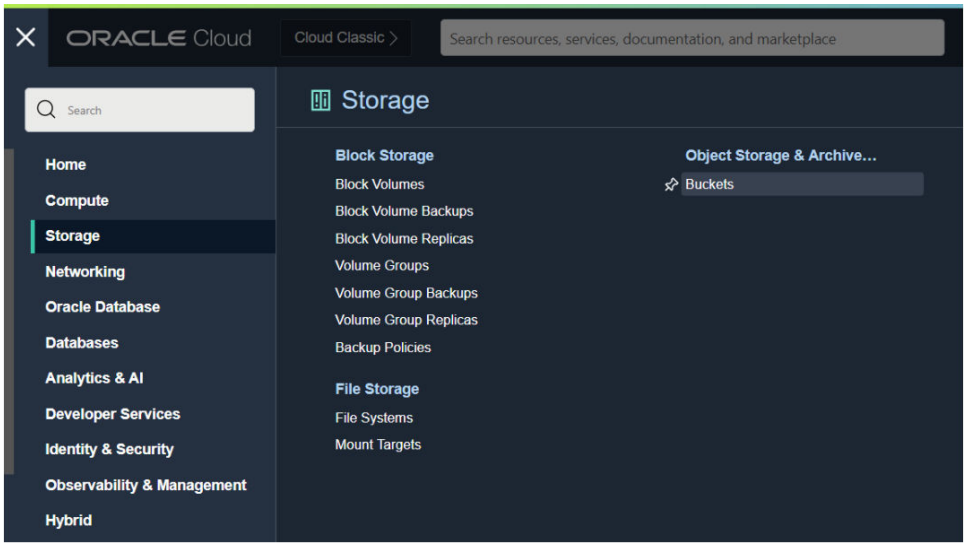
- Each Oracle Analytics data flow run can process around 50 minutes of video. The exact limit depends on video file size, resolution, and format.

Prepare Images or Videos for Analysis with an OCI Vision Model

You use buckets in OCI Object Storage to store the images that you want to analyze, then create a dataset to access these images in Oracle Analytics.

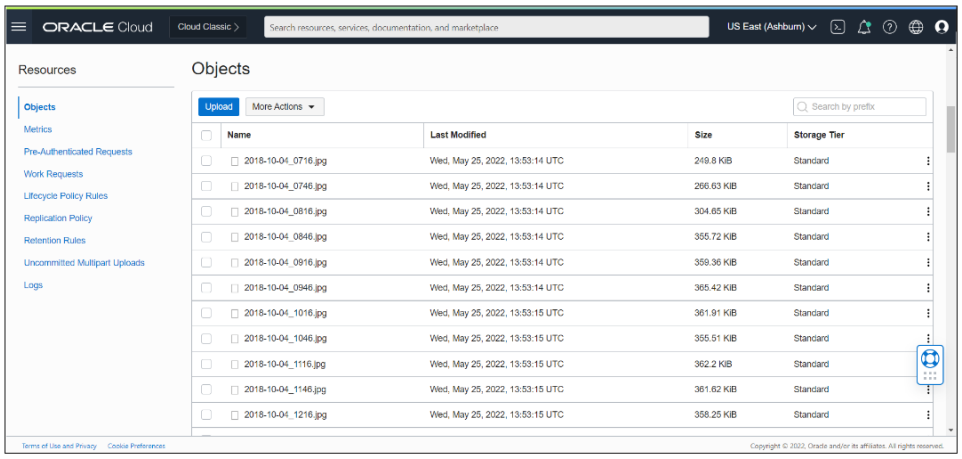
In most cases, input images and Vision models are stored in the *same* Oracle Cloud account (tenancy). If your input images and Vision model are stored on *different* tenancies, you must ensure that the visibility of the storage bucket containing your input images is **public** and the input dataset for the data flow contains individual image URLs (as described in step 4). To learn how to make a bucket public, see Change the visibility of a bucket.

1. In OCI Console, navigate to **Object Storage & Archive Storage**, and create a bucket to store your images.



2. Upload your images or videos to the bucket.

   Make sure that the bucket contains no extraneous files. Oracle Analytics processes every file in the bucket.



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The bucket can be private or public, but must be accessible to the OCI user and comply with OCI's generic limits on images. See OCI documentation. You use the **URL Path (URI)** value to reference for images and videos.

3. To process every image or video in a bucket, add the bucket URL to a CSV file.
   a. In Object Storage, select the bucket to display the images in the Objects dialog.
   b. Copy the URL from the browser's URL bar.
   c. Create a CSV file with fields for `ID`, `Bucket Name`, and `Bucket URL`.
   d. Paste the bucket URL into the CSV file as the `Bucket URL` value.

ID	Bucket Name	Bucket URL
1	Car_Parking	https://[redacted]/buckets/analyticsdev/Car_Parking/objects?region=us-ashburn-1

   If you have more than 20,000 images, you typically create multiple buckets of up to 20,000 images and create a separate dataset for each bucket.

4. To reference images individually, create a CSV file with fields ID, Image Name, and File Location, and populate the file with the unique IDs, names, and URIs of the images to analyze.

Id	Image Name	File Location	Uploaded	Size	Type
1	Car_Parking_001.jpg	https://[redacted]Car_Parking_001.jpg	Fri, Feb 18	109.87 KiB	Standard
2	Car_Parking_002.jpg	https://[redacted]Car_Parking_002.jpg	Fri, Feb 18	70.29 KiB	Standard
3	Car_Parking_003.jpg	https://[redacted]Car_Parking_003.jpg	Fri, Feb 18	139.07 KiB	Standard
4	Car_Parking_004.jpg	https://[redacted]Car_Parking_004.jpg	Fri, Feb 18	605.48 KiB	Standard
5	Car_Parking_005.jpg	https://[redacted]Car_Parking_005.jpg	Fri, Feb 18	2.43 MiB	Standard
6	Car_Parking_006.jpg	https://[redacted]Car_Parking_006.jpg	Fri, Feb 18	239.33 KiB	Standard
7	Car_Parking_007.jpg	https://[redacted]Car_Parking_007.jpg	Fri, Feb 18	136.87 KiB	Standard
8	Car_Parking_008.jpg	https://[redacted]Car_Parking_008.jpg	Fri, Feb 18	7.54 MiB	Standard
9	Car_Parking_009.jpg	https://[redacted]Car_Parking_009.jpg	Fri, Feb 18	23.79 KiB	Standard
10	Car_Parking_010.jpg	https://[redacted]Car_Parking_010.jpg	Fri, Feb 18	107.99 KiB	Standard
11	Car_Parking_011.jpg	https://[redacted]Car_Parking_011.jpg	Fri, Feb 18	30.08 KiB	Standard
12	Car_Parking_012.jpg	https://[redacted]Car_Parking_012.jpg	Fri, Feb 18	34.93 KiB	Standard
13	Car_Parking_013.jpg	https://[redacted]Car_Parking_013.jpg	Fri, Feb 18	72.15 KiB	Standard
14	Car_Parking_014.jpg	https://[redacted]Car_Parking_014.jpg	Fri, Feb 18	50.02 KiB	Standard
15	Car_Parking_015.jpg	https://[redacted]Car_Parking_015.jpg	Fri, Feb 18	40.58 KiB	Standard

5. To reference videos individually, create a CSV file with fields ID and URL, and populate the file with the unique ID and URIs of the videos to analyze.

ID	URL
1	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0001.mp4
2	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0002.mp4
3	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0003.mp4
4	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0004.mp4
5	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0005.mp4
6	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0006.mp4
7	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0007.mp4
8	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0008.mp4
9	https://[redacted]loud.com/n/analyticsdev/b/3min_videos/o/Flight_takeoff_landing_3min_0009.mp4

6. In Oracle Analytics, click **Create**, then **Dataset**, and upload the CSV file that you created in Step 3, 4, or 5.

See Create a Dataset from a File Uploaded from Your Computer.

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Make a Vision Model Available in Oracle Analytics

Make a Vision model available in Oracle Analytics so that you can analyze images or videos to perform object detection, image classification, or text detection using data flows.

Before you start, create a connection to your OCI tenancy. See Create a Connection to Your Oracle Cloud Infrastructure Tenancy.

1. In OCI Object Storage, create a bucket in a compartment using a suitable name (for example, `MyVisionModelStagingBucket`).

   This staging bucket:

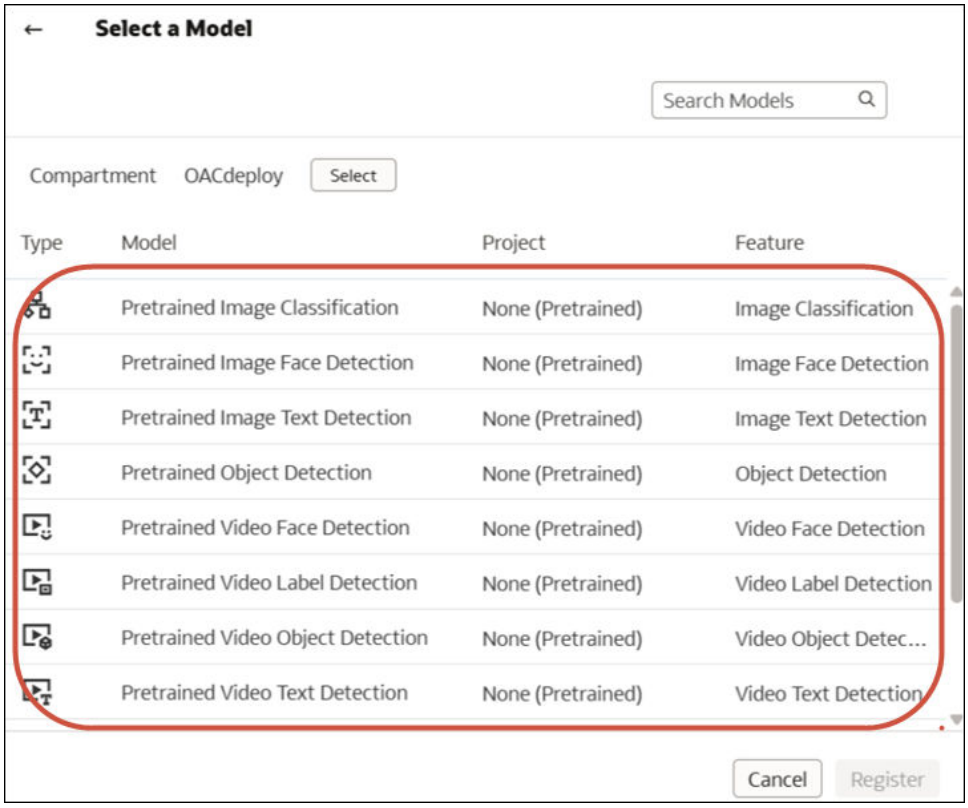
   - Must be created in the accessible compartment.
   - Must be created before registering a model.
   - Can have private visibility.
   - Can be used for multiple models.
   - Can be changed in the Inspect screen.

2. (In Oracle Analytics) On your home page, click **Page Menu** ⋮, select **Register Model/ Function**, and then select **OCI Vision Models**.
3. At the Register a Vision Model dialog, under **From a Connection** click the connection that you created in Create a Connection to Your Oracle Cloud Infrastructure Tenancy.



A list of available models is displayed.

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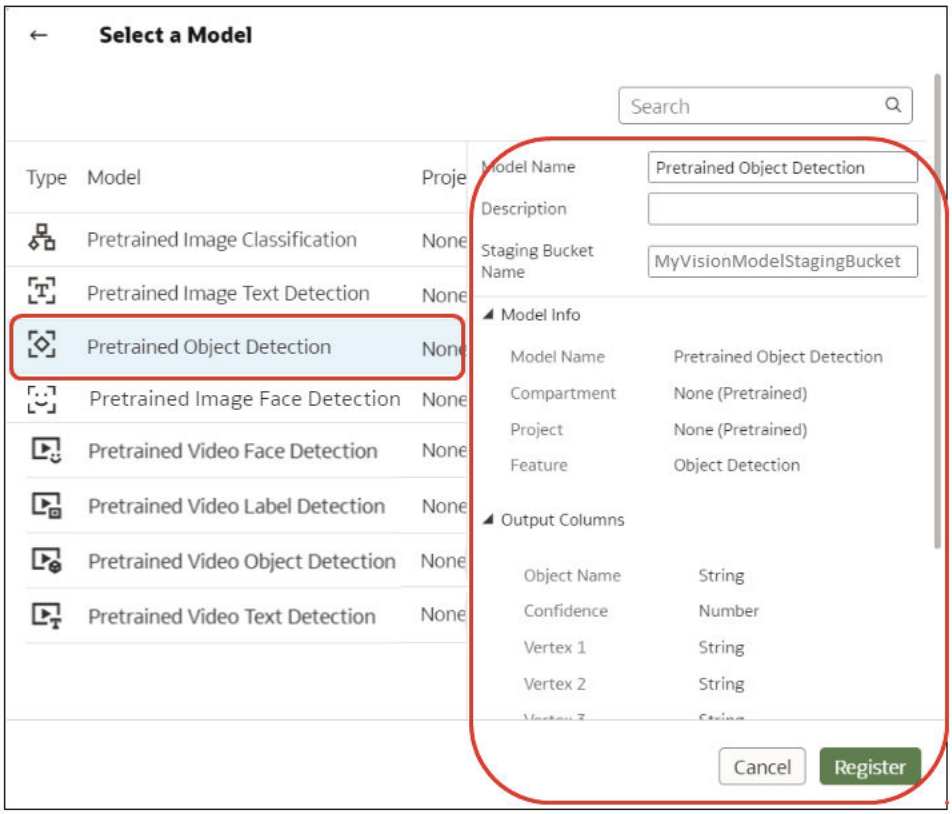


4. In the list of available models, click the model you want to apply to your image data.

   For example, to detect cars in photographs, select **Pretrained Object Detection**, or to detect faces in videos, select **Pretrained Video Face Detection**.

   When select a model, an information panel pops up displaying the model details.

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5. In **Model Name**, specify a name to identify the model in Oracle Analytics.
6. In **Staging Bucket Name**, enter the name that you specified in Step 1 (for example, `MyVisionModelStagingBucket`).
7. Click **Register**.

Tip: To review the registered model, from the Oracle Analytics home page, navigate to **Machine Learning**, then **Models**.

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39

Expression Editor Reference

This section describes the expression elements that you can use in the Expression Editor.

Topics:

- Semantic Model Objects
- SQL Operators
- Conditional Expressions
- Functions
- Constants
- Types
- Variables

Semantic Model Objects

You can use semantic model objects in expressions, like time levels, dimension columns, and fact columns.

To reference a semantic model object, use the syntax:

"Fact/Dimension Table Name"."Column Name"

For example: `"Order Metrics"."Booked Amount"-"Order Metrics"."Fulfilled Amount"`

The Expression Elements section includes only items that are relevant for your task, so not all fact tables and dimension tables might be listed. Similarly, time hierarchies are included only if the Time fact table is joined to the current table.

SQL Operators

You use SQL operators to specify comparisons and arithmetic operations between expressions.

You can use various types of SQL operators.

Operator	Example	Description	Syntax
BETWEEN	`"COSTS"."UNIT_COST" BETWEEN 100.0 AND 5000.0`	Determines if a value is between two non-inclusive bounds. `BETWEEN` can be preceded with `NOT` to negate the condition.	`BETWEEN [LowerBound] AND [UpperBound]`
IN	`"COSTS"."UNIT_COST" IN(200, 600, 'A')`	Determines if a value is present in a set of values.	`IN ([Comma Separated List])`
IS NULL	`"PRODUCTS"."PROD_NAME" IS NULL`	Determines if a value is null.	`IS NULL`

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Operator	Example	Description	Syntax
LIKE	`"PRODUCTS"."PROD_NAME" LIKE 'prod%'`	Determines if a value matches all or part of a string. Often used with wildcard characters to indicate any character string match of zero or more characters (%) or any single character match (_).	LIKE
+	`(FEDERAL_REVENUE + LOCAL_REVENUE) - TOTAL_EXPENDITURE`	Plus sign for addition.	+
-	`(FEDERAL_REVENUE + LOCAL_REVENUE) - TOTAL_EXPENDITURE`	Minus sign for subtraction.	-
* *or* X	`SUPPORT_SERVICES_EXPENDITURE * 1.5`	Multiply sign for multiplication.	* X
/	`CAPITAL_OUTLAY_EXPENDITURE/ 1.05`	Divide by sign for division.	/
%		Percentage	%
||	`STATE|| CAST(YEAR AS CHAR(4))`	Character string concatenation.	||
(	`(FEDERAL_REVENUE + LOCAL_REVENUE) - TOTAL_EXPENDITURE`	Open parenthesis.	(
)	`(FEDERAL_REVENUE + LOCAL_REVENUE) - TOTAL_EXPENDITURE`	Close parenthesis.	)
>	`YEAR > 2000 and YEAR < 2016 and YEAR <> 2013`	Greater than sign, indicating values higher than the comparison.	>
<	`YEAR > 2000 and YEAR < 2016 and YEAR <> 2013`	Less than sign, indicating values lower than the comparison.	<
=		Equal sign, indicating the same value.	=
>=		Greater than or equal to sign, indicating values the same or higher than the comparison.	>=

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Operator	Example	Description	Syntax
<=		Less than or equal to sign, indicating values the same or lower than the comparison.	<=
<>	YEAR > 2000 and YEAR < 2016 and YEAR <> 2013	Not equal to, indicating values higher or lower, but different.	<>
,	STATE in ('ALABAMA','CALIFORNIA')	Comma, used to separate elements in a list.	,

Conditional Expressions

You use conditional expressions to create expressions that convert values.

The conditional expressions described in this section are building blocks for creating expressions that convert a value from one form to another.

Follow these rules:

- In CASE statements, AND has precedence over OR.
- Strings must be in single quotes.

Expression	Example	Description	Syntax
CASE (If)	CASE WHEN score-par < 0 THEN 'Under Par' WHEN score-par = 0 THEN 'Par' WHEN score-par = 1 THEN 'Bogey' WHEN score-par = 2 THEN 'Double Bogey' ELSE 'Triple Bogey or Worse' END	Evaluates each WHEN condition and if satisfied, assigns the value in the corresponding THEN expression. If none of the WHEN conditions are satisfied, it assigns the default value specified in the ELSE expression. If no ELSE expression is specified, the system automatically adds an ELSE NULL. **Note**: See *Best Practices for using CASE statements in Analyses and Visualizations*.	CASE WHEN request_condition1 THEN expr1 ELSE expr2 END

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Expression	Example	Description	Syntax

CASE (Switch)	`CASE Score-par`
	`WHEN -5 THEN 'Birdie on Par 6'`
	`WHEN -4 THEN 'Must be Tiger'`
	`WHEN -3 THEN 'Three under par'`
	`WHEN -2 THEN 'Two under par'`
	`WHEN -1 THEN 'Birdie'`
	`WHEN 0 THEN 'Par'`
	`WHEN 1 THEN 'Bogey'`
	`WHEN 2 THEN 'Double Bogey'`
	`ELSE 'Triple Bogey or Worse'`
	`END`
		Also referred to as `CASE (Lookup)`. The value of the first expression is examined, then the `WHEN` expressions. If the first expression matches any `WHEN` expression, it assigns the value in the corresponding `THEN` expression.
		If none of the `WHEN` expressions match, it assigns the default value specified in the `ELSE` expression. If no `ELSE` expression is specified, the system automatically adds an `ELSE NULL`.
		If the first expression matches an expression in multiple `WHEN` clauses, only the expression following the first match is assigned.
		Note See *Best Practices for using CASE statements in Analyses and Visualizations*.
			`CASE expr1 WHEN expr2 THEN expr3 ELSE expr4 END`

IfCase > ELSE	-	-	`ELSE [expr]`
IfCase > IFNULL	-	-	`IFNULL([expr], [value])`
IfCase > NULLIF	-	-	`NULLIF([expr], [expr])`
IfCase > WHEN	-	-	`WHEN [Condition] THEN [expr]`
IfCase > CASE	-	-	`CASE WHEN [Condition] THEN [expr] END`
SwitchCase > ELSE	-	-	`ELSE [expr]`
SwitchCase >IFNULL	-	-	`IFNULL([expr], [value])`
SwitchCase > NULLIF	-	-	`NULLIF([expr], [expr])`
SwitchCase > WHEN	-	-	`WHEN [Condition] THEN [expr]`

Best Practices for Using CASE Statements in Analyses and Visualizations

When using CASE statements in reports and workbooks, consider the report columns and the order of aggregation because these affect how expressions and subtotals are calculated.

- In general, when using CASE expressions, make sure that any columns used in the expression are included in the report.

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- If the order of aggregation is important, then change the report aggregation rule from Default to Sum.
- If a condition has to be evaluated before the aggregation is computed (for example, if the column filtered isn't displayed in the report), then use the FILTER function.

Example

This example uses data for Brand, Product Type, and Revenue.

Brand	Product_Type	Revenue
BizTech	Accessories	2698715.06
BizTech	Audio	7415868.56
BizTech	Cell Phones	5917902.82
BizTech	Smart Phones	4967513.56
FunPod	Camera	7735104.57
FunPod	Fixed	4530169.23
FunPod	Portable	5234726.2
HomeView	Install	487556.74
HomeView	LCD	5324361.46
HomeView	Maintenance	518288.16
HomeView	Plasma	5169793.64

To apply a condition to set Camera revenue to 0, create the following conditional expression: `CASE WHEN Product_Type = 'Camera' THEN 0 ELSE Revenue END`.

When Product_Type is excluded from the report, data isn't available to evaluate the expression because it contains Product_Type, and the results are:

P4 Brand	Revenue Excluding Camera (CASE)
BizTech	21,000,000.00
FunPod	0.00
HomeView	11,500,000.00

By adding PRODUCT_TYPE to the report and setting report aggregation to SUM, the result aggregates after the base level values are calculated:

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P4 Brand	P2 Product Type	Revenue Excluding Camera (CASE)
BizTech	Accessories	2,698,715.06
	Audio	7,415,868.56
	Cell Phones	5,917,902.82
	Smart Phones	4,967,513.56
BizTech Total		21,000,000.00
FunPod	Camera	0.00
	Fixed	4,530,169.23
	Portable	5,234,726.20
FunPod Total		9,764,895.43
HomeView	Install	487,556.74
	LCD	5,324,361.46
	Maintenance	518,288.16
	Plasma	5,169,793.64
HomeView Total		11,500,000.00

An alternative to using CASE is to use a filter expression: FILTER(Revenue using Product_Type != ‘Camera’). The expression is calculated independently of report columns, and aggregations are applied after calculation:

P4 Brand	Revenue Excluding Cameras (FILTER)
BizTech	21,000,000.00
FunPod	9,764,895.43
HomeView	11,500,000.00

Functions

There are various types of functions that you can use in expressions.

Topics:

- Aggregate Functions
- Analytics Functions
- Conversion Functions
- Date and Time Functions
- Date Extraction Functions

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- Display Functions
- Evaluate Functions
- Mathematical Functions
- Running Aggregate Functions
- Spatial Functions
- String Functions
- System Functions
- Time Series Functions

Analytics Functions

Analytics functions allow you to explore data using models such as forecast, trendline, and cluster. Alternatively, you can drag and drop analytics functions into the workbook editor.

Alternatively, you can add forecasts, trendlines, and clusters to a workbook by selecting them on the Analytics tab of the Data Panel in the workbook editor. See Add Statistical Analytics Functions to Visualizations.

Function	Example	Description	Syntax
CLUSTER	`CLUSTER((product, company), (billed_quantity, revenue), 'clusterName', 'algorithm=k-means;numClusters=%1;maxIter=%2;useRandomSeed=FALSE;enablePartitioning=TRUE', 5, 10)`	Collects a set of records into groups based on one or more input expressions using K-Means or Hierarchical Clustering.	`CLUSTER((dimension_expr1 , ... dimension_exprN), (expr1, ... exprN), output_column_name, options, [runtime_binded_options])`

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Function	Example	Description	Syntax

FORECAST	**Revenue Forecast by Day Example**
	This example selects revenue forecast by day.
	`FORECAST("A - Sample Sales"."Base Facts"."1-Revenue" Target, ("A - Sample Sales"."Time"."T00 Calendar Date"),'forecast', 'numPeriods=30;predictionInterval=70;') ForecastedRevenue`
	Revenue Forecast by Year and Quarter Example
	This example selects revenue forecast by year and quarter.
	`FORECAST("A - Sample Sales"."Base Facts"."1-Revenue", ("A - Sample Sales"."Time"."T01 Year" timeYear, "A - Sample Sales"."Time"."T02 Quarter" TimeQuarter),'forecast', 'numPeriods=30;predictionInterval=70;') ForecastedRevenue`
		Creates a time-series model of the specified measure over the series using Exponential Smoothing (ETS), Seasonal ARIMA, ARIMA, or Prophet. This function outputs a forecast for a set of periods as specified by the *numPeriods* argument.
		See also additional FORECAST Function Options below.
			`FORECAST(measure, ([series]), output_column_name, options, [runtime_binded_options])])`
			Where:
			• *measure* represents the measure to forecast, for example, revenue data.
			• *series* represents the time grain used to build the forecast model. The series is a list of one or more time dimension columns. If you omit series, then the time grain is determined from the query.
			• *output_column_name* represents the valid column names of *forecast*, *low*, *high*, and *predictionInterval*.
			• *options* represents a string list of name/value pairs separated by a semi-colon (;). The value can include *%1 ... %N* specified in `runtime_binded_options`.
			• *runtime_binded_options* represents a comma separated list of columns and options. Values for these columns and options are evaluated and resolved during individual query execution time.
			See also additional FORECAST Function Options below.

OUTLIER	`OUTLIER((product, company), (billed_quantity, revenue), 'isOutlier', 'algorithm=kmeans')`	Classifies a record as Outlier based on one or more input expressions using K-Means or Hierarchical Clustering or Multi-Variate Outlier detection Algorithms.	`OUTLIER((dimension_expr1 , ... dimension_exprN), (expr1, ... exprN), output_column_name, options, [runtime_binded_options])`
REGR	`REGR(revenue, (discount_amount), (product_type, brand), 'fitted', '')`	Fits a linear model and returns the fitted values or model. This function can be used to fit a linear curve on two measures.	`REGR(y_axis_measure_expr, (x_axis_expr), (category_expr1, ..., category_exprN), output_column_name, options, [runtime_binded_options])`
TRENDLINE	`TRENDLINE(revenue, (calendar_year, calendar_quarter, calendar_month) BY (product), 'LINEAR', 'VALUE')`	Oracle recommends that you apply a Trendline using the **Add Statistics** property when viewing a visualization. See Adjust Visualization Properties. Fits a linear, polynomial, or exponential model, and returns the fitted values or model. The *numeric_expr* represents the Y value for the trend and the *series* (time columns) represent the X value.	`TRENDLINE(numeric_expr, ([series]) BY ([partitionBy]), model_type, result_type)`

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FORECAST Function Options The following table lists available options to use with the FORECAST function.

Option Name	Values	Description
numPeriods	Integer	The number of periods to forecast.
predictionInterval	0 to 100, where higher values specify higher confidence	The confidence level for the prediction.
modelType	ETS (Exponential Smoothing) SeasonalArima ARIMA Prophet	The model to use for forecasting.
useBoxCox	TRUE FALSE	If *TRUE*, then use Box-Cox transformation.
lambdaValue	Not applicable	The Box-Cox transformation parameter. Ignore if NULL or when useBoxCox is *FALSE*. Otherwise the data is transformed before the model is estimated.
trendDamp	TRUE FALSE	This is specific to the Exponential Smoothing model. If *TRUE*, then use damped trend. If FALSE or NULL, then use non-damped trend.
errorType	Not applicable	This is specific to the Exponential Smoothing model.
trendType	N (none) A (additive) M (multiplicative) Z (automatically selected)	This is specific to the Exponential Smoothing model
seasonType	N (none) A (additive) M (multiplicative) Z (automatically selected)	This is specific to the Exponential Smoothing model
modelParamIC	ic_auto ic_aicc ic_bic ic_auto (this is the default)	The information criterion (IC) used in the model selection.

Conversion Functions

Conversion functions convert a value from one form to another.

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Function	Example	Description	Syntax
CAST	`CAST(hiredate AS CHAR(40)) FROM employee`	Changes the data type of an expression or a null literal to another data type. For example, you can cast a *customer_name* (a data type of CHAR or VARCHAR) or *birthdate* (a datetime literal). Use CAST to change to a *Date* data type. Don't use TODATE.	`CAST(expr AS type)`
IFNULL	`IFNULL(Sales, 0)`	Tests if an expression evaluates to a null value, and if it does, assigns the specified value to the expression.	`IFNULL(expr, value)`
INDEXCOL	`SELECT INDEXCOL(VALUEOF ("NQ_SESSION"."GEOGRAPHY_LEVEL"), Country, State, City), Revenue FROM Sales`	Uses external information to return the appropriate column for the signed-in user to see.	`INDEXCOL([integer literal], [expr1] [, [expr2], ?-])`
NULLIF	`SELECT e.last_name, NULLIF(e.job_id, j.job_id) "Old Job ID" FROM employees e, job_history j WHERE e.employee_id = j.employee_id ORDER BY last_name, "Old Job ID";`	Compares two expressions. If they're equal, then the function returns NULL. If they're not equal, then the function returns the first expression. You can't specify the literal NULL for the first expression.	`NULLIF([expression], [expression])`
To_DateTime	`SELECT To_DateTime ('2009-03-0301:01:00', 'yyyy-mm-dd hh:mi:ss') FROM sales`	Converts string literals of *DateTime* format to a *DateTime* data type.	`To_DateTime([expression], [literal])`
VALUEOF	`SalesSubjectArea.Customer.Region = VALUEOF("Region Security"."REGION")`	References the value of a semantic model variable in a filter. Use *expr* variables as arguments of the VALUEOF function. Refer to static semantic model variables by name.	`VALUEOF(expr)`

Date Extraction Functions

These functions calculate or round-down timestamp values to the nearest specified time period, such as hour, day, week, month, and quarter.

You can use the calculated timestamps to aggregate data using a different grain. For example, you might apply the `EXTRACTDAY()` function to sales order dates to calculate a timestamp for midnight on the day that orders occur, so that you can aggregate the data by day.

Function	Example	Description	Syntax
Extract Day	`EXTRACTDAY("Order Date")` • `2/22/1967 3:02:01 AM` returns `2/22/1967 12:00:00 AM`. • `9/2/2022 10:38:21 AM` returns `9/2/2022 12:00:00 AM`.	Returns a timestamp for midnight (12 AM) on the day in which the input value occurs. For example, if the input timestamp is for 3:02:01 AM on February 22nd, the function returns the timestamp for 12:00:00 AM on February 22nd.	`EXTRACTDAY(expr)`

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Function	Example	Description	Syntax
Extract Hour	`EXTRACTHOUR("Order Date")` • `2/22/1967 3:02:01 AM` returns `2/22/1967 3:00:00 AM`. • `6/17/1999 11:18:30 PM` returns `6/17/1999 11:00:00 PM`.	Returns a timestamp for the start of the hour in which the input value occurs. For example, if the input timestamp is for 11:18:30 PM, the function returns the timestamp for 11:00:00 PM.	`EXTRACTHOUR (expr)`
Extract Hour of Day	`EXTRACTHOUROFDAY("Order Date")` • `2014/09/24 10:58:00` returns `2000/01/01 **10**:00:00`. • `2014/08/13 11:10:00` returns `2000/01/01 **11**:00:00`	Returns a timestamp where the hour equals the hour of the input value with default values for year, month, day, minutes, and seconds.	`EXTRACTHOUROFDAY(expr)`
Extract Millisecond	`EXTRACTMILLISECOND("Order Date")` • `1997/01/07 15:32:02.150` returns `1997/01/07 15:32:02.**150**`. • `1997/01/07 18:42:01.265` returns `1997/01/07 18:42:01.**265**`.	Returns a timestamp containing milliseconds for the input value. For example, if the input timestamp is for 15:32:02.150, the function returns the timestamp for 15:32:02.150.	`EXTRACTMILLISECOND(expr)`
Extract Minute	`EXTRACTMINUTE("Order Date")` • `6/17/1999 11:18:00 PM` returns `6/17/1999 11:18:00 PM`. • `9/2/2022 10:38:21 AM` returns `9/2/2022 10:38:00 AM`.	Returns a timestamp for the start of the minute in which the input value occurs. For example, if the input timestamp is for 11:38:21 AM, the function returns the timestamp for 11:38:00 AM.	`EXTRACTMINUTE (expr)`
Extract Month	`EXTRACTMONTH("Order Date")` • `2/22/1967 3:02:01 AM` returns `2/1/1967 12:00:00 AM`. • `6/17/1999 11:18:00 PM` returns `6/1/1999 12:00:00 AM`.	Returns a timestamp for the first day in the month in which the input value occurs. For example, if the input timestamp is for February 22nd, the function returns the timestamp for February 1st.	`EXTRACTMONTH(expr)`

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Function	Example	Description	Syntax
Extract Quarter	`EXTRACTQUARTER("Order Date")` • `2/22/1967 3:02:01 AM` returns `1/1/1967 12:00:00 AM`, the first day of the first fiscal quarter. • `6/17/1999 11:18:00 PM` returns `4/1/1999 12:00:00 AM`, the first day of the second fiscal quarter. • `9/2/2022 10:38:21 AM` returns `7/1/2022 12:00:00 AM`, the first day of the third fiscal quarter. **Tip:** Use QUARTER (expr) to calculate just the ordinal quarter from the returned timestamp.	Returns a timestamp for the first day in the quarter in which the input value occurs. For example, if the input timestamp occurs in the third fiscal quarter, the function returns the timestamp for July 1st.	`EXTRACTQUARTER(expr)`
Extract Second	`EXTRACTSECOND("Order Date")` • `1997/01/07 15:32:02.150` returns `1997/01/07 15:32:02`. • `1997/01/07 20:44:18.163` returns `1997/01/07 20:44:18`.	Returns a timestamp for the input value. For example, if the input timestamp is for 15:32:02.150, the function returns the timestamp for 15:32:02.	`EXTRACTSECOND(expr)`
Extract Week	`EXTRACTWEEK("Order Date")` • `2014/09/24 10:58:00` returns `2014/09/21`. • `2014/08/13 11:10:00` returns `2014/08/10`.	Returns the date of the first day of the week (Sunday) in which the input value occurs. For example, if the input timestamp is for Wednesday, September 24th, the function returns the timestamp for Sunday, September 21st. **Note**: If the first day of a week (i.e. Sunday) falls in a previous year and would therefore adversely affect the aggregation, the function returns the 7th day of the week (i.e. Saturday) in the current year instead of the first day of the week in the previous year. For example, 1/1/24, 1/2/24, and 1/3/24 all aggregate to Saturday 1/6/24, rather than Sunday 12/29/23.	`EXTRACTWEEK(expr)`
Extract Year	`EXTRACTYEAR("Order Date")` • `1967/02/22 03:02:01` returns `1967/01/01 00:00:00`. • `1999/06/17 23:18:00` returns `1999/01/01 00:00:00`.	Returns a timestamp for January 1st for the year in which the input value occurs. For example, if the input timestamp occurs in 1967, the function returns the timestamp for January 1st, 1967.	`EXTRACTYEAR (expr)`

Tips on Using Date Dimensions in Subject Areas

Here're some tips on getting the best results when using subject area dates in calculations.

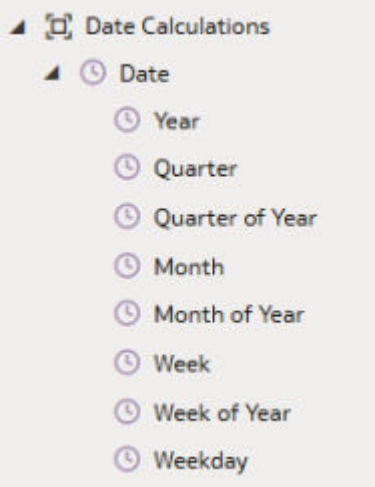
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Adding a Subject Area Date to a Calculation

If you drag a date from a subject area directly into a calculation and process it as a string or an integer, you'll get an error. This happens because the underlying date value is a timestamp.

Instead, use one of the Date Extraction Functions to interpret the date.

For example, you might have these subject area dates.



To extract months from these subject area dates, use the ExtractMonthOfYear function:

```
case when monthname(ExtractMonthOfYear("Date")) in ('Jan' ,'Feb', 'Mar')
THEN 'Q1'
ELSE 'Rest of the year' END
```

Display Functions

Display functions operate on the result set of a query.

Function	Example	Description	Syntax
BottomN	`BottomN(Sales, 10)`	Returns the *n* lowest values of expression, ranked from lowest to highest.	`BottomN([NumericExpression], [integer])`
FILTER	`FILTER(Sales USING Product = 'widget')`	Computes the expression using the given preaggregate filter.	`FILTER(measure USING filter_expr)`
MAVG	`MAVG(Sales, 10)`	Calculates a moving average (mean) for the last *n* rows of data in the result set, inclusive of the current row.	`MAVG([NumericExpression], [integer])`
MSUM	`SELECT Month, Revenue, MSUM(Revenue, 3) as 3_MO_SUM FROM Sales`	Calculates a moving sum for the last *n* rows of data, inclusive of the current row. The sum for the first row is equal to the numeric expression for the first row. The sum for the second row is calculated by taking the sum of the first two rows of data, and so on. When the *n* th row is reached, the sum is calculated based on the last *n* rows of data.	`MSUM([NumericExpression], [integer])`

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Function	Example	Description	Syntax
NTILE	`NTILE(Sales, 100)`	Determines the rank of a value in terms of a user-specified range. It returns integers to represent any range of ranks. The example shows a range from 1 to 100, with the lowest sale = 1 and the highest sale = 100.	`NTILE([NumericExpresssion], [integer])`
PERCENTILE	`PERCENTILE(Sales)`	Calculates a percent rank for each value satisfying the numeric expression argument. The percentile rank ranges are from 0 (1st percentile) to 1 (100th percentile), inclusive.	`PERCENTILE([NumericExpression])`
RANK	`RANK(Sales)`	Calculates the rank for each value satisfying the numeric expression argument. The highest number is assigned a rank of 1, and each successive rank is assigned the next consecutive integer (2, 3, 4,...). If certain values are equal, they're assigned the same rank (for example, 1, 1, 1, 4, 5, 5, 7...).	`RANK([NumericExpression])`
RCOUNT	`SELECT month, profit, RCOUNT(profit) FROM sales WHERE profit > 200`	Takes a set of records as input and counts the number of records encountered so far.	`RCOUNT([NumericExpression])`
RMAX	`SELECT month, profit, RMAX(profit) FROM sales`	Takes a set of records as input and shows the maximum value based on records encountered so far. The specified data type must be one that can be ordered.	`RMAX([NumericExpression])`
RMIN	`SELECT month, profit, RMIN(profit) FROM sales`	Takes a set of records as input and shows the minimum value based on records encountered so far. The specified data type must be one that can be ordered.	`RMIN([NumericExpression])`
RSUM	`SELECT month, revenue, RSUM(revenue) as RUNNING_SUM FROM sales`	Calculates a running sum based on records encountered so far. The sum for the first row is equal to the numeric expression for the first row. The sum for the second row is calculated by taking the sum of the first two rows of data, and so on.	`RSUM([NumericExpression])`
TOPN	`TOPN(Sales, 10)`	Returns the *n* highest values of expression, ranked from highest to lowest.	`TOPN([NumericExpression], [integer])`

Tips on Using Display Functions

- **FILTER** - If you're building a report using a subject area, use hierarchies defined in the subject area instead of filtering hierarchy columns directly in a calculation. In other words, if a subject area has a hierarchy for Time\Fiscal Year\Fiscal Quarter, then avoid:
  `filter (<measure> using fiscal_quarter = 'Q4')`

  `filter (<measure> using fiscal_quarter = 'Q3')`

  `filter (<measure> using fiscal_year = 'FY24')`

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Evaluate Functions

Evaluate functions are database functions that can be used to pass through expressions to get advanced calculations.

Embedded database functions can require one or more columns. These columns are referenced by %1 ... %N within the function. The actual columns must be listed after the function.

Your administrator uses the system setting **Evaluate Support Level** to determine who can run the database functions `EVALUATE, EVALUATE_ANALYTIC, EVALUATE_AGGR` and `EVALUATE_PREDICATE`.

If you see an error similar to this when try to run any of these function, ask your administrator to give you access to the database functions: `EVALUATE_SUPPORT_LEVEL inside NQSConfig.INI is not set to support EVALUATE`.

Function	Example	Description	Syntax
EVALUATE	`SELECT EVALUATE('instr(%1, %2)', address, 'Foster City') FROM employees`	Passes the specified database function with optional referenced columns as parameters to the database for evaluation.	`EVALUATE([string expression], [comma separated expressions])`
EVALUATE_AGGR	`EVALUATE_AGGR('REGR_SLOPE(%1, %2)', sales.quantity, market.marketkey)`	Passes the specified database function with optional referenced columns as parameters to the database for evaluation. This function is intended for aggregate functions with a GROUP BY clause.	`EVALUATE_AGGR('db_agg_function(%1...%N)' [AS datatype] [, column1, columnN])`

Mathematical Functions

The mathematical functions described in this section perform mathematical operations.

Function	Example	Description	Syntax
ABS	`ABS(Profit)`	Calculates the absolute value of a numeric expression. *expr* is any expression that evaluates to a numerical value.	`ABS(expr)`
ACOS	`ACOS(1)`	Calculates the arc cosine of a numeric expression. *expr* is any expression that evaluates to a numerical value.	`ACOS(expr)`
ASIN	`ASIN(1)`	Calculates the arc sine of a numeric expression. *expr* is any expression that evaluates to a numerical value.	`ASIN(expr)`
ATAN	`ATAN(1)`	Calculates the arc tangent of a numeric expression. *expr* is any expression that evaluates to a numerical value.	`ATAN(expr)`

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Function	Example	Description	Syntax
ATAN2	`ATAN2(1, 2)`	Calculates the arc tangent of *y* /*x*, where *y* is the first numeric expression and *x* is the second numeric expression.	`ATAN2(expr1, expr2)`
CEILING	`CEILING(Profit)`	Rounds a non-integer numeric expression to the next highest integer. If the numeric expression evaluates to an integer, the `CEILING` function returns that integer.	`CEILING(expr)`
COS	`COS(1)`	Calculates the cosine of a numeric expression. *expr* is any expression that evaluates to a numerical value.	`COS(expr)`
COT	`COT(1)`	Calculates the cotangent of a numeric expression. *expr* is any expression that evaluates to a numerical value.	`COT(expr)`
DEGREES	`DEGREES(1)`	Converts an expression from radians to degrees. *expr* is any expression that evaluates to a numerical value.	`DEGREES(expr)`
EXP	`EXP(4)`	Sends the value to the power specified. Calculates *e* raised to the n-th power, where *e* is the base of the natural logarithm.	`EXP(expr)`
ExtractBit	`Int ExtractBit(1, 5)`	Retrieves a bit at a particular position in an integer. It returns an integer of either 0 or 1 corresponding to the position of the bit.	`ExtractBit([Source Number], [Digits])`
FLOOR	`FLOOR(Profit)`	Rounds a non-integer numeric expression to the next lowest integer. If the numeric expression evaluates to an integer, the `FLOOR` function returns that integer.	`FLOOR(expr)`
LOG	`LOG(1)`	Calculates the natural logarithm of an expression. *expr* is any expression that evaluates to a numerical value.	`LOG(expr)`
LOG10	`LOG10(1)`	Calculates the base 10 logarithm of an expression. *expr* is any expression that evaluates to a numerical value.	`LOG10(expr)`
MOD	`MOD(10, 3)`	Divides the first numeric expression by the second numeric expression and returns the remainder portion of the quotient.	`MOD(expr1, expr2)`
PI	`PI()`	Returns the constant value of pi.	`PI()`
POWER	`POWER(Profit, 2)`	Takes the first numeric expression and raises it to the power specified in the second numeric expression.	`POWER(expr1, expr2)`
RADIANS	`RADIANS(30)`	Converts an expression from degrees to radians. *expr* is any expression that evaluates to a numerical value.	`RADIANS(expr)`
RAND	`RAND()`	Returns a pseudo-random number between 0 and 1.	`RAND()`

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Function	Example	Description	Syntax
RANDFromSeed	`RAND(2)`	Returns a pseudo-random number based on a seed value. For a given seed value, the same set of random numbers are generated.	`RAND(expr)`
ROUND	`ROUND(2.166000, 2)`	Rounds a numeric expression to *n* digits of precision. *expr* is any expression that evaluates to a numerical value. *integer* is any positive integer that represents the number of digits of precision.	`ROUND(expr, integer)`
SIGN	`SIGN(Profit)`	Returns the following: • 1 if the numeric expression evaluates to a positive number • -1 if the numeric expression evaluates to a negative number • 0 if the numeric expression evaluates to zero	`SIGN(expr)`
SIN	`SIN(1)`	Calculates the sine of a numeric expression.	`SIN(expr)`
SQRT	`SQRT(7)`	Calculates the square root of the numeric expression argument. The numeric expression must evaluate to a nonnegative number.	`SQRT(expr)`
TAN	`TAN(1)`	Calculates the tangent of a numeric expression. *expr* is any expression that evaluates to a numerical value.	`TAN(expr)`
TRUNCATE	`TRUNCATE(45.12345, 2)`	Truncates a decimal number to return a specified number of places from the decimal point. *expr* is any expression that evaluates to a numerical value. *integer* is any positive integer that represents the number of characters to the right of the decimal place to return.	`TRUNCATE(expr, integer)`

Running Aggregate Functions

Running aggregate functions perform operations on multiple values to create summary results.

Function	Example	Description	Syntax
MAVG		Calculates a moving average (mean) for the last *n* rows of data in the result set, inclusive of the current row. *expr* is any expression that evaluates to a numerical value. *integer* is any positive integer. Represents the average of the last *n* rows of data.	`MAVG(expr, integer)`
MSUM	`select month, revenue, MSUM(revenue, 3) as 3_MO_SUM from sales_subject_area`	Calculates a moving sum for the last n rows of data, inclusive of the current row. *expr* is any expression that evaluates to a numerical value. *integer* is any positive integer. Represents the sum of the last n rows of data.	`MSUM(expr, integer)`

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Function	Example	Description	Syntax
RSUM	`SELECT month, revenue, RSUM(revenue) as RUNNING_SUM from sales_subject_area`	Calculates a running sum based on records encountered so far. *expr* is any expression that evaluates to a numerical value.	`RSUM(expr)`
RCOUNT	`select month, profit, RCOUNT(profit) from sales_subject_area where profit > 200`	Takes a set of records as input and counts the number of records encountered so far. *expr* is an expression of any datatype.	`RCOUNT(expr)`
RMAX	`SELECT month, profit,RMAX(profit ) from sales_subject_area`	Takes a set of records as input and shows the maximum value based on records encountered so far. *expr* is an expression of any datatype.	`RMAX(expr)`
RMIN	`select month, profit,RMIN(profit ) from sales_subject_area`	Takes a set of records as input and shows the minimum value based on records encountered so far. *expr* is an expression of any datatype.	`RMIN(expr)`

Spatial Functions

Spatial functions enable you to perform geographical analysis when you model or analyze data. For example, you might calculate the distance between two geographical areas (known as shapes or polygons).

To use these functions in workbooks and data flows, make sure that your Oracle Analytics instance supports geometry data types. Ask your administrator to enable preview mode for Enable Geometry Data Type.

For guidance on visualizing spatial data, see 'Geometry Data Type (Preview)' in Technical Papers.

Function	Example	Description	Syntax
`GeometryArea`	`GeometryArea(Shape)`	Calculates the area that a shape occupies.	`GeometryArea(Shape)`
`GeometryAsText`	`GeometryAsText(shape)` `GeometryAsText(GeometryPoint(longitude, latitude))`	Converts the `LONGVARBINARY` values of a geometry column into Well-Known Text (WKT) format.	`GeometryAsText(shape_expr)` Where `shape_expr` represents any valid shape expression, including a `GeometryPoint` function.
`GeometryDistance`	`GeometryDistance(TRIP_START, TRIP_END)`	Calculates the distance between two shapes.	`GeometryDistance(Shape 1, Shape 2)`
`GeometryLength`	`GeometryLength(Shape)`	Calculates the circumference of a shape.	`GeometryLength(Shape)`
`GeometryPoint`	`GeometryPoint(longitude, latitude)`	Creates a geometry data type in Point() format using longitude and latitude values.	`GeometryPoint(longitude, latitude)` Where `longitude, latitude` represent the longitude and latitude of a location.

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Function	Example	Description	Syntax
GeometryRelate	GeometryRelate(TRIP_START, TRIP_END)	Determines whether one shape is inside another shape. Returns TRUE or FALSE as a string (varchar).	GeometryRelate(Shape 1, Shape 2)
GeometryWithinDistance	GeometryWithinDistance(TRIP_START, TRIP_END, 500)	Determines whether two shapes are within a specified distance of each other. Returns TRUE or FALSE as a string (varchar).	GeometryWithinDistance(Shape 1, Shape2, DistanceInFloat)

String Functions

String functions perform various character manipulations. They operate on character strings.

Function	Example	Description	Syntax
ASCII	ASCII('a')	Converts a single character string to its corresponding ASCII code, between 0 and 255. If the character expression evaluates to multiple characters, the ASCII code corresponding to the first character in the expression is returned. *expr* is any expression that evaluates to a character string.	ASCII(expr)
BIT_LENGTH	BIT_LENGTH('abcdef')	Returns the length, in bits, of a specified string. Each Unicode character is 2 bytes in length (equal to 16 bits). *expr* is any expression that evaluates to a character string.	BIT_LENGTH(expr)
CHAR	CHAR(35)	Converts a numeric value between 0 and 255 to the character value corresponding to the ASCII code. *expr* is any expression that evaluates to a numerical value between 0 and 255.	CHAR(expr)
CHAR_LENGTH	CHAR_LENGTH(Customer_Name)	Returns the length, in number of characters, of a specified string. Leading and trailing blanks aren't counted in the length of the string. *expr* is any expression that evaluates to a character string.	CHAR_LENGTH(expr)
CONCAT	SELECT DISTINCT CONCAT ('abc', 'def') FROM employee	Concatenates two character strings. *exprs* are expressions that evaluate to character strings, separated by commas. You must use raw data, not formatted data, with CONCAT.	CONCAT(expr1, expr2)

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Function	Example	Description	Syntax
INSERT	`SELECT INSERT('123456', 2, 3, 'abcd') FROM table`	Inserts a specified character string into a specified location in another character string. *expr1* is any expression that evaluates to a character string. Identifies the target character string. *integer1* is any positive integer that represents the number of characters from the beginning of the target string where the second string is to be inserted. *integer2* is any positive integer that represents the number of characters in the target string to be replaced by the second string. *expr2* is any expression that evaluates to a character string. Identifies the character string to be inserted into the target string.	`INSERT(expr1, integer1, integer2, expr2)`
LEFT	`SELECT LEFT('123456', 3) FROM table`	Returns a specified number of characters from the left of a string. *expr* is any expression that evaluates to a character string *integer* is any positive integer that represents the number of characters from the left of the string to return.	`LEFT(expr, integer)`
LENGTH	`LENGTH(Customer_Name)`	Returns the length, in number of characters, of a specified string. The length is returned excluding any trailing blank characters. *expr* is any expression that evaluates to a character string.	`LENGTH(expr)`
LOCATE	`LOCATE('d' 'abcdef')`	Returns the numeric position of a character string in another character string. If the character string isn't found in the string being searched, the function returns a value of 0. *expr1* is any expression that evaluates to a character string. Identifies the string for which to search. *expr2* is any expression that evaluates to a character string. Identifies the string to be searched.	`LOCATE(expr1, expr2)`
LOCATEN	`LOCATEN('d' 'abcdef', 3)`	Like LOCATE, returns the numeric position of a character string in another character string. LOCATEN includes an integer argument that enables you to specify a starting position to begin the search. *expr1* is any expression that evaluates to a character string. Identifies the string for which to search. *expr2* is any expression that evaluates to a character string. Identifies the string to be searched. *integer* is any positive (nonzero) integer that represents the starting position to begin to look for the character string.	`LOCATEN(expr1, expr2, integer)`

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Function	Example	Description	Syntax
LOWER	`LOWER(Customer_Name)`	Converts a character string to lowercase. *expr* is any expression that evaluates to a character string.	`LOWER(expr)`
OCTET_LENGTH	`OCTET_LENGTH('abcdef')`	Returns the number of bytes of a specified string. *expr* is any expression that evaluates to a character string.	`OCTET_LENGTH(expr)`
POSITION	`POSITION('d', 'abcdef')`	Returns the numeric position of *strExpr1* in a character expression. If *strExpr1* isn't found, the function returns 0. *expr1* is any expression that evaluates to a character string. Identifies the string to search for in the target string. For example, "d". *expr2* is any expression that evaluates to a character string. Identifies the target string to be searched. For example, "abcdef".	`POSITION(expr1, expr2)`
REPEAT	`REPEAT('abc', 4)`	Repeats a specified expression *n* times. *expr* is any expression that evaluates to a character string *integer* is any positive integer that represents the number of times to repeat the character string.	`REPEAT(expr, integer)`
REPLACE	`REPLACE('abcd1234', '123', 'zz')`	Replaces one or more characters from a specified character expression with one or more other characters. *expr1* is any expression that evaluates to a character string. This is the string in which characters are to be replaced. *expr2* is any expression that evaluates to a character string. This second string identifies the characters from the first string that are to be replaced. *expr3* is any expression that evaluates to a character string. This third string specifies the characters to substitute into the first string.	`REPLACE(expr1, expr2, expr3)`
RIGHT	`SELECT RIGHT('123456', 3) FROM table`	Returns a specified number of characters from the right of a string. *expr* is any expression that evaluates to a character string. *integer* is any positive integer that represents the number of characters from the right of the string to return.	`RIGHT(expr, integer)`
SPACE	`SPACE(2)`	Inserts blank spaces. *integer* is any positive integer that indicates the number of spaces to insert.	`SPACE(expr)`
SUBSTRING	`SUBSTRING('abcdef' FROM 2)`	Creates a new string starting from a fixed number of characters into the original string. *expr* is any expression that evaluates to a character string. *startPos* is any positive integer that represents the number of characters from the start of the left side of the string where the result is to begin.	`SUBSTRING([SourceString] FROM [StartPostition])`

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Function	Example	Description	Syntax
SUBSTRINGN	`SUBSTRING('abcdef' FROM 2 FOR 3)`	Like SUBSTRING, creates a new string starting from a fixed number of characters into the original string. *SUBSTRINGN* includes an integer argument that enables you to specify the length of the new string, in number of characters. *expr* is any expression that evaluates to a character string. *startPos* is any positive integer that represents the number of characters from the start of the left side of the string where the result is to begin.	`SUBSTRING(expr FROM startPos FOR length)`
TrimBoth	`Trim(BOTH '_' FROM '_abcdef_')`	Strips specified leading and trailing characters from a character string. *char* is any single character. If you omit this specification (and the required single quotes), a blank character is used as the default. *expr* is any expression that evaluates to a character string.	`TRIM(BOTH char FROM expr)`
TRIMLEADING	`TRIM(LEADING '_' FROM '_abcdef')`	Strips specified leading characters from a character string. *char* is any single character. If you omit this specification (and the required single quotes), a blank character is used as the default. *expr* is any expression that evaluates to a character string.	`TRIM(LEADING char FROM expr)`
TRIMTRAILING	`TRIM(TRAILING '_' FROM 'abcdef_')`	Strips specified trailing characters from a character string. *char* is any single character. If you omit this specification (and the required single quotes), a blank character is used as the default. *expr* is any expression that evaluates to a character string.	`TRIM(TRAILING char FROM expr)`
UPPER	`UPPER(Customer_Name)`	Converts a character string to uppercase. *expr* is any expression that evaluates to a character string.	`UPPER(expr)`

Tips on Using LISTAGG in String Functions

Here're some tips on using the LISTAGG function to get the best results when handling strings in your workbooks. For example, you might want to create a string containing all cities in a data column.

Concatenate multiple values:

Use LISTAGG to concatentate multiple string values into one cell and one row.

```
LISTAGG([DISTINCT] <column to concatenate> BY <grouping column>) ON OVERFLOW TRUNCATE
```

- `DISTINCT` - If values aren't unique, use this argument to remove duplicate values.

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- `ON OVERFLOW TRUNCATE` - If the result exceeds the maximum length allowed, use this argument to truncate the string returned.

Example data

```
Number City    State
12     New York    New York
14     New York    New York
30     Boston      Massachusetts
18     Salem    Massachusetts
12     Buffalo     New York
10     Buffalo     New York
20     Albany      New York
```

Example commands and output

`LISTAGG(City, ', ')` outputs `"New York, New York, Boston, Salem, Buffalo, Buffalo, Albany"`

`LISTAGG(DISTINCT City, ', ')` outputs `"New York, Boston, Salem, Buffalo Albany"`

`LISTAGG(City, ', ' ON OVERFLOW TRUNCATE '...')` outputs `"New York, New York, Boston, Salem, Buffalo, ..."`

System Functions

The `USER` system function returns values relating to the session. For example, the user name you signed in with.

Function	Example	Description	Syntax
DATABASE		Returns the name of the subject area to which you're logged on.	`DATABASE()`
USER		Returns the user name for the semantic model to which you're logged on.	`USER()`

Time Series Functions

Time series functions enable you to aggregate and forecast data based on time dimensions. For example, you might use the AGO function to calculate revenue from one year ago.

Time dimension members must be at or below the level of the function. Because of this, one or more columns that uniquely identify members at or below the given level must be projected in the query.

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Function	Example	Description	Syntax
AGO	`SELECT Year_ID, AGO(sales, year, 1)`	Calculates the aggregated value of a measure in a specified time period in the past. For example, to calculate monthly revenue one year ago, use `AGO(Revenue, Year, 1, SHIP_MONTH)`. To calculate quarterly revenues in the last quarter, use `AGO(Revenue, Quarter, 1)`.	`AGO(MEASURE, TIME_LEVEL, OFFSET)` Where: • *MEASURE* represents the measure to calculate, for example, revenue. • *TIME_LEVEL* represents the time interval, which must be Year, Quarter, Month, Week, or Day. • *OFFSET* represents the number of time intervals to calculate back to, for example, 1 for one year.
PERIODROLLING	`SELECT Month_ID, PERIODROLLING (monthly_sales, -1, 1)`	Calculates the aggregate of a measure over the period starting *x* units of time and ending *y* units of time from the current time. For example, `PERIODROLLING` can compute sales for a period that starts at a quarter before and ends at a quarter after the current quarter.	`PERIODROLLING(measure, x [,y])` Where: • *MEASURE* represents the name of a measure column. • *X* is an integer that represents the offset from the current time. • *Y* is an integer that represents the number of time units over which the function calculates. • *HIERARCHY* is an optional argument that represents the name of a hierarchy in a time dimension such as *YR*, *MON*, *DAY*, that you want to use to compute the time window.
TODATE	`SELECT Year_ID, Month_ID, TODATE (sales, year)`	Calculates the aggregated value of a measure from the start of a time period to the latest time period, for example, year to date calculations. For example, to calculate Year to Date Sales, use `TODATE(sales, year)`.	`TODATE(MEASURE, TIME_LEVEL)` Where: • *MEASURE* represents an expression that references at least one measure column, for example, sales. • *TIME_LEVEL* represents the time interval, which must be Year, Quarter, Month, Week, or Day.

Aggregate Functions

Aggregate functions perform operations on multiple values to create summary results.

The following list describes the aggregation rules that are available for columns and measure columns. The list also includes functions that you can use when creating calculated items for analyses.

- **Default** - Applies the default aggregation rule as in the semantic model or by the original author of the analysis. Not available for calculated items in analyses.
- **Server Determined** - Applies the aggregation rule that's determined by the Oracle Analytics (such as the rule that is defined in the semantic model). The aggregation is

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performed within Oracle Analytics for simple rules such as Sum, Min, and Max. Not available for measure columns in the Layout pane or for calculated items in analyses.

- **Sum** - Calculates the sum obtained by adding up all values in the result set. Use this for items that have numeric values.
- **Min** - Calculates the minimum value (lowest numeric value) of the rows in the result set. Use this for items that have numeric values.
- **Max** - Calculates the maximum value (highest numeric value) of the rows in the result set. Use this for items that have numeric values.
- **Average** - Calculates the average (mean) value of an item in the result set. Use this for items that have numeric values. Averages on tables and pivot tables are rounded to the nearest whole number.
- **First** - In the result set, selects the first occurrence of the item for measures. For calculated items, selects the first member according to the display in the Selected list. Not available in the Edit Column Formula dialog box.
- **Last** - In the result set, selects the last occurrence of the item. For calculated items, selects the last member according to the display in the Selected list. Not available in the Edit Column Formula dialog box.
- **Count** - Calculates the number of rows in the result set that have a non-null value for the item. The item is typically a column name, in which case the number of rows with non-null values for that column are returned.
- **Count Distinct** - Adds distinct processing to the Count function, which means that each distinct occurrence of the item is counted only once.
- **None** - Applies no aggregation. Not available for calculated items in analyses.
- **Report-Based Total (when applicable)** - If not selected, specifies that the Oracle Analytics should calculate the total based on the entire result set, before applying any filters to the measures. Not available in the Edit Column Formula dialog box or for calculated items in analyses. Only available for attribute columns.

Function	Example	Description	Syntax
AGGREGATE AT	`AGGREGATE(sales AT year)`	Aggregates columns based on the level or levels in the hierarchy configured in the semantic model. • *measure* is the name of a measure column. • `level` is the level at which you want to aggregate. You can optionally specify more than one level. You can't specify a level from a dimension that contains levels that are being used as the measure level for the measure you specified in the first argument. For example, you can't write the function as `AGGREGATE(yearly_sales AT month)` if *month* is from the same time dimension used as the measure level for *yearly_sales*.	`AGGREGATE(measure AT level [, level1, levelN])`

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Function	Example	Description	Syntax
AGGREGATE BY	`AGGREGATE(sales BY month, region)`	Aggregates a measure based on one or more dimension columns. • *measure* is the name of a measure column to aggregate. • `column` is the dimension column at which you want to aggregate. You can aggregate measures based more than one column.	`AGGREGATE(measure BY column [, column1, columnN])`
AVG	`Avg(Sales)`	Calculates the average (mean) of a numeric set of values.	`AVG(expr)`
AVGDISTINCT		Calculates the average (mean) of all distinct values of an expression.	`AVG(DISTINCT expr)`
BIN	`BIN(revenue BY productid, year WHERE productid > 2 INTO 4 BINS RETURNING RANGE_LOW)`	Classifies a given numeric expression into a specified number of equal width buckets. The function can return either the bin number or one of the two end points of the bin interval. numeric_expr is the measure or numeric attribute to bin. BY grain_expr1,…, grain_exprN is a list of expressions that define the grain at which the numeric_expr is calculated. BY is required for measure expressions and is optional for attribute expressions. WHERE a filter to apply to the numeric_expr before the numeric values are assigned to bins INTO number_of_bins BINS is the number of bins to return BETWEEN min_value AND max_value is the min and max values used for the end points of the outermost bins RETURNING NUMBER indicates that the return value should be the bin number (1, 2, 3, 4, etc.). This is the default. RETURNING RANGE_LOW indicates the lower value of the bin interval RETURNING RANGE_HIGH indicates the higher value of the bin interval	`BIN(numeric_expr [BY grain_expr1, ..., grain_exprN] [WHERE condition] INTO number_of_bins BINS [BETWEEN min_value AND max_value] [RETURNING {NUMBER | RANGE_LOW | RANGE_HIGH}])`
BottomN		Ranks the lowest n values of the `<expr>` argument from 1 to n, 1 corresponding to the highest value. *expr* is any numeric or string value. `integer` is any positive integer. Represents the bottom number of rankings displayed in the result set, 1 being the highest rank.	`BottomN(expr, integer)`
COUNT	`COUNT(Products)`	Determines the number of items with a non-null value.	`COUNT(expr)`
COUNTDISTINCT		Adds distinct processing to the COUNT function. *expr* is any expression.	`COUNT(DISTINCT expr)`
COUNT*	`SELECT COUNT(*) FROM Facts`	Counts the number of rows.	`COUNT(*)`
First	`First(Sales)`	Selects the first non-null returned value of the expression argument. The `First` function operates at the most detailed level specified in your explicitly defined dimension.	`First([NumericExpression)]`
Last	`Last(Sales)`	Selects the last non-null returned value of the expression.	`Last([NumericExpression)]`

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Function	Example	Description	Syntax
MAVG		Calculates a moving average (mean) for the last n rows of data in the result set, inclusive of the current row. *expr* is any expression that evaluates to a numerical value. integer is any positive integer. Represents the average of the last n rows of data.	`MAVG(expr, integer)`
MAX	`MAX(Revenue)`	Calculates the maximum value (highest numeric value) of the rows satisfying the numeric expression argument.	`MAX(expr)`
MEDIAN	`MEDIAN(Sales)`	Calculates the median (middle) value of the rows satisfying the numeric expression argument. When there are an even number of rows, the median is the mean of the two middle rows. This function always returns a double.	`MEDIAN(expr)`
MIN	`MIN(Revenue)`	Calculates the minimum value (lowest numeric value) of the rows satisfying the numeric expression argument.	`MIN(expr)`
NTILE		Determines the rank of a value in terms of a user-specified range. It returns integers to represent any range of ranks. NTILE with numTiles=100 returns what is commonly called the "percentile" (with numbers ranging from 1 to 100, with 100 representing the high end of the sort). *expr* is any numeric or string value. numTiles is a positive, nonnull integer that represents the number of tiles.	`NTILE(expr, numTiles)`
PERCENTILE		Calculates a percentile rank for each value satisfying the numeric expression argument. The percentile rank ranges are between 0 (0th percentile) to 1 (100th percentile). *expr* is any expression that evaluates to a numerical value.	`PERCENTILE(expr)`
RANK	`RANK(chronological_key, null, year_key_columns)`	Calculates the rank for each value satisfying the numeric expression argument. The highest number is assigned a rank of 1, and each successive rank is assigned the next consecutive integer (2, 3, 4,...). If certain values are equal, they'reare assigned the same rank (for example, 1, 1, 1, 4, 5, 5, 7...). *expr* is any expression that evaluates to a numerical value. Use ASC to rank the lowest value as 1. Use DESC to rank the highest value as 1.	`RANK(expr) [ASC | DESC]`
STDDEV	`STDDEV(Sales)` `STDDEV(DISTINCT Sales)`	Returns the standard deviation for a set of values. The return type is always a double.	`STDDEV(expr)`
STDDEV_POP	`STDDEV_POP(Sales)` `STDDEV_POP(DISTINCT Sales)`	Returns the standard deviation for a set of values using the computational formula for population variance and standard deviation.	`STDDEV_POP([NumericExpression])`

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Function	Example	Description	Syntax
SUM	`SUM(Revenue)`	Calculates the sum obtained by adding up all values satisfying the numeric expression argument.	`SUM(expr)`
SUMDISTINCT		Calculates the sum obtained by adding all of the distinct values satisfying the numeric expression argument. *expr* is any expression that evaluates to a numerical value.	`SUM(DISTINCT expr)`
TOPN		Ranks the highest n values of the `<expr>` argument from 1 to n, 1 corresponding to the highest value. *expr* is any numeric or string value. `integer` is any positive integer. Represents the top number of rankings displayed in the result set, 1 being the highest rank.	`TOPN(expr, integer)`

Tips on Using Aggregate Functions

Here're some tips on getting the best results when using aggregate functions in your workbooks.

Tips:

- `First`, `Last`. Avoid using the First and Last aggregations with a 100% stacked bar chart type. Adding current date to `By` adds grain to the query, which fetches all rows for the visualization plus the current date. The `Last` function then returns the last row in that result set, which varies depending on how the data is returned from the source.
- `Min` - Use `Min` to calculate the smallest value in a set of rows. To find the smallest value in a set of columns, use `Evaluate`. For example:
  `evaluate('least(%1,%2,%3)',column date 1,date 2,date 3)`

Date and Time Functions

Date and time functions manipulate data based on `DATE` and `DATETIME`.

Function	Example	Description	Syntax
CURRENT_Date	`CURRENT_DATE`	Returns the current date. The date is determined by the system in which the Oracle BI is running.	`CURRENT_DATE`
CURRENT_TIME	`CURRENT_TIME(3)`	Returns the current time to the specified number of digits of precision, for example: HH:MM:SS.SSS If no argument is specified, the function returns the default precision.	`CURRENT_TIME(expr)`
CURRENT_TIMESTAMP	`CURRENT_TIMESTAMP(3)`	Returns the current date/timestamp to the specified number of digits of precision.	`CURRENT_TIMESTAMP(expr)`
DAYNAME	`DAYNAME(Order_Date)`	Returns the name of the day of the week for a specified date expression.	`DAYNAME(expr)`

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Function	Example	Description	Syntax
DAYOFMONTH	`DAYOFMONTH(Order_Date)`	Returns the number corresponding to the day of the month for a specified date expression.	`DAYOFMONTH(expr)`
DAYOFWEEK	`DAYOFWEEK(Order_Date)`	Returns a number between 1 and 7 corresponding to the day of the week for a specified date expression. For example, 1 always corresponds to Sunday, 2 corresponds to Monday, and so on through to Saturday which returns 7.	`DAYOFWEEK(expr)`
DAYOFYEAR	`DAYOFYEAR(Order_Date)`	Returns the number (between 1 and 366) corresponding to the day of the year for a specified date expression.	`DAYOFYEAR(expr)`
DAY_OF_QUARTER	`DAY_OF_QUARTER(Order_Date)`	Returns a number (between 1 and 92) corresponding to the day of the quarter for the specified date expression.	`DAY_OF_QUARTER(expr)`
HOUR	`HOUR(Order_Time)`	Returns a number (between 0 and 23) corresponding to the hour for a specified time expression. For example, 0 corresponds to 12 a.m. and 23 corresponds to 11 p.m.	`HOUR(expr)`
MINUTE	`MINUTE(Order_Time)`	Returns a number (between 0 and 59) corresponding to the minute for a specified time expression.	`MINUTE(expr)`
MONTH	`MONTH(Order_Time)`	Returns the number (between 1 and 12) corresponding to the month for a specified date expression.	`MONTH(expr)`
MONTHNAME	`MONTHNAME(Order_Time)`	Returns the name of the month for a specified date expression.	`MONTHNAME(expr)`
MONTH_OF_QUARTER	`MONTH_OF_QUARTER(Order_Date)`	Returns the number (between 1 and 3) corresponding to the month in the quarter for a specified date expression.	`MONTH_OF_QUARTER(expr)`
NOW	`NOW()`	Returns the current timestamp. The `NOW` function is equivalent to the `CURRENT_TIMESTAMP` function.	`NOW()`
QUARTER_OF_YEAR	`QUARTER_OF_YEAR(Order_Date)`	Returns the number (between 1 and 4) corresponding to the quarter of the year for a specified date expression.	`QUARTER_OF_YEAR(expr)`
SECOND	`SECOND(Order_Time)`	Returns the number (between 0 and 59) corresponding to the seconds for a specified time expression.	`SECOND(expr)`
TIMESTAMPADD	`TIMESTAMPADD(SQL_TSI_MONTH, 12,Time."Order Date")`	Adds a specified number of intervals to a timestamp, and returns a single timestamp. Interval options are: *SQL_TSI_SECOND*, *SQL_TSI_MINUTE*, *SQL_TSI_HOUR*, *SQL_TSI_DAY*, *SQL_TSI_WEEK*, *SQL_TSI_MONTH*, *SQL_TSI_QUARTER*, *SQL_TSI_YEAR*	`TIMESTAMPADD(interval, expr, timestamp)`
TIMESTAMPDIFF	`TIMESTAMPDIFF(SQL_TSI_MONTH, Time."Order Date",CURRENT_DATE)`	Returns the total number of specified intervals between two timestamps. Use the same intervals as TIMESTAMPADD.	`TIMESTAMPDIFF(interval, expr, timestamp2)`

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Function	Example	Description	Syntax
WEEK_OF_QUARTER	`WEEK_OF_QUARTER(Order_Date)`	Returns a number (between 1 and 13) corresponding to the week of the quarter for the specified date expression.	`WEEK_OF_QUARTER(expr)`
WEEK_OF_YEAR	`WEEK_OF_YEAR(Order_Date)`	Returns a number (between 1 and 53) corresponding to the week of the year for the specified date expression.	`WEEK_OF_YEAR(expr)`
YEAR	`YEAR(Order_Date)`	Returns the year for the specified date expression.	`YEAR(expr)`

Tips on Using Date Functions

Here're some tips on getting the best results when using date functions in your workbooks to calculate fiscal periods, convert strings to dates, show a date and time in a specific time zone, and calculate differences over time.

Calculate fiscal year, quarter and month:

Subject areas typically have a time dimension, so you can use the pre-configured periods such as fiscal quarter, fiscal month, and fiscal week. If you only have a date field, you can calculate these periods yourself using date functions.

This example calculates fiscal quarter:

```
'FY'||cast(YEAR(TIMESTAMPADD(SQL_TSI_MONTH, 7,<date field>)) as char)||'Q'||
cast(QUARTER(TIMESTAMPADD(SQL_TSI_MONTH, 7,<same date field>)) as char)
```

This example calculates fiscal year and month:

```
'FY'||cast(YEAR(TIMESTAMPADD(SQL_TSI_MONTH, 7,<date field>)) as char)||
cast(MONTHNAME(<same date field>) as char)
```

Notes:

- `||` concatenates values.
- `cast (xxx(date) as char)` extracts a portion of a date field.
- `TIMESTAMPADD` adds (or substracts) periods from a date. This example uses the parameter value SQL_TSI_MONTH to add months.

The calculations above work well in tables but when used in filters the spacing between returned values might look odd. In this case, use a cleaner but more complex calculation based on these examples:

```
'FY'||evaluate ('to_char(%1,%2)'as char,(EVALUATE('add_months(%1,%2)' as
date,<date field>,7)),'YY')||'-Q'||evaluate ('to_char(%1,%2)'as char,
(EVALUATE('add_months(%1,%2)' as date,<same date field>,7)),'Q')
```

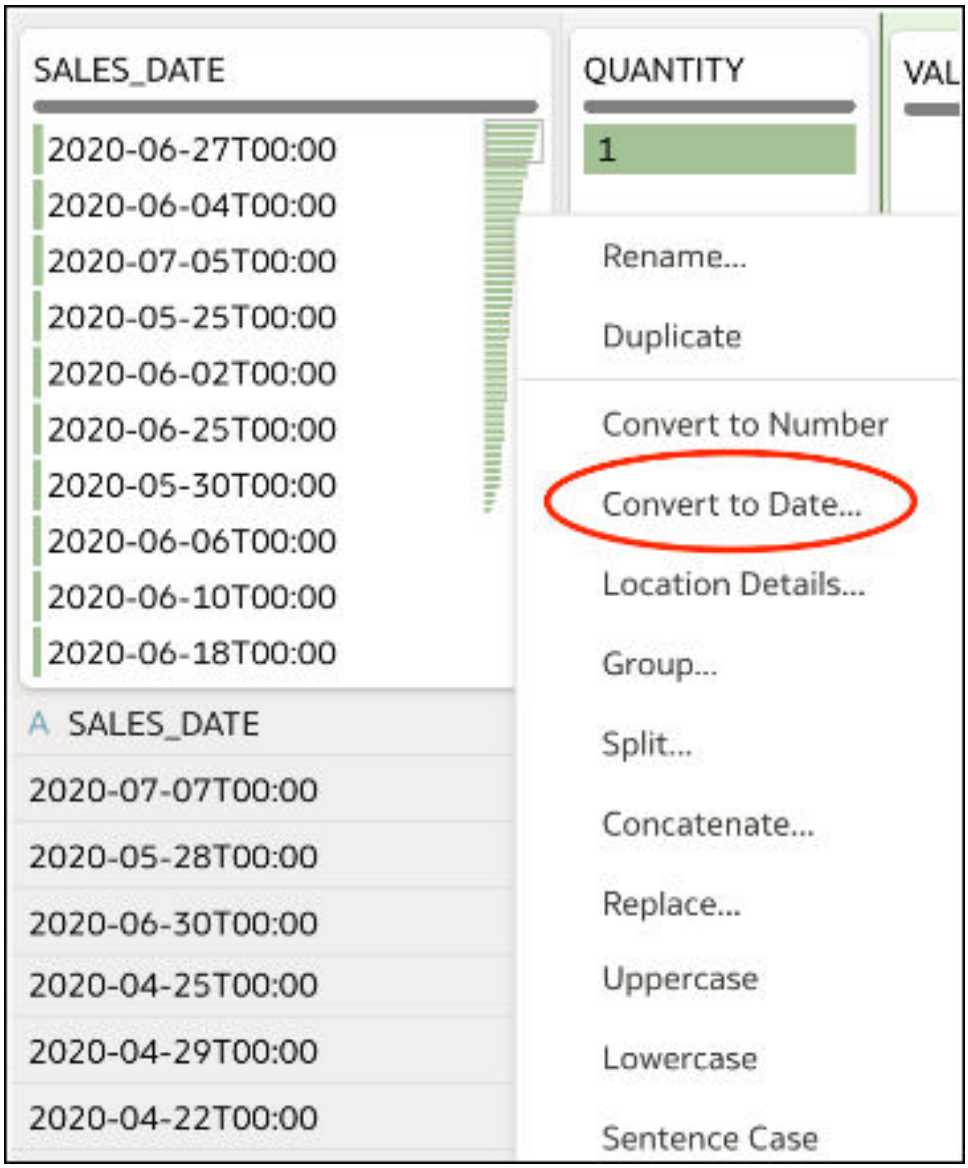
```
'FY'||evaluate ('to_char(%1,%2)'as char,(EVALUATE('add_months(%1,%2)' as
date,<date field>,7)),'YY')||'-'||evaluate ('to_char(%1,%2)'as char,<same
date field>,'MON')
```


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Convert a string to a date:

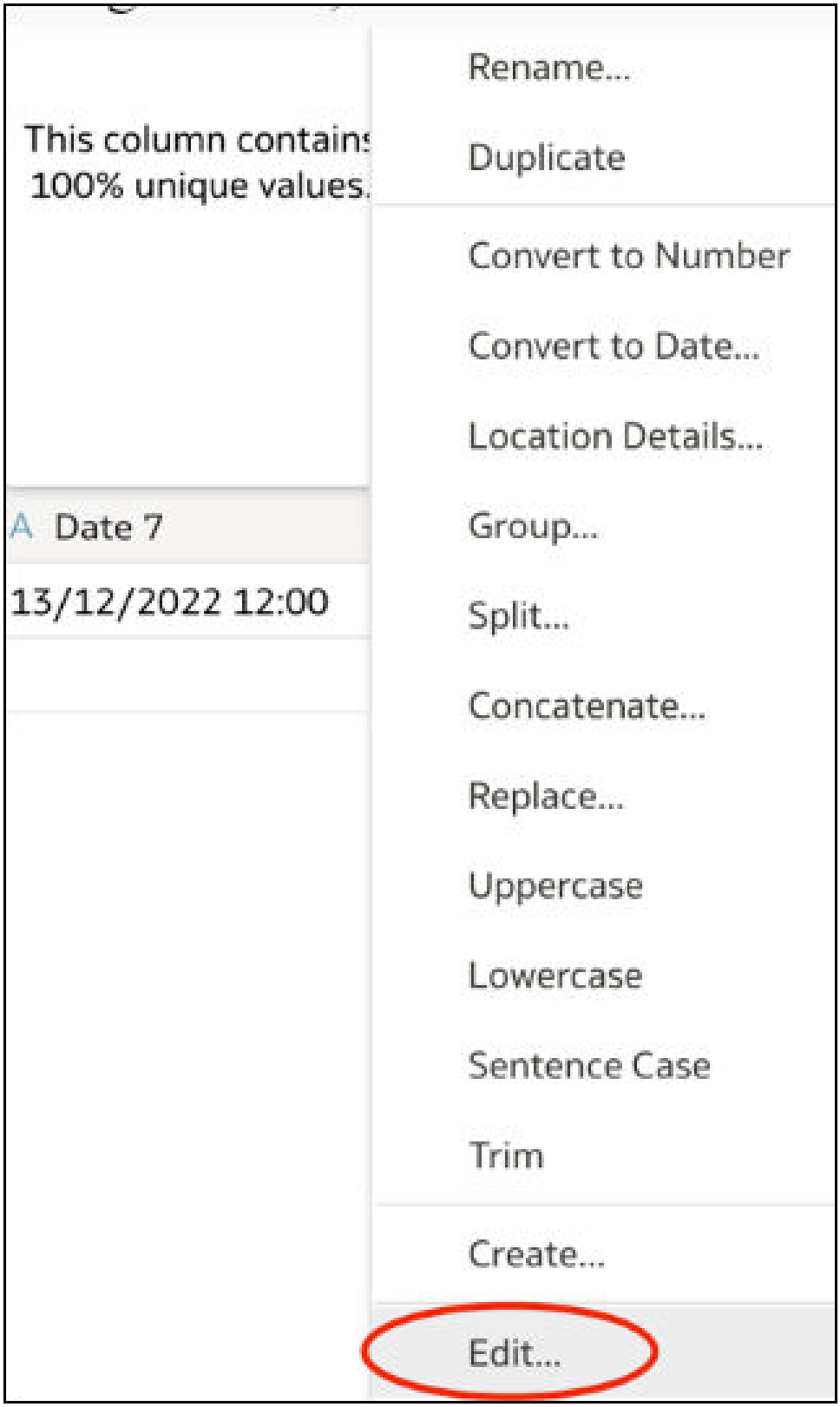
Oracle Analytics profiles your data and provides enrichment recommendations for extracting and converting dates. If you need to convert a string to a date yourself, use these tips.

- In the workbook designer, navigate in the data pane to the column that you wish to convert, then right-click and select **Convert to Date**. Configure the date then click **Add Step**.



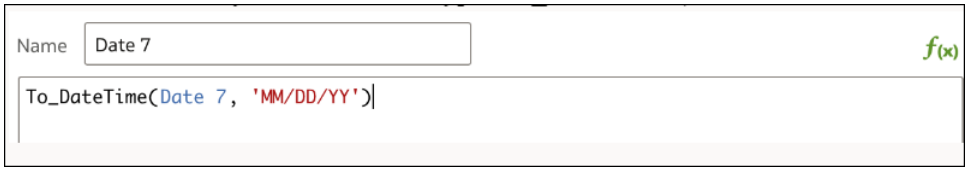
- In the workbook designer, navigate in the data pane to the column that you wish to convert, then right-click and select **Edit**. Configure the date then click **Add Step**.

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In the text box containing the name of your column in blue, insert `To_DateTime(` before the column name, then add the date format you want to use after the column name, followed by `)`, then click **Add Step**.

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When you use the Edit option to create your date-conversion function, you can also use `Allow_Variable_Digits` to process column values with one-digit or two digit numbers, and `Null_On_Error` arguments to discard rows that don't match the pattern required. See also REPLACE and CAST for alternative ways to process data that doesn't match the pattern required.

As an alterntive to using `To_DateTime()`, use CAST() to change a value's data type. For example, `CAST(SalesDate AS DATE)`.

Additionally, use the **Replace** option. In the workbook designer, navigate in the data pane to the column that you wish to convert, then right-click and select **Replace**. Configure the replacement type you want, then click **Add Step**.

Show a date and time field in a specific timezone:

Use the NEW_TIME function in the database in conjunction with EVALUATE. For example:

```
evaluate ('new_time(%1,%2,%3)' as char, "DV - Pipeline and
Forecast"."Opportunity"."Last Updated Date",'GMT','AST')
```

Make sure that the date field includes the time component.

Calculate difference over time:

To show the difference in number and percentage between now and yesterday create calculations based on these examples:

- Calculate a measure until yesterday: `filter (Measure using date <= TIMESTAMPADD(SQL_TSI_DAY,-1,CURRENT_DATE))`
- Calculate the difference: `Measure - filter (Measure using date <= TIMESTAMPADD(SQL_TSI_DAY,-1,CURRENT_DATE))`
- Calculate the difference percentage: `1-(filter (Measure using date <= TIMESTAMPADD(SQL_TSI_DAY,-1,CURRENT_DATE))/Measure` *`display as percentage`*

Notes:

- These examples use `SQL_TSI_DAY`, however you can alternatively use WEEK and MONTH week over week and month over month.
- These examples work with a normal or natural calendar. If you need fiscal months and quarters, use repository variables in your calculations instead of TIMESTAMPADD. Alternatively, combine this with the **Calculate fiscal year, quarter and month** tip.
- Some subject areas include pre-calculated Prior X measures like PY (prior year), PQ (prior quarter) that you can use to calculate differences over time.
- Alternatively, you can use the TIME SERIES functions: AGO, PERIODROLLING and TODATE. See Time Series Functions.

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Constants

You can use constants to include specific fixed dates and times in workbooks and reports.

Constant	Example	Description	Syntax
DATE	`DATE '2026-04-09'`	Creates a specific date in a calculation or expression.	`DATE 'yyyy-mm-dd'`
TIME	`TIME '12:00:00'`	Creates a specific time in a calculation or expression.	`TIME 'hh:mi:ss'`
TIMESTAMP	`TIMESTAMP '2026-04-09 12:00:00'`	Creates a specific time-stamp in a calculation or expression.	`TIMESTAMP 'yyyy-mm-dd hh:mi:ss'`

Types

You can use data types, such as `CHAR`, `INT`, and `NUMERIC` in expressions.

For example, you use types when creating `CAST` expressions that change the data type of an expression or a null literal to another data type.

Variables

Variables are used in expressions.

You can use a variable in an expression.

See Advanced Techniques: Reference Stored Values in Variables.

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40

Certification Information

This appendix contains certification information for Oracle Analytics.

For supported platforms and versions for Model Administration Tool, click **Oracle Analytics Client Tools Latest Update** on the download page for Oracle Analytics Client Tools and review the download packs for Oracle Analytics Client.

Topics:

- Certification - Supported Browsers

Certification - Supported Browsers

Oracle Analytics supports these web browsers:

- **Apple Safari**: Support for the most current major production release and one prior release.
- **Google Chrome**: Support for the most current major stable channel release only. Visit the Google Chrome FAQ for a description of the Chrome support policy: https://support.google.com/chrome/a/answer/188447?hl=en.
- **Microsoft Edge**: Support for the latest major version of Microsoft Edge Chromium. Beginning in Microsoft Edge v77, Microsoft has decoupled Edge from the Windows operating system and shifted to a Chromium-based browser technology and deployment model that follows a continuous 6-week update pattern, similar to Chrome and Firefox. Visit the Microsoft Edge FAQ for a description of the Edge support policy: https://docs.microsoft.com/en-au/deployedge/microsoft-edge-support-lifecycle.
- **Mozilla Firefox**: Support for the most current major Extended Support Release (ESR) version and above, in production only. Visit the Mozilla FAQ for a description of the Firefox support policy: https://www.mozilla.org/en-US/firefox/organizations/faq/.
- For mobile device operating systems, Oracle provides support for the most recent browser delivered by the device operating system only.

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