BI Viewer Guide

8.2.4 Release

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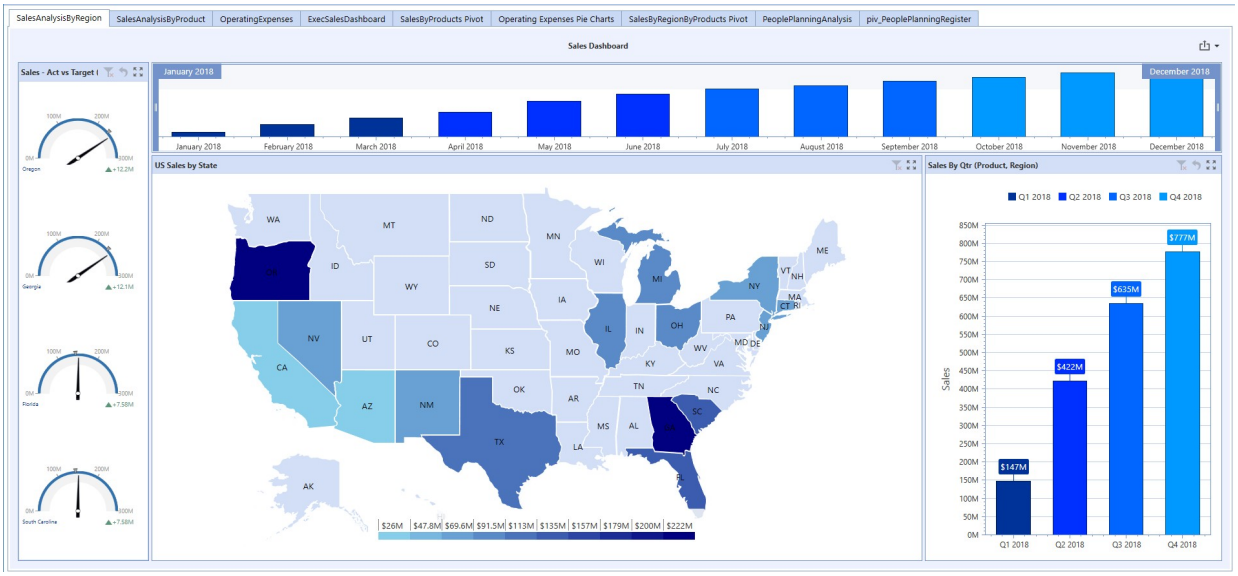
Introduction

The purpose of the OneStream BI Dashboard Design and Reference Guide is to provide clarification, tips, best practices, and configurations for all implementers, administrators, and end users.

The OneStream BI Dashboard Design Guide is a collection of smaller guides and was created to enhance the OneStream experience by providing in-depth explanations of specific functions, comprehensive reporting, and overall usage which can be applied to any application. It is an explanation of all properties, fields, and options found in OneStream. The Reference Guide is broken into four sub sections: Application, System, OnePlace, and Excel Add-in.

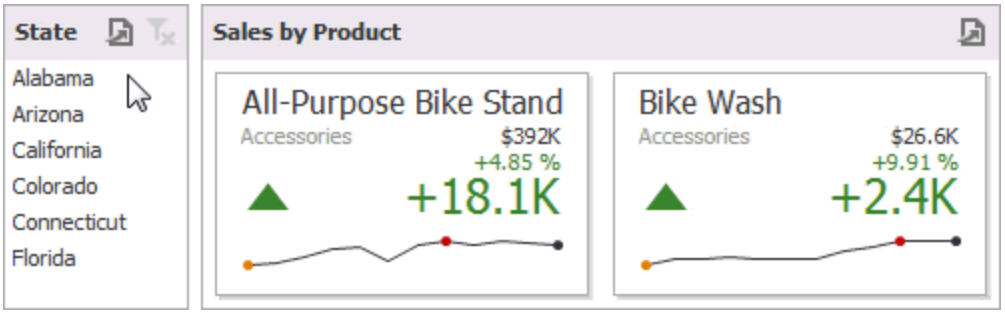
BI Dashboard Viewer

The BI Dashboard Viewer provides the capability to display dashboards at runtime.



Master Filtering

The dashboard allows you to use any data-aware dashboard item as a filter for the entire dashboard (Master Filter). You can select elements in a master filter item (chart bars, pie segments, grid records, etc.) to filter data in the rest of the dashboard by the selected values.



Master Filtering Modes

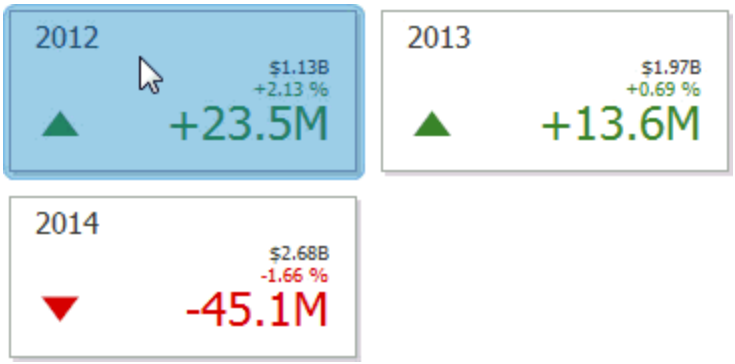
The master filter item supports two selection modes:

Multiple: Allows you to select multiple elements in the master filter item. To clear the selection in the master filter item, use the **Clear Master Filte**r button in the dashboard item's caption.

Single: Allows you to select only one element in the master filter item. When this mode is enabled, the default selection will be set to a master filter element. You can change this selection, but cannot clear it. To learn how to filter dashboard data via a specific dashboard item, refer to the documentation for this item in the Dashboard Items section.

Drill-Down

Dashboard provides the drill-down feature, which allows you to change the detail level of data displayed in a dashboard item. This feature allows you to drill down to display the details, or drill up to view more general information.

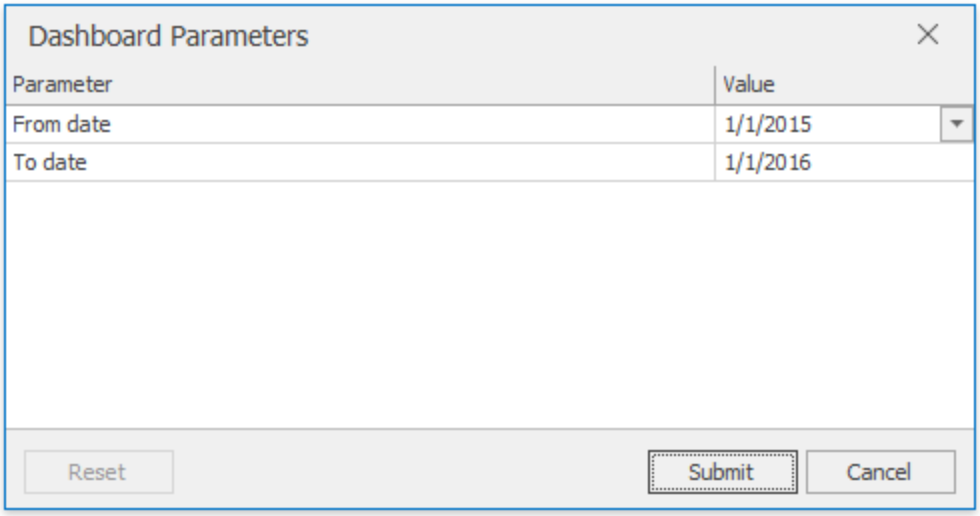


To return to the previous detail level, use the **Drill Up** button in the dashboard item's caption, or the corresponding command in the context menu.

To learn how to drill down using a particular dashboard item, refer to the documentation for this item in the Dashboard Items topic.

Dashboard Parameters Requesting Parameter Values

The Dashboard Viewer provides a built-in Dashboard Parameters dialog, which allows you to change dashboard parameter values. This dialog can be used to apply filtering to dashboard data.



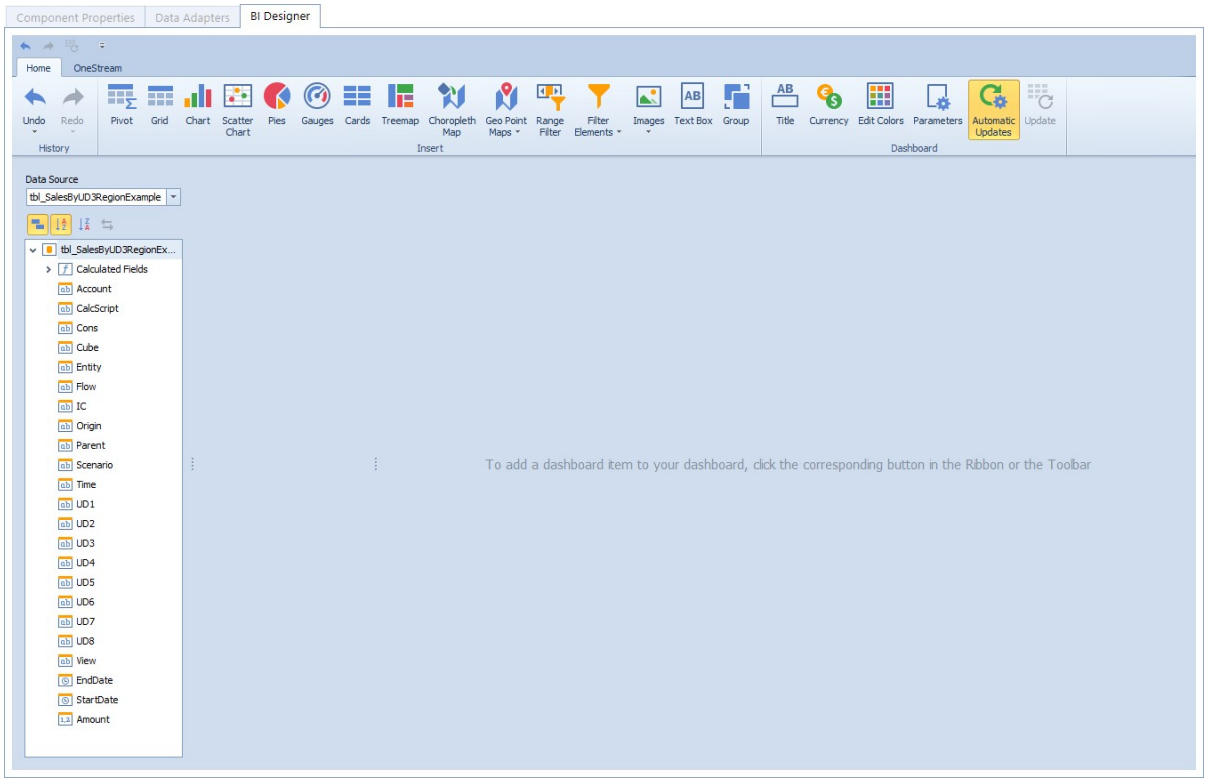
To invoke the dashboard parameters, click the **Parameters**button in the dashboard title. Select the required parameter values and click the **Submit** button to apply the changes. To reset changes to the default values, click the **Reset** button.

BI Viewer Tabs

The BI Viewer component is comprised of three main tabs: BI designer, component properties, and data adapters.

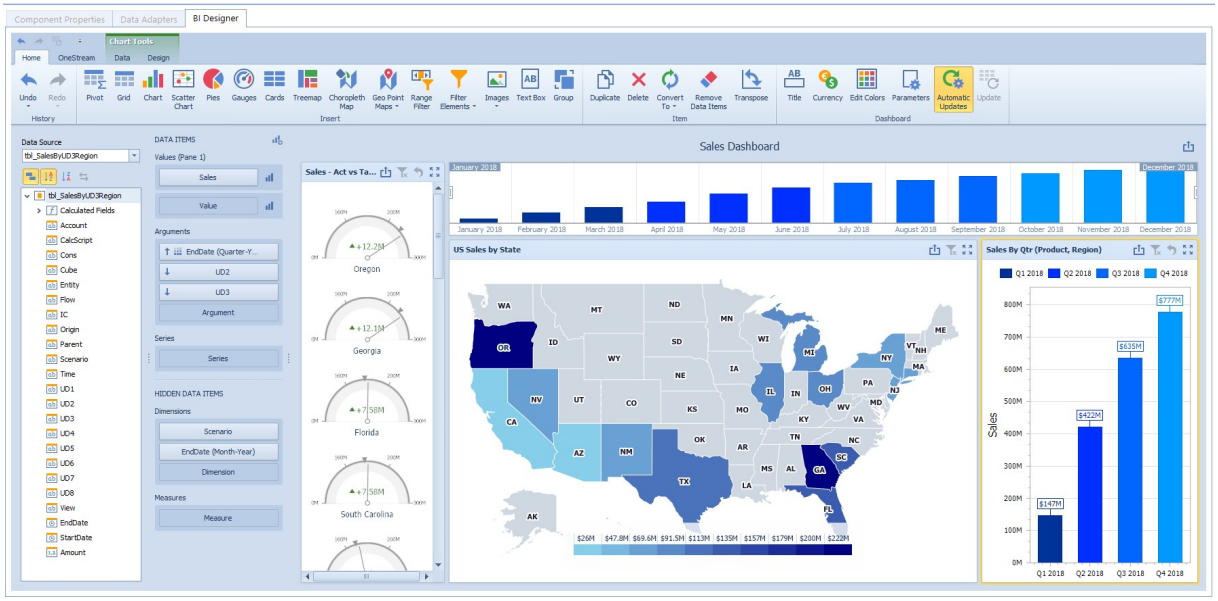
BI Designer

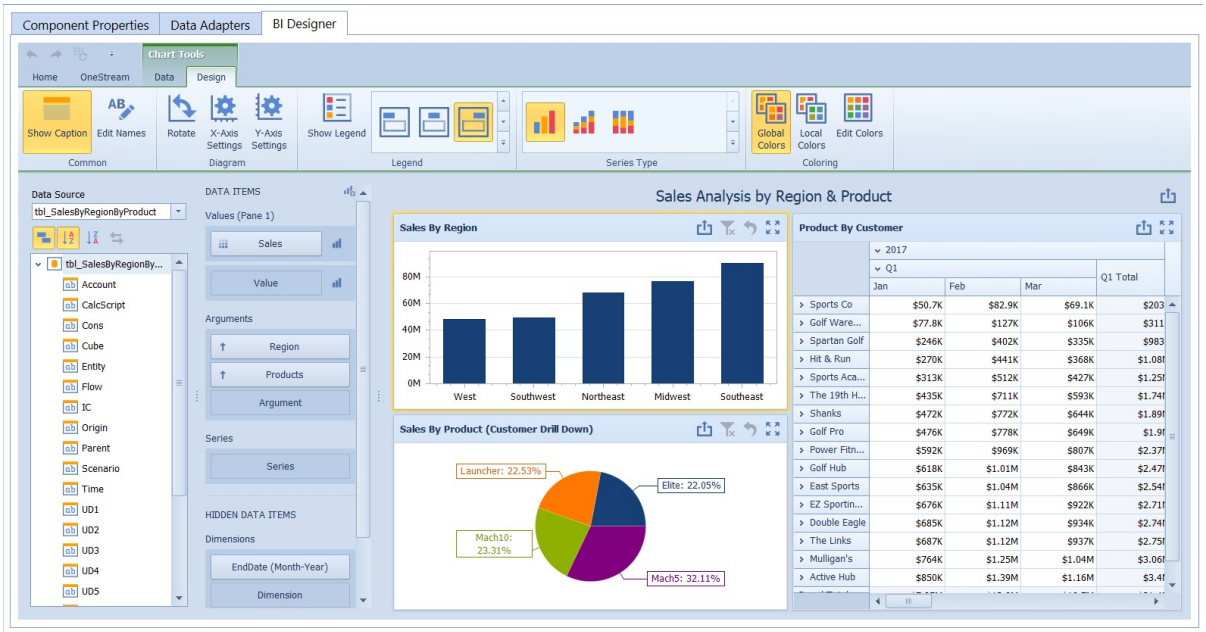
Once the BI Designer is selected the user is presented with the controls that provides the capability to build a functional dashboard. The dashboard provides elements that display visual or textual information in a dashboard known as dashboard items. These Dashboard items can be divided into the following groups: data visualization items, filter elements and dashboard item containers. To visualize data within dashboard items, you need to first establish a connection to a data source as mentioned above. The data source collects the data adapter data and passes it to the dashboard.



The BI Designer layout provides an intuitive user interface that facilitates data binding, shaping, and layout design. Many of these normally complex tasks can be accomplished with a simple drag-and-drop operation, allowing you to start creating dashboards immediately. This BI Designer contains rich, intuitive graphics and tools that will assist in analyzing data with functionality that requires little to no coding. Users would be able to combine multiple views of data to get better insight to their information, perform ad hoc analyses and quickly publish their dashboard to share it within the application.

Features of this solution assist with Ad Hoc Reports, Dashboard Data Analysis, Data Visualization, Key Performance Indicators, Drill down, filters and interact with OneStream data and other sources of data.



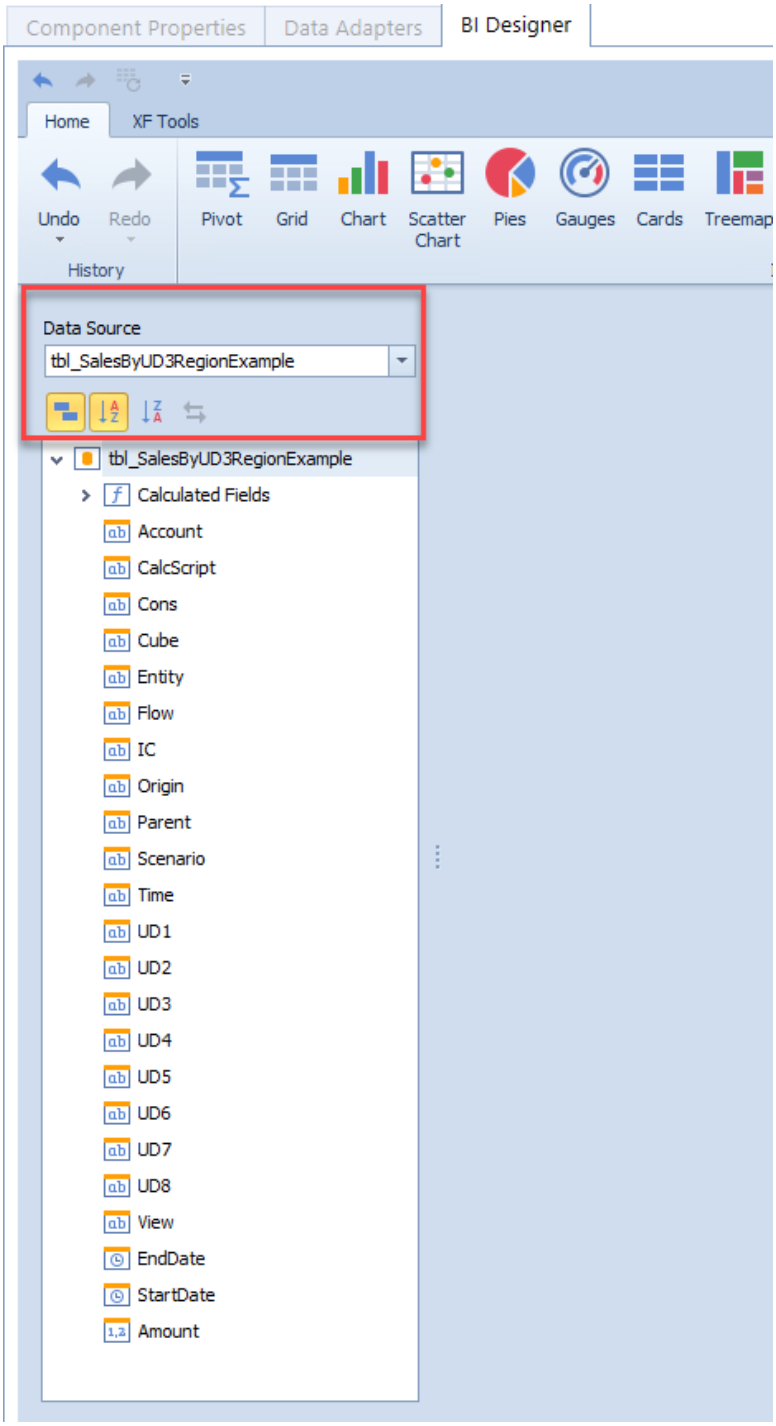


Data Source

The Data Source section allows you to navigate through dashboard data provided from the Data Adapter. It displays the data source structure and allows you to bind dashboard items to the required data source fields using drag-and-drop functionality. The data source section also enables you to manage calculated fields.

The data source browser contains the following elements:

Data Source Drop-Down List Allows you to select the required data source and its required data member. The command buttons pictured below are available to sort or group fields in the browser.

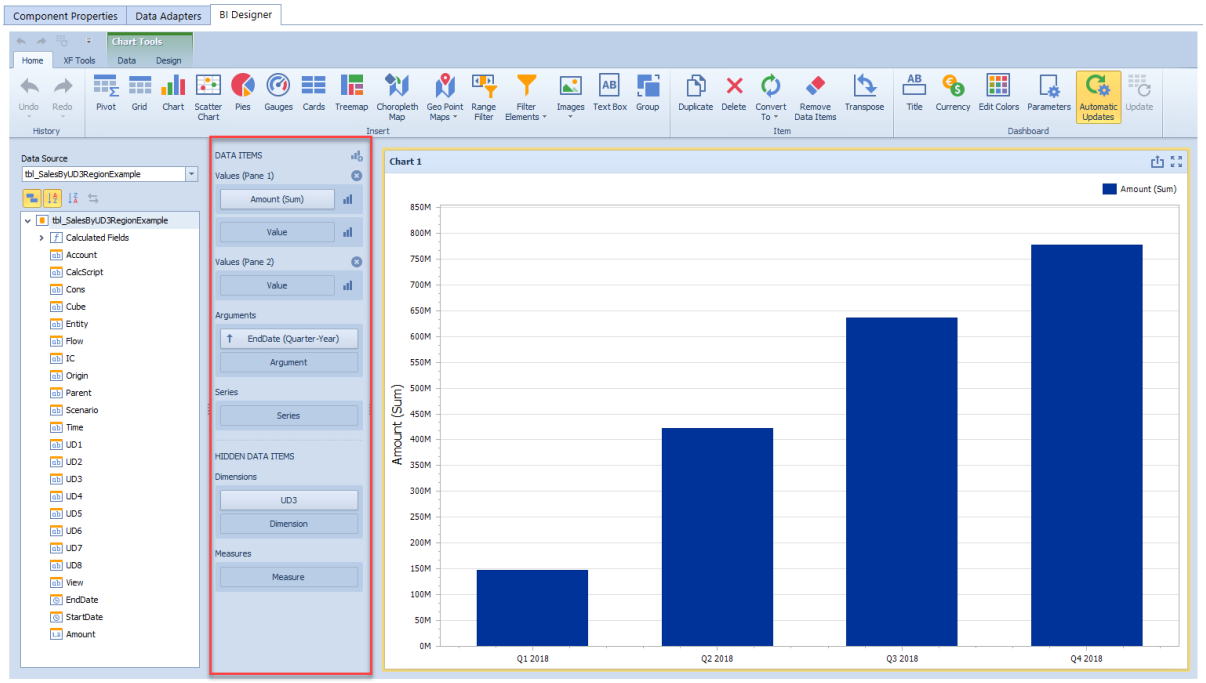


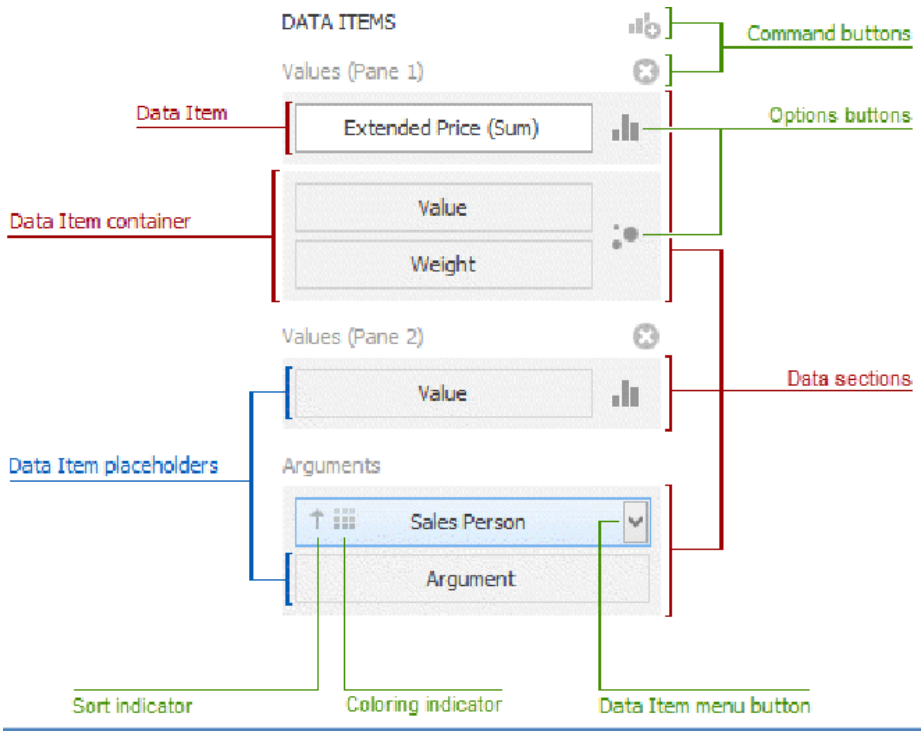
The **Field List** displays data source fields. You can drag these fields to the data item placeholders to specify data binding. Data source data field types define the field type of each field.

Icon	Description
	Boolean
	Byte
	Date-time
	Numeric
	String
	Calculated Field

Data Items Pane

The Data Items pane is placed side-by-side with the data source browser and allows you to create and modify data binding using drag-and-drop operations.





The data items pane can contain the following elements:

Data Item placeholder: Creates data binding using drag-and-drop operations.

Data Item: Identifies data binding by mapping to a specified data source field. Each data item has the Data Item menu button, used to invoke a menu that allows you to perform various data shaping operations.

Data Section: Corresponds to a specified dashboard item area or element.

Data Item Container: Provides data item sets (e.g., for calculating the difference between two measures). Data item containers have options buttons that allow you to change specific dashboard item settings.

Sort indicator: Shows the current sort order for the data item.

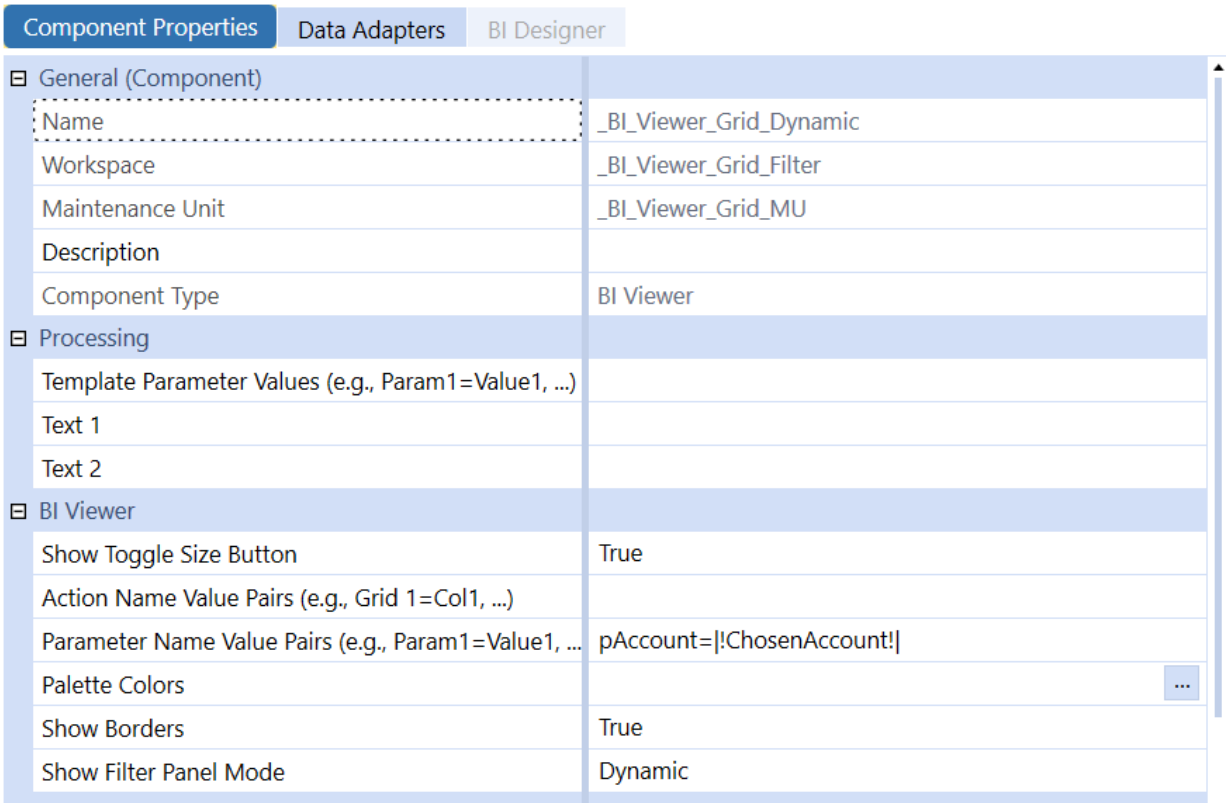
Coloring indicator: Indicates whether coloring by hue is enabled for the data item.

Component Properties

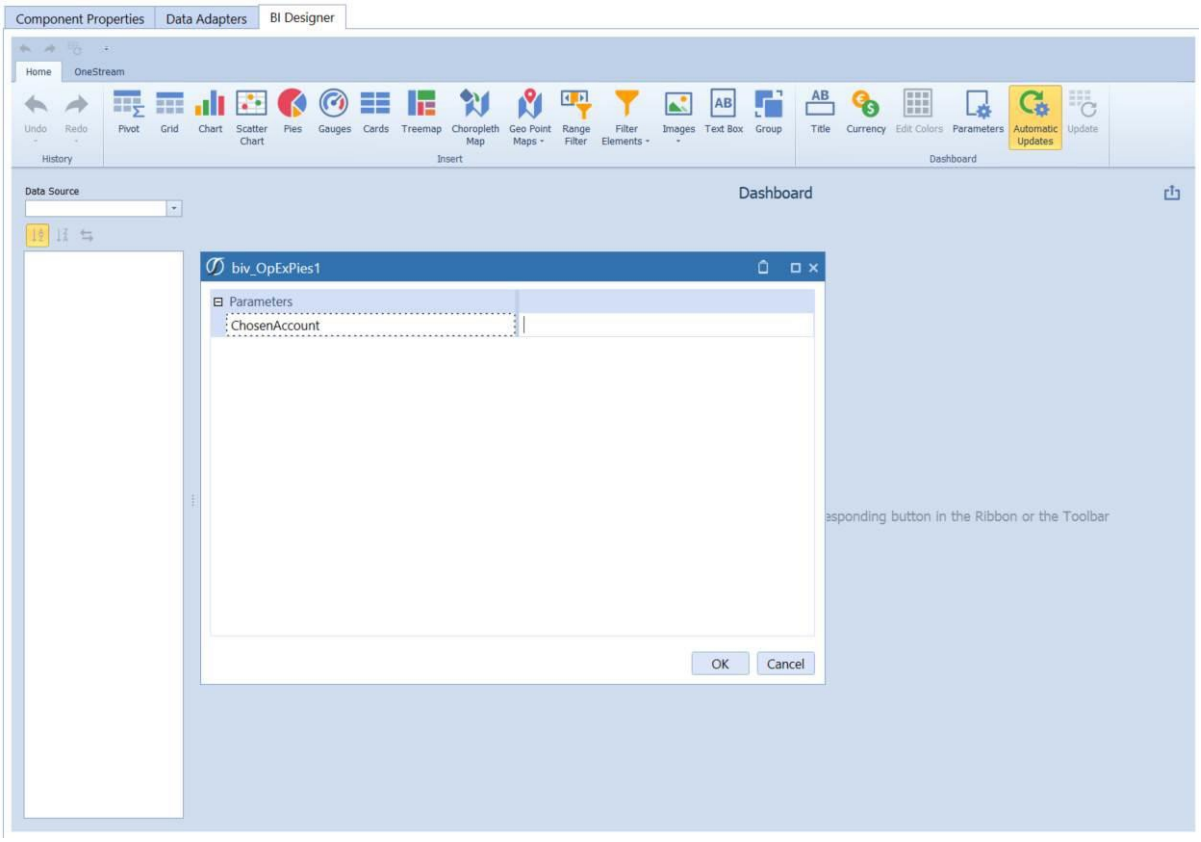
The BI Designer has its own section for parameters. These parameters can be used to filter on and drive the data shown in BI viewer components (inbound parameter). There is also the ability for the BI viewer to pass values from the BI viewer components to other dashboard components (outbound parameters) outside of the BI viewer.

Parameter Name Value Pairs (Inbound Parameter)

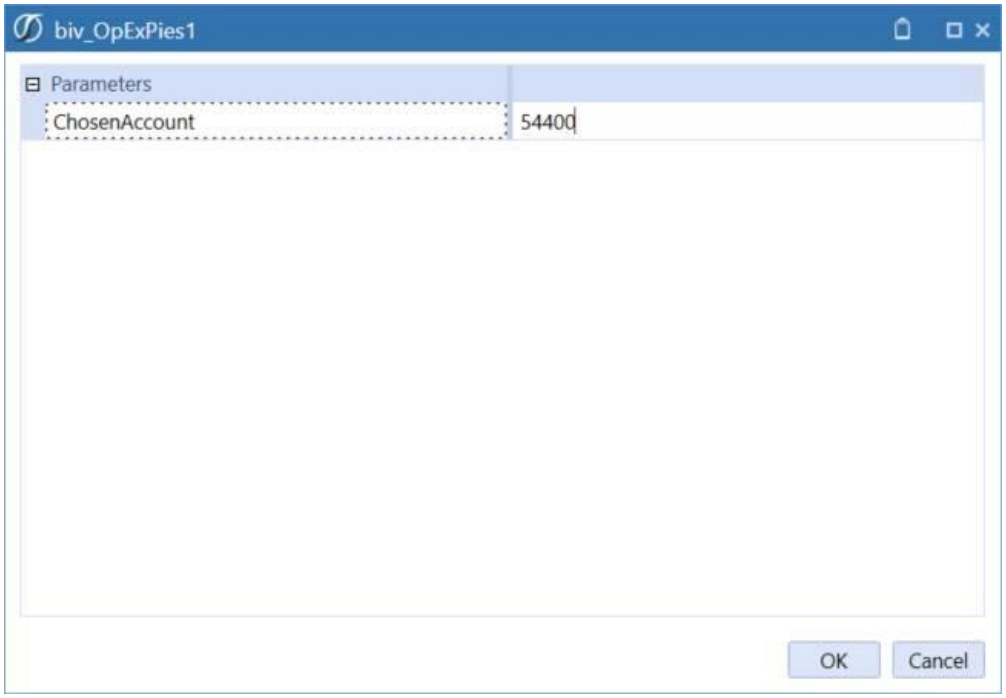
The **Parameter Name Value Pairs** property is used to assign a BI viewer parameter to some value. This value can be a bound parameter.



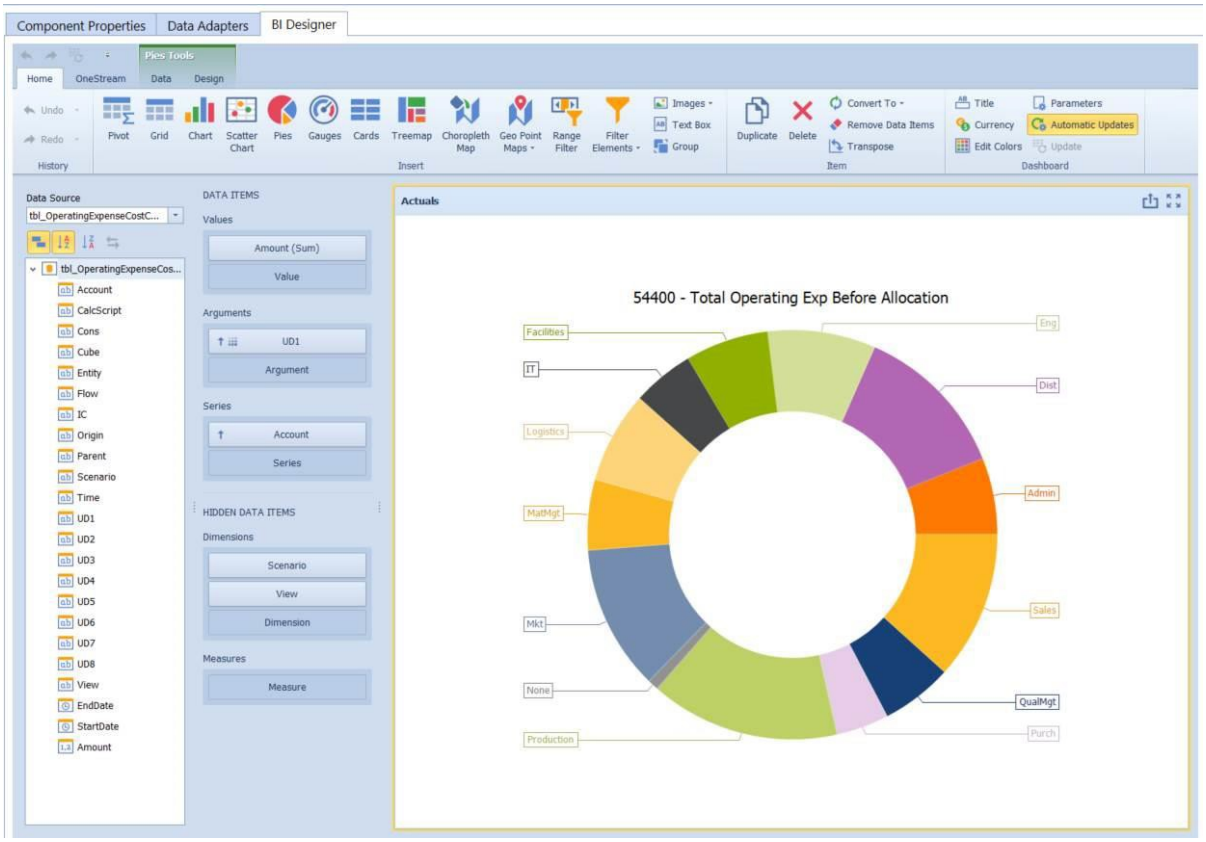
When the BI Designer is opened or the BI viewer component is run inside a dashboard, the specified BI viewer parameter in the Parameter Name Value Pairs property will be set to the specified value **(|!ChosenAccount!|)** which in this case is set in the Cube View. If that value is a bound parameter, the value will be resolved before setting the BI Viewer parameter.



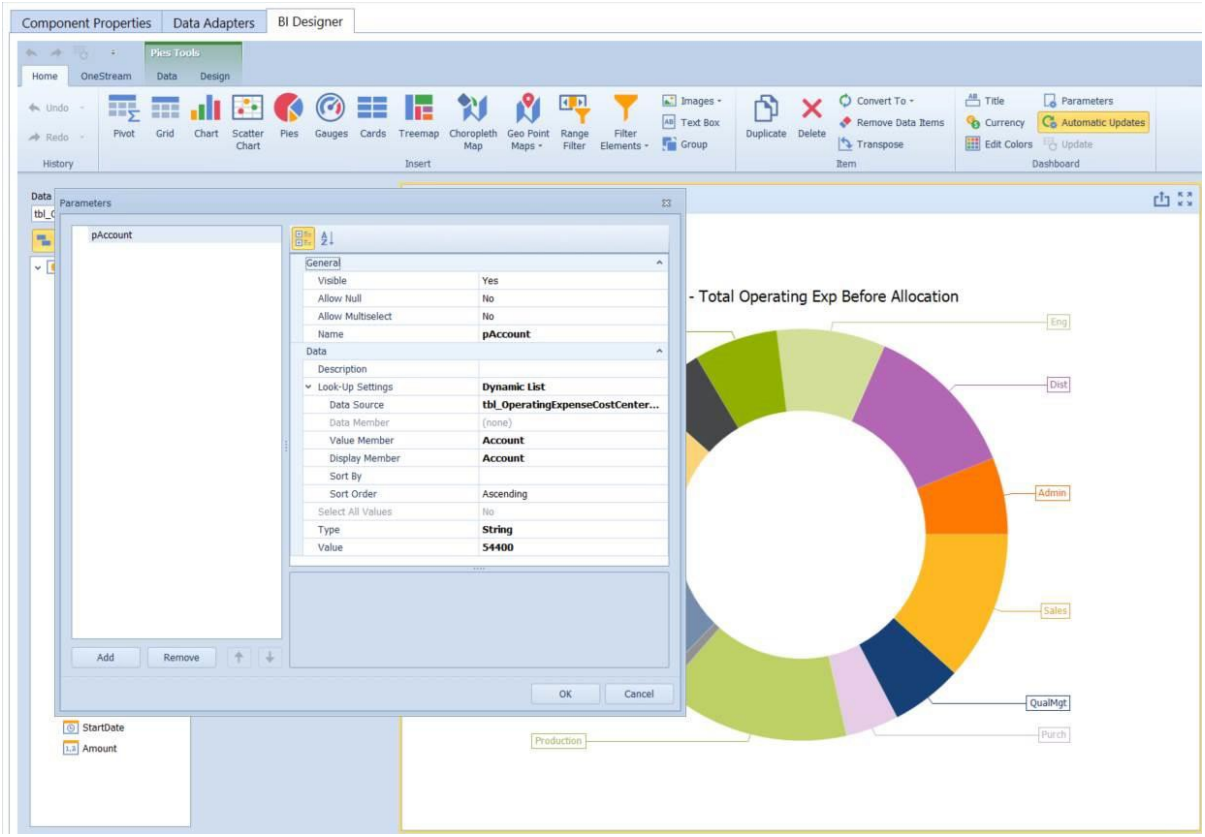
|!ChosenAccount!| is a dashboard bound parameter. In this case the value hasn't been resolved yet, so its value is prompted for.



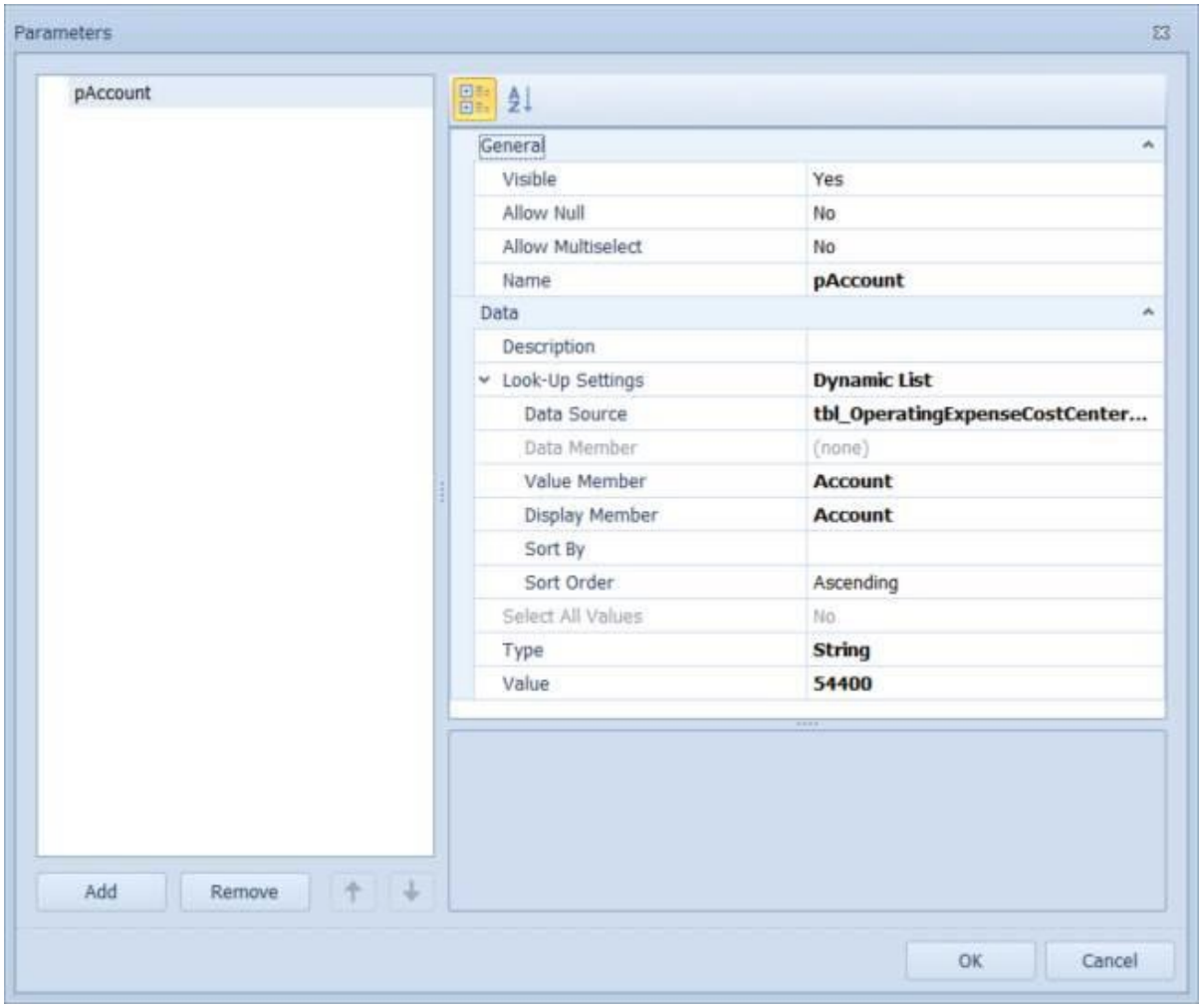
Once the value (54400) is entered at prompt time, the component (pie chart) will be displayed representing the value.



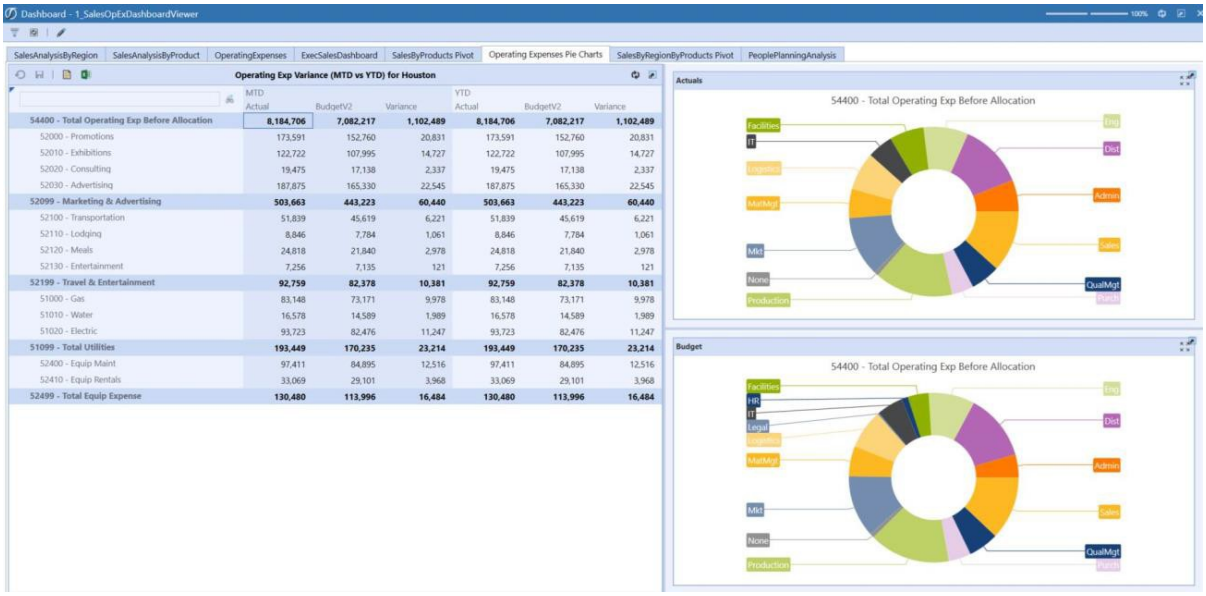
In the upper-right corner of the toolbar inside the BI Designer there is a **Parameters** button. Clicking it will open the parameters dialog which is used to create BI viewer parameters. Each parameter has its own settings for what values they can be set to and in what format.



In this case notice how the value property was set to 54400. This is due to the Parameter Name Value Pairs property set earlier (pAccount=|!ChosenAccount!|). The value of this BI viewer parameter called pAccount was assigned to the value of the OneStream bound parameter |!ChosenAccount!|.



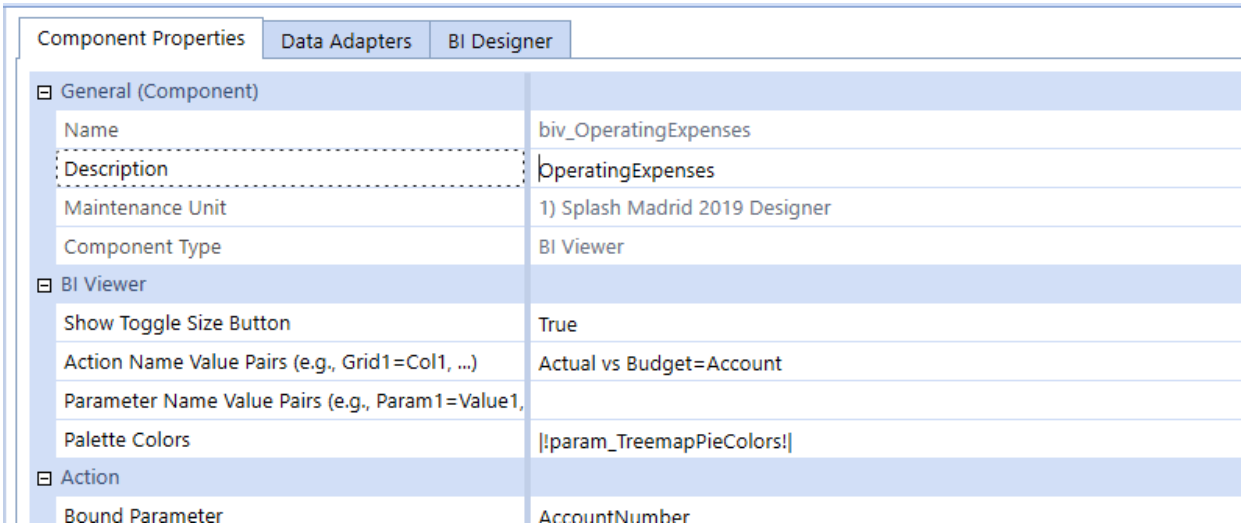
At runtime, the Pie Charts created in the BI Viewer will utilize the selected items (|!ChosenAccount!| from the Cube View to render its view.



Action Name Value Pairs (Outbound Parameter)/ Bound Parameter

The BI Designer has its own section for parameters. These parameters can be used to filter the BI viewer and to pass values from the BI viewer components to other dashboard components (outbound parameters) outside of the BI viewer.

The **Action Name Value Pairs** property is used to assign a BI viewer parameter to some value. This value can be a bound parameter.

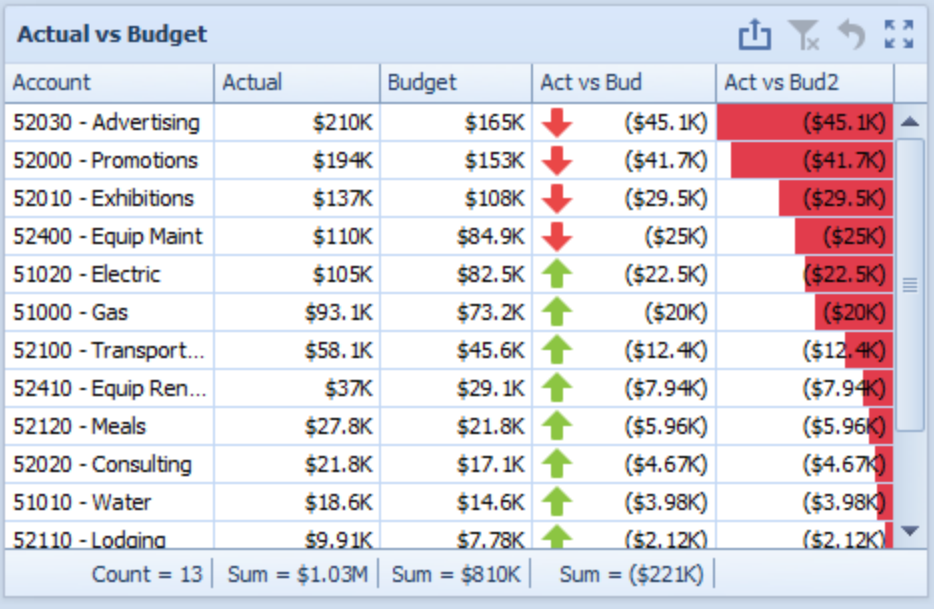


In the screenshot above, the Action Name Value Pairs property of Actual vs Budget=Account is used to assign that BI viewer value to a bound parameter which is assigned AccountNumber.

In the screenshot below, the grid component in the BI viewer is the source of the Action Name Value Pairs property that is being used to assign a BI viewer parameter to a bound parameter.

The name of the grid component is Actual vs Budget and this along with the column Account is the source of the Action Name Value Pairs property used in the example above. The result is that anytime an account (or multiple accounts -if setup) is selected at runtime, that selected account value(s) will be passed to the designated bound parameter (AccountNumber).

If the row that contains 52000 – Promotions is selected, the value of the account from that row will be assigned to the bound parameter.



Show Filter Panel Mode

The **Show Filter Panel Mode** property allows you to turn on and off filter editors within the BI Viewer grids. You must specify the mode controlling the visibility of all grid component's bottom filter panel.

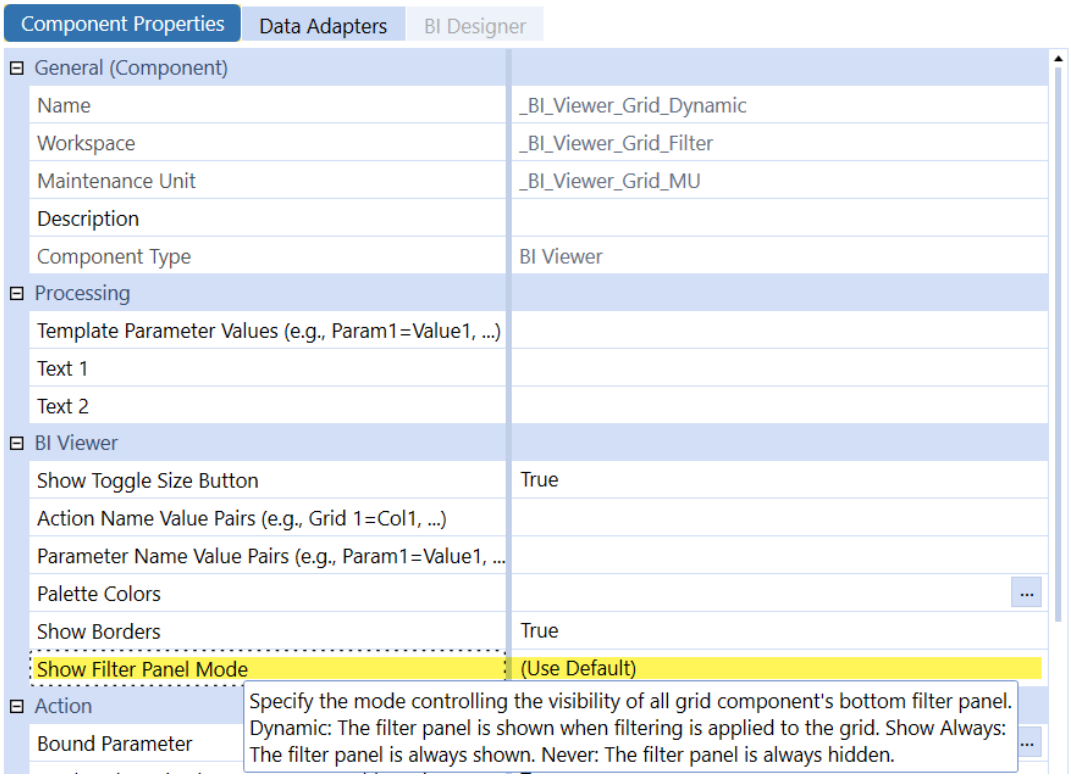
The Show Filter Panel Mode contains the following values:

(Use Default): This value will display when Show Filter Panel Mode has not been set up. You must change this property to display filter editors.

Dynamic: The filter panel is shown when filtering is applied to the grid meaning the filter isn't always on or off. The bottom panel filter of the grid is only on if any column has filtering on it. It will only pop up after filtering has been applied to the grid.

Show Always: The filter panel is always shown.

Never: The filter panel is always hidden.



Data Adapters

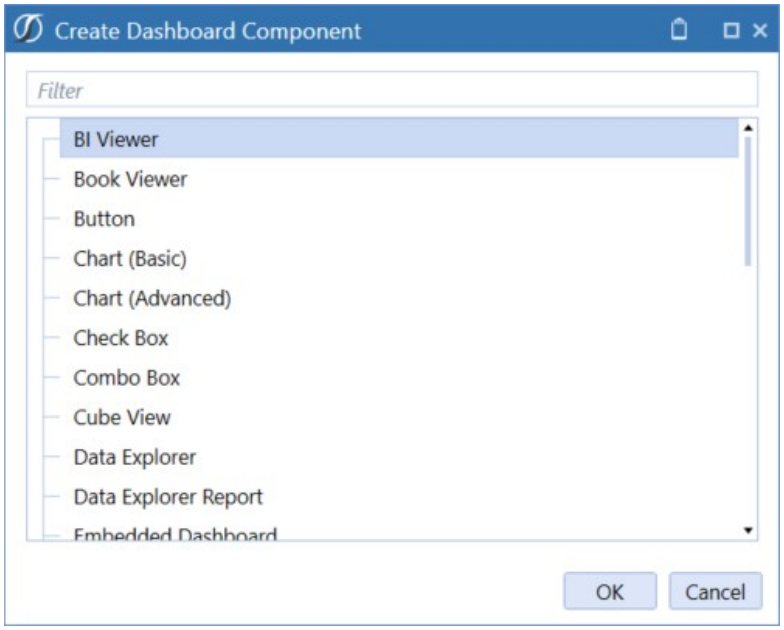
Data adapters specify the kind of data used within a dashboard. Once the data adapter is configured and pointing to the desired data, attach it to a dashboard component in order to display it on a dashboard.

Creating Dashboards with BI Viewer

The following topics will guide you through the process of creating a dashboard.

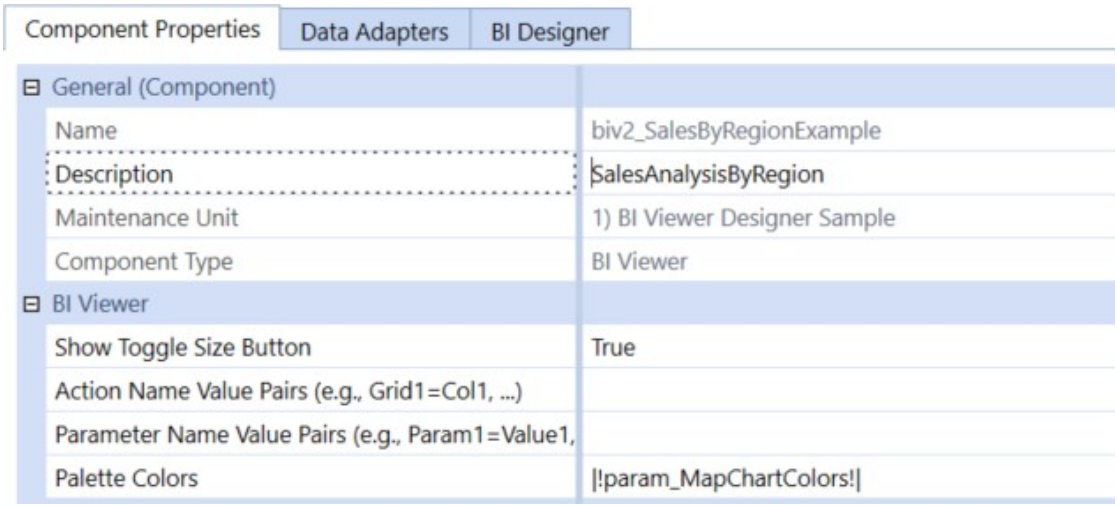
When you run an application containing the dashboard designer, it already contains an empty dashboard. To create a new dashboard, click the **New** button in the ribbon **Home** tab.

1. Go to **Application tab** and select **Workspaces**.
2. Select **Components** (in the Workspace Maintenance Unit), then select **Create Dashboard Component**.
3. Select **BI Viewer**.



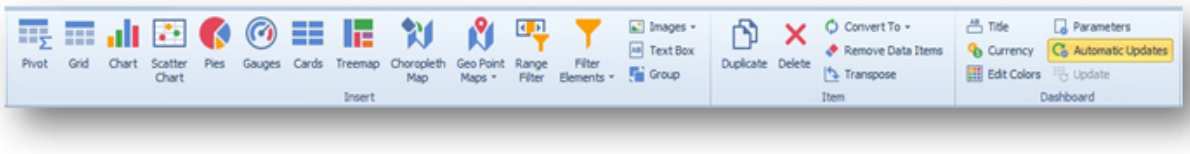
4. Enter a name: biv2_SalesByRegionExample, description: SalesAnalysisByRegion and

select **Save**.

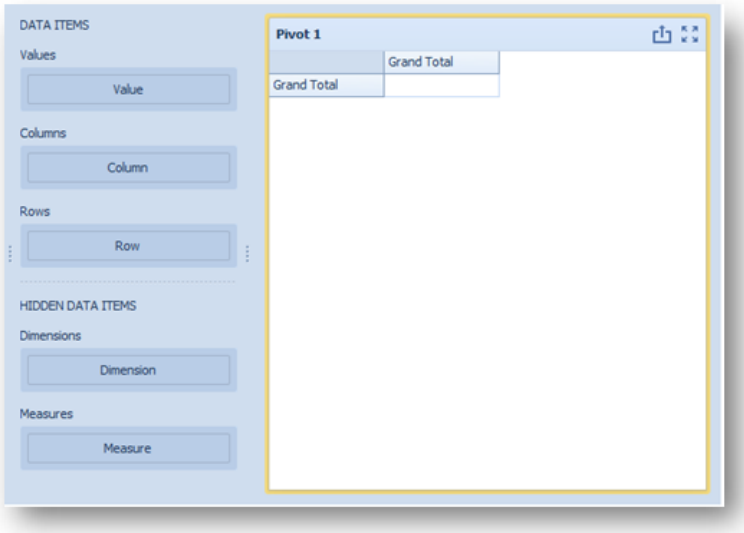


Adding Dashboard Items

To create a dashboard item in the BI Designer, click the corresponding button in the **Home** ribbon tab.



This creates an empty dashboard item and displays the required data sections for binding this item to data (for instance, the image below displays the Pivot dashboard item and corresponding data sections).



Perform the following steps to design a dashboard item:

- Bind the dashboard item to data.
- Perform the required data shaping operations (such as grouping, sorting and filtering). Use the interactivity features to enable interaction between various dashboard items.
- Adjust the dashboard item's position and size and specify the dashboard item caption settings.
- Specify specific dashboard item settings based on its type. To learn more, see Designing Dashboard Items

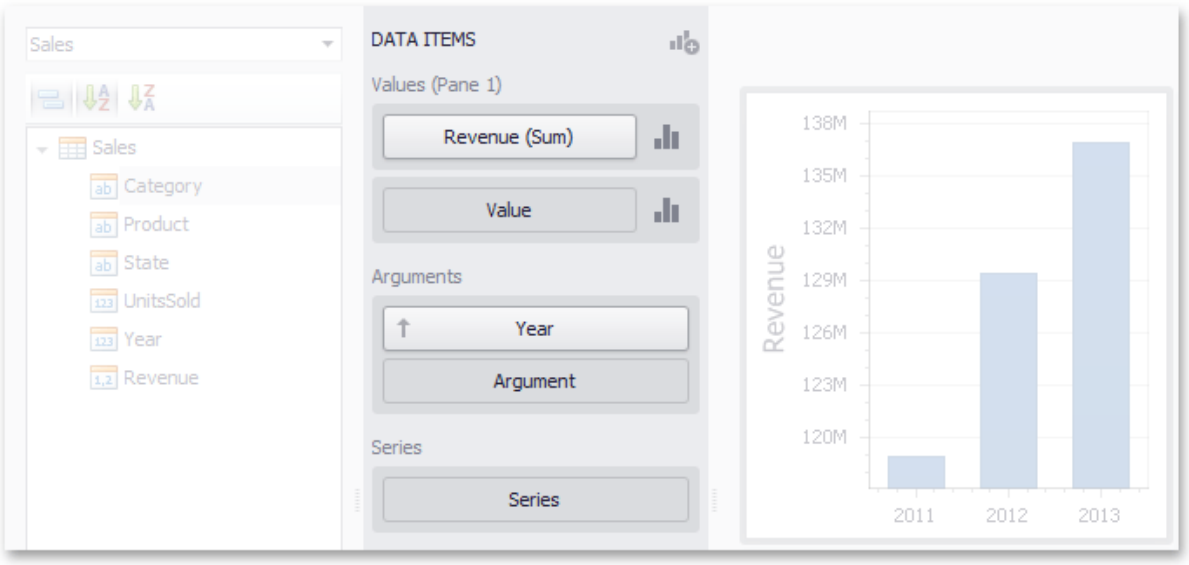
After you have created and designed the dashboard item, you can create an exact copy. To do this, click the Duplicate button in the Home ribbon tab, or use the dashboard item's context menu. To remove the dashboard item from the dashboard, use the delete button or the corresponding item in the context menu.

Binding Dashboard Items to Data

This topic explains how to bind the newly created dashboard item to data source fields, to display data.

Binding Concepts

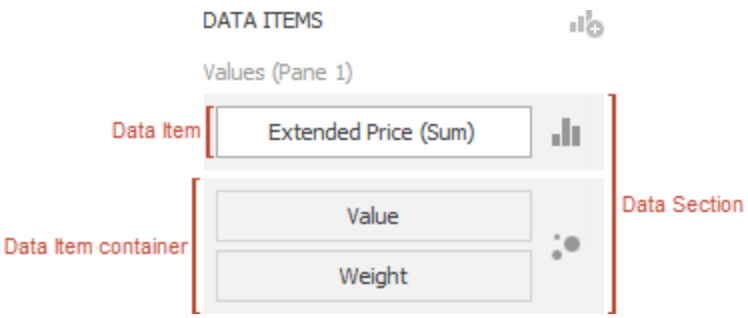
To bind dashboard items to data in the dashboard designer, the Data Items pane is used.



Each dashboard item type has a specific set of data sections, such as values, arguments and series in the chart, columns and sparklines in the grid, and values, columns and rows in the pivot grid. Each data section corresponds to a particular dashboard item area or element and should be mapped to data to be displayed within this area/ element.

Mapping is performed using data items - objects that are used to bind a dashboard item to data source fields. Data items are used to link the dashboard item to the required data source fields and thus, visualize data within the dashboard item.

Another key concept in data binding is the data item container, which represents a set of data items. It can contain either a single data item or multiple data items, and allows you to specify various options related to how a specific dashboard item visualizes data.

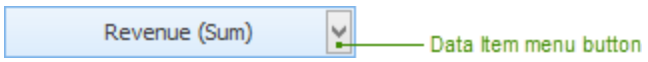


The data item can process data in two ways - as dimensions or measures. This depends on the data section to which the data item is assigned, and the type of the data item container.

These values can be of any type - string, date-time or numeric. In any case, the dashboard does not summarize the dimension values, but groups identical values. You can perform grouping, sorting, or display the top values for the dimension values. You can also customize data format settings for numeric and date-time values. To access the data shaping settings, use the data item's menu button.

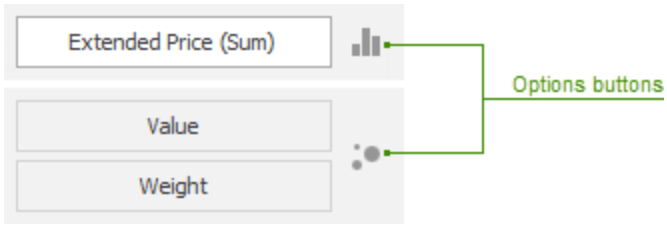
For instance, dimensions are used to provide data for the chart argument axis, pivot grid column and row headers.

These values can be of any type - numeric, date-time or string. In any case, the dashboard will calculate an appropriate summary function against measure values. You can also customize the data format settings that affect how summary values are displayed. To access these settings, use the data item's menu button.



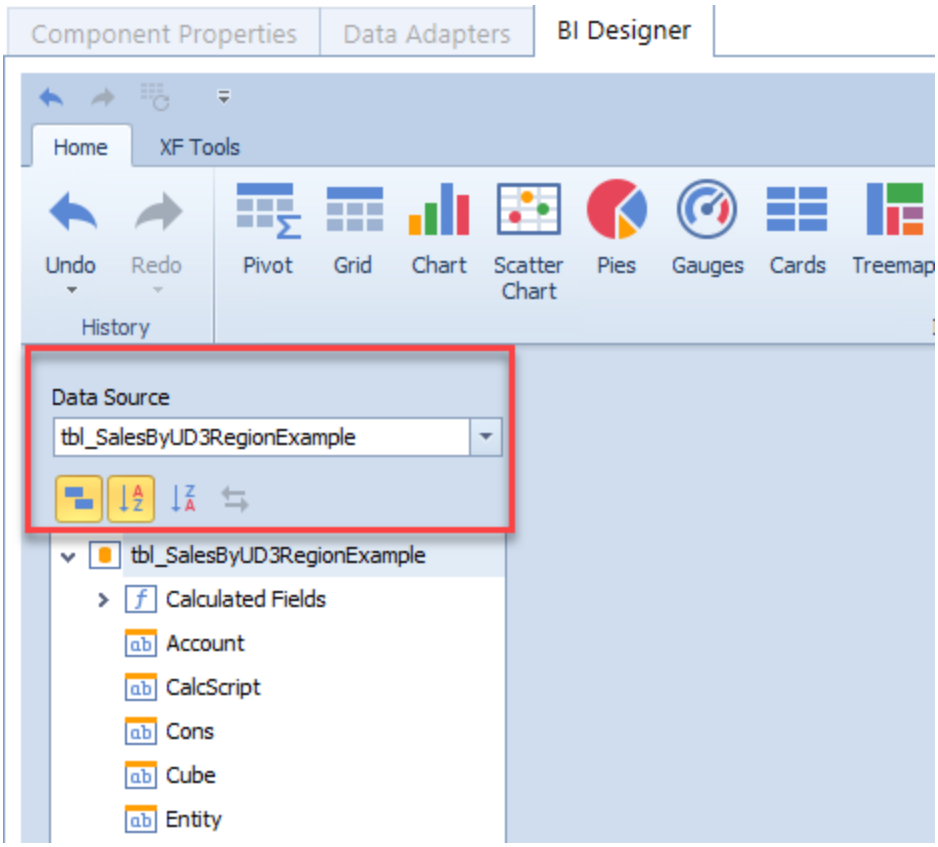
For example, measures are used to provide data for the chart's Y-axis, and to calculate pivot cell values.

Specific data sections display options buttons for each data item container. Use these buttons to invoke a dialog that allows you to specify the settings of this data item container. These settings affect how a particular dashboard item's area/element displays the provided data.



Data Source Browser

The Data Source Browser allows you to navigate through dashboard data sources. It displays the data source structure and allows you to bind dashboard items to the required data source fields using drag-and-drop operations. The Data Source Browser also enables you to manage calculated fields.



The Data Source Browser contains the following elements:

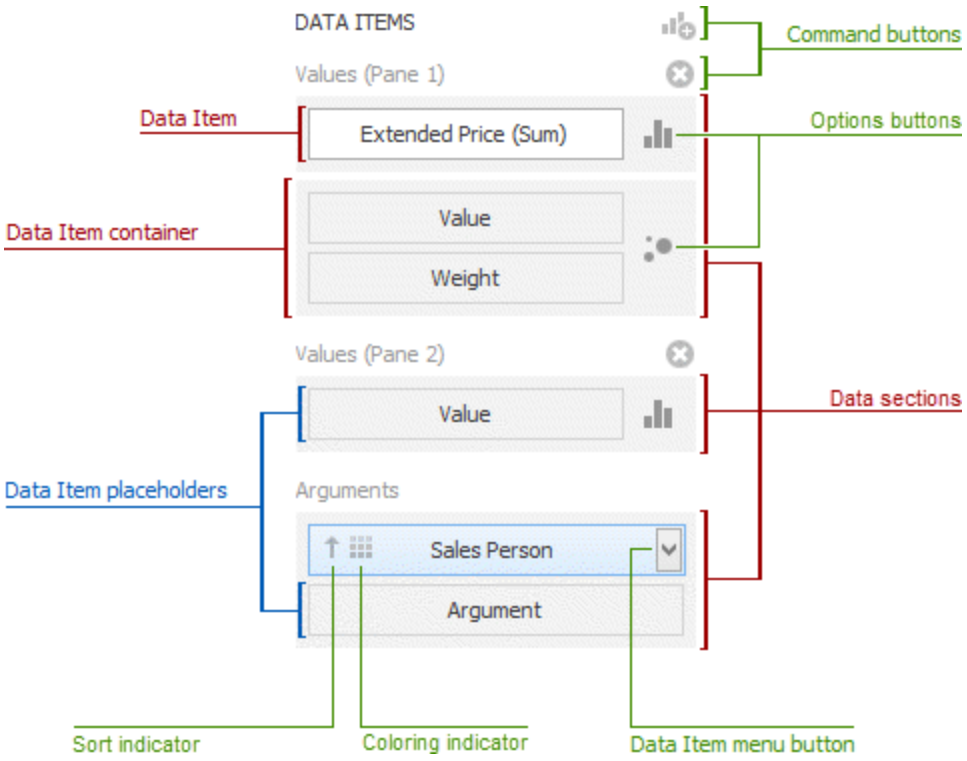
- **Data Source Drop-Down List**: Allows you to select the required data source.
- **Query/Data Member Drop-Down List**: Allows you to select the required query or data member.
- **Field List**: Displays data source fields. You can drag these fields to the data item placeholders to specify data binding.

The data source browser identifies the following data field types:

Icon	Description
	Boolean
	Byte
	Date-time
	Numeric
	String
	Calculated Field

Data Items Pane

The data items pane is placed side-by-side with the data source browser and allows you to create and modify data binding using drag-and-drop operations.



The data items pane can contain the following elements:

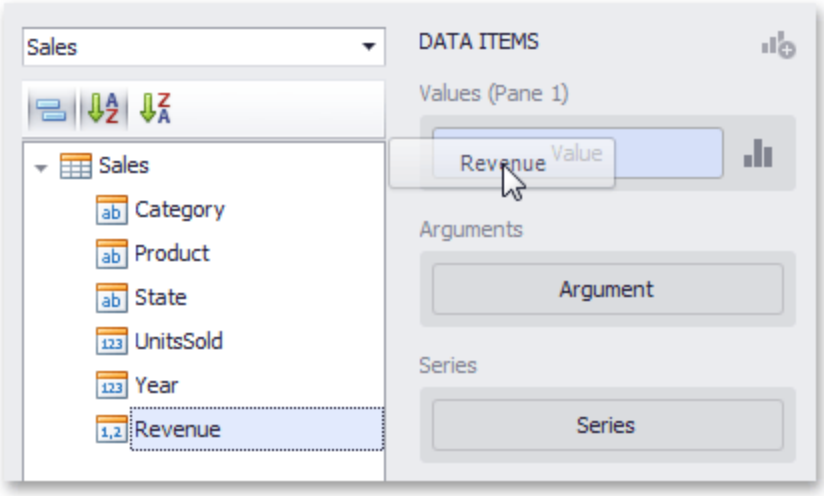
- **Data Item Placeholder**: Used to create a data binding using drag-and-drop operations.
- **Data Item**: Identifies a data binding by mapping to a particular data source field. Each data item has the Data Item menu button, used to invoke a menu that allows you to perform various data shaping operations.
- **Data Section**: Corresponds to a dashboard item area or element.
- **Data Item Container**: Used to provide data item sets (e.g., for calculating the difference between two measures). Data item containers have Options buttons that allow you to change specific dashboard item settings (e.g., to switch between chart series types or grid column types).
- **Sort Indicator**: Shows the current sort order for the data item.
- **Coloring Indicator**: Indicates whether coloring by hue is enabled for the data item.

Specific dashboard items have command buttons that allow you to perform various operations, for instance, to add a new pane to the chart dashboard item.

Create Binding

The data items pane displays data sections of the selected dashboard item. It can be used to add, rearrange or remove data items.

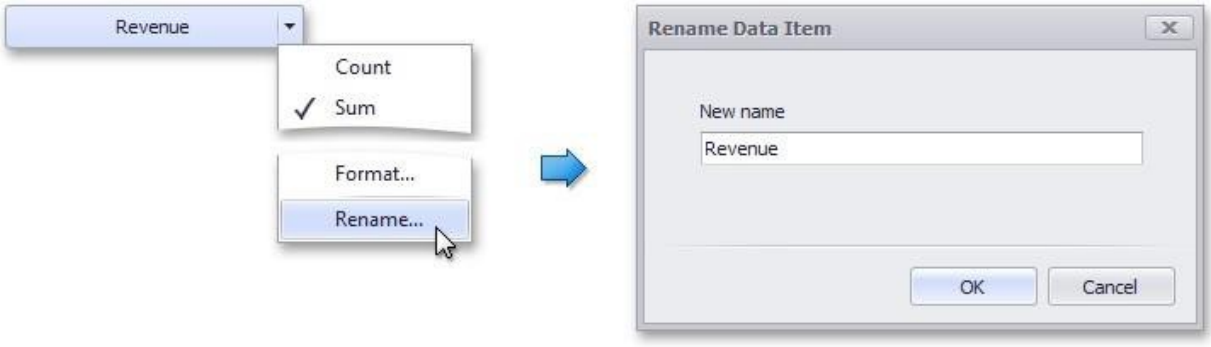
To bind a dashboard item to data, select the dashboard item. Then choose the required data field from the data source browser and drop it onto the appropriate section in the data items pane.



You can remove the data item by dragging it outside the data items pane.

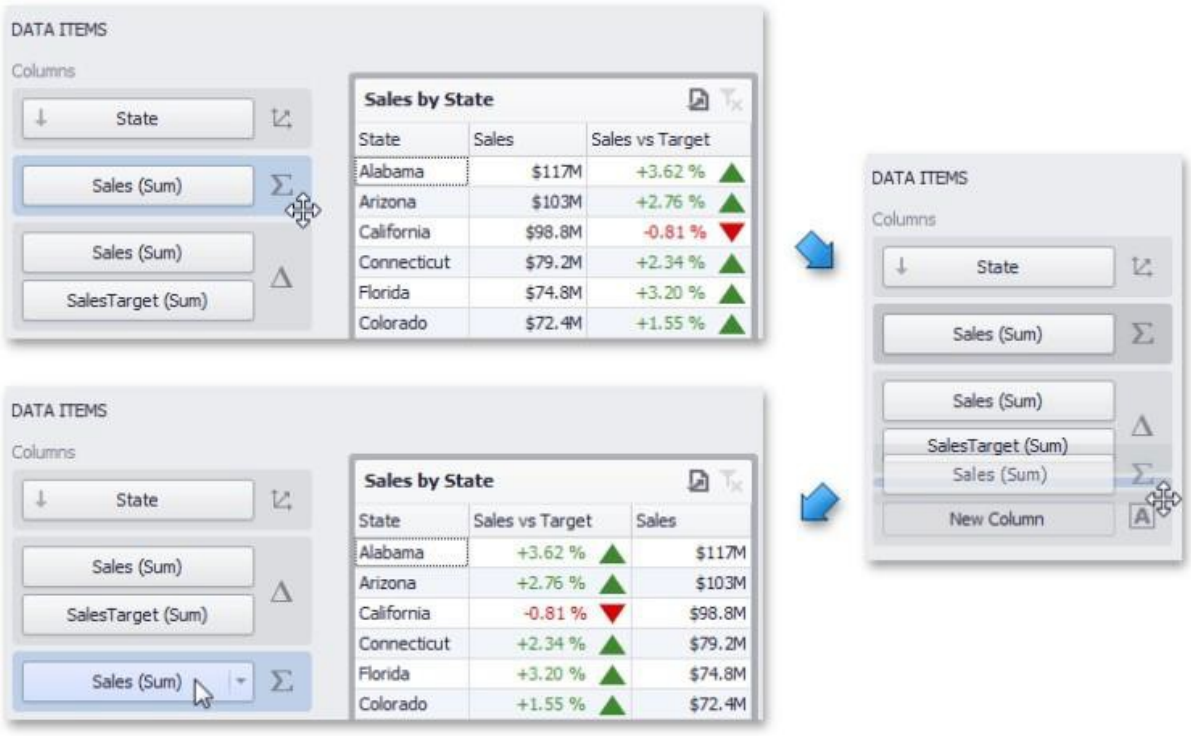
To learn how to bind a specific dashboard item to data, see the Providing Data topic for the required dashboard item.

To rename the data item, click its menu button and select **Rename**.



Modify Binding

You can modify data binding by dragging data item containers within a data section. To do this, drag the data item container to the required position.

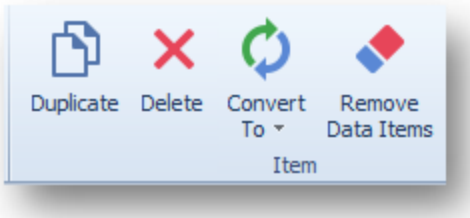


You can also modify data binding by dragging data items within the data items pane. This action has the following specifics:

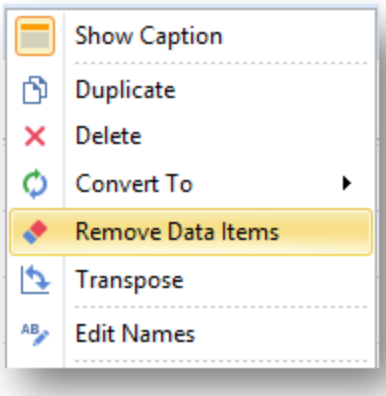
- If you drag the data item to a new position, the settings specified for the corresponding data item container will be restored to the default values.
- If you drag the data item to an existing data item placeholder, the settings of the corresponding data item container will be applied.

Clear Binding

To remove all data items for a selected dashboard item, use the Remove Data Items button in the Home ribbon tab.



You can also do this via the dashboard item's context menu.



Working with Data

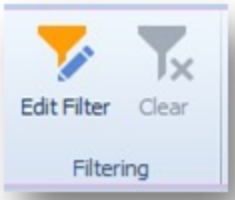
The topics in this section describe how to work with data in a connected data source. This section contains the following topics:

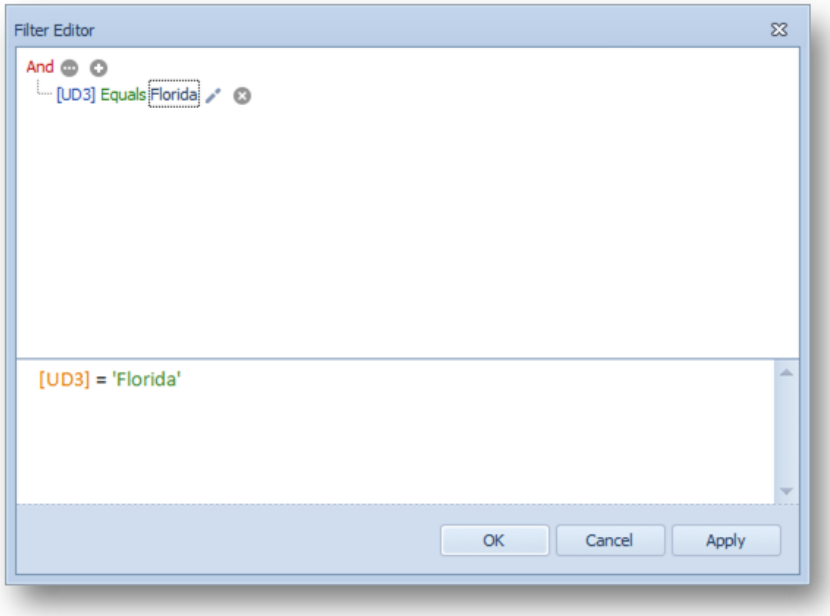
- Filter Queries
- Pass Query Parameters Stored Procedures Preview Data
- Creating Calculated Fields

Filter Editor

Filtering can be applied to either underlying or aggregated data.

To filter data, click the **Edit Filter** button in the data ribbon tab, or right-click in dashboard item to bring up the filter editor dialog, which allows you to build filter criteria.



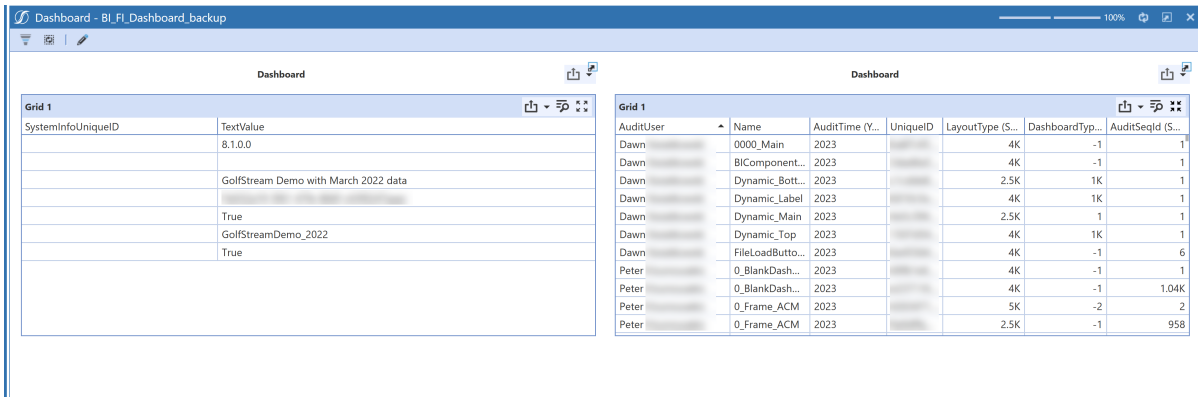


The filter tab allows you to filter underlying data, while the group filter tab provides the capability to filter data aggregated on the server side. In the Filter Editor, you can compare a field value with the following objects:

- A static value (represented by the icon): Click this button to switch to the next item mode ("another field value") to compare the field value with another field value.
- An other field value (represented by the icon): Click this button to switch to the next item mode (parameter value) to compare the field value with a parameter value.
- A parameter value (represented by the icon): Click this button to switch back to the initial mode ("static value") to compare the field value with a static value.

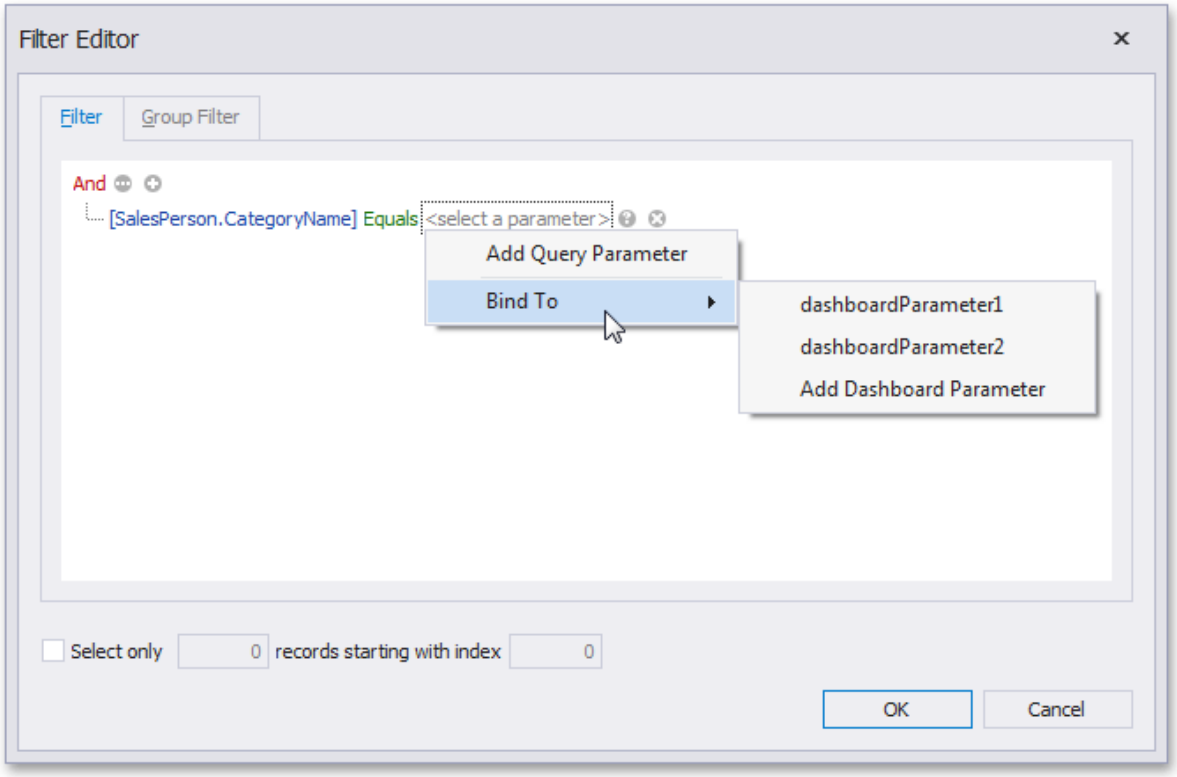
When setting a field on the Show Filter Panel Mode property, the filter editors will be displayed as it is set.

> **Example:** The component below has a show filter panel mode field set to Dynamic. In the BI Designer tab, "Grid 1" will not have a checkbox filter button listed at the bottom-left of the section.



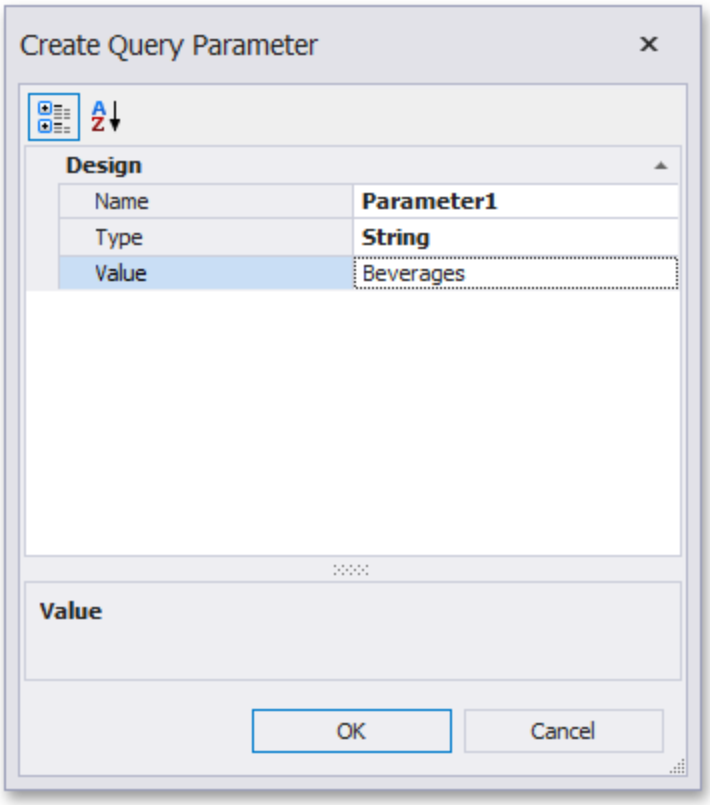
See Show Filter Panel Mode for more information.

You can pass the query parameter to the filter string. To do this, click the button, then click the button and finally click <select a parameter>.

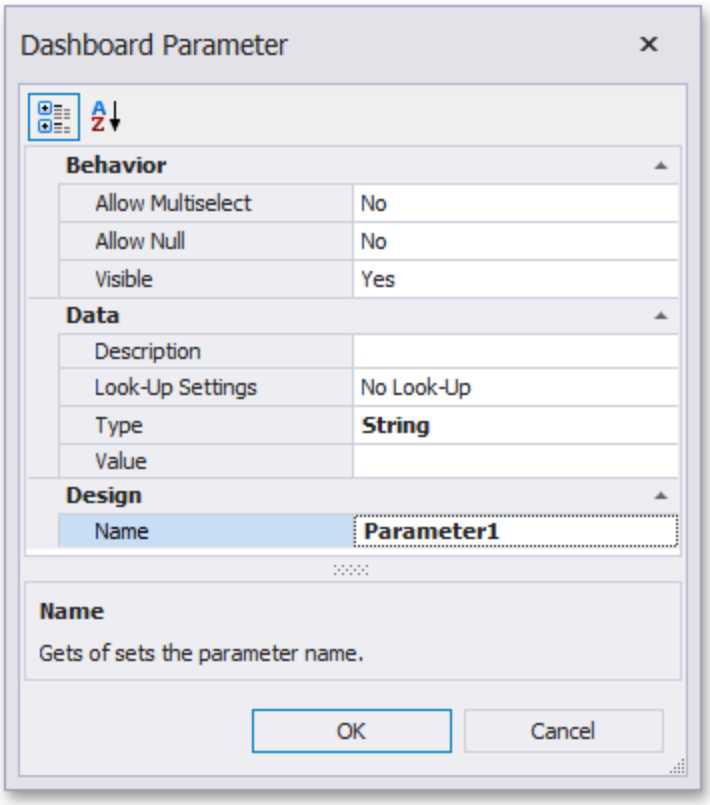


In the popup menu, you can choose from the following options:

Add Query Parameter: Allows you to create a new query parameter. In the corresponding dialog, you can specify a parameter's name, type, and value. If the current query already contains query parameters, they will be displayed within the popup menu.



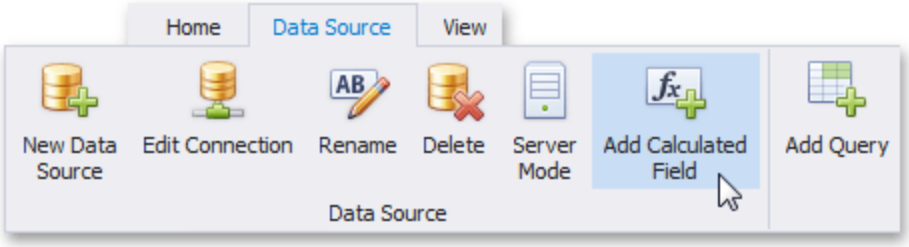
Bind To: Allows you to pass a dashboard parameter to a filter string. You can choose from the list of predefined dashboard parameters or create a new dashboard parameter by selecting Add Dashboard Parameter. If you selected Add Dashboard Parameter, the following dialog will be invoked.

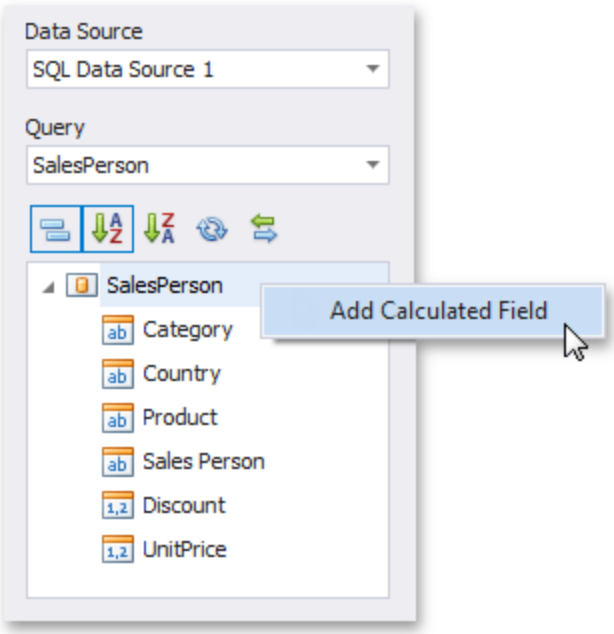


Creating Calculated Fields

The dashboard designer provides the capability to create calculated fields that allow you to apply complex expressions to data fields that are obtained from the dashboard's data source. You can use these fields in data visualizations as regular data source fields. After you have created a data source, you can add a new calculated field based on the existing data source fields.

To create a calculated field, select the required data source (and the required query/data member, if applicable) in the data source browser and click the **Add Calculated Field** button in the ribbon's data source tab, or right-click the field list and select Add Calculated Field in the context menu.



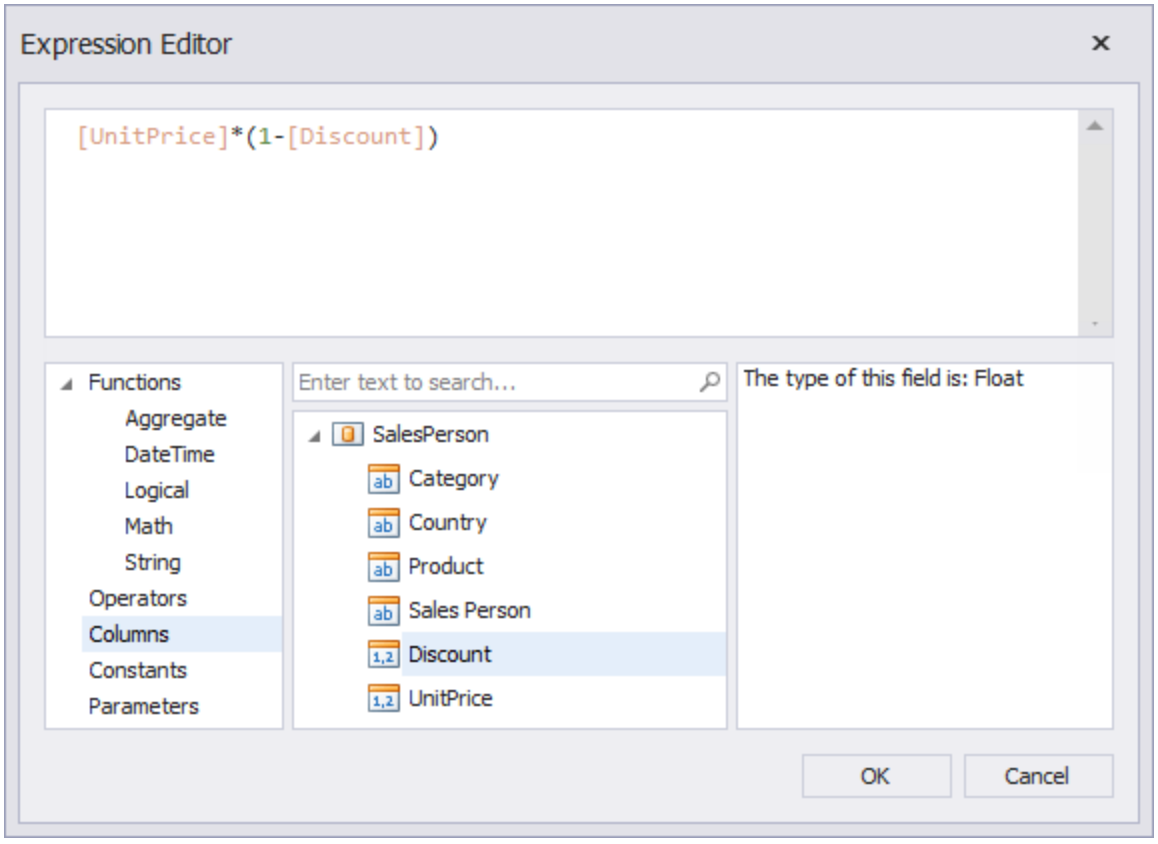


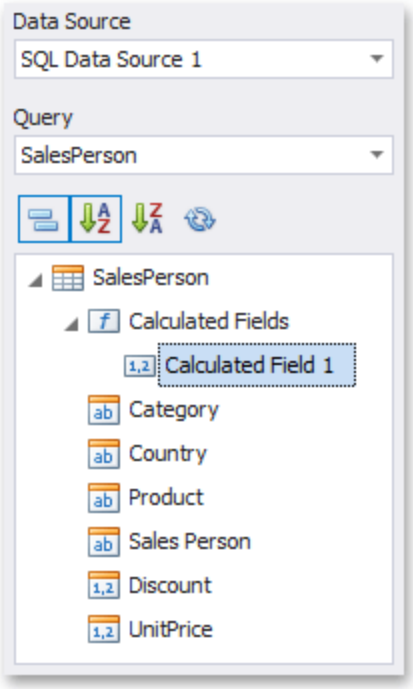
This prompts the expression editor dialog, which allows you to specify an expression that will be used to obtain calculated field values. Here, you can construct the required expression.

You can use the following elements in expressions:

- Functions
- Operators
- Columns
- Constants
- Parameters

After the expression has been specified, click OK. This displays a new calculated field in the data source structure. Now you can specify the required calculated field type.





Editing a Calculated Field

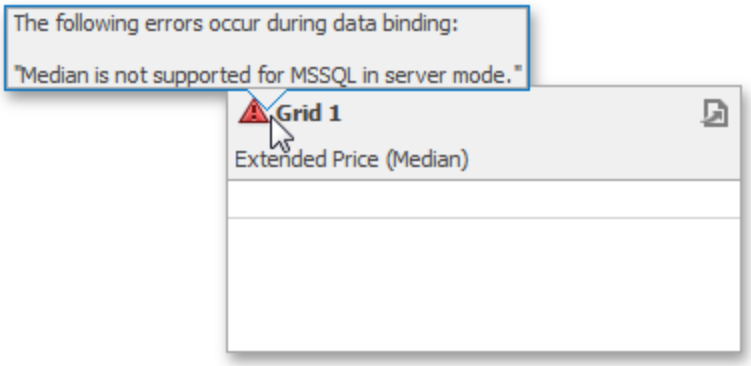
To edit a calculated field, use its context menu.

This menu contains the following items:

- **Edit Expression**: Prompts the expression editor dialog, which allows you to change an expression for an existing calculated field.
- **Field Type**: Specifies the type of the calculated field.
- **Rename**: Changes the calculated field name.
- **Delete**: Removes the existing calculated field from the data source.

Data Processing Errors

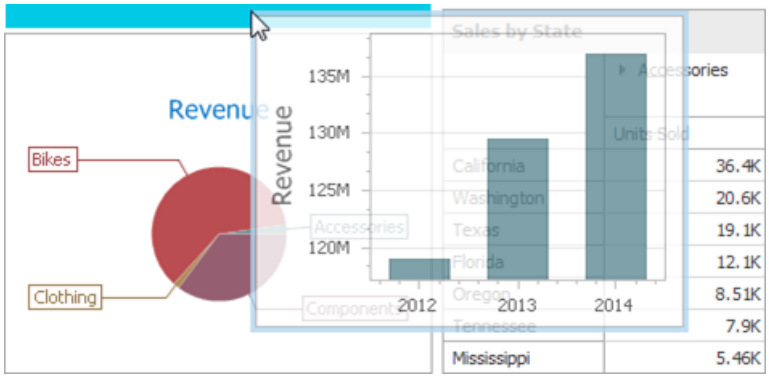
The Dashboard Designer provides the capability to display errors that occurred during data processing operations (such as changing measure summary types, calculation errors, etc.). For instance, the grid below shows an error when the summary type of the extended price measure is set to median in server mode.



To see the error message, hover the mouse pointer over the icon.

BI Dashboard Items Layout

The BI Dashboard Designer provides the capability to arrange and resize dashboard items and groups in various ways, using simple drag-and-drop operations.

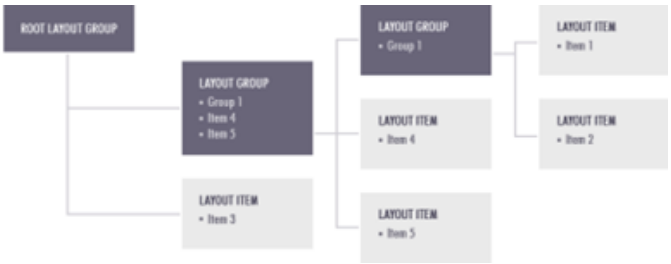


Layout Concepts

The dashboard arranges dashboard items and groups using layout items and layout groups. They are special containers that are used to present a dashboard layout as a hierarchical structure.

- A layout item is used as a container that displays an individual dashboard item.
- A layout group is used as a container that is used to arrange layout items (or other layout groups) either horizontally or vertically. At the same time, layout groups are used as containers that display dashboard item groups.

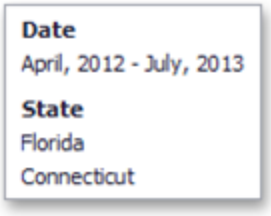
Thus, a dashboard layout is hierarchically arranged from the root layout group to bottommost layout items, which display individual dashboard items.



Dashboard Title

The Dashboard Title is located at the top of the Dashboard. The dashboard title can contain text or image content, elements selected in the master filter item and command buttons.

When you hover over the filter icon, all master filters applied to the dashboard are displayed in the invoked pop-up.



The dashboard title can contain the following command buttons:

- **Export To** button (the icon) allows you to print/export the dashboard. To learn more about printing and exporting, see the Printing and Exporting topic.
- **Parameters** button (the icon) allows you to modify dashboard parameter values. To learn how to modify dashboard parameter values, see the Requesting Parameter Values topic.

Dashboard Item Caption

Each dashboard item has a caption that is displayed at the top of this item. The caption contains static text along with other information, as well as command buttons.

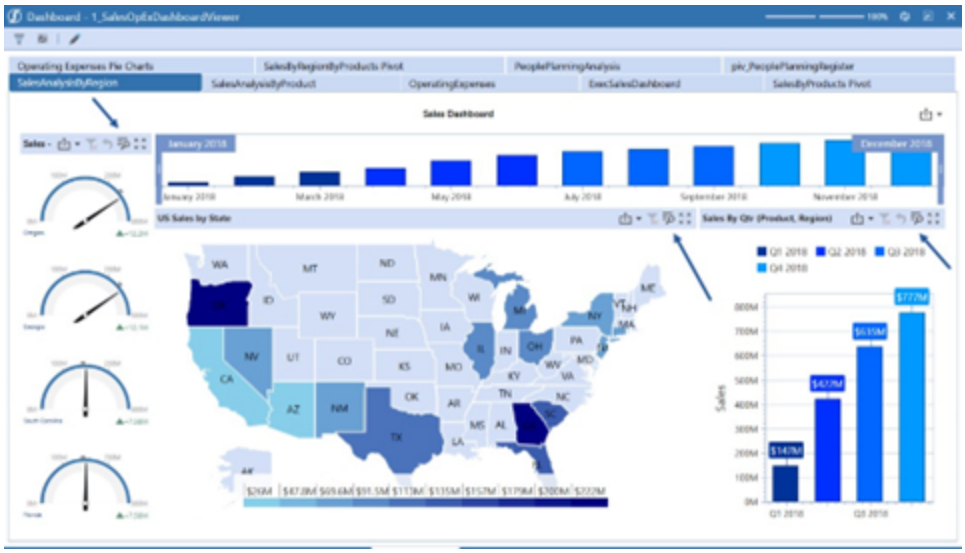
The caption of the Dashboard item contains the following information and buttons, depending on the dashboard item type:

- **Dashboard Item Name**: Represents the static text within a dashboard item's caption
- **Data Item Container Name**: Represents the name of the data item container
- **Drill-Down Value**: Shows value(s) from the current drill-down hierarchy
- **Export To Button**: Allows you to print or export a dashboard item
- **Values Button**: Invokes a drop-down menu that allows you to switch between provided values (in the pie, card, gauge and map dashboard items)
- **Clear Master Filter Button**: Allows you to reset filtering when a dashboard item acts as the Master Filter
- **Drill Up Button**: Allows you to return to the previous detail level when the drill-down capability is enabled for this item

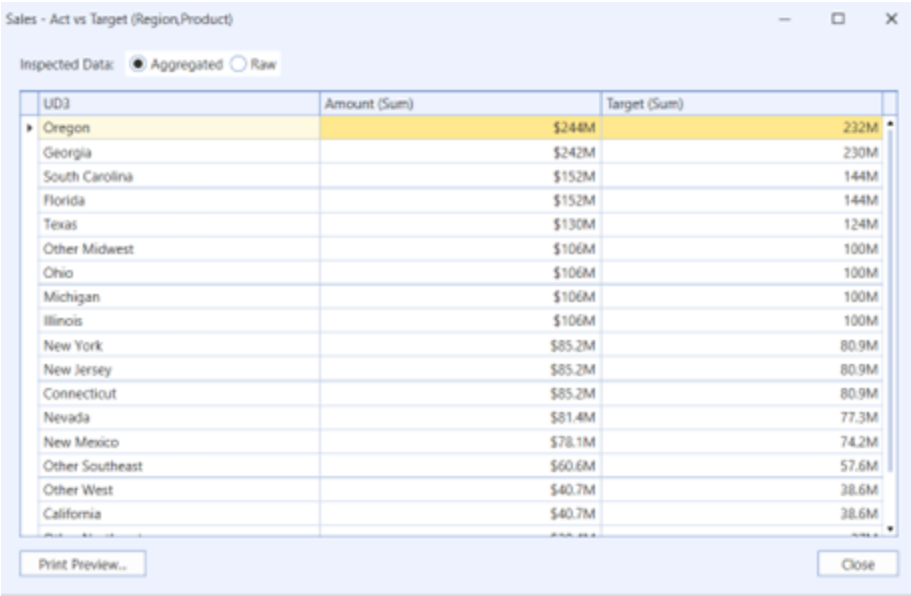
Inspect Data

You can review your underlying data from your visualization in an aggregated or raw data view and create quick reports which can be exported to multiple formats.

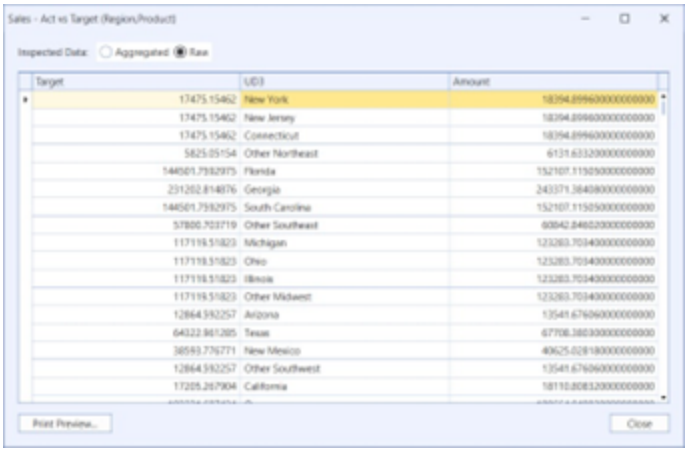
1. Click **Inspect Data** from a Dashboard or from the BI Designer to open the Data Inspector window.



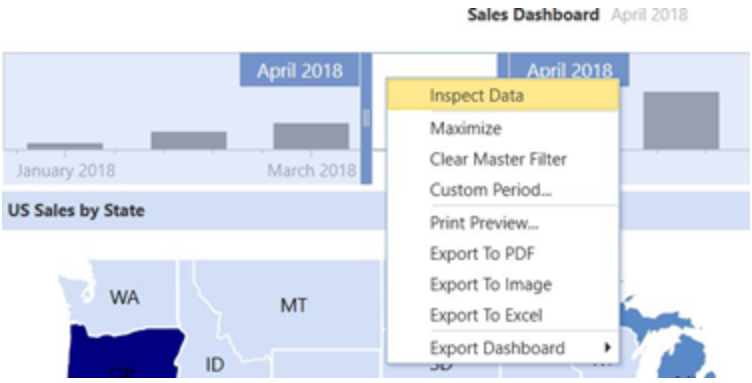
2. Click **Aggregated** to review the data that is retrieved from the dashboard item's data.



3. Click **Raw** to review the data from the dashboard item's underlying data.

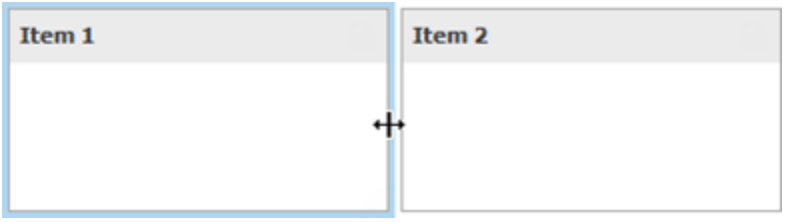


4. You can also right-click for the Inspect Data menu option.

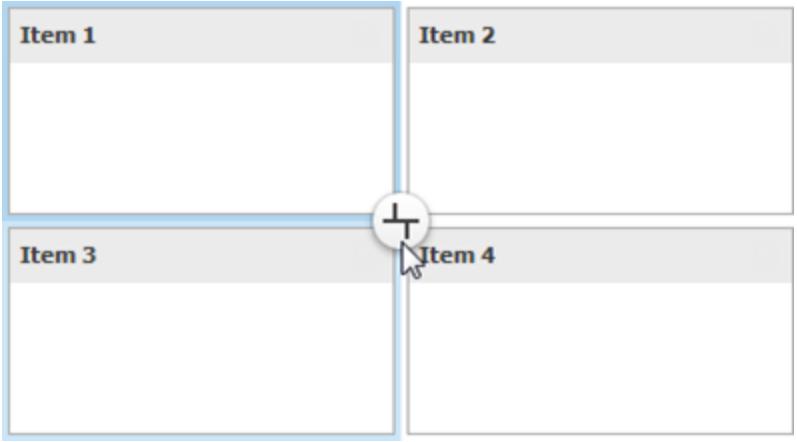


Item Resizing

You can resize individual items/groups of items by dragging their edges.



By default, a 2x2 layout group of dashboard items is horizontally oriented and contains two child layout groups. This arranges dashboard items in two 'columns' and allows you to set a different height for items in different columns. You can switch the orientation of the 2x2 group to Vertical using the indicator at the group intersection.



Item Positioning

You can change the position of a dashboard item by using drag-and-drop and one of the following approaches:

- If the caption of the dashboard item is visible, click it and hold down the left mouse button while dragging the item.
- If the caption of the dashboard item is not visible, click the icon in the top left corner, and hold down the left mouse button while dragging the item.

Designing Dashboard Items

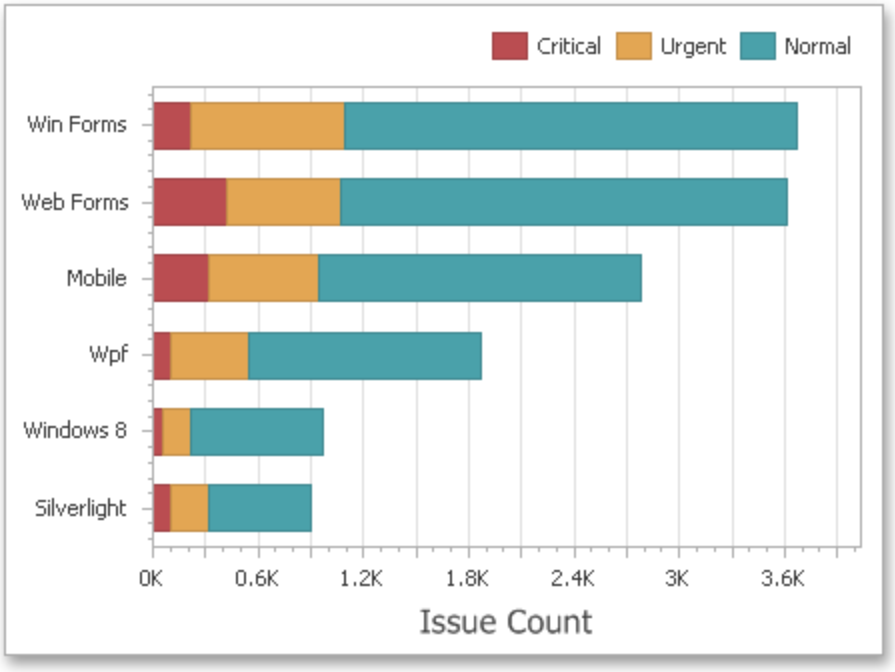
The BI Dashboard provides several visualization elements designed to present visual or textual information in a dashboard.

This section describes the available dashboard items:

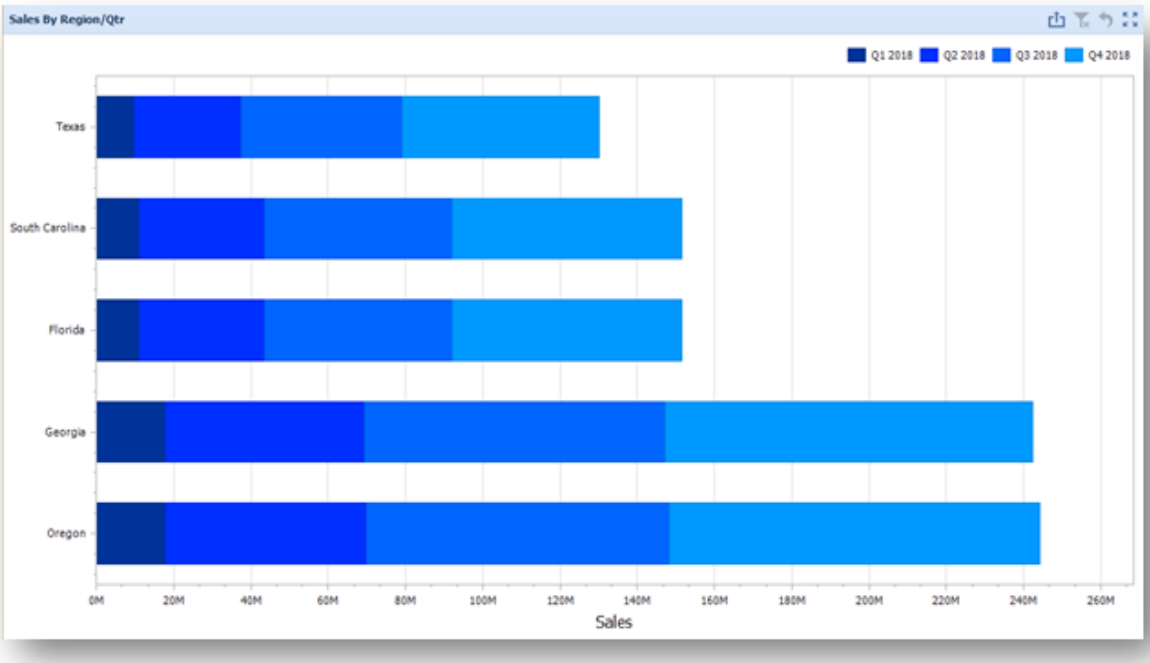
- Chart
- Scatter Chart
- Grid
- Pies
- Cards
- Gauges
- Pivot
- Choropleth Map
- Geo Point Maps
- Range Filter
- Images
- Text Box
- Treemap
- Filter Elements
- Dashboard Item Group
- Converting Dashboard Items

Chart

The topics in this section describe the features available in the Chart dashboard item and provide extensive information on how to create and customize charts in the Dashboard Designer.



The Chart dashboard item presents data visually using different types of series.



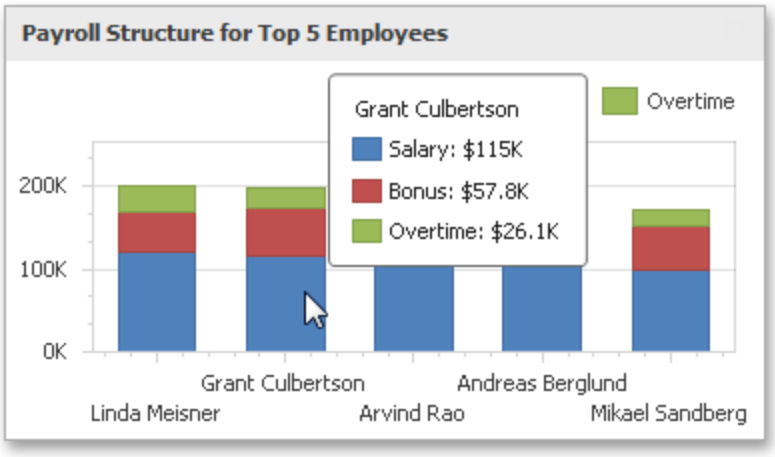
A series represents a grouping of related data points. The most important characteristic of a series is its type, which determines a particular visual representation of data.

The Chart dashboard item includes the following series types:

- A **Bar** series displays data as sets of rectangular bars with lengths proportional to the values that they represent.
- **Point** and **Line** series display data as standalone points or points joined by a line.
- An **Area** series displays data by a line that joins points, and the shaded area between the line and the argument axis.
- A **Range** series is the area between two simple series displayed as a shaded area, or bars that stretch from a point in one series to the corresponding point in another series.

- A **Weighted** series displays data using a third dimension, expressed by a bubble's size.
- **Financial** series are useful in ananlyzing stock and bond prices as well as the behavior of commodities.

The Chart dashboard item can display a tooltip that shows information on a hovered series point.



Providing Data

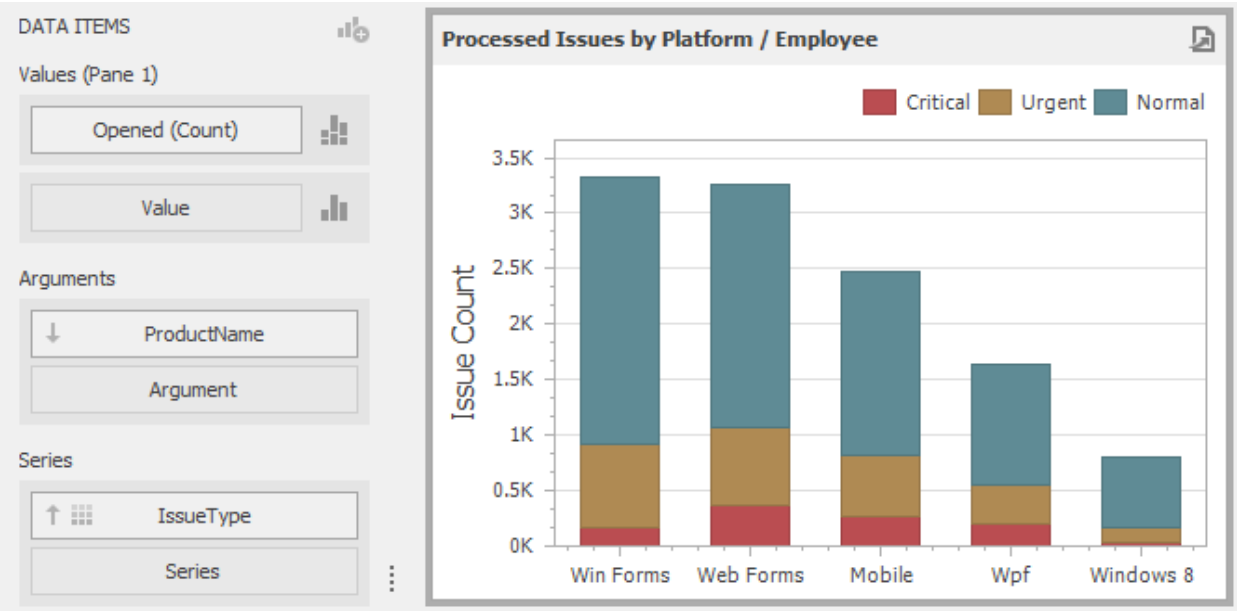
The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner. To learn more, see the Binding Dashboard Items to Data topic.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Chart dashboard item to data in the Designer.

Binding to Data in the Designer Transposing Arguments and Series.

Binding to Data in the Designer

The image below shows a sample Chart dashboard item that is bound to data.

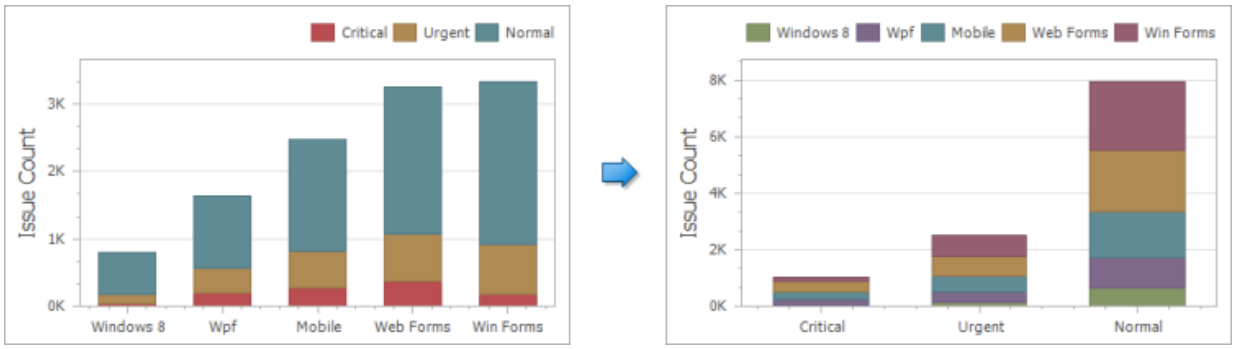


To bind the Chart dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. The table below lists and describes the Chart's data sections.

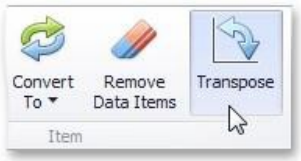
Section	Description
Values	Contains Data Items against which the Y-coordinates of data points are calculated. The Options button next to the Value data item allows you to select the series type and specify different options. Note that some types of series accept several measures. To learn more, see the documentation for the required series type.
Arguments	Contains Data Items that provide values displayed along the X-axis of the chart.
Series	Contains Data Items whose values are used to create chart series.

Transposing Arguments and Series

The Chart dashboard item provides the capability to transpose chart arguments and series. In this case, Data Items contained in the Arguments section are moved to the Series section, and vice versa.



To transpose the selected Chart dashboard item, use the Transpose button in the Home ribbon tab.



Series

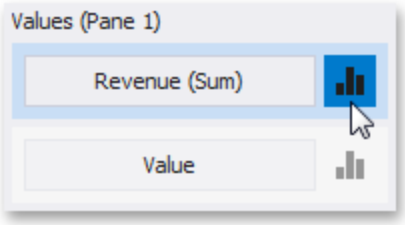
This section describes how to select a desired series type in the overview topic, and lists the variety of available series types.

Series Overview

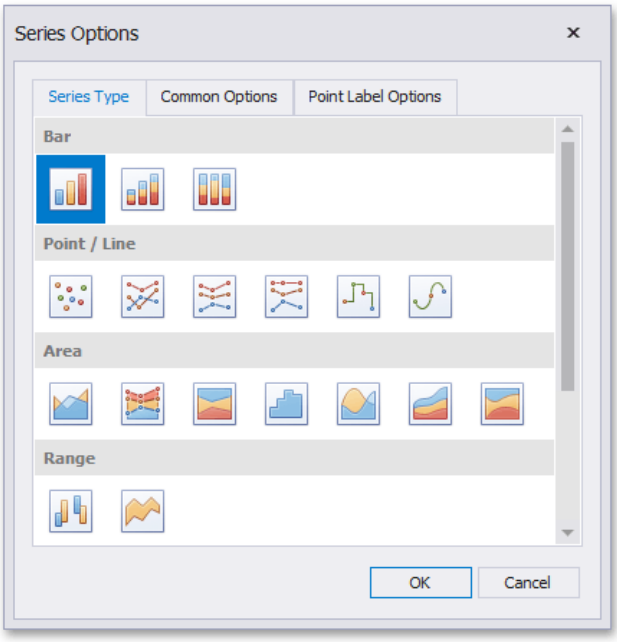
The Chart dashboard item supports a variety of series types - from simple bar and line charts to complex candle stick and bubble graphs.

Series Types

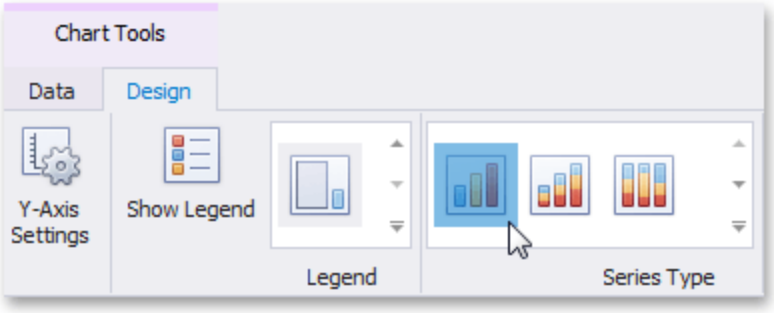
To switch between series types in the Dashboard Designer, click the Options button next to the required data item (or placeholder) in the Values section. Filtering can be applied to either underlying or aggregated data.



In the invoked Series Options dialog, select the required series type and click **OK**.

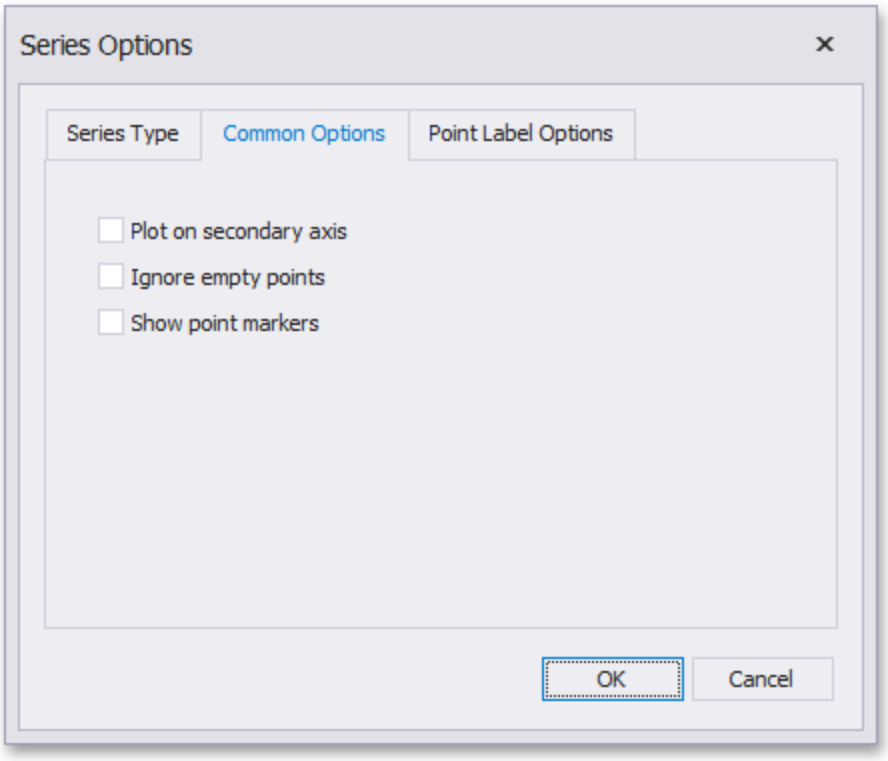


You can also do this using the Series Type gallery in the Design Ribbon tab.



Series Options

To manage common series options, use the Common Options tab of the Series Options dialog.



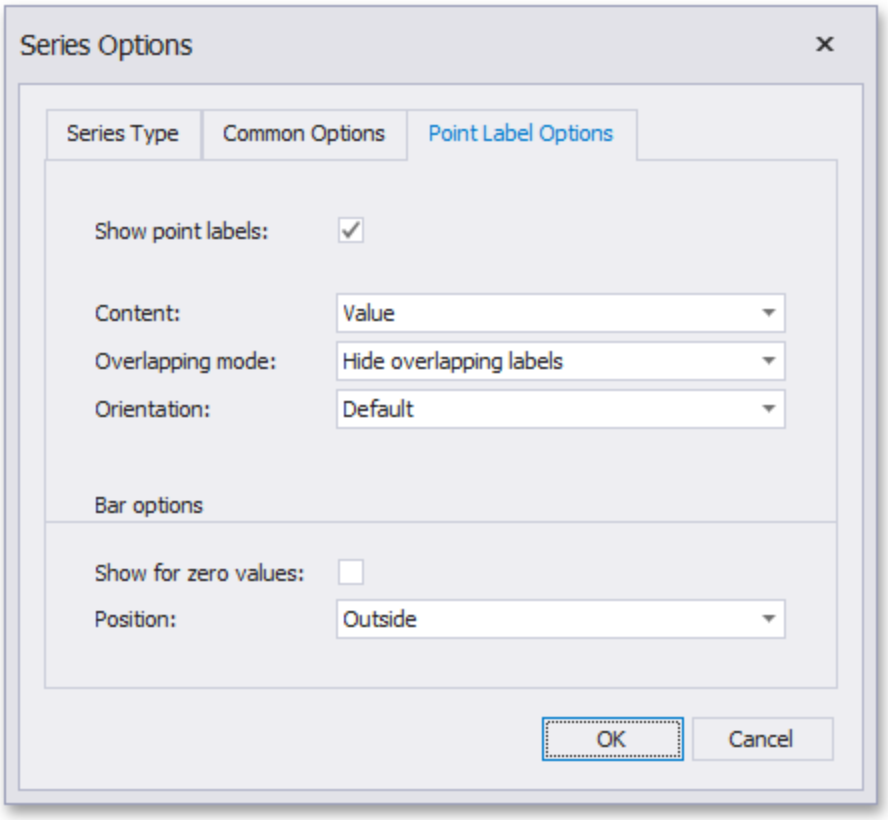
Plot on secondary axis: Specifies whether or not the secondary axis is used to plot the current series.

Ignore empty points: Specifies whether or not empty points are ignored when plotting the current series. Note that this option is in effect for the Line, Area, and Range Area series.

Show point markers: Specifies whether or not to show point markers for the current series. Note that point markers are always shown when Master Filtering is enabled for the Chart dashboard item.

Series Point Labels

The Point Label Options tab of the Series Options dialog allows you to enable series point labels and manage their settings.



Show point labels: Specifies whether or not to show point labels for the current series.

Content: Specifies the type of content displayed within point labels.

Overlapping mode: Specifies the label overlap mode. This option is not in effect when the dashbaord is displayed in the Web Viewer.

Orientation: Specifies the orientation of point labels.

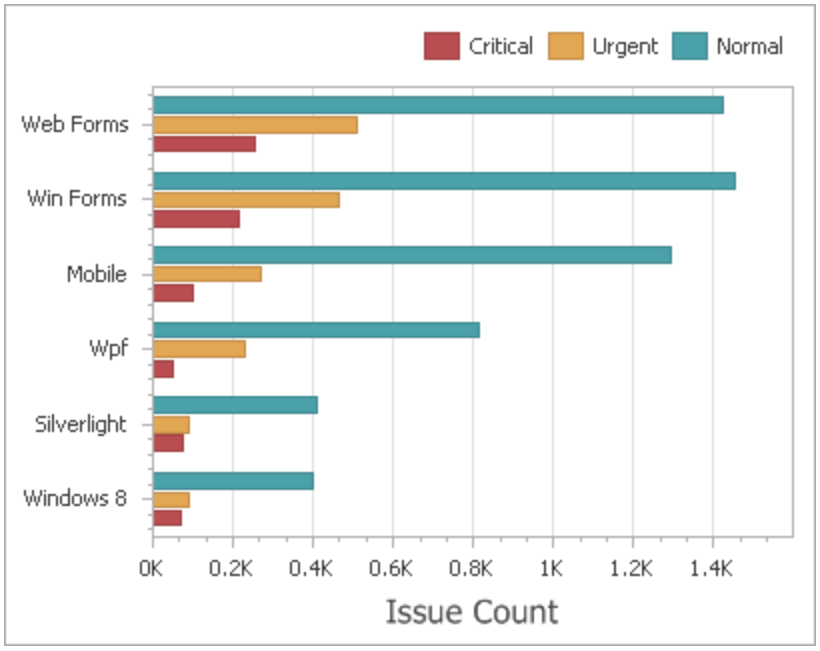
Bar options: These settings are in effect for Bar series only.

Show for zero values: Specifies whether or not to show labels for points with zero values.
Position - Specifies the position of point labels relative to bars.

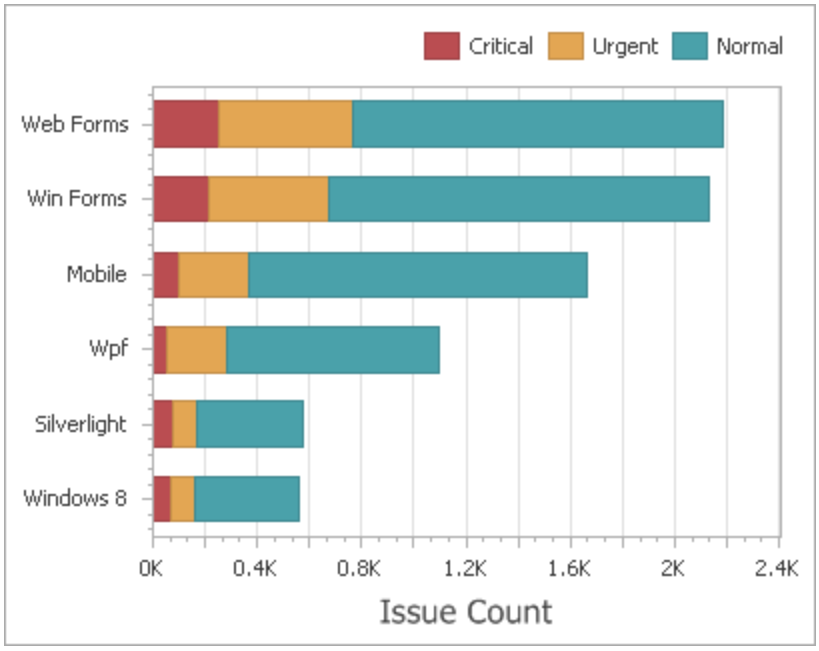
Bar Series

Bar series visualize data using rectangular bars with lengths proportional to the values that they represent.

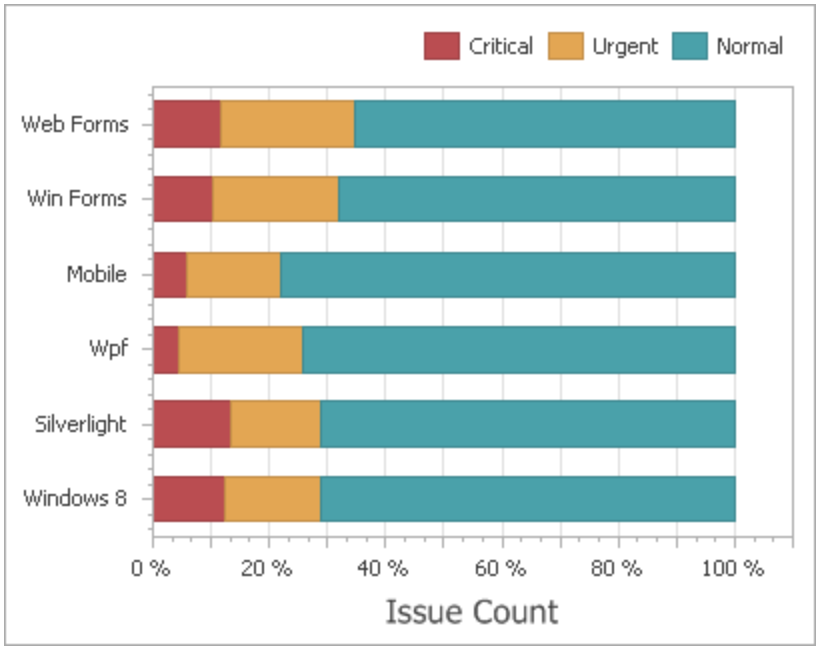
Bar series can be used to compare values across categories.



Stacked Bar series show the contribution of individual categories to the whole.



Full-Stacked Bar series allow you to compare the percentage that each value contributes to a total across categories.



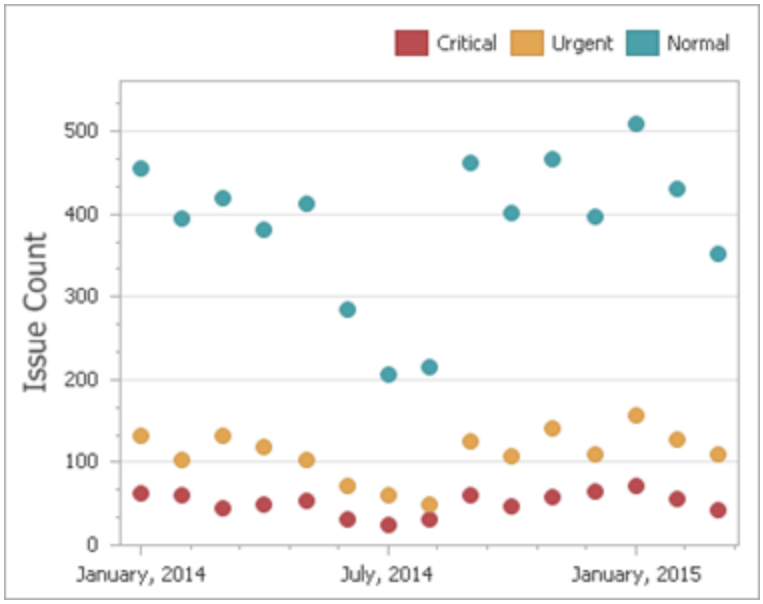
Point and Line Series

Point series visualize data as a set of individual numeric data points. Line series are used to connect numeric data points by different types of line segments.

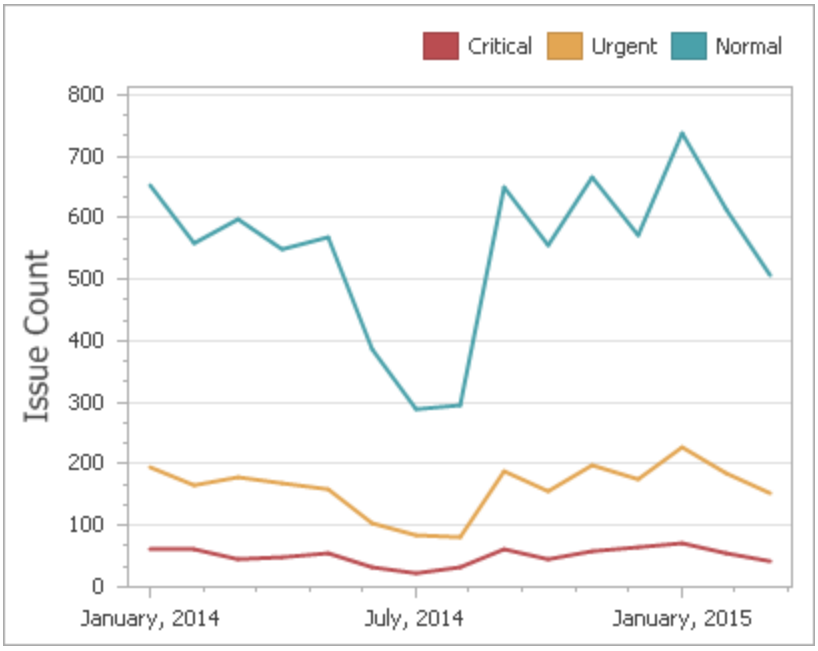
The following types of Point and Line series are available:

- Point Line
- Stacked Line
- Full-Stacked Line Step Line
- Spline

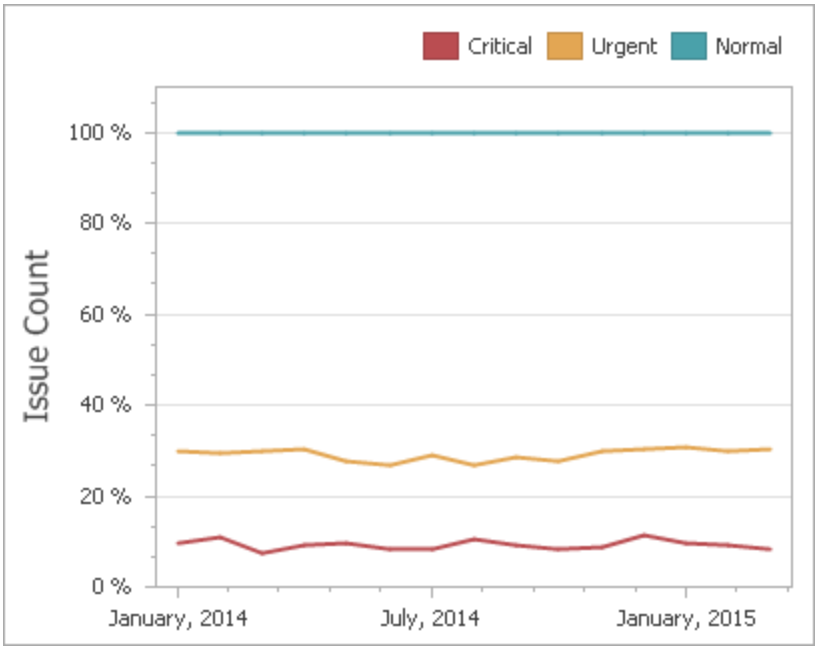
Point series visualize data as a set of individual numeric data points.



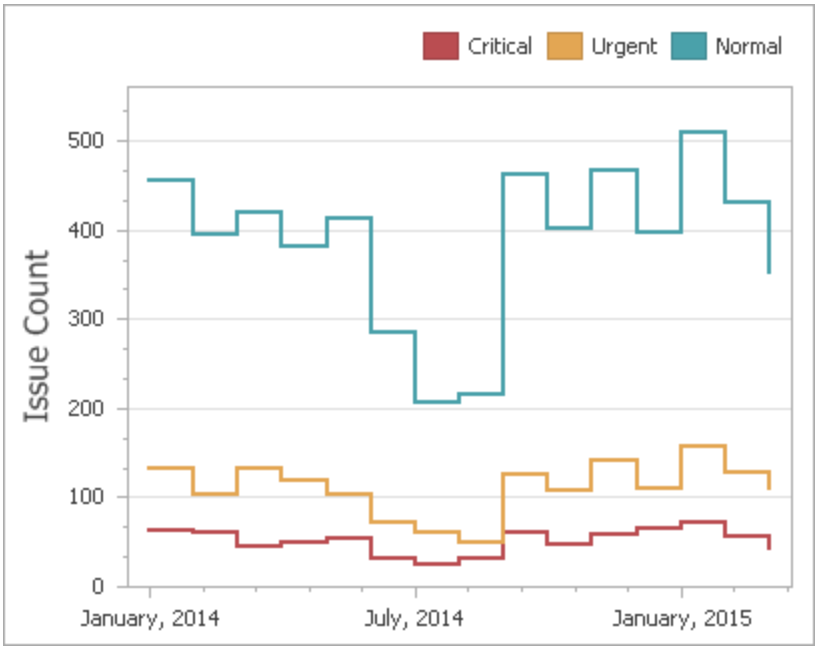
Line Series Connect numeric data points by straight line segments.



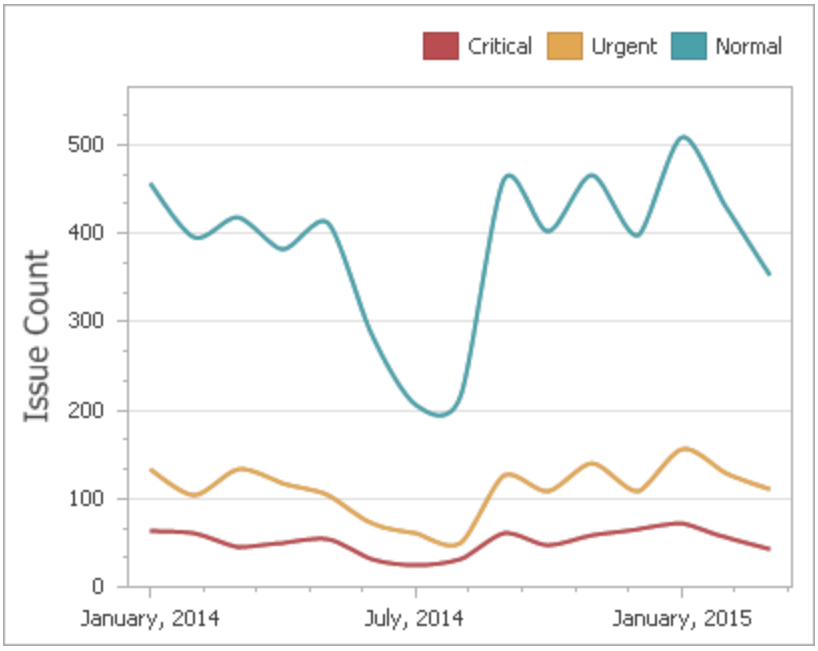
Stacked Line series are useful for showing the trend of the percentage for each value.



Step Line series use vertical and horizontal lines to connect the numeric data points forming a step-like progression.



Spline series plot a fitted curve through each numeric data point.



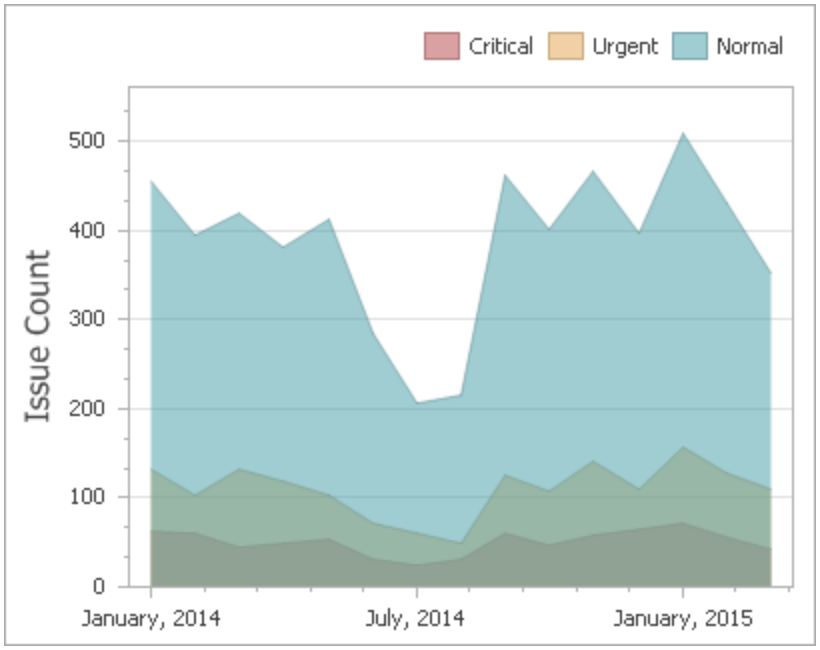
Area Series

Area series connect numeric data points by different types of line segments and fill the area between the line and X- axis/other series.

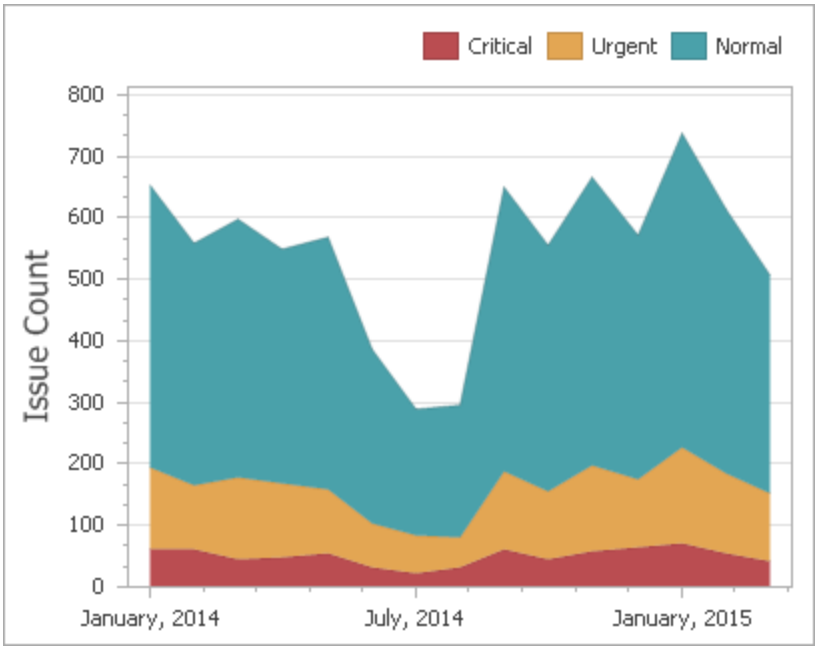
The following types of Point and Line series are available:

- Area
- Stacked Area
- Full-Stacked Area
- Step Area
- Spline
- Area Stacked
- Spline Area
- Full-Stacked Spline Area

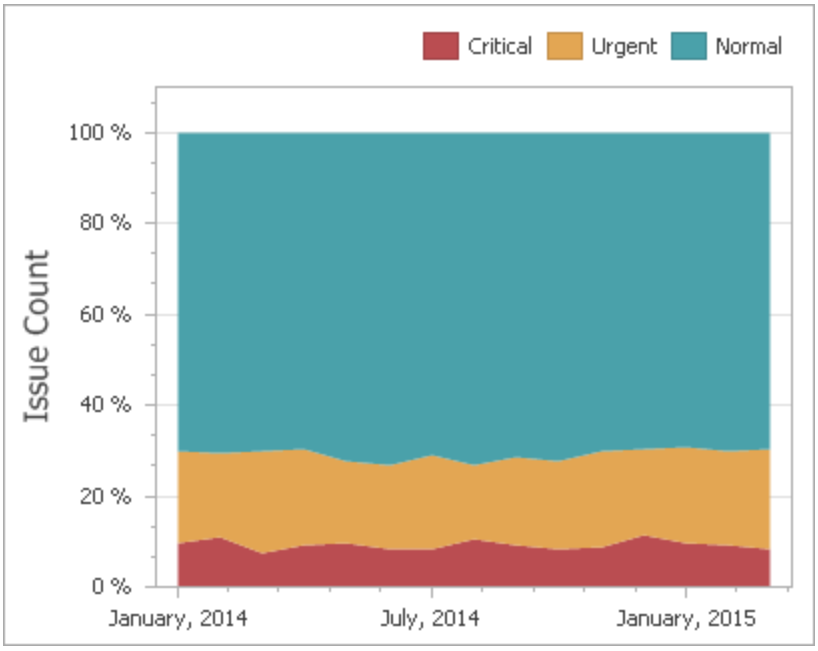
Area series connect numeric data points y straight line segments and fill the area between the line and X-axis.



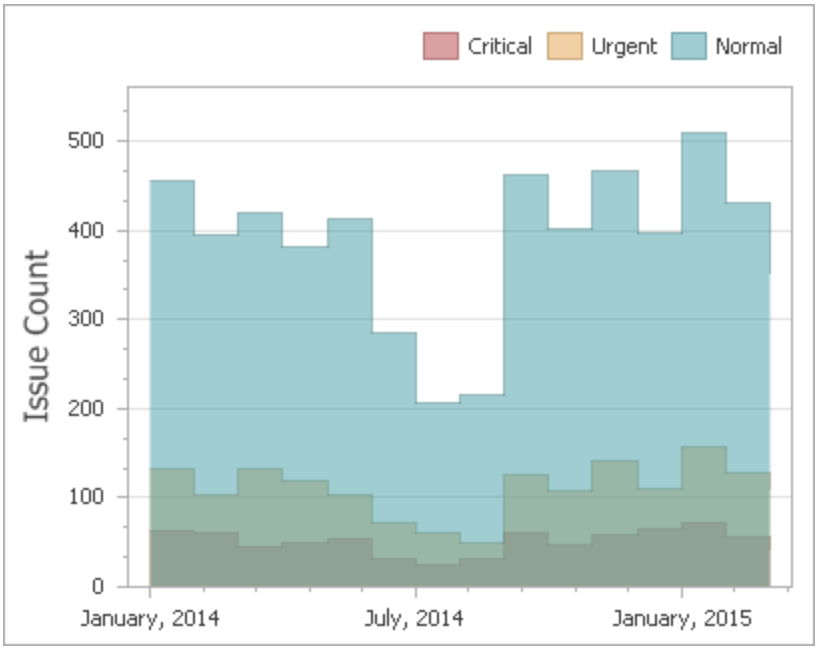
Stacked Area series can be used to show the trend of the contribution for each value. Stacked Area series connect numeric data points by straight line segments and fill the area between the line and previous series.



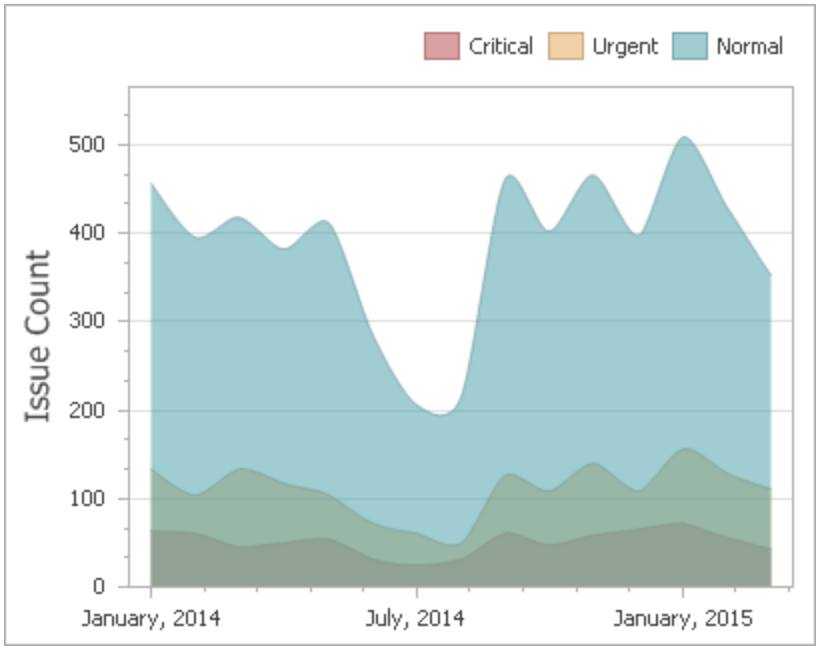
Full-Stacked Area series are useful to show the trend of the percentage for each value.



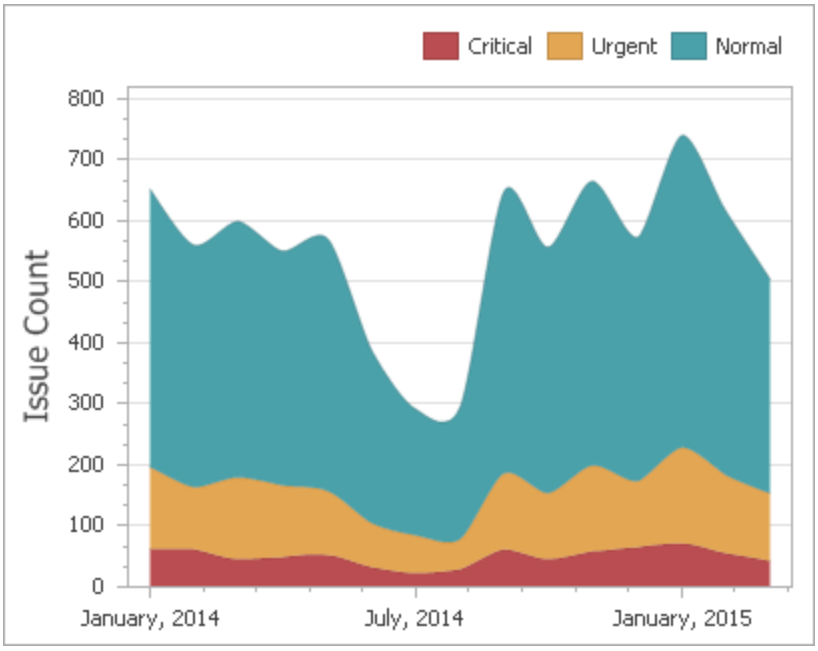
Step Area series use vertical and horizontal lines to connect the numeric data points forming a step-like progression and fill the area between the line and X-axis



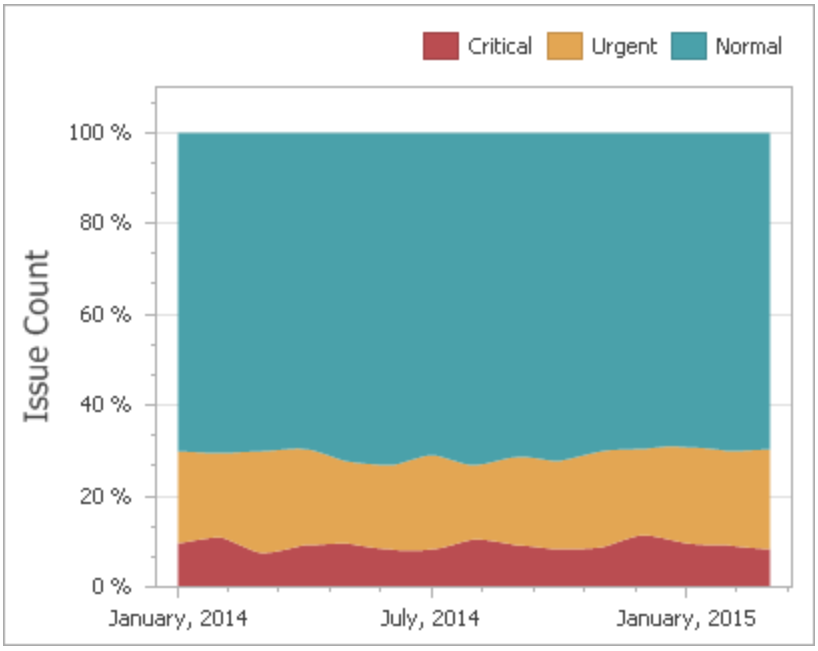
Spline Area series plot a fitted curve through each numeric data point and fill the area between the line and X-axis.



Stacked Area series can be used to show the trend of the contribution for each value. Stacked Area series plot a fitted curve through each numeric data point, and fill the area between the line and previous series.



Full-Stacked Spline Area series are useful to show the trend of the percentage for each value.



Range Series

Range series are generally used to show variations in a specified time range like temperature, price, etc. The following types of Range series are available:

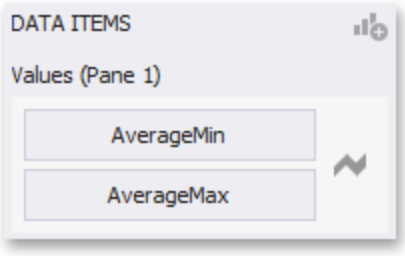
- Range Bar
- Range Area

A range series is a space between two simple series displayed as a filled area (Range Area) or bars that stretch from a point in one series to the corresponding point in the other (Range Bar). Thus, you need to provide two measures instead of one to display a range series.

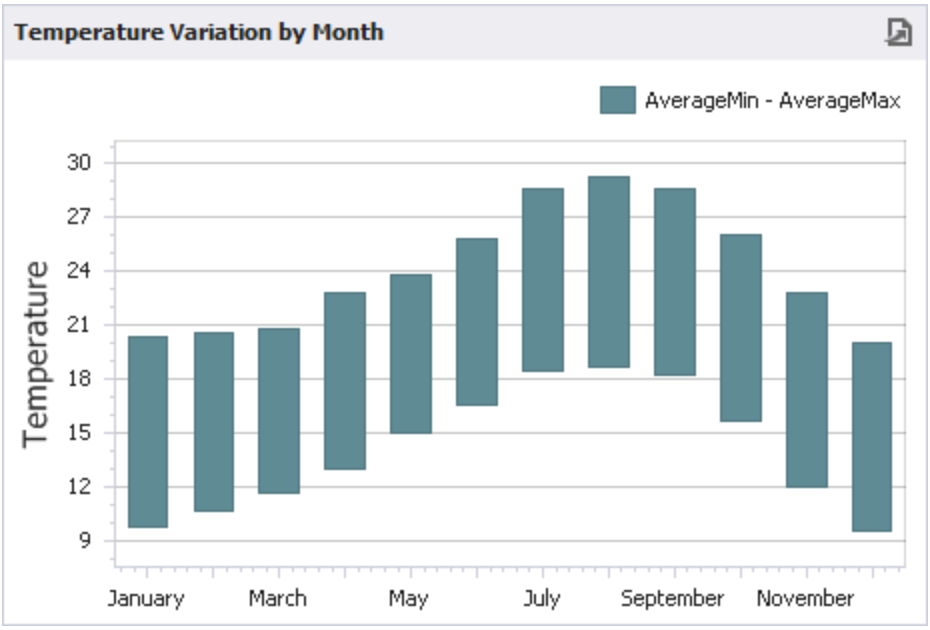
Value 1 - a measure against which the first set of values is calculated.

Value 2 - a measure against which the second set of values is calculated.

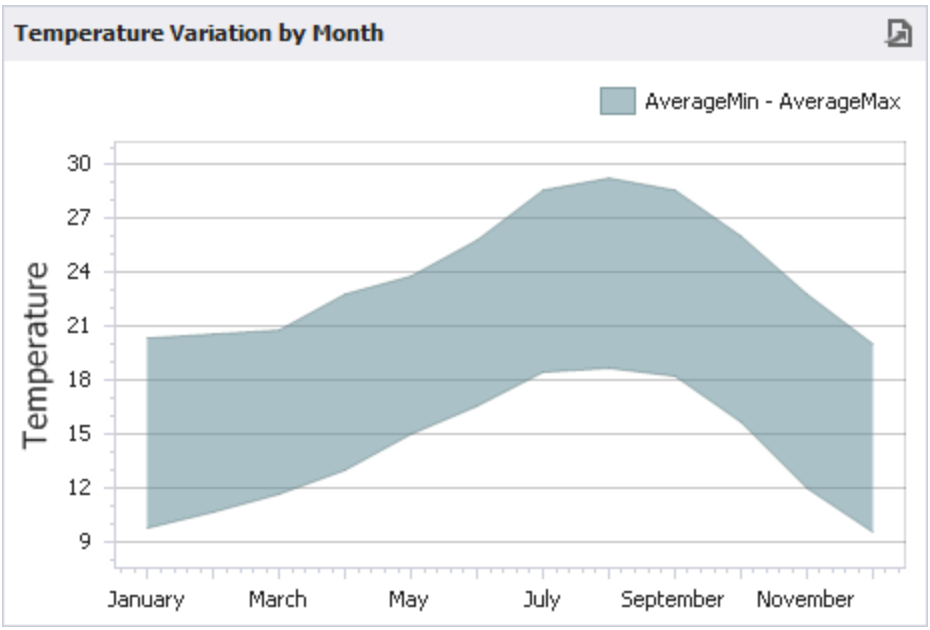
When you select the Range Bar or Range Area series type in the Designer, the Data Items area displays two data item placeholders. Drag and drop the required measures to corresponding placeholders.



Range Bar series are similar to Bar Series except that they are drawn between a range of values.



Range Area series are similar to Area Series except that their areas are filled between a range of values.



Weighted Series

Weighted series allow you to visualize data in three dimensions. The following types of Weighted series are available:

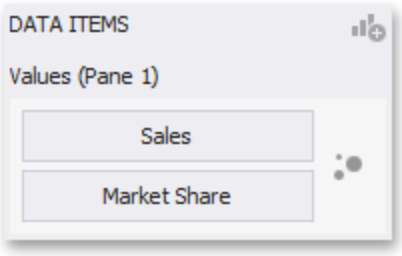
- Bubble

Data points in a weighted series present the following two measures.

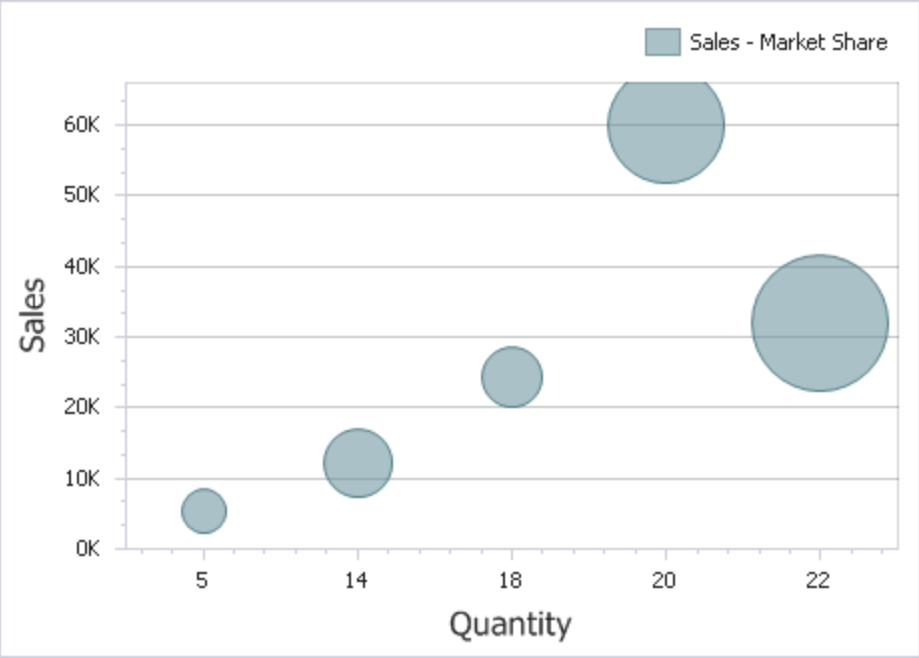
Value - the Y-coordinate of series points.

Weight - the size of series points.

When you select the Bubble series type in the Designer, the data items area displays two data item placeholders. Drag and drop the required measures to corresponding placeholders.



Bubble series are similar to Point Series except that they allow you to provide an additional measure whose values are expressed in a bubble size.



Financial Series

Financial series are used to illustrate stock prices. The following types of Financial series are available.

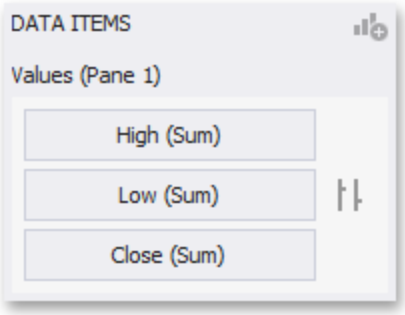
- High-Low -Close Stock
- Candle Stick

Note that financial series do not support a standard coloring mechanism used to color chart series points. The Chart dashboard item colors series points of financial series in the following way.

Black if the price at the end of the previous period is lower than the price at the end of the current period.

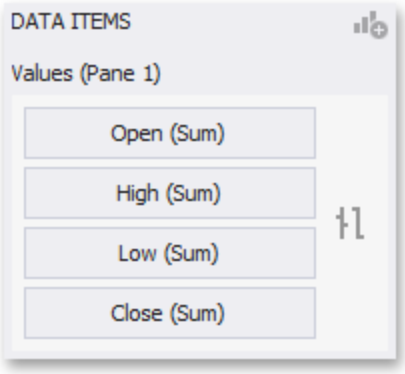
Red if the price at the end of the previous period is larger than the price at the end of the current period.

When you select the High-Low-Close series type in the Designer, the Data Items area displays three data item placeholders. High-Low-Close series require three measures to be provided.



- **High**: the maximum price within the specified period (the top of the series point).
- **Low**: the minimum price within the specified period (the bottom of the series point).
- **Close**: the price at the end of the specified period (the tick mark).

When you select the Stock series type in the Designer, the Data Items area displays four data item placeholders. Stock series require four measures to be provided.



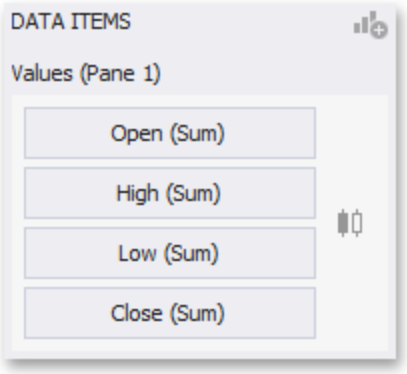
Open: the price at the beginning of the specified period (the left tick mark).

High: the maximum price within the specified period (the top of the series point).

Low : the minimum price within the specified period (the bottom of the series point).

Close: the price at the end of the specified period (the right tick mark).

When you select the Candle Stick series type in the Designer, the Data Items area displays four data item placeholders. Candle Stick series require four measures to be provided.



Open: the price at the beginning of the specified period.

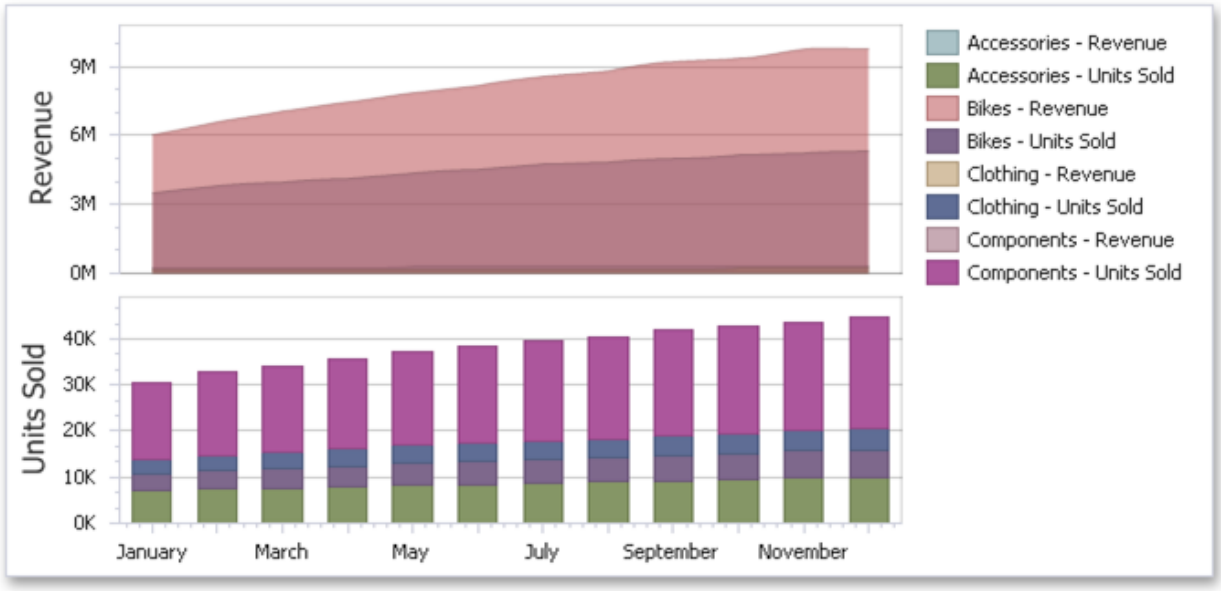
High: the maximum price within the specified period (the upper shadow top).

Low : the minimum price within the specified period (the lower shadow bottom).

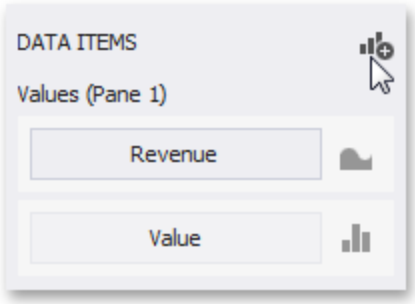
Close : the price at the end of the specified period.

The Chart dashboard item can contain any number of panes. Panes are visual areas within a diagram that display chart series.

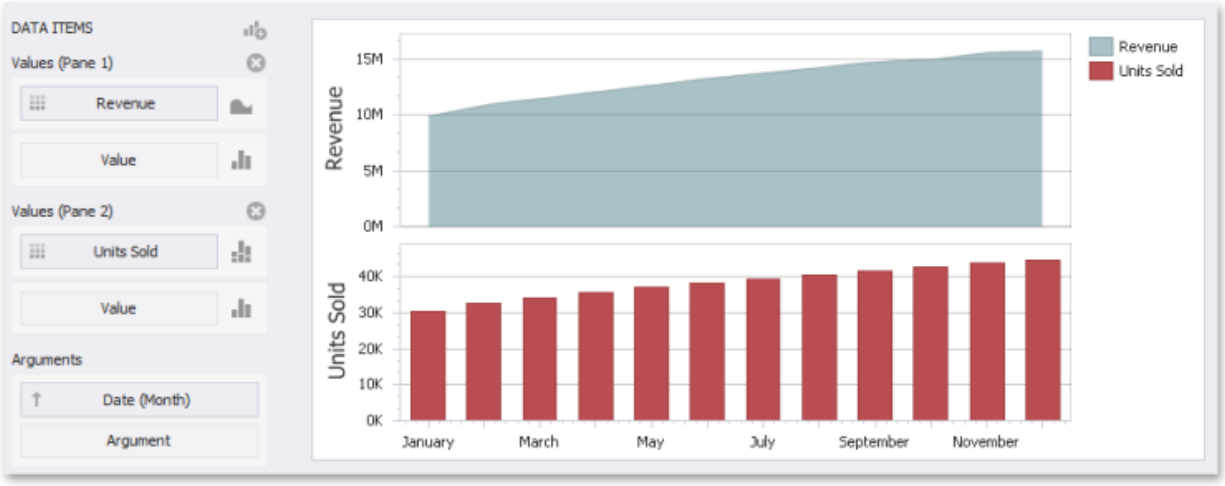
Each pane has its own Y-axis and displays a specific set of series. All panes in a chart share the same X-axis.



To add a pane click the **Add Pane** button (the icon) at the top right of the Data Items pane.



Once a new pane is added, the Dashboard Designer creates another Values section in the Data Items pane.



Use this section to provide Data Items that supply values to be displayed in the new pane.

To remove a pane, click the Remove Pane button (the icon) displayed in the corresponding Values section.

Interactivity

This section describes features that enable interaction between the Chart and other dashboard items. These features include Master Filtering and Drill-Down.

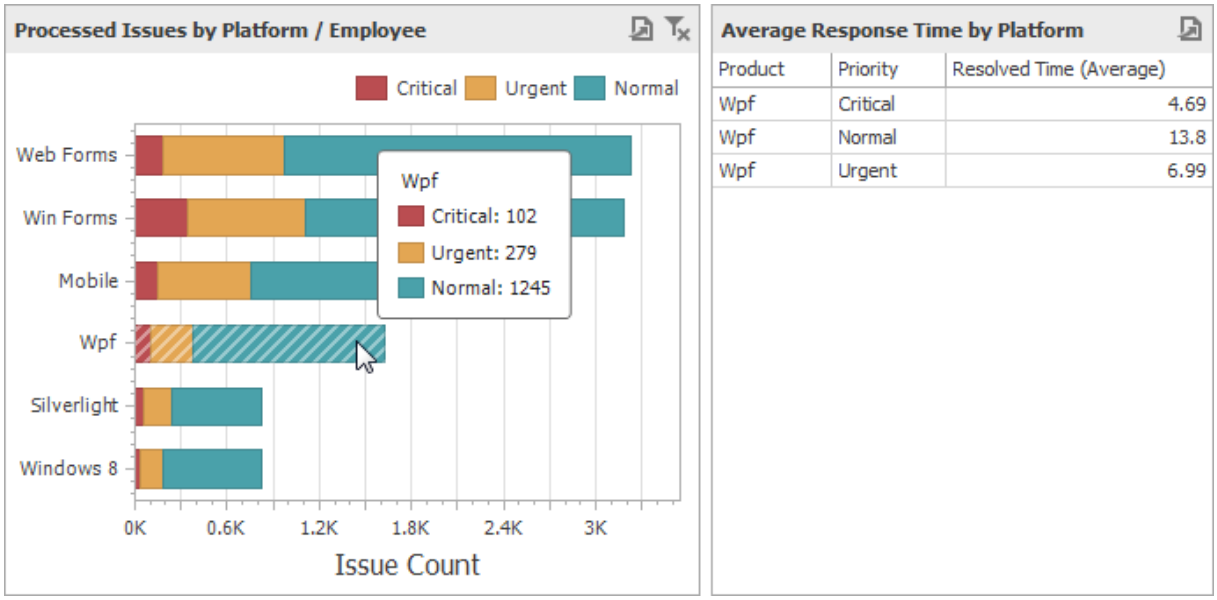
Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

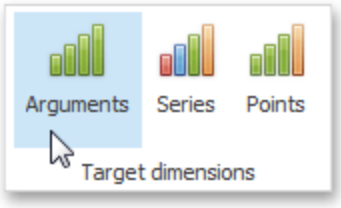
The Chart dashboard item supports filtering by argument, series or points.

Filtering by Arguments

When filtering by arguments is enabled, you can click series points to make other dashboard items only display data related to selected argument values.

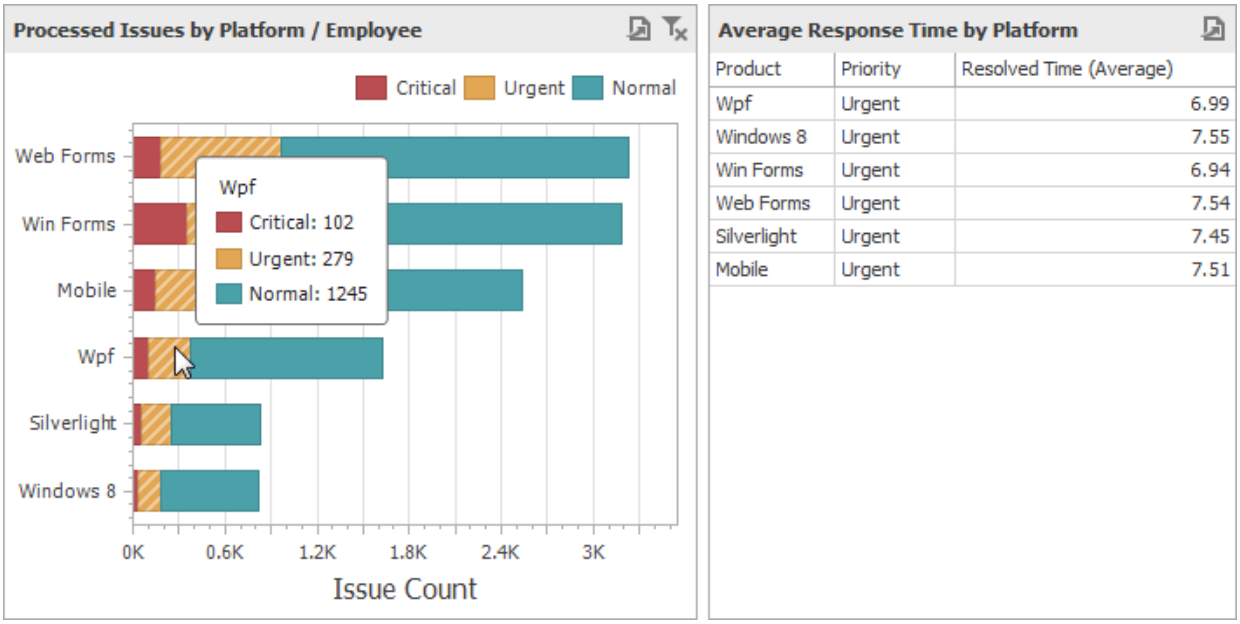


To enable filtering by arguments in the Designer, set the required Master Filter mode and click the **Arguments** button in the Data Ribbon tab (or the button if you are using the toolbar menu).

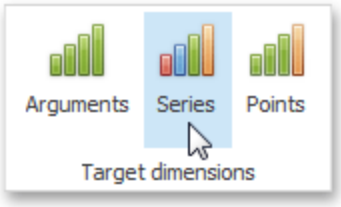


Filtering by Series

When filtering by series is enabled, you can click a series point to make other dashboard items only display data related to the selected series.

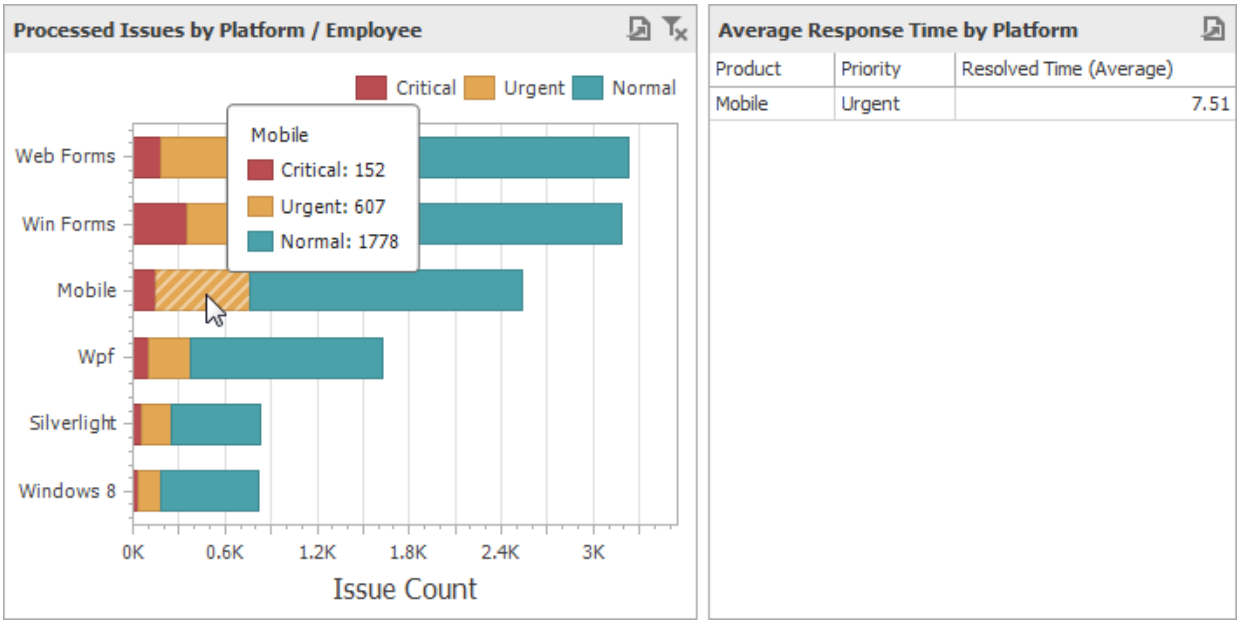


To enable filtering by series in the Designer, set the required Master Filter mode and click the **Series** button in the Data Ribbon tab (or the button if you are using the toolbar menu).

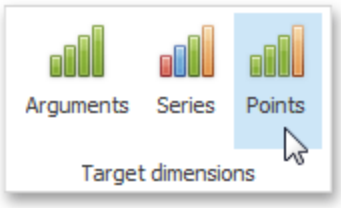


Filtering by Points

When filtering by points is enabled, you can click a individual point to make other dashboard items display only data related to the selected point.

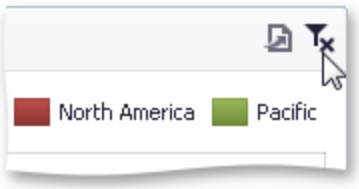


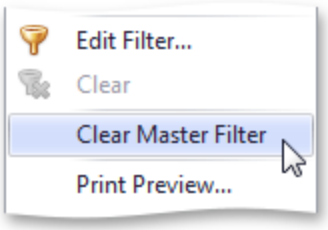
To enable filtering by points in the Designer, set the required Master Filter mode and click the **Points** button in the Data Ribbon tab.



Reset Filtering

To reset filtering, use the Clear Master Filter button in the chart's caption area or the corresponding command in the chart's context menu.





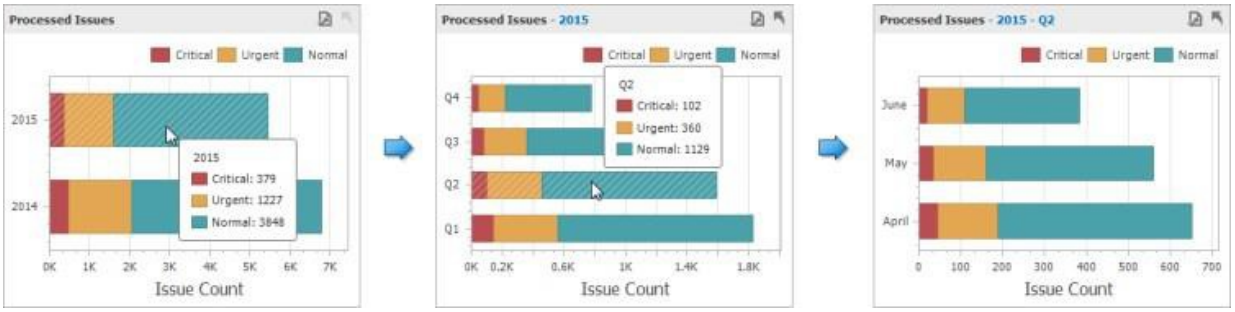
Drill-Down

The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly.

The Chart dashboard item supports drill down on argument or series values.

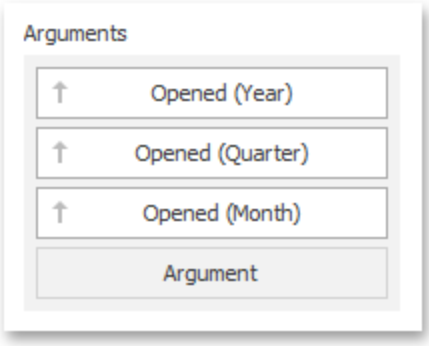
Drill-Down on an Argument

When drill down on arguments is enabled, you can click a series point to view a detail chart for the corresponding argument value.

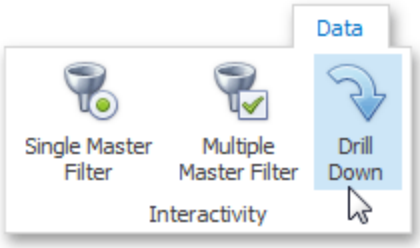


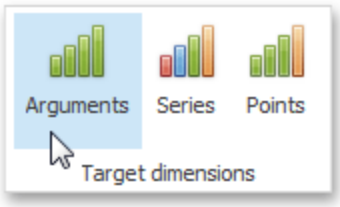
When Filtering by Arguments is enabled, you can view the details by double-clicking a series point.

Drill down on arguments requires that the Arguments section contains several Data Items, from the least detailed to the most detailed item.



To enable drill down on arguments, click the Drill Down button in the Data Ribbon tab (or the button if you are using the toolbar menu) and the Arguments button (or the button if you are using the toolbar menu).



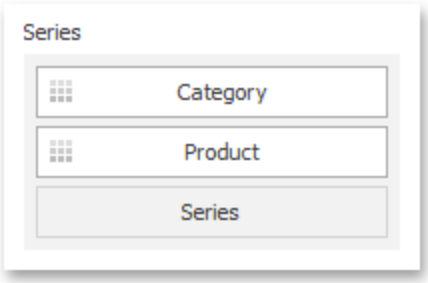


Drill-Down on a Series

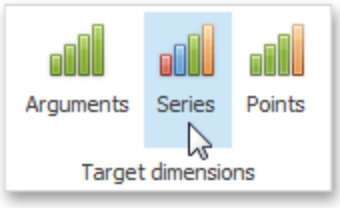
When drill down on a series is enabled, you can click a series point (or corresponding legend item) to view a detail chart for the corresponding series.

When Filtering by Series is enabled, you can view the details by double-clicking on a series point.

Drill down on a series requires that the Series section contains several Data Items, from the least detailed to the most detailed item.



To enable drill down on a series, click the Drill Down button in the Data Ribbon tab (or the button if you are using the toolbar menu) and the Series button (or the button if you are using the toolbar menu).



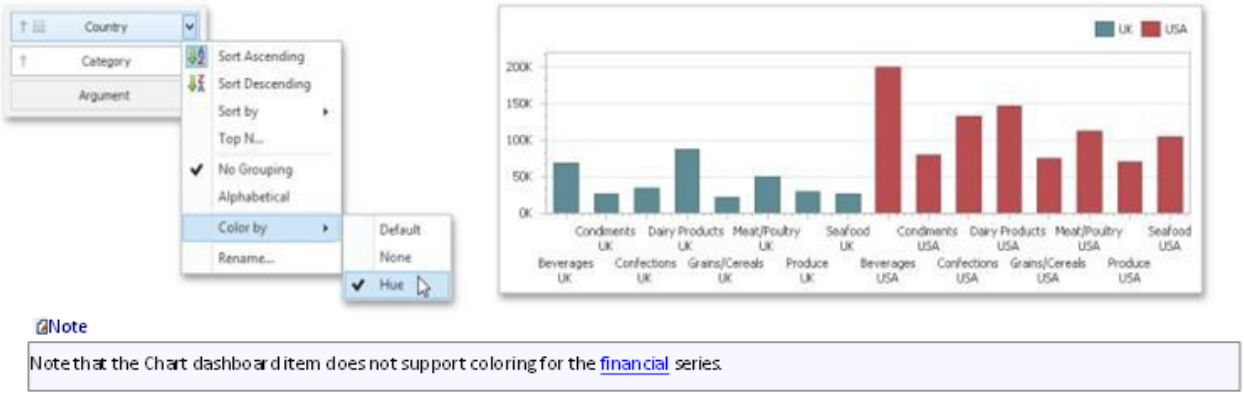
Drill-Up

To return to the previous detail level (drill up), use the Drill Up button within the Chart caption or in the context menu.

Coloring

Certain dashboard items provide the capability to color dashboard item elements by associating dimension values/ measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item.

By default, the Chart dashboard item colors different measures and series dimensions by hue. In the example below, series points corresponding to different countries (UK and USA) are painted in different colors.

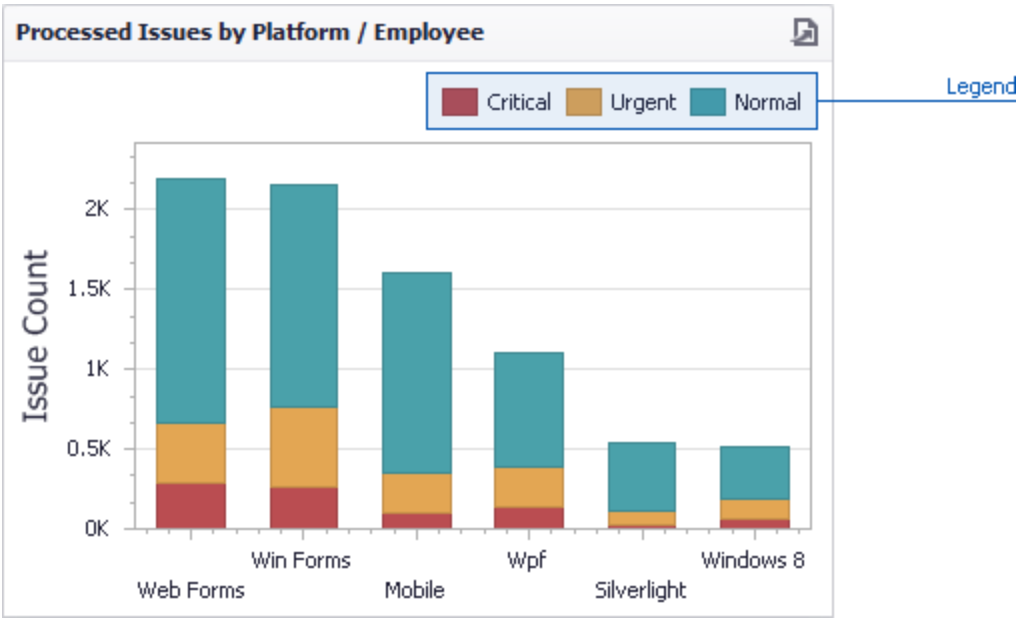


Note

Note that the Chart dashboard item does not support coloring for the financial series.

Legend

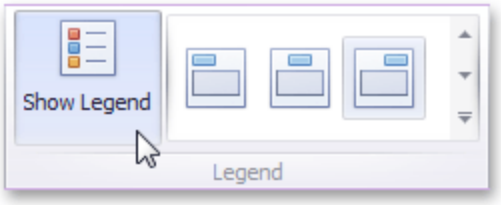
A legend is an element of a chart that identifies chart series and series points (for instance, colored points corresponding to argument values).



This topic describes how to customize various legend settings.

Visibility

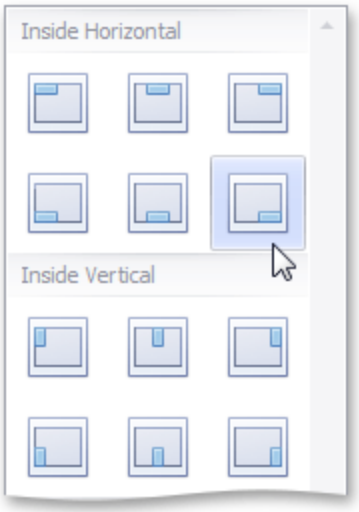
You can specify whether or not a chart should display a legend.



In the Designer, use the Show Legend button in the Legend section of the Design Ribbon tab.

Position and Orientation

To specify the legend's position and orientation, select one of the predefined options from the gallery in the Design Ribbon tab,

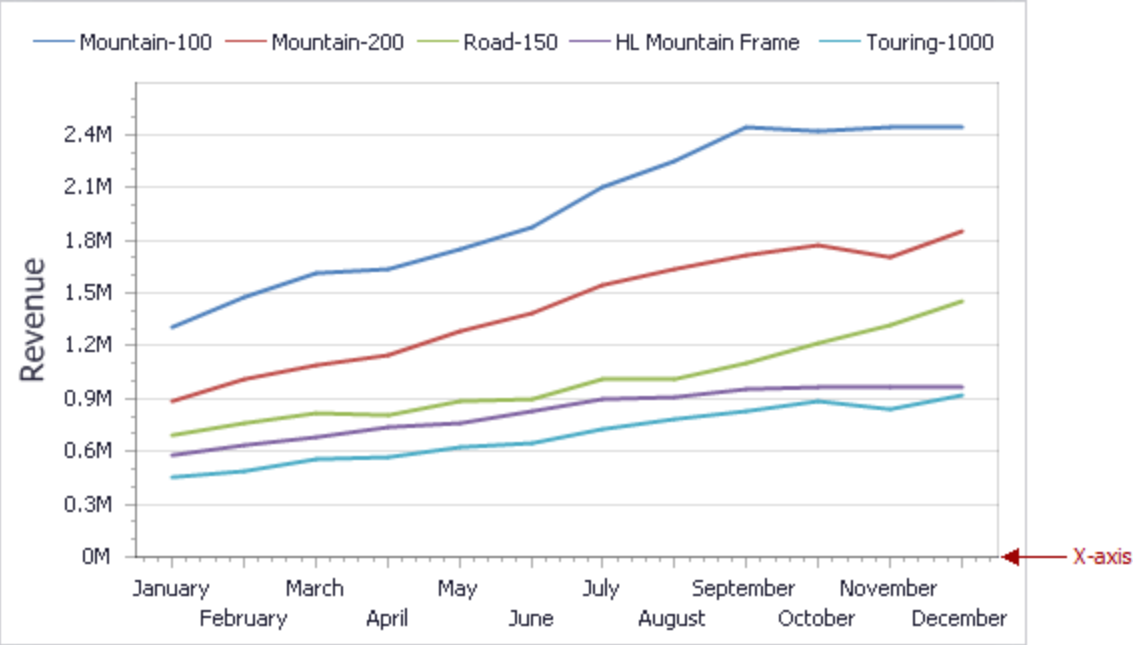


Axes

The Chart dashboard item displays two axes by default: the X-axis and the Y-axis. The topics in this section describe how to customize axis settings.

X-Axis

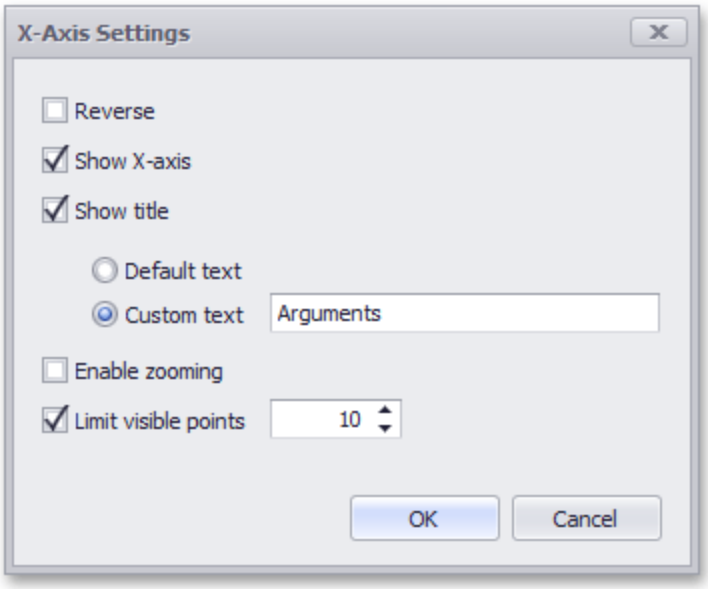
The X-axis is the axis of arguments.



General X-Axis Settings

To access X-axis settings, use the X-Axis Settings button in the Diagram section of the Design Ribbon tab.

This will invoke the X-Axis Settings dialog.



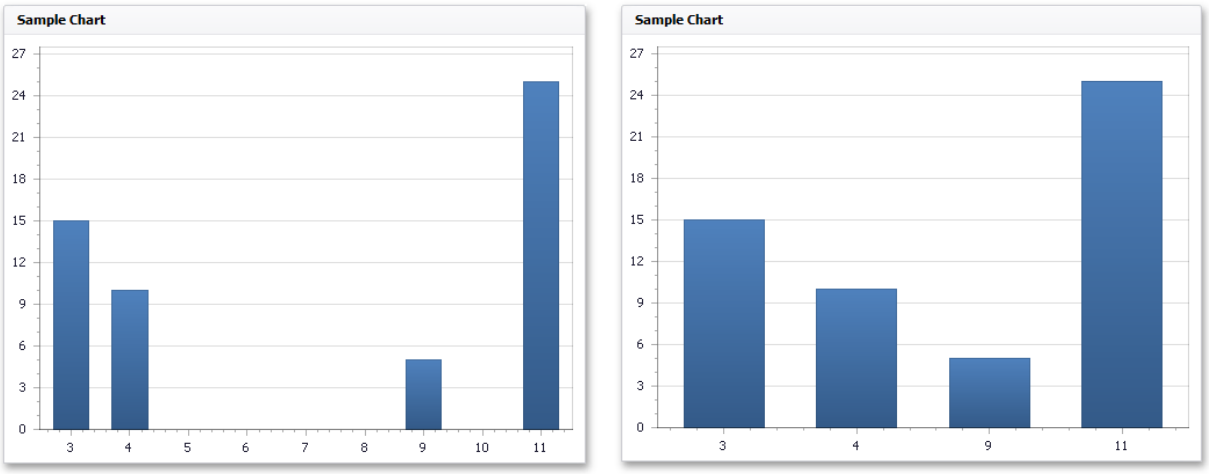
This dialog contains the following settings:

Reverse	Allows you to reverse the X-axis. If the X-axis is reversed, its values are ordered from right to left.
Show X-axis	Allows you to hide and show the X-axis.
Show title	Allows you to hide and show the X-axis title. You can choose whether to use the default text or specify a custom string.
Enable zooming	Allows you to enable zooming for the X-axis. The X- axis' scroll bar provides the capability to perform navigation in the zoomed diagram.
Limit visible points	Allows you to limit the number of points displayed on the chart's diagram along the X-axis. The X-axis' scroll bar provides the capability to perform navigation if the number of all points exceeds the number of visible points.

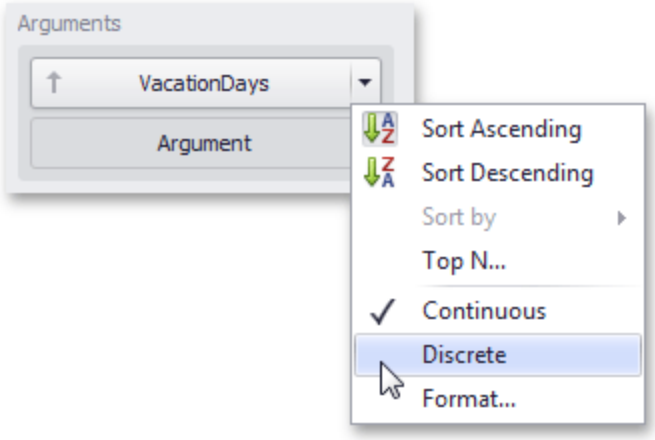
Continuous and Discrete X-Axes

If the dimension in the Arguments section contains numeric data, the Chart can create either a continuous X-axis or a discrete X-axis.

Continuous X-axis	Discrete X-axis
If a continuous axis is used, the distance between argument values is proportional to their values.	On a discrete axis, all argument values are an equal distance from each other.

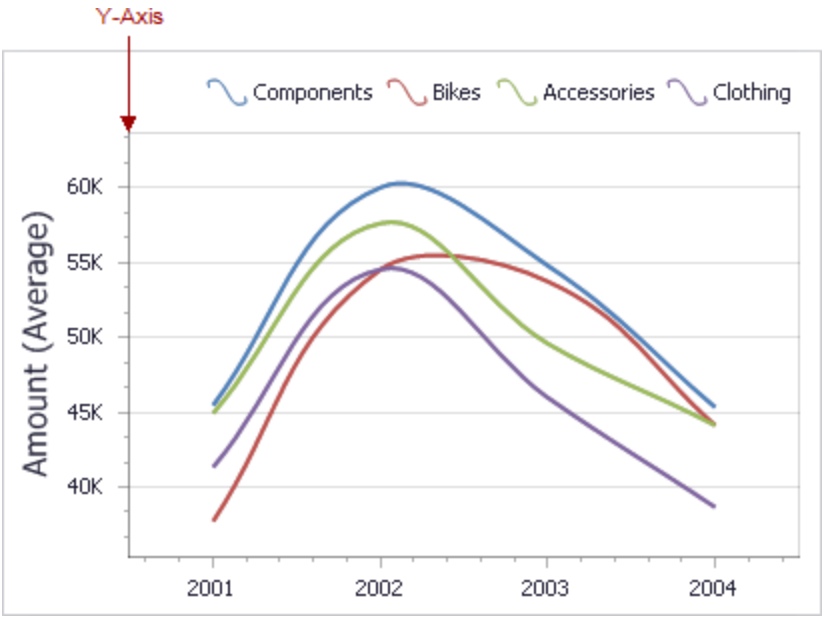


To specify the X-axis type in the Designer, invoke the data item menu for the argument dimension and select the axis type.



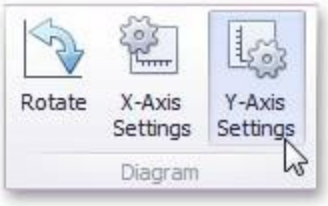
Y-Axis

The Y-axis is the numerical axis of values.

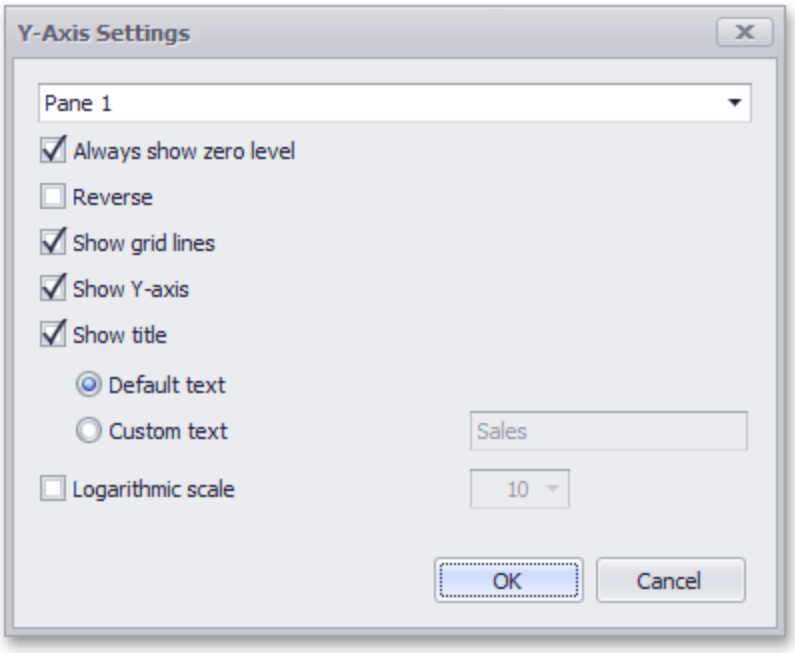


General Settings

To access the Y-axis settings, use the Y-Axis Settings button in the Diagram section of the Design Ribbon tab.

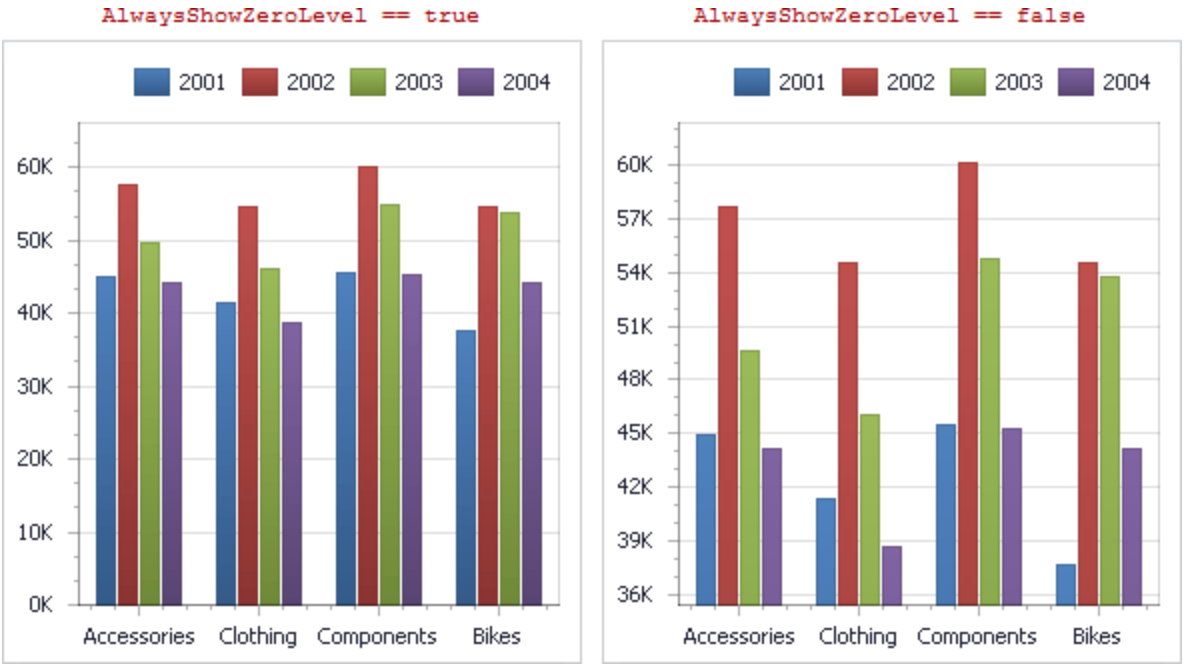


This will invoke the Y-Axis Settings dialog.



Use the combo box at the top to select the pane for the Y-axis settings you need to edit. The dialog contains the following settings:

Always show zero level: Specifies whether or not the axis' zero level is visible. If this option is unchecked, the visible axis range is defined based on the values plotted in the chart.



Reverse: Allows you to reverse the X-axis. If the X-axis is reversed, its values are ordered from top to down.

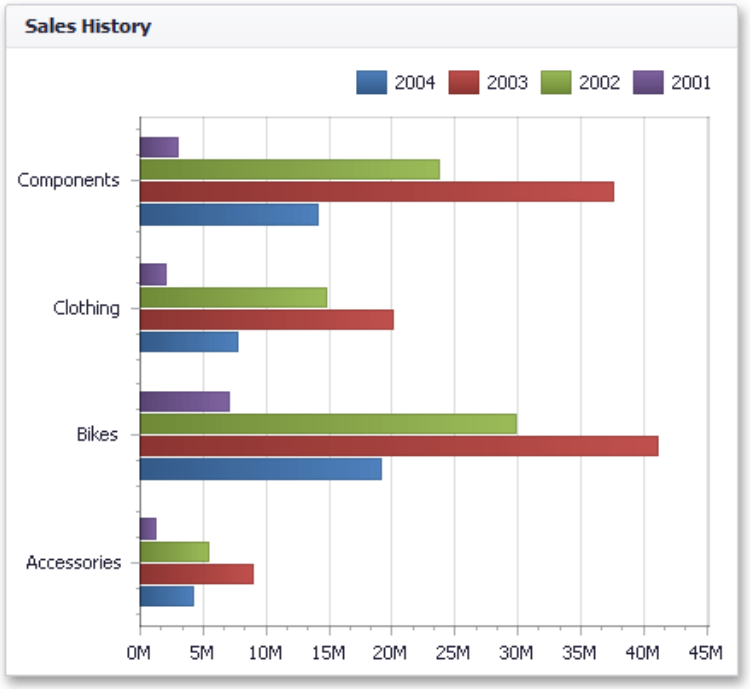
Show grid lines: Allows you to hide and show grid lines for the Y-axis.

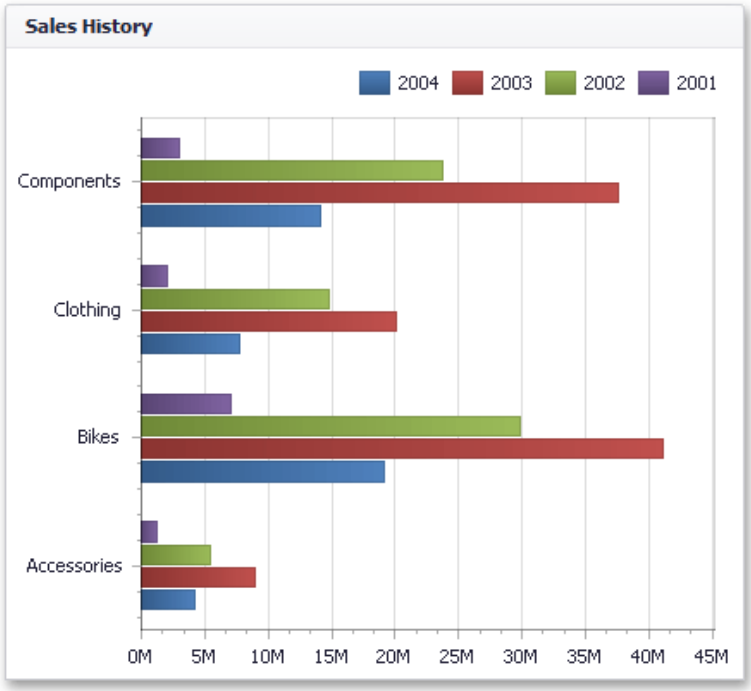
Show Y-axis: Allows you to hide and show the Y-axis.

Show title: Allows you to hide and show the Y-axis title. You can choose whether to use the default text or specify a custom string.

Orientation

You can rotate the Chart so that the X-axis becomes vertical, and the Y-axis becomes horizontal.

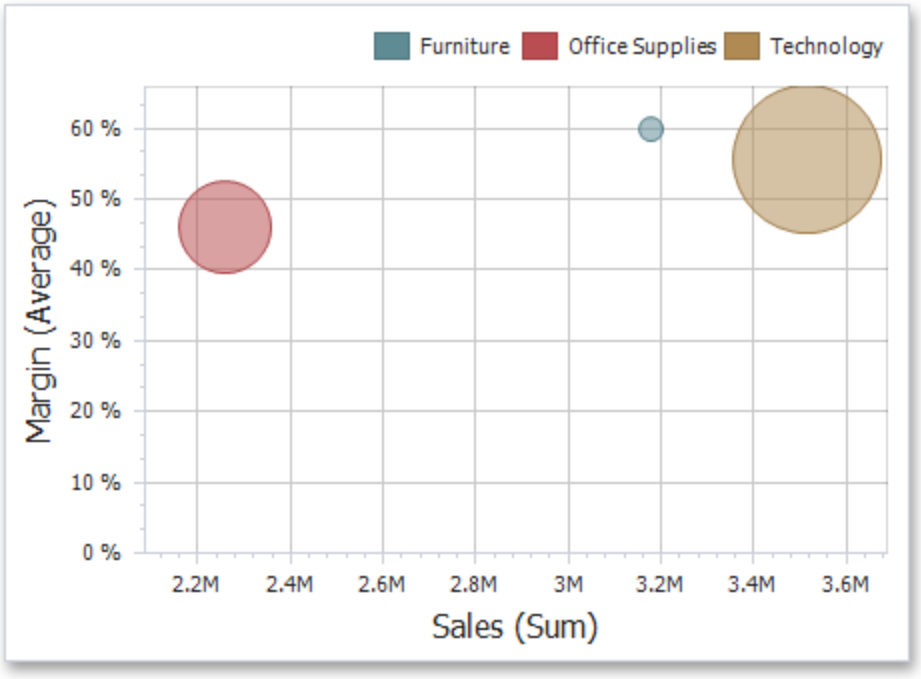

Sales History
2004
2003
2002
2001
Components
Clothing
Bikes
Accessories
0M
5M
10M
15M
20M
25M
30M
35M
40M
45M


Sales History
2004
2003
2002
2001
Components
Clothing
Bikes
Accessories
0M
5M
10M
15M
20M
25M
30M
35M
40M
45M

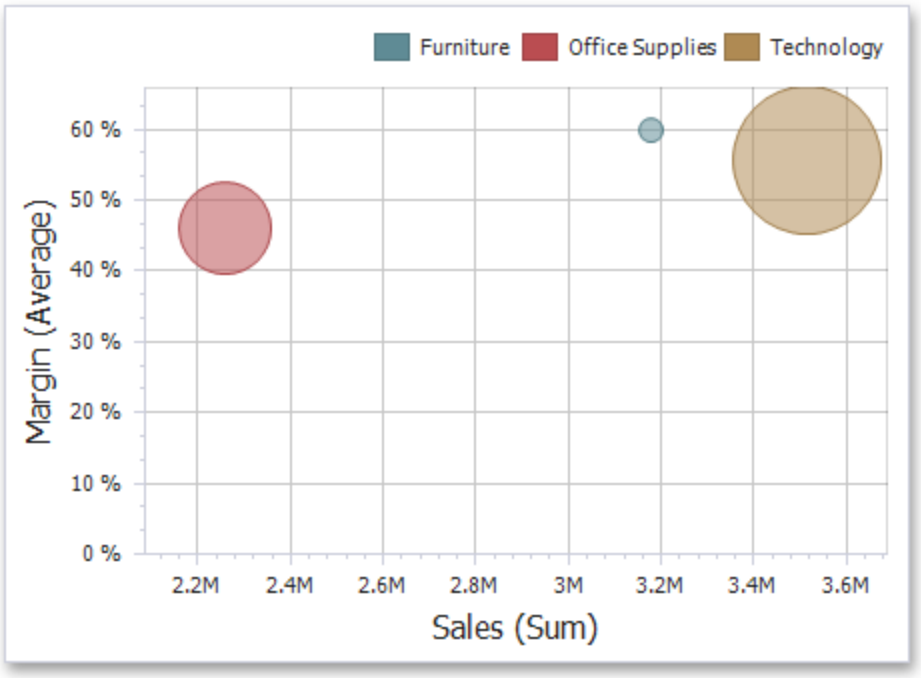
To rotate a Chart in the Designer, use the Rotate button in the Diagram group of the Design Ribbon tab.

Scatter Chart

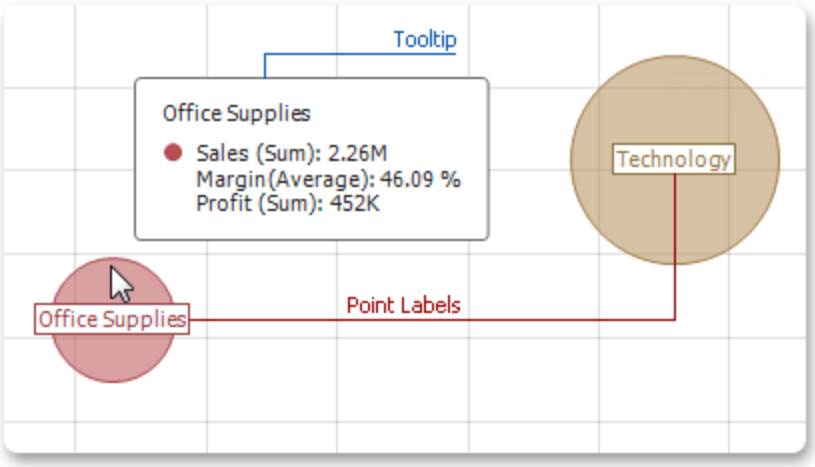
The topics in this section describe the features available in the Scatter Chart dashboard item, and provide information on how to create and customize scatter charts in the BI Dashboard.



The Scatter Chart dashboard item visualizes summaries using three dimensions: the X-axis, the Y-axis and the size of data points.



The Scatter Chart dashboard item can display point labels and tooltips that show information on data points. To see a tooltip, hover over the required point.



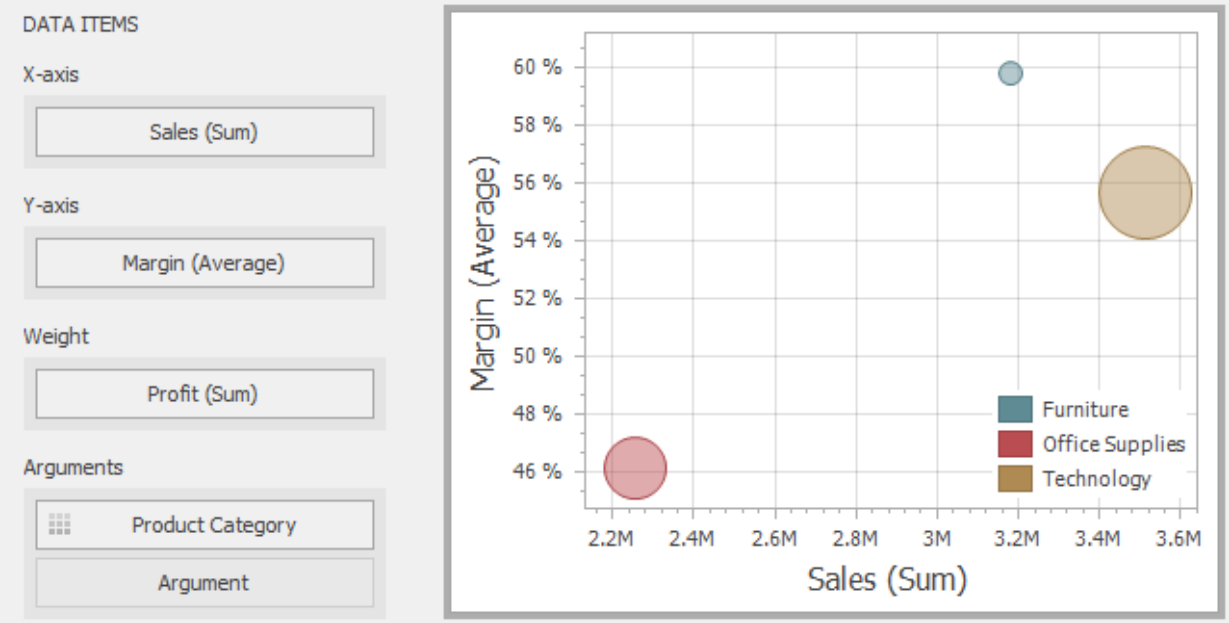
Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Scatter Chart dashboard item to data in the Designer.

Binding to Data in the Designer

The image below shows a sample Scatter Chart dashboard item that is bound to data.



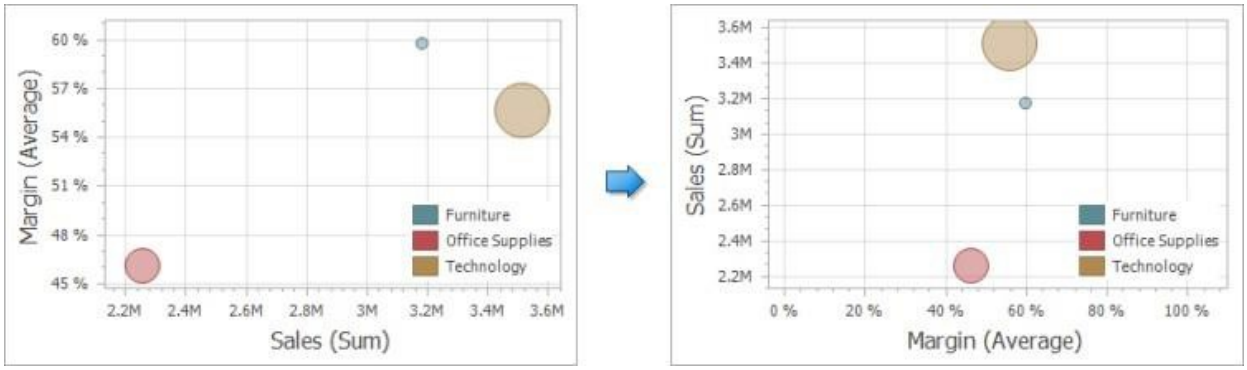
To bind the Scatter Chart dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. A table below lists and describes Scatter Chart data sections.

Section	Description
X-Axis	Contains the data item against which the X- coordinates of data points are calculated.
Y-Axis	Contains the data item against which the Y- coordinates of data points are calculated.
Weight	Contains the data item whose values are used to calculate the weight of data points.

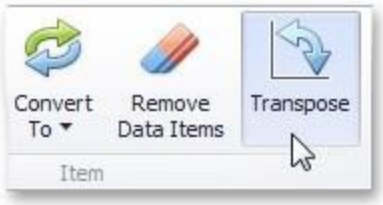
Section	Description
Arguments	Contains Data Items providing scatter chart arguments that are used to create data points.

Transposing X and Y axis

The Scatter Chart dashboard item provides the capability to transpose its axes. In this case, the data item contained in the X-Axis section is moved to the Y-Axis section, and vice versa.



To transpose the selected Scatter Chart dashboard item, use the Transpose button in the Home ribbon tab.



Interactivity

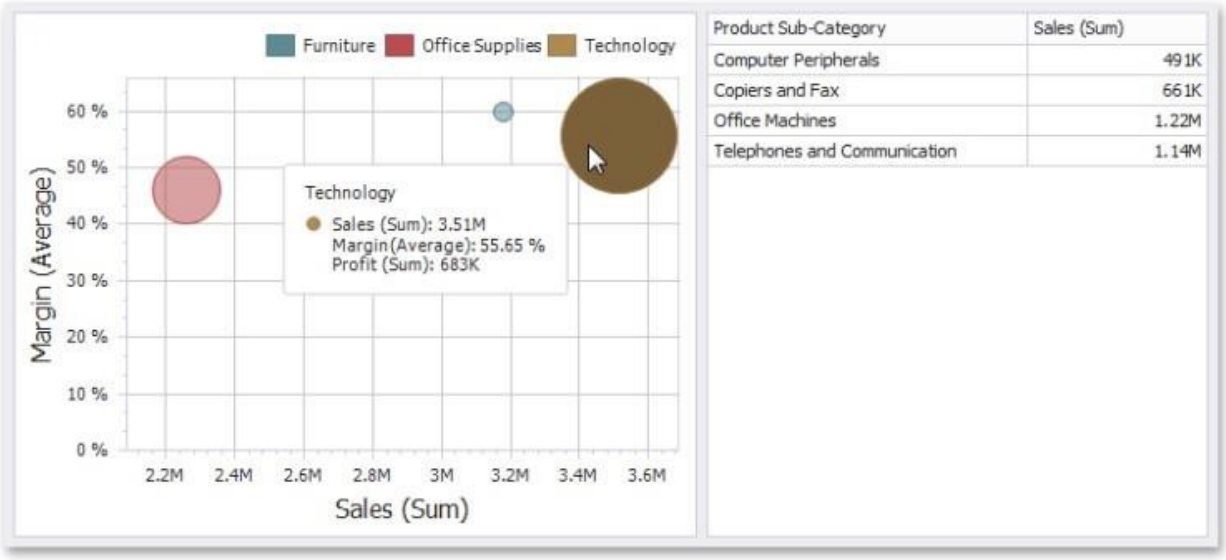
This section describes features that enable interaction between the Scatter Chart and other dashboard items. These features include Master Filtering and Drill-Down.

Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

The Scatter Chart dashboard item supports filtering by points that correspond to specific argument values or their combinations.

When Master Filtering is enabled, you can click a point (or multiple points by holding down the CTRL key) to make other dashboard items only display data related to the selected point(s).

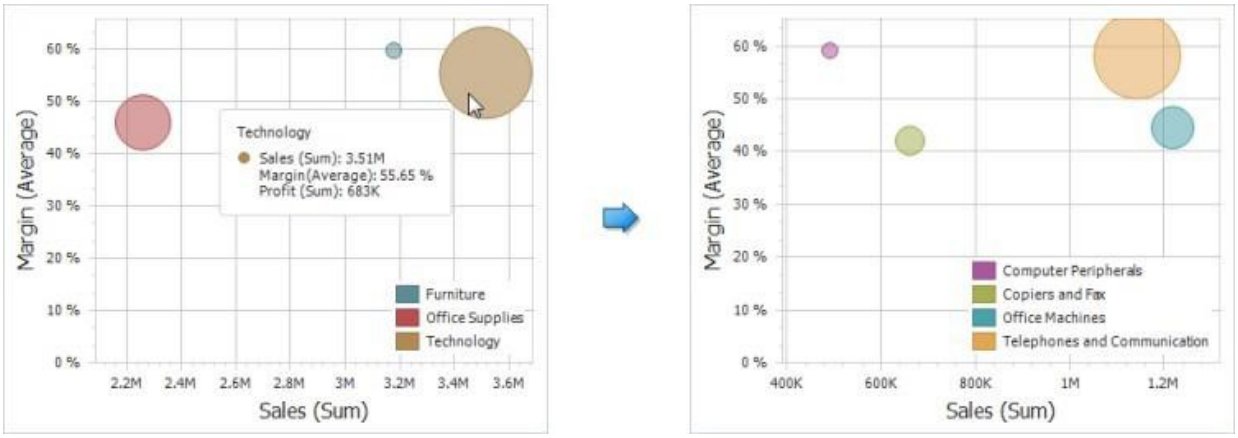


To reset filtering, use the **Clear Master Filter** button in the Chart's caption area, or the Clear Master Filter command in the context menu.

Drill-Down

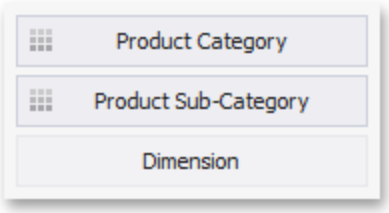
The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly.

When drill-down is enabled, you can click a point to view the details

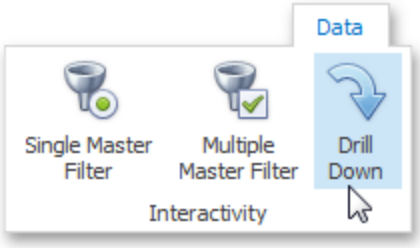


When Master Filtering is enabled, you can view the details by double-clicking a point.

Drill-down requires that the Arguments section contain several dimensions, from the least to the most detailed dimension.



To enable drill-down, click the **Drill Down** button in the Data Ribbon tab (or the button if you are using the toolbar menu).

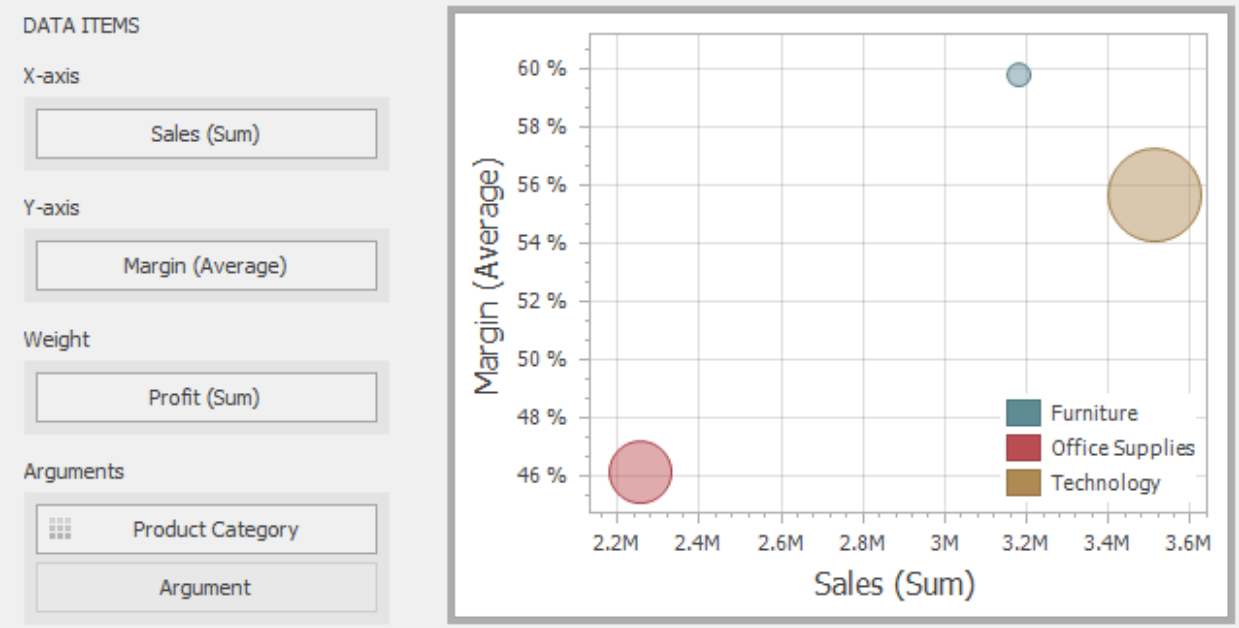


To return to the previous detail level (drill up), use the **Drill Up** button in the caption of the Scatter Chart dashboard item, or the Drill Up command in the context menu.

Coloring

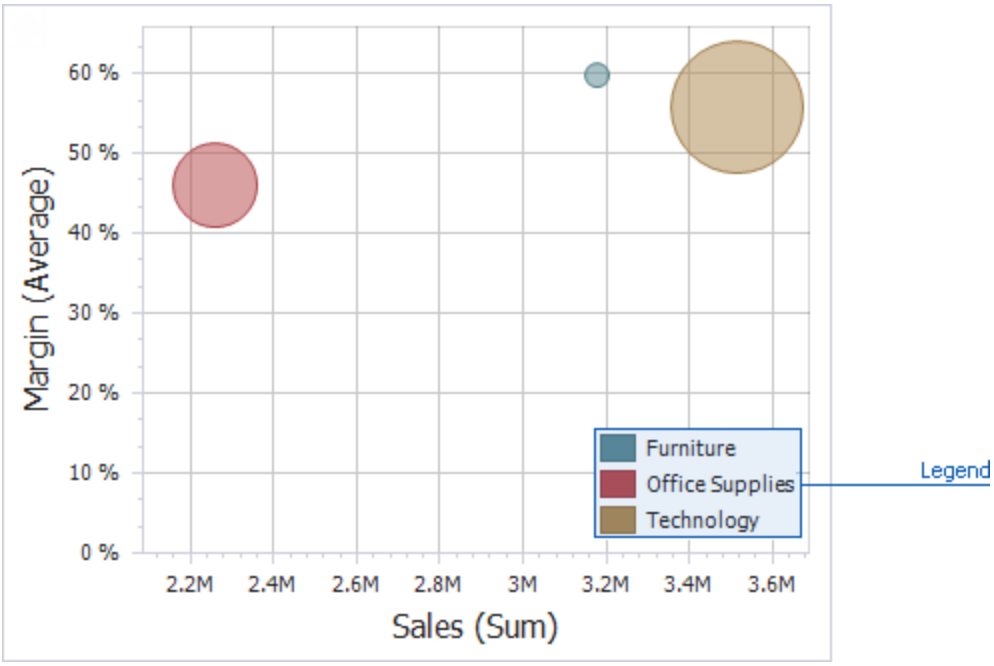
Certain dashboard items provide the capability to color dashboard item elements by associating dimension values/ measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item.

By default, the Scatter Chart dashboard item does not color its arguments. If necessary, you can change this behavior. For instance, the image below displays the Scatter Chart dashboard item whose Product Category points are colored by hue.



Legend

A legend is an element of a scatter chart that identifies chart points (for instance, colored points corresponding to argument values).

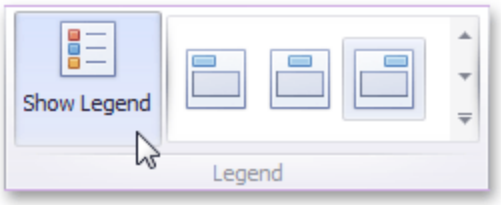


This topic describes how to customize various legend settings.

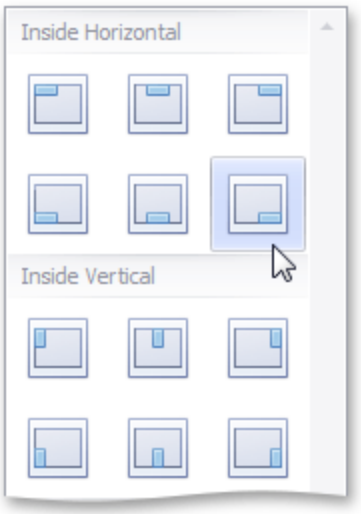
Visibility

You can specify whether or not a chart should display a legend.

In the Designer, use the Show Legend button in the Legend section of the Design Ribbon tab.



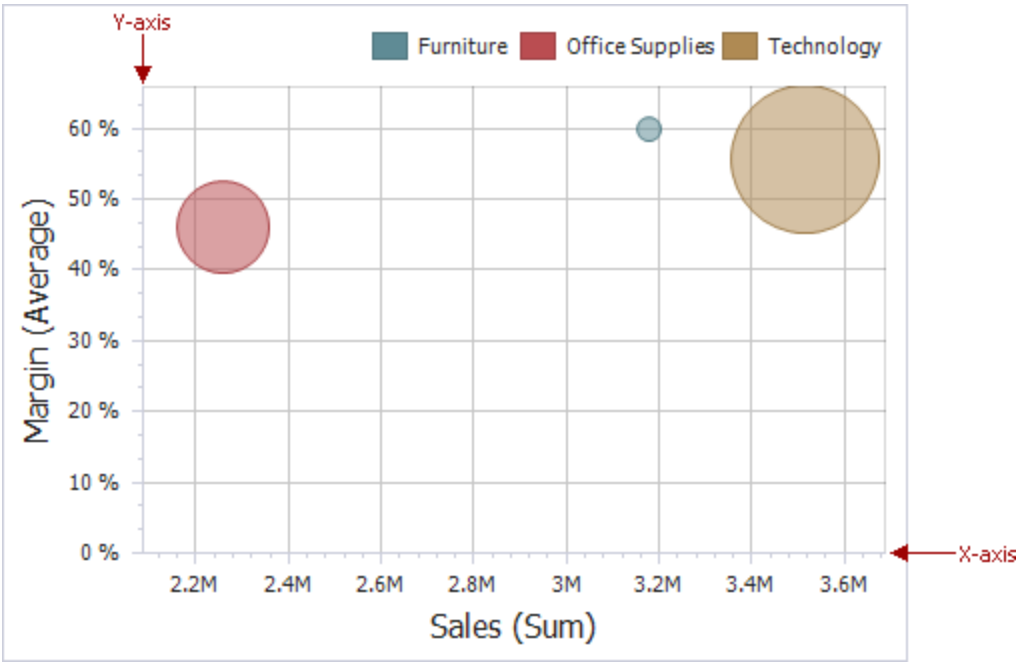
Position and Orientation



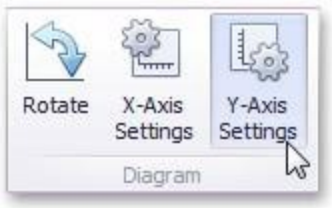
To specify the legend's position and orientation, select one of the predefined options from the gallery in the Design Ribbon tab.

Axes

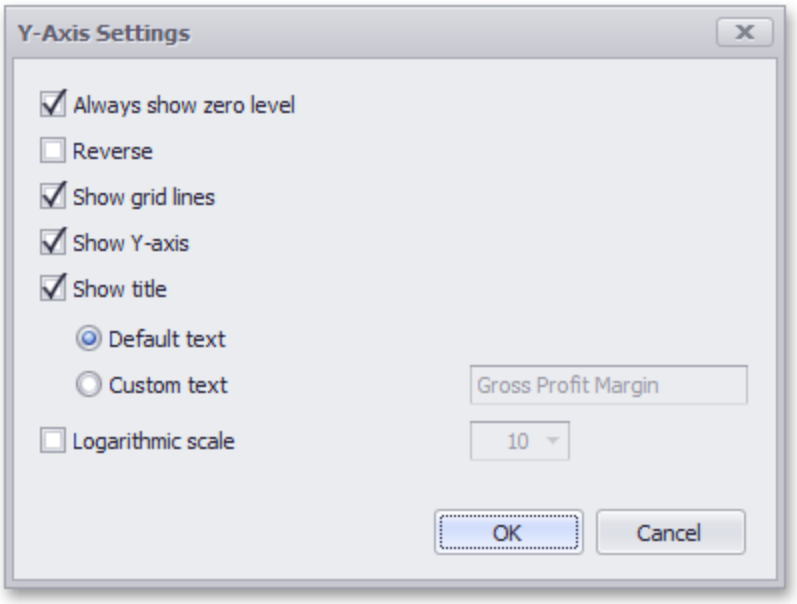
Scatter Chart X and Y-axes are numerical axis of values. You can specify various axes settings to change visual data presentation.



To access X and Y-axis settings, use the X-Axis Settings/Y-Axis Settings buttons in the **Diagram** section of the Design Ribbon tab.



This will invoke the X-Axis Settings/Y-Axis Settings dialog.



In this dialog, you can specify the following settings:

Always show zero level: Specifies whether or not the axis' zero level is visible. If this option is unchecked, the visible axis range is defined based on the values plotted in the chart. Note that the X-Axis setting dialog does not contain this option.

Reverse: Allows you to reverse the axis. If the axis is reversed, its values are ordered from top to down.

Show grid lines: Allows you to hide and show grid lines for the axis.

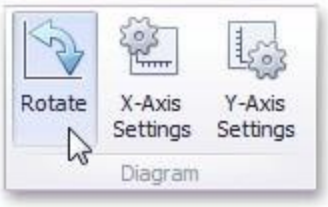
Show axis: Allows you to hide and show the axis.

Show title: Allows you to hide and show the axis title. You can choose whether to use the default text or specify a custom string.

Logarithmic scale: Specifies whether or not the axis should display its numerical values using a logarithmic scale. The combo box next to this option allows you to select the logarithmic base from one of the predefined values.

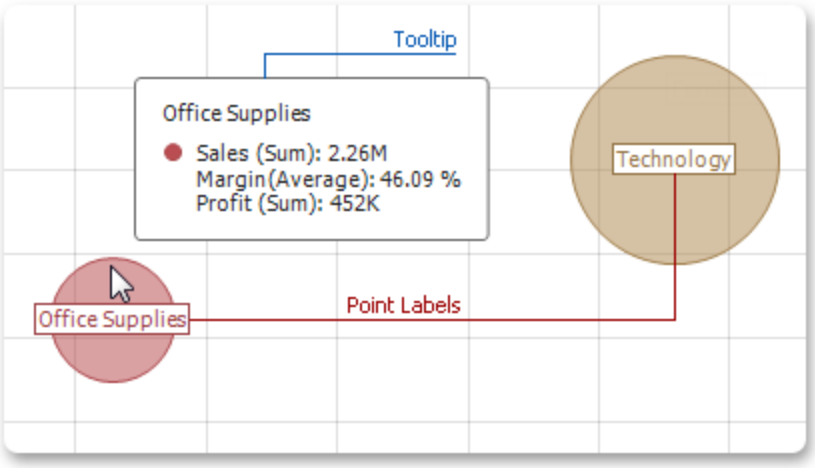
Orientation

You can rotate the Scatter Chart so that the X-axis becomes vertical, and the Y-axis becomes horizontal. To rotate a Chart in the Designer, use the **Rotate** button in the **Diagram** section of the Design Ribbon tab.



Labels

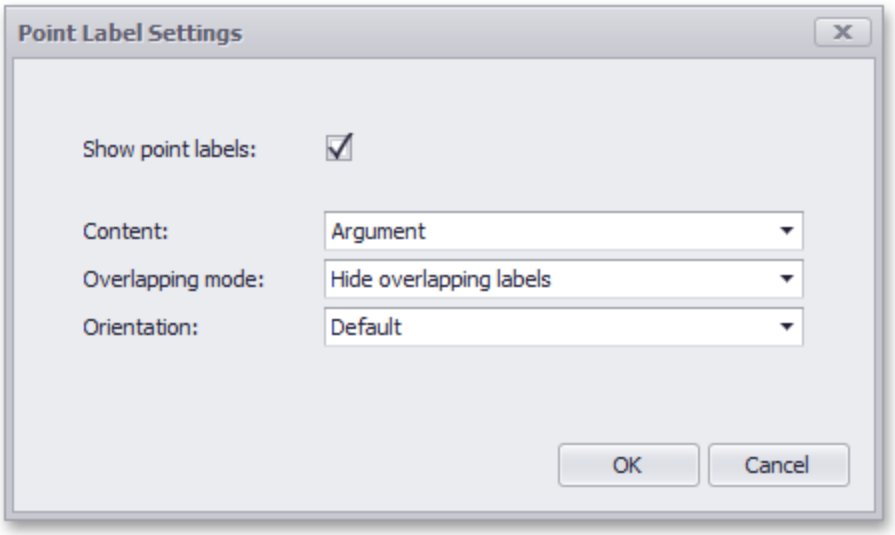
The Scatter Chart display can display point labels that contain descriptions for data points, and provide tooltips with additional information.



Point Labels

To manage the visibility of point labels, click the Point Labels button in the Design ribbon tab.

In the invoked Point Label Settings dialog, enable the Show point labels check box to show point labels.



You can specify the following settings for point labels:

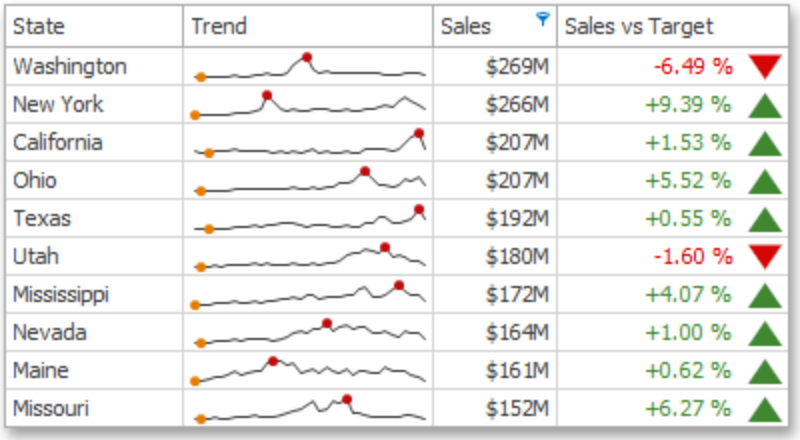
- **Content**: Specifies the type of content displayed within point labels. You can select one of the following options:
    - **Values**: Point labels show summary values from X and Y-axes.
    - **Argument**: Point labels show argument values.
    - **Argument and values**: Point labels show argument values and corresponding summary values.
    - **Weight**: Point labels show the weight summary value.
    - **Argument and weight**: Point labels show the argument value and the corresponding weight summary value.
- **Overlapping mode**: Specifies the label overlap mode. The following options are available:
    - **Hide Overlapping labels**: If two or more labels overlap, some of them are automatically hidden to avoid overlapping.
    - **None**: The overlapping resolving algorithm is disabled.

    - **Reposition overlapping labels**: The default algorithm to re-position point labels in a random way, and avoid overlapping labels.

- **Orientation**: Specifies the orientation of point labels. The following options are available:
    - **Default**: A point label is displayed in its default orientation.
    - **Rotate to the Right**: A point label is rotated 90 degrees clockwise.
    - **Rotate to the Left**: A point label is rotated 90 degrees counter clockwise.

Grid

The topics in this section describe the features available in the Grid dashboard item, and provide extensive information on how to create and customize grids in the Dashboard Designer.



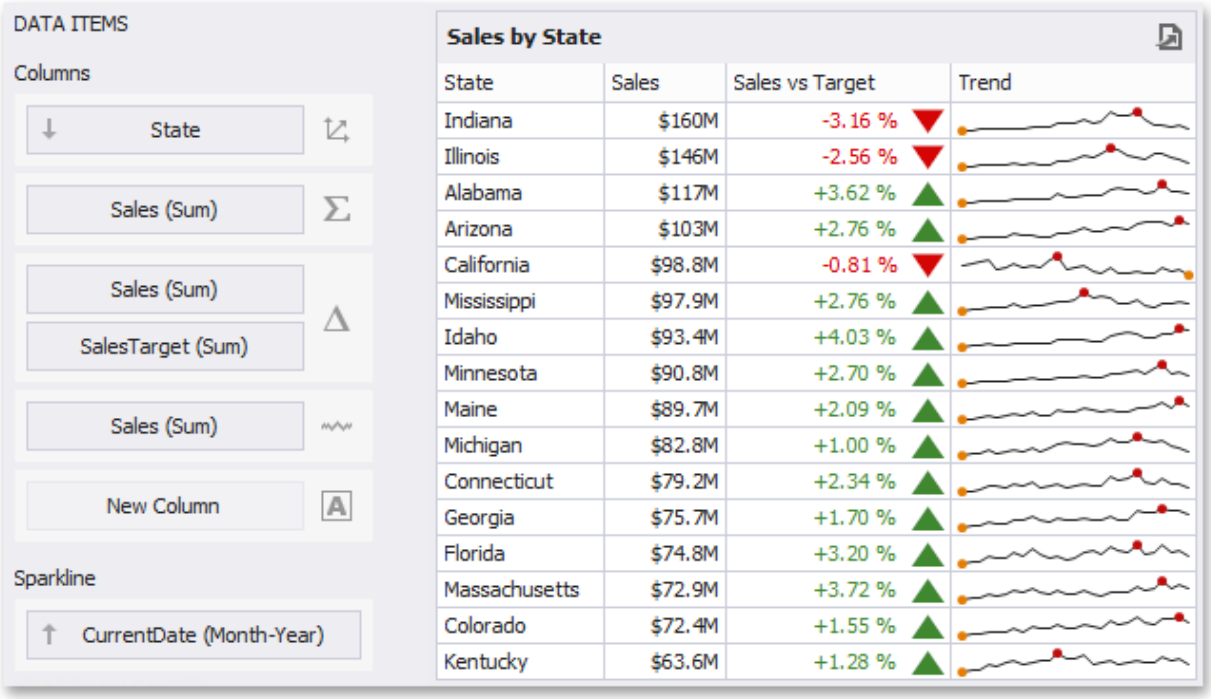
State	Trend	Sales	Sales vs Target
Washington		$269M	-6.49 %
New York		$266M	+9.39 %
California		$207M	+1.53 %
Ohio		$207M	+5.52 %
Texas		$192M	+0.55 %
Utah		$180M	-1.60 %
Mississippi		$172M	+4.07 %
Nevada		$164M	+1.00 %
Maine		$161M	+0.62 %
Missouri		$152M	+6.27 %

Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Grid dashboard item to data in the Designer.

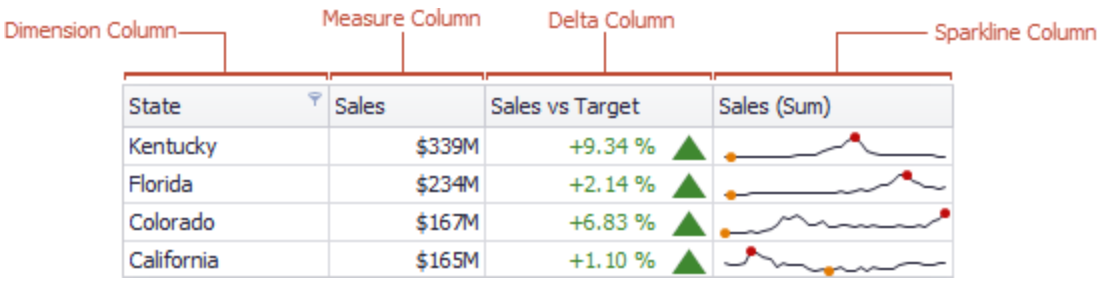
The image below shows a sample Grid dashboard item that is bound to data.



To bind the Grid dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. A table below lists and describes a Grid's data sections.

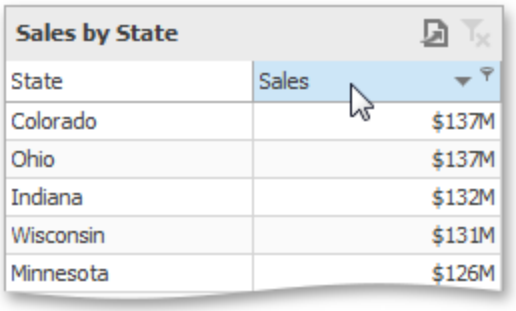
Section	Description
Columns	Contains Data Items that provide values for grid columns. The Option s button next to the Column data item allows you to select the column type and specify their options.
Sparkline	Contains a data item that provides arguments for sparkline columns. To learn more, see Sparkline Column.

The Grid displays data in a two-dimensional table that supports four types of columns.

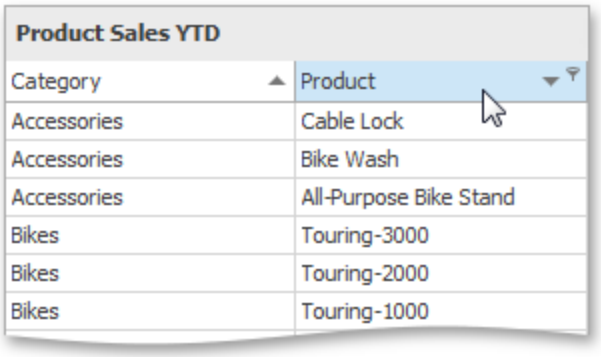


- The **dimension column** displays values from the bound data item "as is".
- The **measure column** displays summaries calculated from data in the bound data item.
- The **delta column**, bound to two measures, calculates summaries for both measures, and displays the difference between these summaries.
- The **sparkline column** visualizes the variation of summary values over time.

To sort records by a column's values and replace existing sort conditions that are applied to the current or other columns, click the target column's header until an Up or Dow n arrow icon is displayed within the header. The Up and Dow n arrows indicate ascending and descending sort orders, respectively.

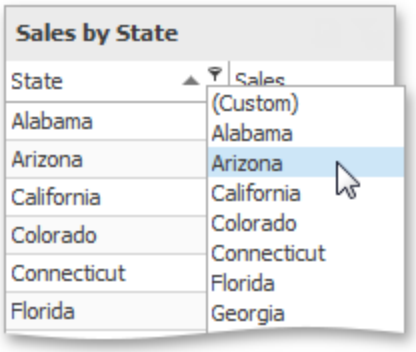


To sort records by a column's values while preserving existing sort conditions, click a column header while holding the **Shift** key until an Up or Down arrow icon is displayed within the header.

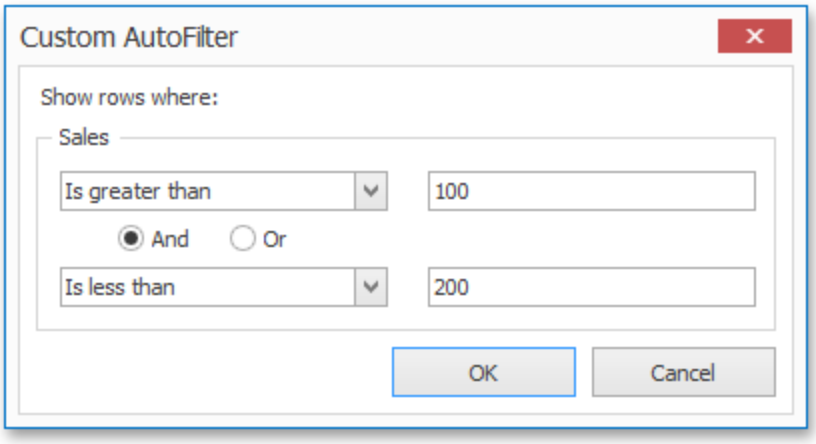


To remove sorting by a column, click a column header while holding down the **CTRL** key.

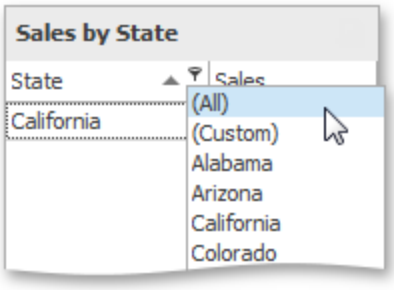
To filter grid data, click the filter button (the icon) and select the required filter value in the invoked filter drop-down list.



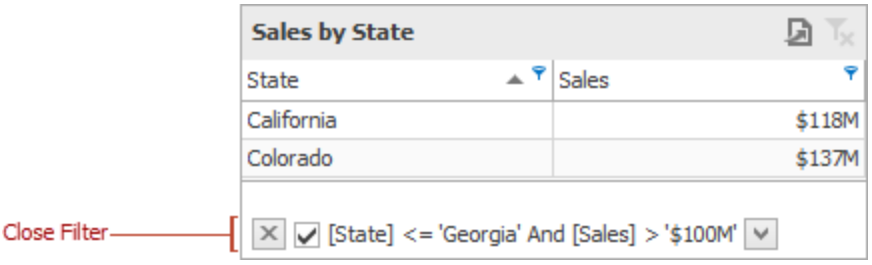
Click **Custom** to construct filter criteria involving up to two conditions. This will invoke the Custom AutoFilter dialog, allowing you to compare a column with one or two values.



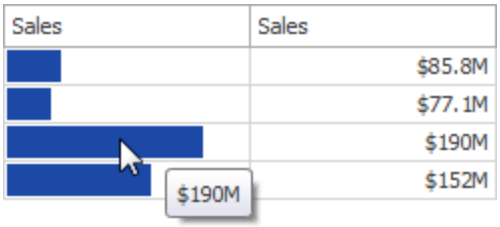
To clear the filter applied to a specific column, invoke the filter drop-down list and click **All**.



To clear all filter criteria, click the **Close Filter** button within the Filter Panel.

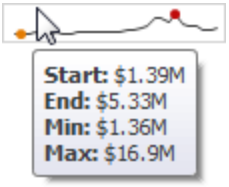


A Grid dashboard item can display a tooltip when the mouse pointer is hovered over the bar in the measure column.



The tooltip shows the value in the measure column as text.

When the mouse pointer is hovered over the cell in the sparkline column, the tooltip can display start/end values and minimum/maximum values.



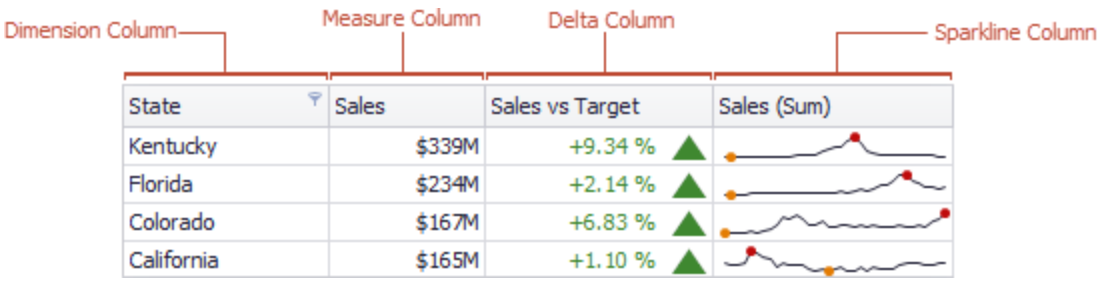
Columns

The topics in this section describe the different types of grid columns, and contain information on when to use each column type and how to customize them based on the type.

Column Type Overview

The Grid dashboard item supports four types of columns:

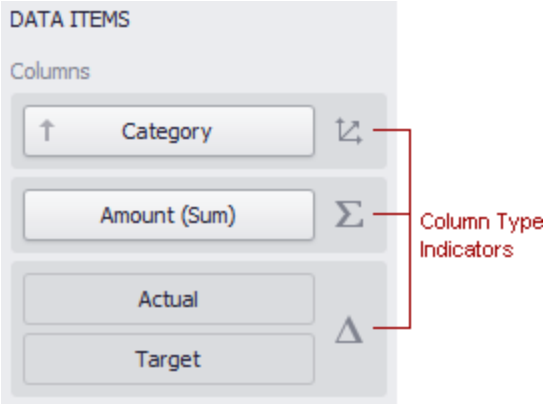
- **Dimension Column**: Displays values in the bound data item "as is".
- **Measure Column**: Displays summaries calculated against data in the bound data item.
- **Delta Column**: Bound to two measures, it calculates summaries for both measures, and displays the difference between these summaries.
- **Sparkline Column**: Displays values in the bound data item using sparklines.



When you drop a data item into the Columns section, the type for the new column is determined automatically, based on the data type.

Column Type Indication

The type of the column is indicated within the corresponding data item container in the Data Items area.

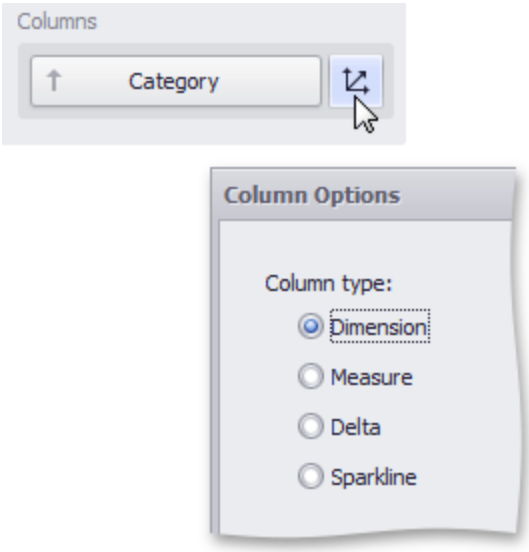


Column type indicators are defined as follows:

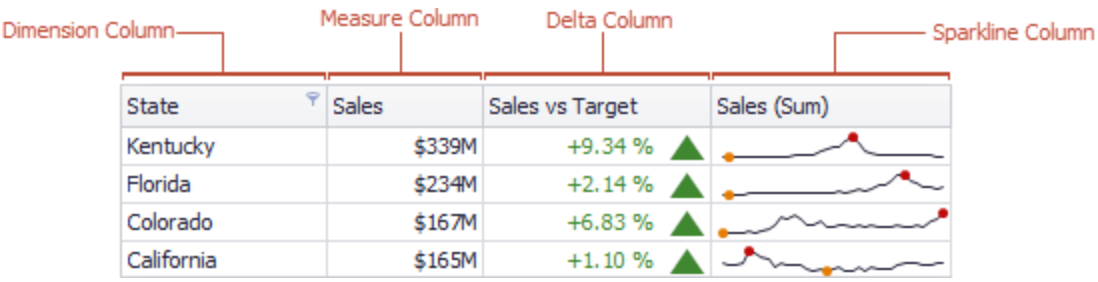
	Dimension Column
Σ	Measure Column
Δ	Delta Column
	Sparkline Column

Changing Column Type

To change the column type, click the column type indicator. In the invoked Column Options window, select the required column type in the Column type section.



Dimension Column

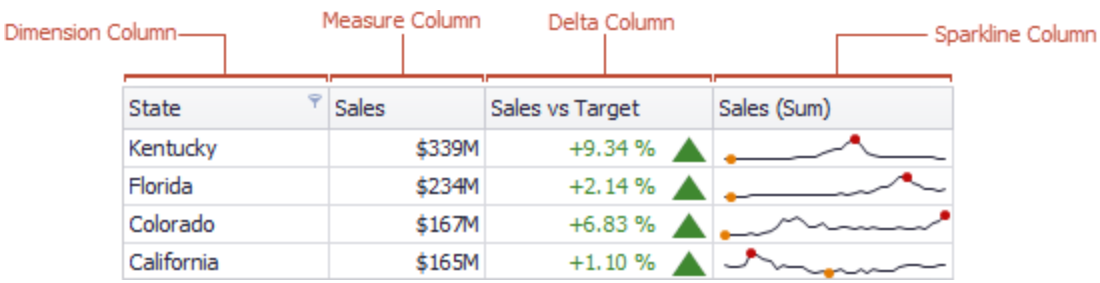


The dimension column displays values from the bound data item "as is".

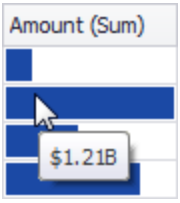
If the dimension column is bound to a data source containing images, it can display images.

Measure Column

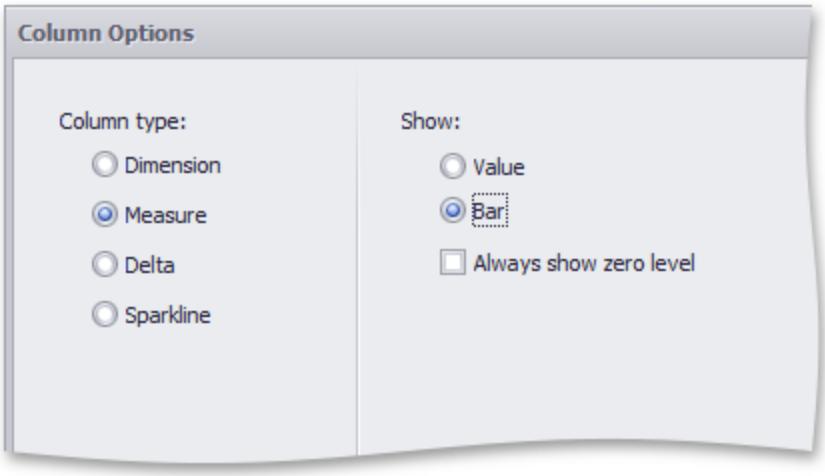
A measure column displays summaries calculated against data in a bound data item.



Values in the measure column can be displayed as text or represented by bars.



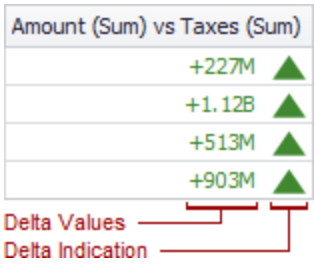
To select between these modes, invoke the **Column Options** window and select **Value** or **Bar**.



If bars are displayed, use the Always show zero level check box to specify whether the bar's zero level is always visible.

Delta Column

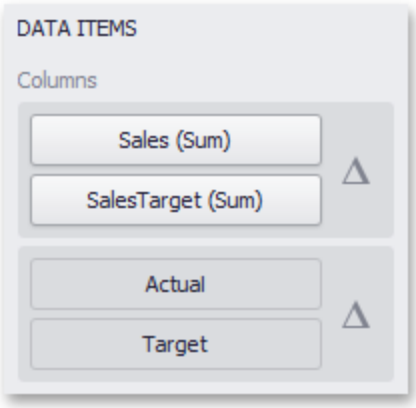
A delta column calculates summaries against two measures, and displays the difference between these summaries. This difference can be indicated with a numeric value displayed within the delta element and an additional delta indication.



Data Binding Specifics

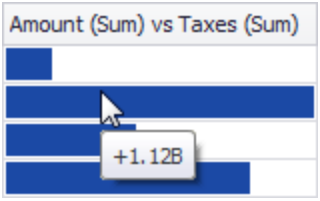
Delta columns are bound to two measures that provide two values: the Actual value and the Target value. The difference between these values is displayed in the column.

When you switch the column type to Delta, the data item container is changed, to accept the Actual and Target measures.

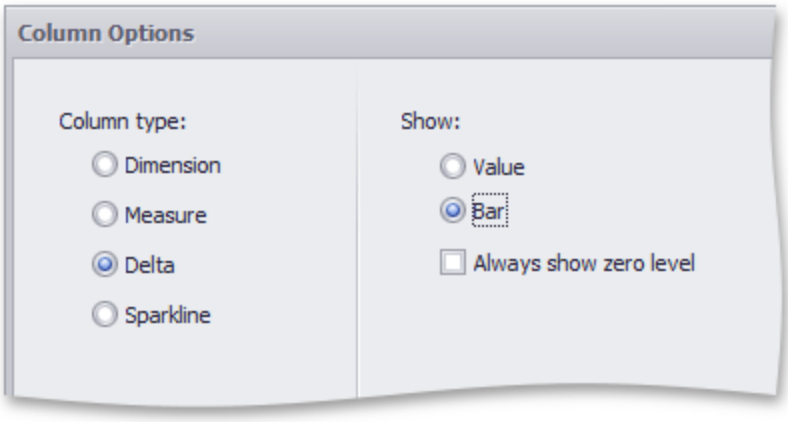


Display Mode

Values in the delta column can be displayed as text, or represented by bars.



To select between these modes, invoke the **Column Options** window and select **Value** or **Bar**.



If bars are displayed, use the Always show zero level check box to specify whether the bar's minimum value is zero (checked) or an automatically selected value that ensures that the difference between bars is clearly displayed (unchecked).

`AlwaysShowZeroLevel == true`

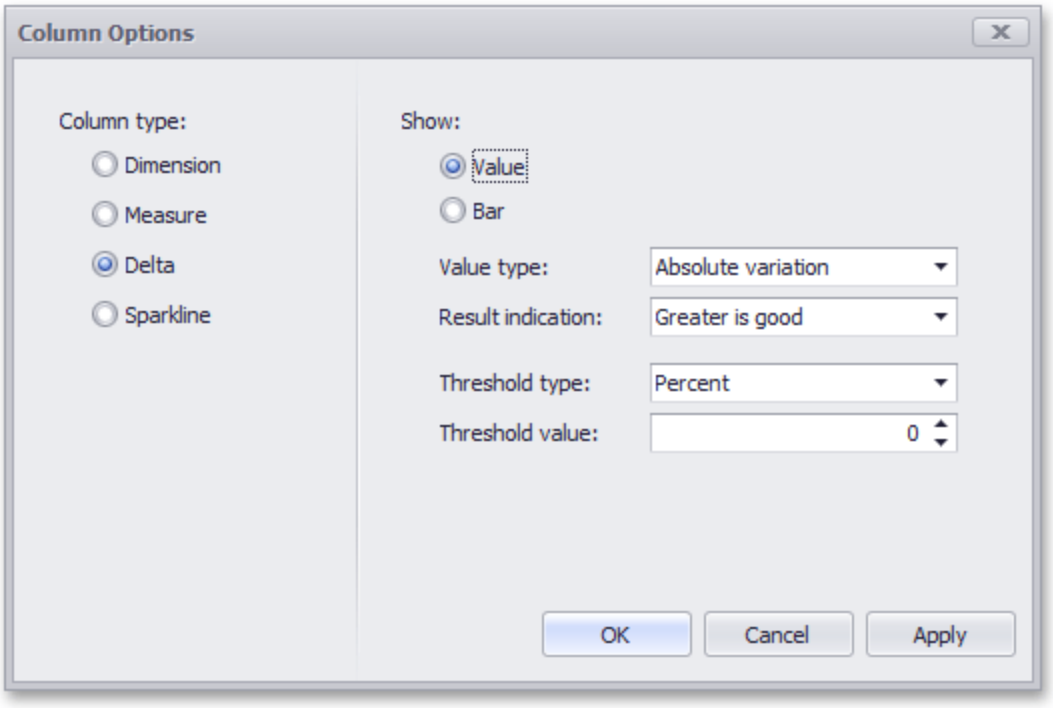
Sales	Sales
	$79.5M
	$80.3M
	$85.6M
	$86.6M
	$87.3M

`AlwaysShowZeroLevel == false`

Sales	Sales
	$79.5M
	$80.3M
	$85.6M
	$86.6M
	$87.3M

Delta Values and Indication

If the display type is set to Value, the Column Options window displays options that allow you to configure delta values and indication.



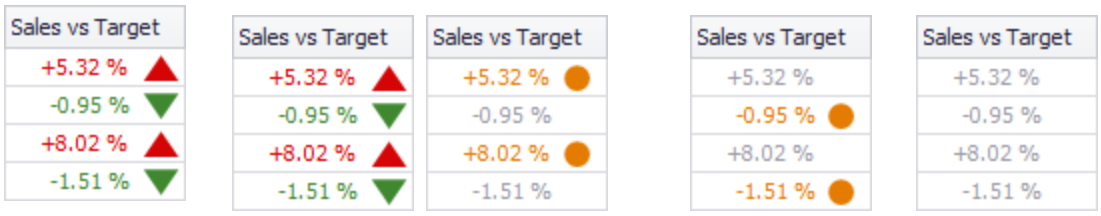
You can specify which values should be displayed in the delta column. To do this, use the Value type combo box in the Column Options window.

Actual Value Absolute Variation Percent Variation Percent of Target

Sales vs Target	Sales vs Target	Sales vs Target	Sales vs Target
$113M ▲	+5.7M ▲	+5.32 % ▲	105.32 % ▲
$106M ▼	-1.02M ▼	-0.95 % ▼	99.05 % ▼
$104M ▲	+7.72M ▲	+8.02 % ▲	108.02 % ▲
$90.3M ▼	-1.38M ▼	-1.51 % ▼	98.49 % ▼

To specify the condition for displaying delta indication, use the **Result** indication combo box in the Column Options window.

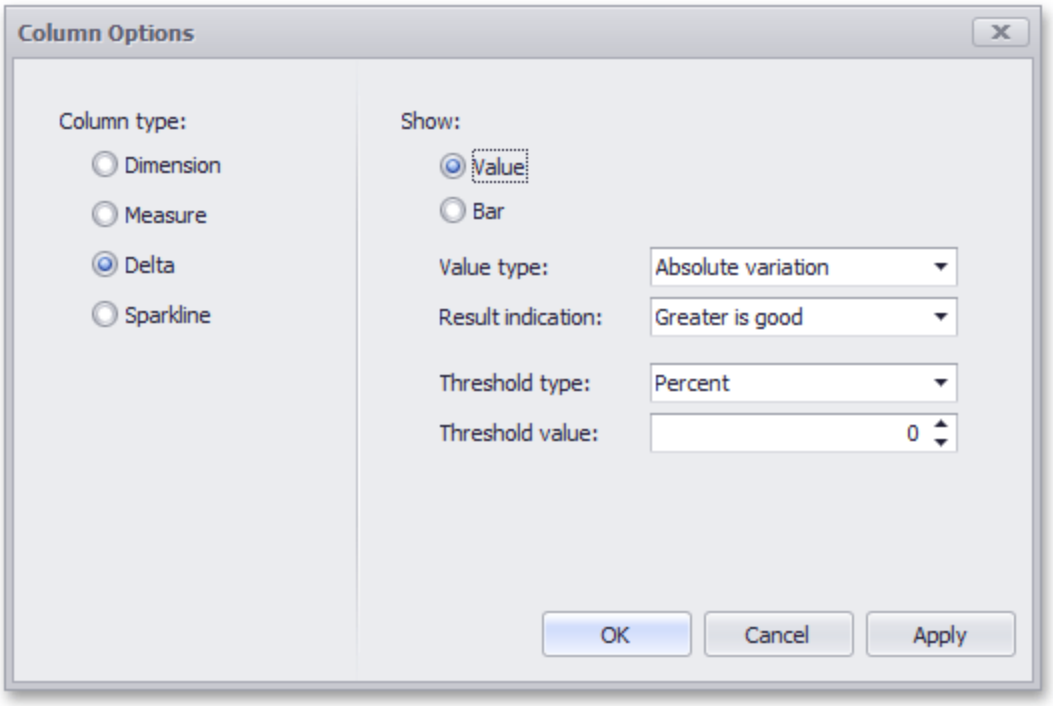
Greater is Good Less is Good Warning if Greater Warning if Less No Indication



Comparison Tolerance

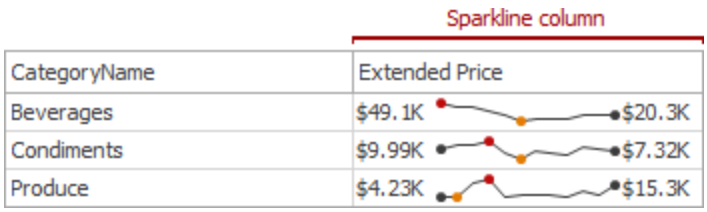
The comparison tolerance allows you to specify more advanced conditions for displaying delta indication. For instance, you can set a specific indication to be displayed when the actual value exceeds the target value by 10% or by $2K.

Use the **Threshold** type combo box to select whether you wish to specify the comparison tolerance in percentage values or in absolute values. Then use the Threshold value box to specify the comparison tolerance.



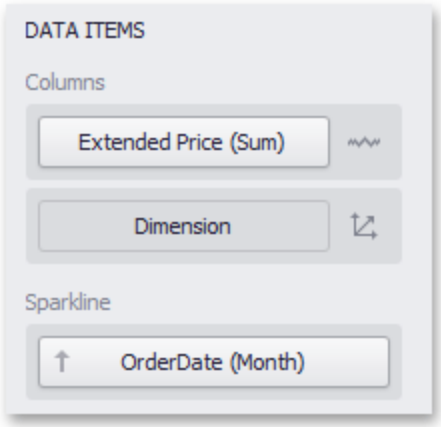
Sparkline Column

A sparkline column visualizes the variation in summary values over time.



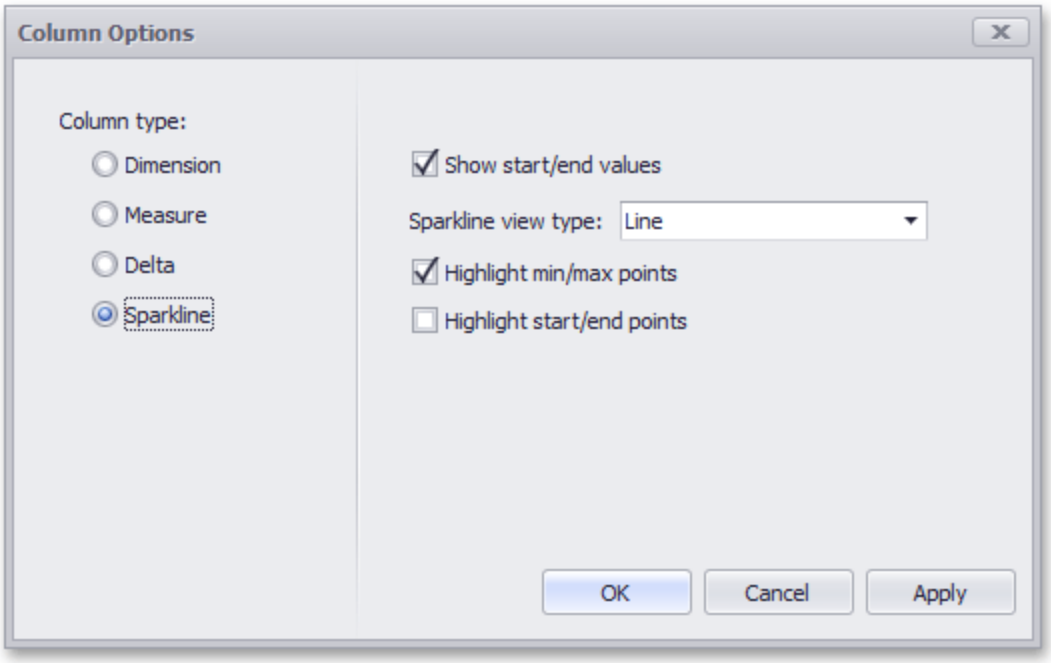
Data Binding Specifics

The sparkline column is bound to a measure providing sparkline values and to a dimension providing a date-time interval.

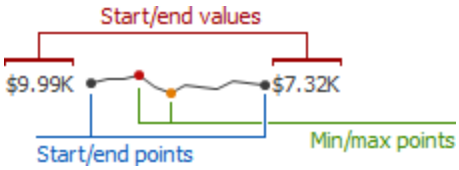


Sparkline Options

You can control sparkline appearance settings using the Column Options dialog. To invoke this dialog, click the column type indicator (〰).



In this dialog, you can control various settings that affect how the sparkline is displayed within a grid cell.



Sparkline Options	Description
Show start/end values	Species whether or not to display sparkline start/end values within a grid cell.
Sparkline view type	Defines the view type of a sparkline. Sparkline view types include Line, Area, Bar, and Win/Loss.

Sparkline Options	Description
Highlight min/max points	Specifies whether or not to highlight the minimum/ maximum points of a sparkline.
Highlight start/end points	Specifies whether or not to highlight the start/end points of a sparkline.

Interactivity

This section describes features that enable interaction between the Grid and other dashboard items. These features include Master Filtering and Drill-Down.

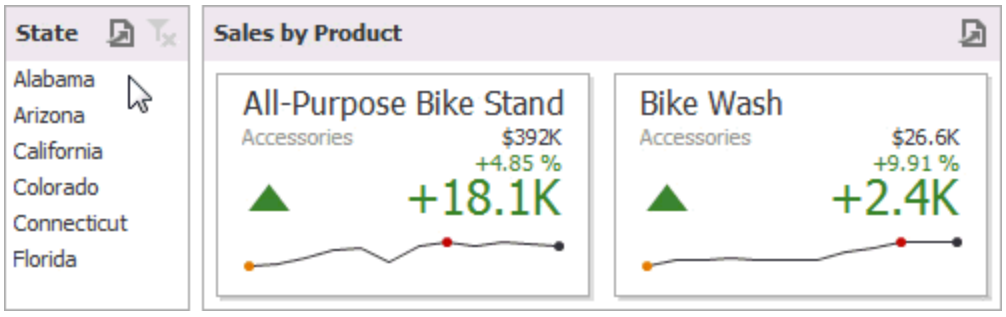
Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

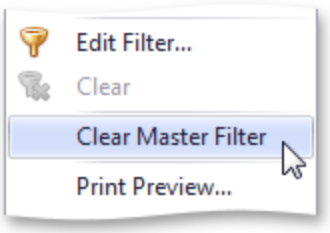
Configure Master Filters in the Designer

The Grid dashboard item supports filtering by rows.

When Master Filtering is enabled, you can click a grid row (or multiple rows by holding down the CTRL key) to make other dashboard items only display data related to the selected record(s).



To reset filtering, use the Clear Master Filter button (the icon) in the grid's caption area, or the **Clear Master Filter** command in the grid's context menu.

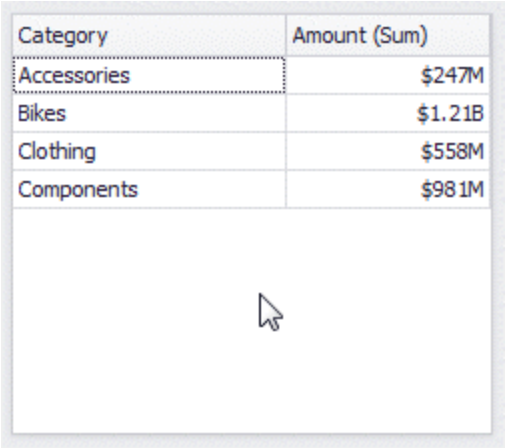


Drill-Down

The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly.

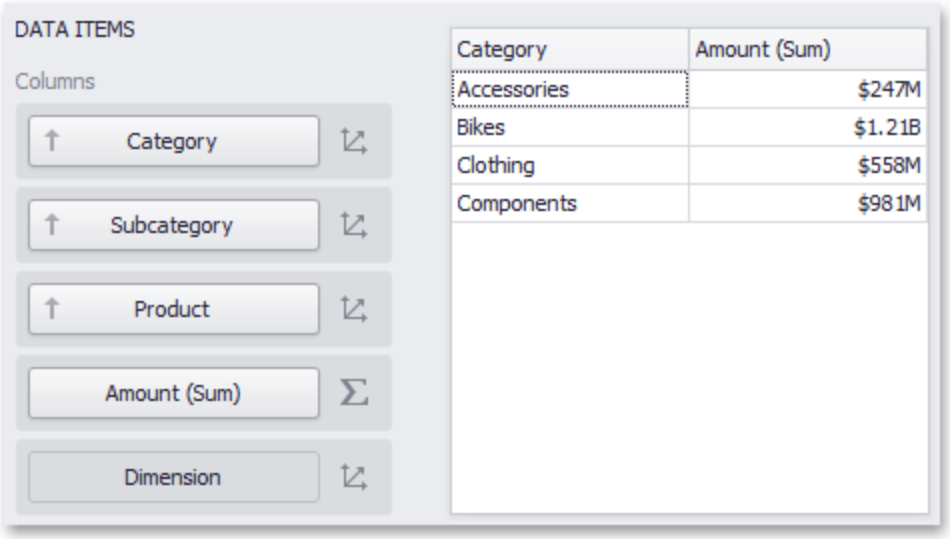
The Grid dashboard item supports drill-down for rows.

When drill-down is enabled, you can click a grid row to view the details.



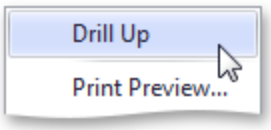
When Master Filtering is enabled, you can view the details by double-clicking a grid row.

Drill-down requires that the Columns section contains several dimensions at the top, from the least detailed to the most detailed dimension.



To enable drill-down, click the Drill Down button in the Data Ribbon tab (or the button if you are using the toolbar menu).

To return to the previous detail level (drill up), use the Drill Up button (the icon) within the grid's caption area, or the **Drill Up** command in the grid's context menu.



Conditional Formatting

The Grid dashboard item supports the conditional formatting feature that provides the capability to apply formatting to grid cells whose values meet the specified condition. This feature allows you to highlight specific cells or entire rows using a predefined set of rules.

Conditional Formatting Overview

The Grid dashboard item allows you to apply conditional formatting to Data Items providing data to the following column types:

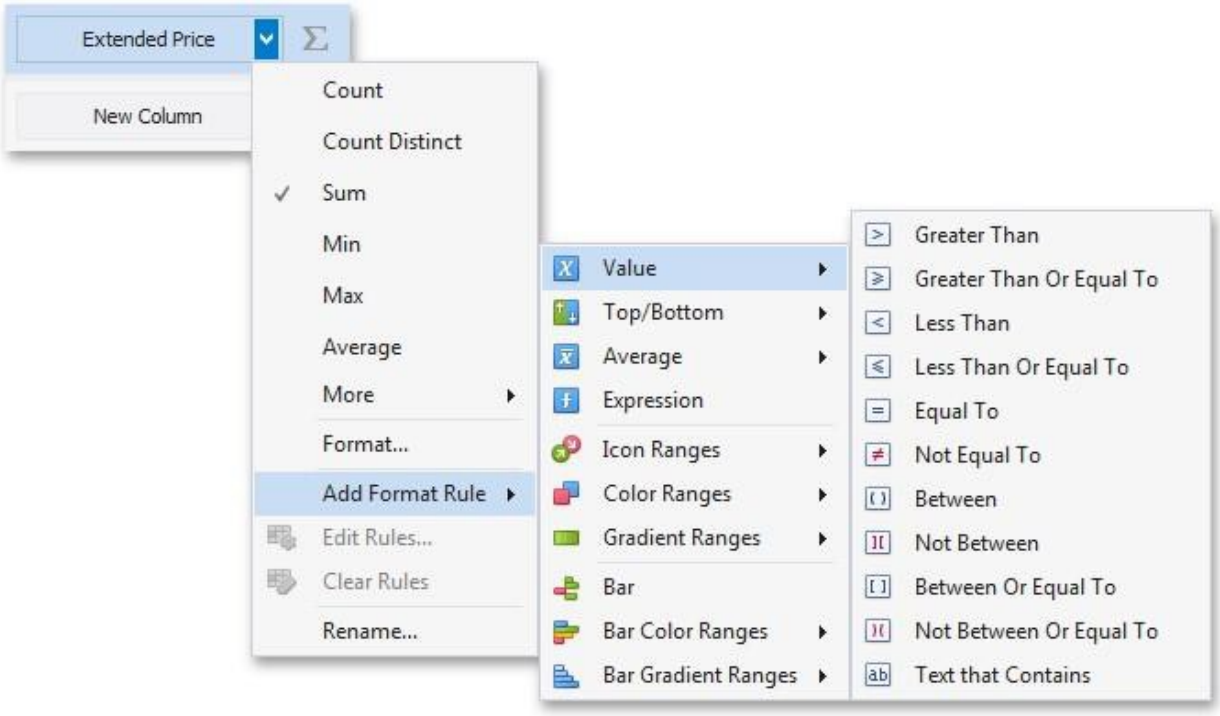
- Dimension column
- Measure Column
- Sparkline Column

> **NOTE:** You can use hidden measures to specify a condition used to apply formatting to visible values. New appearance settings are applied to grid cells corresponding to the target dimension/measure values.

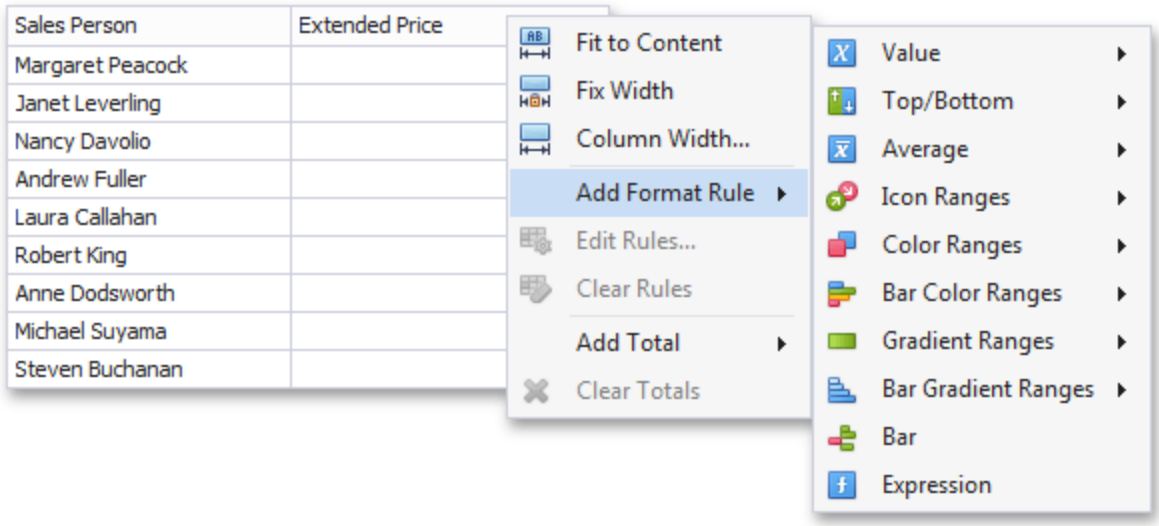
Create a Formal Rule

To create a new format rule for the grid's dimension/measure, do one of the following:

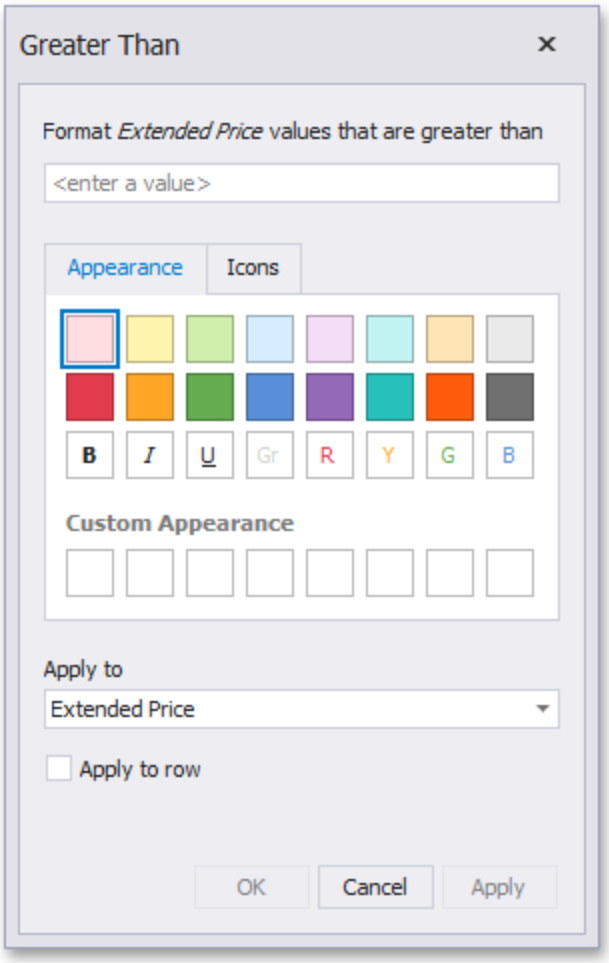
Click the **Options** button next to the required measure/dimension, select **Add Format Rule** and choose the condition.



Right-click the column header corresponding to the required measure/dimension and select **Add Format Rule**.



Depending on the selected format condition, the dialog used to create a format rule for Grid contains different settings. For instance, the image below displays the Greater Than dialog corresponding to the Value format condition.



The **Apply to row** check box allows you to specify whether to apply the formatting to the entire grid row.

Edit a Format Rule

To edit format rules for the current Grid dashboard item, use the following options:

- Click the **Edit Rules** button in the Home ribbon tab or use corresponding item in the Grid context menu.
- Click the menu button for the required data item and select **Edit Rules**. As an alternative, right-click the column header corresponding to the required data item and select Edit Rules.

All of these actions invoke the Edit Rules dialog containing existing format rules.

Totals

The Grid dashboard item enables you to add a summary value (a total) calculated against displayed values of an individual column, and show the result under this column. Note that you can add any number of totals for each column. For example, you can obtain the number of column records, average or maximum value, etc.

Category	Extended Price (Sum)	Discount (Average)
Beverages	$268K	6.19 %
Condiments	$106K	5.26 %
Confections	$167K	5.69 %
Dairy Products	$235K	5.34 %
Grains/Cereals	$95.7K	4.53 %
Meat/Poultry	$163K	6.45 %
Produce	$100K	4.54 %
Seafood	$131K	6.02 %
Count = 8	Max = $268K	Avg = 5.50 %
	Sum = $1.27M	

Totals

Totals Overview

You can use the following summary functions when creating totals:

- **Count**: The number of records
- **Sum**: The sum of the values

$$Sum = \sum_i v_i$$

- **Min**: The smallest value
- **Max**: The largest value
- **Average**: The average of the values

$$\bar{v} = \frac{1}{n} \cdot \sum_i v_i$$

- **Auto**: The total is calculated using the type of summary function specified for the measure corresponding to the current Grid column. Note that in this case, the total is calculated based on values of the corresponding data field from the underlying data source.

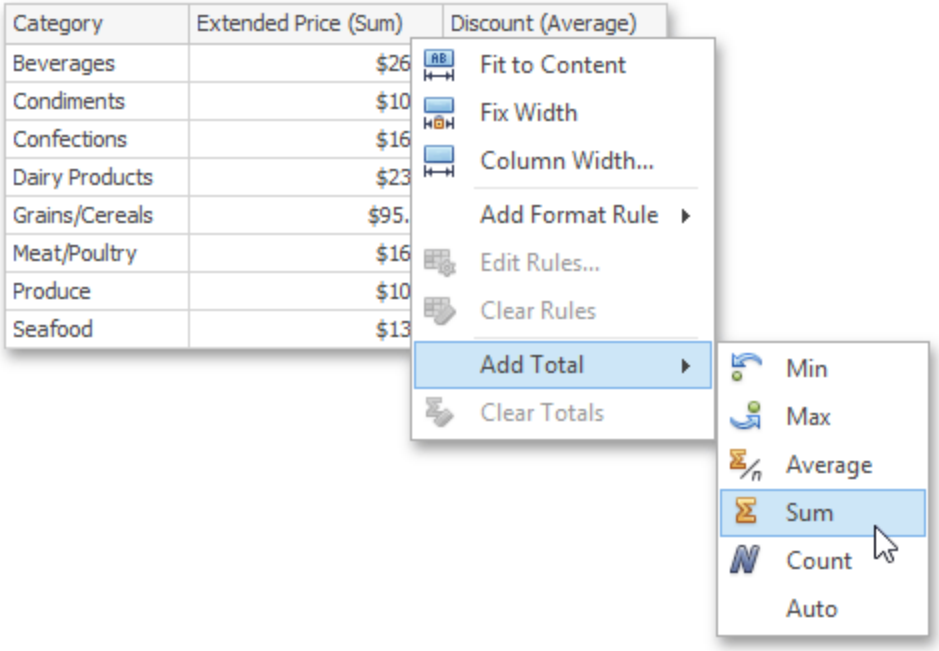
You can create totals using different sets of summary functions. This depends on the type of the data source field providing data for the target column.

Icon	Data Source Field Type	Supported Totals
	Boolean	Count
	Byte	Count
	Date-time	Min,Max,Count
	Numeric	Allavailabletypes
	String	Min,Max,Count

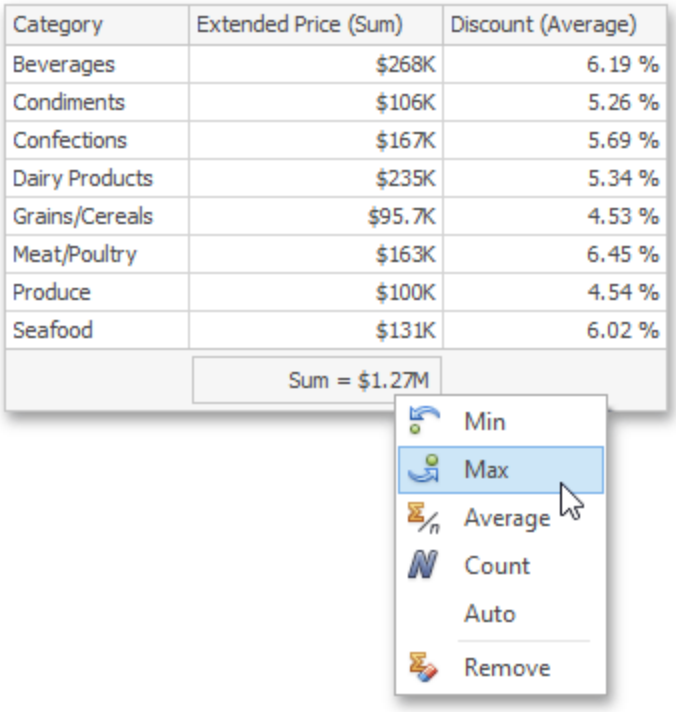
Note that the Auto type is available only for the Measure column.

Create and Edit Tools

To create a total, use the context menu of the column header. Right-click the required column header, select Add Total and specify the type of summary function used to calculate a total.



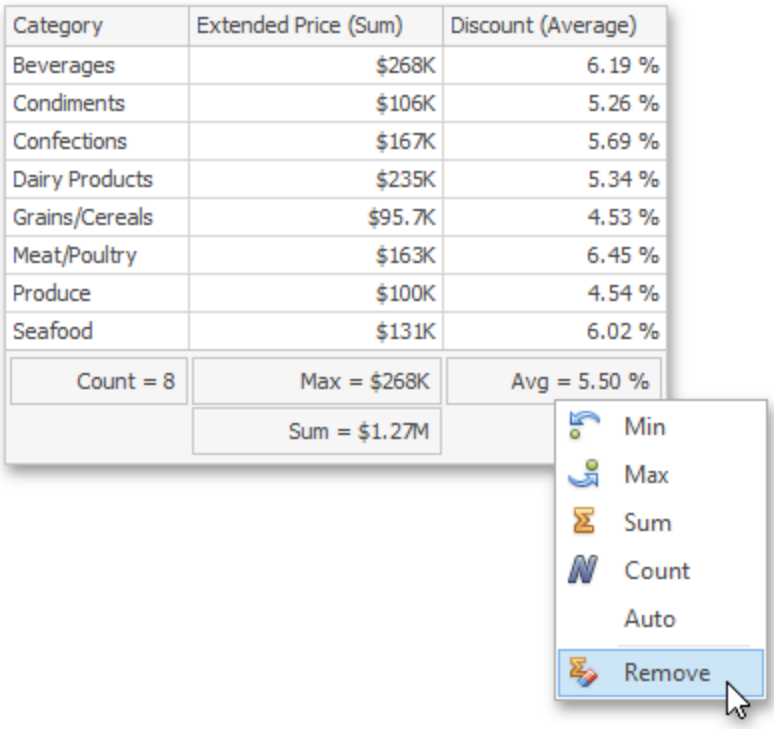
To change the total type, right-click the required total and select a new total type.



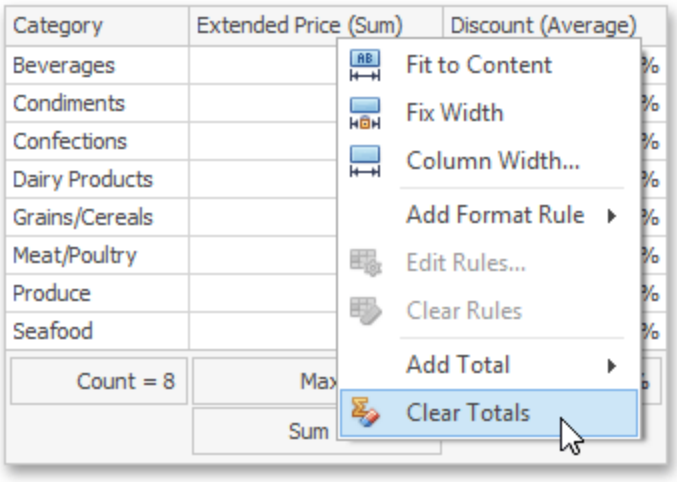
Clear Totals

You can delete one total or all the totals in a particular column.

To delete a single total, right-click a total and select **Remove**.



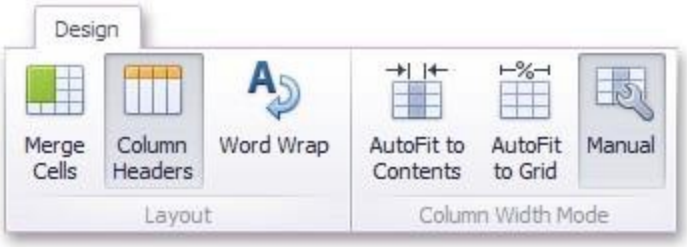
To delete all column totals, right-click the column header and select **Clear Totals** in the invoked context menu.



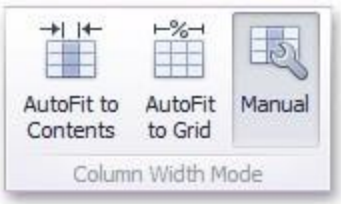
Layout

The Grid dashboard item allows you to customize its layout in various ways. You can manage the width of grid columns, specify the visibility of column headers, enable cell merging, etc.

To do this, use the Layout and Column Width Mode groups in the Design Ribbon tab.



The Grid dashboard item allows you to manage column widths using different modes. Use buttons in the Column Width Mode group to manage the column width modes.

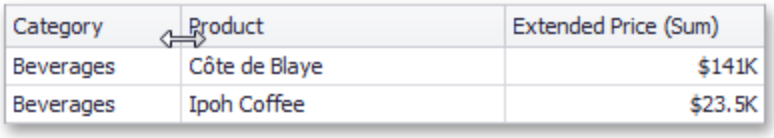


The following modes are available:

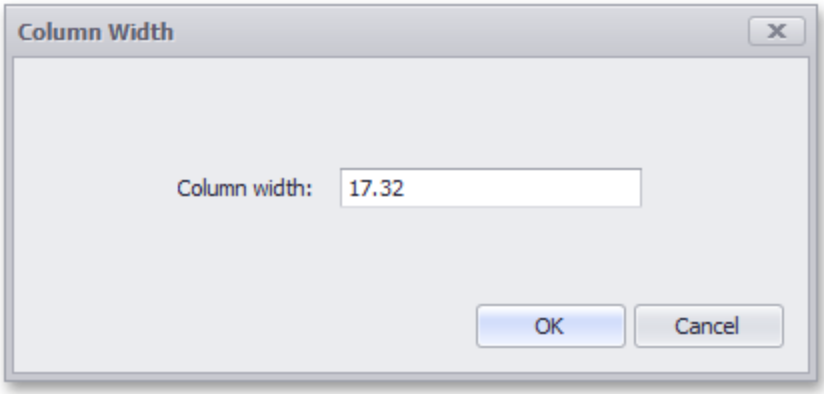
- **AutoFit to Contents**: The grid adjusts columns to the minimum width required to completely display their content automatically. If the entire content cannot be displayed within the dashboard item, horizontal scrolling is enabled.
- **AutoFit to Grid**: The grid adjusts the width of all columns to fit their content in an optimal way. If you are changing the size of the dashboard item, the width of columns is changed proportionally..
- **Manual**: The grid allows you to adjust column widths manually.

In this mode, you can adjust the width of individual columns in the following ways:

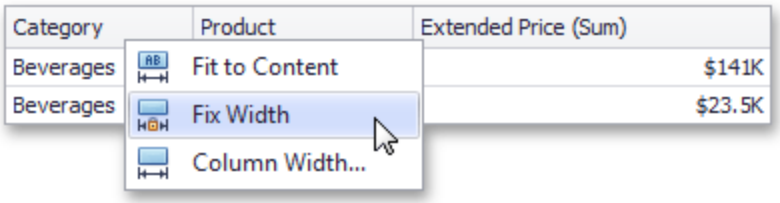
Specify the width of the required column by dragging the right edge of the column header



In this case, all columns preserve their relative size when the grid width is changed.



Specify the column width and fix it by right-clicking the required column header and selecting **Fix Width**.

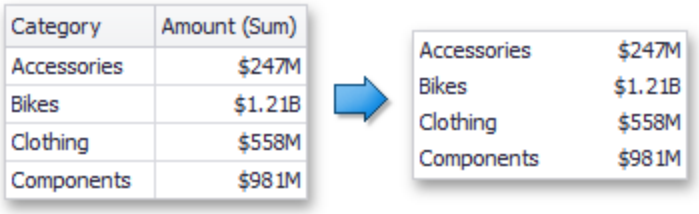


You can also specify the fixed column width by selecting Column Width. This invokes the Column Width window that allows you to specify the width of the column in characters.

Fit the column width to its content and fix it by right-clicking the required column header and selecting Fit to Content.

Column Header

Use the Column Headers button to toggle column header visibility.

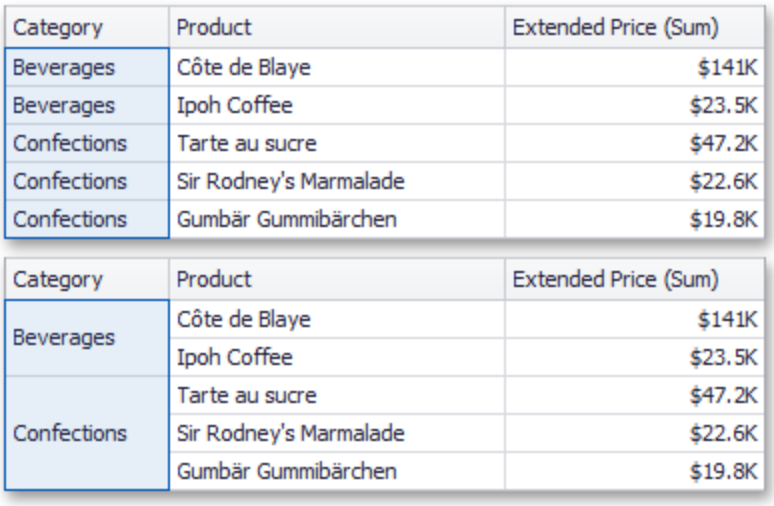


Category	Amount (Sum)
Accessories	$247M
Bikes	$1.21B
Clothing	$558M
Components	$981M

Accessories	$247M
Bikes	$1.21B
Clothing	$558M
Components	$981M

Cell Merging

The Grid allows you to merge neighboring cells with identical values . To do this, use the **Merge Cells** button.



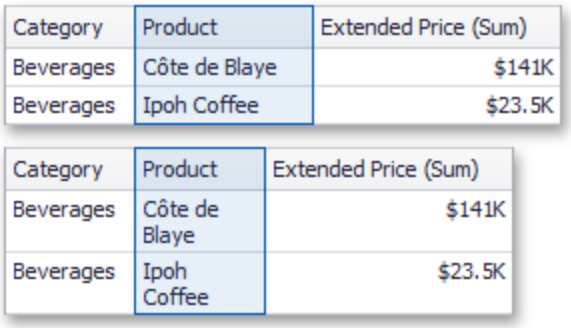
Category	Product	Extended Price (Sum)
Beverages	Côte de Blaye	$141K
Beverages	Ipoh Coffee	$23.5K
Confections	Tarte au sucre	$47.2K
Confections	Sir Rodney's Marmalade	$22.6K
Confections	Gumbär Gummibärchen	$19.8K

Category	Product	Extended Price (Sum)
Beverages	Côte de Blaye	$141K
	Ipoh Coffee	$23.5K
Confections	Tarte au sucre	$47.2K
	Sir Rodney's Marmalade	$22.6K
	Gumbär Gummibärchen	$19.8K

Note that the banded rows are not available when cell merging is enabled.

Word Wrapping

The word wrapping feature enables the capability to display cell content on multiple lines if the size of a dashboard item is insufficient to completely display the cell content on a single line.



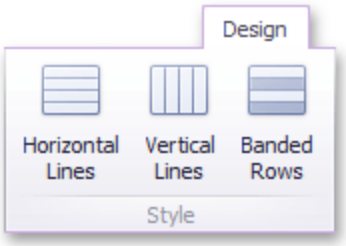
Category	Product	Extended Price (Sum)
Beverages	Côte de Blaye	$141K
Beverages	Ipoh Coffee	$23.5K

Category	Product	Extended Price (Sum)
Beverages	Côte de Blaye	$141K
Beverages	Ipoh Coffee	$23.5K

The word wrapping feature is not in effect when the **AutoFit to Contents** column width mode is enabled.

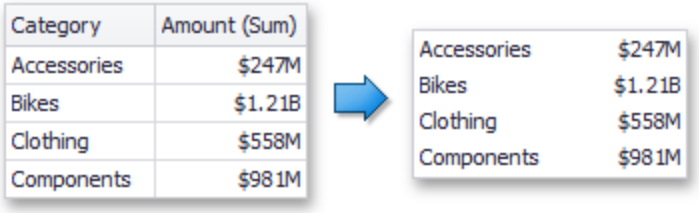
Style

The Grid dashboard item allows you to specify various style settings. To do this, use the **Style** group in the Design Ribbon tab.



Grid Lines

The Horizontal Lines and Vertical Lines buttons control grid line visibility



Category	Amount (Sum)
Accessories	$247M
Bikes	$1.21B
Clothing	$558M
Components	$981M

Accessories	$247M
Bikes	$1.21B
Clothing	$558M
Components	$981M

Banded Rows

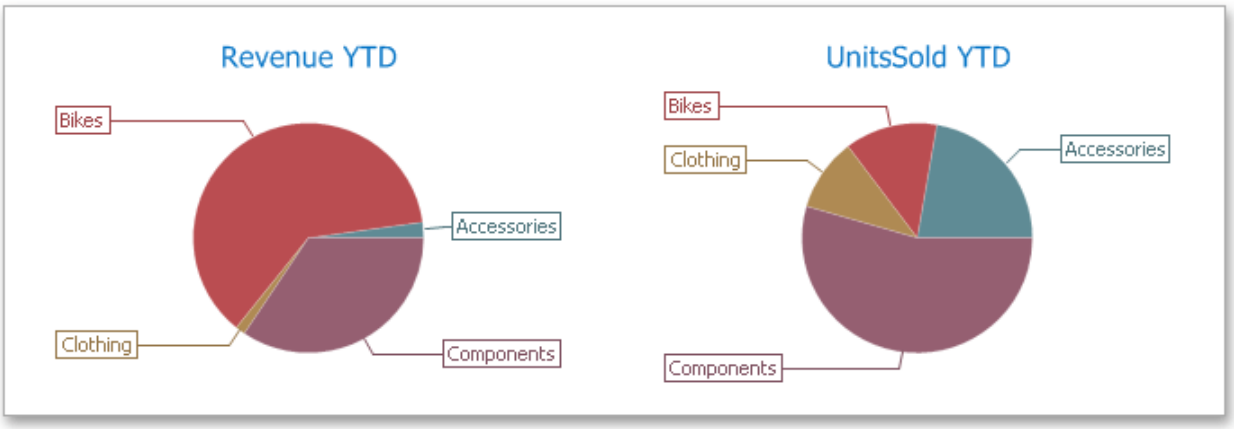
To paint the background of odd and even rows differently, use the **Banded Rows** button.

Category	Product	Extended Price (Sum)
Beverages	Côte de Blaye	$141K
Beverages	Ipoh Coffee	$23.5K
Confections	Tarte au sucre	$47.2K
Confections	Sir Rodney's Marmalade	$22.6K
Confections	Gumbär Gummibärchen	$19.8K

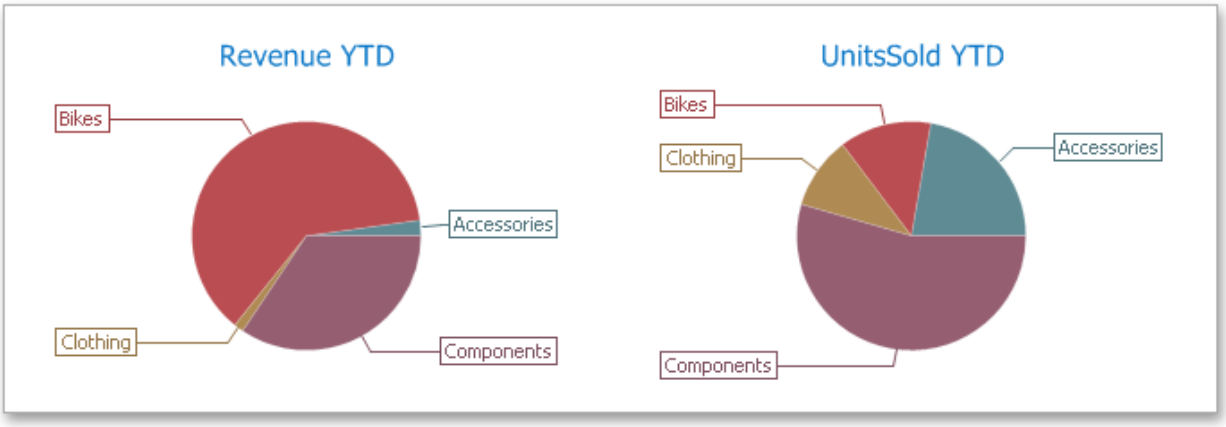
Banded rows are not available when cell merging is enabled.

Pies

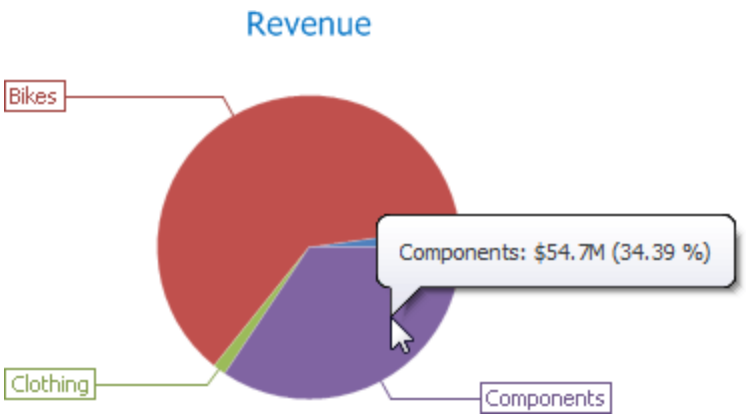
The Pie dashboard item displays a series of pies or donuts that represent the contribution of each value to a total.



The Pie dashboard item displays a series of pies or donuts that represent the contribution of each value to a total.



A Pie dashboard item can display a tooltip that shows information about the hovered pie segment.



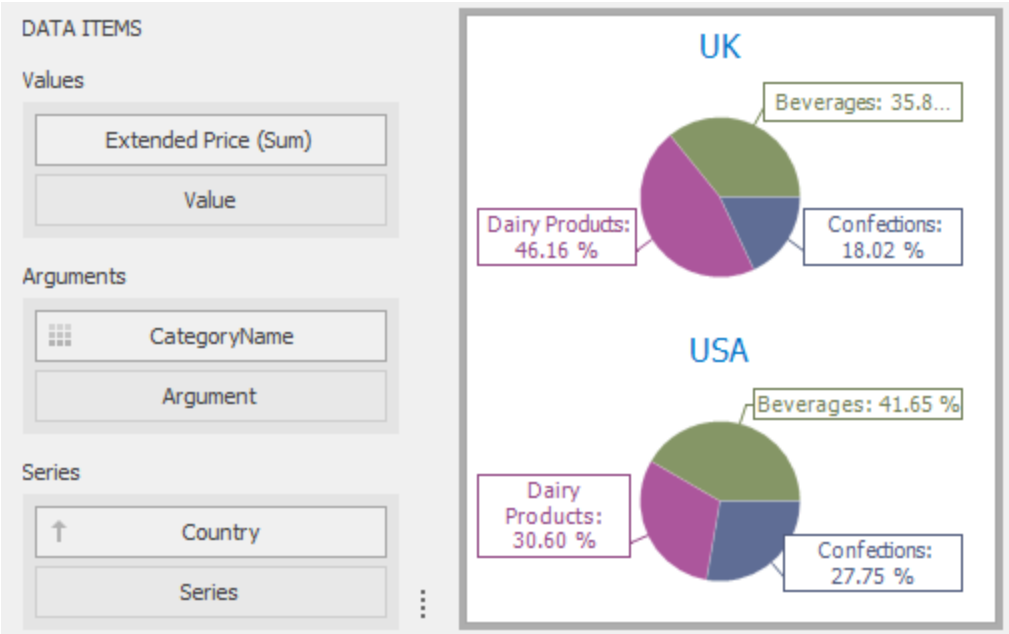
Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Pie dashboard item to data in the Designer.

Binding to the Data in the Designer

The image below shows a sample Pie dashboard item that is bound to data,

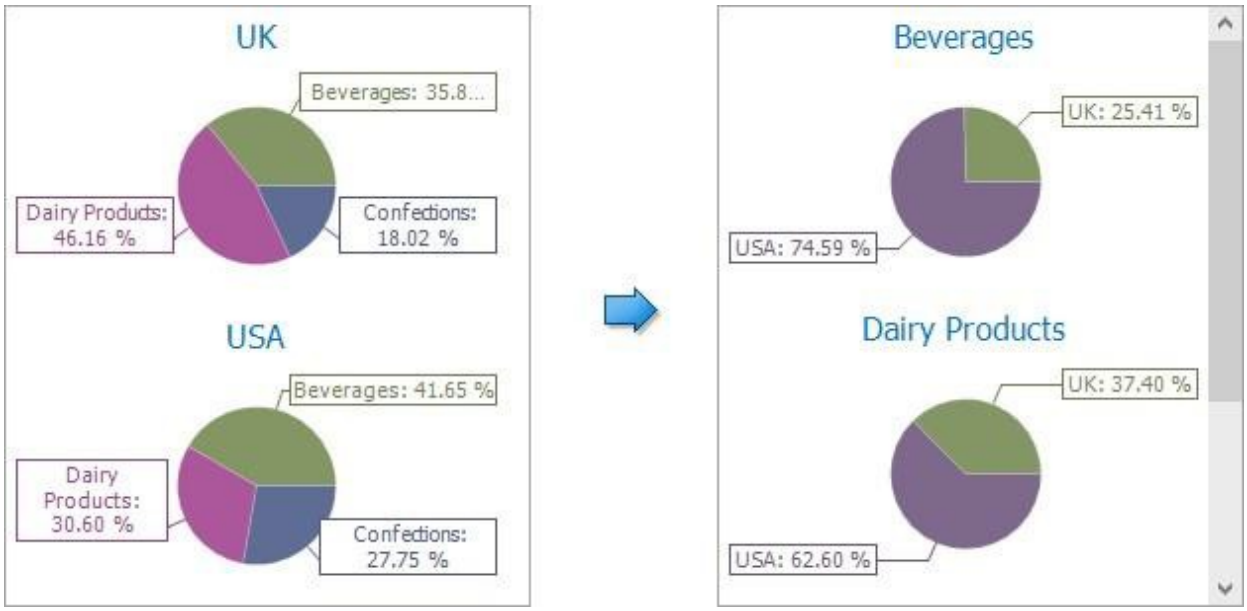


To bind the Pie dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. A table below lists and describes Pie's data sections.

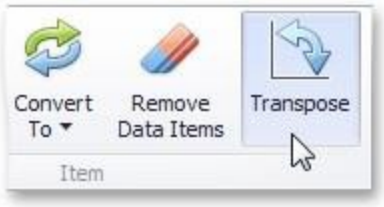
Section	Description
Values	Contains Data Items that define the share of pie segments. In case of negative measure values, Pie uses their absolute values.
Arguments	Contains Data Items that provide values used to label pie segments.
Series	Contains Data Items whose values are used to label pie charts.

Transposing Arguments and Series

The Pie dashboard item provides the capability to transpose pie arguments and series. In this case, Data Items contained in the Arguments section are moved to the Series section, and vice versa.



To transpose the selected Pie dashboard item, use the Transpose button in the Home ribbon tab.



Interactivity

This section describes features that enable interaction between the Pie dashboard item and other items. These features include Master Filtering and Drill-Down.

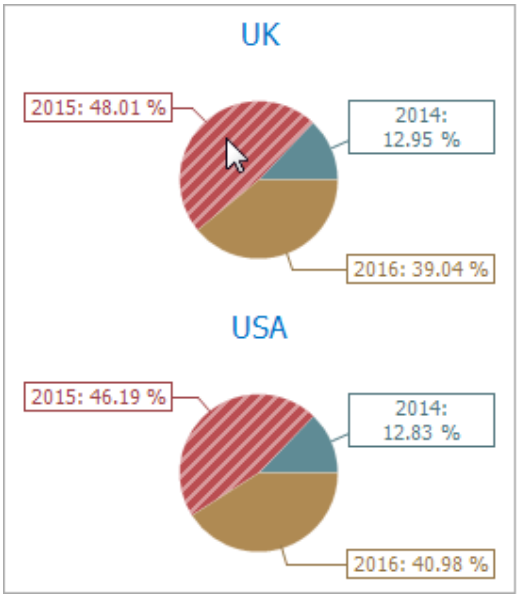
Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

The Pie dashboard item supports filtering by argument or series values.

Filtering by Arguments

When filtering by arguments is enabled, you can click a pie segment to make other dashboard items only display data related to the selected argument value.



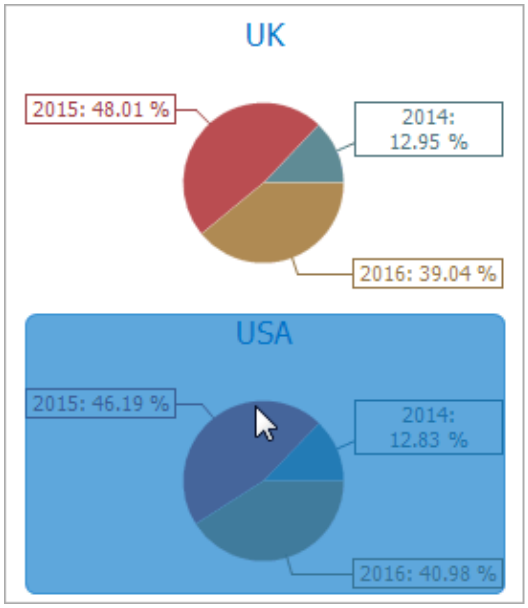
Year	Quarter	Country	Extended Price
2015	Q1	UK	$34.3K
		USA	$111K
	Q2	UK	$35.1K
		USA	$110K
	Q3	UK	$40.7K
		USA	$93.9K
	Q4	UK	$55.3K
		USA	$111K

To enable filtering by arguments in the Designer, set the required Master Filter mode and click the **Arguments** button in the Data Ribbon tab (or the button if you are using the toolbar menu).

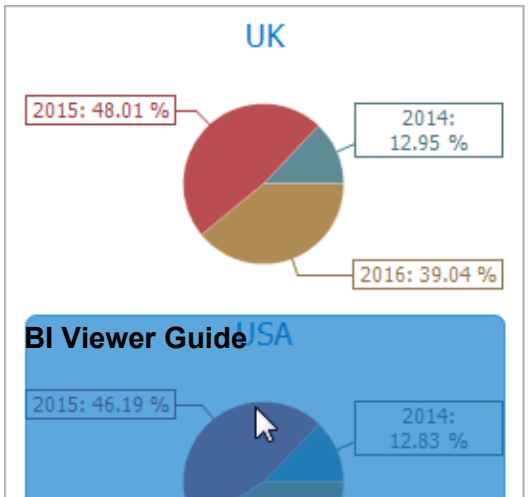
Filtering by the Series

When filtering by series is enabled, you can click a pie to make other dashboard items display only data related to the selected pie.

To enable filtering by series in the Designer, set the required Master Filter mode and click the **Series** button in the Data Ribbon tab (or the button if you are using the toolbar menu).



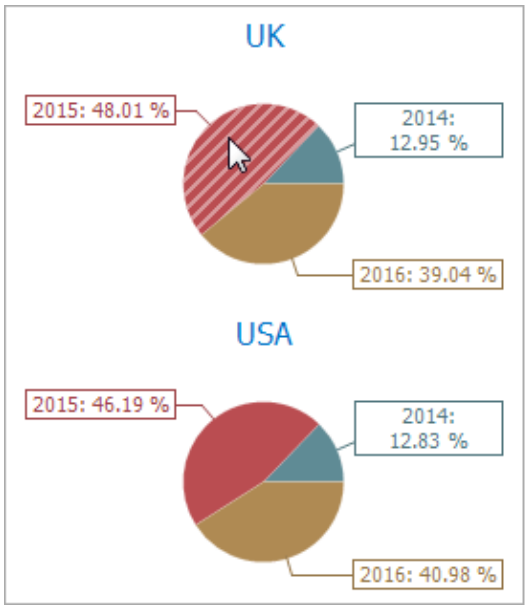
Year	Quarter	Country	Extended Price
2014	Q3	USA	$41.8K
	Q4		$76.5K
2015	Q1		$111K
	Q2		$110K
	Q3		$93.9K
	Q4		$111K
2016	Q1		$196K
	Q2		$182K



Year	Quarter	Country	Extended Price
2014	Q3	USA	$41.8K
	Q4		$76.5K
2015	Q1		$111K
	Q2		$110K
	Q3		$93.9K
	Q4		$111K
2016	Q1		$196K
	Q2		$182K

Filtering by Points

When filtering by points is enabled, you can click a single pie segment to make other dashboard items display only data related to the selected segment.



Year	Quarter	Country	Extended Price
2015	Q1	UK	$34.3K
	Q2		$35.1K
	Q3		$40.7K
	Q4		$55.3K

To enable filtering by points in the Designer, set the required Master Filter mode and click the Points button in the Data Ribbon tab.

Reset Filtering

To reset filtering, use the Clear Master Filter button (the icon) in the caption area of the Pie dashboard item, or the Clear Master Filter command in the Pie's context menu.

Drill-Down

The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly.

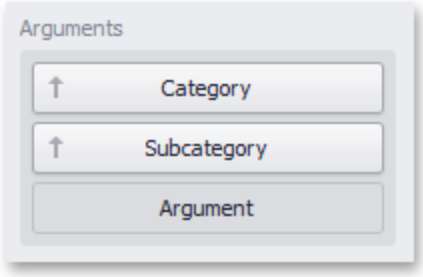
The Pie dashboard item supports drill-down on argument or series values.

Drill-Down on an Argument

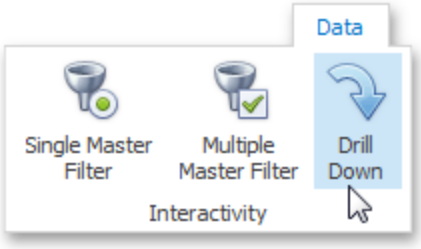
When drill down on an argument is enabled, you can click a pie segment to view a detail diagram for the corresponding argument value.

When Filtering by Arguments is enabled, you can view the details by double-clicking a pie segment.

Drill down on an argument requires that the Arguments section contains several Data Items, from the least detailed to the most detailed item.

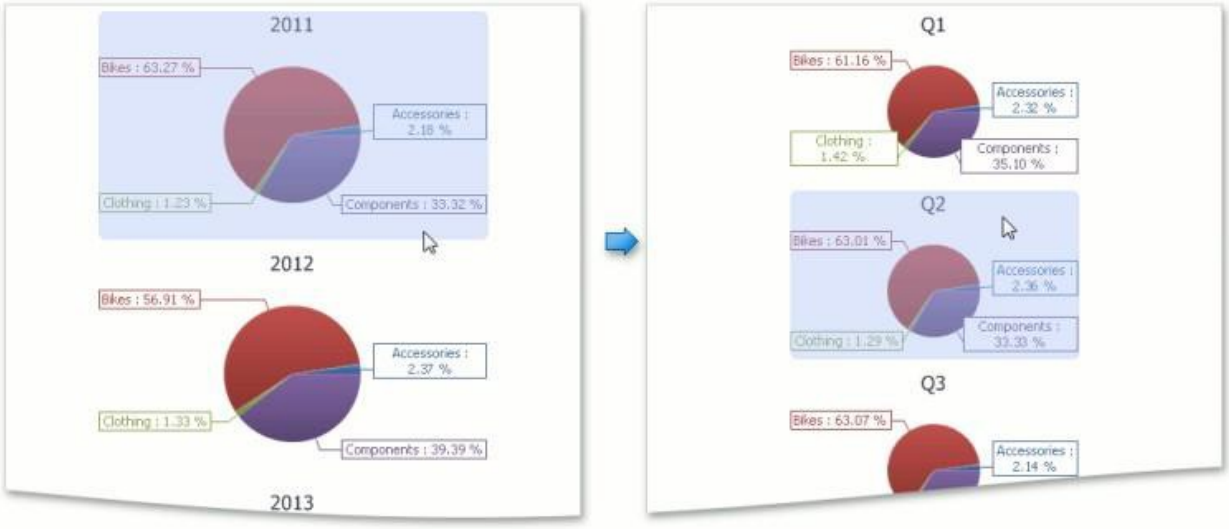


To enable drill down on an argument, click the Drill Down button in the Data Ribbon tab (or the button if you are using the toolbar menu) and the Arguments button (or the button if you are using the toolbar menu).



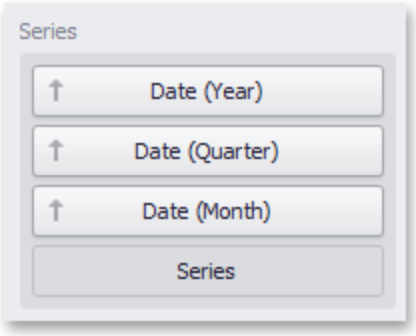
Drill-Down on a Series

When drill down on a series is enabled, you can click a pie chart to view a detail diagram for the corresponding series value.

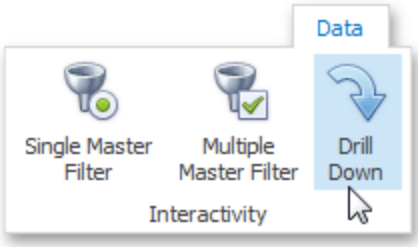


When Filtering by Series is enabled, you can view the details by double-clicking a pie chart.

Drill down on a series requires that the Series section contains several Data Items, from the least detailed to the most detailed item.



To enable drill down on a series, click the **Drill Down** button in the Data Ribbon tab (or the button if you are using the toolbar menu) and the **Series** button (or the button if you are using the toolbar menu).



Drill Up

To return to the previous detail level (drill up), use the Drill Up button (the icon) in the caption area of the Pie dashboard item, or the Drill Up command in the context menu.

Coloring

Certain dashboard items provide the capability to color dashboard item elements by associating dimension values/ measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item.

By default, the Pie dashboard item colors its segments in the following ways:

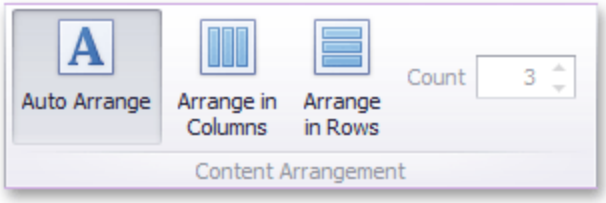
- If the Pie dashboard item contains measures (the Values section) and series dimensions (the Series section), only values corresponding to different measures are colored by hue.
- If the Pie dashboard item contains arguments (the Arguments section), different argument values are colored by hue.

If necessary, you can change the default behavior. For instance, the image below shows the Pie dashboard item whose measures and argument values are colored by hue.

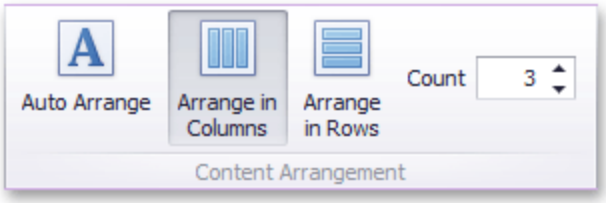
Layout

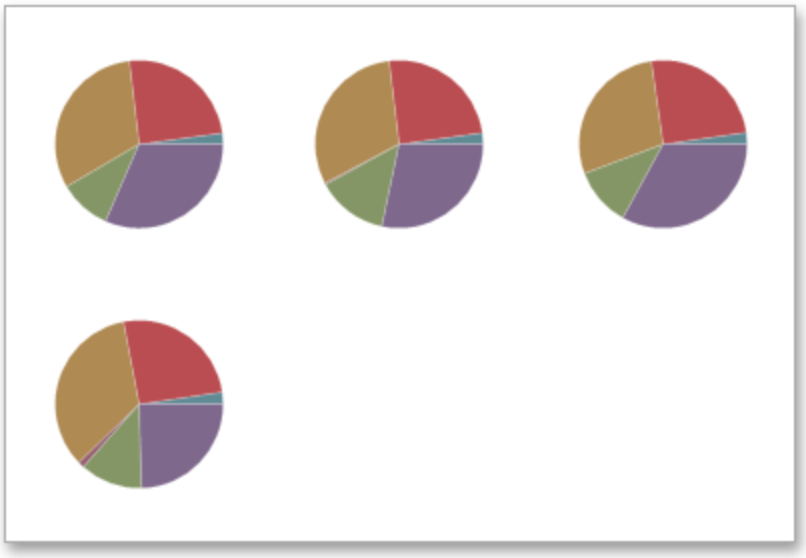
The Pie dashboard item allows you to specify the number of columns or rows in which individual diagrams are arranged.

To control how pies are arranged, use the buttons in the Content Arrangement group of the Design Ribbon tab. By default, the Auto Arrange option is enabled, which automatically resizes pies to fit within the dashboard item.

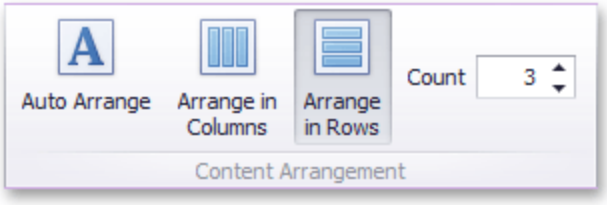


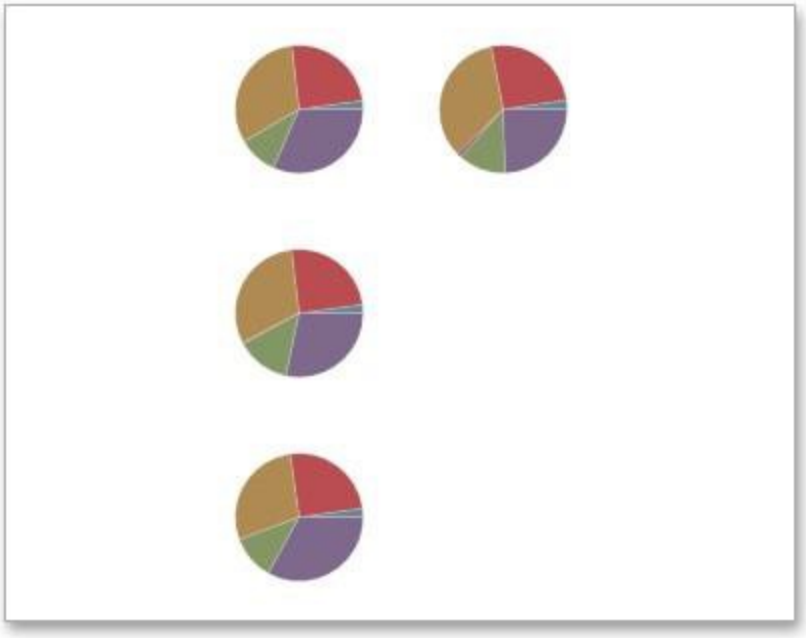
You can also specify the number of columns in which pies are arranged. Click the Arrange in Columns button and specify the appropriate number in the Count field.



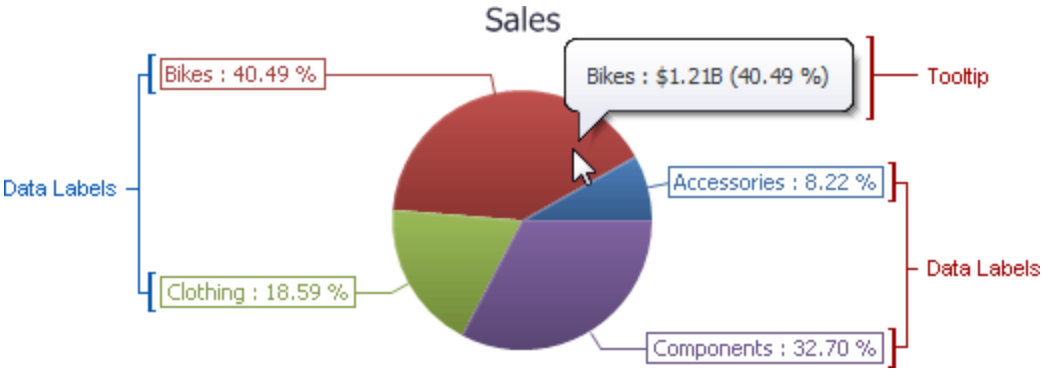


Similarly, you can arrange pies in a specific number of rows.



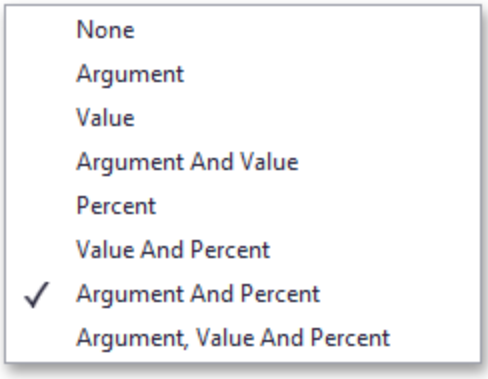


Labels



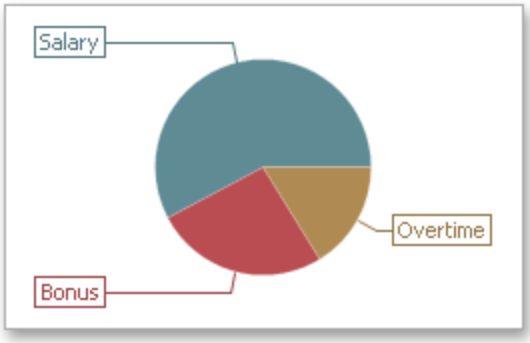
You can specify which information should be displayed within data labels and tooltips. To do this, use the Data Labels and Tooltips buttons in the Labels group of the Design Ribbon tab.

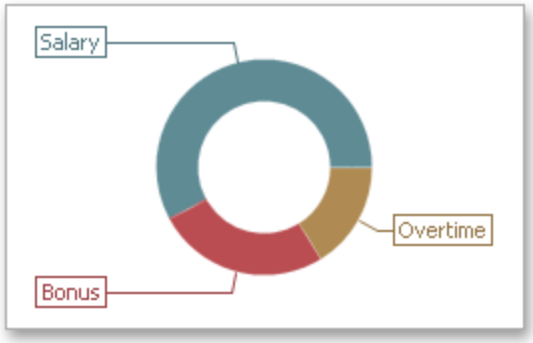
These buttons invoke a drop-down menu that is similar for both buttons. This menu allows you to specify which values are displayed within data labels or tooltips.



Style

The Pie dashboard item allows you to select whether diagrams should be painted as pies or donuts.



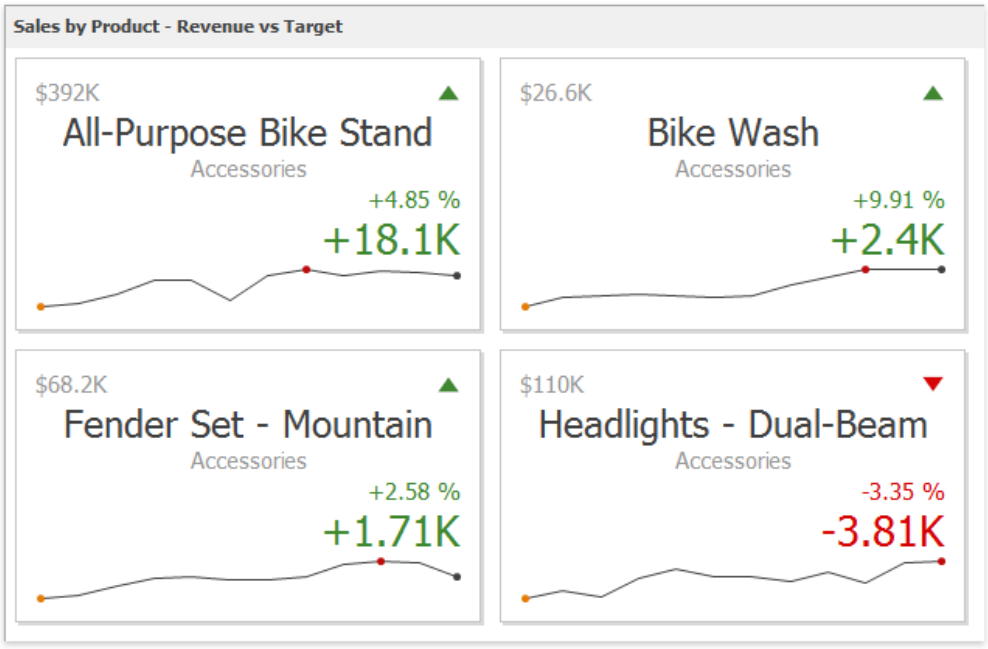


To select the diagram style, use the Pie and Donut buttons in the Style section of the Design Ribbon tab.

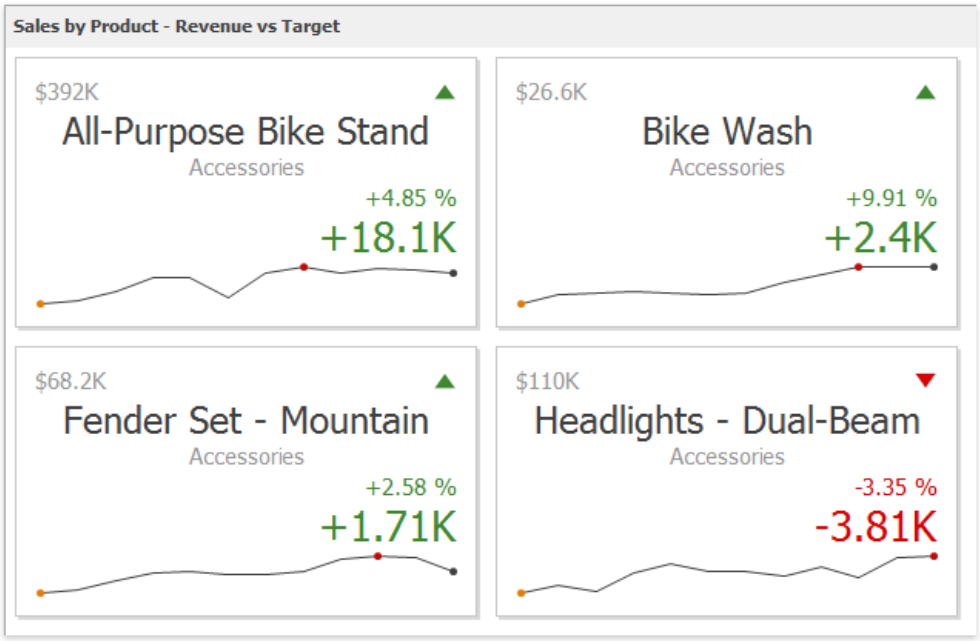
Pie
Donut
Style

Cards

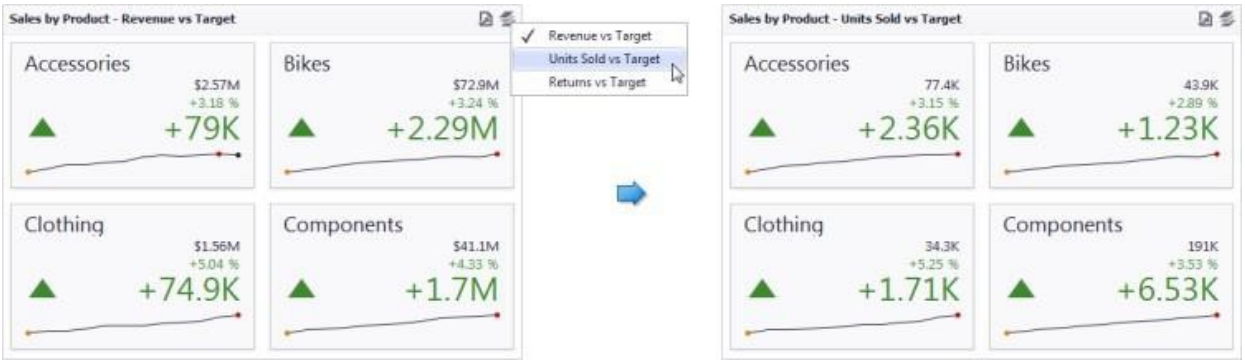
The Card dashboard item displays a series of cards. Each card illustrates the difference between two values. This difference can be expressed as an absolute value, an absolute variation or a percentage variation.



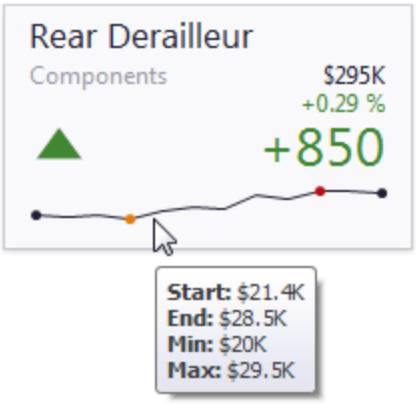
The Card dashboard item displays a series of cards. Each card illustrates the difference between two values. This difference can be expressed as an absolute value, an absolute variation or a percentage variation.



The Card dashboard item can illustrate this difference for various sets of values. You can switch between these sets using the Values button (the icon) in the dashboard item caption area or in the context menu.



A Card dashboard item can display a tooltip for cards containing a sparkline. When the mouse pointer is hovered over the sparkline, the tooltip can display start/end values and minimum/maximum values.



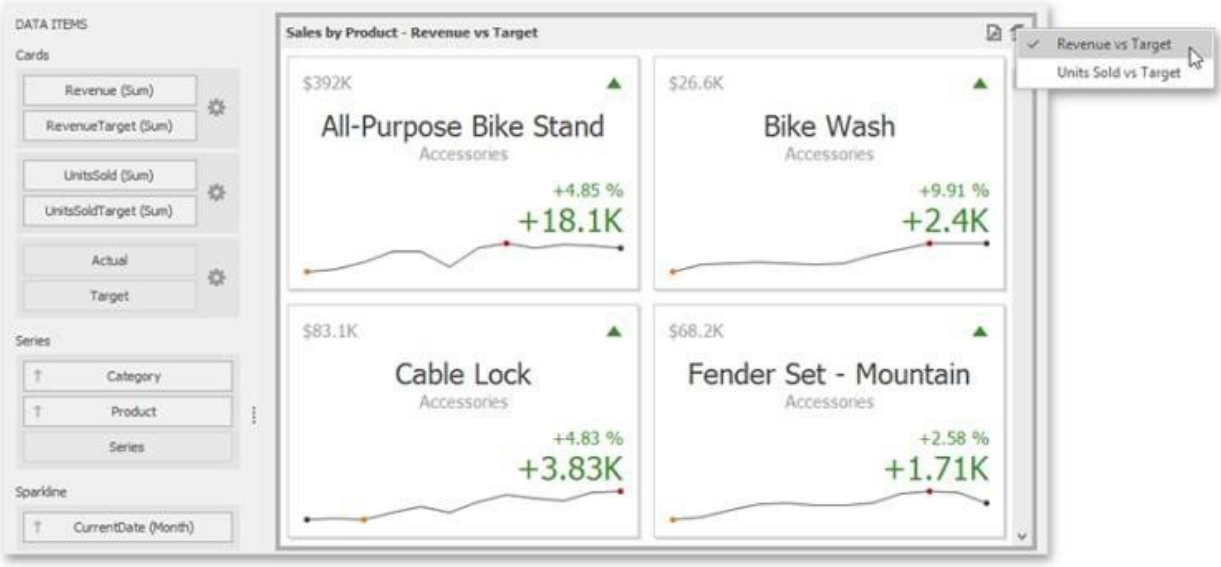
Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Card dashboard item to data in the Designer.

Binding to Data in the Designer

The image below shows a sample Card dashboard item that is bound to data.



To bind the Card dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. A table below lists and describes Card data sections.

Section	Description
Cards	Contains Data Items used to calculate values displayed within cards. Data Items are arranged in containers. Each data item container can hold two Data Items. The first item contains actual data and the second item (optional) contains target data. If both items are provided, cards show the difference between actual and target values. You can fill several data item containers in the Cards section and use the Values drop-down menu to switch between the provided values. To invoke the Values menu, click the icon in the dashboard item caption or use its context menu. This drop-down menu is available if the Series section is not empty. Otherwise, a separate card is created for each data item container, and all cards are displayed simultaneously.
Series	Contains Data Items whose values are used to label cards.
Sparkline	Provide a dimension whose data will be used to visualize values using sparklines.

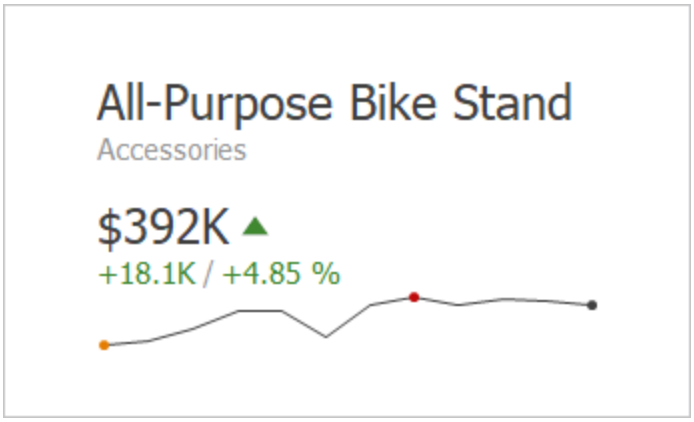
Layout

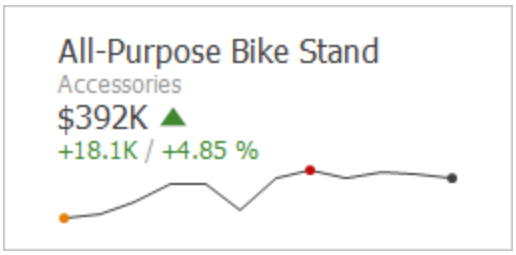
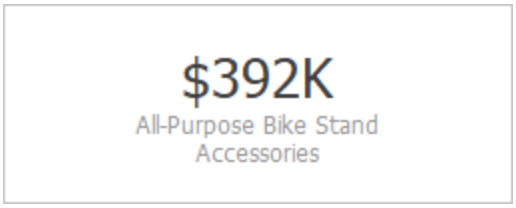
The Card dashboard item allows you to manage the position and visibility of elements displayed on cards. These elements include actual and target values, a delta indicator and corresponding delta values, a sparkline, etc.

To manage the position and visibility of card elements, choose a predefined layout template and customize its settings.

Available Layout Templates

The table below contains information about the available layout templates:

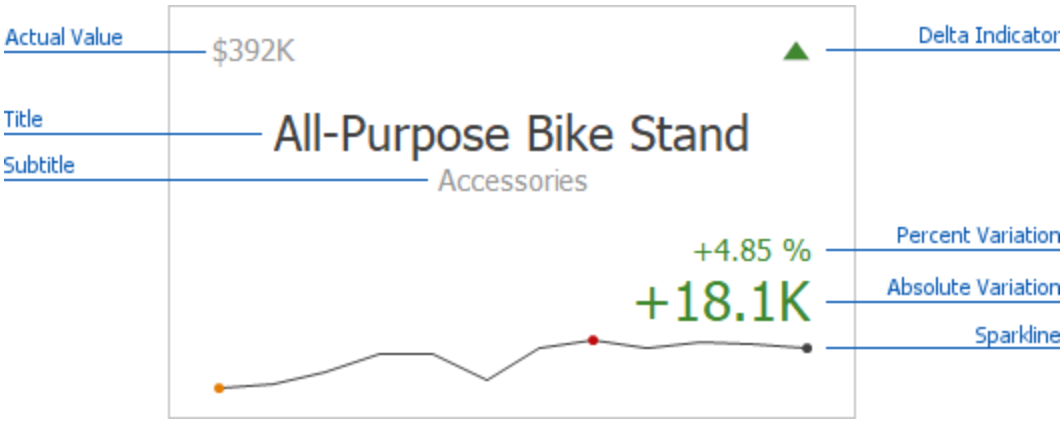
Layout Type	Example	Description
Stretched		The Stretched layout template arranges card elements so that they occupy an entire card area.
Centered		The Centered layout template is used to center card elements so that they occupy a specified width/ height.
Compact		The Compact layout template is used to arrange card elements so that they occupy the

Layout Type	Example	Description
		minimum area.
Lightweight		The Lightweight layout template displays the minimum set of elements within a card.

For all layout types, you can change the visibility of its elements, or you can specify the display value type for data- bound elements.

Default Layout

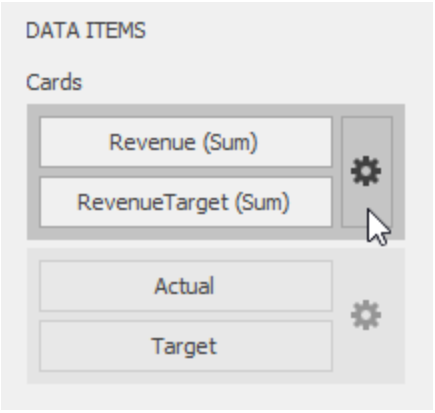
The Card dashboard item uses the Stretched layout template that arranges card visual elements in the following way by default.



Delta Indicator and delta values (such as Percent Variation or Absolute Variation) are colored depending on delta settings.

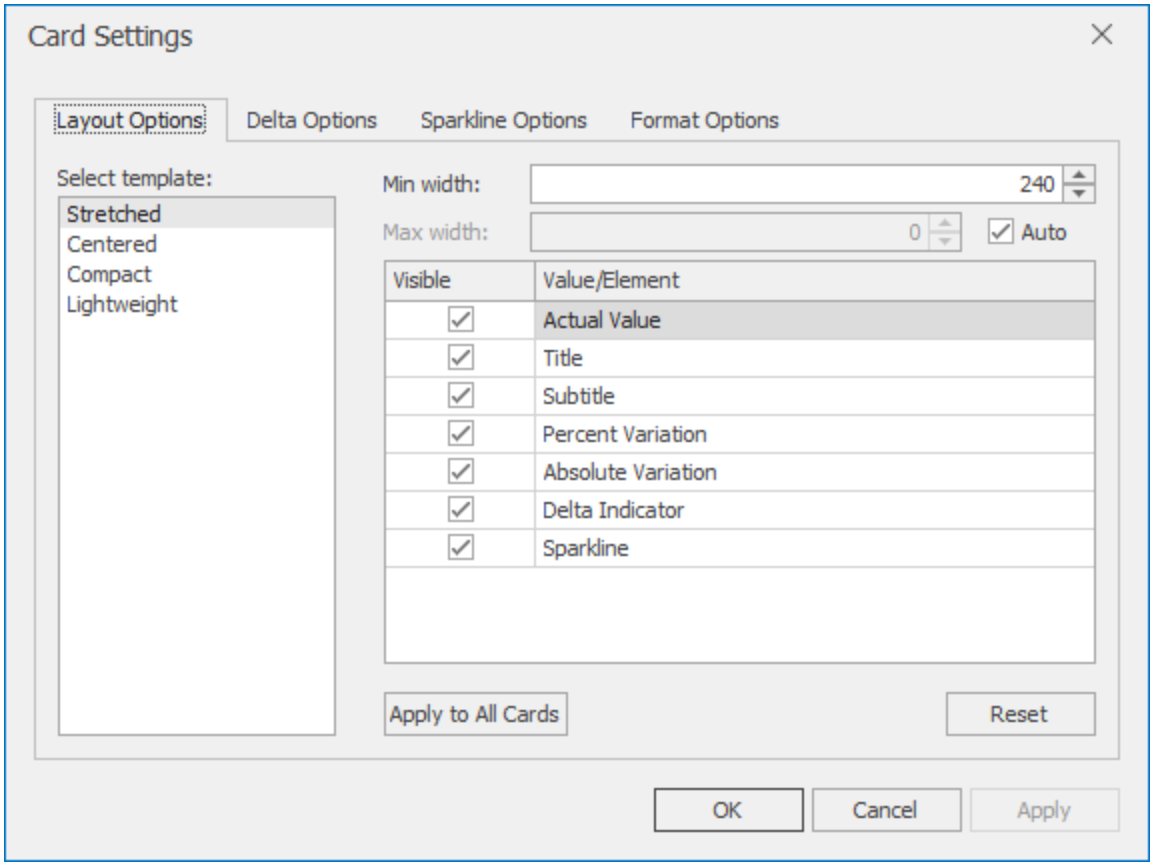
Change Layout

To change a card's layout in the Dashboard Designer, click the Options button (the icon) displayed next to the data item container in the Cards section.



This invokes the Card Settings dialog.

On the Layout Options tab, select the required layout type in the Select template list and specify its settings:



Min width: Specifies the minimum width of the card content.

Max width: Specifies the maximum width of the card content. Use the Auto option to determine the maximum width automatically.

You can show/hide the following values and visual elements within the card:

Value	Description	Example
Title	Displays values of the last (bottommost) dimension placed in the Series section.	Microsoft Office Keyboard
Subtitle	Displays combined values of all dimensions except the last (bottommost) dimension.	Technology - Computer Peripherals

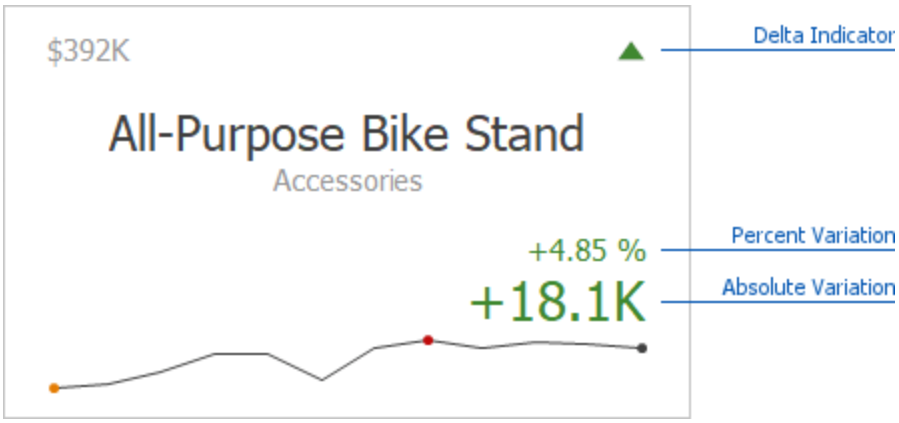
Value	Description	Example
Absolute Variation	An absolute difference between the actual and target value.	+1 8 .1 K
Actual Value	A summary value for a measure placed in the Actual placeholder.	$ 3 9 2 K
Card Name	A card name.	Revenue vs . Target
Percent of Target	A percent of a target.	1 0 4 .8 5 %
Percent Variation	A percent difference between the actual and target value.	4 .8 5 %
Target Value	A summary value for a measure placed in the Target placeholder.	$ 3 7 4 K
Dimension {Name}	Allows you to display values of a specific dimension placed in the Series section.	Technology

Element	Description	Example
Delta Indicator	Indicates whether the actual value is less or greater than the target value (see Delta).	
Sparkline	Visualizes the variation of actual or target values. To learn more, see Sparkline.	

Use the **Apply to All Cards** button to propagate the specified layout settings to all cards corresponding to Actual-Target pairs. The **Reset** button resets all setting to their default values.

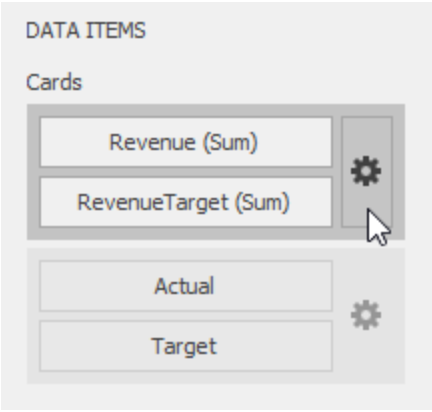
Delta

Cards allow you to visualize the difference between the actual and target values using special delta values and a delta indicator. If the default layout is used (Stretched layout type), the card displays the following delta values/ elements:

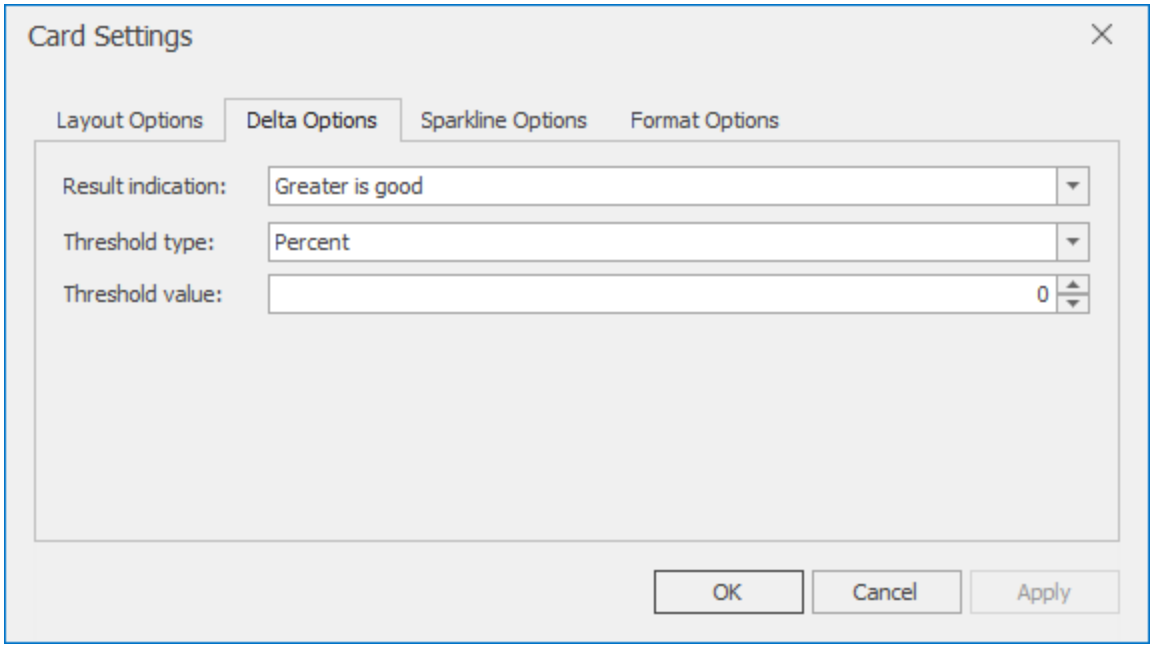


- **Delta Indicator**: Indicates whether the actual value is less or greater than the target value.
- **Percent Variation and Absolute Variation**: Delta values that show a difference between the actual and target value. You can also display the Percent of Target value. To do this, customize the card's layout.

To customize settings that relate to the calculation and display of delta values/elements, use the Options button (the ⚙ icon) displayed next to the data item container in the Cards section.



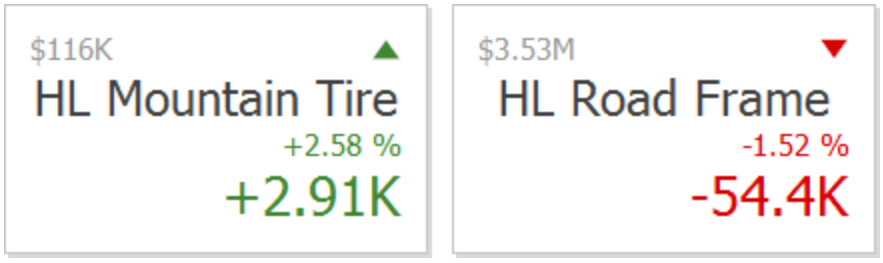
In the invoked Card Settings dialog, go to the Delta Options tab.



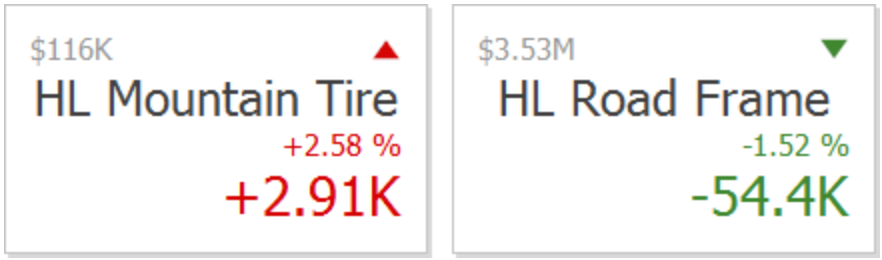
Then, specify the following settings:

Result Indication: You can specify the condition for displaying delta indication.

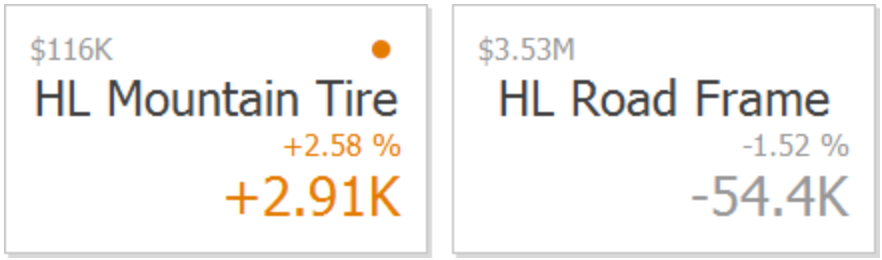
Greater is Good: The 'good' indication is displayed if the actual value exceeds the target value; if the target value exceeds the actual value, the 'bad' indication displays.



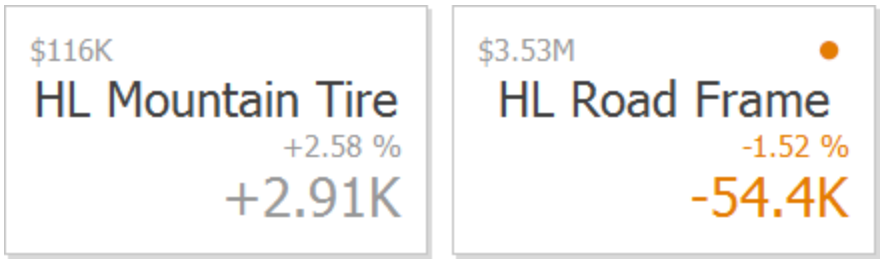
Less is Good: The 'bad' indication displays if the actual value exceeds the target value; if the target value exceeds the actual value, the 'good' indication displays.



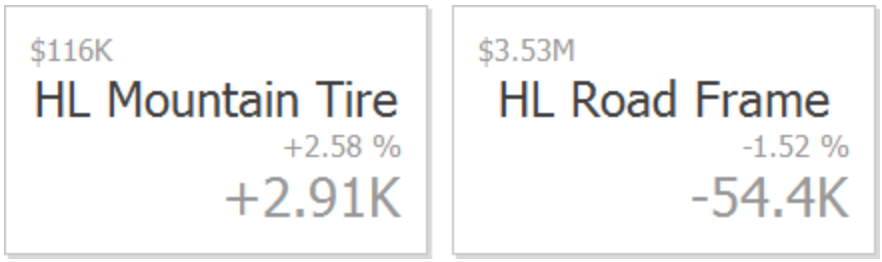
Warning if Greater: A warning is displays only if the actual value exceeds the target value



Warning if Less: A warning is displays only if the target value exceeds the actual value.



No Indication: Indication does not display.

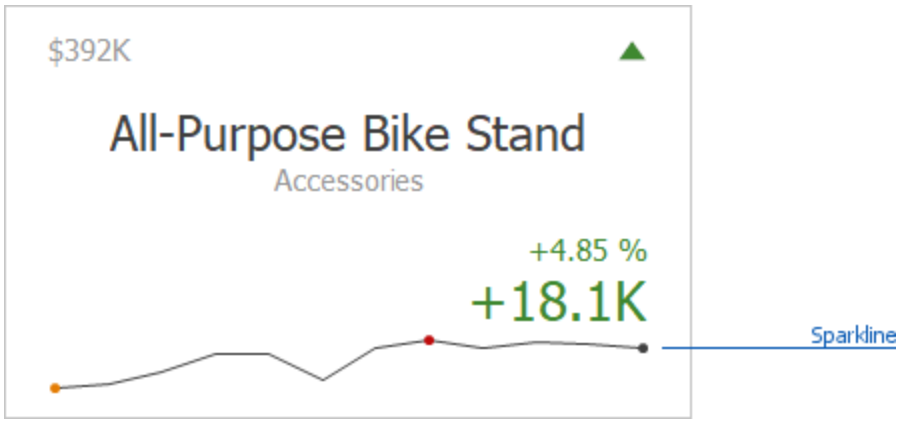


Threshold type / Threshold value: For instance, you can specify that a specific indication should display when the actual value exceeds the target value by 10% or by $2K. Use the Threshold type combo box to select whether you wish to specify the comparison tolerance in percentage values or absolute values.

Then use the Threshold value box to specify the comparison tolerance.

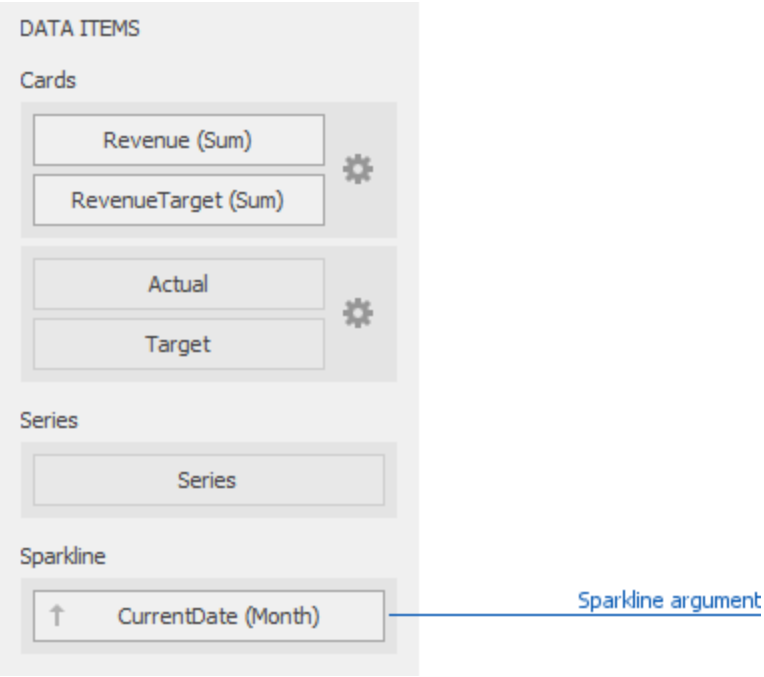
Sparkline

Sparklines can be used to visualize the variation of actual or target values (for instance, over time).



Data Binding Specifics

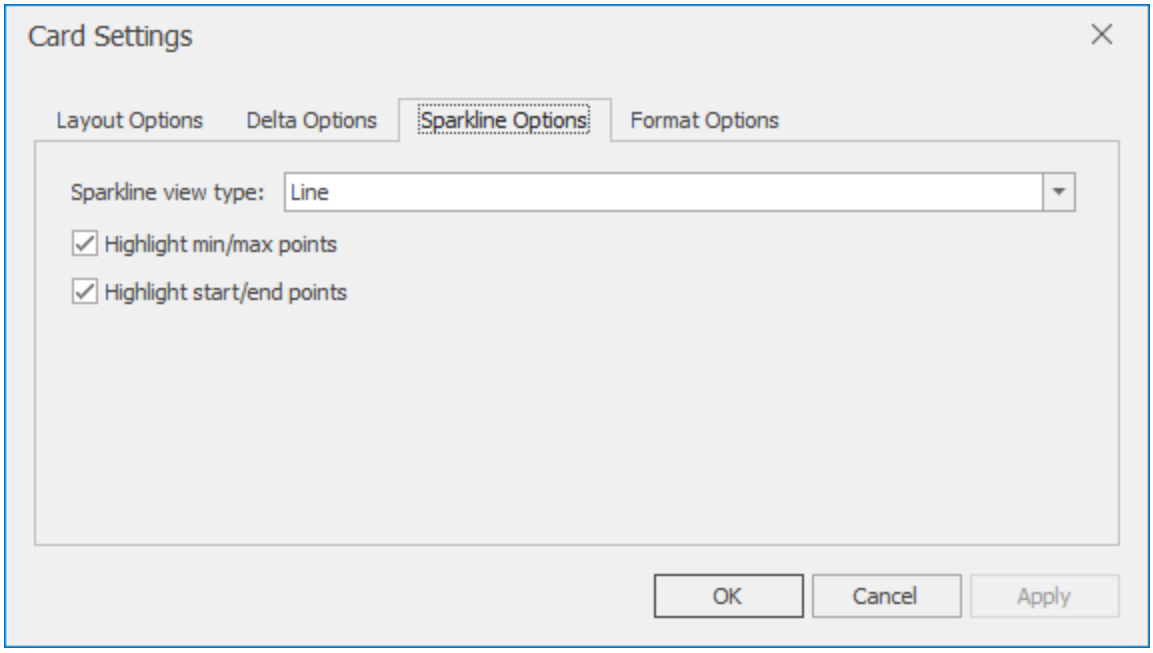
You need to provide a date-time or numeric dimension whose data is used as argument values to display a sparkline within the card.



If you have provided both actual and target values, a sparkline visualizes the actual value's variation.

Change Sparkline Options

To manage sparkline settings, click the Options button (the icon) displayed next to the data item container. In the invoked Card Settings dialog, go to the Sparkline Options tab:

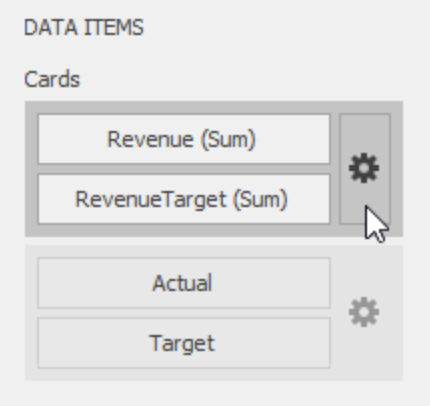


The following options are available:

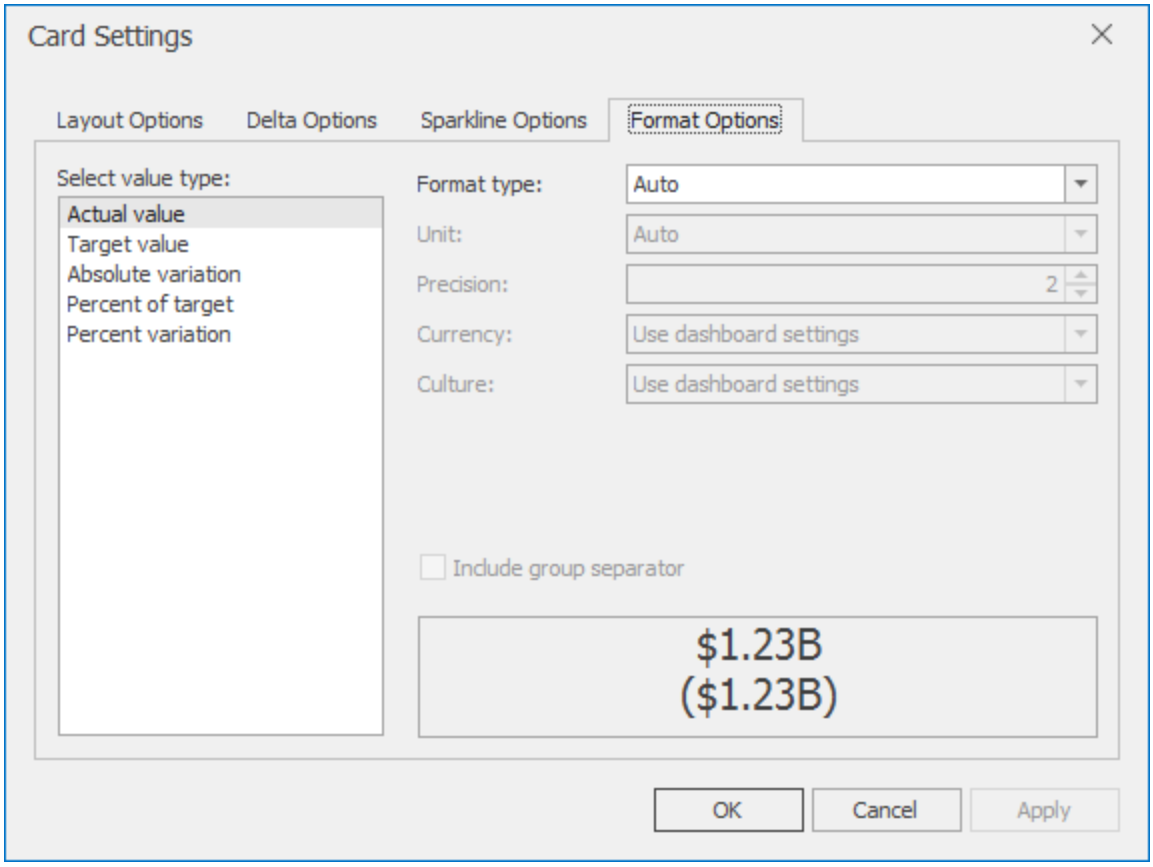
Sparkline Options	Description
Sparkline view type	Defines the sparklines view type. Sparkline data points can be represented as area, line, bars, or win and loss squares.
Highlight min/max points	Specifies whether to highlight the minimum/maximum points of a sparkline.
Highlight start/end points	Specifies whether to highlight the start/end points of a sparkline.

Formatting

The Card dashboard item formats the actual and target values displayed within cards using format settings specified for Data Items. Click the options buttons (the ⚙ icon) displayed next to the data item container in the Cards section to change format settings for other values.



In the invoked Card Settings dialog, go to the Format Options tab and use the Select value type option to specify which values format settings should change.



You can change format settings for the following value types:

- Actual Value
- Target Value
- Absolute Variation
- Percent of Target
- Percent Variation

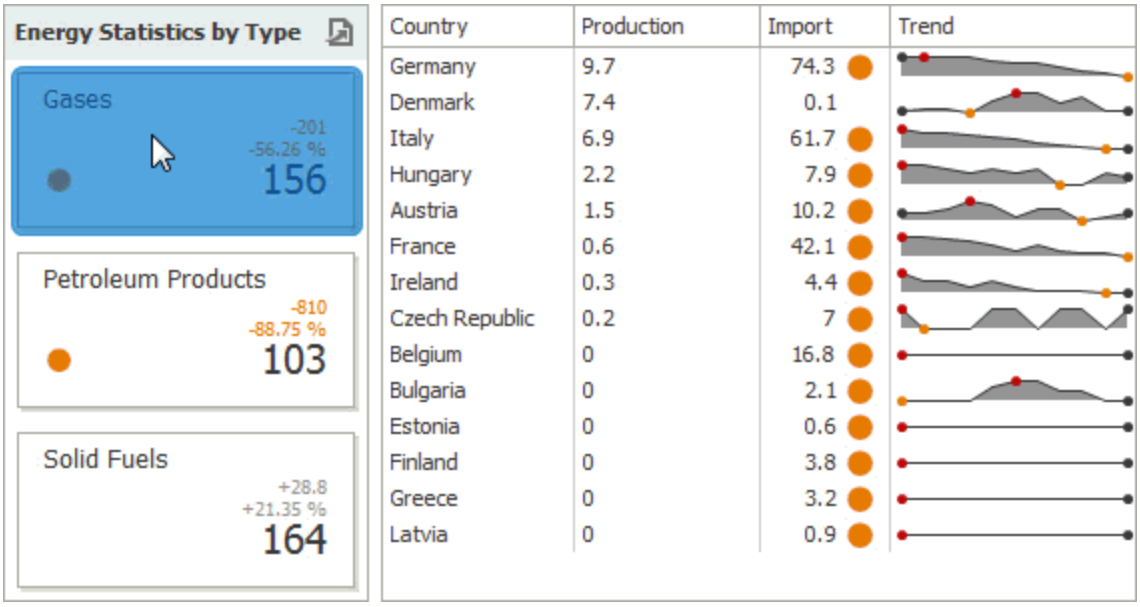
Interactivity

This section describes features that enable interaction between the Card dashboard item and other items. These features include Master Filtering and Drill-Down.

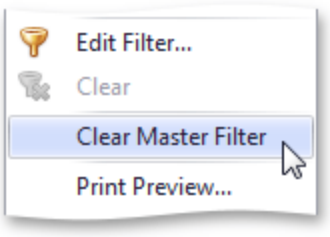
Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

When Master Filtering is enabled, you can click a card (or multiple cards by holding down the CTRL key) to make other dashboard items only display data related to the selected card(s).



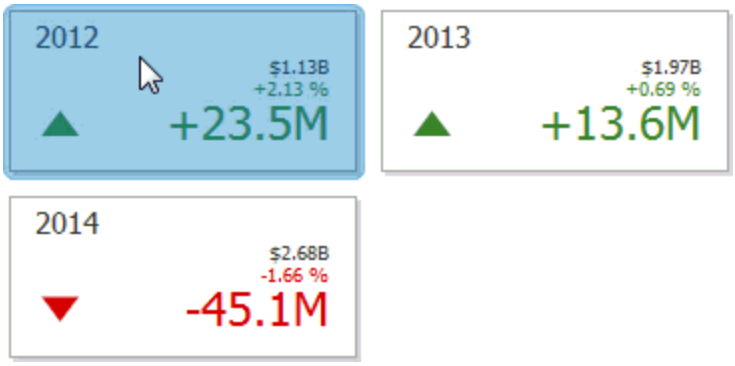
To reset filtering, use the Clear Master Filter button (the icon) in the caption of the Card dashboard item, or the Clear Master Filter command in the Card's context menu.



Drill-Down

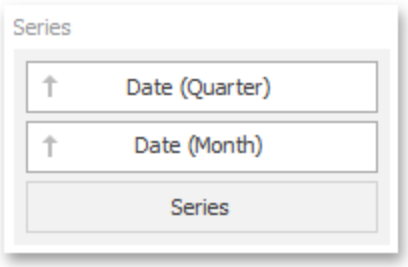
The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly.

When drill-down is enabled, you can click a card to view the details.



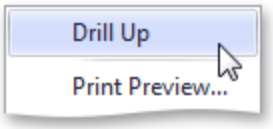
When Master Filtering is enabled, you can view the details by double-clicking a card.

Drill-down requires that the Series section contains several dimensions, from the least to the most detailed dimension.



To enable drill-down, click the Drill Down button in the Data Ribbon tab (or the button if you are using the toolbar menu).

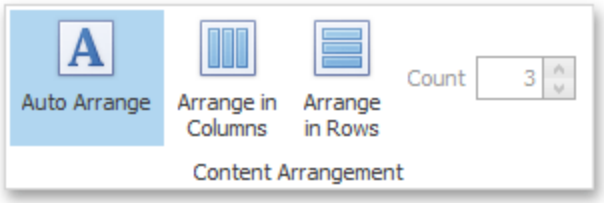
To return to the previous detail level (drill up), use the Drill Up button (the icon) in the caption of the Card dashboard item, or the Drill Up command in the Card's context menu.

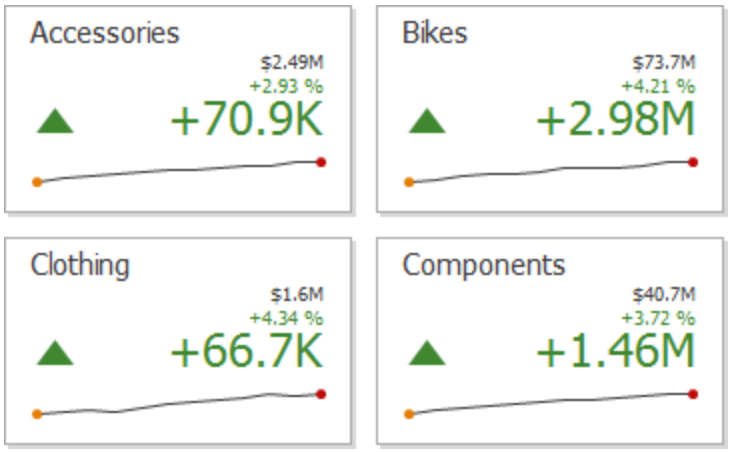


Cards Arrangement

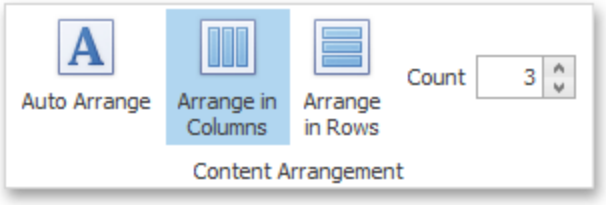
The Card dashboard item allows you to specify the number of columns or rows in which individual cards are arranged.

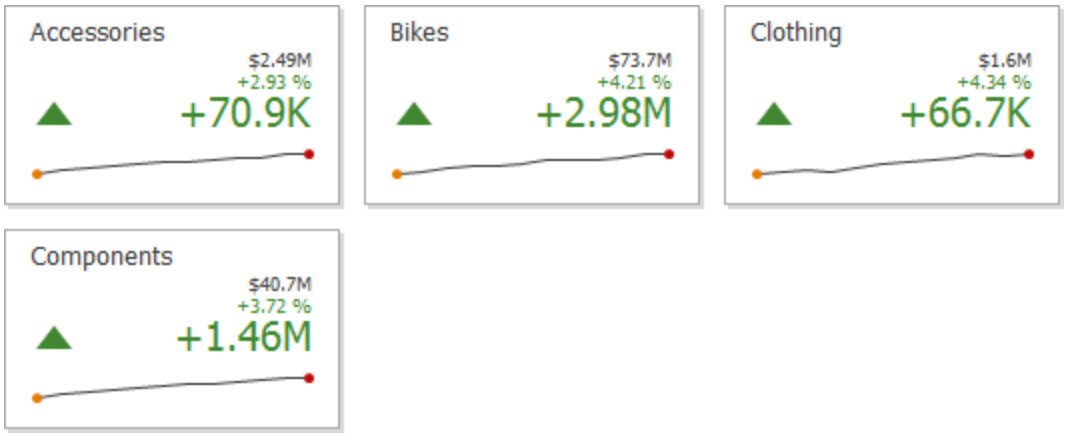
Use the buttons in the Content Arrangement group of the Design Ribbon tab to control how cards are arranged. The Auto Arrange option is enabled by default, which automatically resizes cards to fit within the dashboard item.



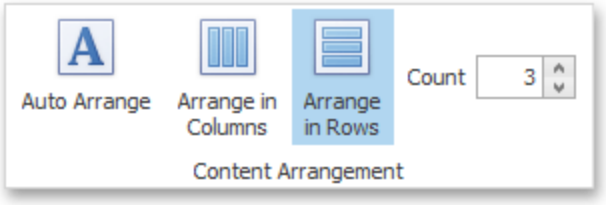


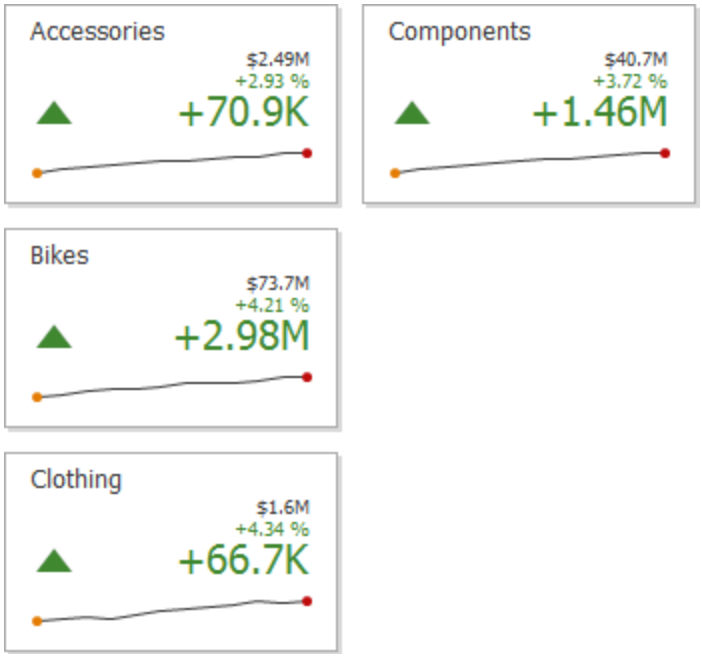
You can also specify the number of columns in which cards are arranged. Click the **Arrange in Columns** button and specify the appropriate number in the Count field.





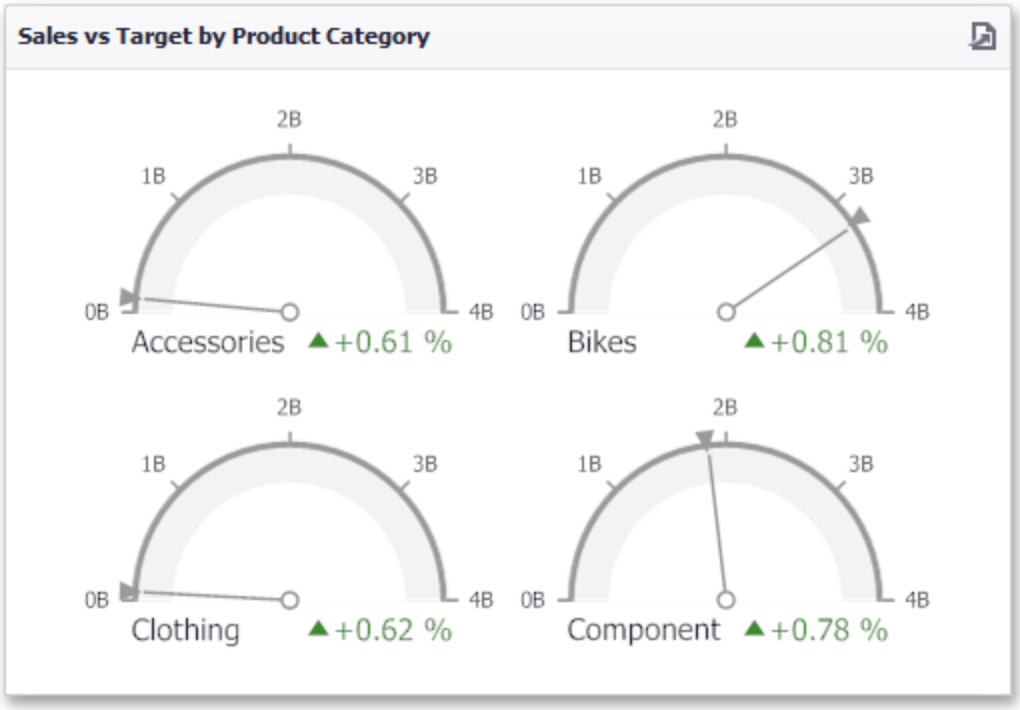
Similarly, you can arrange cards in a specific number of rows.



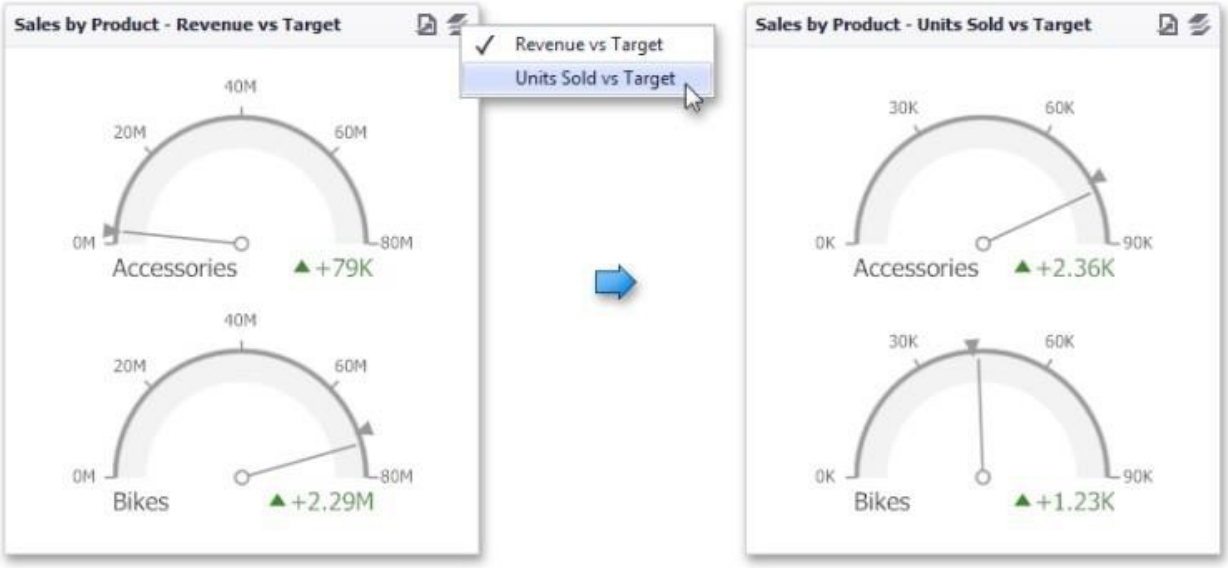

Accessories
$2.49M
+2.93 %
+70.9K
Components
$40.7M
+3.72 %
+1.46M
Bikes
$73.7M
+4.21 %
+2.98M
Clothing
$1.6M
+4.34 %
+66.7K

Gauges

The Gauge dashboard item displays a series of gauges. Each gauge can communicate two values - one with a needle and the other with a marker on the scale.



The Gauge dashboard item can illustrate the difference for various sets of values. You can switch between these sets using the **Values** button (the icon) in the dashboard item caption or in the context menu.



Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Gauge dashboard item to data in the Designer.

The image below shows a sample Gauge dashboard item that is bound to data.

To bind the Gauge dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. A table below lists and describes Gauge's data sections.

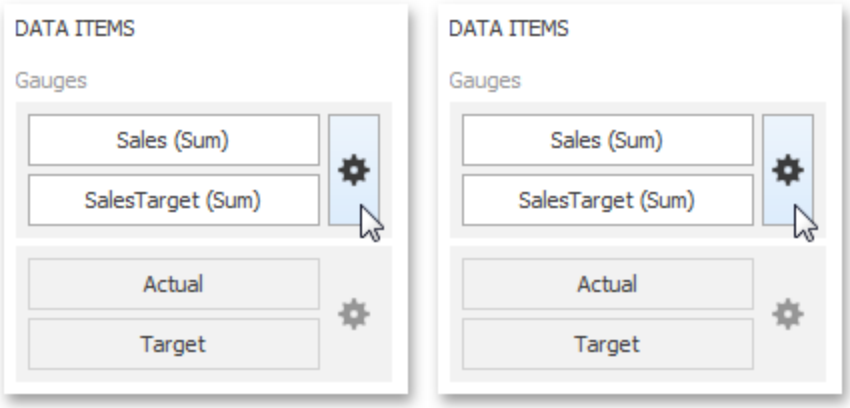
Section	Description
Gauges	Contains Data Items used to calculate values displayed by gauges. Data Items are arranged in containers. Each data item contain er can hold two Data Items. The first item contains actual data and the second item (optional) contains target data. If both items are provided, gauges show the difference between actual and target values. You can fill several data item containers in the Gauges section and use the Values drop-down menu to switch between the provided values. To invoke the Values menu, click the icon in the dashboard item caption. This drop- own menu is available if the Series section is not empty. Otherwise, a separate gauge is created for each data item container, and all gauges are displayed simultaneously.
Series	Contains Data Items whose values are used to label gauges.

Delta

Gauges allow you to display the difference between the actual and target values of a particular parameter. This difference is called delta.

Delta is shown with a delta indicator (indicating whether the actual value is less than or greater than the target value) and delta values (representing this difference as an absolute value or a variation).

To customize settings that relate to the calculation and display of deltas, use the options buttons (the icon) displayed next to the data item container in the Gauges section of the Data Items pane.



These buttons invoke the Gauge Options dialog.

Use it to define the condition for displaying delta indication, specify which delta values should be displayed, and introduce the comparison tolerance.

Delta Values

You can specify which values should be displayed within gauges. Use the Value type combo box in the Gauge Options window to select the value that will be displayed as the delta value.

Value Type	Result
Actual Value	
Absolute Variation	

Percentage Variation

Percentage of Target

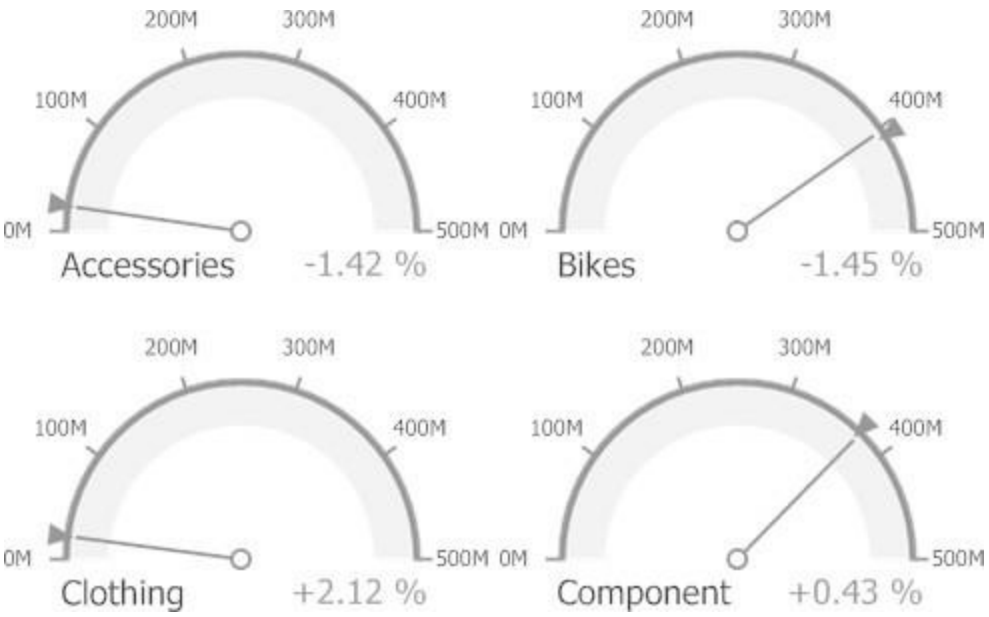
Delta Indication

You can specify the condition for displaying delta indication. To do this, use the **Result** indication combo box in the Gauge Options window.

Greater is Good: The 'good' indication is displayed if the actual value exceeds the target value; if the target value exceeds the actual value, the 'bad' indication is displayed.

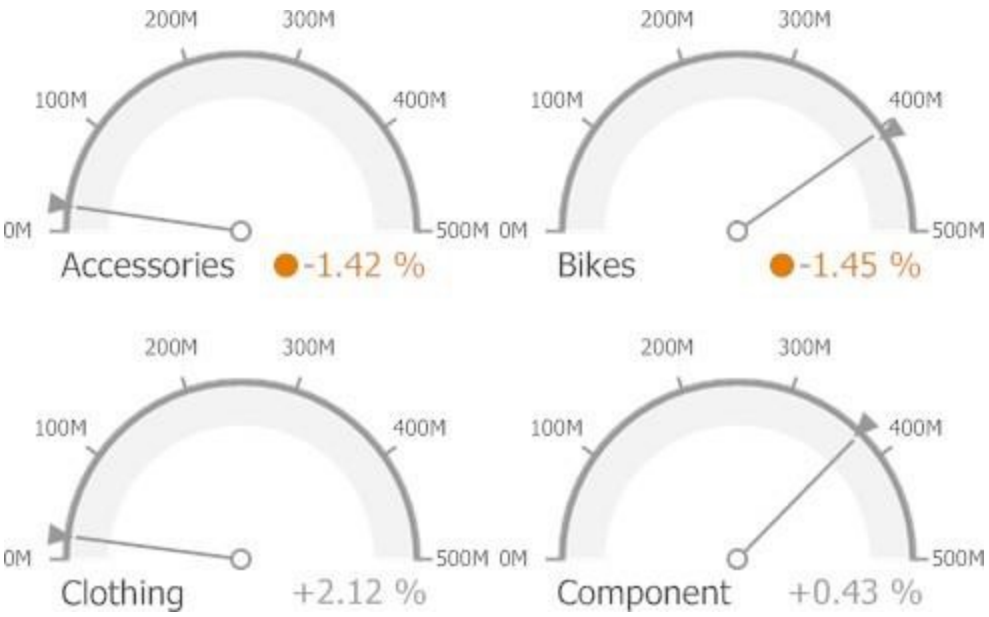
Less is Good: The 'bad' indication is displayed if the actual value exceeds the target value; if the target value exceeds the actual value, the 'good' indication is displayed.

No Indication: Indication is not displayed.



Warning if Greater: A warning is displayed if the actual value exceeds the target value; otherwise, no indication is displayed.

Warning if Less: A warning is displayed if the target value exceeds the actual value; otherwise, no indication is displayed.



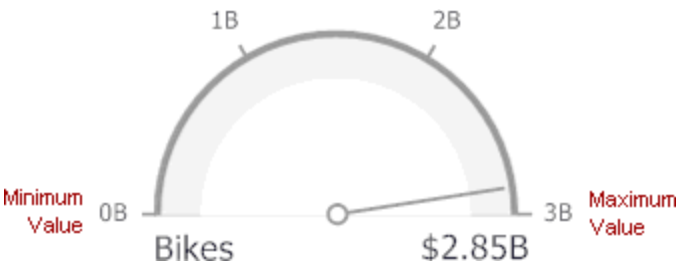
Comparison Tolerance

The comparison tolerance allows you to create more advanced conditions for displaying delta indication. For instance, you can specify that a specific indication should be displayed when the actual value exceeds the target value by 10% or by $2K.

Use the Threshold type combo box to select whether you wish to specify the comparison tolerance in percentage values or in absolute values. Then use the Threshold value box to specify the comparison tolerance.

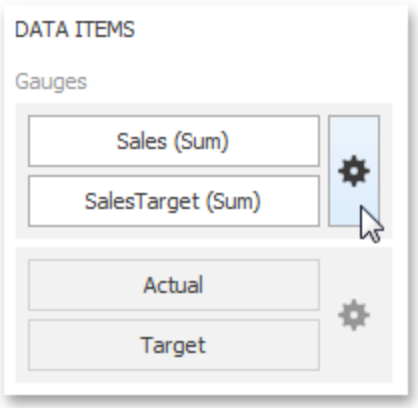
Gauge Scale

By default, the Gauge dashboard item automatically determines the range of the gauge scales based on the values they display.

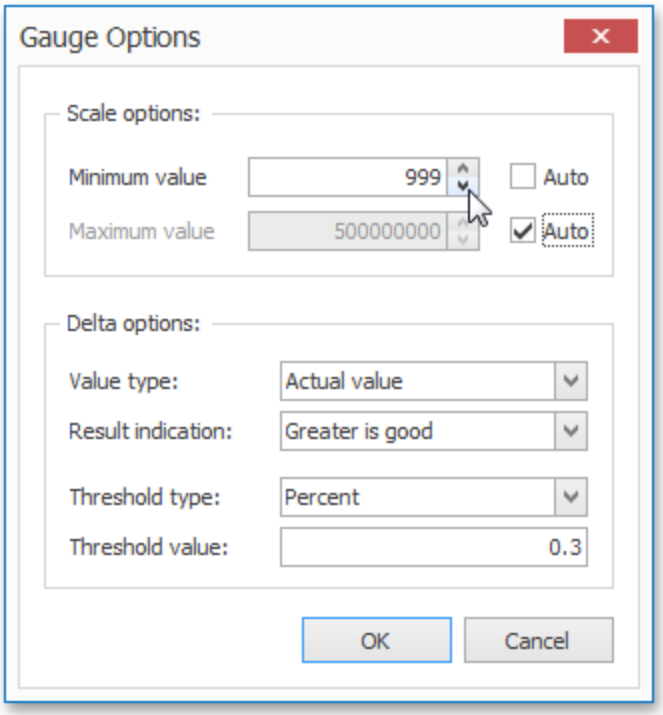


You can override this behavior and specify the maximum and minimum values on the scale.

To do this, invoke the Gauge Options window using the Options button displayed in the data item container in the Gauges section of the Data Items pane.



In the Gauge Options window, uncheck the Auto check box for the maximum or minimum value, and specify this value in the corresponding field.



Interactivity

This section describes features that enable interaction between the Gauge dashboard item and other items. These features include Master Filtering and Drill-Down.

Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

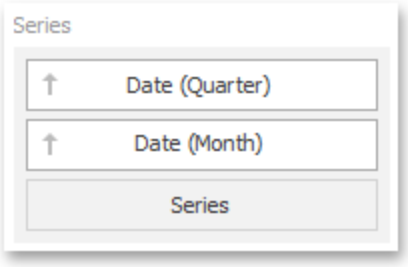
When master filtering is enabled, you can click a gauge (or multiple gauges by holding down the CTRL key) to make other dashboard items only display data related to the selected gauge(s).

To reset filtering, use the Clear Master Filter button (the icon) in the caption of the Gauge dashboard item, or the Clear Master Filter command in the Gauges context menu.

Drill-Down

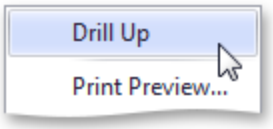
The built-in drill-down capability allows you to change the detail level of data displayed in dashboard items on the fly. When drill-down is enabled, you can click a gauge to view the details.

Drill-down requires that the Series section contains several dimensions, from the least detailed to the most detailed dimension.



To enable drill-down, click the Drill Down button in the Data Ribbon tab (or the button if you are using the toolbar menu).

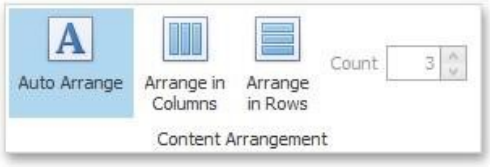
To return to the previous detail level (drill up), use the Drill Up button (the icon) in the caption of the Gauge dashboard item, or the Drill Up command in the Gauges context menu.



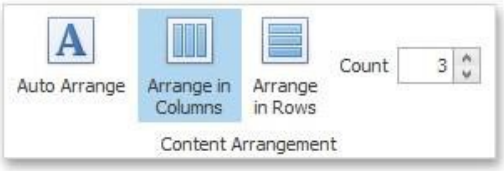
Layout

The Gauge dashboard item allows you to specify the number of columns or rows in which individual gauges are arranged.

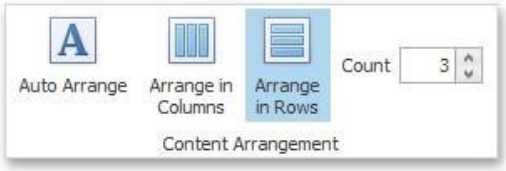
To control how gauges are arranged, use the buttons in the **Content Arrangement** group of the Design Ribbon tab. By default, the Auto Arrange option is enabled, which automatically resizes gauges to fit within the dashboard item.



You can also specify the number of columns in which gauges are arranged. Click the **Arrange in Columns** button and specify the appropriate number in the Count field.



Similarly, you can arrange pies in a specific number of rows by clicking the **Arrange in Rows**button.

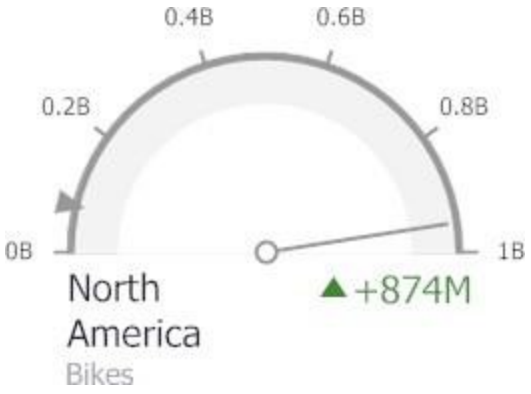


Style

The Gauge dashboard item allows you to select the gauge type. The following types are supported:

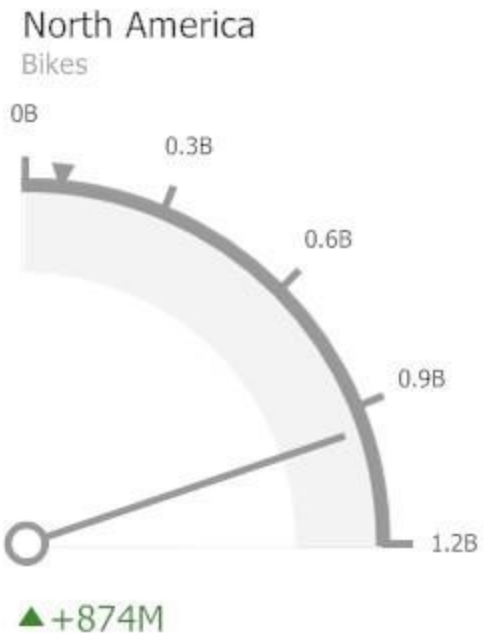
Full
Circular

Half Circular



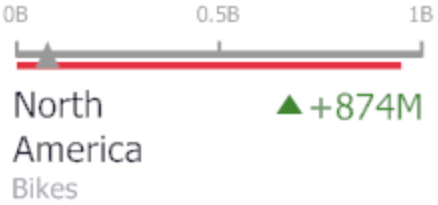
Left-Quarter Circular

Right-Quarter Circular

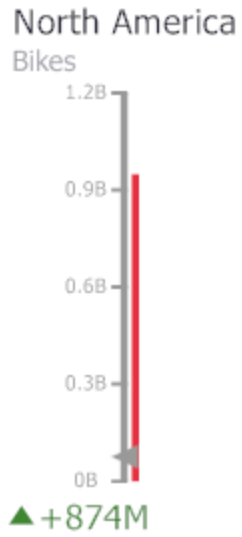


Three-Fourths Circular

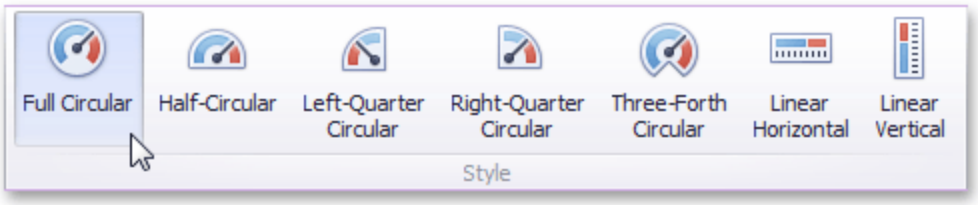
Linear Horizontal



Linear Vertical

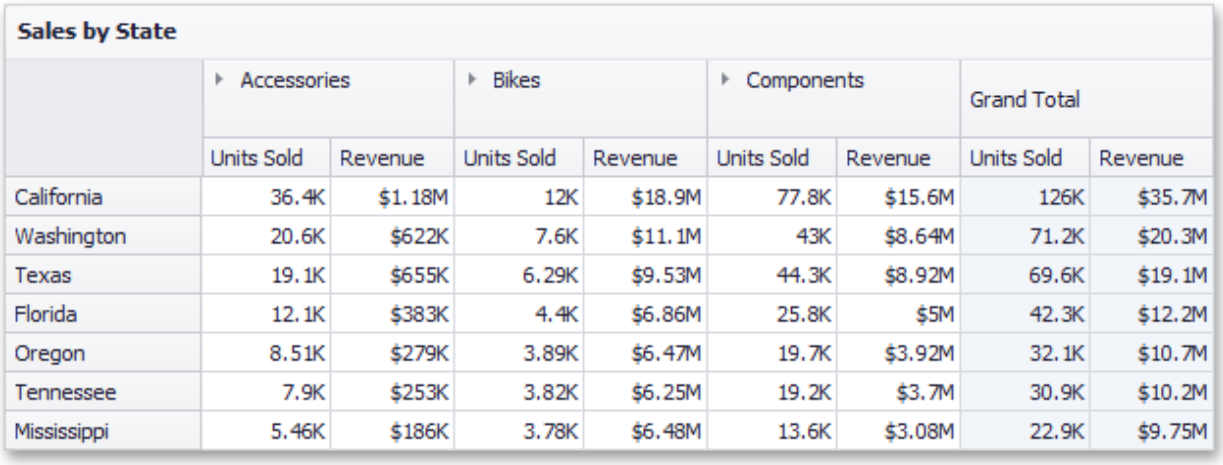


To select the gauge type, use the buttons in the **Style** group of the Design Ribbon tab.



Pivot

The Pivot dashboard item displays a cross-tabular report that presents multi-dimensional data in an easy-to-read format.



Sales by State

	Accessories		Bikes		Components		Grand Total	
	Units Sold	Revenue	Units Sold	Revenue	Units Sold	Revenue	Units Sold	Revenue
California	36.4K	$1.18M	12K	$18.9M	77.8K	$15.6M	126K	$35.7M
Washington	20.6K	$622K	7.6K	$11.1M	43K	$8.64M	71.2K	$20.3M
Texas	19.1K	$655K	6.29K	$9.53M	44.3K	$8.92M	69.6K	$19.1M
Florida	12.1K	$383K	4.4K	$6.86M	25.8K	$5M	42.3K	$12.2M
Oregon	8.51K	$279K	3.89K	$6.47M	19.7K	$3.92M	32.1K	$10.7M
Tennessee	7.9K	$253K	3.82K	$6.25M	19.2K	$3.7M	30.9K	$10.2M
Mississippi	5.46K	$186K	3.78K	$6.48M	13.6K	$3.08M	22.9K	$9.75M

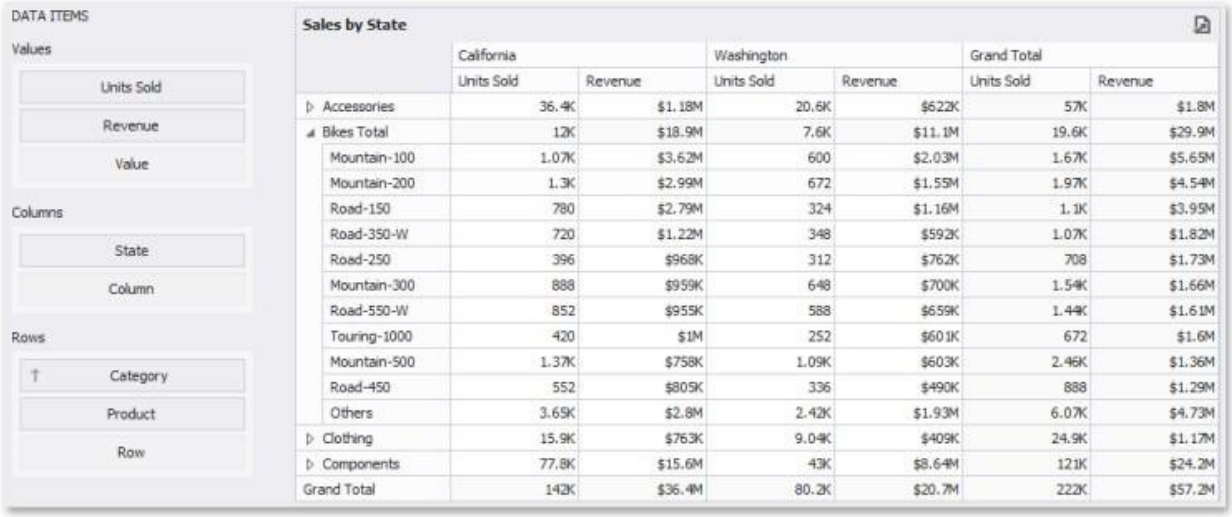
Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Pivot dashboard item to data in the Designer.

Binding to Data in the Designer

The image below shows a sample Pivot dashboard item that is bound to data.



To bind the Pivot dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. A table below lists and describes a Pivot's data sections.

Section	Description
Values	Contains Data Items used to calculate values displayed in the pivot table.
Columns	Contains Data Items whose values are used to label columns.
Rows	Contains Data Items whose values are used to label rows.

Transposing Columns and Rows

The Pivot dashboard item provides the capability to transpose pivot columns and rows. In this case, Data Items contained in the Columns section are moved to the Rows section and vice versa.

	2013	2014	2015	Grand Total
Bikes	$72.2M	$79.3M	$83.6M	$235M
Components	$42.2M	$45.3M	$48.2M	$136M
Accessories	$2.77M	$2.99M	$3.15M	$8.91M
Grand Total	$117M	$128M	$135M	$380M

	Bikes	Components	Accessories	Grand Total
2013	$72.2M	$42.2M	$2.77M	$117M
2014	$79.3M	$45.3M	$2.99M	$128M
2015	$83.6M	$48.2M	$3.15M	$135M
Grand Total	$235M	$136M	$8.91M	$380M

To transpose the selected Pivot dashboard item, use the Transpose button in the Home ribbon tab.

Interactivity

This document describes the features that enable interaction between the Pivot and other dashboard items. These features include Master Filtering.

Master Filtering

The Dashboard allows you to use any data-aware dashboard item as a filter for other dashboard items (Master Filter).

Data displayed in the Pivot dashboard item can be filtered by other master filter items. You can prevent the pivot from being affected by other master filter items using the **Ignore Master Filters** button on the Data Ribbon tab.

Conditional Formatting

The Pivot dashboard item supports the conditional formatting feature that provides the capability to apply formatting to cells whose values meet the specified condition. This feature allows you to highlight specific cells or entire rows/columns using a predefined set of rules.

Conditional Formatting Overview

The Pivot dashboard item allows you to use conditional formatting to measures placed in the Values section and dimensions placed in the Columns/Rows sections. Note that you can use hidden measures to specify a condition used to apply formatting to visible values.

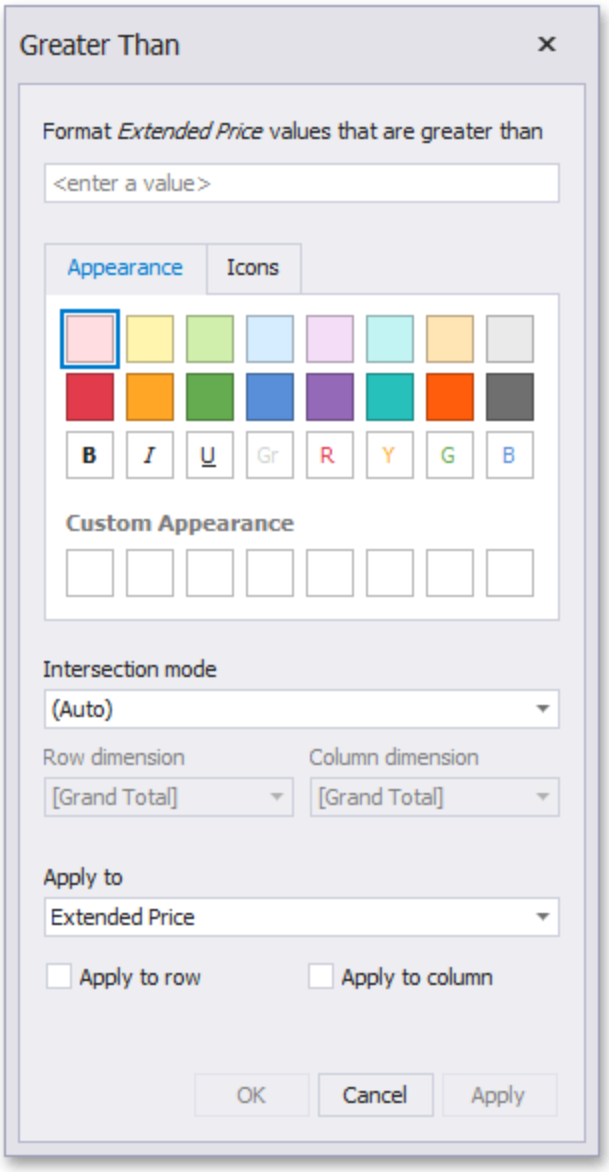
Note that you can use hidden measures to specify a condition used to apply formatting to visible values.

New appearance settings are applied to pivot data cell or cells corresponding to column/row field values.

Create a Format Rule

To create a new format rule for the Pivot's dimension/measure, do one of the following:

- Click the Options button next to the required measure/dimension, select Add Format Rule and choose the condition. Use the Edit Rules dialog.
- Depending on the selected format condition, the dialog used to create a format rule for Pivot contains different settings. For instance, the image below displays the Greater Than dialog invoked for the measure.



This dialog contains the following settings specific to Pivot.

Intersection mode specifies the level on which to apply conditional formatting to pivot cells. The following levels are supported:

- **Auto**: Identifies the default level. For the Pivot dashboard item, Auto identifies the First Level.

- **First Level**: First level values are used to apply conditional formatting.
- **Last Level**: The last level values are used to apply conditional formatting.
- **All Levels**: All pivot data cells are used to apply conditional formatting.
- **Specific Level**: Values from the specific level are used to apply conditional formatting.

If you specified the Intersection mode as Specific Level, use the Row dimension and Column dimension combo boxes to set the specific level.

The Apply to row and Apply to column check boxes allow you to specify whether to apply the formatting to the entire pivot row/column.

If you are creating a new format rule for the dimension from the Column/Rows section, the corresponding format condition dialog would not contain any Pivot specific settings.

Edit a Format Rule

To edit format rules for the current Grid dashboard item, use the following options:

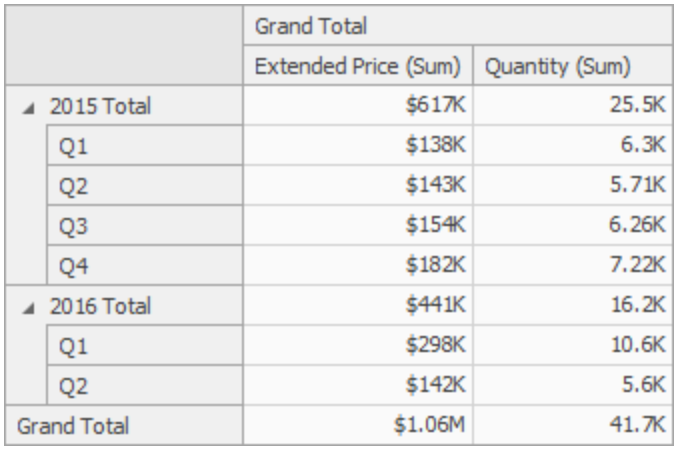
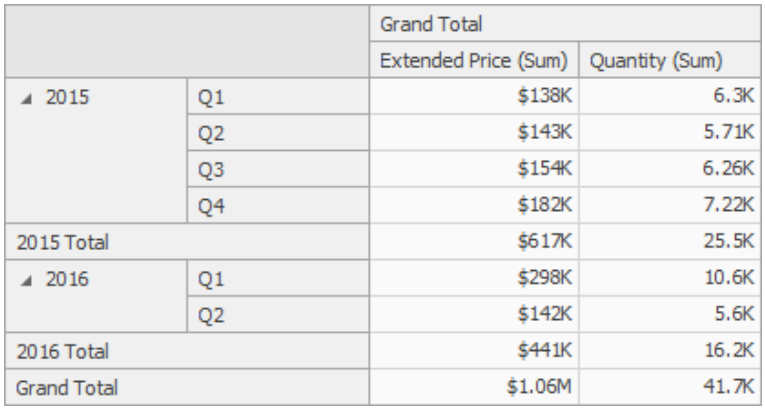
- Click the **Edit Rules** button in the Home ribbon tab or use corresponding item in the Pivot context menu. Click the menu button or the required data item and select Edit Rules.
- All of these actions invoke the Edit Rules dialog containing existing format rules.

Layout

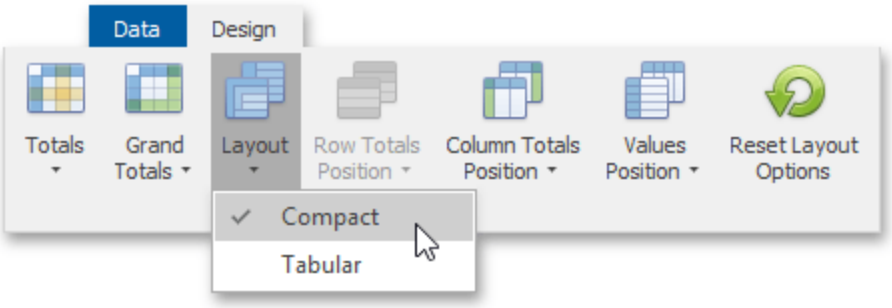
This topic describes how to control the Pivot dashboard item layout, the visibility of totals and grand totals, etc.

Layout Type

If the Pivot dashboard item contains a hierarchy of dimensions in the Rows section, you can specify the layout used to arrange values corresponding to individual groups.

Layout Type	Example	Description
Compact		Displays values from different Row dimensions in a single column. Note that in this case totals are shown at the top of a group, and you cannot change totals position.
Tabular		Displays values from different Row dimensions in separate columns.

Use the Layout button in the Design ribbon tab to change the Pivot layout.



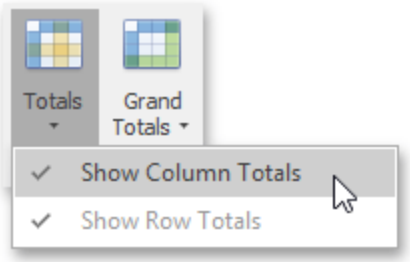
Totals Visibility

You can control the visibility of totals and grand totals for the entire Pivot dashboard item. For instance, the image below displays the Pivot dashboard item with the disabled row totals.

		Grand Total	
		Extended Price (Sum)	Quantity (Sum)
◢ 2015	Q1	$138K	6.3K
	Q2	$143K	5.71K
	Q3	$154K	6.26K
	Q4	$182K	7.22K
2015 Total		$617K	25.5K
◢ 2016	Q1	$298K	10.6K
	Q2	$142K	5.6K
2016 Total		$441K	16.2K
Grand Total		$1.06M	41.7K

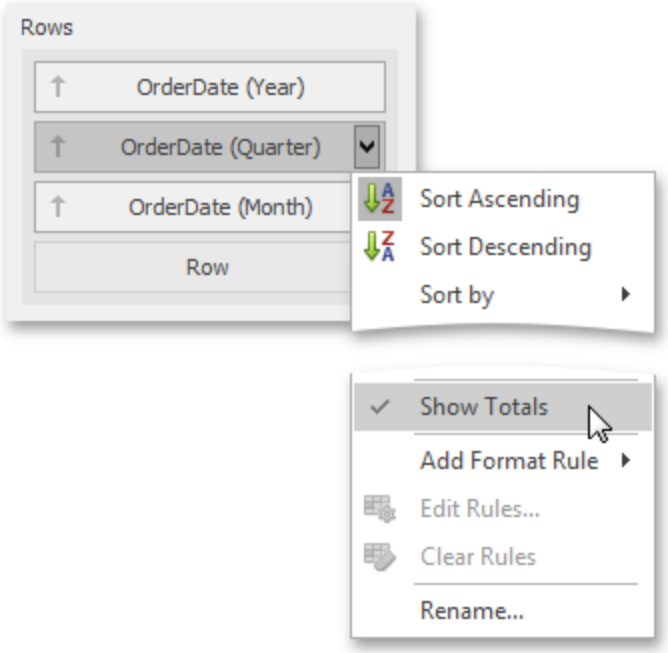
		Grand Total	
		Extended Price (Sum)	Quantity (Sum)
◢ 2015	Q1	$138K	6.3K
	Q2	$143K	5.71K
	Q3	$154K	6.26K
	Q4	$182K	7.22K
◢ 2016	Q1	$298K	10.6K
	Q2	$142K	5.6K
Grand Total		$1.06M	41.7K

To manage the visibility of totals and grand totals, use the Totals and Grand Totals buttons in the Design ribbon tab, respectively.



These buttons invoke a popup menu that allows you to manage the visibility of column and row totals/grand totals separately.

Moreover, you can control the visibility of totals for individual dimensions/measures by using the data item's context menu (Show Totals and Show Grand Totals options).



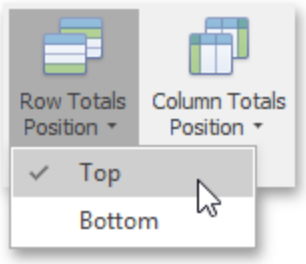
Totals Position

If necessary, you can change the Pivot dashboard items totals/grand totals position. For instance, in the image below the row totals are moved from the bottom to the top.

		Grand Total	
		Extended Price (Sum)	Quantity (Sum)
◢ 2015	Q1	$138K	6.3K
	Q2	$143K	5.71K
	Q3	$154K	6.26K
	Q4	$182K	7.22K
2015 Total		$617K	25.5K
◢ 2016	Q1	$298K	10.6K
	Q2	$142K	5.6K
2016 Total		$441K	16.2K
Grand Total		$1.06M	41.7K

		Grand Total	
		Extended Price (Sum)	Quantity (Sum)
Grand Total		$1.06M	41.7K
◢ 2015 Total		$617K	25.5K
2015	Q1	$138K	6.3K
	Q2	$143K	5.71K
	Q3	$154K	6.26K
	Q4	$182K	7.22K
◢ 2016 Total		$441K	16.2K
2016	Q1	$298K	10.6K
	Q2	$142K	5.6K

To manage totals position, use the **Row Totals Position** and **Column Totals Position** buttons in the Design ribbon tab.



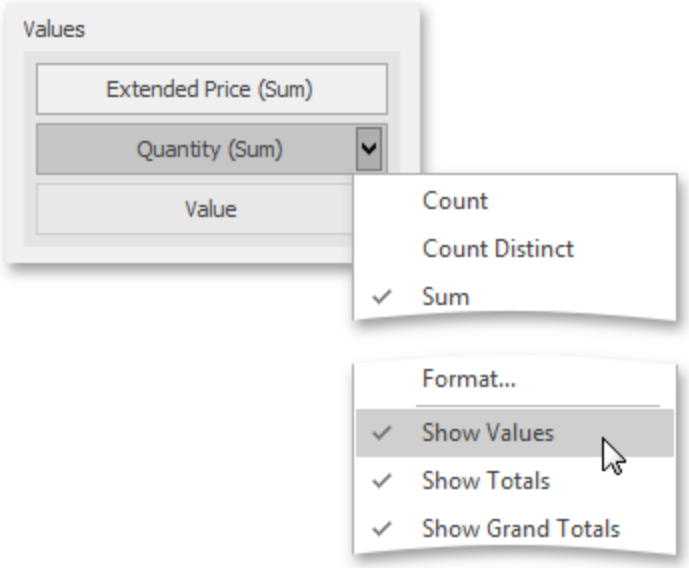
Values Visibility

The Pivot dashboard item can contain several measures in the Values section to hide summary values corresponding to specific measures. For instance, the image below shows the Pivot with hidden Quantity values.

		UK		USA	
		Extended Price (Sum)	Quantity (Sum)	Extended Price (Sum)	Quantity (Sum)
◢ 2015	Q1	$27.8K	1.24K	$110K	5.06K
	Q2	$38.1K	1.65K	$105K	4.06K
	Q3	$53.3K	1.86K	$101K	4.4K
	Q4	$41.3K	1.71K	$140K	5.51K
◢ 2016	Q1	$79.1K	3.04K	$219K	7.6K
	Q2	$44.7K	1.59K	$97.4K	4.01K

		UK	USA
◢ 2015	Q1	$27.8K	$110K
	Q2	$38.1K	$105K
	Q3	$53.3K	$101K
	Q4	$41.3K	$140K
◢ 2016	Q1	$79.1K	$219K
	Q2	$44.7K	$97.4K

To do this, use the Show Values command in the measure menu.



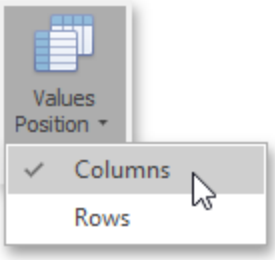
Values Position

The Pivot dashboard item allows you to control the position of headers used to arrange summary values corresponding to different measures. For instance, you can display values in columns or rows.

		Grand Total	
		Extended Price (Sum)	Quantity (Sum)
◢ 2016	Q1	$298K	10.6K
	Q2	$142K	5.6K
2016 Total		$441K	16.2K
Grand Total		$441K	16.2K

			Grand Total
◢ 2016	Q1	Extended Price (Sum)	$298K
		Quantity (Sum)	10.6K
	Q2	Extended Price (Sum)	$142K
		Quantity (Sum)	5.6K
2016 Total		Extended Price (Sum)	$441K
		Quantity (Sum)	16.2K
Grand Total		Extended Price (Sum)	$441K
		Quantity (Sum)	16.2K

To manage this position, use the Values Position button in the Design ribbon tab.



Rest Layout Options

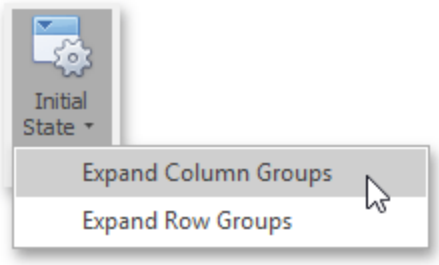
To reset layout options, click the Reset Layout Options button in the Design ribbon tab.

Expanded State

If the Columns and Rows section contains several Data Items, the Pivot column and row headers are arranged in a hierarchy and make up column and row groups.

	UK	USA	Grand Total
2016 Total	$124K	$317K	$441K
Q1 Total	$79.1K	$219K	$298K
January	$25.5K	$68.7K	$94.2K
February	$32.9K	$66.6K	$99.4K
March	$20.7K	$84.2K	$105K
Q2	$44.7K	$97.4K	$142K
Grand Total	$124K	$317K	$441K

You can collapse and expand row and column groups using the arrow buttons. However, the current expanded state of column and row groups do not save in the dashboard definition. If necessary, you can specify the default expanded state using the **Initial State** button in the Design ribbon tab.

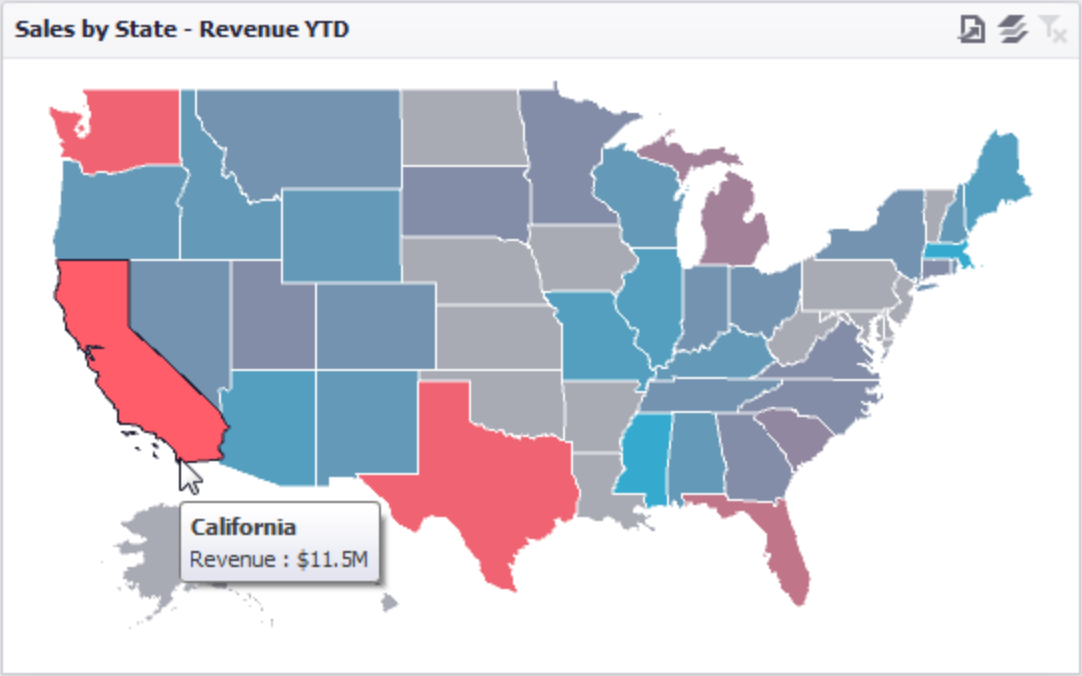


This button invokes the pop-up menu that allows you to select whether column and row groups should be collapsed or expanded by default.

Choropleth Map

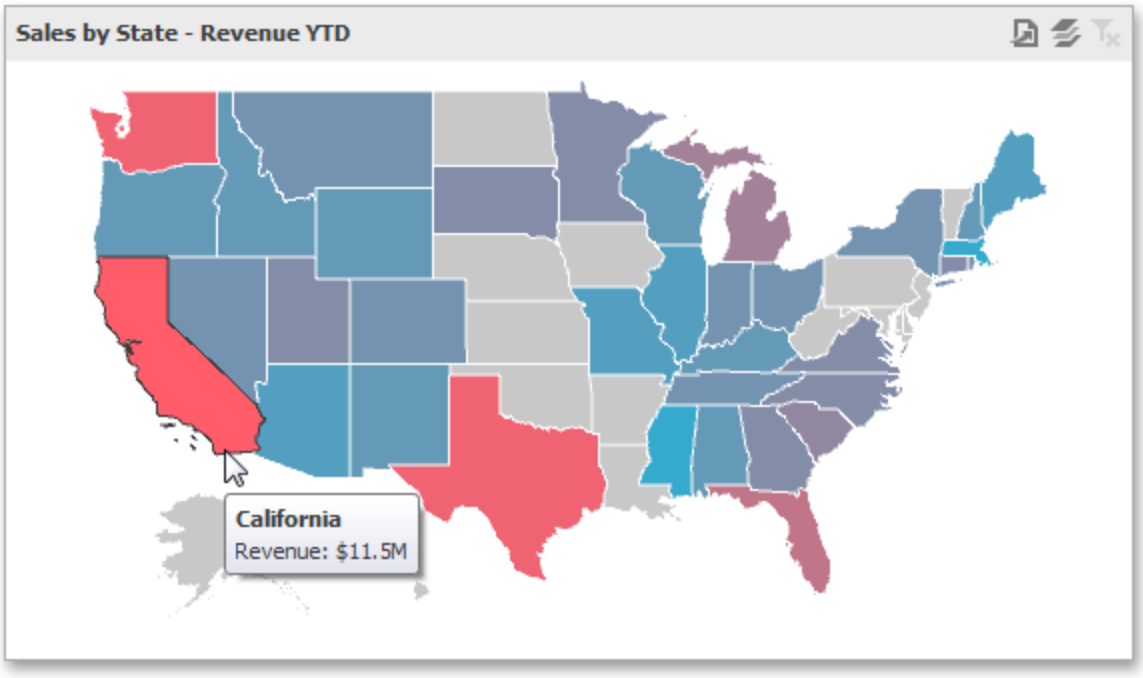
The topics in this section describe the features available in the Choropleth Map dashboard item.

The Choropleth Map dashboard item allows you to colorize the required areas in proportion to the provided values.

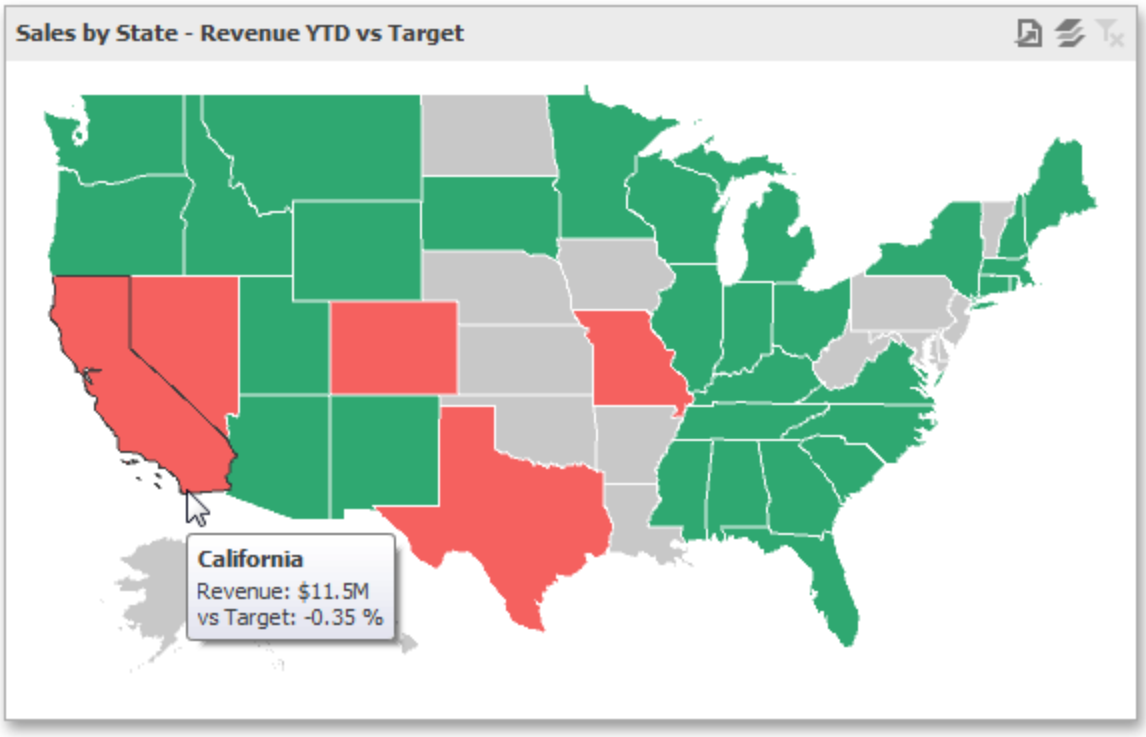


The Chloropleth Map dashboard item colorizes map areas in the following two ways:

- Based on the values provided.



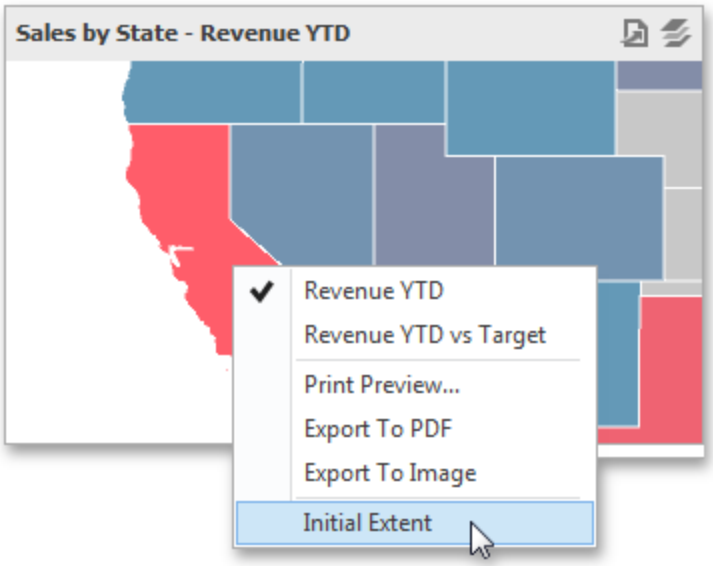
- By indicating the difference between the actual and target values of a particular parameter.



You can switch between the provided values using the Values button (the icon) in the map's caption area, or by using the context menu.

You can use the mouse wheel to change the current zoom level for the map. To scroll the map, hold down the left mouse button and drag it.

To move to the initial zooming and scrolling state, select the Initial Extent menu item in the map's context menu.



The Choropleth Map dashboard item can display a tooltip that shows information on a hovered area.

Providing Maps

This document explains how to use the default BI Dashboard maps, or provide custom maps.

Default Maps

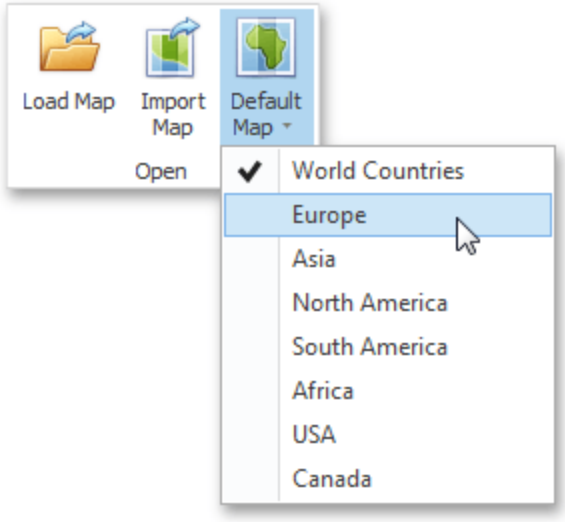
The BI Dashboard ships with a set of default maps showing various parts of the world. The following maps are included:

- World Countries: A world map
- Europe

- Asia
- North America
- South America
- Africa
- USA
- Canada

Note that the World Countries map has a lower level of detail than maps of specific regions and may not contain some countries. As an alternative, you can load a custom map with the required granularity.

To select the required default map, use the **Default Map** button in the Open group of the Design ribbon tab.



As an alternative, use the corresponding command in the map context menu.

Custom Maps

A Shapefile vector format to provide custom maps. Commonly, this format includes two file types:

- .shp file - holds map shapes(points/lines/polygons).
- .dbf file - contains attributes for each shape.

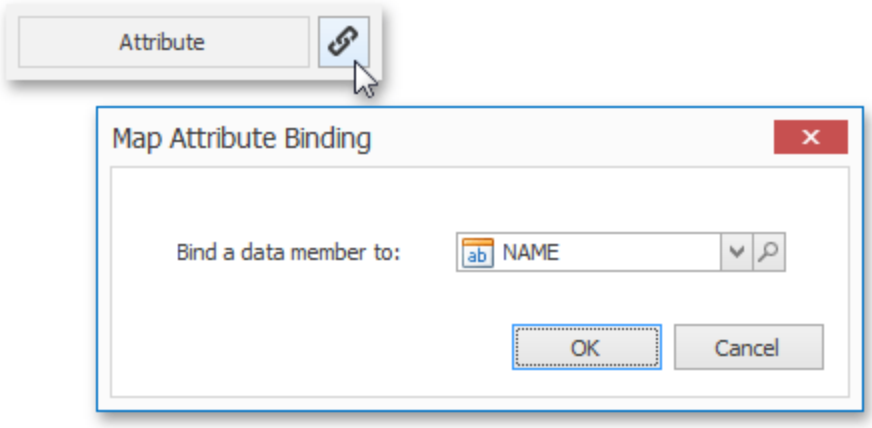
To open an existing shapefile, use the Load Map or Import Map button in the Ribbon, or the command in the context menu (Load Map or Import Map).

In the invoked dialog, locate the required .shp file. Note that custom maps created in the Cartesian coordinate system are not supported.

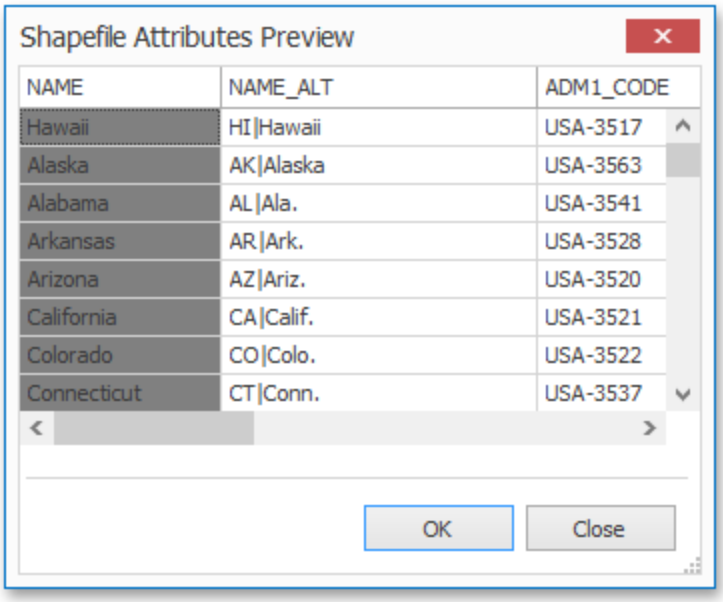
If the map is opened using the Load Map button, the dashboard XML definition will contain the path to a map shapefile. If the map is opened using the Import Map button, the dashboard XML definition will contain the map itself.

Map Attributes

After you select the default map or a custom map, you can view supplemental information (such as the name of the country, state, etc.). To do this, click the Options button next to the Attribute placeholder.



In the invoked Map Attribute Binding dialog, click **Preview**.



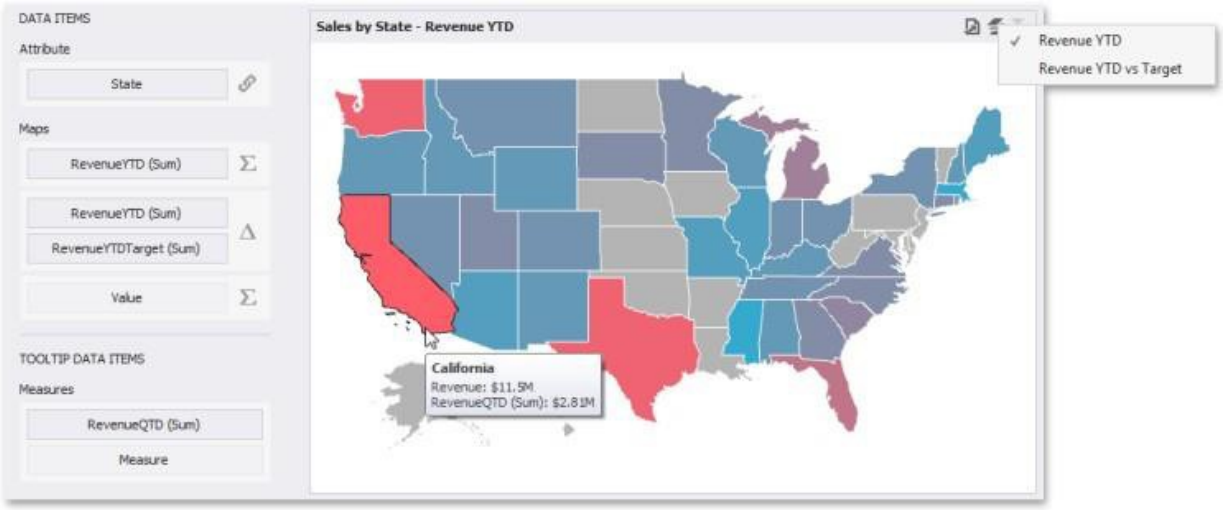
This table displays the available attributes for the current map. Each set of attribute values is related to a specific map shape.

Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Choropleth Map dashboard item to data in the Designer.

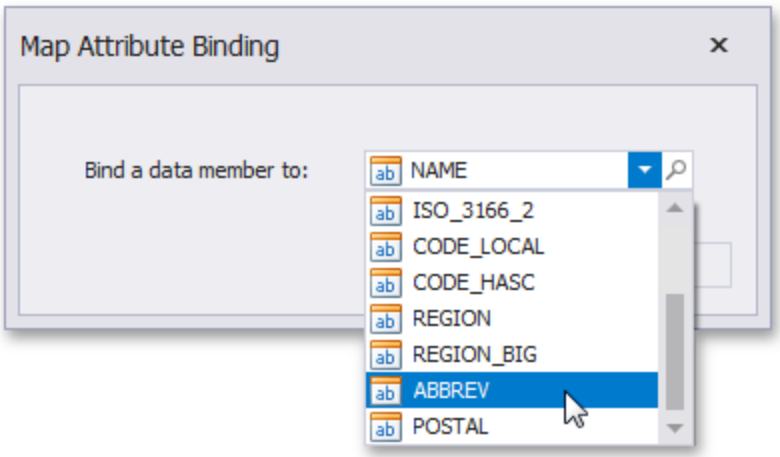
The image below shows a sample Choropleth Map dashboard item that is bound to data.



To bind the Choropleth Map dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. The Choropleth Map provides two data item groups for data binding: Data Items and TOOLTIP Data Items. Tables below list the available data sections.

Data Items

Attribute: Allows you to associate map shapes with data source field values.



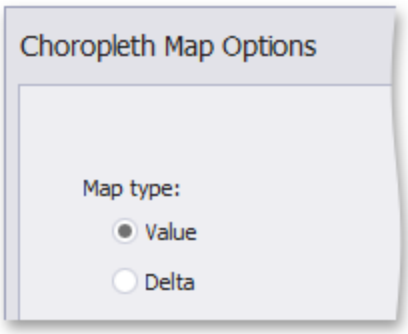
To associate map shapes with data source field values, drag-and-drop the required dimension to the data item's placeholder and select the required attribute in the Map Attribute Binding dialog.

To invoke this dialog, click the **Options** button (the icon) next to the Attribute placeholder.

Select the required attribute and click **OK**.

Maps: Contains Data Items whose values are used to color map shapes. Map shape colors vary based on the map type.

Click the Options button (the Σ or Δ icon depending on the map type) next to the Value placeholder and select the required map type in the invoked Choropleth Map Options dialog.



- If you select Value, the Choropleth map colors map shapes depending on the values provided.
- If you select Delta, the Choropleth map colors map shapes depending on the difference between two values. To learn how to specify delta indication settings, see Delta.

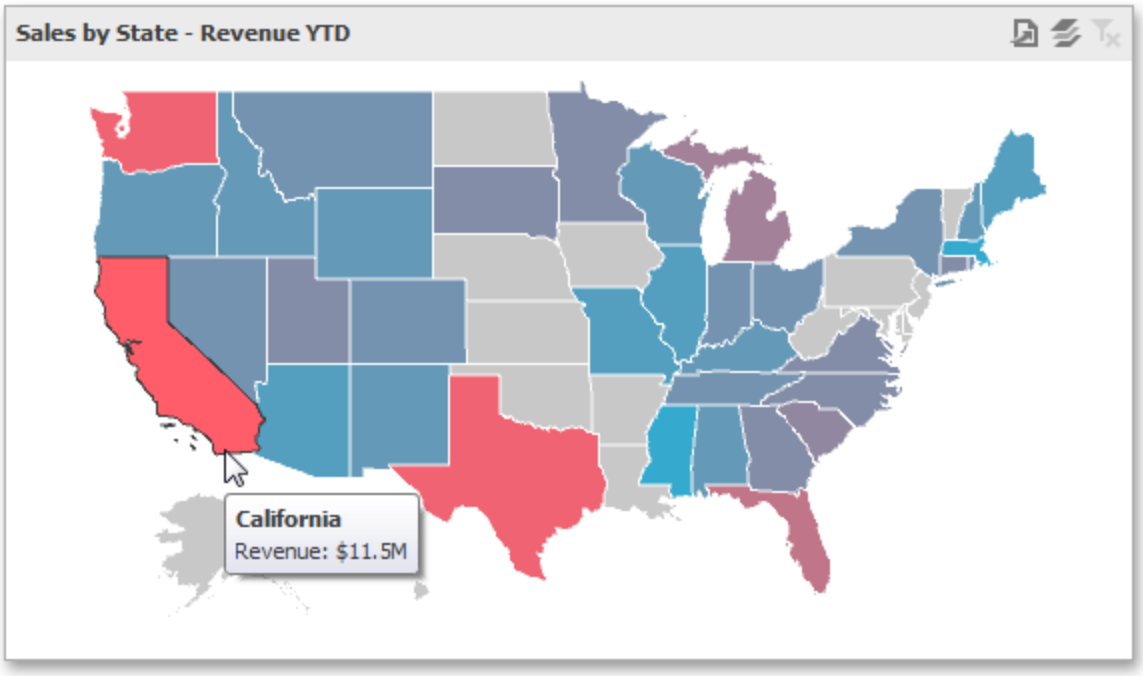
You can fill several data item containers in the Maps section and use the Values drop-down menu to switch between the provided values. To invoke the Values menu, click the icon in the dashboard item caption.

Tooltip Data Items

Measures : Allows you to add supplementary content to the tooltips. Drag and drop the required measures to provide additional data.

Map Coloring

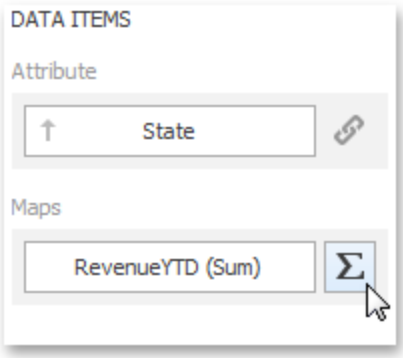
The Choropleth Map dashboard item colors map shapes depending on the data provided. For instance, you can visualize a sales amount or population density.



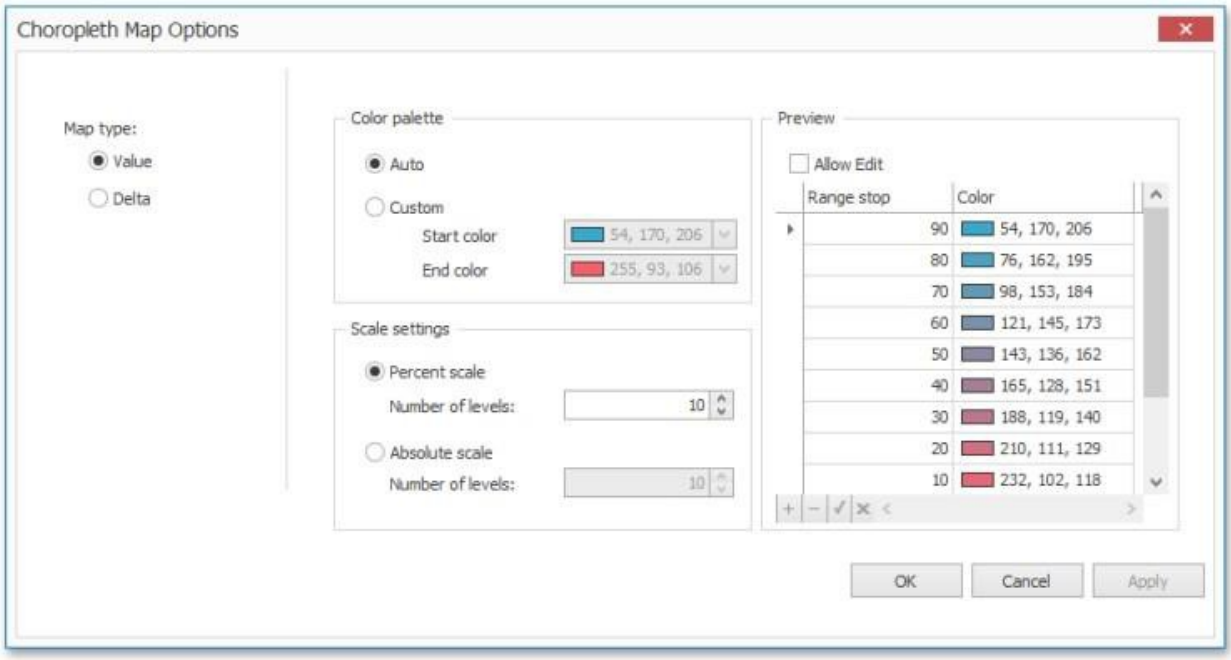
Palette and Scale Settings

The Choropleth Map automatically selects palette and scale settings to color map shapes.

If you need to customize these settings, click the Options button next to the data item that contains these values.



This invokes the Choropleth Map Options dialog.



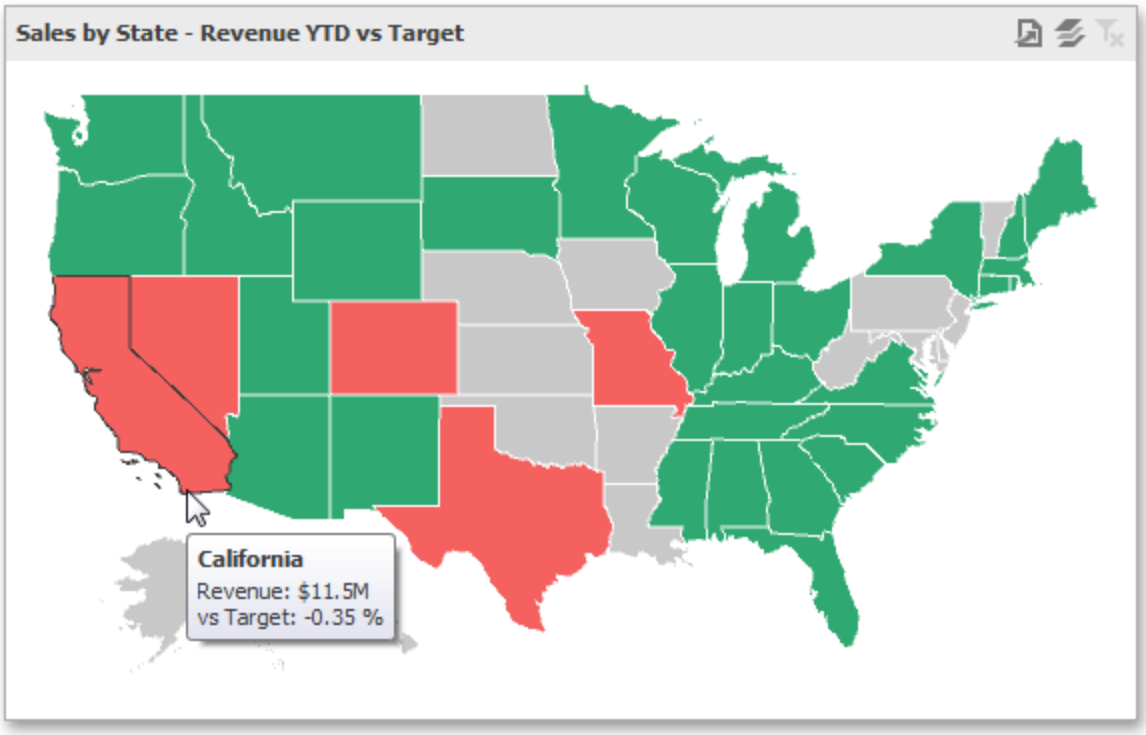
You can specify the following settings in this window:

- **Color palette**: Allows you to specify the start and end color of the palette.
- **Scale settings**: Specifies whether a percent scale or an absolute scale is used to define a set of colors. You can specify the number of levels that represent the number of colors used to color the map.
- **Preview**: Used to display a full set of palette colors generated based on the start/end colors and the number of levels. Use the Allow Edit check box to automatically change the generated colors or specify value ranges for each color.

Also, the Choropleth Map allows you to visualize the difference between the actual and target values of a particular parameter.

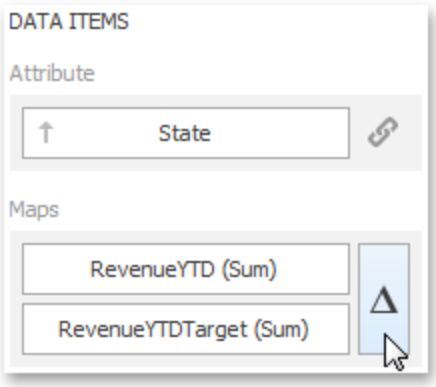
Delta

The Choropleth Map allows you to indicate the difference between the actual and target values of a particular parameter. This difference is called delta.

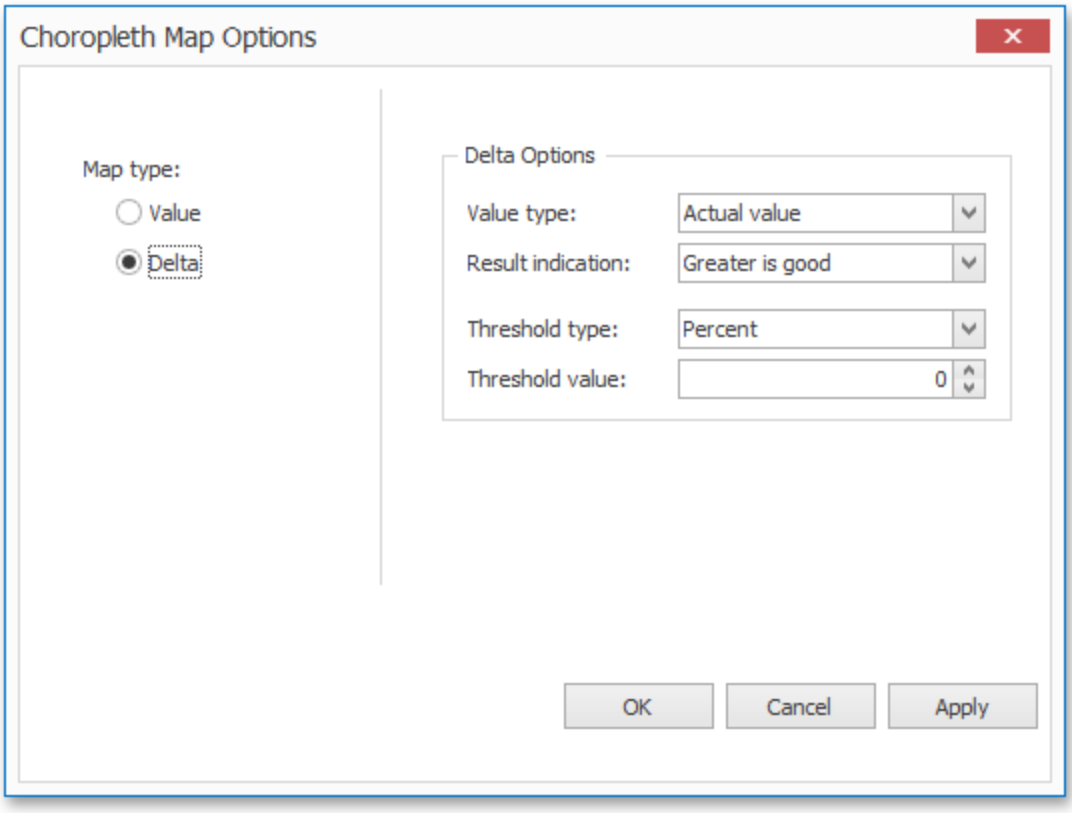


Delta Options

To specify delta indication settings, click the Options button next to the data item container.

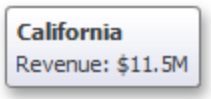


This invokes the Choropleth Map Options dialog. When the map type is set to Delta, this dialog contains the following settings.

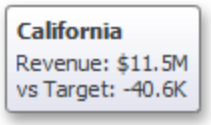


Value Type: You can specify which values to display within map tooltips. Use the Value type combo box to select the value that will be displayed as the delta value.

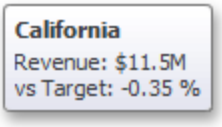
Actualvalue



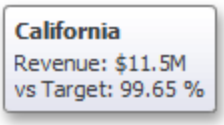
Absolutevariation



Percentvariation



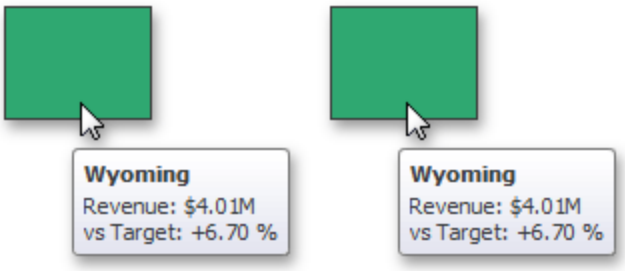
Percentof target



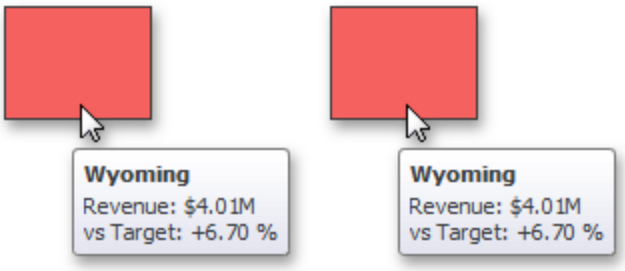
Result Indication

You can specify the condition that will be used to select the indicator color. To do this, use the Result indication combo box.

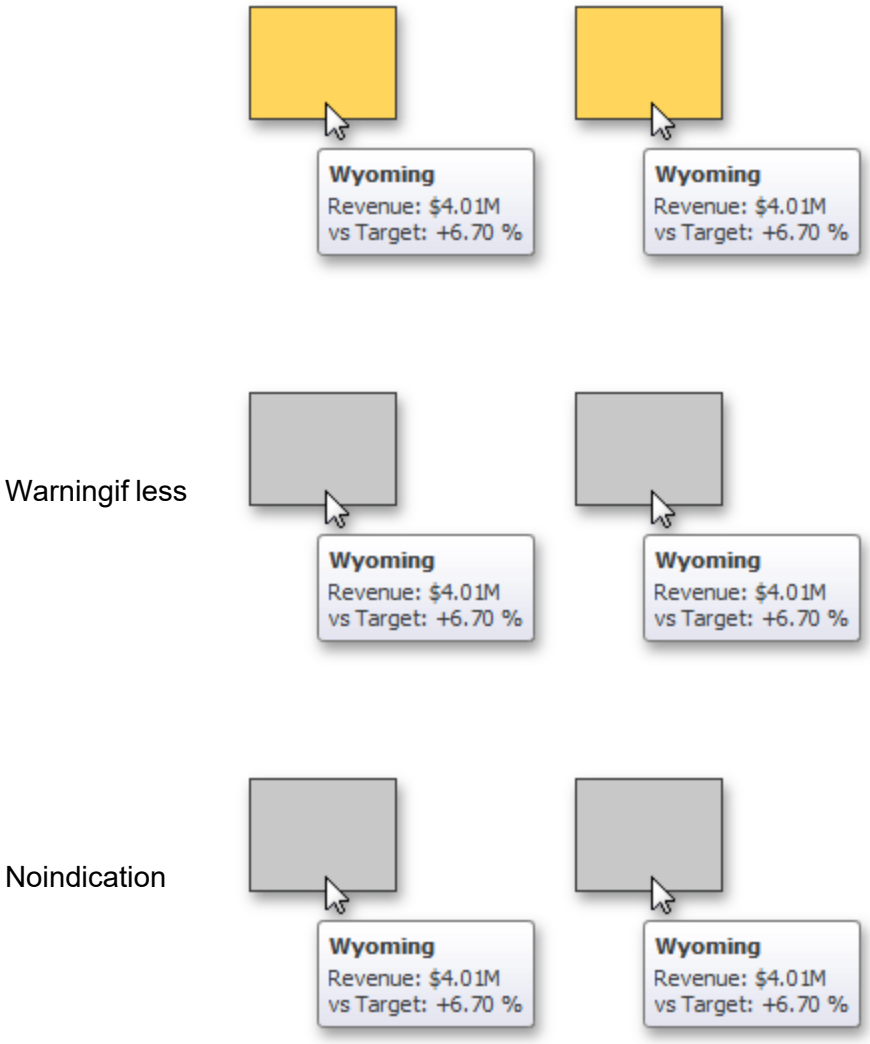
Greater isgood



Lessis good



Warningif greater



Threshold Type and Threshold Value

You can specify that a required indicator should only be displayed when the difference between the actual and target values exceeds a specified value. For instance, the actual value exceeds the target value by 10%, or by $2K.

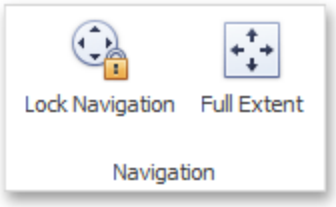
Use the Threshold type combo box to select whether you wish to specify the threshold in percentage values or in absolute values. Then use the Threshold value box to specify the threshold value.

Map Navigation

The Choropleth Map dashboard item allows you to perform navigation actions such as zooming and scrolling.

The Dashboard Designer allows you to specify the initial zooming/scrolling state for the Choropleth map using the mouse.

You can disable the capability to scroll/zoom the map using the **Lock Navigation** button in the Design ribbon tab.



Use the Full Extent button to display the entire map within the dashboard item.

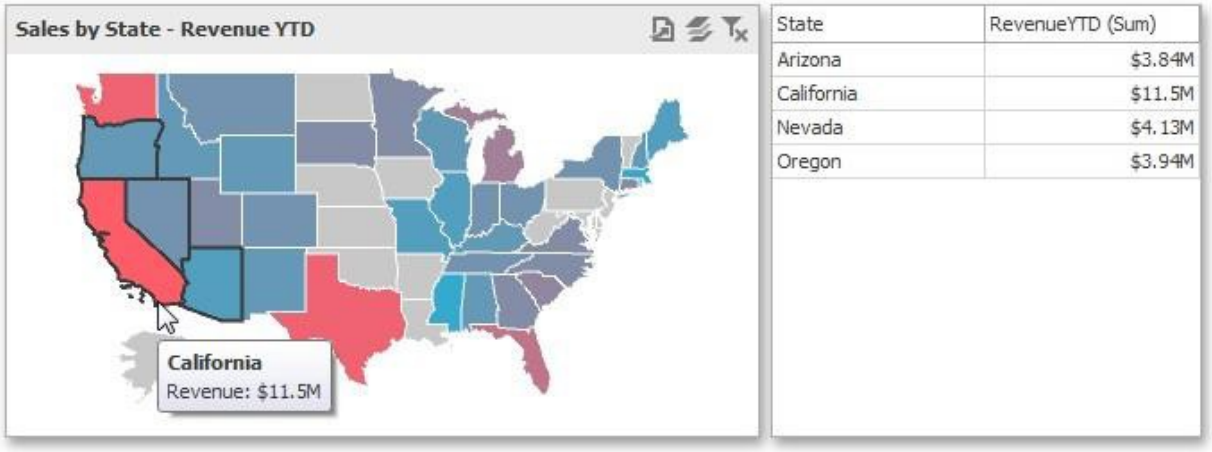
Interactivity

This document describes the Master Filtering feature, which enables interaction between the Choropleth Map and other dashboard items.

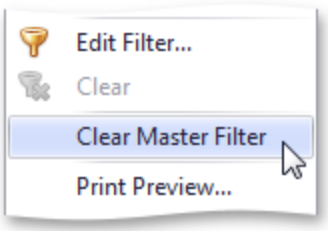
Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

When Master Filtering is enabled, you can click a shape (or multiple shapes by holding down the CTRL key) to make other dashboard items only display data related to the selected shape(s).



To reset filtering, use the Clear Master Filter button (the icon) in the map's caption, or the **Clear Master Filter** command in the map's context menu.

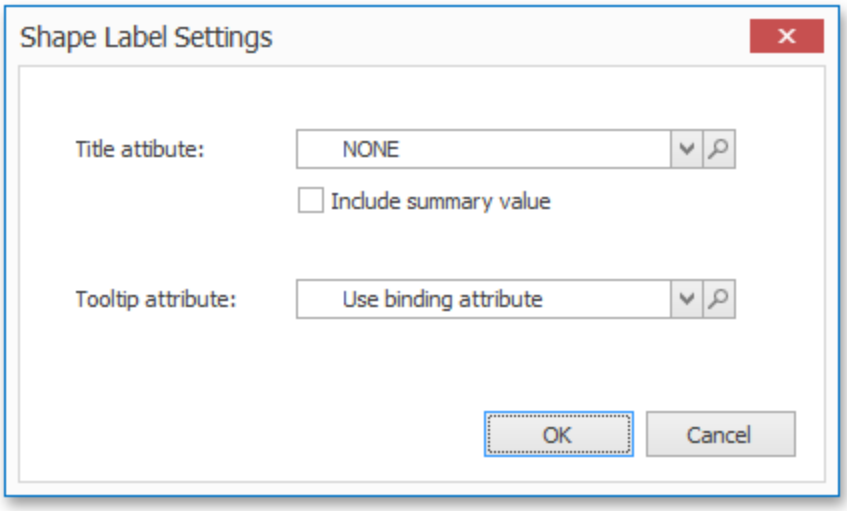


Labels

A Choropleth map provides the capability to display titles within map shapes and allows you to manage what data to show in the shape tooltips.

To manage map titles and tooltips, click the Shape Labels button in the Design ribbon tab.

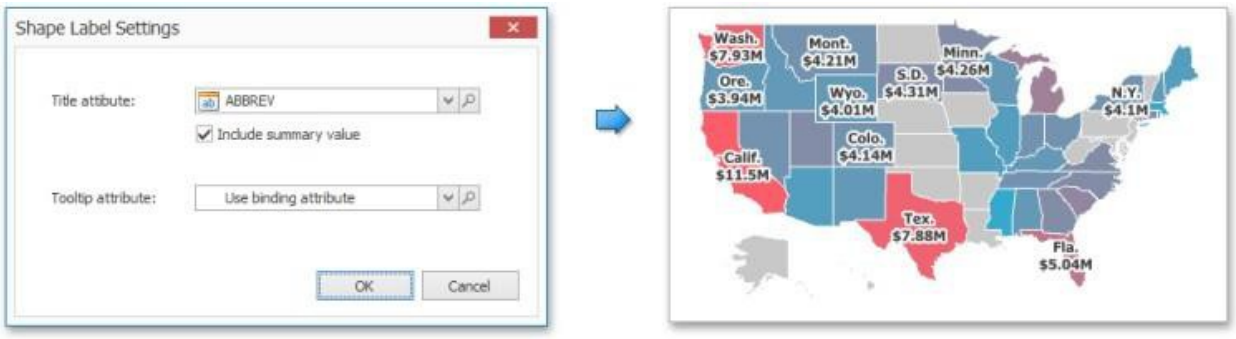
This invokes the **Shape Label Settings** dialog.



In this dialog, you can specify attributes whose values will be displayed within shapes and tooltips. Use the magnifying glass button to preview the available attributes and their values for the current map.

Shape Tiles

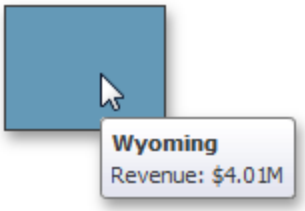
The Title attribute option allows you to select the attribute whose values are displayed within corresponding map shapes.



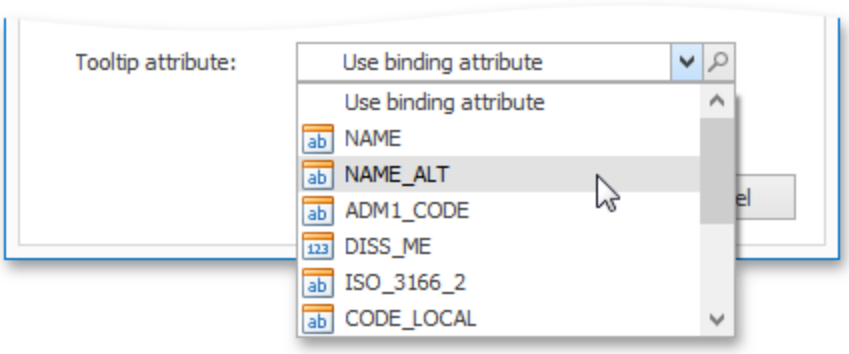
You can also use the Include summary value option to add summary values to shape titles.

Tooltips

The Choropleth Map dashboard item displays a tooltip that shows information related to a hovered shape.



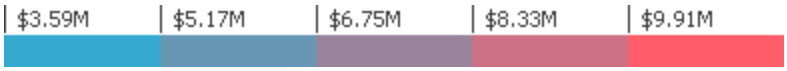
You can choose whether to use a binding attribute to display as the title of shape tooltips (the Use binding attribute option) or specify a custom attribute using the Tooltip attribute option.



The Choropleth Map also allows you to add supplementary content to the tooltips using the Tooltip Data Items area.

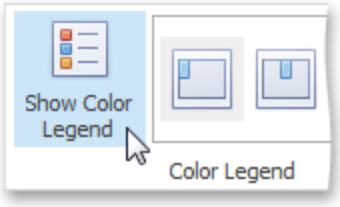
Legend

A legend is an element of a map that shows values corresponding to each color.



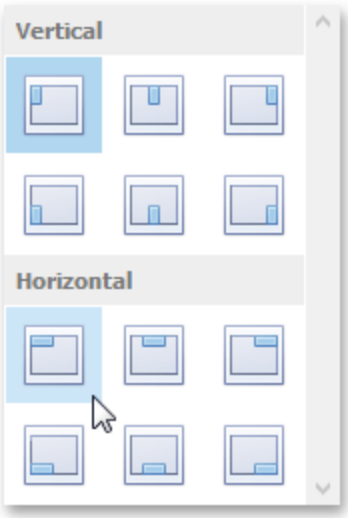
Visibility

To display a legend within a map, use the Show Legend button in the Legend group of the Design Ribbon tab.



Position and Orientation

To specify the legend's position and orientation, select one of the predefined options from the gallery in the Design Ribbon tab.



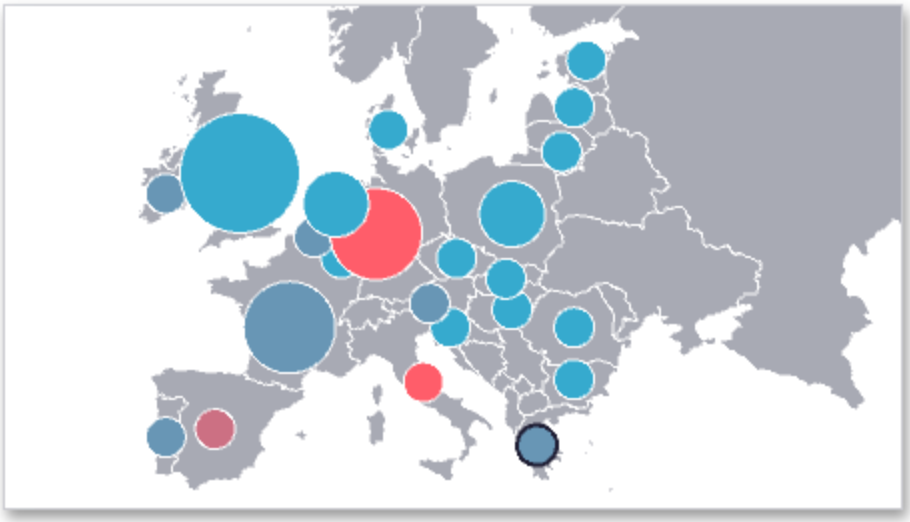
Geo Point Maps

The topics in this section describe various types of Geo Point Map dashboard items that allow you to place callouts, bubbles or pies on the map using geographical coordinates.

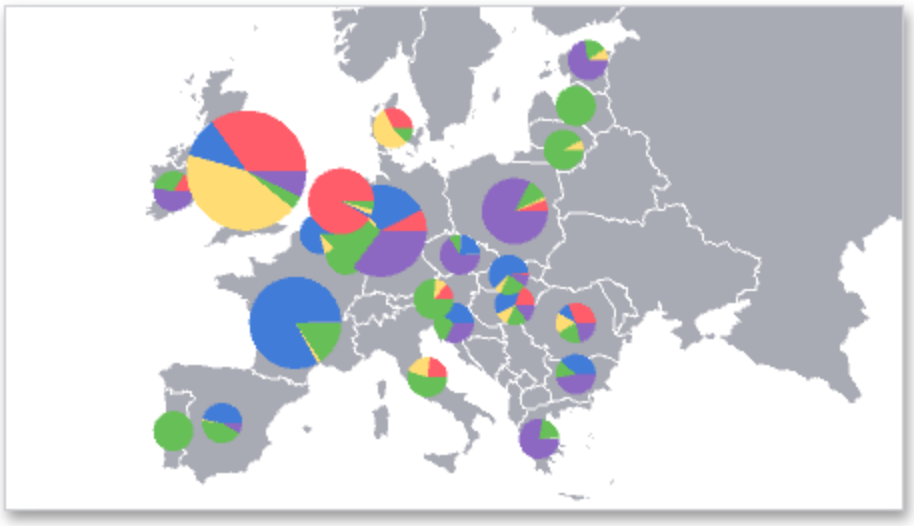
The dashboard supports three types of Geo Point maps:

- The Geo Point Map dashboard item allows you to place callouts on the map using geographical coordinates.

- The Bubble Map dashboard item allows you to place bubbles on the map. Each bubble can represent data via its weight and color.



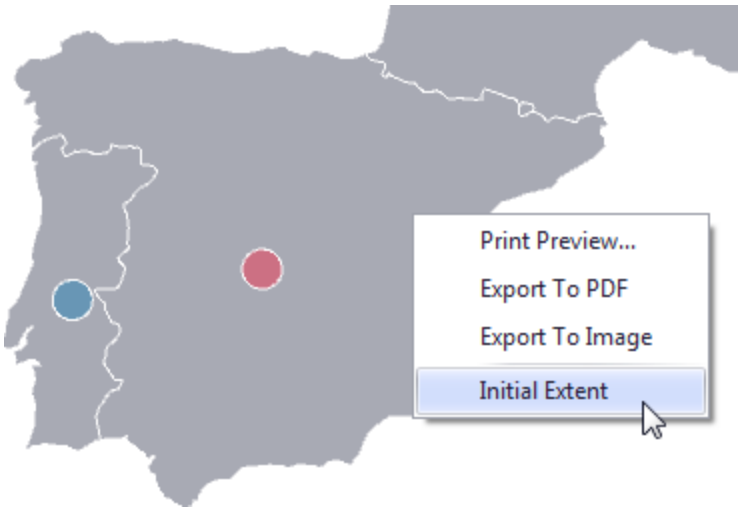
- The Pie Map dashboard item allows you to display pies on the map. Each pie visualizes the contribution of each value to the total.



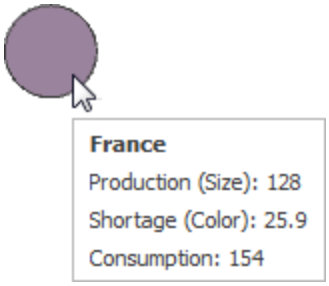
Map Zooming and Scrolling

You can use the mouse wheel to change the current zoom level for a map. To scroll the map, hold down the left mouse button and drag it.

To move to the initial zooming and scrolling state, click the Initial Extent menu item in the map's context menu.



A Geo Point Map dashboard item can display a tooltip that shows information on a hovered callout/bubble/pie.

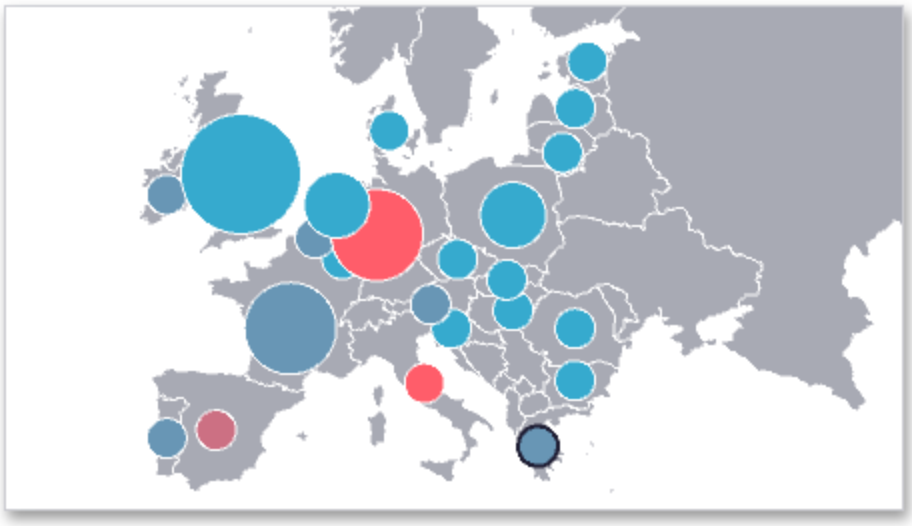


Map Types Overview

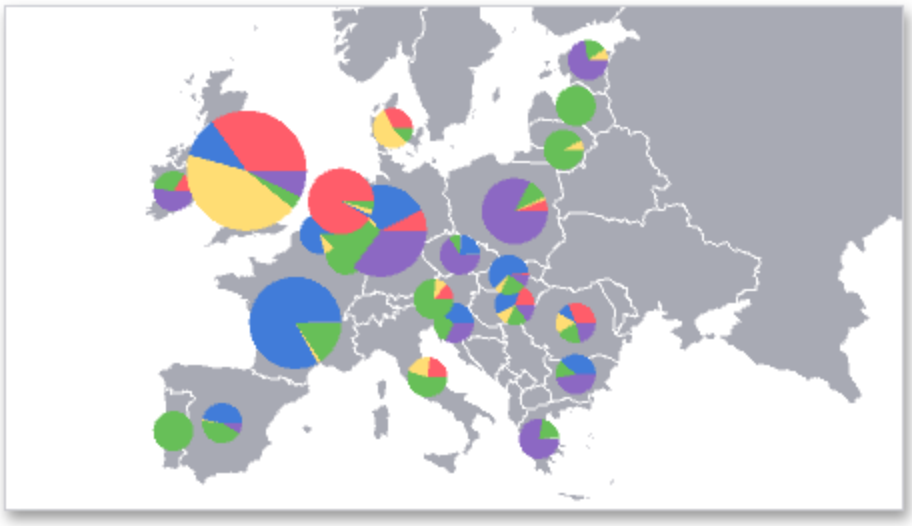
The Dashboard Designer allows you to create three types of Geo Point maps.

The Geo Point Map dashboard item allows you to place callouts on the map using geographical coordinates.

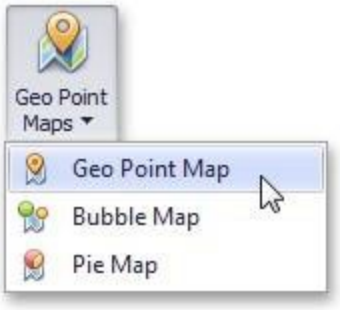
The Bubble Map dashboard item allows you to place bubbles on the map. Each bubble can represent data using its weight and color.



The Pie Map dashboard item allows you to display pies on the map. Each pie visualizes the contribution of each value to the total.



To create the required Geo Point Map dashboard item, use the Geo Point Maps button in the Home ribbon tab.



Providing Maps

This document explains how to use the BI Dashboard maps or provide custom maps.

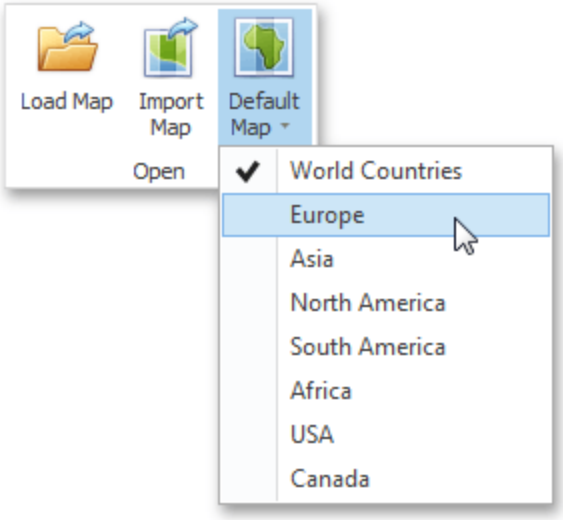
Default Maps

The BI Dashboard contains a set of default maps showing various parts of the world. The following maps are included:

- World Countries
- Europe
- Asia
- North America
- South America
- Africa
- USA
- Canada

> **NOTE:** The World Countries map has a lower level of detail than maps of specific regions and may not contain some countries. As an alternative, you can load a custom map with the required granularity.

To select the default map, use the **Default Map** button in the Design ribbon tab.



As an alternative, use the corresponding command in the map's context menu.

Custom Maps

A **Shapefile vector** format to provide custom maps. Commonly, this format includes two file types:

- .shp file - holds map shapes (points/lines/polygons).
- .dbf file - contains attributes for each shape.

To open an existing shapefile, use the **Load Map** or **Import Map** button in the Ribbon, or the command in the context menu.

If the map is opened using the Load Map button, the dashboard XML definition will contain the path to a map shapefile. If the map is opened using the Import Map button, the dashboard XML definition will contain the map itself.

Geo Point Map

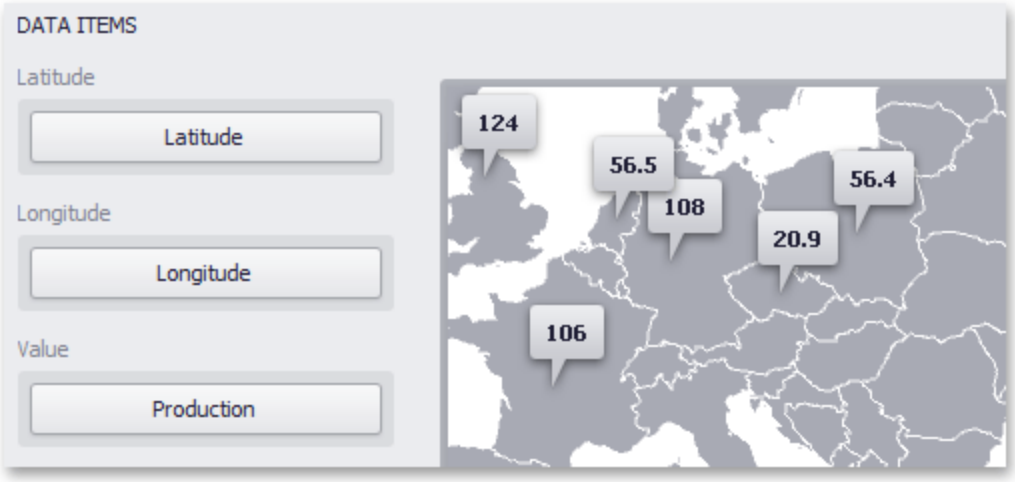
The Geo Point Map dashboard item allows you to place callouts on the map using geographical coordinates.

Providing Data

This topic describes how to bind the Geo Point Map dashboard item to data using the Dashboard Designer.

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner. The only difference is in the data sections that these dashboard items have.

The image below shows a sample Geo Point Map dashboard item that is bound to data.



Note that the Geo Point Map provides two data item groups for data binding: Data Items and TOOLTIP Data Items. Tables below list the available data sections.

Data Items

Section	Description
Latitude	Accepts a dimension used to provide geographic latitude.
Longitude	Accepts a dimension used to provide geographic longitude.
Value	Accepts values related to geographic points. These values are displayed within map callouts.

Tooltip Data Items

Section	Description
Dimensions	Accepts dimensions allowing you to add supplementary content to the tooltips.
Measures	Accepts measures allowing you to add summaries to the tooltips.

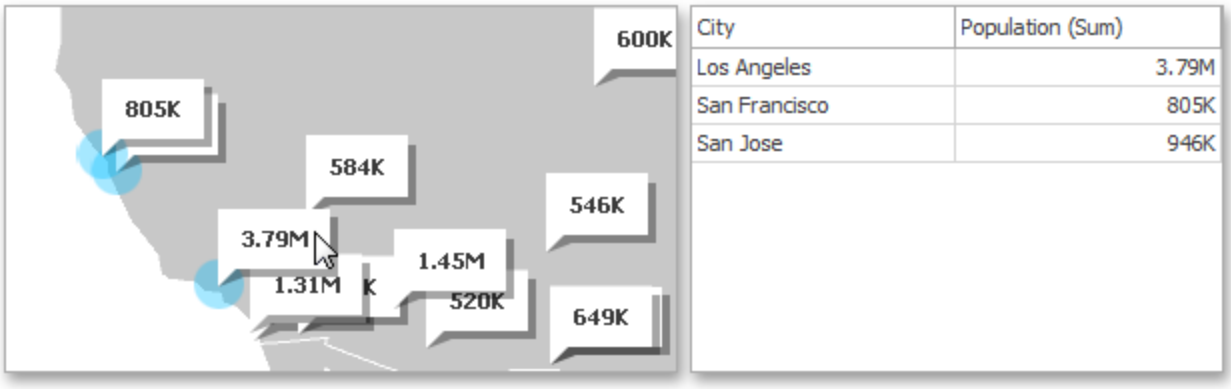
Interactivity

This document describes the capabilities that enable interaction between Geo Point maps and other dashboard items. These capabilities include Master Filtering.

Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

When Master Filtering is enabled, you can click a callout/bubble/pie (or multiple callouts/bubbles/pies by holding down the CTRL key) to make other dashboard items only display data related to the selected callout(s)/bubble(s)/ pie(s).



City	Population (Sum)
Los Angeles	3.79M
San Francisco	805K
San Jose	946K

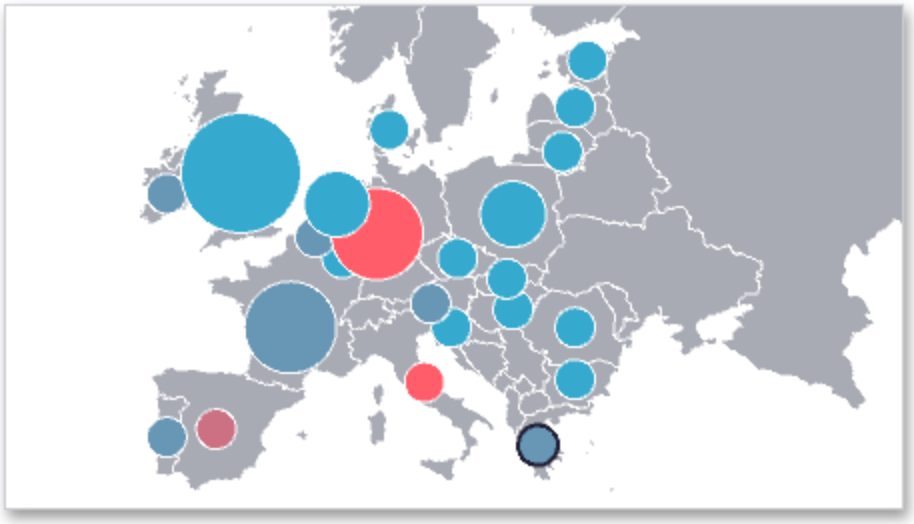
You can also select multiple callouts/bubbles/pies in the following way.

- Hold the Shift key and the left mouse button
- Drag the mouse pointer, to mark an area that includes the desired elements
- Release the left mouse button. All elements within the area will be selected

To reset filtering, use the Clear Master Filter button (the icon) in the Map's caption area, or the Clear Master Filter command in the context menu.

Bubble Map

The Bubble Map dashboard item allows you to place bubbles on the map. Each bubble can represent data using its weight and color.

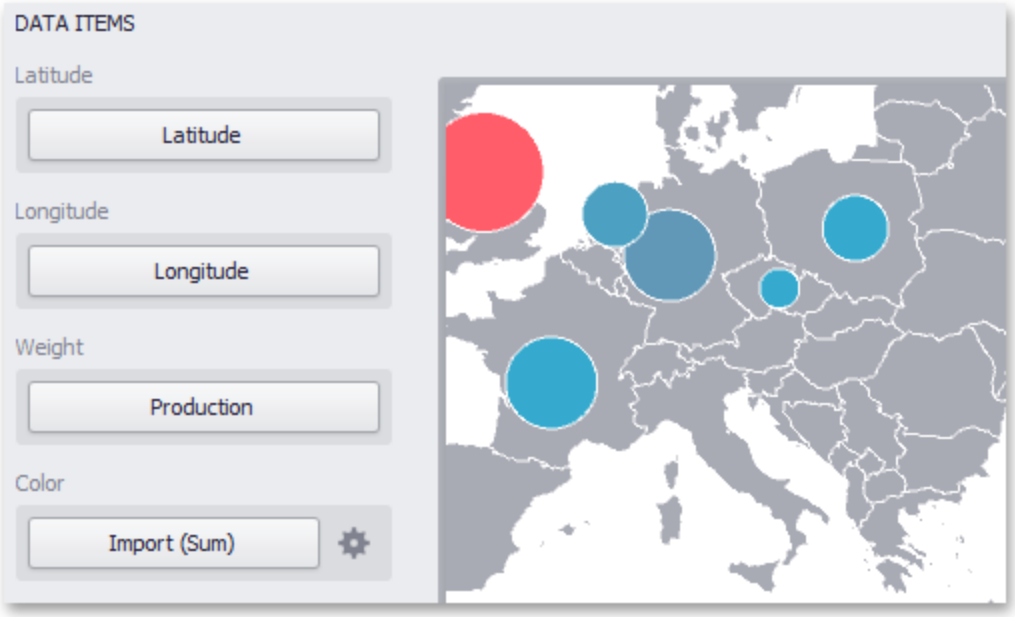


Providing Data

This topic describes how to bind the Bubble Map dashboard item to data using the Dashboard Designer.

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner. The only difference is in the data sections that these dashboard items have.

The image below shows a sample Bubble Map dashboard item that is bound to data.



Note that the Bubble Map provides two data item groups for data binding: Data Items and TOOLTIP Data Items. Tables below list the available data sections.

Data Items

The Bubble Map dashboard item automatically selects palette and scale settings used to color bubbles. To customize these settings, click the **Options** button next to the Color placeholder. This invokes the Color Scale Options dialog, which allows you to specify the palette and scale options.

Latitude: Accepts a dimension used to provide geographic latitude.

Longitude: Accepts a dimension used to provide geographic longitude.

Weight: Accepts a measure used to evaluate the bubble's weight.

Color: Accepts a measure used to evaluate the bubble's color.

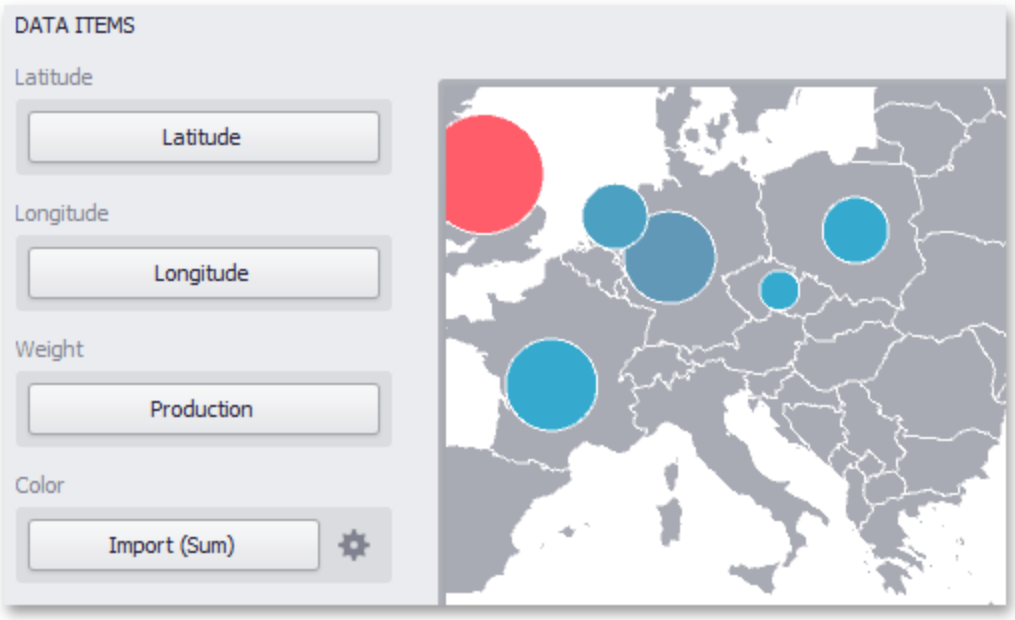
Tooltip Data Items

Dimensions: Accepts dimensions allowing you to add supplementary content to the tooltips.

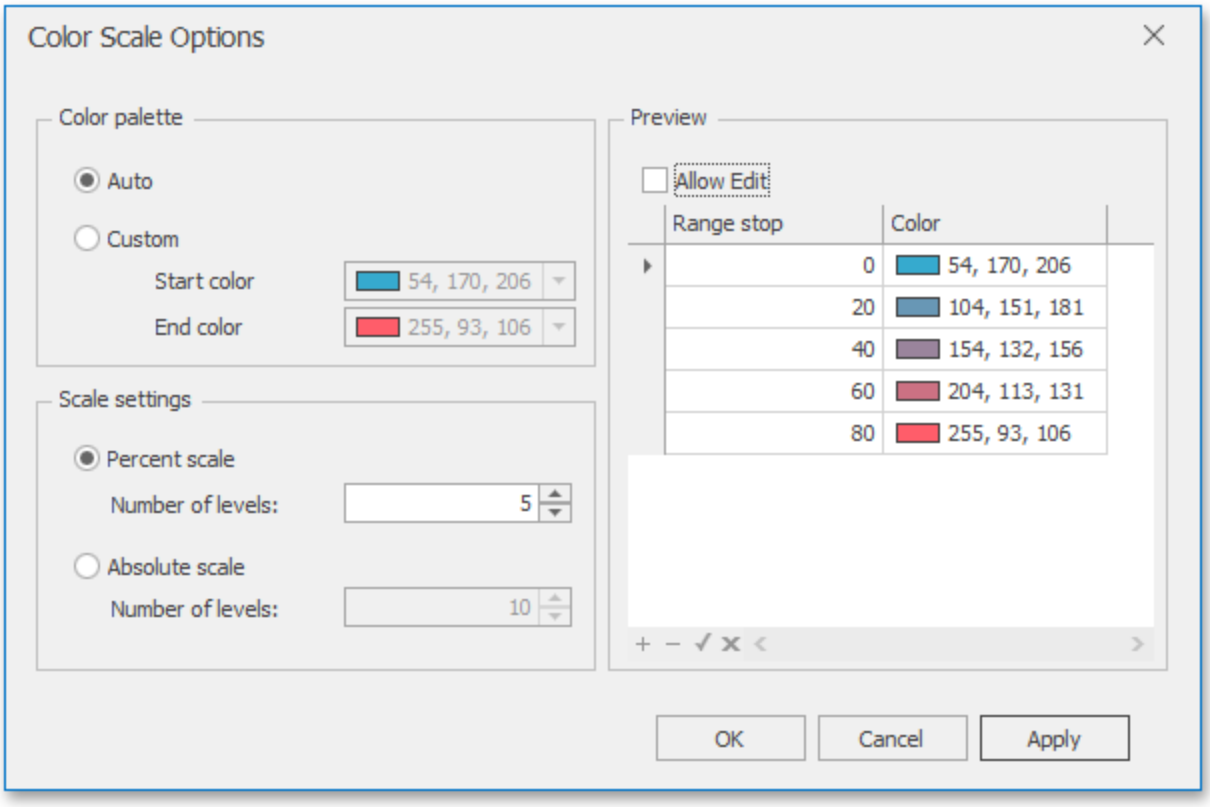
Measures: Accepts measures allowing you to add summaries to the tooltips.

Coloring

The Bubble Map dashboard item automatically selects palette and scale settings used to color bubbles depending on the provided values.



To customize these settings, click the **Options** button next to the Color placeholder. This invokes the Color Scale Options dialog, which allows you to specify the palette and scale options.



You can specify the following settings in this window:

Color palette: Allows you to specify the start and end color of the palette

Scale setting: Specifies whether a percent scale or an absolute scale is used to define a set of colors. You can specify the number of levels that represent the number of colors used to color the map.

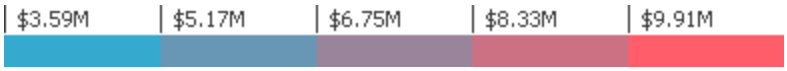
Preview: Used to display a full set of palette colors generated based on the start/end colors and the number of levels. Use the **Allow Edit** check box to automatically change the generated colors or specify value ranges for each color.

Legends

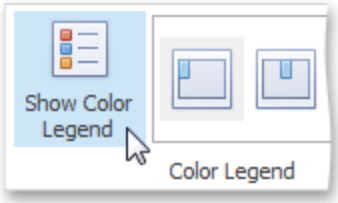
Bubble Map provides two types of legends used to identify map objects - color and weighted legends.

Color Legend

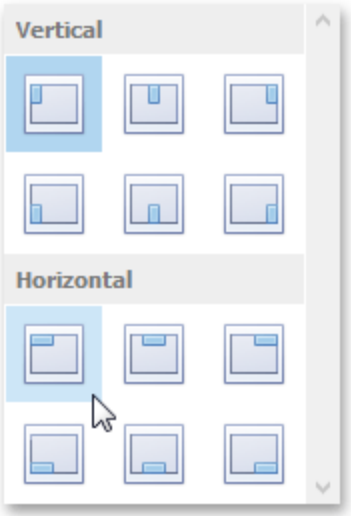
The color legend helps you to identify which colors correspond to specific values.



To display a color legend within a map, use the Show Color Legend button in the Color Legend section of the Design Ribbon tab.

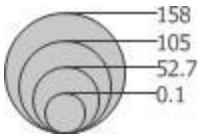


To specify the legend's position and orientation, select one of the predefined options from the gallery in the Design Ribbon tab.

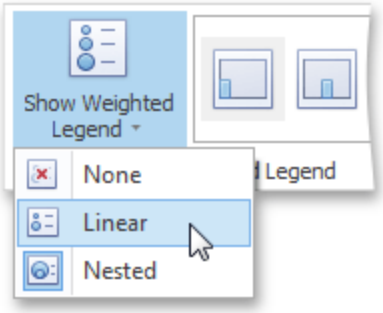


Weighted Legend

The weighted legend allows you to identify values corresponding to specific bubble sizes.



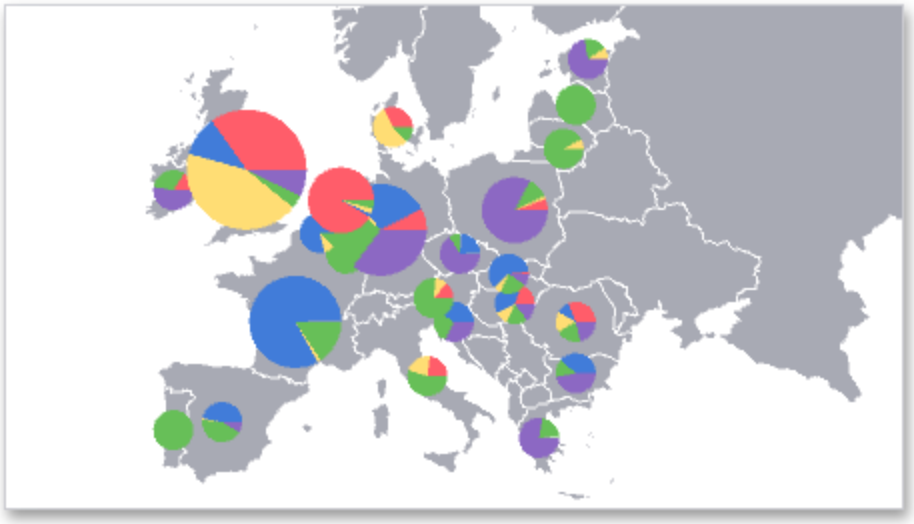
To select the required weighted legend type, use the Show Weighted Legend button in the Weighted Legend section of the Design Ribbon tab.



To specify the legend's position, select one of the predefined options from the gallery in the Design Ribbon tab.

Pie Map

The Pie Map dashboard item allows you to display pies on the map. Each pie visualizes the contribution of each value to the total.

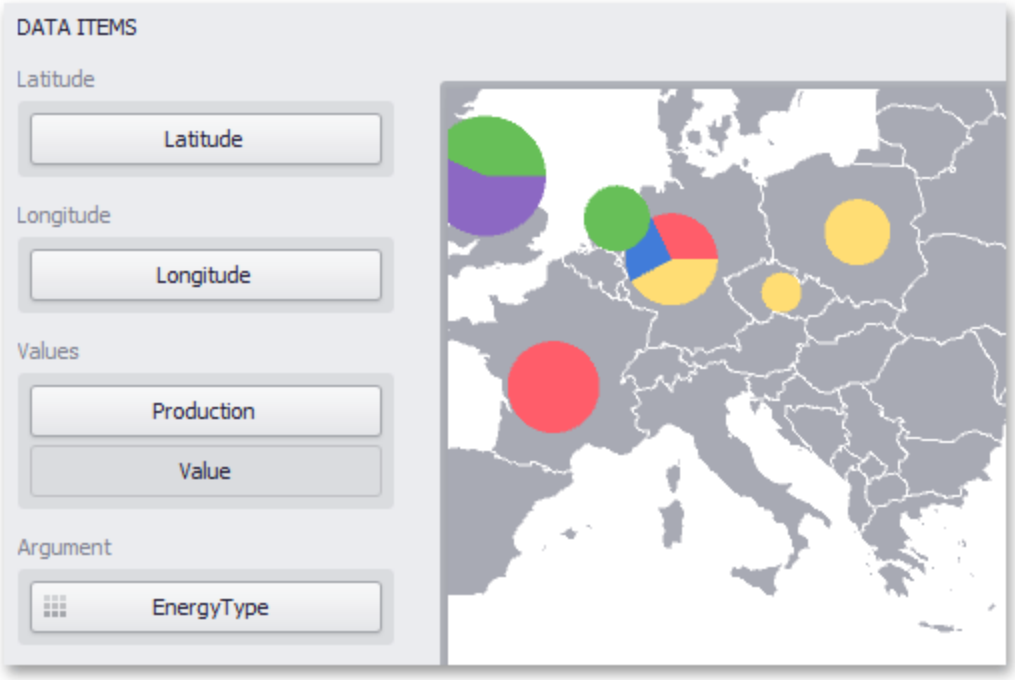


Providing Data

This topic describes how to bind the Pie Map dashboard item to data using the Dashboard Designer.

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner. The only difference is in the data sections that these dashboard items have.

The image below shows a sample Pie Map dashboard item that is bound to data.



Note that the Pie Map provides two data item groups for data binding: Data Items and Tooltip Data Items. Tables below list the available data sections.

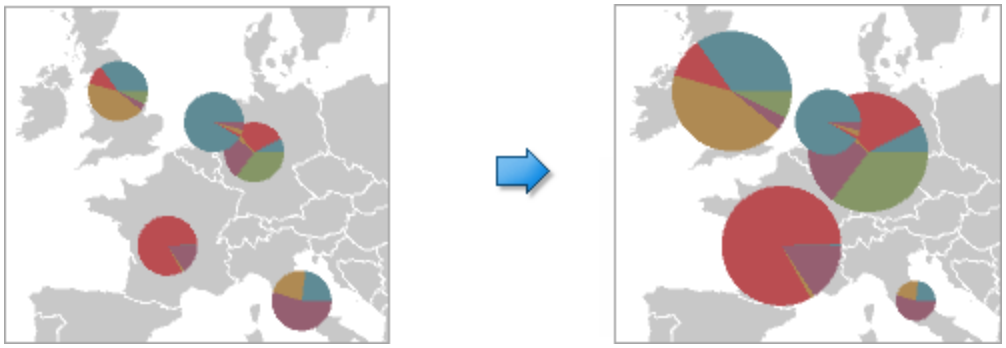
Data Items

Section	Description
Latitude	Accepts a dimension used to provide geographic latitude.
Longitude	Accepts a dimension used to provide geographic longitude.
Values	Accepts measures used to calculate pie values. In case of negative measure values, Pie Map uses their absolute values. If you added a data item to the Argument section and several Data Items to the Values section, you can use the Values drop-down menu to switch between the provided values. To invoke the Values menu, click the icon in the map's caption or use the map's context menu.
Argument	Allows you to provide data for pie arguments.

Section	Description
Dimensions	Accepts dimensions allowing you to add supplementary content to the tooltips.
Measures	Accepts measures allowing you to add summaries to the tooltips.

Pie Options

The Pie Map dashboard item allows you to take into account the weight of pies. In this case, the relative sizes of the pies depend on the corresponding summary values.

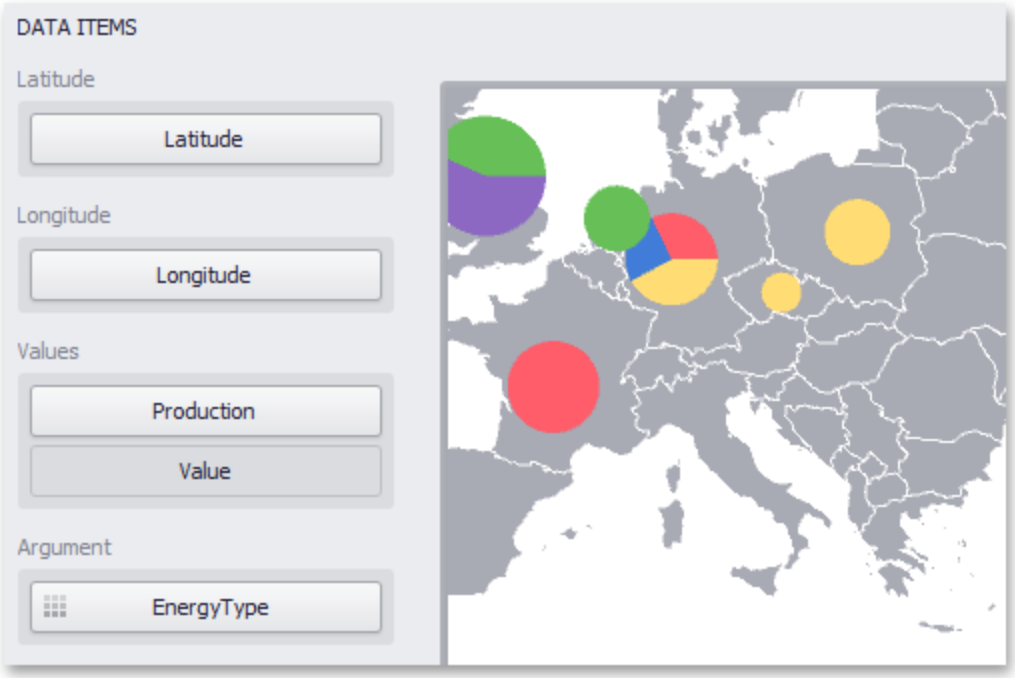


To enable this capability, use the Weighted Pies button in the Design ribbon tab.

Coloring

Certain dashboard items provide the capability to color dashboard item elements by associating dimension values/ measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item.

The Pie Map dashboard item allows you to manage the coloring of segments corresponding to various dimension values/measures. For instance, the image below illustrates the Pie Map dashboard item whose argument values are colored by hue.

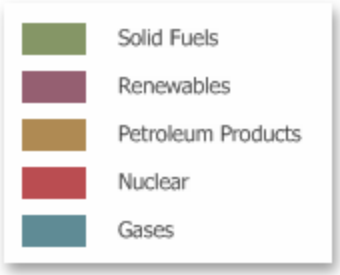


Legends

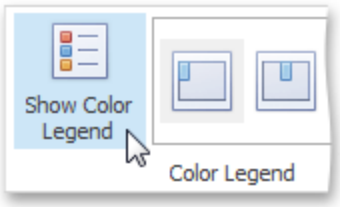
The Pie Map provides two types of legends used to identify map objects - color and weighted legends.

Color Legend

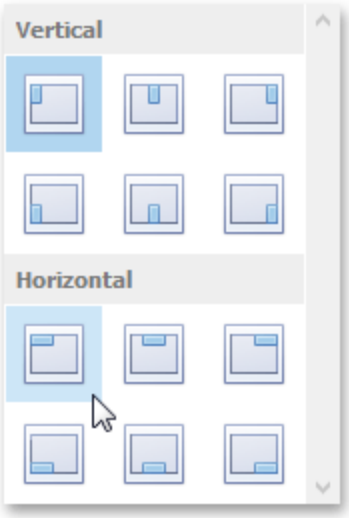
The color legend helps you to identify which colors correspond to specific argument values.



To display a color legend within a map, use the **Show Color Legend** button in the Color Legend section of the Design Ribbon tab.

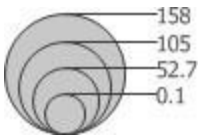


To specify the legend's position and orientation, select one of the predefined options from the gallery in the Design Ribbon tab.



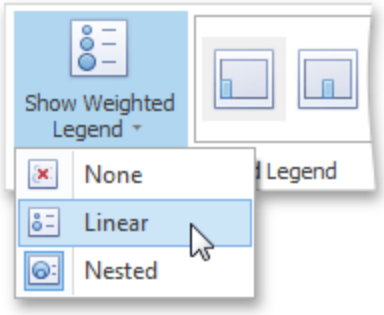
Weighted Legend

The weighted legend allows you to identify values corresponding to specific pie sizes.



The Pie Map dashboard item does not display the weighted legend if weighed pies are disabled.

To select the required weighted legend type, use the Show Weighted Legend button in the Weighted Legend section of the Design Ribbon tab.



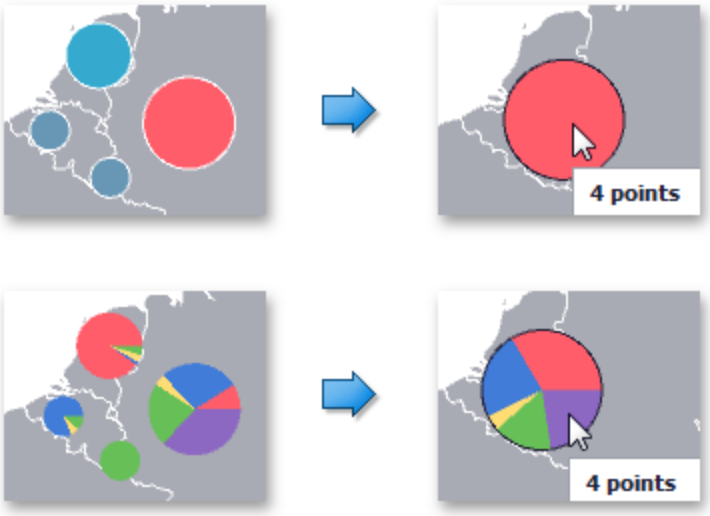
To specify the legend's position, select one of the predefined options from the gallery in the Design Ribbon tab.

Clustering

When a Geo Point map contains a large number of objects (callouts, bubbles or pies), showing each object individually on the map is not useful. The Dashboard Designer provides the capability to group neighboring map objects. This feature is called Clustering.

For instance, the Geo Point Map dashboard item combines callouts to bubbles.

The Bubble Map and Pie Map dashboard items cluster bubbles/pies with other bubbles/pies.



To enable clustering in the Designer, use the Enable Clustering button in the Data ribbon tab.

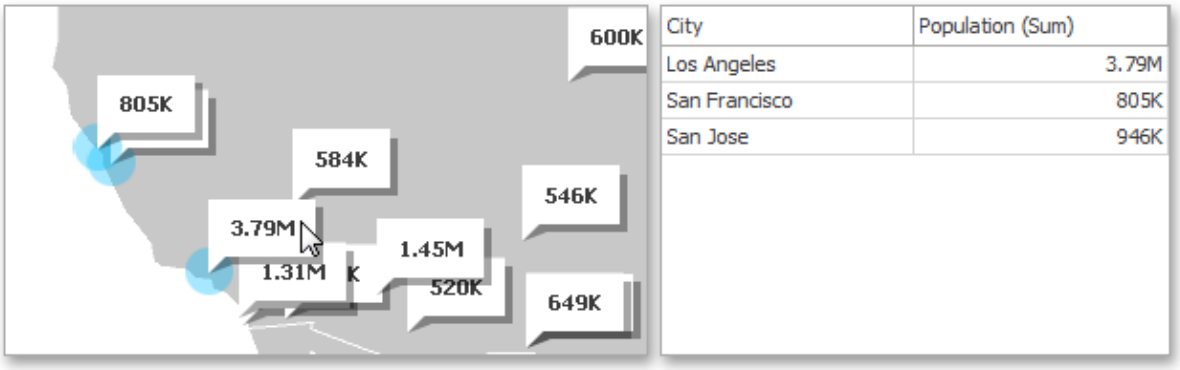
Interactivity

This document describes the Master Filtering capability, which enables interaction between the Geo Point Map and other dashboard items.

Master Filtering

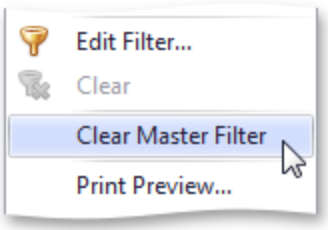
The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

When Master Filtering is enabled, you can click a callout/bubble/pie (or multiple callouts/bubbles/pies by holding down the CTRL key) to make other dashboard items only display data related to the selected callout(s)/bubble(s)/pie(s).



When you select a clustered bubble or pie, master filtering is applied by all points that are clustered into this bubble/pie.

To reset filtering, use the **Clear Master Filter button** in the map's caption, or the Clear Master Filter command in the context menu.



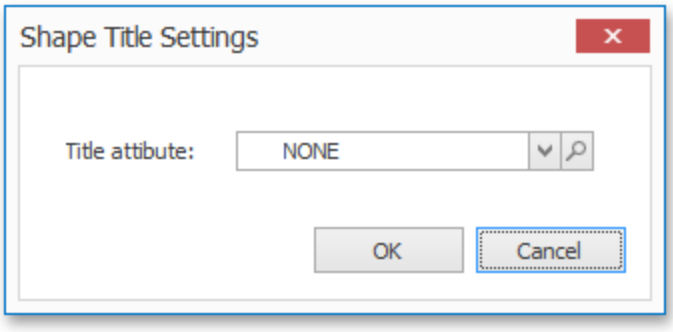
Labels

Geo Point maps provide the capability to display titles within map shapes and allows you to add supplementary content to the callout/bubble/pie tooltips.

Shape Tiles

To manage map titles, click the **Shape Title** button in the Design ribbon tab.

This invokes the Shape Title Settings dialog.



In this dialog, you can specify attributes whose values will be displayed within shapes. Use the button to preview the available attributes and their values for the current map.

The Title attribute option allows you to select the attribute whose values are displayed within corresponding map shapes.

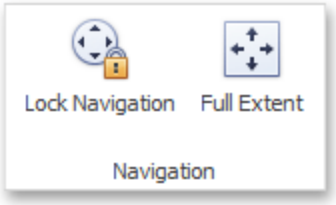
Tooltips

Geo Point maps also allow you to add supplementary content to the callout/bubble/pie tooltips using the TooltipData Items area. To learn more, see the Tooltip Data Items paragraph in the Providing Data topic.

Map Navigation

Geo Point maps allow you to perform navigation actions such as zooming and scrolling.

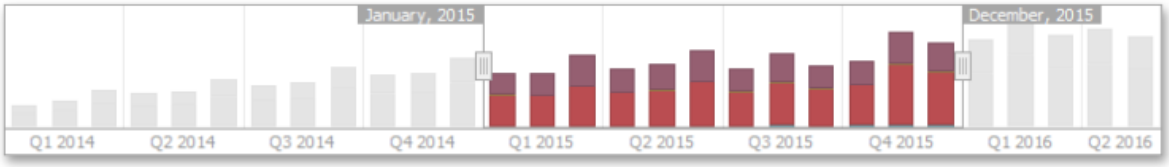
The Dashboard Designer allows you to specify the initial zooming/scrolling state for the Geo Point map using the mouse. You can disable the capability to scroll/zoom the map using the Lock Navigation button in the Design ribbon tab.



Use the **Full Extent** button to display the entire map within the dashboard item.

Range Filter

The Range Filter dashboard item allows you to apply filtering to other dashboard items. This item displays a chart with selection thumbs that allow you to filter out values displayed along the argument axis.

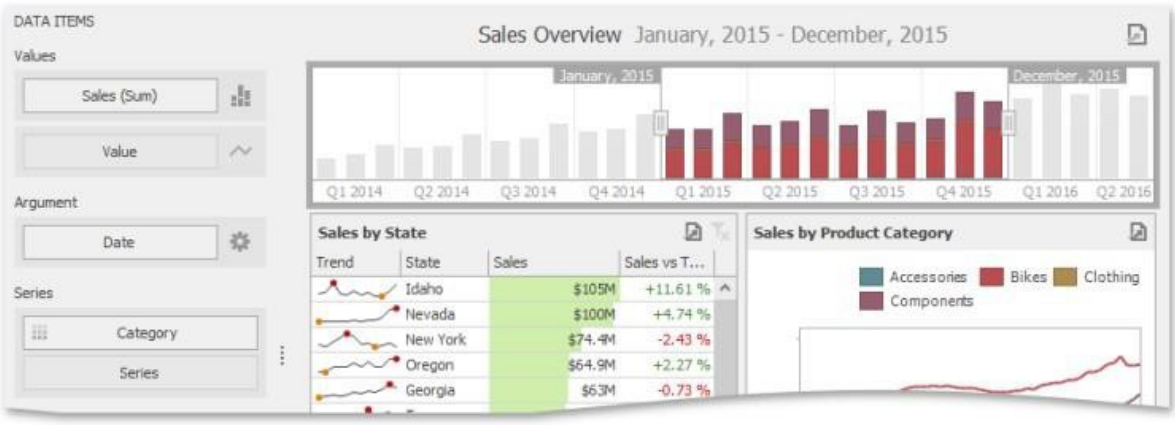


Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner.

The only difference is in the data sections that the required dashboard item has. This topic describes how to bind a Range Filter dashboard item to data in the Designer.

The image below shows a sample Range Filter dashboard item that is bound to data.



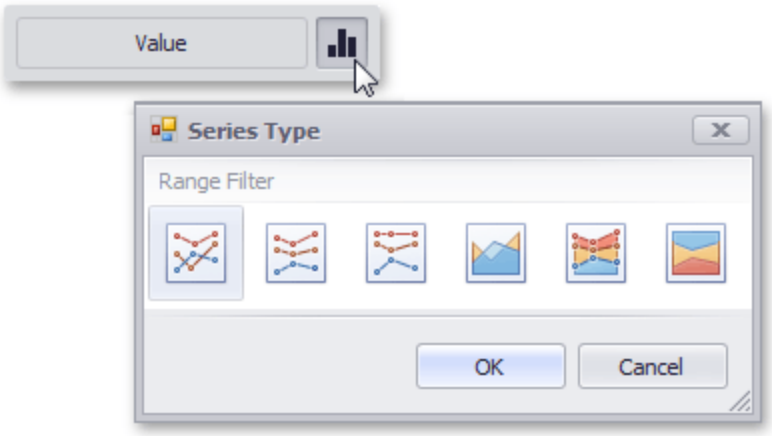
To bind the Range Filter dashboard item to data, drag and drop a data source field to a placeholder contained in one of the available data sections. A table below lists and describes Range Filter data sections.

Section	Description
Values	Contains Data Items against which the Y-coordinates of data points are calculated.
Argument	Contains a data item that provides values displayed along the horizontal axis of the Range Filter. Filtering is performed based on these values. Note that the Option s button (the icon) allows you to create predefined ran ges used to select the required date- time interval.
Series	Contains Data Items whose values are used to create chart series.

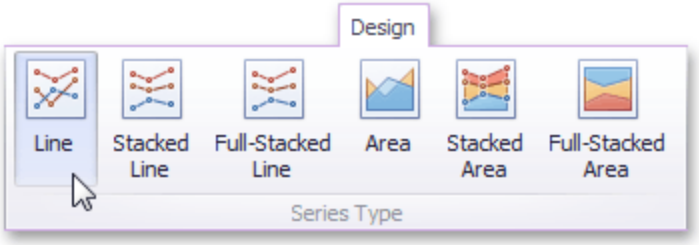
Series

The Range Filter dashboard item supports various Line and Area series types.

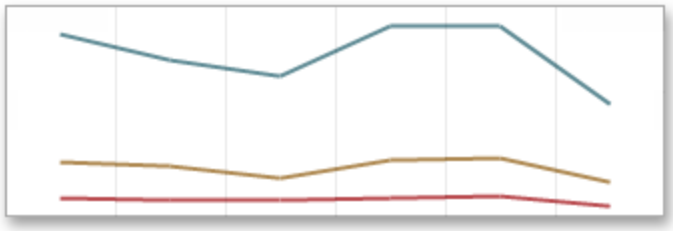
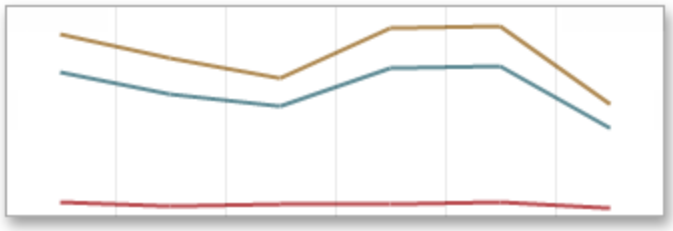
To switch between series types in the Designer, click the options button next to the required data item in the Values section. In the invoked Series Type dialog, select the required series type and click **OK**.

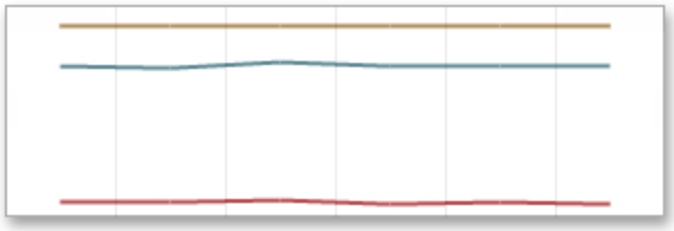
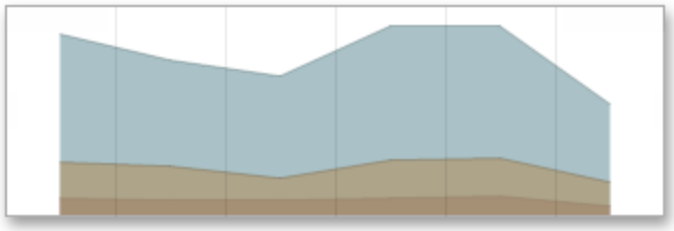
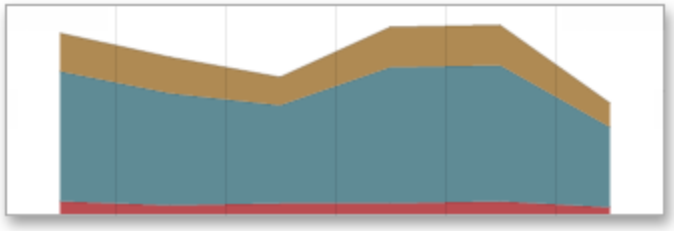
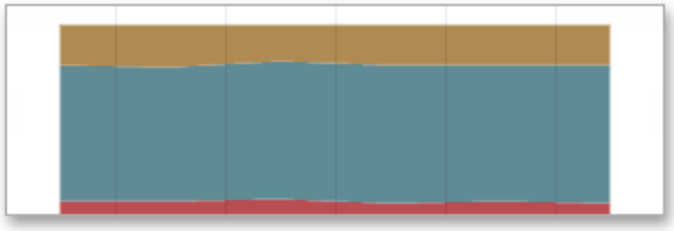


You can also do this using the buttons in the Series Type group of the Design Ribbon tab.



The Range Filter supports the following series types:

Line	
Stacked Line	
Full-Stacked Line	

	
Area	
Stacked Area	
Full-Stacked Area	

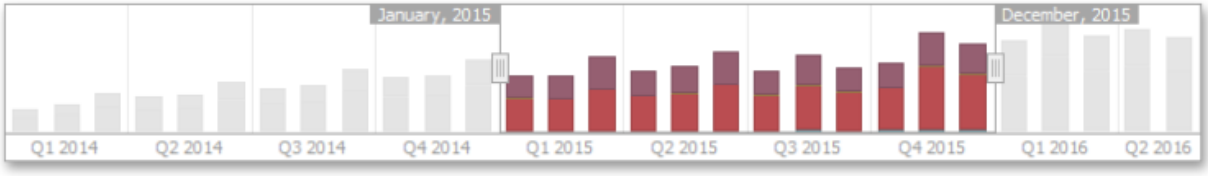
Interactivity

This document describes the features that enable interaction between the Range Filter and other dashboard items. These features include Master Filtering.

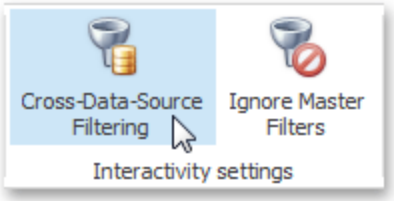
Master Filtering

The Dashboard allows you to use any data-aware dashboard item as a filter for other dashboard items (Master Filter).

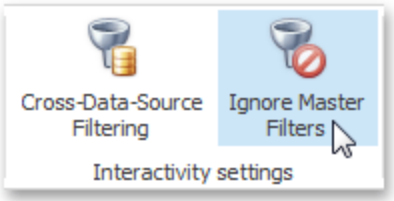
Master filtering is always enabled for the Range Filter dashboard item. This Range Filter displays a chart with selection thumbs that allow you to filter out values displayed along the argument axis.



To enable filtering across data sources for the Range Filter, use the Cross-Data-Source Filtering button in the Data Ribbon tab.



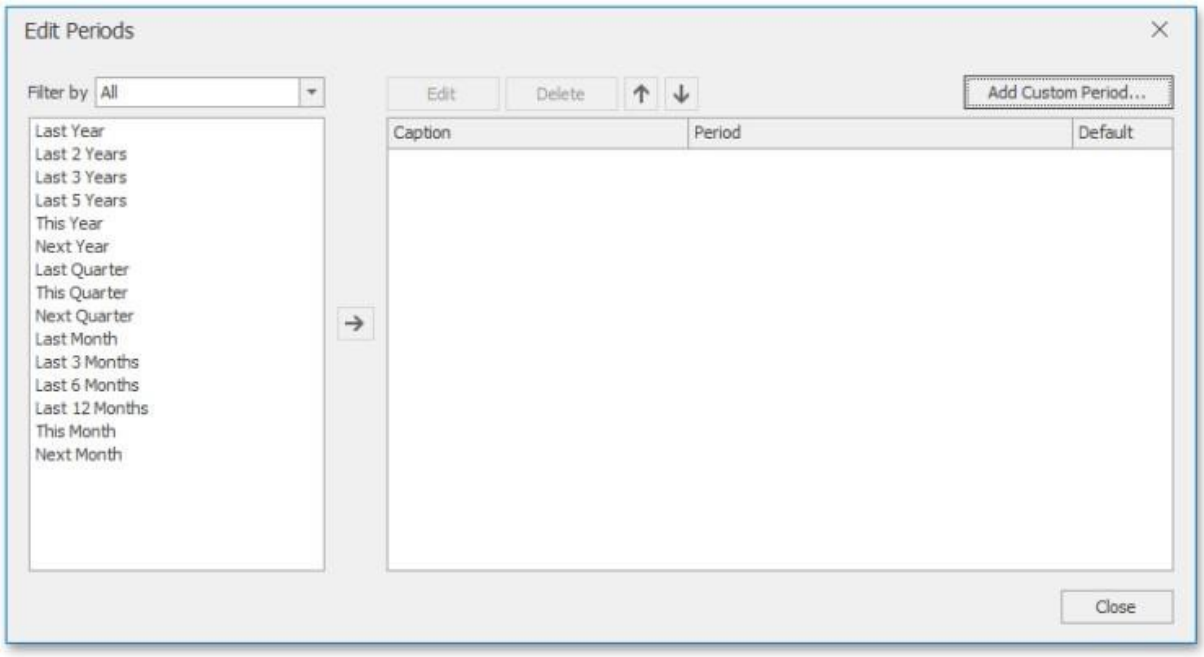
You can enable/disable ignoring of other master filter items using the Ignore Master Filters button in the Data Ribbon tab.



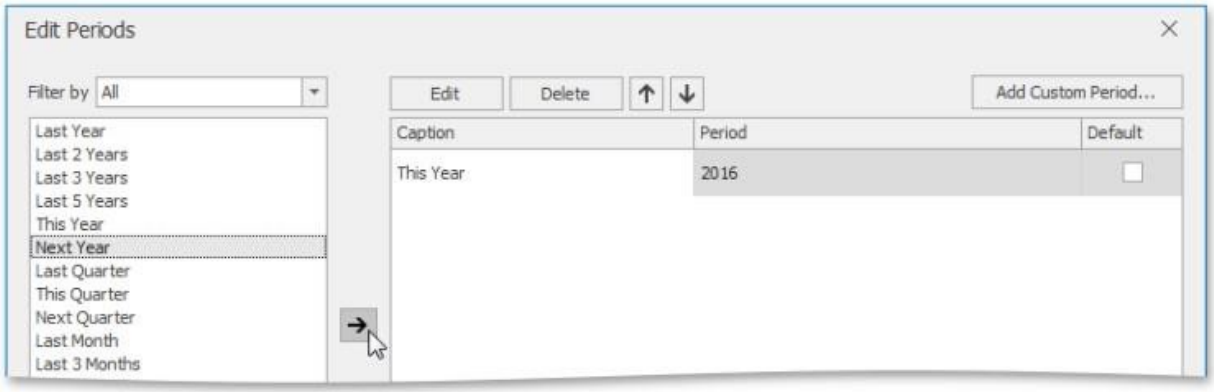
Predefined Ranges

The Range Filter dashboard item allows you to add a number of predefined date-time periods that can be used to perform a selection (for instance, year-to-date or quarter-to-date).

To add a period, click the Options button (the ⚙ icon) next to the Argument placeholder or use the **Edit Periods** button in the ribbon's Design tab. This invokes the Edit Periods dialog.



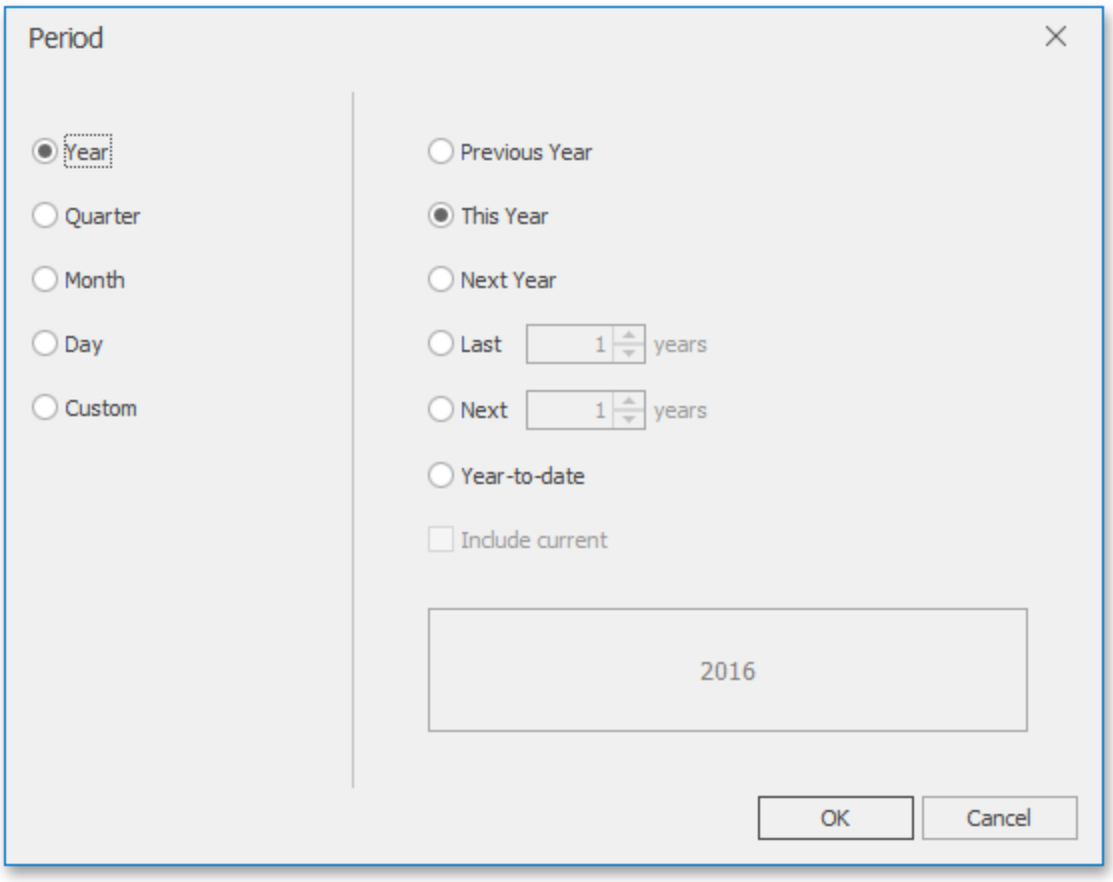
To add the selected period, use the → button or double-click this period.



This period will be added to the right pane of the Edit Periods dialog. The following settings are available for the added period:

- **Caption**: Specifies the caption corresponding to the period.
- **Period**: Displays the date-time interval corresponding to the period.
- **Default**: Allows you to use the selected period as the default selection in the Range Filter dashboard item.

If necessary, you can customize the selected period by clicking the **Edit** button in the Edit Periods dialog. This invokes the Period dialog.



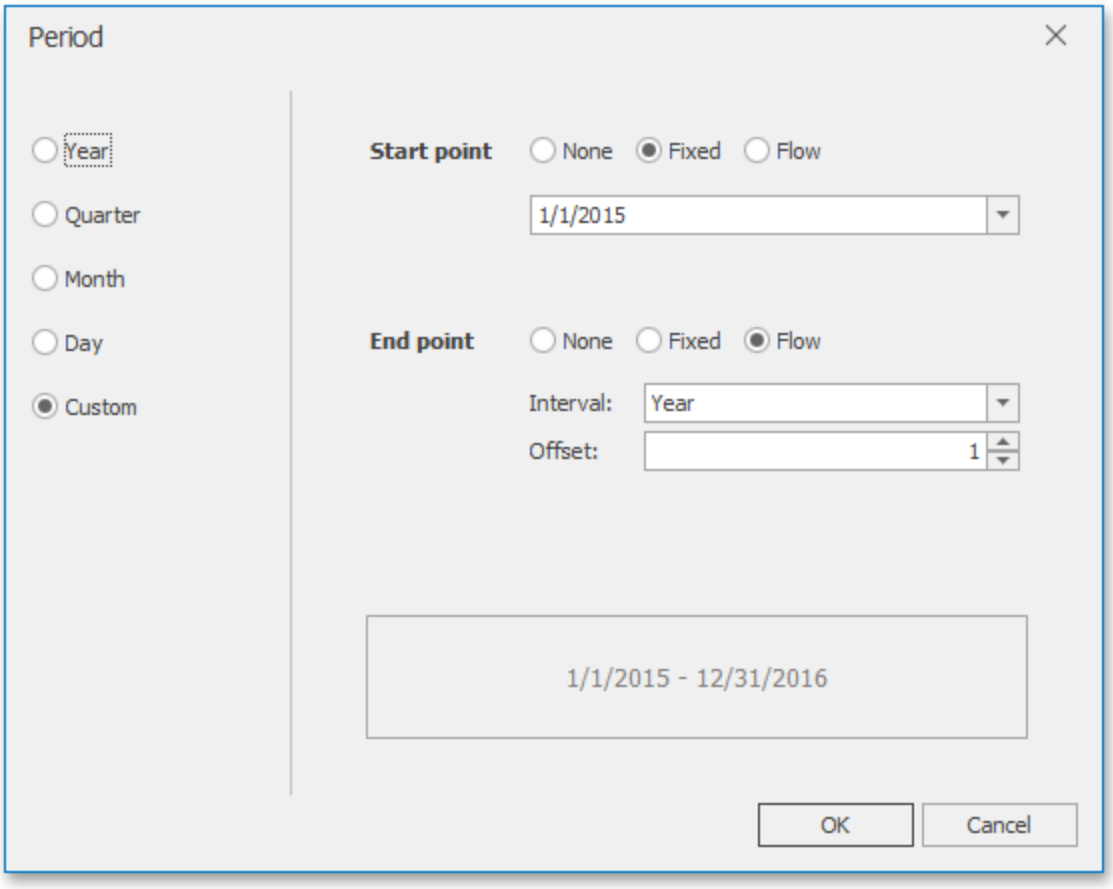
Note that the Edit dialog above contains the displayed periods (Year, Quarter, Month, Day) if the group interval of the Range Filter argument is set to Day-Month-Year.

This dialog allows you to add the following periods:

- **Year**: A period duration is measured in years.
    - **Previous Year**: Identifies the entire previous year.
    - **This Year**: Identifies the entire current year.
    - **Next Year**: Identifies the entire next year.
    - **Last Years**: Identifies a specific number of previous years. Use the Include current option to specify whether or not the period is ended with the current year.
    - **Next Years**: Identifies a specific number of next years. Use the Include current option to specify whether or not the period is started from the current year.
    - **Year-to-date**: A period from the beginning of the current year and up to the current day.
- **Quarter**: Period duration is measured in quarters.
    - **Previous Quarter**: Identifies the entire previous quarter.
    - **This Quarter**: Identifies the entire current quarter.
    - **Next Quarter**: Identifies the entire next quarter.
    - **Last Quarters**: Identifies a specific number of previous quarters. Use the Include current option to specify whether or not the period ends with the current quarter.
    - **Next Quarters**: Identifies a specific number of following quarters. Use the Include current option to specify whether or not the period starts from the current quarter.
    - **Quarter-to-date**: A period from the beginning of the current quarter and up to the current day.
- **Month**: Period duration is measured in months.
    - **Previous Month**: Identifies the entire previous month.
    - **This Month**: Identifies the entire current month.
    - **Next Month**: Identifies the entire next month.

- **Last Months**: Identifies a specific number of previous months. Use the Include current option to specify whether or not the period ends with the current month.
- **Next Months**: Identifies a specific number of the following months. Use the Include current option to specify whether or not the period starts with the current month.
- **Month-to-date**: A period from the beginning of the current month and up to the current day.

- **Day**: Period duration is measured in days.
  - **Previous Day**: Identifies the entire previous day.
  - **This Day**: Identifies the entire current day.
  - **Next Day**: Identifies the entire next day.
  - **Last Day**: Identifies a specific number of previous days. Use the Include current option to specify whether or not the period ends with the current day.
  - **Next Days**: Identifies a specific number of the following days. Use the Include current option to specify whether or not the period starts with the current day.
- **Custom**: A custom period. Allows you to specify a period with the custom boundaries



You can specify the following settings for the start/end boundaries:

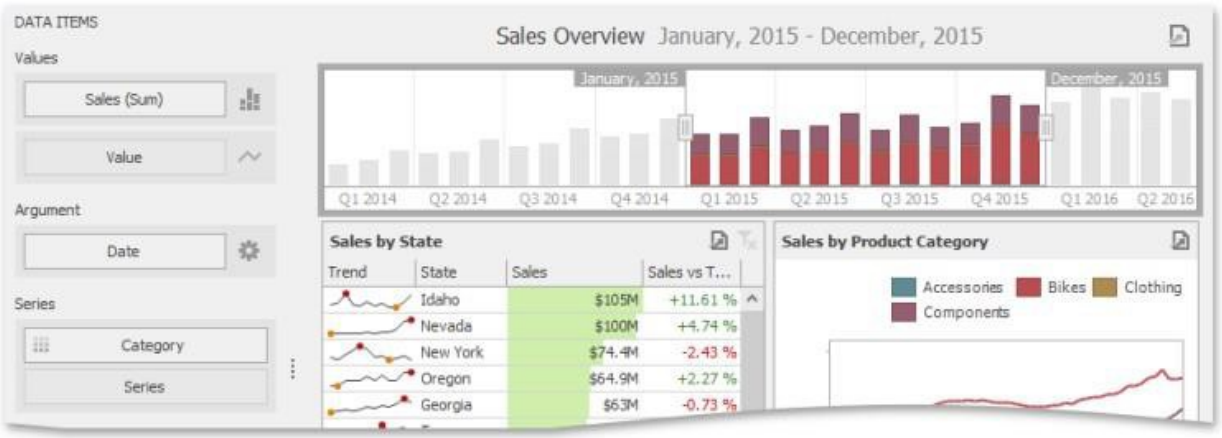
- **None**: The selection will begin from the start/end of the visible range.
- **Fixed**: Allows you to select a specific date value using the calendar.
- **Flow**: Allows you to select a relative date value. The Interval option specifies the interval between the current date and the required date. The Offset option allows you to set the number of such intervals.

Note that the Offset option can accept negative and positive values. Negative values correspond to dates before the current date, while positive values correspond to future dates.

Coloring

Certain dashboard items provide the capability to color dashboard item elements by associating dimension values/ measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item.

By default, the Range Filter dashboard item colors different measures and series dimensions by hue. The image below illustrates the Range Filter dashboard item whose series points corresponding to different categories are colored in different colors.



Images

The Dashboard Designer allows you to add images to a dashboard.

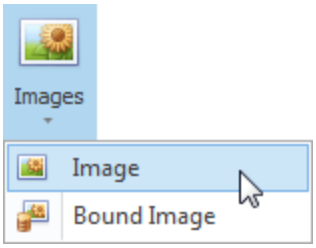
You can either add a static image or you can use the Bound Image as a detail item along with the Master Filtering feature.

Image Types Overview

The Dashboard Designer allows you to create two types of an Image dashboard item. The Image dashboard item allows you to add static images to a dashboard.

The **Bound Image** dashboard item can be bound to a set of images (for instance, stored in the database). You can use the Bound Image as a detail item along with the Master Filtering feature.

To create the required Image dashboard item, use the **Images** button in the Home ribbon tab.



Providing Images

Static Images

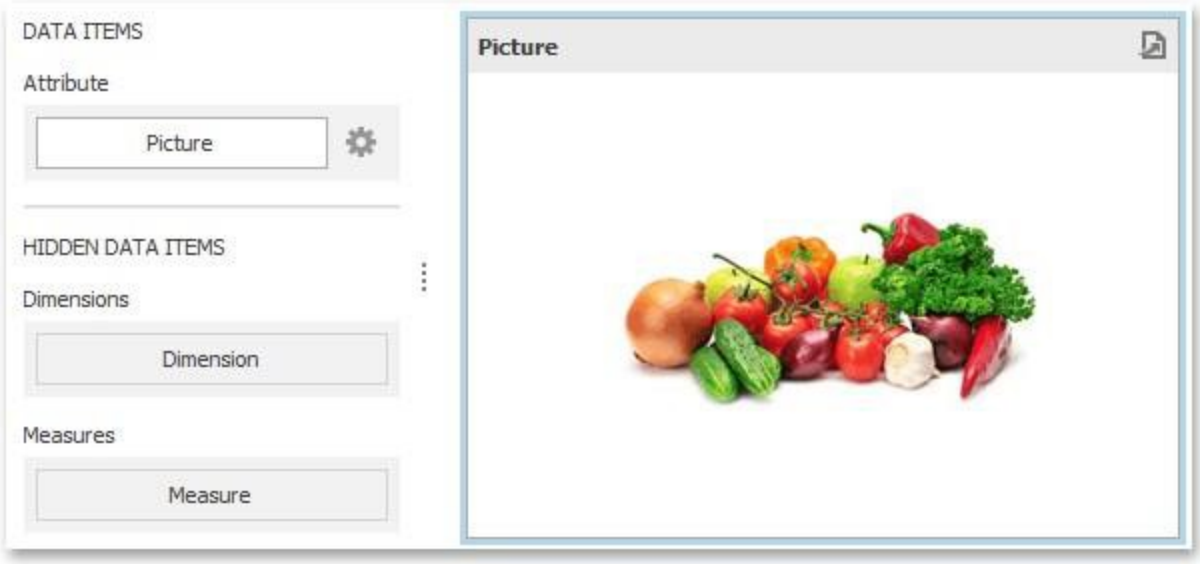
To load an image to a dashboard item, use the Load Image and Import Image buttons in the Ribbon, or commands in the context menu (Load Image and Import Image respectively).

These commands invoke the Open dialog, which allows you to locate the desired image.

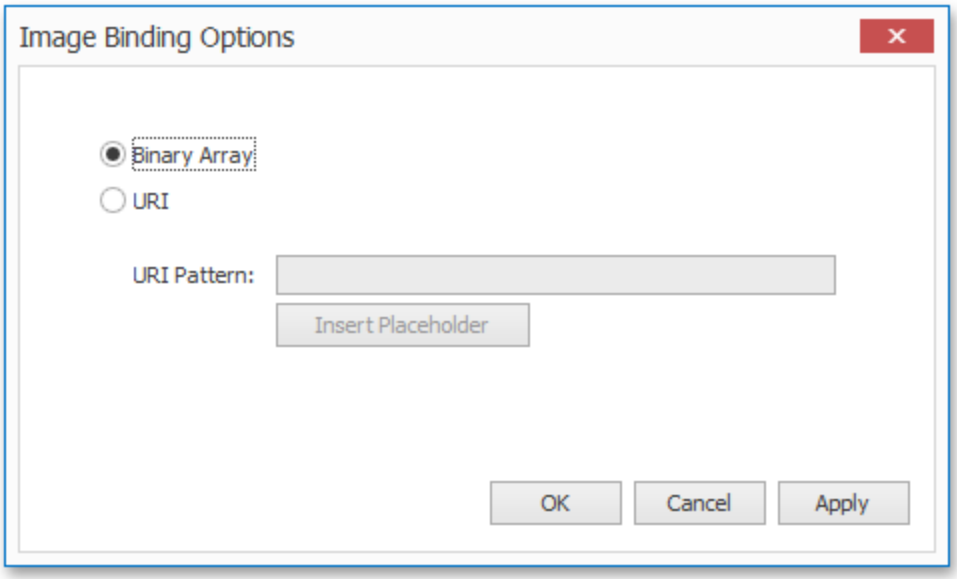
The Load Image command saves the path to the image in the dashboard definition, while the Import Image command saves the image itself.

Binding the Bound Image to Data

The Bound Image dashboard item provides the Attribute data section containing the corresponding placeholder.



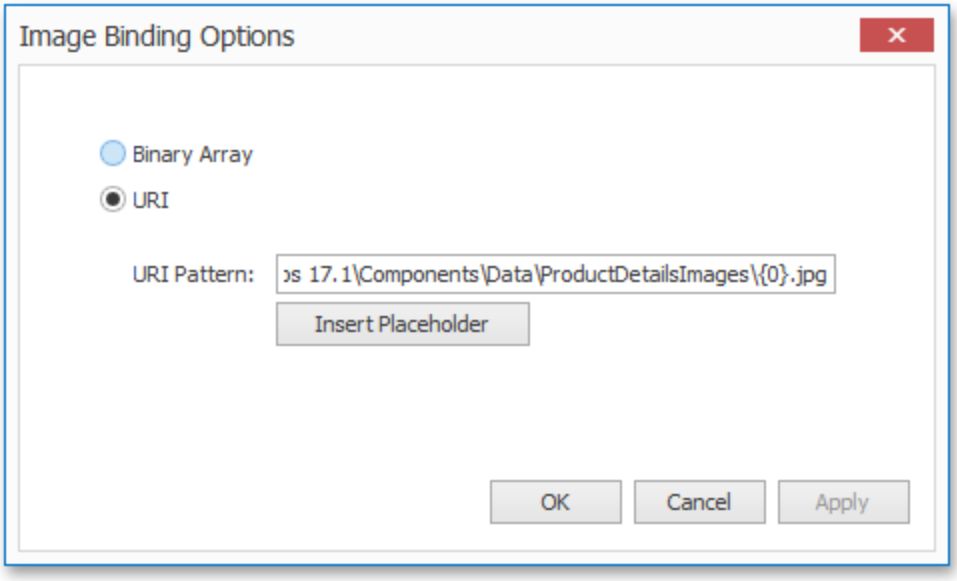
Specify the binding mode for the Bound Image by clicking the Options button (the icon) next to the Attribute placeholder. This invokes the following dialog:



This dialog provides two options:

- **Binary Array**: Use this mode if images are stored in the data source as byte arrays.
- **URI**: Use this mode to locate images accessible by a predefined URI. In this case, the data source field should return strings that are parts of URIs to these images.

For instance, the URI pattern in the form below specifies the path to the folder containing the required images.



Data source field values will be inserted to the position of the {0} placeholder. Thus, the Bound Image maps the current dimension value with the image placed at the specified URI.

Note that the Bound Image can display only a single image simultaneously. If Master Filtering is not applied to the Bound Image, it selects the displayed image in the following ways:

- In the Binary Array mode, the displayed image cannot be predicted precisely as a result of sorting limitations for the image/binary data types. Use the Master Filtering feature to display the specified image.
- In the URI mode, the Bound Image displays an image corresponding a first attribute value taking into account the attribute's sort order.

Interactivity

This document describes the features that enable interaction between the Bound Image and other dashboard items. These features include Master Filtering.

Master Filtering

The Dashboard allows you to use most of the data-aware dashboard items as a filter for other dashboard items (Master Filter).

Data displayed in the Bound Image dashboard item can be filtered by other master filter items. For instance, the Bound Image below shows an image corresponding to a category selected in the Grid dashboard item.

You can prevent the Bound Image from being affected by other master filter items using the Ignore Master Filters button on the Data ribbon tab.

Image Settings

You can customize the representation of Image and Bound Image dashboard items in different ways.

Image Alignment

To specify how the image is aligned within the dashboard item, use the Alignment group in the Design ribbon tab.

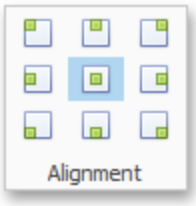
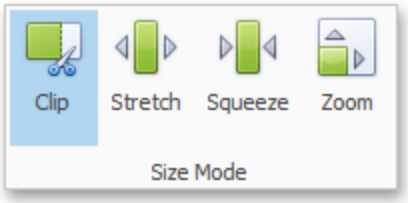


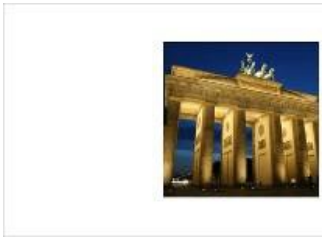
Image Size Mode

You can specify the image size mode that defines how the image fits within the dashboard item. To do this, use the Size Mode group in the Ribbon's Design tab.



The following table illustrates each size mode in two cases: when the image is smaller than the dashboard item, and vice versa.

Size Mode	Image Smaller than Dashboard Item	Image Larger than Dashboard Item	Description
Clipped			The image is clipped if it is larger than the Image dashboard item.

			
Stretch			The image is stretched or shrunk to fit the size of the Image dashboard item.
Squeeze			If the dimensions of the Image dashboard item exceed those of the image it contains, the image is shown in full-size. Other wise, the image is resized to fit the dimensions of the Image

			dashboard item.

Zoom			The image is sized proportionally (without clipping), so that it best fits the Image dashboard item. If the aspect ratio of the Image dashboard item is the same as the aspect ratio of the image, it will be resized to fit into the Image dashboard item while maintaining its aspect ratio. Otherwise, the image will be resized in the closest fitting dimension (either the height or the width), and the remaining dimension will be resized while maintaining the image' s aspect ratio.

Text Box

Use the Text Box dashboard item to display rich text within a dashboard.

You can either add a static text or you can use the Text Box as a detail item along with the Master Filtering or Filtering features.

Editing Text

To edit the text within the Text Box, click the Edit button in the ribbon's Design tab or use the corresponding item in the context menu.

This adds the Text Box Editor context category to the Dashboard Designer's ribbon and allows you to modify the content within the Text Box.

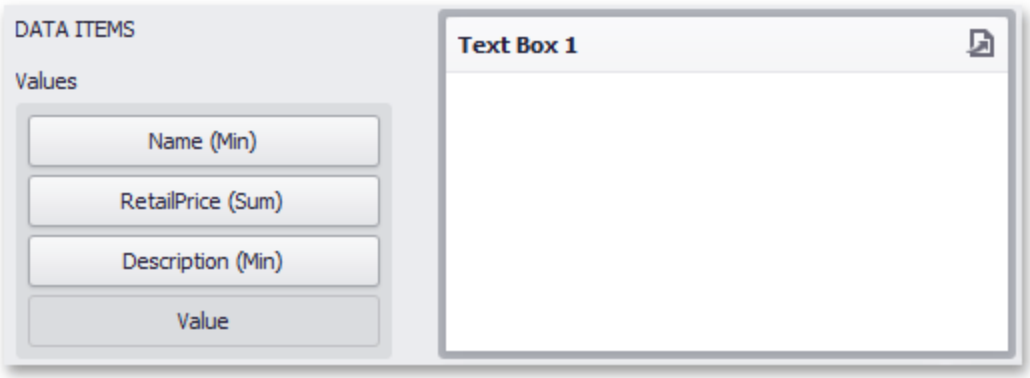
To learn how to edit the content within the Text Box, see Rich Text Editor. After you change the document, click **Edit** again to finish editing.

Note that the Text Box can be bound to data. To learn how to do this, see Providing Data.

Providing Data

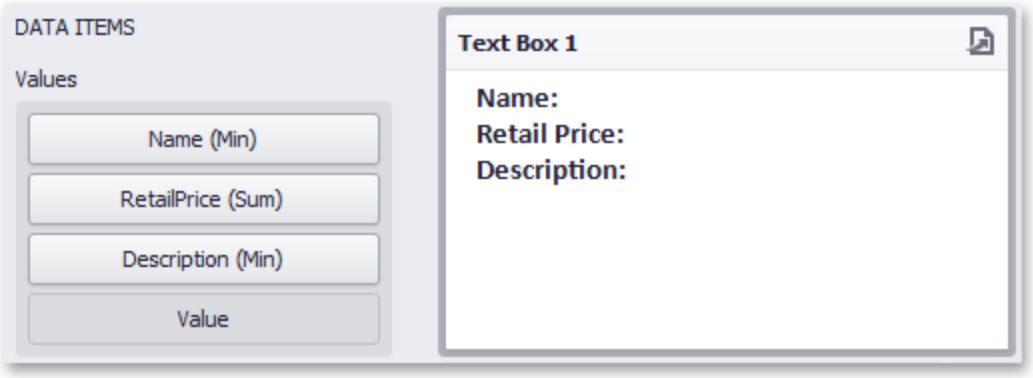
The Text Box dashboard item can be bound to data as other data-aware dashboard items. To do this, perform the following steps:

1. Drop the Name, RetailPrice and Description data source fields from the Products table to the Values section of the Text Box.

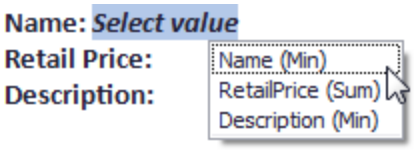


   Note that summary types of the created measures are Min, Sum and Min, respectively.

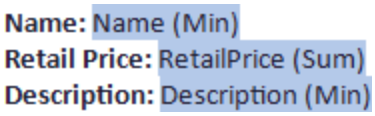
2. Click the Edit button in the Design ribbon tab and add the Name, RetailPrice and Description strings to the document.



3. Place the pointer next to Name, right-click the document and select Insert Field (or use the Insert Field button in the ribbon). Then, click the Select value placeholder and select the Name (Min) measure.



4. Perform the third step for Retail Price and Description.



5. Click the Edit button again to leave the editing mode. The Text Box will show data in the following way:

You can use this Text Box as a detail item along with the Master Filtering feature to filter data according to the selected product.

Interactivity

This document describes the features that enable interaction between the Text Box and other dashboard items. These features include Master Filtering.

Master Filtering

The Dashboard allows you to use most of the data-aware dashboard items as a filter for other dashboard items (Master Filter).

Data displayed in the Text Box dashboard item can be filtered by other master filter items. For instance, the Text Box below shows data corresponding to a product selected in the List Box dashboard item.

You can prevent the Text Box from being affected by other master filter items using the Ignore Master Filters button on the Data ribbon tab.

Image

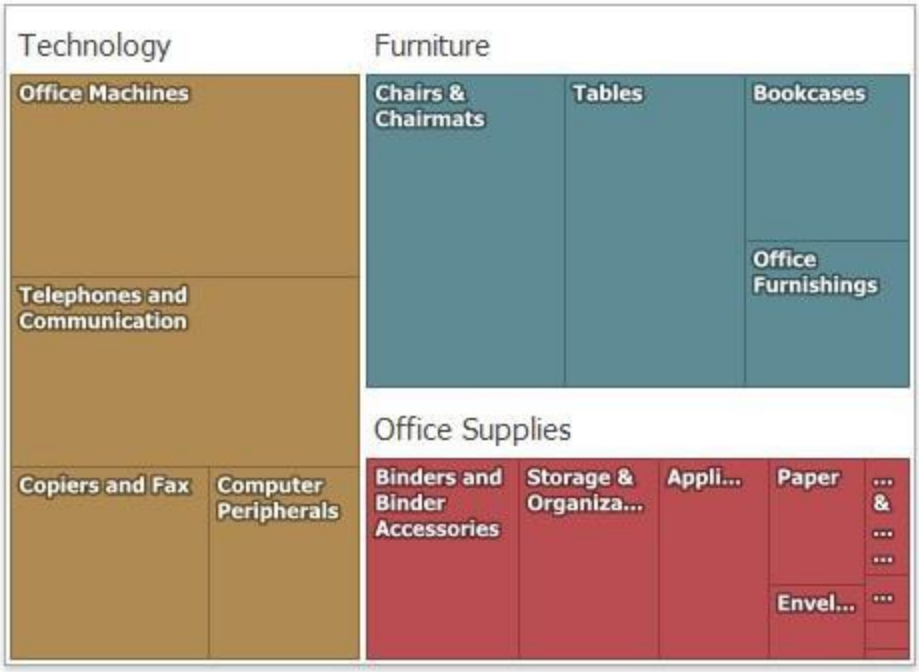
The Image dashboard item is used to display images within a dashboard.

Text Box

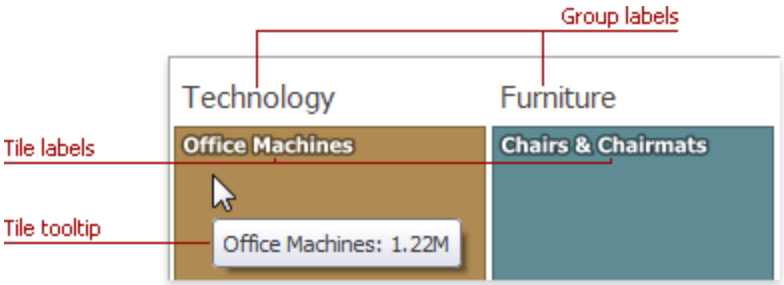
The Text Box dashboard item is used to display rich text within a dashboard.

Treemap

Use the Treemap dashboard item to visualize data in nested rectangles that are called tiles.



The Treemap displays labels that contain descriptions for tiles and groups, and provide tooltips with additional information.

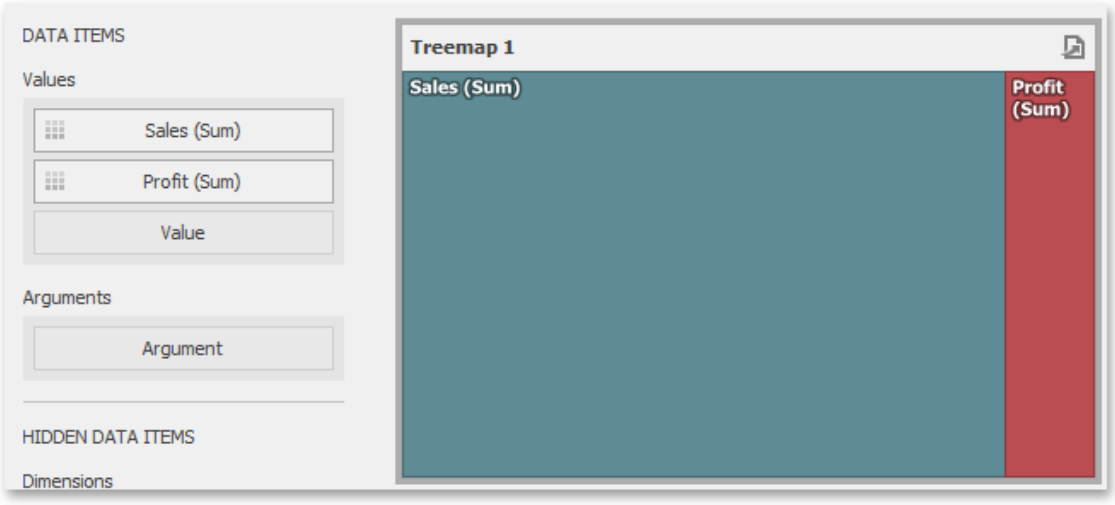


Providing Data

The Dashboard Designer allows you to bind various dashboard items to data in a virtually uniform manner. The only difference is in the data sections that the required dashboard item has.

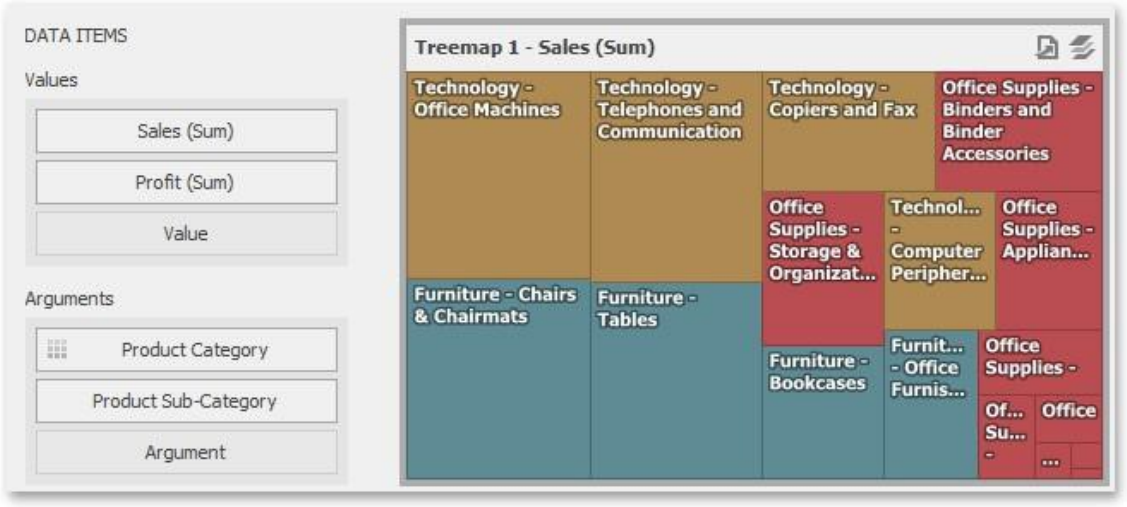
The Treemap dashboard item has the Values and Arguments data sections that provide numeric and discrete categorical data, respectively. The steps below provide the most common scenarios of binding a Treemap to data.

1. Drop the Sales and Profit fields to the Values section. The Treemap will draw two tiles whose sizes correspond to the Sales and Profit summary values.

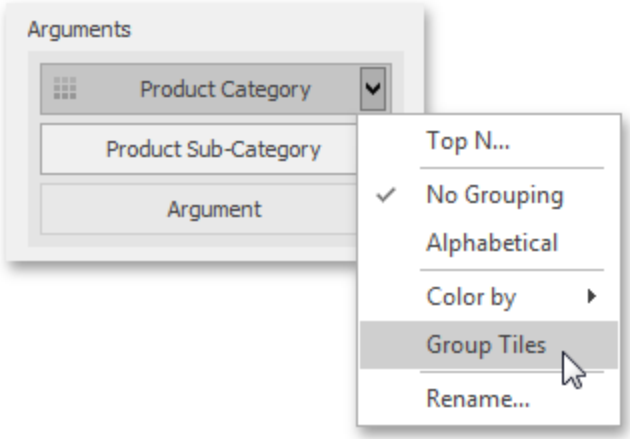


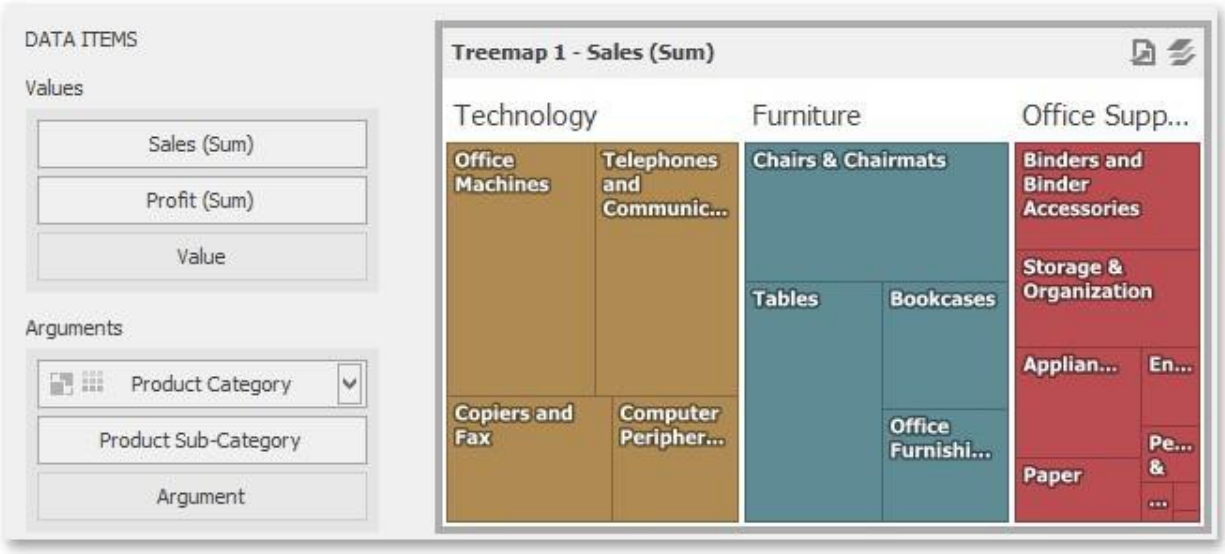
2. Drop the Product Category field to Arguments. The Treemap will create individual tiles for all categories. You can switch between Sales and Profit values by clicking the icon in the item's caption or you can use its context menu.

3. Drop the child Product Sub-Category field into Arguments. The Treemap will visualize all combinations of categories and corresponding sub-categories using individual tiles.



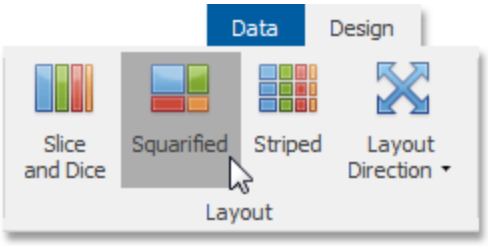
4. If the Arguments section contains several dimensions, you can group child tiles by values of the parent dimension. To group sub-categories inside corresponding categories, click the **Category Name** menu button and select **Group Tiles**. Sub-category tiles will be grouped into category groups.



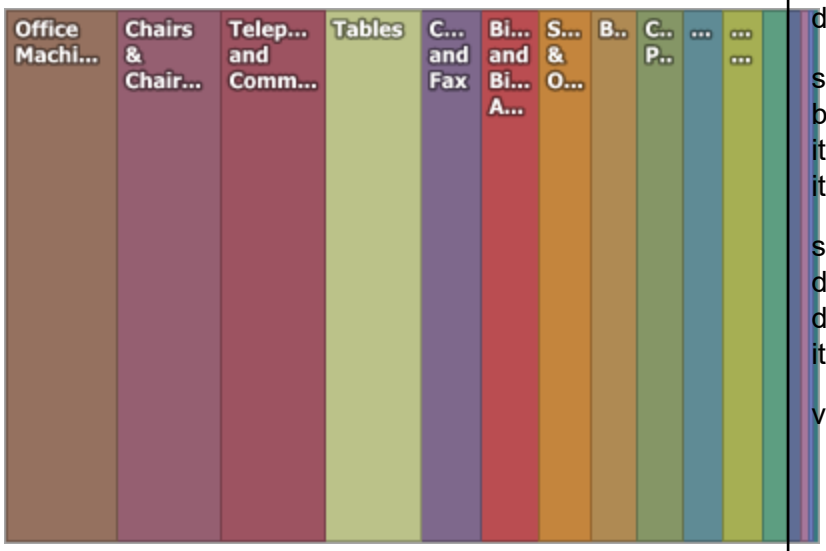


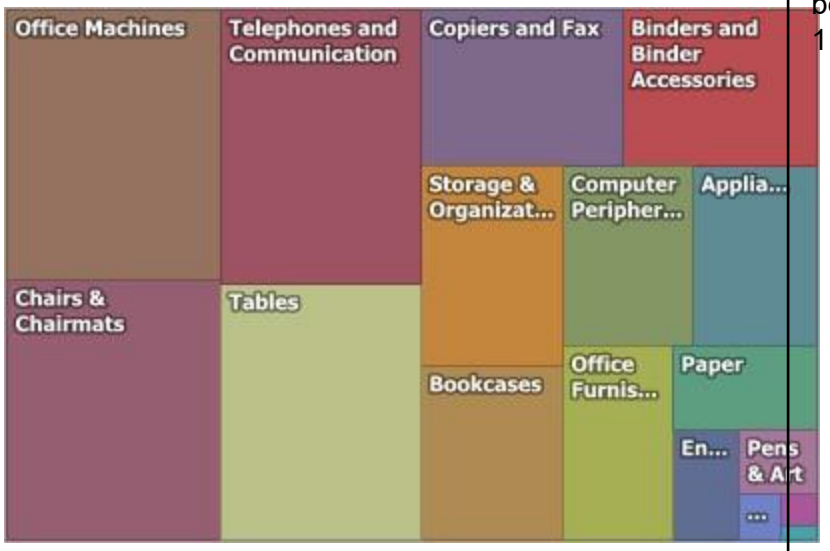
Layout

This topic describes how to change a layout algorithm used to arrange Treemap tiles. To do this in the Designer, use buttons from the Layout group placed in the Design ribbon tab.

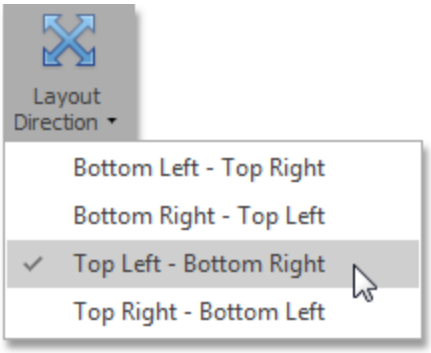


The following algorithms are available:

Algorithm	Example	Description
Slice and Dice		This layout algorithm divides the space between items, slicing it in the specified direction depending on item value.
Squarified		The Squarified algorithm arranges tiles so that their width/height ratio will

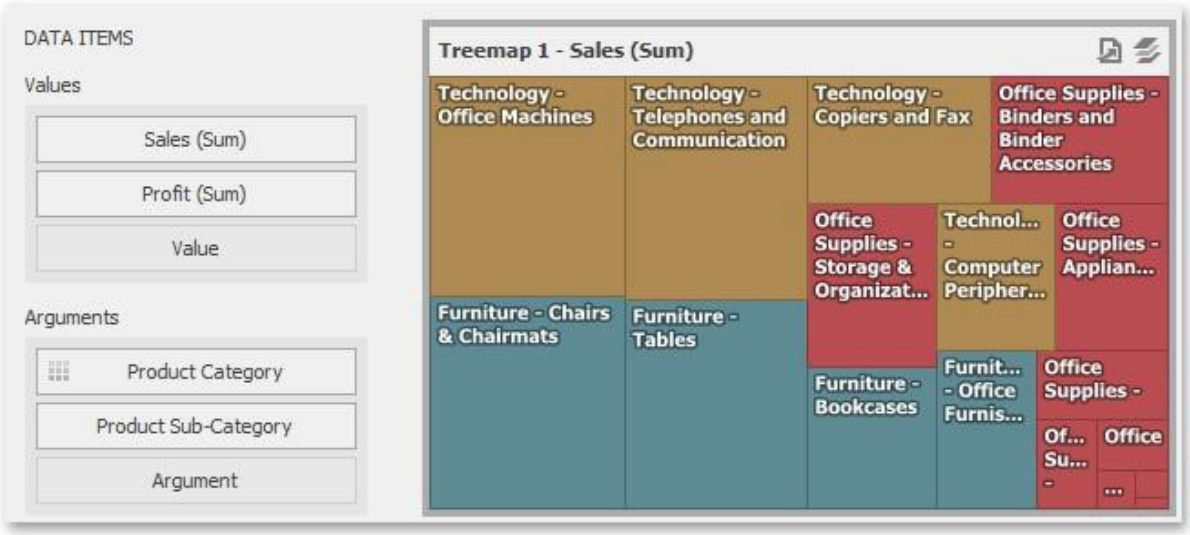
		be closer to 1.
Striped		This algorithm is a modified version of the Squarified algorithm. The difference here is that tiles are drawn side by side as columns or rows.

You can also set a layout direction to specify an arrangement of tiles depending on their sizes. To do this, click the **Layout Direction** button and select the required direction.

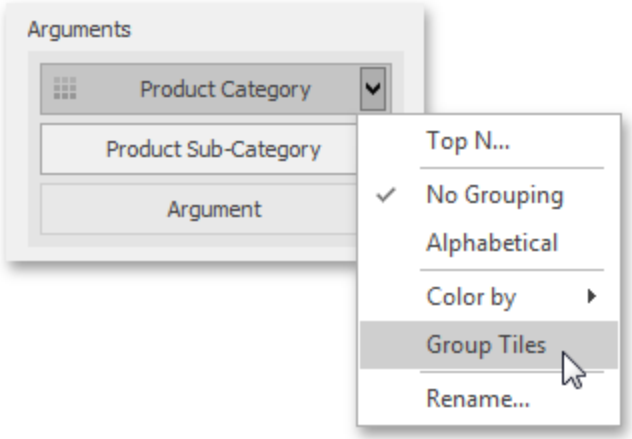


Grouping

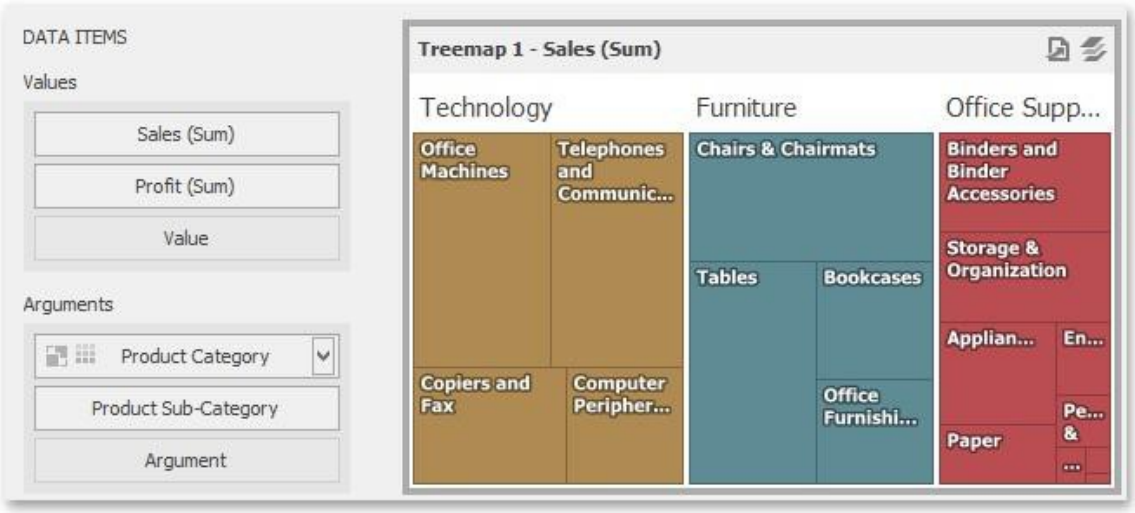
If you use several arguments in the Treemap, you can group tiles corresponding to child values by parent values. For instance, the following Treemap dashboard item displays combinations of categories and sub-categories.



To group sub-categories inside corresponding categories, click the Product Category menu button and select **Group Tiles**.



Product tiles will be grouped into category groups.



Note that the icon will be displayed within the Product Category dimension.

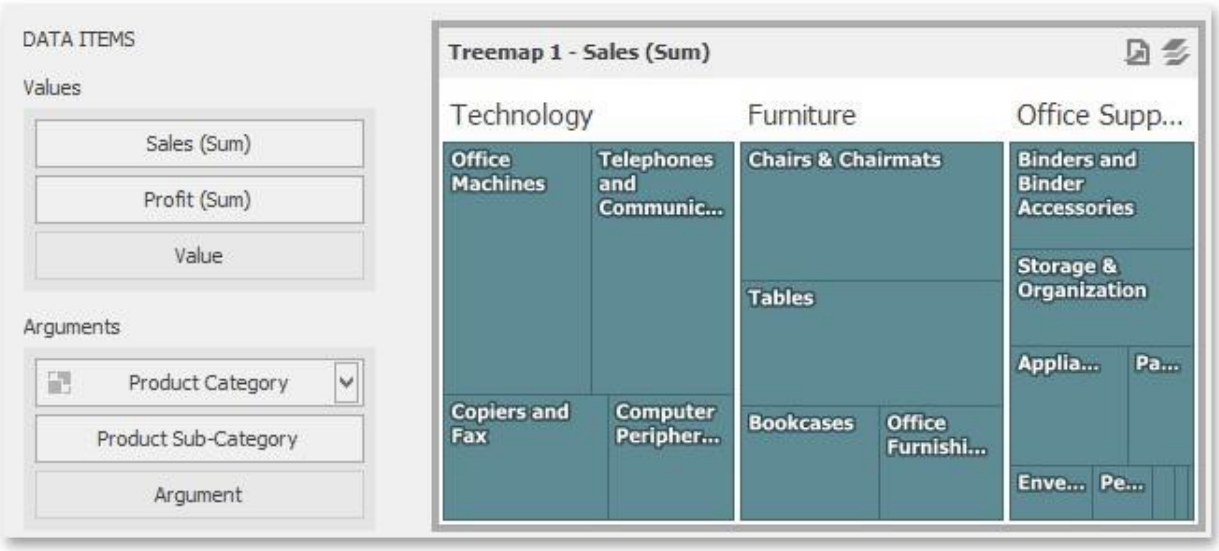
Coloring

Certain dashboard items provide the capability to color dashboard item elements by associating dimension values/ measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item.

By default, the Treemap dashboard item colors its tiles in the following way:

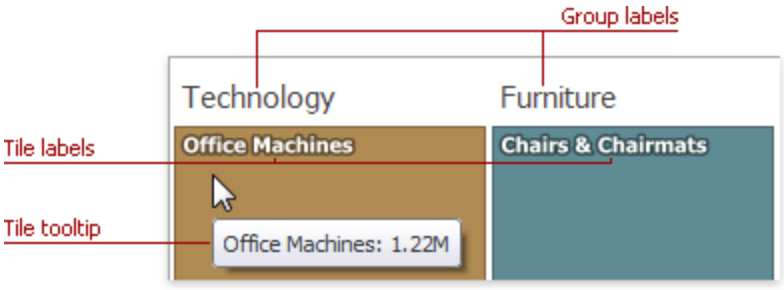
- If the Treemap dashboard item contains only measures (the **Values** section), values corresponding to different measures are colored by hue.
- If the Treemap dashboard item contains arguments (the **Arguments** section), values corresponding to the first argument are colored by hue.

If necessary, you can change the default behavior. For instance, the image below shows the Treemap dashboard item whose measures and argument values are painted with the same color.

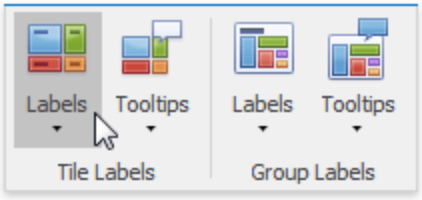


Labels

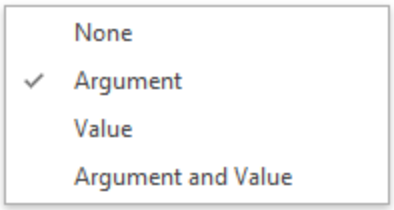
The Treemap displays labels that contain descriptions for tiles and groups, and provide tooltips with additional information.



You can specify which information should be displayed within tile and group labels separately. To do this, use the **Labels** and **Tooltips** buttons in the Design Ribbon tab.



Use buttons within the Tile Labels/Group Labels ribbon groups to manage tile and group labels, respectively. These buttons invoke the drop-down menu, which is similar for all buttons.



Filter Elements

Filter elements represent a special type of dashboard item that allows you to apply filtering to other dashboard items.

Filter Elements Overview

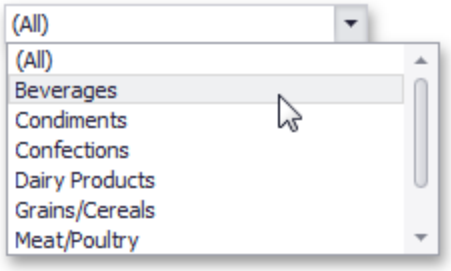
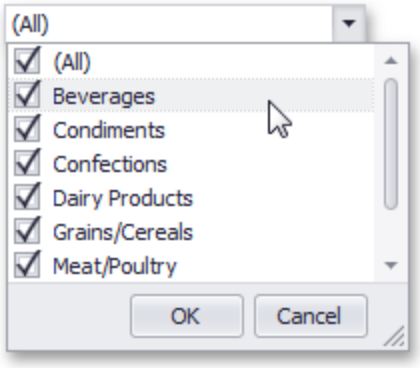
The Dashboard Designer allows you to create three types of filter elements that provide the capability to filter other dashboard items.

To add the required filter element to the dashboard, use the **Filter Elements** button in the Home ribbon tab.

Combo Box

The Combo Box dashboard item allows you to select a value(s) from the drop-down list. You can switch the combo box type in the ribbon Design tab.

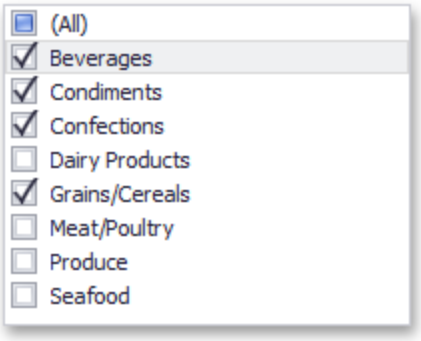
Combo Box Type	Example	Description

Standard		Allows you to select only a single value.
Checked		Allows you to select multiple values in the invoked drop-down list.

List Box

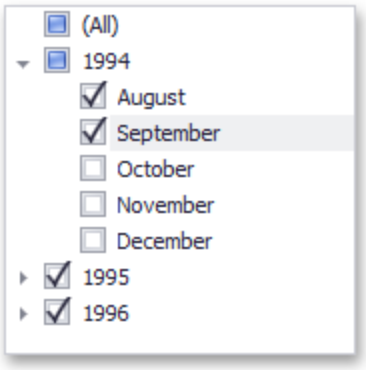
The List Box dashboard item allows you to select a value(s) from the list. You can switch the list box type in the ribbon Design tab.

List Box Type	Example	Description

Checked		Allows you to select multiple values in the list box.
Radio		Allows you to select only a single value in the radio group.

Tree View

The Tree View dashboard item displays values in a hierarchical way and allows you to expand/collapse nodes.



You can manage the initial expanded state of filter values using the Auto Expand button in the Design ribbon tab.

Providing Data

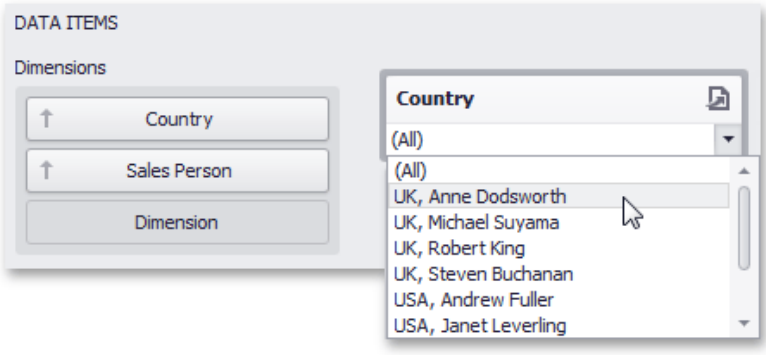
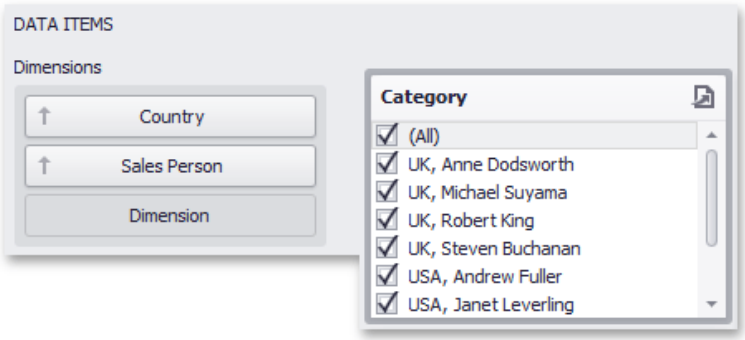
This topic describes how to bind filter elements to data using the Dashboard Designer.

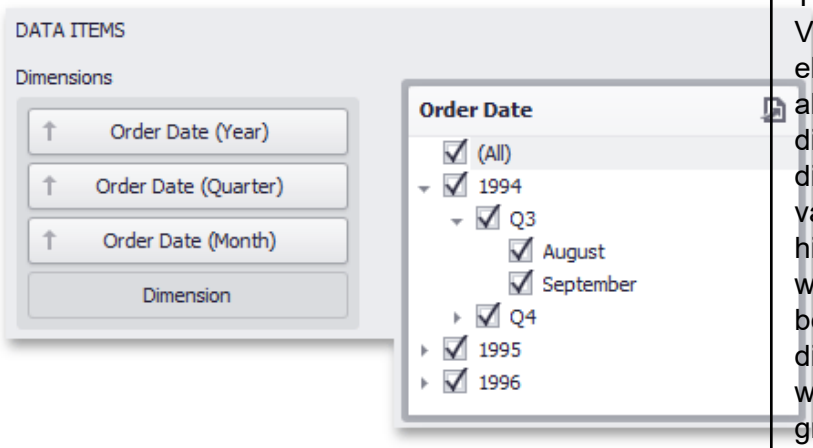
The Dashboard Designer allows you to bind various dashboard items to data in a consistent manner, the only difference being the data sections that these dashboard items comprise.

Binding Overview

All filter elements provide the Dimensions data section, which accepts dimensions used to provide filter values. To learn about the specifics of binding various filter elements to data, see the table below.

Dashboard Item	Data Sections	Description

Combo Box		The Combo Box filter element can contain several dimensions at the Dimensions data section. In this case, the drop-down list will contain combinations of dimension values.
List Box		The List Box filter element can contain several dimensions at the Dimensions data section. In this case, the list will contain combinations of dimension values.

Tree View		The Tree View filter element allows you to display dimension values in a hierarchical way. This can be the set of dimensions with different group intervals (for instance, Year/ Quarter/ Month) or the set of related dimensions (for instance, geographical data such as continents/ countries/ cities).

Interactivity

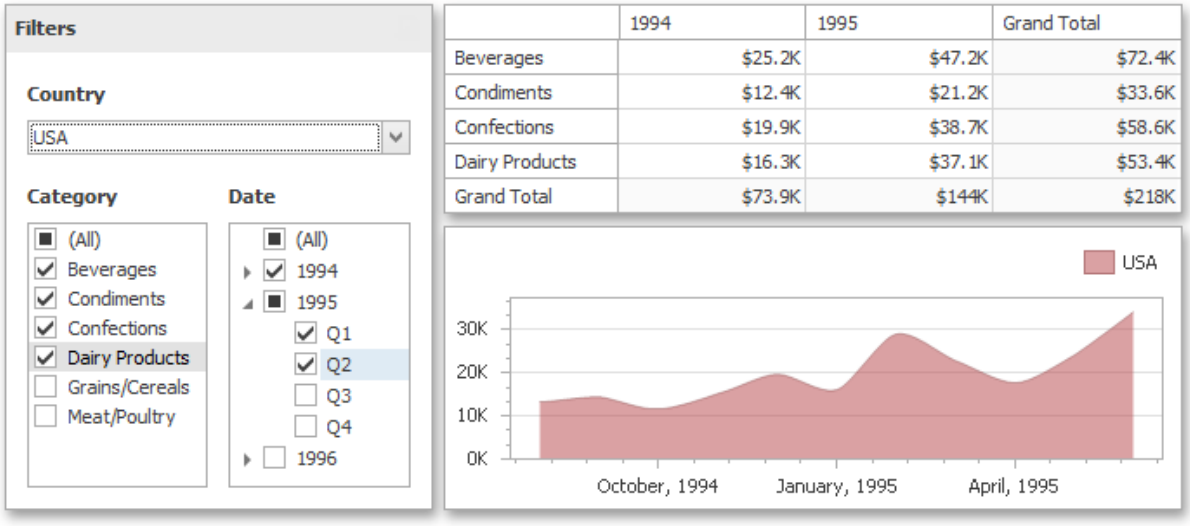
This document describes the filtering capabilities supported by filter elements. You can use filter elements to apply master filtering to other dashboard items or introduce hierarchical filtering by adding several connected filters.

Master Filtering

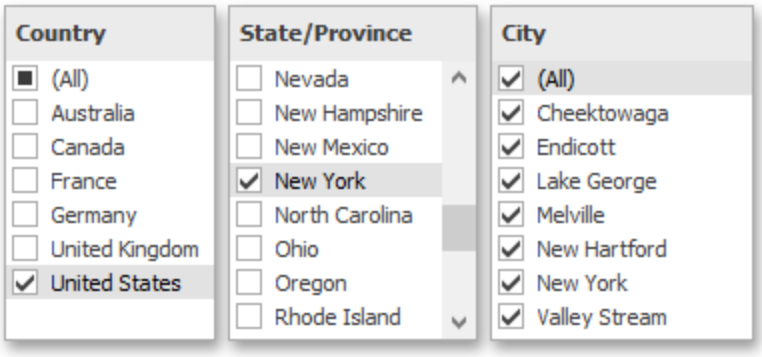
The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter).

Note that filter elements do not support Master Filter selection modes. You can switch the selection mode by changing the type of the required filter element.

Depending on the filter element type, you can select a value(s) to make other dashboard items display only data related to the selected value(s).



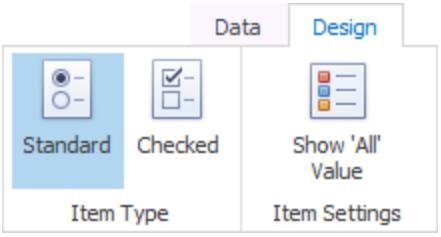
You can also create a set of related filter elements containing relevant filter values. For instance, in the image below, the State/Province filter element contains states related to the 'United States' value, while the City filter element contains cities related to the 'New York' value.



Disable the Ignore Master Filters option for the required filter element to allow applying filtering to this element.

Filter Element Options

Filter elements provide the capability to specify whether to enable the (All) option that allows you to apply filtering by all values. To do this, use the **Show 'All' Value** button in the Design ribbon tab.



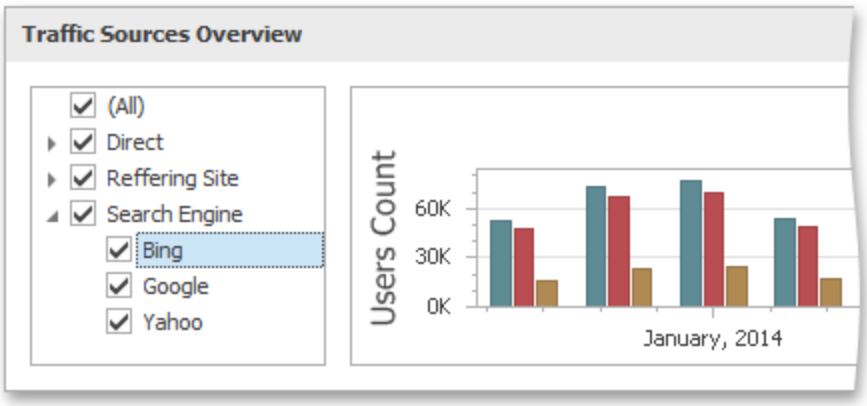
> **NOTE:** This capability is supported by the 'Standard' Combo Box and 'Radio' List Box filter elements.

Dashboard Item Group

The BI Dashboard provides the capability to combine dashboard items into a group. The dashboard item group serves two main purposes:

- Combine dashboard items within the dashboard into a separate layout group.
- Manage interaction between dashboard items within and outside the group.

For instance, you can combine related filter elements and data visualization dashboard items into a group.



Create a Group

To create a new group, use the **Group** button in the Home ribbon tab.

You can add dashboard items to a group and manage item layout using drag-and-drop.

Note that a dashboard item group cannot be added to another group.

Interactivity

The dashboard item group provides the capability to manage interactions between dashboard items within and outside the group.

The **Master Filter** button allows you to specify whether the current group allows you to filter external dashboard items using master filter items contained within the group. If this option is disabled, master filter items contained within the group can filter only dashboard items from this group.

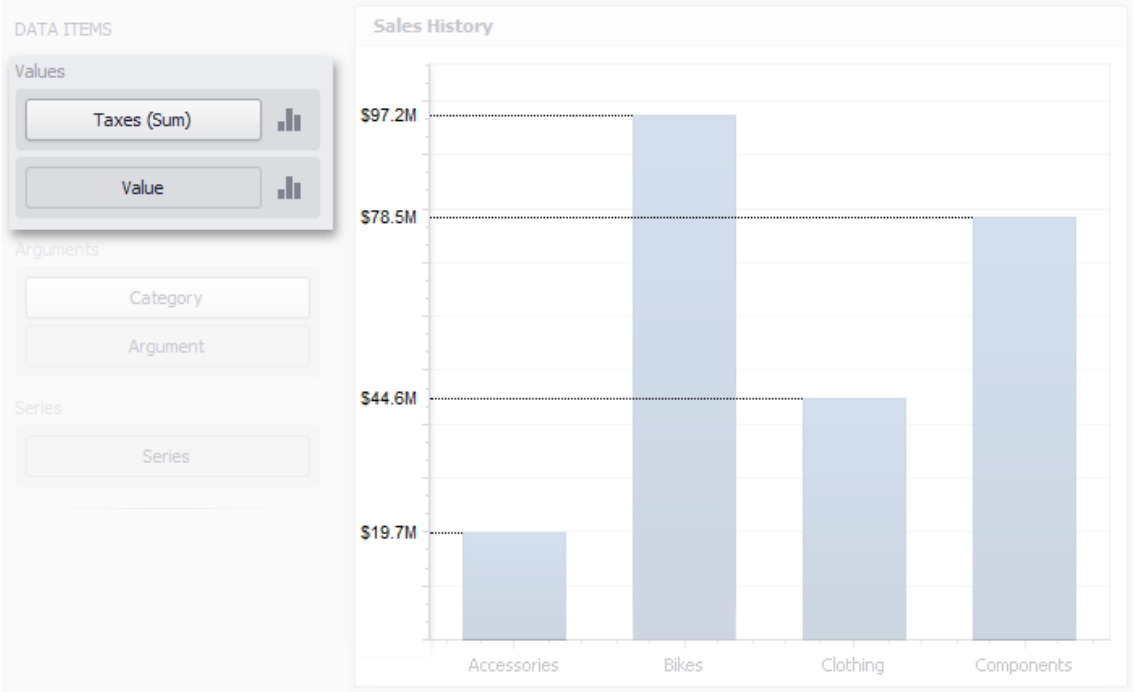
The **Ignore Master Filters** button allows you to isolate dashboard items contained within the group from being filtered using external master filter items.

Data Shaping

This section describes how to perform various data shaping operations (such as grouping, sorting and filtering) in the Dashboard Designer.

Summarization

To obtain numeric values that should be displayed within a dashboard item, Dashboard calculates a summary function against the specified measure.



This topic describes how to specify which summary function should be calculated against a particular measure.

Summary Function Types

The following summary functions are available:

Count: The number of values (excluding Null and DBNull values). This is the only summary type that can be calculated against non-numeric data.

Count Distinct: The number of distinct values.

Sum: The sum of the values.

$$Sum = \sum_{i} v_i$$

Min: The smallest value.

Max: The largest value.

Average: The average of the values.

$$\bar{v} = \frac{1}{n} \cdot \sum_i v_i \bar{v} = \frac{1}{n} \cdot \sum_i v_i$$

StdDev: An estimate of the standard deviation of a population, where the sample is a subset of the entire population.

$$\bar{v} = \frac{1}{n} \cdot \sum_i v_i$$

$$StdDev = \sqrt{\frac{1}{n-1} \cdot \sum_i (v_i - \bar{v})^2}$$

StdDevP: The standard deviation of a population, where the population is the entire data to be summarized.

$$StdDevp = \sqrt{\frac{1}{n} \cdot \sum_i (v_i - \bar{v})^2}$$

Var: An estimate of the variance of a population, where the sample is a subset of the entire population.

$$Var = \frac{1}{n-1} \cdot \sum_i (v_i - \bar{v})^2$$

VarP: The variance of a population, where the population is the entire data to be summarized.

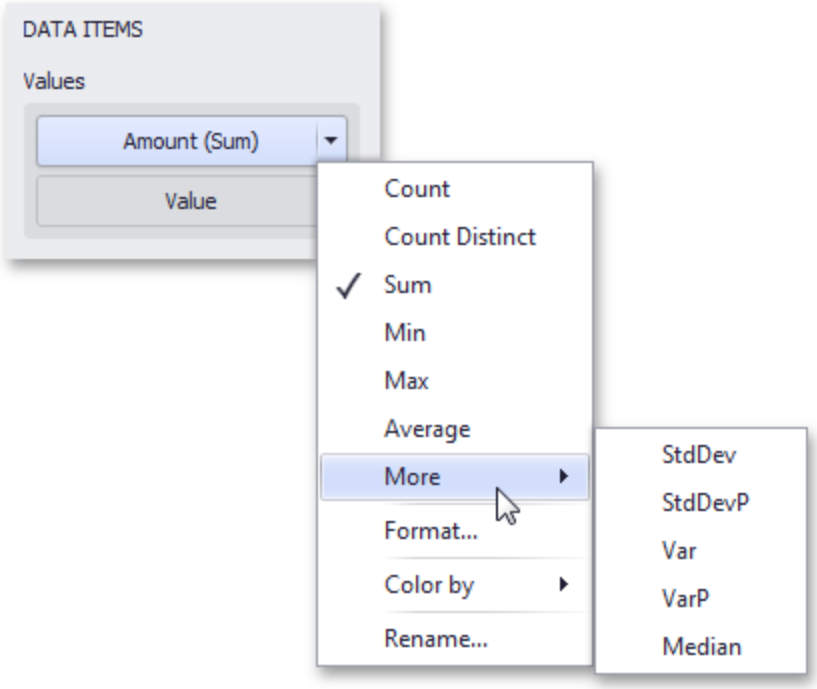
$$Varp = \frac{1}{n} \cdot \sum_i (v_i - \bar{v})^2$$

Median: The median of the values (excluding Null and DBNull values). A median is the number separating the higher half of a value range from the lower half.

Changing Summary Type

By default, Dashboard calculates Sum for numeric measures and Count for measures that contain another type of data.

You can change the summary function type for numeric measures. To do this in the Designer, invoke the data item menu and select the desired summary type. Less common summary types are organized in the More sub-menu.



Grouping

The Dashboard Designer allows you to group dimension values and display summaries for entire groups rather than individual values.

You can arrange dimension values in groups of different sizes by specifying the appropriate group interval. For instance, date-time values can be grouped by years, months, quarters, etc.

This topic lists the supported text and date-time group intervals, and describes how to change the group interval.

Text Group Intervals

String values support the following grouping intervals.

No Grouping	Each value is displayed "as is".
Alphabetical	Values are grouped alphabetically (e.g., A, B, C, ... Z).

Date-Time Group Intervals

Date-time values support the following group intervals.

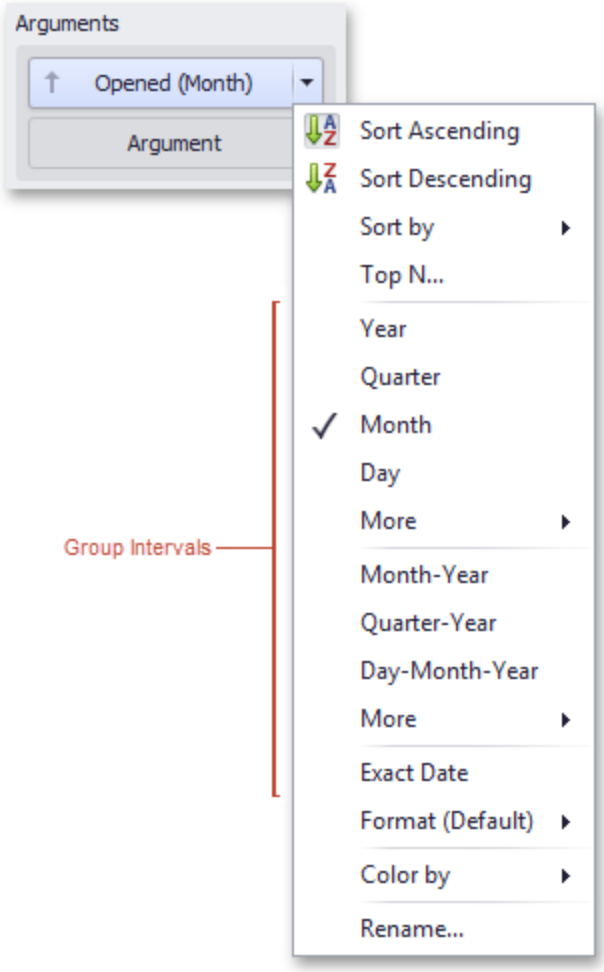
Examples in the table below are formatted using the default settings.

Group Interval	Description	Examples
Year	Valuesare groupedbytheyear.	2010,2011,2012
Quarter	Valuesare groupedbythequarter.	Q1,Q2,Q3,Q4
Month	Valuesare groupedbythemonth.	January,February,March,... December
Day	Valuesaregroupedbythedayof the month.	1,2,3,...31
Hour	Valuesare groupedbythehour.	0,1,2,...23
Minute	Valuesare groupedbytheminute.	0,1,2,...59
Second	Valuesare groupedbythesecond.	0,1,2,...59
Day of the Year	Valuesaregroupedbythedayof the year.	1,2,3,...365
Day of the Week	Valuesaregroupedbythedayof the week.	Sunday,Monday,Tuesday,... Saturday
Week of the Year	Valuesaregroupedbytheweekof the year.	1,2,3,...52
Week of the Month	Valuesaregroupedbytheweekof the month.	1,2,3,4,5

Month-Year	Valuesaregroupedbytheyear and month.	January2012,February2012,... December2012,January2013,...
Quarter-Year	Valuesaregroupedbytheyear and quarter.	Q32012,Q42012,Q12013,Q2 2013,...
Day-Month-Year	Valuesaregroupedby date.	3/4/2012,3/5/2012,3/6/2012,...
Date-Hour	Valuesaregroupedbydatewith the hour value.	3/4/20120:00AM,3/4/20121:00 AM, 3/4/2012 2:00 AM, ...
Date-Hour-Minute	Valuesaregroupedbydatewith the hour and minute values.	3/4/20120:00AM,3/4/20120:01 AM, 3/4/2012 0:02 AM, ...
Date-Hour-Minute-Second	Valuesaregroupedbydatewith the hour, minute and second values.	3/4/20120:00:00AM,3/4/2012 0:00:01AM,3/4/20120:00:02 AM, ...
Exact Date	Eachvalueisdisplayed"as is".	2009,Q22009,6/15/20091:45:30 PM, ...

Changing Group Interval

To specify the group interval in the Designer, invoke the data item menu and select the desired group interval. Less common group intervals are organized in the More submenus.

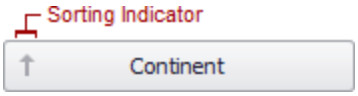


Sorting

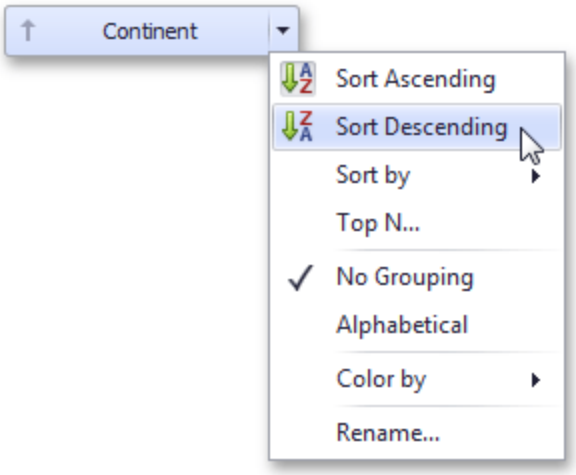
The Dashboard Designer allows you to easily change the sort order of values within a dashboard item. You can also enable sorting by parameter values.

Changing Sort Order

The sort order of dimension values is indicated with an arrow.

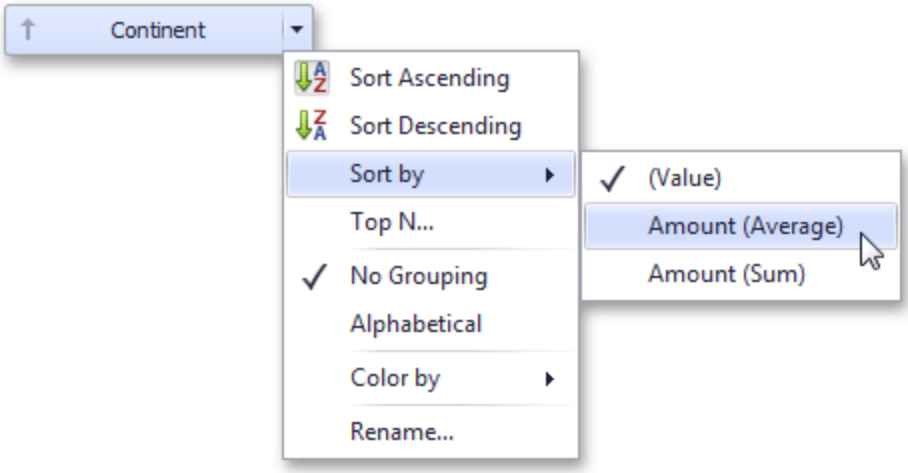


To change the sort order in the Designer, click the data item. You can also toggle sorting from the data item menu.



Sorting by Measure Values

Dashboard allows you to sort dimension values by summary values calculated for a specific measure. To enable sorting by measure in the Designer, use the Sort by submenu in the dimension's menu.



You can also sort dimension values by the values of hidden measures.

Filtering

The Dashboard allows you to filter a query of the SQL Data Source or apply filtering to a specific data-aware dashboard item.

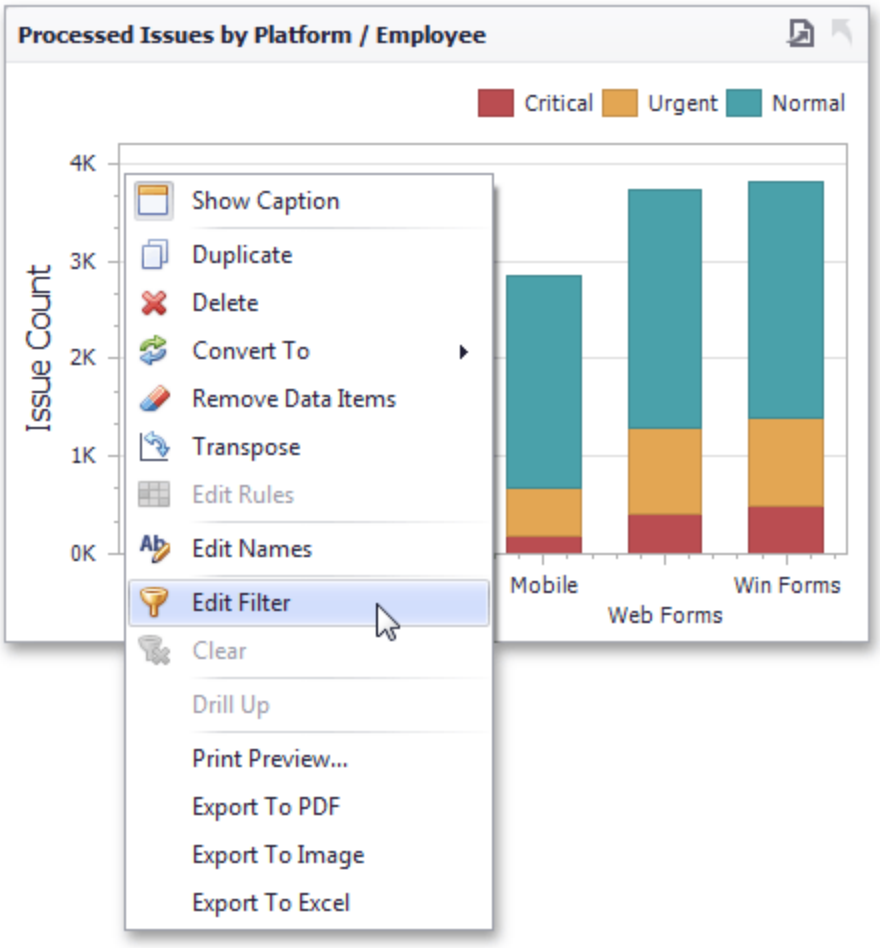
This topic describes how to enable and reset filtering.

Apply Filtering

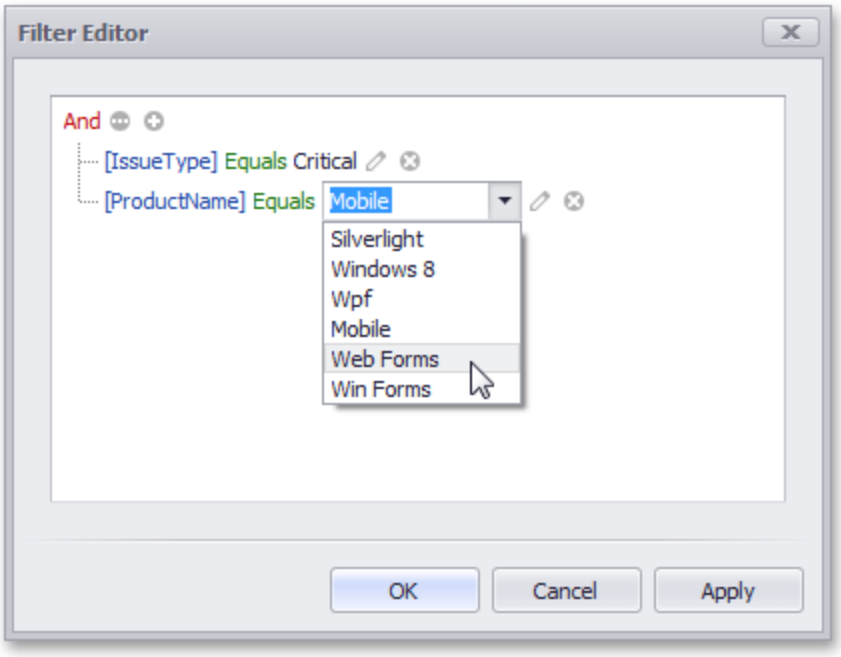
To configure filtering, select the target dashboard item and do one of the following:

- If you are using a Ribbon menu, click the **Edit Filter** button in the Data tab.

- Right-click a dashboard item and select Edit Filter from its context menu.



This will invoke the **Filter Editor** dialog. Use this dialog to build filter criteria with a convenient tree-like interface.



You can use hidden dimensions within the Filter Editor dialog, allowing you to filter data based on their values.

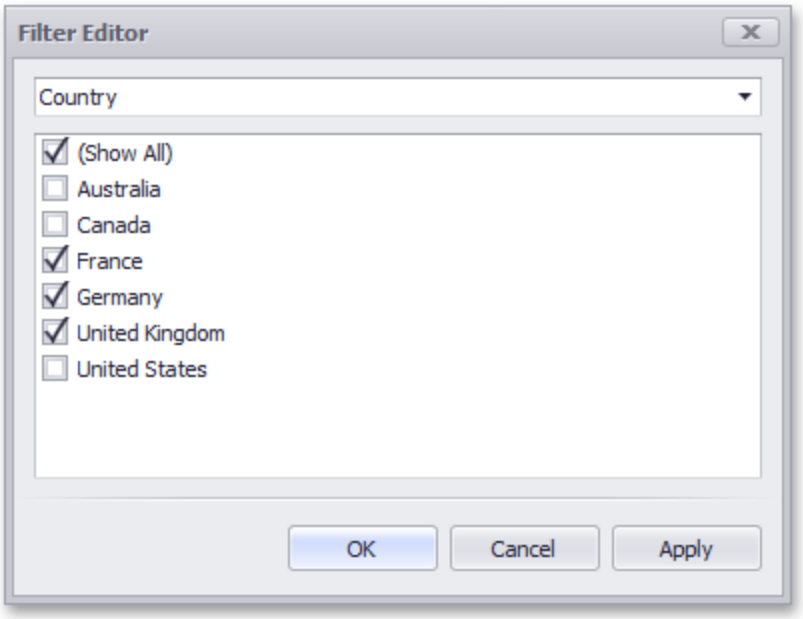
Clear Filtering

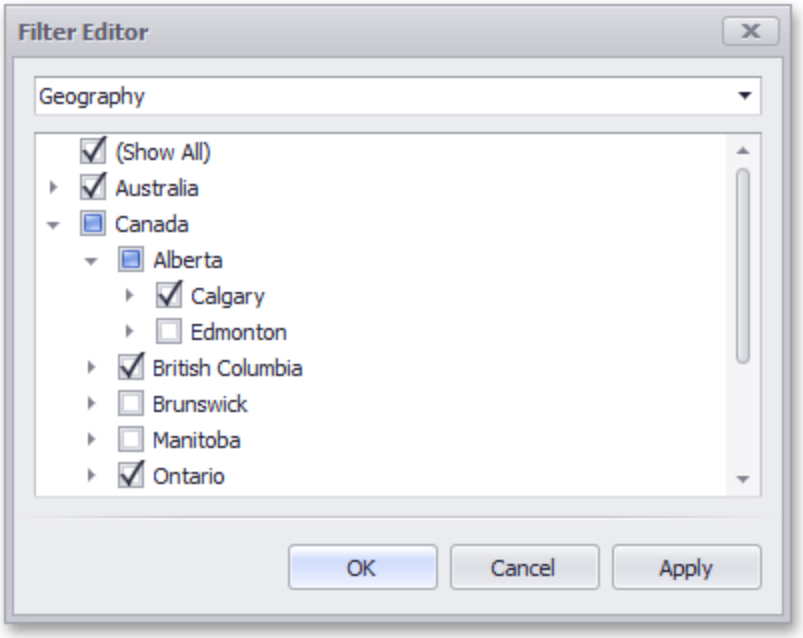
To clear filtering in the Designer, select the target dashboard item and do one of the following:

- If you are using a Ribbon menu, click the **Clear** button in the Data tab.

- Right-click a dashboard item and select Clear from its context menu.

For hierarchies, a tree is displayed instead, allowing you to filter individual values at any hierarchy level.

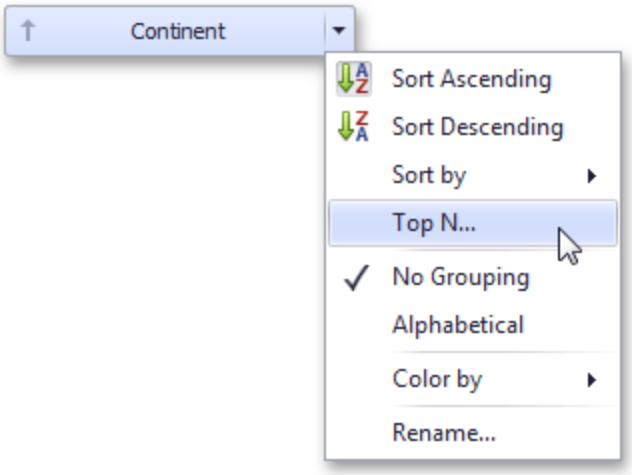




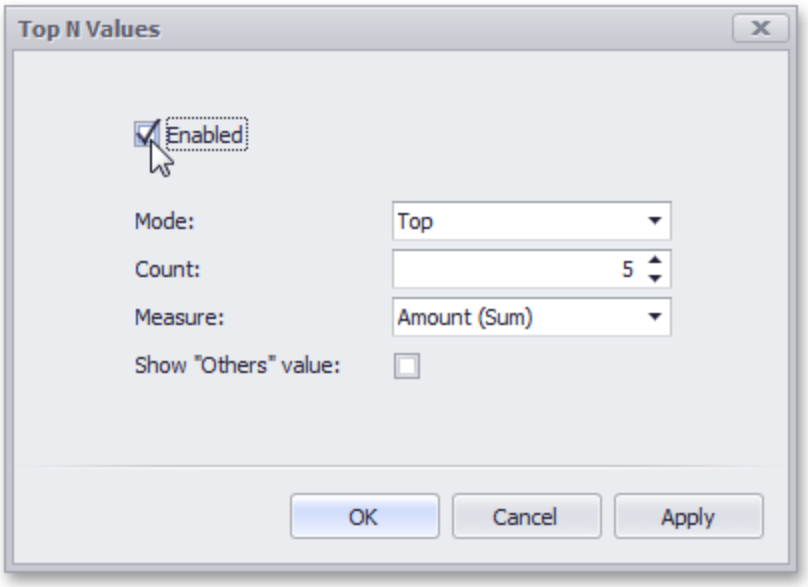
Top N

The Top N feature allows you to display only a limited number of values that correspond to the highest or lowest values of a particular measure.

To display the top values in a dimension, select **Top N** from the data item menu.



This invokes the Top N Values dialog.



In this dialog, check the **Enabled** check box and specify the following settings.

Mode	Specifies whether top or bottom values should be displayed.
Count	The number of values to be displayed.
Measure	The parameter that will determine the top or bottom value.
Show "Others" Value	If enabled, all values that are not the top/bottom values are consolidated in the "Others" value.

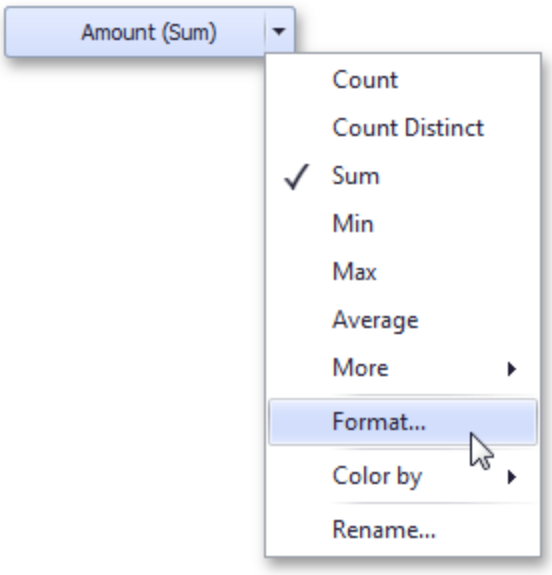
You can use the hidden measure as a parameter that will determine the top or bottom value.

Formatting Data

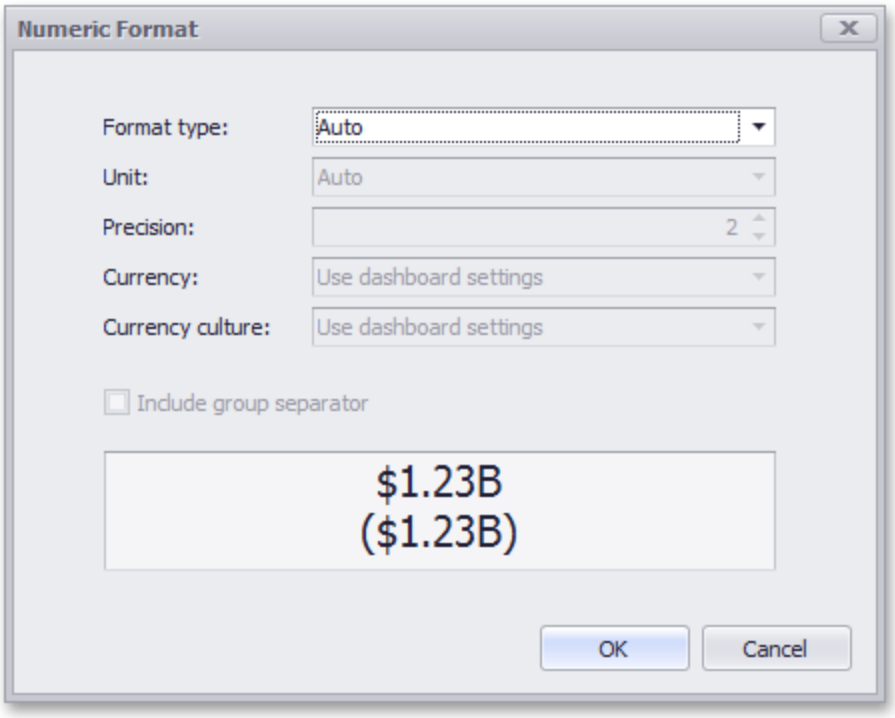
Dashboard allows you to customize various data format settings for numeric and date-time values.

Formatting Numeric Values

To specify a format for numeric values, select **Format** from the data item menu.



This invokes the Numeric Format window.



In the Format type field, select the required format type.

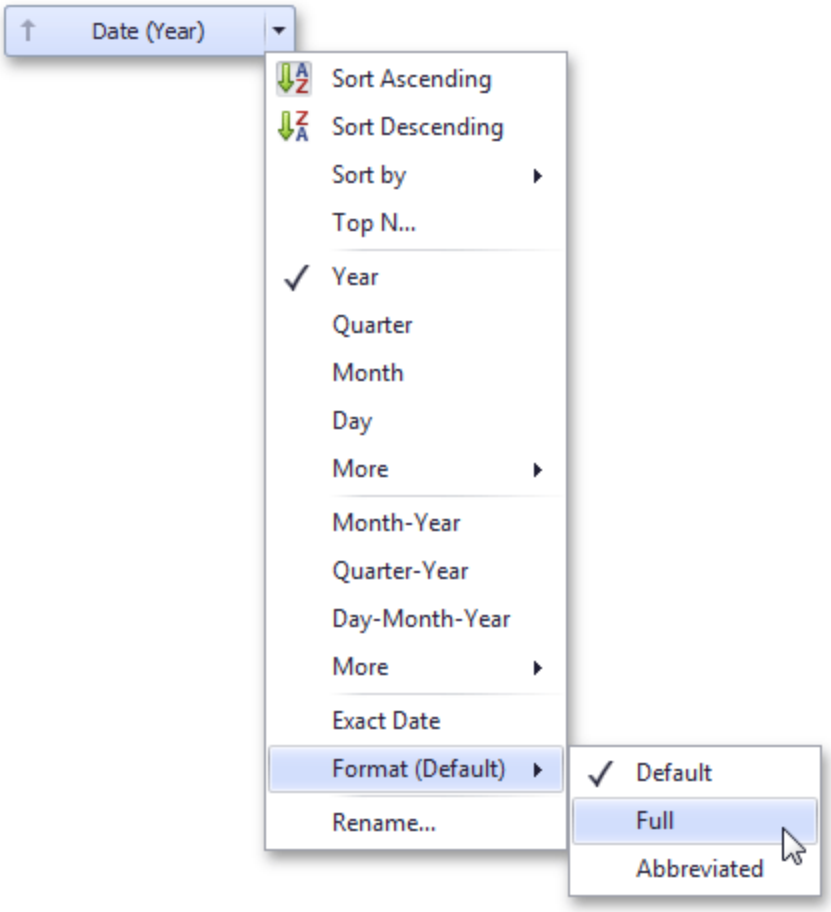
Auto	Format settings are automatically determined based on the data type.
General	Converts a number to the most compact of either fixed-point or scientific notation, depending on the type of the number.
Number	Converts a number to a string of the "-d,ddd,ddd. ddd" form where "-" indicates a negative number symbol (if required), "d" indicates a digit (0-9), "," indicates a group separator, and "." indicates a decimal point symbol.
Currency	Converts a number to a string that represents a currency amount. To learn about currency formatting specifics, see the Currency Formatting Specifics section of this document.
Scientific	Converts a number to a string of the "-d.dddE+ddd" or "-d.ddde+ddd" form where each "d" indicates a digit (0-9).
Percent	Multiplies a number by 100 and converts it to a percentage string.

Other format settings are in effect for only specific format types.

Setting	Description	Format Types
Unit	The unit to which values should be converted.	Number, Currency
Precision	The number of fractional digits that should be displayed.	Scientific, Percent
Currency	Defines the currency sign and format settings that should be used to display currency values. To learn about currency formatting specifics, see the Currency Formatting Specifics section of this document.	Currency
Currency culture	For currencies used in a region with several cultures, specifies the culture that defines format settings.	Currency
Include group separator	Specifies whether or not separators should be inserted between digit groups.	Number, Currency, Percent

Formatting Date-Time Values

To specify a format for date-time values, use the Format submenu in the data item menu.



This submenu lists the available format types that depend on the selected group interval.

Specific group intervals do not have format options. This means that corresponding values can only be presented in a single manner. The Format submenu is not displayed for such group intervals.

The following list shows format types by group interval:

- **Year**
  - **Full**: The full year pattern (Example - 6/15/2017 1:45:30 PM -> 2017 (en-US)).

    Abbreviated: The year from 00 to 99 (Example - 6/15/2017 1:45:30 PM -> 17 (en-US)).
- **Quarter**

- **Full**: The full quarter pattern (Example: 6/15/2017 1:45:30 PM -> Q2 (en-US)).
- **Numeric**: The quarter from 1 through 4 (Example: 6/15/2017 1:45:30 PM -> 2 (en-US)).

- **Month**
  - **Full**: The full name of the month (Example: 6/15/2017 1:45:30 PM -> June (en-US)).
  - **Abbreviated**: The abbreviated name of the month (Example: 6/15/2017 1:45:30 PM -> Jun (en-US)). N u m eric - The month from 1 through 12 (Example: 6/15/2017 1:45:30 PM -> 6 (en-US)).
- **Hour**
  - **Long**: Long hour pattern, 12-hour format (Example: 6/15/2017 1:45:30 PM -> 1:00 PM).

    Short: Short hour pattern, 24-hour format (Example: 6/15/2017 1:45:30 PM -> 13).
- **Day of Week**
  - **Full**: The full name of the day of the week (Example: 6/15/2017 1:45:30 PM -> Monday (en-US)).
  - **Abbreviated**: The abbreviated name of the day of the week (Example: 6/15/2017 1:45:30 PM -> Mon (en-US)).
  - **Numeric**: The day of the week from 1 through 7 (Example: 6/15/2017 1:45:30 PM -> 2 (en-US)).
- **Day-Month-Year**
  - **Long**: Long date pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 (en-US)).

    Short: Short date pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 (en-US)).
- **Date-Hour**
  - **Long**: Long date pattern, long hour pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:00 PM (en-US)).

- **Short**: Short date pattern, long hour pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:00 PM (en-US)).
- **Time only**: Long hour pattern (Example: 6/15/2017 1:45:30 PM -> 1:00 PM (en-US)).

- **Date-Hour-Minute**
  - **Long**: Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:45 PM (en-US)).
  - **Short**: Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:45 PM (en-US)).
  - **Time only**: Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:45 PM (en-US)).
- **Date-Hour-Minute-Second**
  - **Long**: Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:45:30 PM (en-US)).
  - **Short**: Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:45:30 PM (en-US)).
  - **Tim e only**: Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:45:30 PM (en-US)).

The list below illustrates format types related to the Exact Date group interval:

- **Year**
  - **Full**: The full year pattern (Example: 6/15/2017 1:45:30 PM -> 2017 (en-US)).
  - **Abbreviated**: The year from 00 to 99 (Example: 6/15/2017 1:45:30 PM -> 17 (en-US)).
- **Quarter**
  - n /a - The default year and full quarter pattern (Example: 6/15/2017 1:45:30 PM -> Q2 2017 (en-US)).
- **Month**

- n /a - The default year pattern and the full name of the month (Example: 6/15/2017 1:45:30 PM -> June, 2017 (en-US)).

- **Day**
  - **Long**: Long date pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 (en-US)).
  - **Short**: Short date pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 (en-US)).
- **Hour**
  - **Long**: Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:00 PM (en-US)).
  - **Short**: Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:00 PM (en-US)).
  - **Time only**: Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:00 PM (en-US)).
- **Minute**
  - Long: Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:45 PM (en-US)).
  - Short: Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:45 PM (en-US)).
  - Tim e only: Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:45 PM (en-US)).
- **Second**
  - **Long**: Long date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> Monday, June 15, 2017 1:45:30 PM (en-US)).
  - **Short**: Short date pattern, long time pattern (Example: 6/15/2017 1:45:30 PM -> 6/15/2017 1:45:30 PM (en-US)).

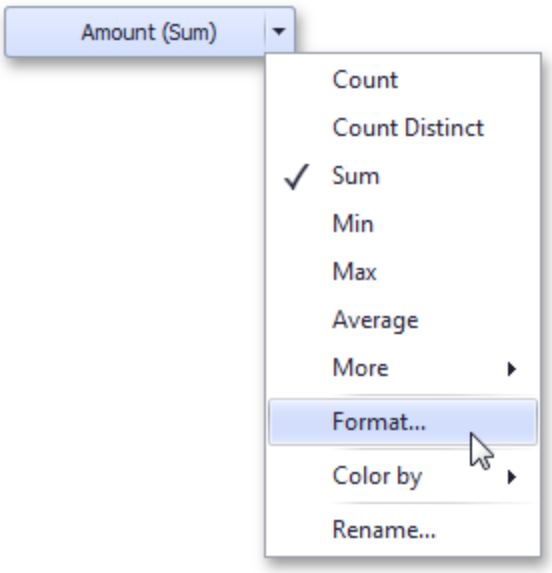
    Time only: Long time pattern (Example: 6/15/2017 1:45:30 PM -> 1:45:30 PM (en-US)).

Currency Formatting Specifics

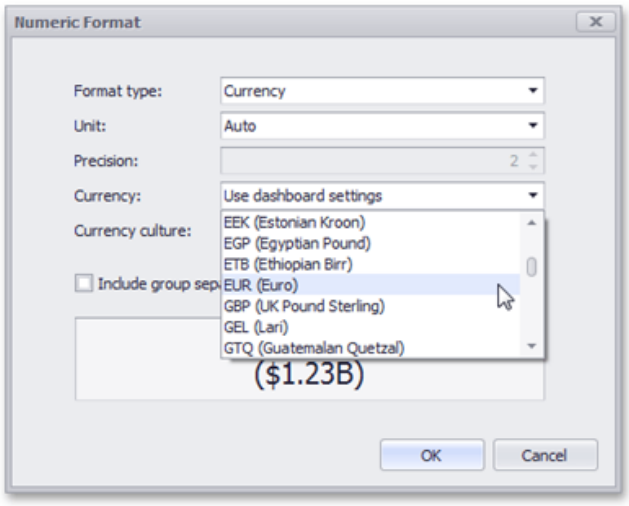
The Dashboard allows you to specify a currency format at two levels: for the entire dashboard and for individual Data Items.

Data Item Currency

To specify which currency to use for a particular data item, select Format from the data item menu.



In the Numeric Format dialog, select **Currency** in the Format type field and use the Currency combo box to select the required currency.



This option only affects the way values are displayed. The Dashboard does not convert monetary amounts from one currency to another.

For regions with several cultures, you can also select the culture that will be used to format currency values.

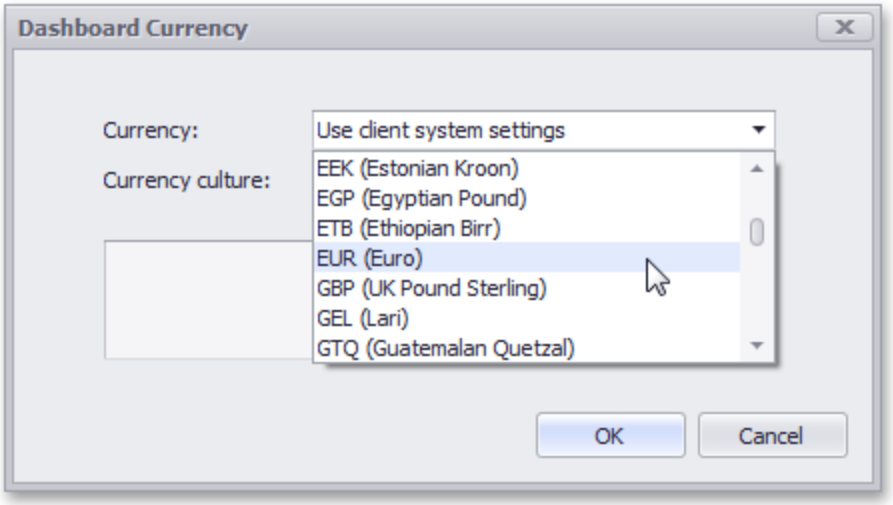
You can also apply the default dashboard currency by selecting **Use dashboard settings** in the Currency field.

Dashboard Currency

You can also specify the default currency for the dashboard. This setting will be applied to dashboard items that have no currency defined.

To set the dashboard currency, click the **Currency** button in the Ribbon.

This invokes the Dashboard Currency window. In this window, select the required currency using the Currency combo box.



This option only affects the way values are displayed. The Dashboard does not convert monetary amounts from one currency to another.

For regions with several cultures, you can also select the culture that will be used to format currency values.

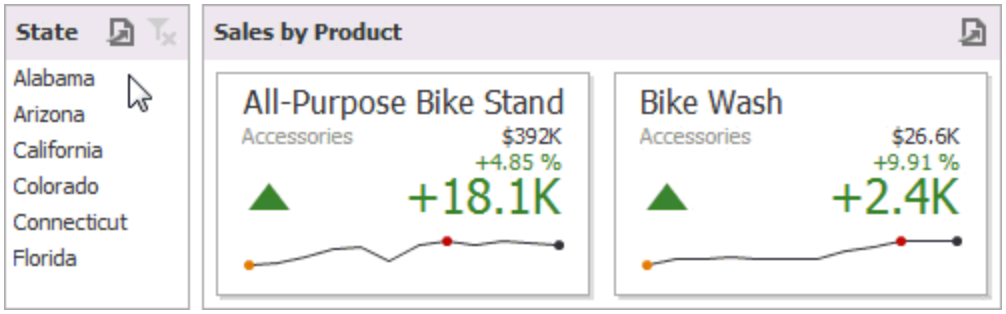
Additionally, you can specify the client culture that should be used for the dashboard by selecting the **Use client system** settings item. In this instance, the current system culture will be used in WinForms applications, and the client culture will be used in Web applications.

Interactivity

This section describes features that enable interaction between various dashboard items. These features include Master Filtering and Drill-Down.

Master Filtering

The Dashboard allows you to use any data aware dashboard item as a filter for other dashboard items (Master Filter). You can select elements in a Master Filter item (grid records, chart bars, pie segments, etc.) to filter data in other dashboard items by the selected values.



Master Filtering Overview

Dashboard items can be divided into four groups by their master filtering capabilities.

Data visualization dashboard items allow you to enable master filtering by specifying the selection mode.

- Filter elements represent a special type of dashboard item whose main purpose is to apply filtering to other dashboard items. This capability is always enabled for these dashboard items.

The following filter elements are available:

- Combo Box
- List Box

- Tree View

Instead of switching between standard master filtering modes, some filter elements allow you to switch their type. This allows you to select a single value or multiple values.

- Range Filter is a special type of dashboard item that displays a chart with selection thumbs and allows you to filter out values displayed along the argument axis.
- Dashboard item group allows you to manage interaction between dashboard items in and out of the group.

The Master Filter item supports two selection modes:

- **Multiple**: Allows you to select multiple elements in the Master Filter item.
- **Single**: Allows you to select only one element in the Master Filter item. When this mode is enabled, the default selection will be set to a Master Filter element. You can change this selection, but cannot clear it.

To enable/disable master filtering, use the **Multiple Master Filter** or **Single Master Filter** buttons in the Data Ribbon tab.

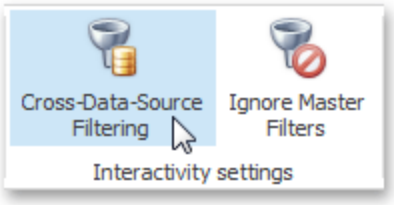
If the selected dashboard item contains several types of elements that can be used for filtering, the Ribbon or Toolbar will provide the appropriate buttons to switch between these types (e.g., the Arguments and Series buttons in the Chart).

Filtering Across Data Sources

When different items in a dashboard are bound to different data sources, you can specify that a particular Master Filter should be applied across data sources. This means that it will apply filtering to fields with matching names in all data sources.

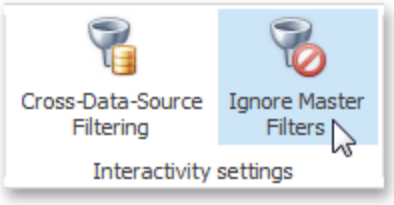
Fields are matched by their full names. For fields in other data sources to be affected by Master Filtering, their names must match the name of the field in the current data source, and they must belong to the same hierarchy level so that their full names also match. For instance, Customer City and Customer Address. City will not be treated as matching fields.

To enable filtering across data sources, use the Cross-Data-Source Filtering button in the Data Ribbon tab.



Preventing Items from Being Filtered

You can prevent specific dashboard items from being affected by Master Filters. To do this, use the Ignore Master Filters button in the Data Ribbon tab.

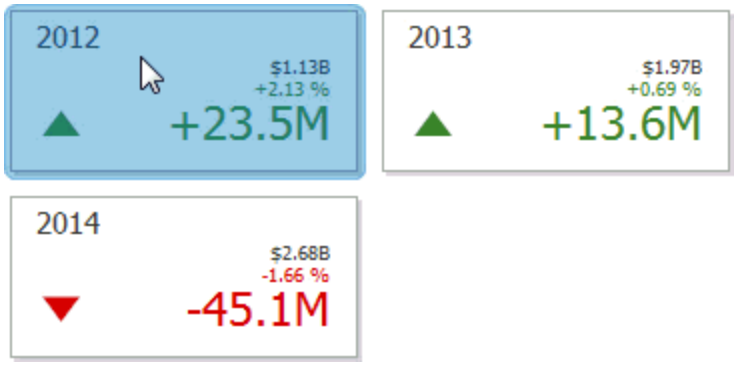


Apply Filtering

To learn how to apply filtering in a specific dashboard item, refer to the **Master Filtering** topic in the Interactivity section for this item.

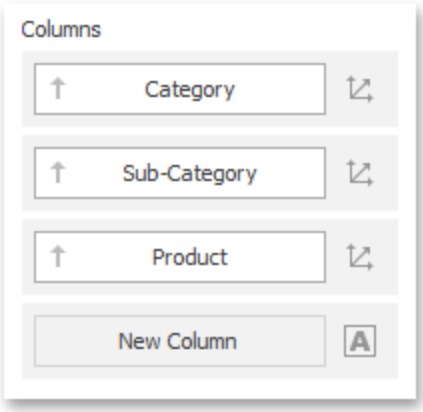
Drill-Down

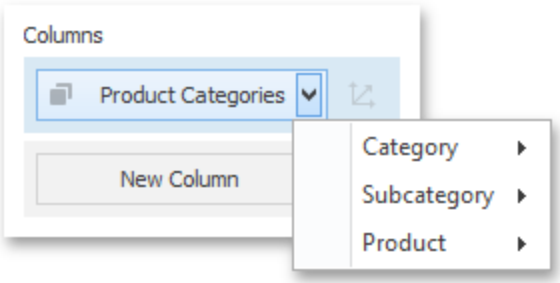
Dashboard provides the Drill-Down feature, which allows you to change the detail level of data displayed in a dashboard item. The Drill-Down feature enables users to drill down to display detail data, or drill up to view more general information.



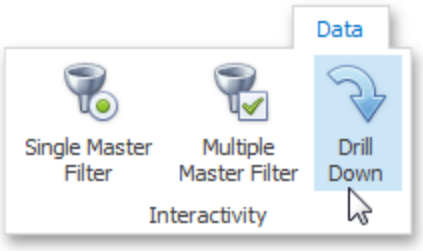
EnableDrill-Down

Drill-down requires that the data section contains several dimensions or a hierarchy data item.





To enable drill-down, click the Drill-Down button in the Data Ribbon tab (or the button if you are using the toolbar menu).



If the selected dashboard item contains several types of elements that can be used for drill-down, the Ribbon or Toolbar will provide the appropriate buttons to switch between these types (e.g., Arguments and Series buttons in a Chart). For details, refer to the documentation for the individual dashboard items in the Designing Dashboard Items topic.

The following dashboard items support the Drill-Down feature:

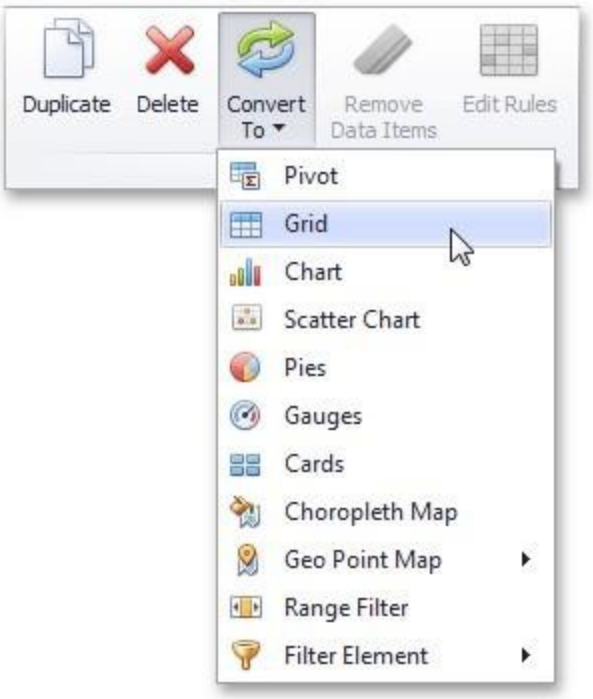
- Chart
- Scatter Chart
- Grid
- Pies
- Cards
- Gauges
- Treemap

Perform Drill-Down

To learn how you can drill down using a particular dashboard item, refer to the **Drill-Down** topic in the Interactivity section for this item.

Converting Dashboard Items

The BI Dashboard Designer provides the capability to convert data-bound dashboard items to another type. To convert the selected dashboard item to another type, use the Convert button in the ribbon's Home tab or the corresponding command in the item's context menu.



The BI Dashboard Designer always preserves the following settings for data-bound dashboard items:

- The set of Data Items used to bind the dashboard item to data.
- Data shaping settings of Data Items and their names.
- A custom name displayed within the dashboard item caption.

The following settings are kept if the dashboard item is being converted to an item that also supports this feature:

- Master Filtering settings (e.g., the specified master filter mode) and Drill-Down settings (e.g., the target dimension).
- Conditional Formatting settings.
- Coloring settings.
- Calculation settings.

For different types of dashboard items, some specific settings can be preserved. For example, the following settings are preserved:

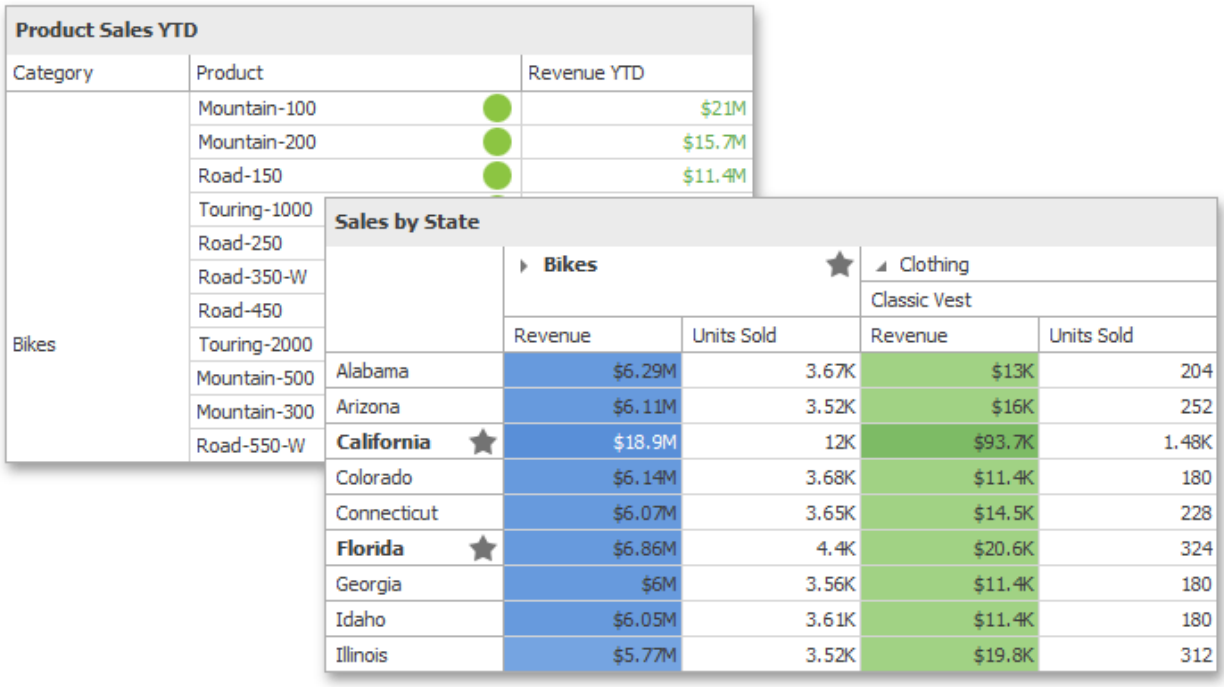
- Legend settings for the Chart/Scatter Chart dashboard items.
- Series types for the Chart/Range Filter dashboard items.
- Element arrangement settings for the Pie/Card/Gauge dashboard items.
- Caption settings for the Pie/Gauge dashboard items.
- Navigation settings for Choropleth Map/Geo Point Maps.
- The attribute whose values are displayed within shape titles for Choropleth Map/Geo Point Maps.
- Legend settings for the Choropleth Map/Geo Point Maps.
- Clustering settings for Geo Point Maps.

Appearance Customization

The topics in this section describe how to customize the appearance of a dashboard or any of its elements using conditional formatting and coloring.

Conditional Formatting

The Dashboard Designer provides the capability to apply formatting to dashboard item elements whose values meet the specified condition. This feature allows you to highlight specific elements using a predefined set of rules.



Product Sales YTD

Category	Product	Revenue YTD
Bikes	Mountain-100	$21M
	Mountain-200	$15.7M
	Road-150	$11.4M
	Touring-1000	
	Road-250	
	Road-350-W	
	Road-450	
	Touring-2000	
	Mountain-500	
	Mountain-300	
	Road-550-W	

Sales by State

	Bikes		Clothing	
			Classic Vest	
	Revenue	Units Sold	Revenue	Units Sold
Alabama	$6.29M	3.67K	$13K	204
Arizona	$6.11M	3.52K	$16K	252
California	$18.9M	12K	$93.7K	1.48K
Colorado	$6.14M	3.68K	$11.4K	180
Connecticut	$6.07M	3.65K	$14.5K	228
Florida	$6.86M	4.4K	$20.6K	324
Georgia	$6M	3.56K	$11.4K	180
Idaho	$6.05M	3.61K	$11.4K	180
Illinois	$5.77M	3.52K	$19.8K	312

Conditional Formatting Overview

Comparison rules used in conditional formatting can be divided into the following groups.

- **Value** :Allows you to compare static values (such as Greater Than, Less Than, Between, etc.).
- **Top-Bottom**: Highlights a specific number of topmost/bottommost values.
- **Average**: Highlights values above the average value or below the average value.
- **A Date Occurring**: Allows you to highlight date-time values that fall into a specified interval.
- **Expression**: Allows you to use complex conditions to apply formatting. You can also pass dashboard parameters to expressions.
- **Icon Ranges**: Allows you to apply formatting by displaying specific icons for different ranges of values. You can select a predefined set of icons or use a specific icon for each range.
- **Color Ranges**: Allows you to apply formatting using specific colors for different ranges of values. You can select a predefined set of colors or use custom appearance settings to highlight values within specified ranges.
- **Gradient Ranges**: Allows you to apply formatting using gradient color scales.
- **Bar**: Allows you to visualize numeric values using bars. You can also color bars corresponding to positive and negative values using different colors.
- **Bar Color Ranges**: Allows you to visualize numeric values using bars whose colors are contained in the specified color set.
- **Bar Gradient Ranges**: Allows you to visualize numeric values using bars whose colors are contained in the specified color gradient.

You can create comparison rules for measures or dimensions. The list below shows format conditions that can be applied to different types of Data Items.

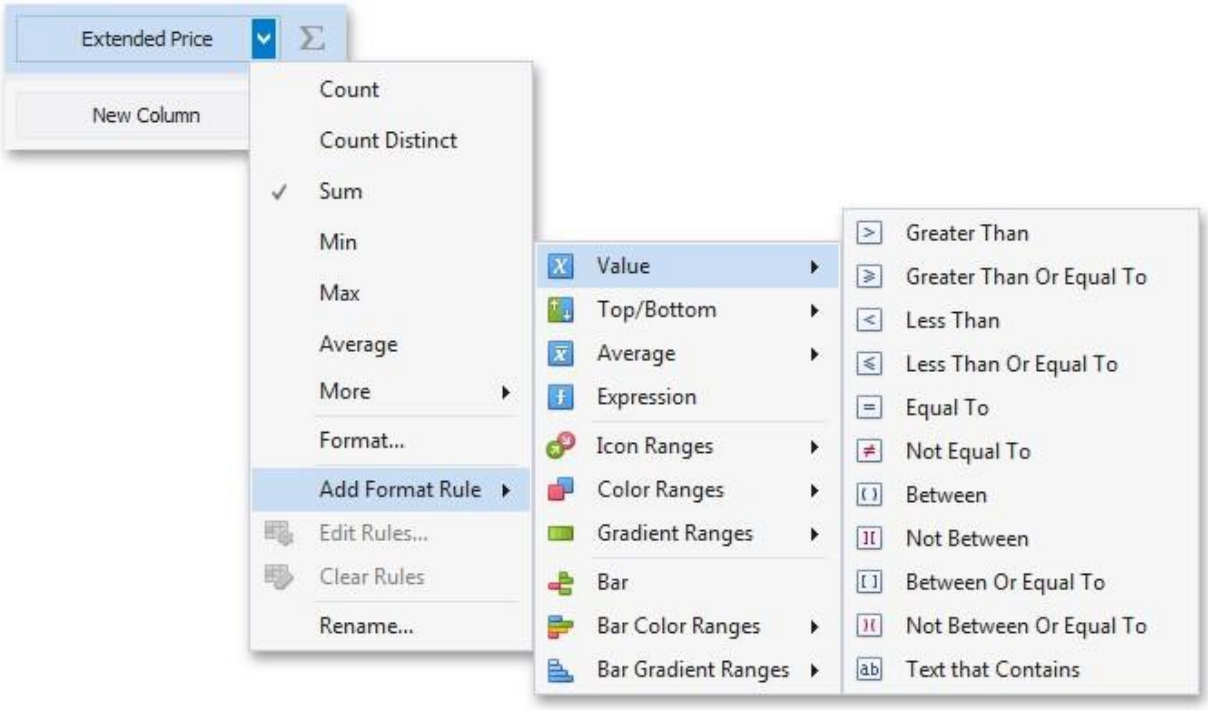
- Measure/numeric
- Dimension Value
- Top-Bottom Average
- Expression
- Icon Ranges

- Color Ranges
- Gradient Ranges
- Bar
- Bar Color Ranges
- Bar Gradient Ranges
- String Dimension
- Value with the condition type set to Equal To, Not Equal To or Text that Contains Expression
- Date-Time
- Dimension Value
- A Date Occuring for dimensions with the continuous date-time group interval Expression
- Icon Ranges
- Color Ranges
- Gradient Ranges Bar
- Bar Color Ranges
- Bar Gradient Ranges

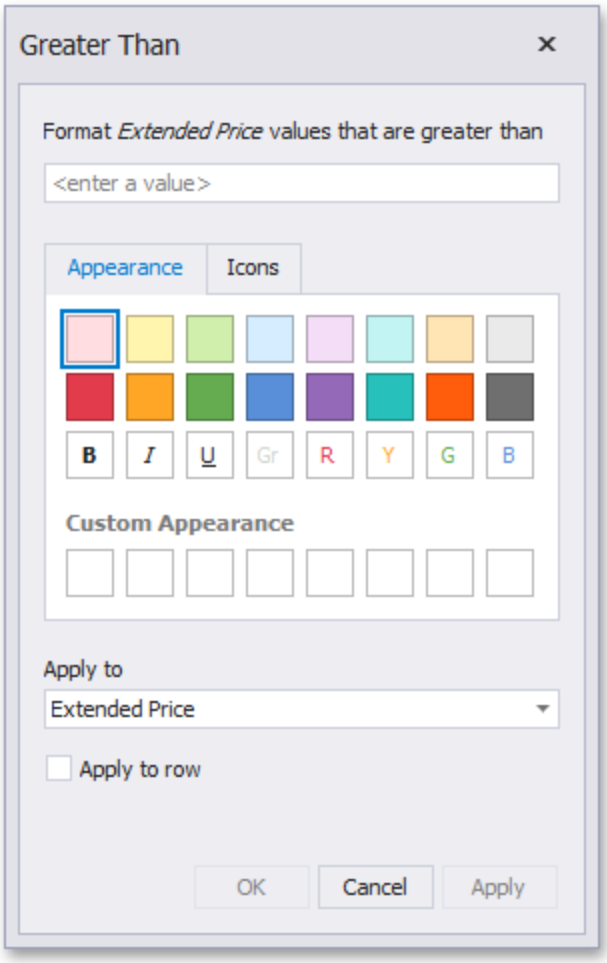
Create a Format Rule

To create a new rule used to apply formatting according to the required condition, do the following:

1. Choose a measure/dimension by whose values a format condition will be calculated. Click the measure/ dimension menu button, select Add Format Rule and choose the condition.



2. This invokes the dialog that depends on the selected format condition and the type of dashboard item. For instance, the image below displays the Greater Than dialog corresponding to the Value format condition for the Grid dashboard item.



In this dialog, specify settings for the selected condition (for instance, specify a value to compare with dimension/measure values). To learn more, see the documentation for the required condition.

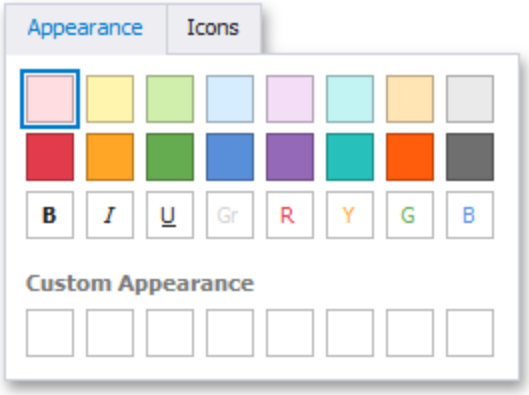
3. Specify appearance settings applied to elements whose values meet the noted condition.
4. Specify the data item to whose values conditional formatting is applied using the **Apply to** combo box.

Thus, you can create a format rule for one data item and apply new appearance settings to the other data item. You can also create format rules for hidden measures and apply formatting to values of visible Data Items. Different dashboard items can provide additional capabilities for creating a new format rule. To learn more, refer to documentation for the required dashboard item.

Specify Appearance Settings

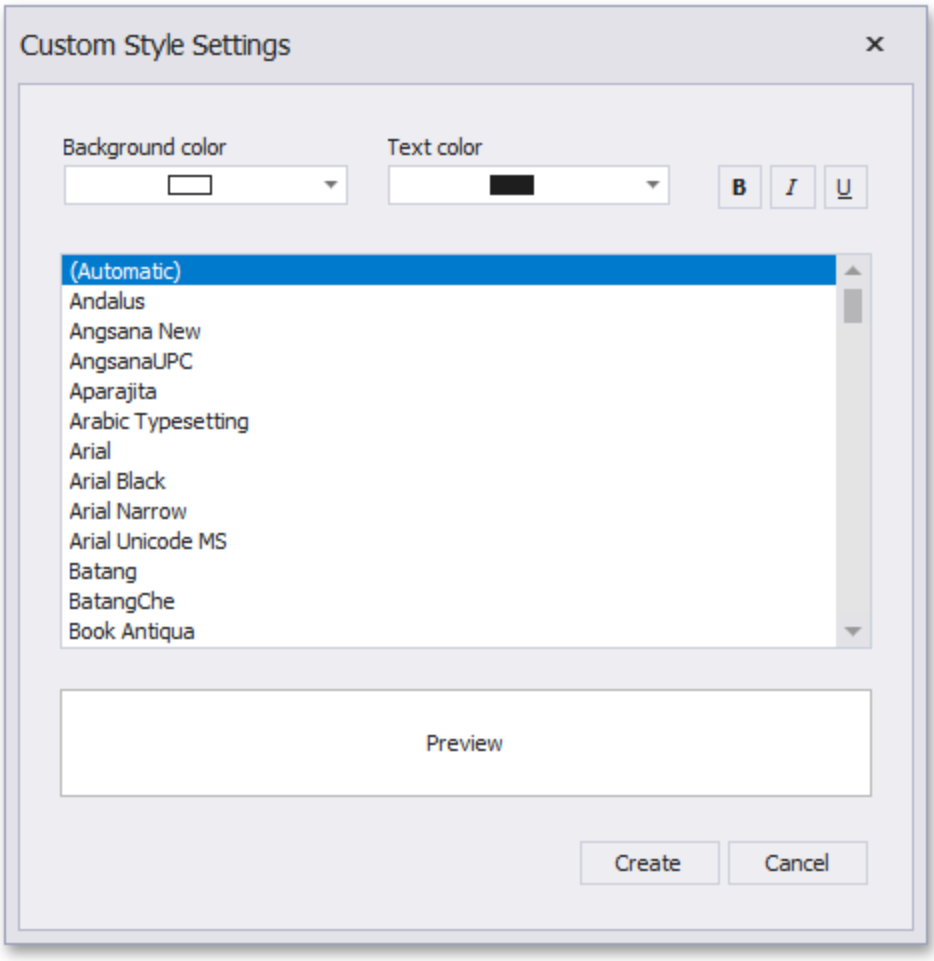
When creating a new format rule, you can select the required appearance settings applied according to the current format condition. All format conditions allow you to customize appearance settings in a similar manner. For instance, the Value format condition allows you to specify appearance settings in the following way:

The Appearance tab allows you to choose the predefined background color/font.



The Icons tab allows you to add the predefined icon.

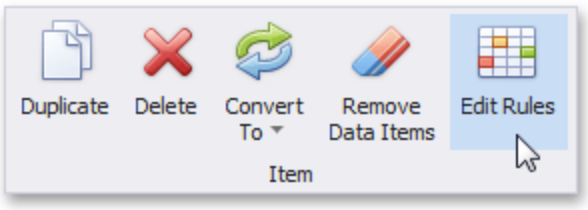
Use the Custom Appearance area in the Appearance tab to add presets containing custom appearance settings. To add a new preset, click an empty square. This invokes the Custom Style Settings dialog, allowing you to specify the required appearance settings.



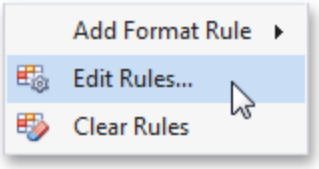
In this dialog, you can specify the backgoround/foreground colors and font settings. Click Create to add a preset. The created preset will be displayed in the Custom Appearance area.

Edit a Format Rule

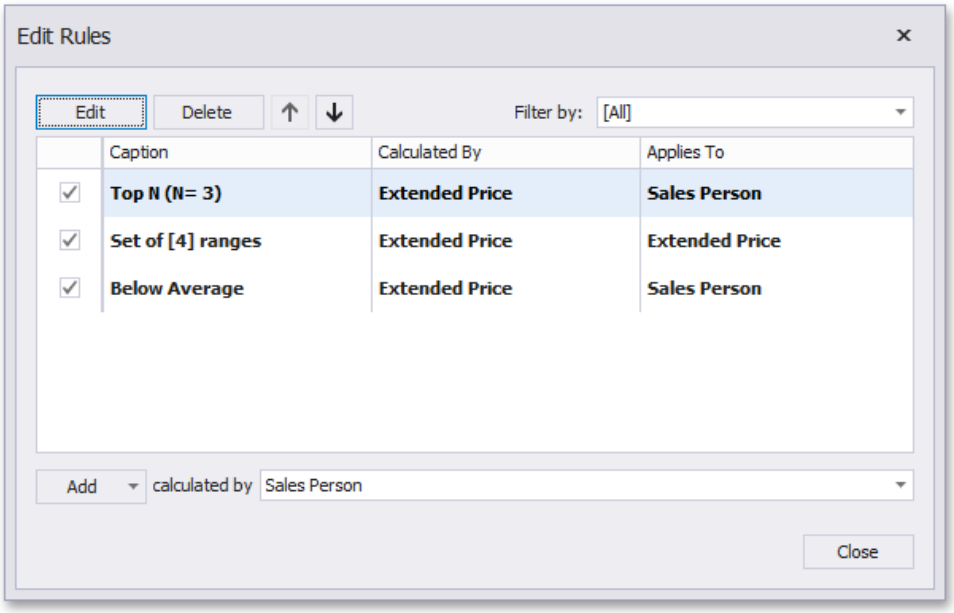
To edit format rules for the selected dashboard item, click the **Edit Rules** button in the Home ribbon tab.



As an alternative, use the Edit Rules data item's menu item or the corresponding item in the dashboard item's context menu.



This invokes the Edit Rules dialog containing existing format rules for this dashboard item.



This dialog allows you to perform the following actions:

- To edit the selected rule, use the **Edit** button or double-click the required rule.
- To delete the selected rule, use the **Delete** button.
- To reorder format rules, use the **Up** and **Down** buttons (the and icon, respectively). Reordering of rules allows you to specify the priority of rules from higher (a bottommost rule) to lower (a topmost rule).
- To enable/disable the required rule, use the corresponding check box on the left column.

- To create a new rule, click the **Add** button and select the required format condition. The **Calculated By** combo box allows you to select the measure/dimension by whose values a format rule is applied.
- To filter format rules by the specified data item, use the **Filter** by combo box.

To clear all rules for the specified data item, use the **Clear Rules** button in the data item's context menu.

Value

The Value format condition allows you to compare static values (such as Greater Than, Less Than, Between, etc.). The following condition types are supported for measures or date-time dimensions:

Greater Than/Greater Than or Equal To

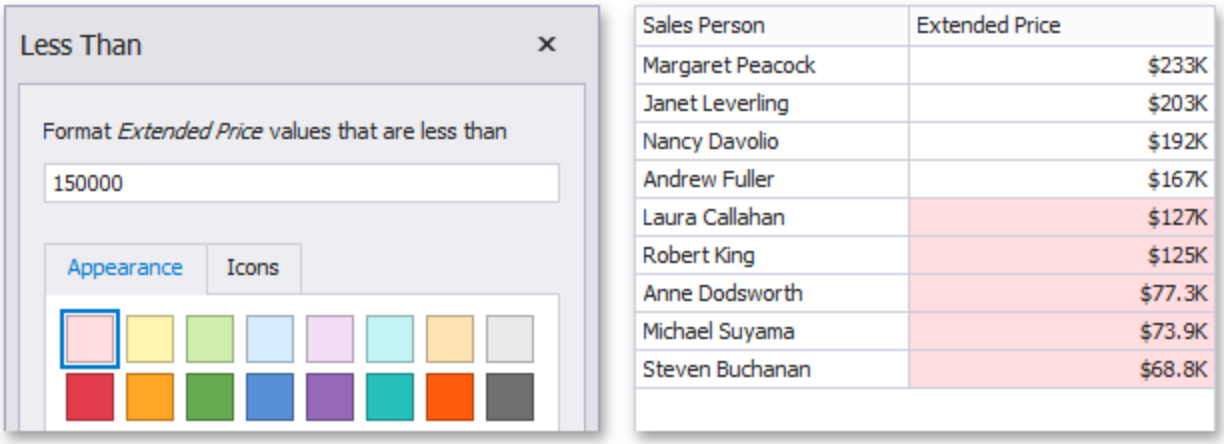
The "Greater Than"/"Greater Than or Equal To" format conditions allow you to apply formatting to elements whose values are greater than/greater than or equal to the specified value. For instance, the following image displays a Grid dashboard item whose Exten ded Price cells are filled in green if their values are Greater Than 150 000.

Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

This format condition can be applied to measures or date-time dimensions.

Less Than/Less Than or Equal To

The "Less Than"/"Less Than or Equal To" format conditions allow you to apply formatting to elements whose values are less than/less than or equal to the specified value. For instance, the following image displays a Grid dashboard item whose E xten ded Price cells are filled in red if their values are Less Than 150 000.



This format condition can be applied to measures or date-time dimensions.

Equal To/Not Equal To

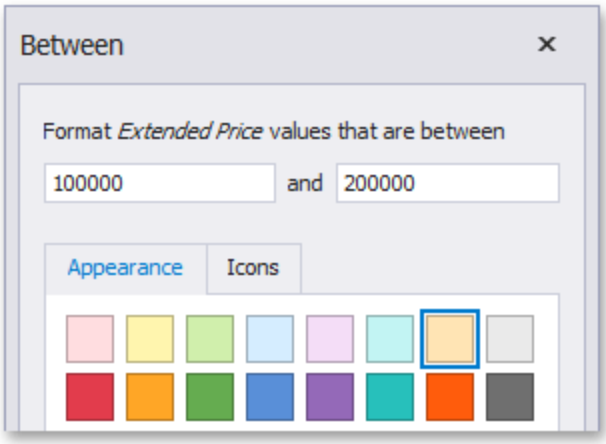
The "Equal To"/"Not Equal To" format conditions allow you to apply formatting to elements whose values are equal to/not equal to the specified value. For instance, the following image displays a Grid dashboard item whose Sales Pers on cells are filled in blue if their values are equal to 'Robert King'.

Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

This format condition can be applied to measures, string or date-time dimensions.

Between/Not Between

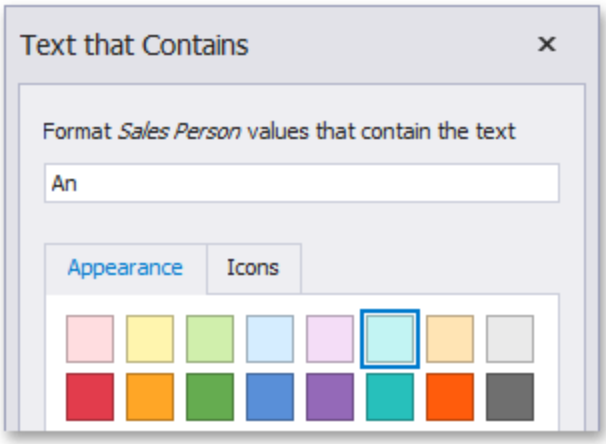
The "Between"/"Not Between" format conditions allow you to apply formatting to elements whose values are between/not between the specified values. For instance, the following image displays a Grid dashboard item whose Extended Price cells are filled in orange if their values are Between 100,000 and 200,000.



Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

This format condition can be applied to measures or date-time dimensions.

The "Text That Contains" format condition allows you to apply formatting to elements whose values contain the specified text. For instance, the following image displays a Grid dashboard item whose Sales Person cells are in cyan if their values contain the 'An' text.



Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

This format condition can be applied to measures, string or date-time dimensions.

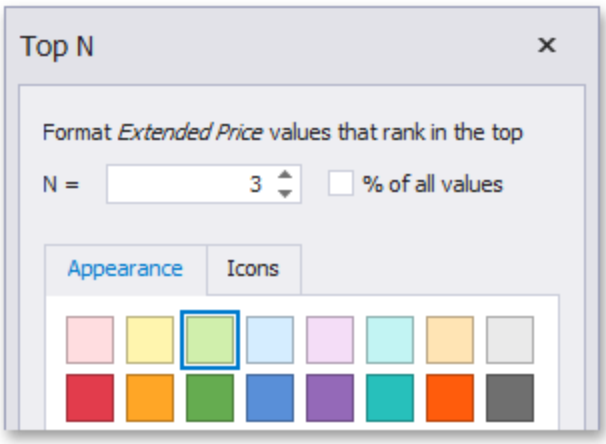
Top-Bottom

The Top-Bottom format conditions allow you to highlight a specific number of topmost/bottommost values. You can specify this number as an absolute or percent value.

The following condition types are supported for measures:

Top N

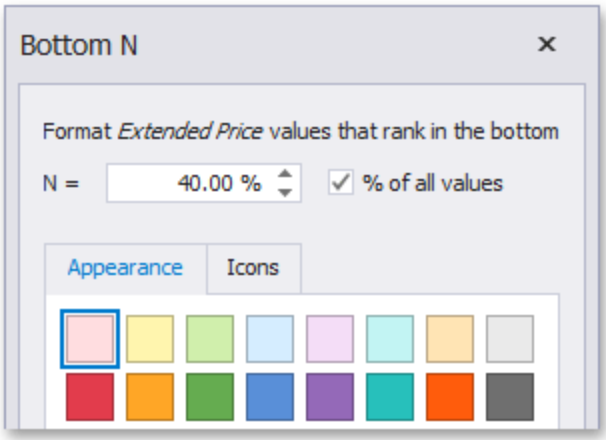
The "Top N" format condition allows you to apply formatting to elements whose values are ranked at the top. For instance, the following image displays a Grid dashboard item whose top 3 Extended Price values filled in green.



Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

Bottom N

The "Bottom N" format condition allows you to apply formatting to elements whose values are ranked at the bottom. For instance, the following image displays a Grid dashboard item whose bottom 40%Extended Price values are filled in red.



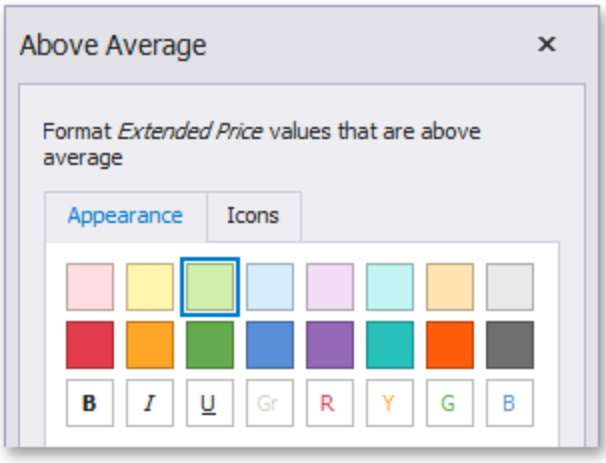
Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

Average

The Average format conditions allow you to highlight values above or below an average value. The following condition types are supported for measures:

Above Average/Above of Equal Average

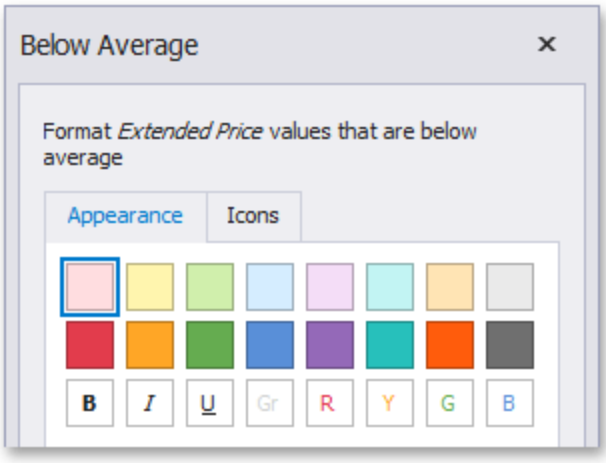
The "Above Average"/"Above or Equal Average" format conditions allow you to apply formatting to elements whose values are above/above or equal to the average. For instance, the following image displays a Grid dashboard item whose Extended Price values that are above average (~ 141,000) filled in green.



Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

Below Average/Below or Equal Average

The "Below Average"/"Below or Equal Average" format conditions allow you to apply formatting to elements whose values are below/below or equal to the average. For instance, the following image displays a Grid dashboard item whose E xten ded Price values that are below average (~ 141,000) filled in red.



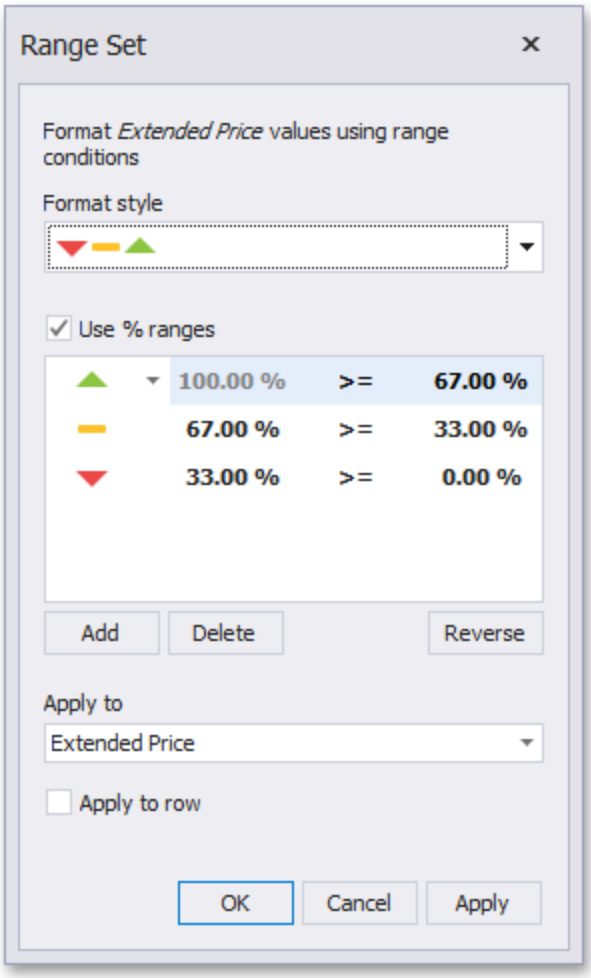
Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

Icon Ranges

Icon Ranges allow you to use predefined or custom sets of icons to apply conditional formatting to different ranges of values.

To format values according the required condition, click the data item menu button, select **Add Format Rule | Icon Ranges** and choose the required icon set.

This invokes the Range Set dialog containing the set of value ranges and corresponding icons. The Grid dashboard item on the right displays the default formatting applied using the predefined set of 3 icons.



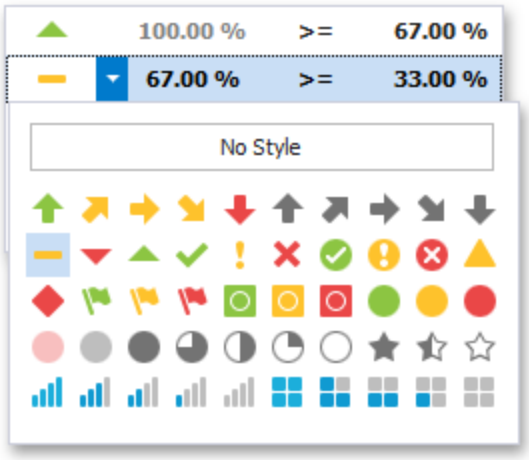
Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

This dialog allows you to change the following options specific to Icon Ranges.

- The Format Style combo box allows you to change the icon set used to apply formatting.
- The Use % ranges check box specifies whether the percent or absolute scale is used to generate ranges.

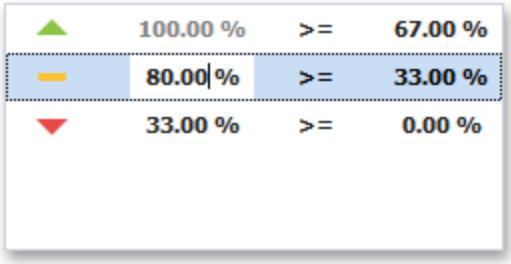
Note that this option is not available for date-time dimensions.

To change the icon displayed for values corresponding to the specified range, click the button next to the required icon and select a new icon.



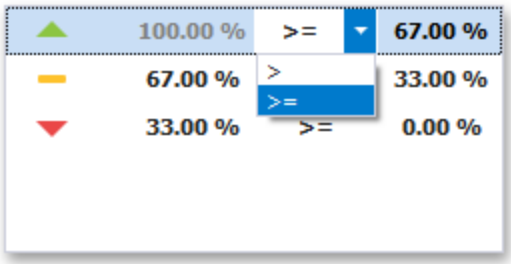
Select **No Style** to disable the indication for the required range.

You can change range boundaries by specifying the required values.



Note that a new value should fall into a range between corresponding values of the previous and next range.

To change the comparison logic for the required range, click the comparison sign and select the required option.



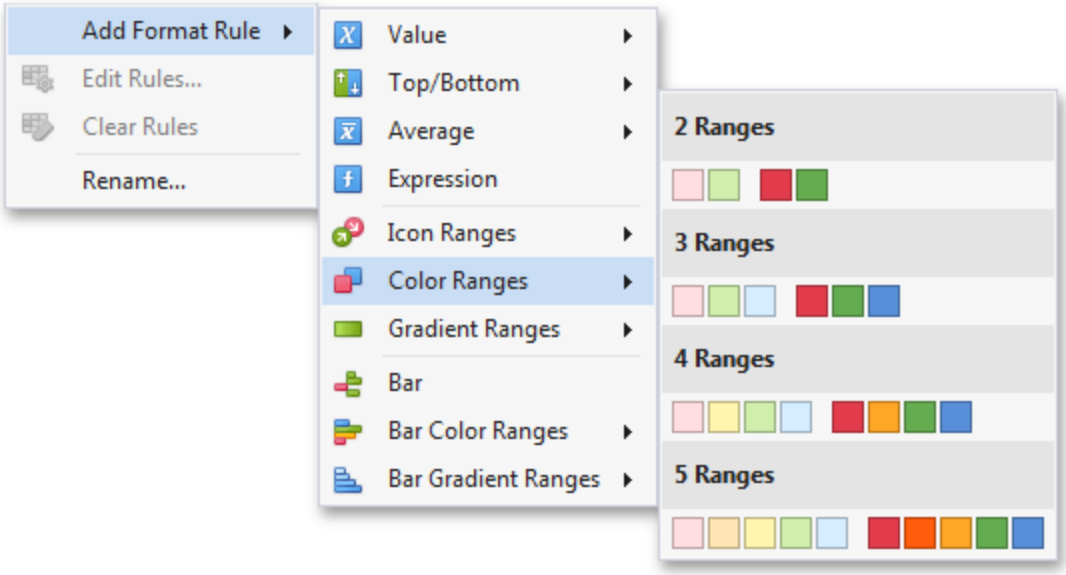
The greater or equal sign includes the smallest value of the current interval while the greater sigh excludes the smallest value from the current interval and includes it in the next interval.

Use the **Add** and **Delete** buttons to add new ranges or delete the selected range respectively. Note that new range is added below the selected range.

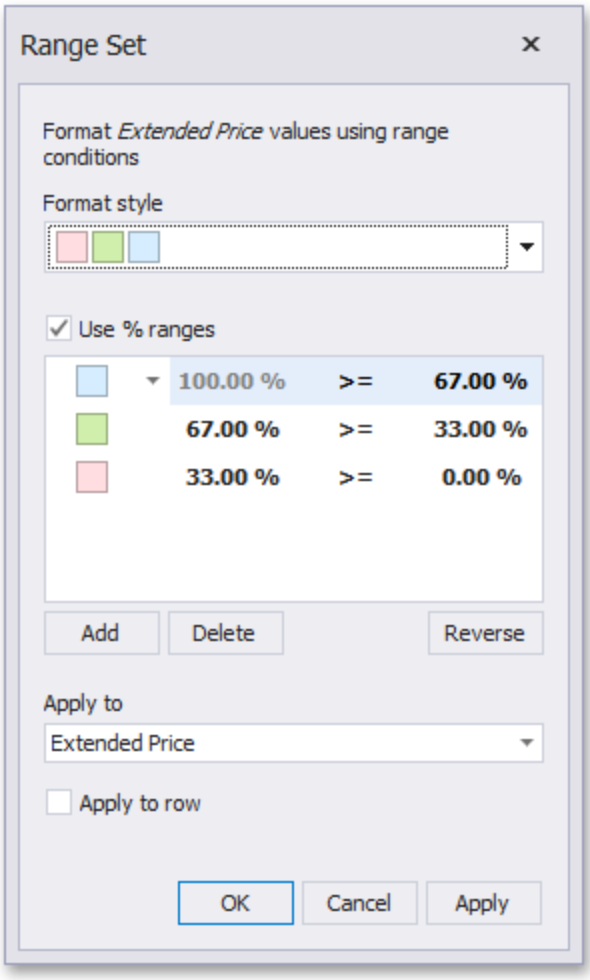
Color Ranges

Color Ranges allow you to use predefined sets of colors to apply conditional formatting to different ranges of values. You can also use custom appearance settings for specific ranges.

To format values according the required condition, click the data item menu button, select Add Format Rule | Color Ranges and choose the required icon set.



This invokes the Range Set dialog containing the set of value ranges and corresponding appearance settings. The Grid dashboard item on the right displays the default formatting applied using the predefined set of 3 colors.



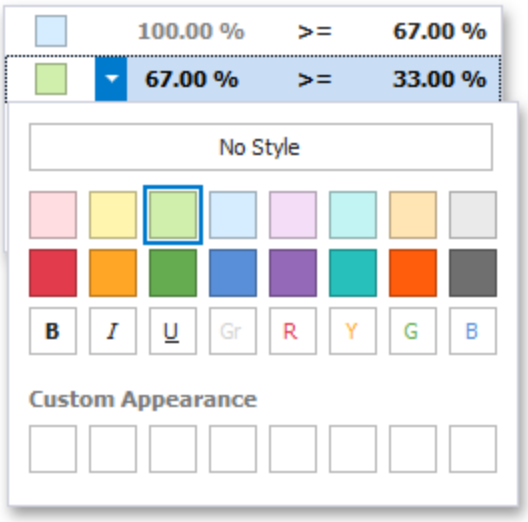
Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

This dialog allows you to change the following options specific to Icon Ranges.

- The Format Style combo box allows you to change the color set used to apply formatting.
- The Use % ranges check box specifies whether the percent or absolute scale is used to generate ranges.

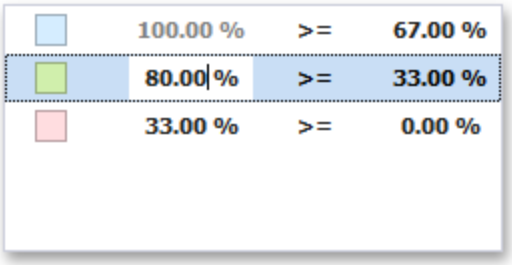
Note that this option is not available for date-time dimensions.

To change the appearance settings applied to values corresponding to the specified range, click the button next to the required color and select a new color or specify custom appearance settings.



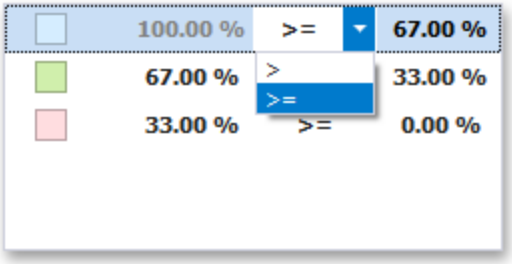
Select **No Style** to disable the indication for the required range.

You can change range boundaries by specifying the required values.



Note that a new value should fall into a range between corresponding values of the previous and next range.

To change the comparison logic for the required range, click the comparison sign and select the required option.



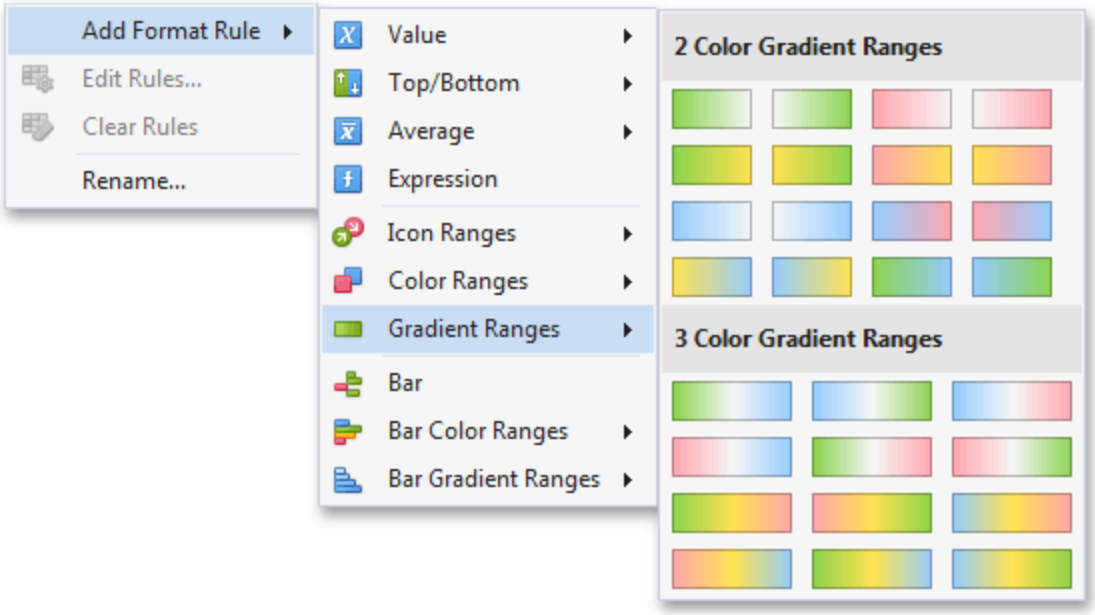
The greater or equal sign includes the smallest value for the current interval while the greater sign excludes the smallest value from the current interval and includes it in the next interval.

Use the **Add** and **Delete** buttons to add new ranges or delete the selected range respectively.

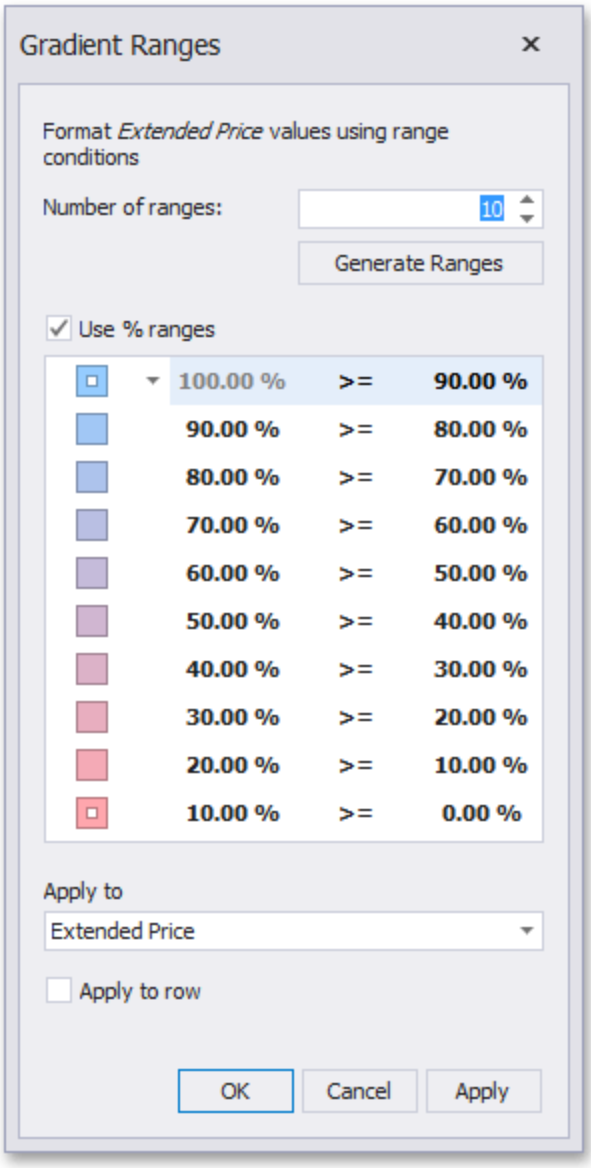
Gradient Ranges

Gradient Ranges allow you to use predefined color gradients to apply conditional formatting to different ranges of values. You can also use specific colors to generate custom gradients.

To format values according the required condition, click the measure menu button, select Add Format Rule | Color Ranges and choose the required color gradient.



This invokes the Gradient Ranges dialog containing the set of value ranges and corresponding appearance settings. The Grid dashboard item on the right displays the default formatting applied using the predefined Red- Blue gradient.



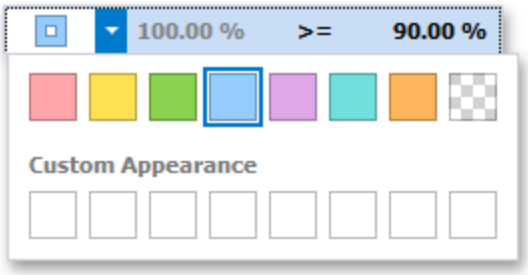
Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

This dialog allows you to change the following options specific to Gradient Ranges.

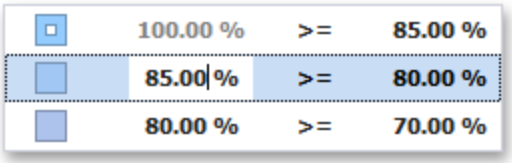
- Number of ranges allows you to specify the number of ranges used to classify values.
- Click the Generate Ranges button to generate a new gradient scale according to the specified number of ranges. The Use % ranges check box specifies whether the percent or absolute scale is used to generate ranges.

Note that this option is not available for date-time dimensions.

To change the specific color in the gradient, click the button next to the required color and select a new color or specify a custom background color. This allows you to create a color gradient based on more than two colors. In this case, the specified colors are marked with an empty square.

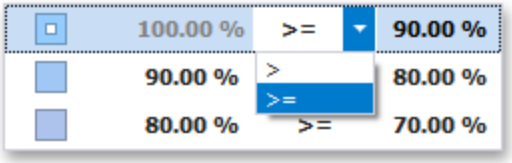


You can change range boundaries by specifying the required values.



Note that a new value should fall into a range between corresponding values of the previous and next range.

To change the comparison logic for the required range, click the comparison sign and select the required option.

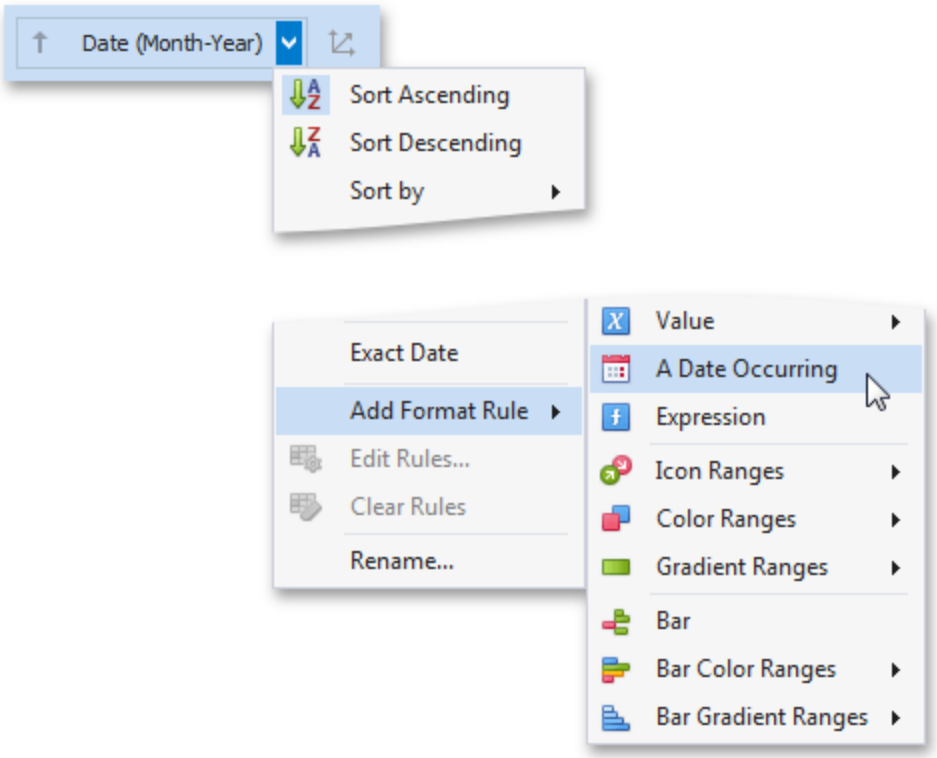


The greater or equal sign includes the smallest value in the current interval while the greater sign excludes the smallest value from the current interval and includes it in the next interval.

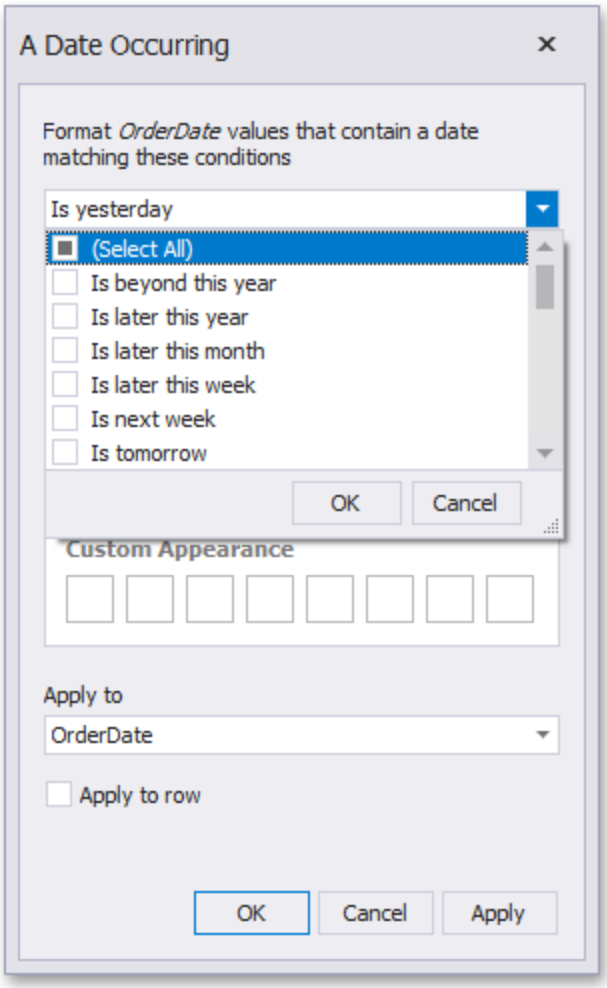
A Date Occurring

A Date Occurring format condition allows you to highlight date-time values that fall into a specified interval. Note that this format condition can be applied to dimensions with the continuous date-time group interval.

To format values according the Date Occurring condition, click the menu button of the required dimension and select **Add Format Rule | A Date Occurring**.



This invokes the A Date Occurring dialog which allows you to select a date-time interval(s), whose value should be formatted.



The following intervals are supported:

- Is beyond this year - Dates that follow the current year.
- Is later this year - Dates of the current year starting from the following month.
- Is later this month - Dates of the current month that follow the next week.
- Is later this week - Dates of the current week starting from the day after tomorrow.
- Is next week - Dates that belong to the following week.
- Is tomorrow - Tomorrow.

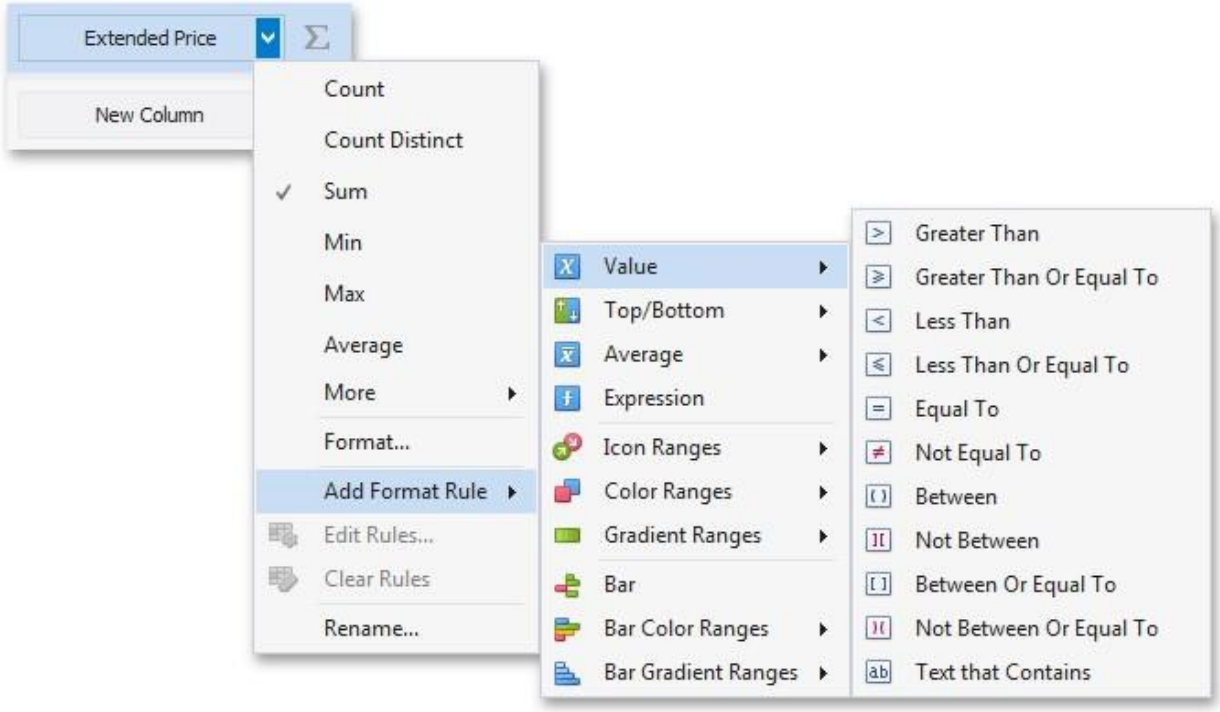
- Is today - Today.
- Is yesterday - Yesterday.
- Is earlier this week - Dates of the current week that are prior to yesterday.
- Is last week - Dates of the previous week.
- Is earlier this month - Dates of the current month that are prior to the previous week.
- Is earlier this year - Dates of the current year that are prior to the current month.
- Is prior to this year - Dates that are prior to the current year.
- Empty - Does not specify any condition.
- Beyond - Dates that belong to the month in three-months time and beyond.
- ThisWeek - Dates that belong to the current week.
- ThisMonth - Dates that belong to the current month.
- MonthAfter1 - Dates that belong to the following month.
- MonthAfter2 - Dates that belong to the month in two-months time.
- MonthAgo1 - Dates that belong to the previous month.
- MonthAgo2 - Dates that belong to the month two months ago.
- MonthAgo3 - Dates that belong to the month three months ago.
- MonthAgo4 - Dates that belong to the month four months ago.
- MonthAgo5 - Dates that belong to the month five months ago.
- MonthAgo6 - Dates that belong to the month six months ago.
- Earlier - Dates that belong to the month seven months ago and earlier.

Expression

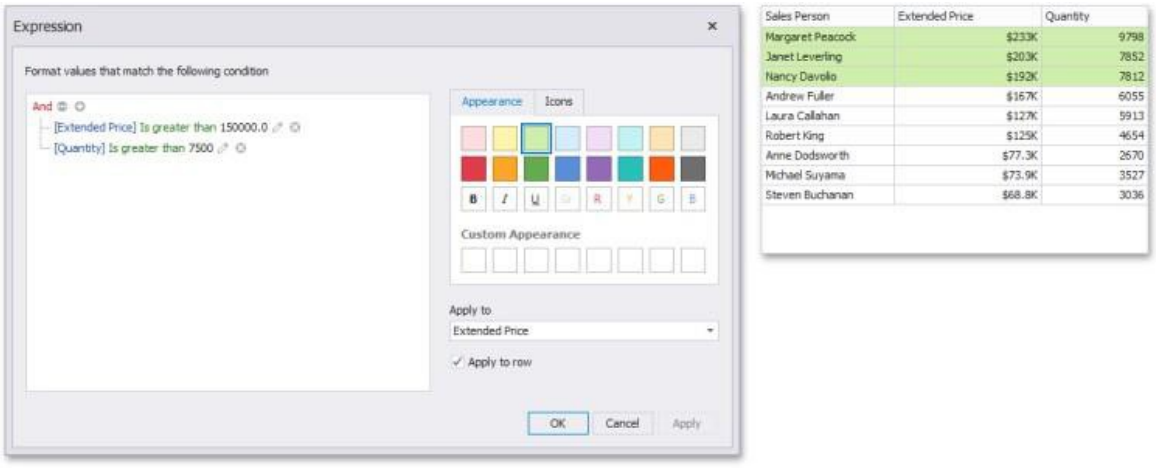
An Expression format condition allows you to use complex conditions to apply formatting.

To format values according to the Expression condition, click the menu button of the required data item and select.

Add Format Rule/Expression



This invokes the Expression dialog that allows you to specify the required expression. For instance, the following image displays a Grid dashboard item whose rows are filled in green if the Extended Price/Quantity values are greater than 150,000 and 7,500, respectively.

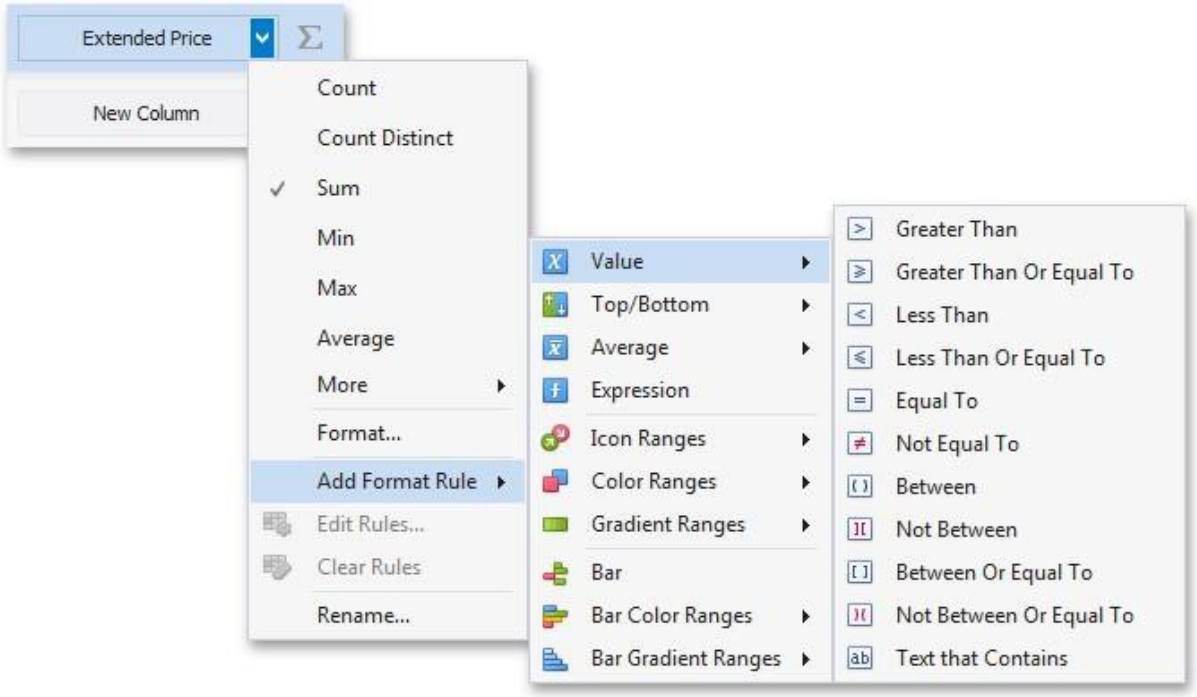


You can pass static values when creating conditions or pass a dashboard parameter to apply conditional formatting dynamically.

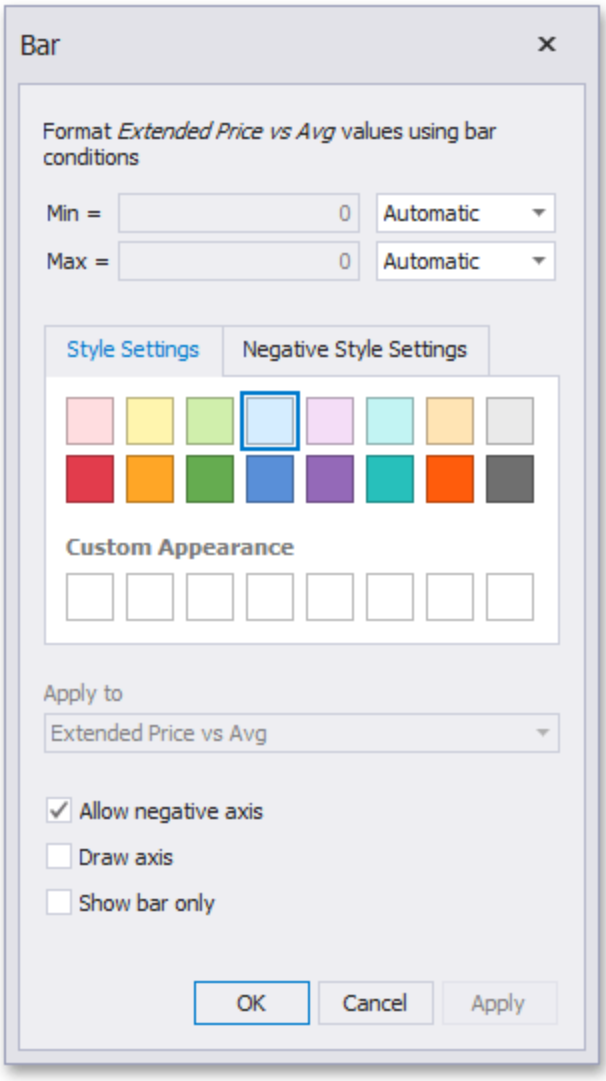
Bar

The Bar format condition allows you to visualize numeric values using bars. You can also paint bars corresponding to positive and negative values using different colors.

To format values according to the Bar condition, click the menu button of the required data item and select **Add Format Rule | Bar**.



This invokes the Bar dialog that allows you to specify the required settings. For instance, the following image displays a Grid dashboard item whose Extended Price cell contains data bars corresponding to numeric values.



Sales Person	Extended Price vs Avg
Margaret Peacock	$92.2K
Janet Leverling	$62.2K
Nancy Davolio	$51.5K
Andrew Fuller	$25.9K
Laura Callahan	($13.8K)
Robert King	($16.1K)
Anne Dodsworth	($63.3K)
Michael Suyama	($66.7K)
Steven Buchanan	($71.9K)

This dialog allows you to change the following options specific to the Bar format condition:

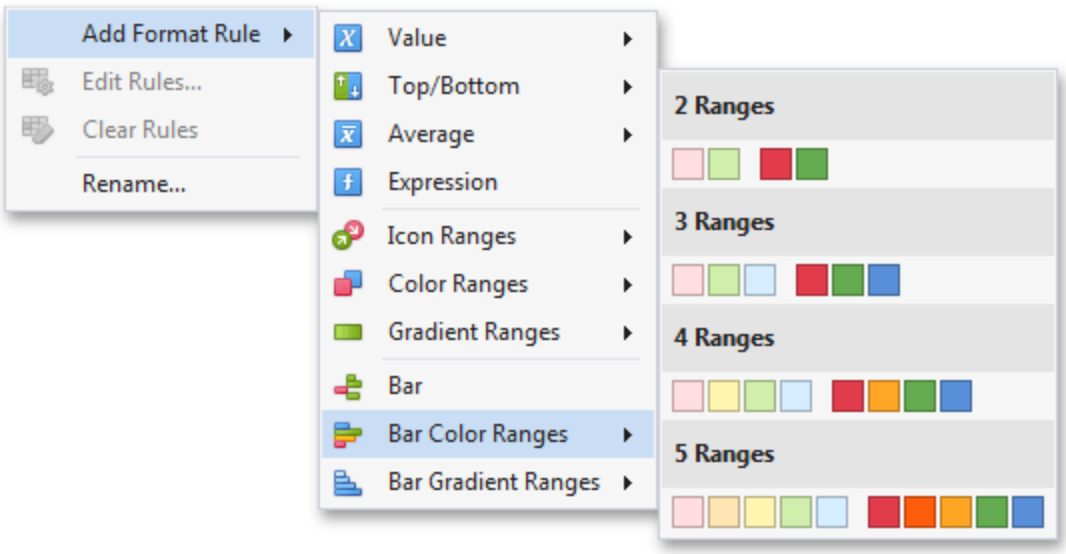
- By default, lengths of the shortest and longest bars correspond to minimum and maximum values, respectively. If necessary, you can specify values corresponding to the shortest and longest bars manually. To do this, change the type of minimum/maximum value from **Automatic** to **Number** or **Percent**, and specify the required values.

- **Style Settings** and **Negative Style Settings** allow you to specify style settings used to color data bars corresponding to positive and negative values, respectively. To learn how to specify custom style settings, see the Specify Appearance Settings paragraph in the Conditional Formatting topic.
- The **Allow negative axis** option allows you to specify whether negative data bars are displayed in the direction opposite to the positive data bars.
- The **Draw axis** option specifies whether to draw the vertical axis between positive and negative data bars.
- The **Show bar only** option specifies whether to show bars without corresponding values.

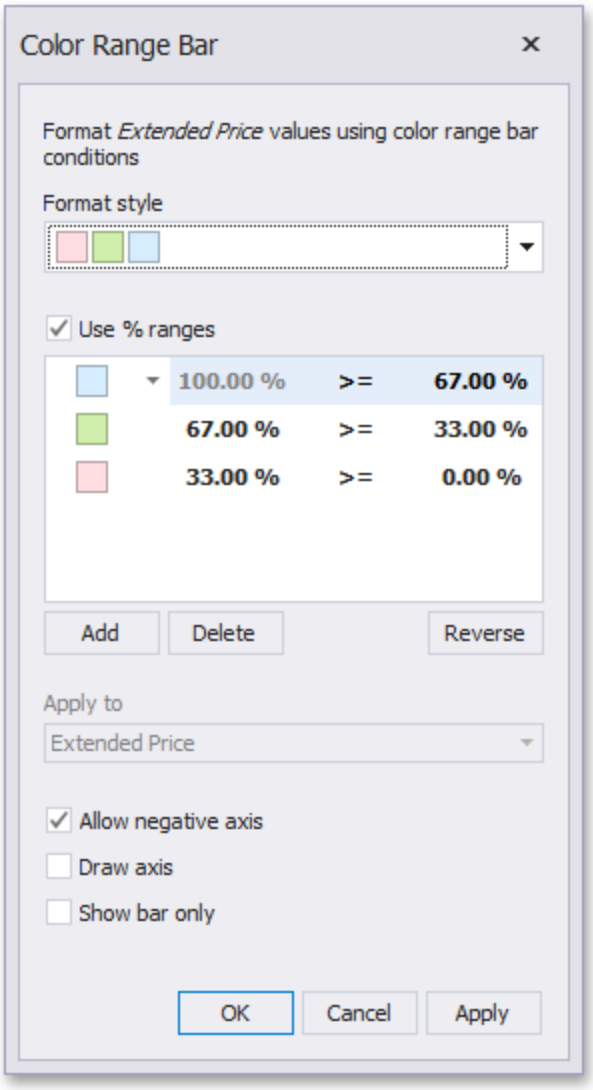
Bar Color Ranges

Bar Color Ranges allow you to visualize numeric values using bars whose colors are contained in the specified color set.

To format values according the required condition, click the data item menu button, select Add Format Rule | Bar Color Ranges and choose the required color set.



This invokes the **Color Range Bar** dialog containing the set of value ranges and corresponding colors. The Grid dashboard item on the right displays the default formatting applied using the predefined set of 3 colors.



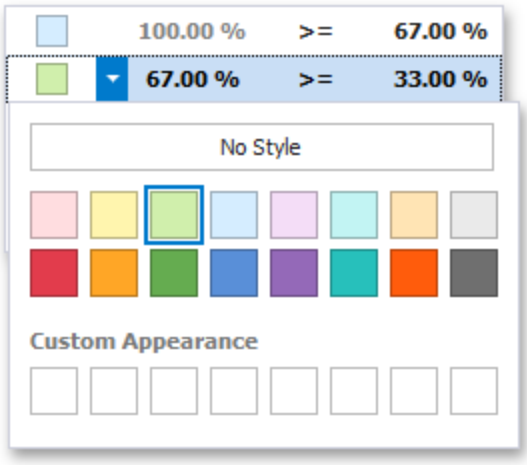
Sales Person	Extended Price
Margaret Peacock	$233K
Janet Leverling	$203K
Nancy Davolio	$192K
Andrew Fuller	$167K
Laura Callahan	$127K
Robert King	$125K
Anne Dodsworth	$77.3K
Michael Suyama	$73.9K
Steven Buchanan	$68.8K

This dialog allows you to change the following options specific to Bar Color Ranges.

- The Format Style combo box allows you to change the color set used to apply formatting.
- The Use % ranges check box specifies whether the percent or absolute scale is used to generate ranges.

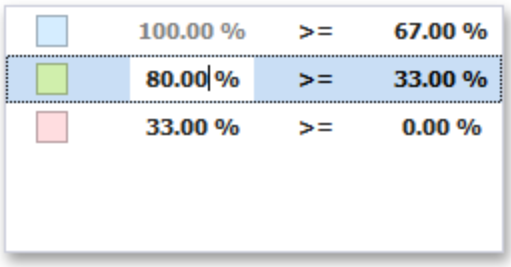
Note that this option is not available for numeric dimensions.

To change the appearance settings applied to values corresponding to the specified range, click the button next to the required color and select a new color or specify custom appearance settings.



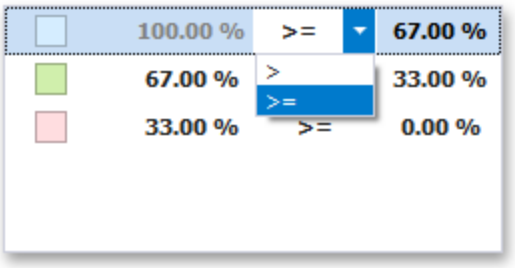
Select **No Style** to disable the indication for the required range.

You can change range boundaries by specifying the required values.



Note that a new value should fall into a range between corresponding values of the previous and next range.

To change the comparison logic for the required range, click the comparison sign and select the required option.



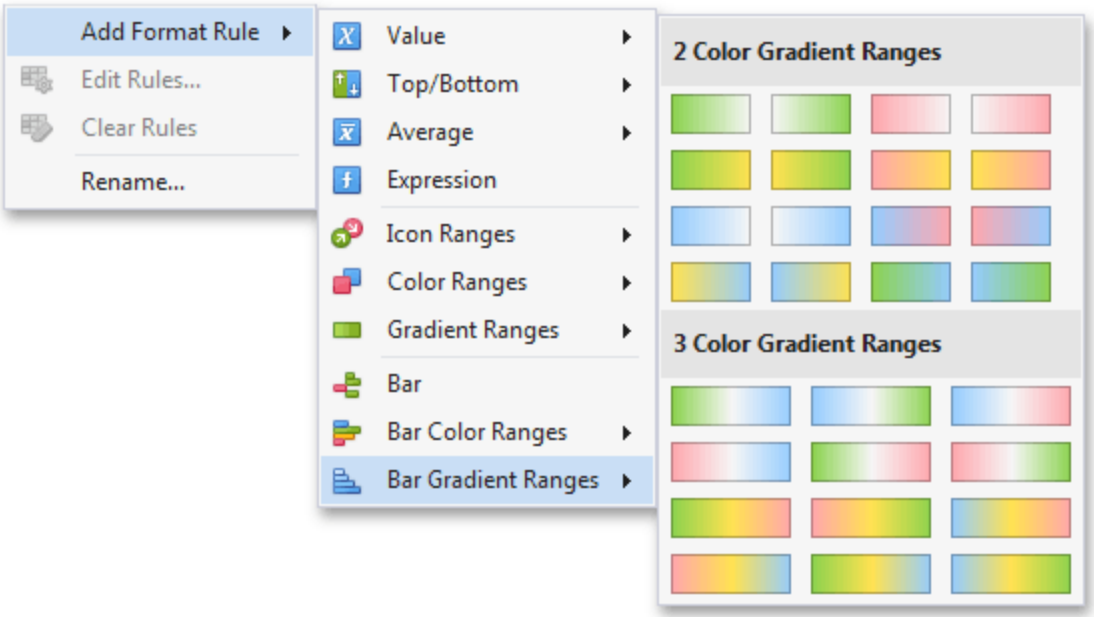
The greater or equal sign includes the smallest value for the current interval, while the greater sign excludes the smallest value from the current interval and includes it in the next interval.

Use the **Add** and **Delete** buttons to add new ranges or delete the selected range respectively.

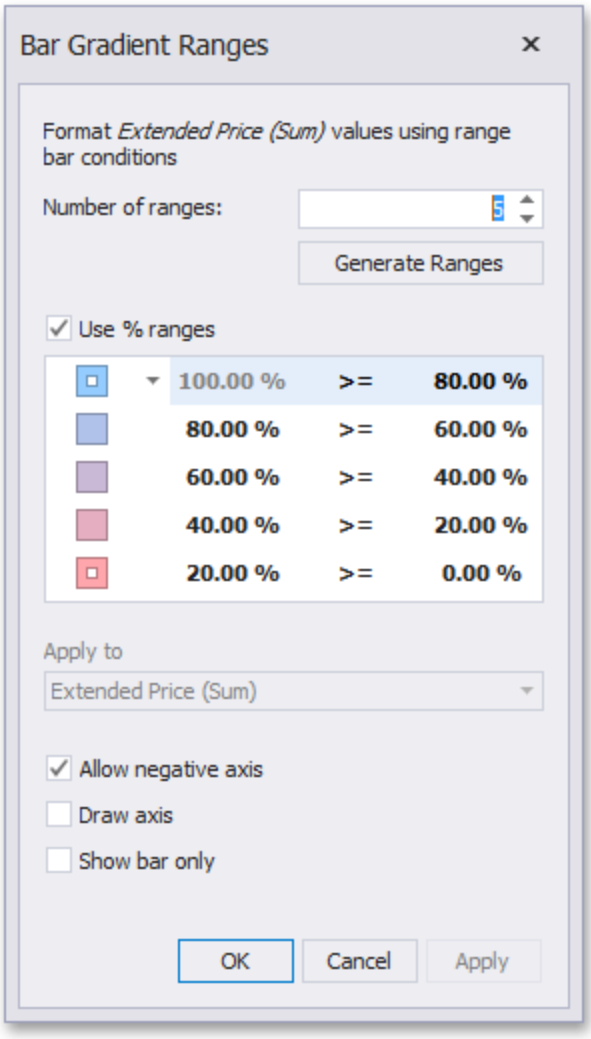
Bar Gradient Ranges

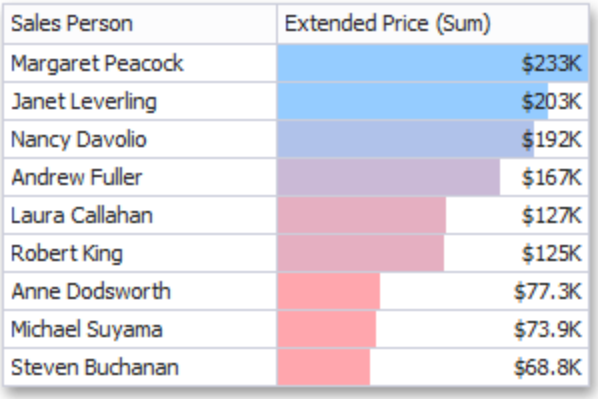
The Bar Gradient Ranges allow you to visualize numeric values using bars whose colors are contained in the specified color gradient.

To format values according the required condition, click the measure menu button, select Add Format Rule | Bar Gradient Ranges and choose the required color gradient.



This invokes the Bar Gradient Ranges dialog containing the set of value ranges and corresponding appearance settings. The Grid dashboard item on the right displays the default formatting applied using the predefined Red- Blue gradient.



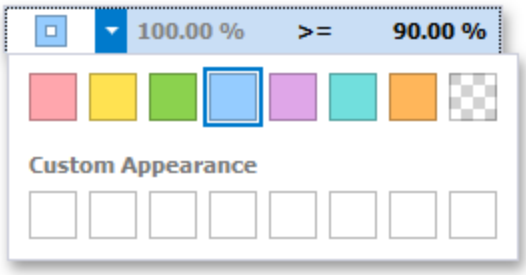


This dialog allows you to change the following options specific to Bar Gradient Ranges.

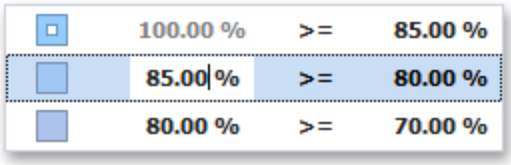
- **Number of ranges** allows you to specify the number of ranges used to classify values.
- Click the **Generate Ranges** button to generate a new gradient scale according to the specified number of ranges. The Use % ranges check box specifies whether the percent or absolute scale is used to generate ranges.

Note that this option is not available for numeric dimensions.

To change the specific color in the gradient, click the button next to the required color and select a new color or specify a custom background color. This allows you to create a color gradient based on more than two colors. In this case, the specified colors are marked with an empty square.

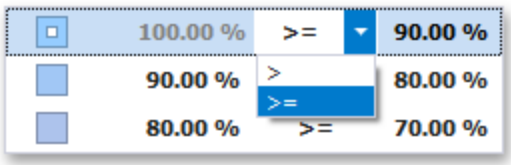


You can change range boundaries by specifying the required values.



Note that a new value should fall into a range between corresponding values of the previous and next range.

To change the comparison logic for the required range, click the comparison sign and select the required option.



The greater or equal sign includes the smallest value in the current interval while the greater sign excludes the smallest value from the current interval and includes it in the next interval.

Coloring

The Dashboard Designer provides the capability to manage coloring of dashboard item elements. You can choose whether to use a global color scheme providing consistent colors for identical values across the dashboard or a local color scheme that provides an independent set of colors for each dashboard item. The Dashboard Designer also allows you to edit colors automatically assigned from the default palette.

Coloring Concepts

The Dashboard Designer provides you with the capability to color dashboard item elements by associating dimension values/measures and specified colors. You can choose whether to use a global color scheme to provide consistent colors for identical values or specify a local color scheme for each dashboard item.

Supported Dashboard Items

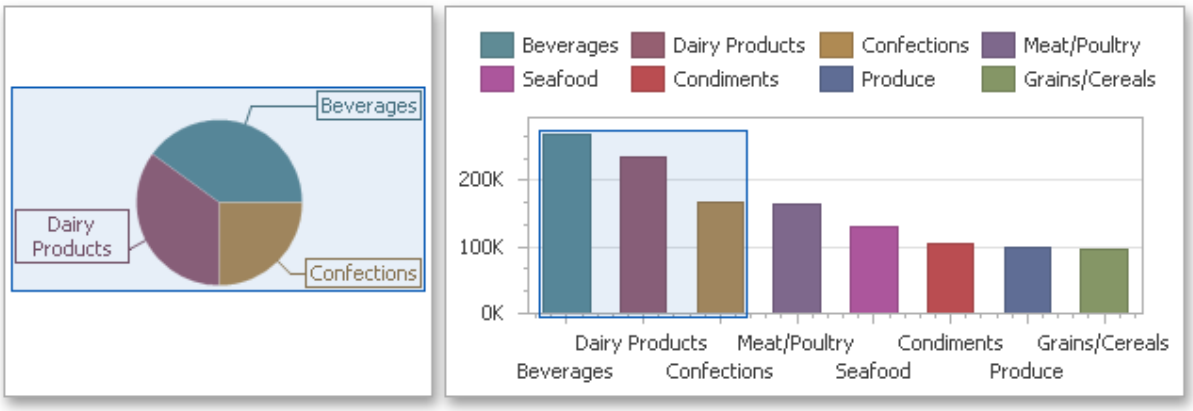
The BI Dashboard allows you to manage coloring for the following dashboard items:

- Chart
- Scatter Chart
- Pie
- Pie Map
- Range
- Filter
- Treemap

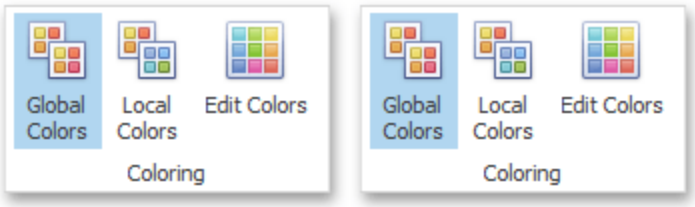
Color Schemes

The dashboard provides two ways of coloring dashboard item elements.

Using a global color scheme that provides consistent colors for identical values across the dashboard. The image below shows the dashboard containing Pie and Chart dashboard items. Pie segments and chart series points corresponding to 'Beverages', 'Condiments' and 'Diary Products' dimension values are colored using identical colors from the default palette.



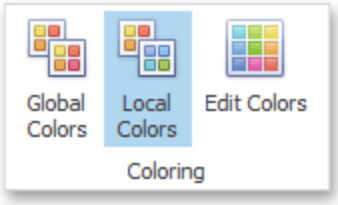
To use global colors for coloring dashboard item elements, click the **Global Colors** button in the Design ribbon tab.



When a global color scheme is used, the dashboard reserves automatically generated colors for certain values regardless of the filter state.

Using a local color scheme that provides an independent set of colors for each dashboard item.

To use local colors for coloring dashboard item elements, click **Local Colors** in the Design ribbon tab.



When a local color scheme is used, the dashboard reassigns palette colors when the filter state is changed.

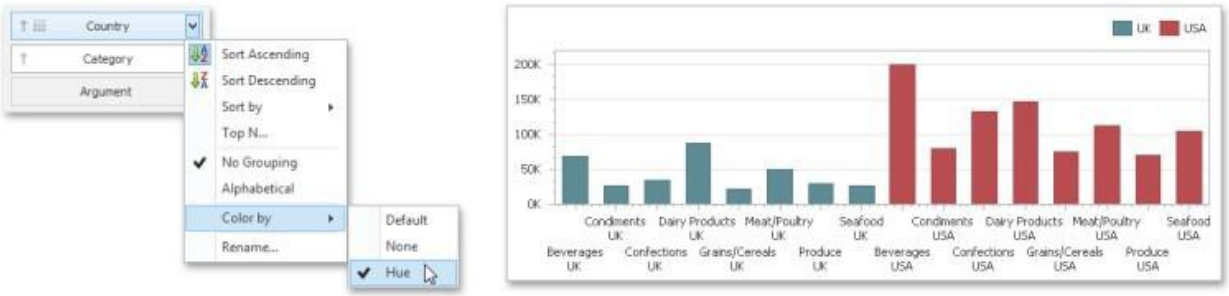
Coloring Dimensions and Measures

Dashboard items allow you to manage the coloring of individual dimensions or all dashboard item measures using predefined coloring modes.

Coloring Mode	Description
Default	Dimension values/measures are colored by default. To learn how specific dashboard items color their elements by default, see the Coloring topic for the corresponding dashboard item.
Hue	Dimension values/measures are colored by hue. If coloring by hue is enabled, a data item indicates this using the indicator.
None	Dimension values/measures are colored with the same color.

Coloring Dimension Values

To specify the coloring mode for the required dimension, click the dimension's menu button and use the **Color by** sub-menu. For instance, the image below shows the Chart dashboard item whose 'Country' dimension is colored by hue.



Coloring Measures

To specify the coloring mode for dashboard item measures, click the menu button of any measure and use the **Color by** sub-menu. For instance, the image below shows the Pie dashboard item whose measures are colored by hue.

If you enabled coloring by hue for several dimensions/measures, all combinations of dimension values/measures will be automatically colored using different colors from the default palette.

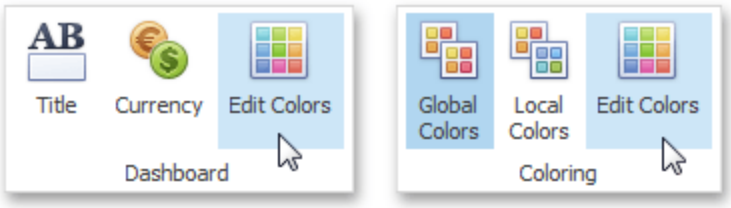
Customizing a Color Scheme

The Dashboard Designer provides the capability to edit colors contained in global and local color schemes. You can select the required color from the default dashboard palette or specify a custom color.

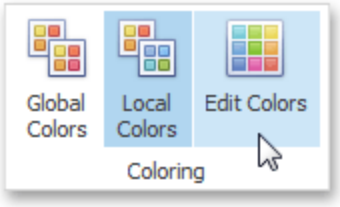
Invoke a Color Scheme Dialog

To edit colors, use the Color Scheme dialog. You can invoke this dialog in the following ways:

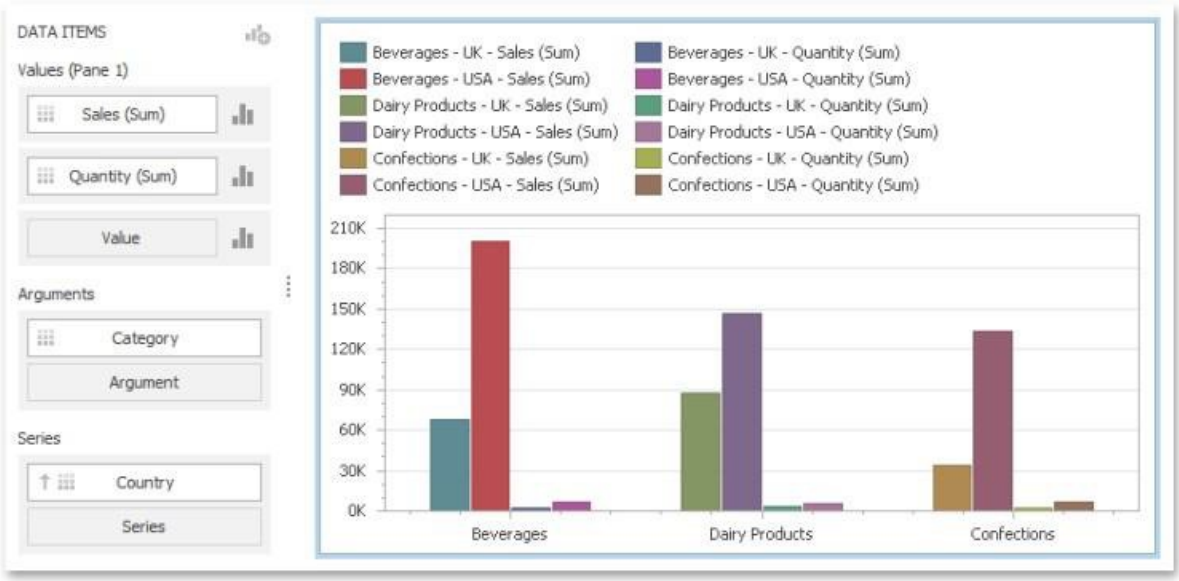
To edit colors in a global color scheme, use the **Edit Colors** button in the **Home** ribbon tab or the Edit Colors button in the dashboard item's **Design** tab.



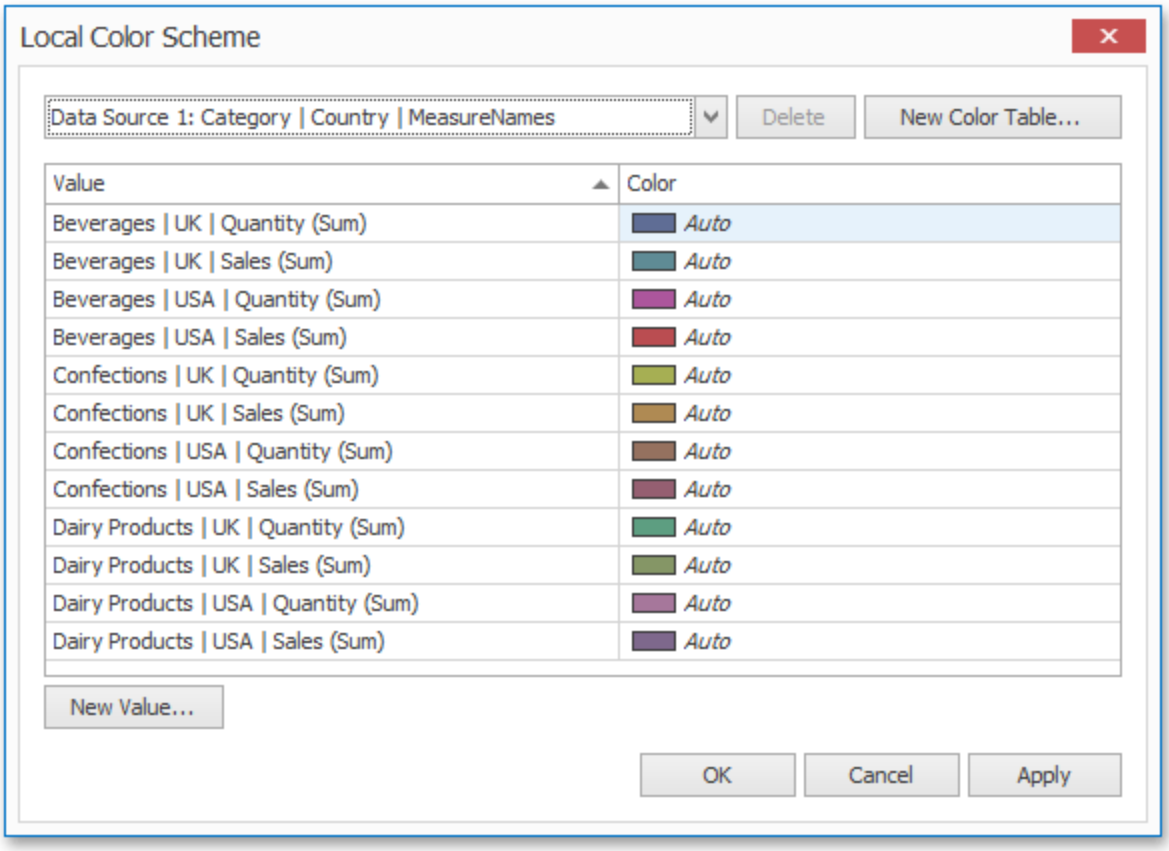
To edit colors in a local color scheme, use the **Edit Colors** button in the contextual **Design** ribbon tab.



Lets consider a Chart dashboard item whose dimensions and measures are colored by hue using local colors.



For this dashboard item, the Color Scheme dialog will contain combinations of all dimension values and a specific measure.



In this dialog, you can perform the following actions:

- Edit automatically assigned colors or specify new colors.
- Add new values to a color table.
- Add new color tables containing values whose colors are not yet assigned.

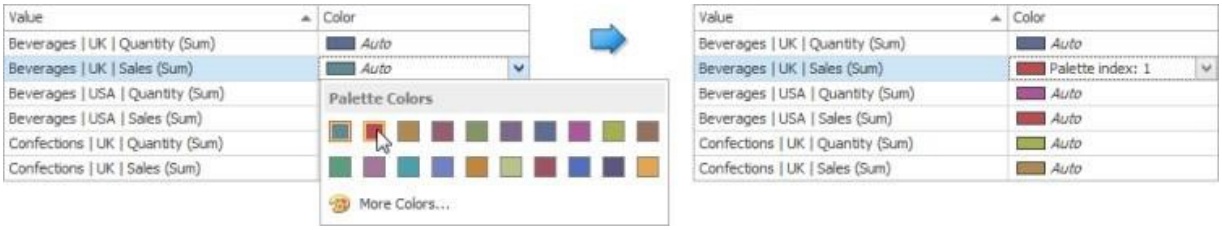
Edit Colors

You can customize automatically assigned colors in several ways.

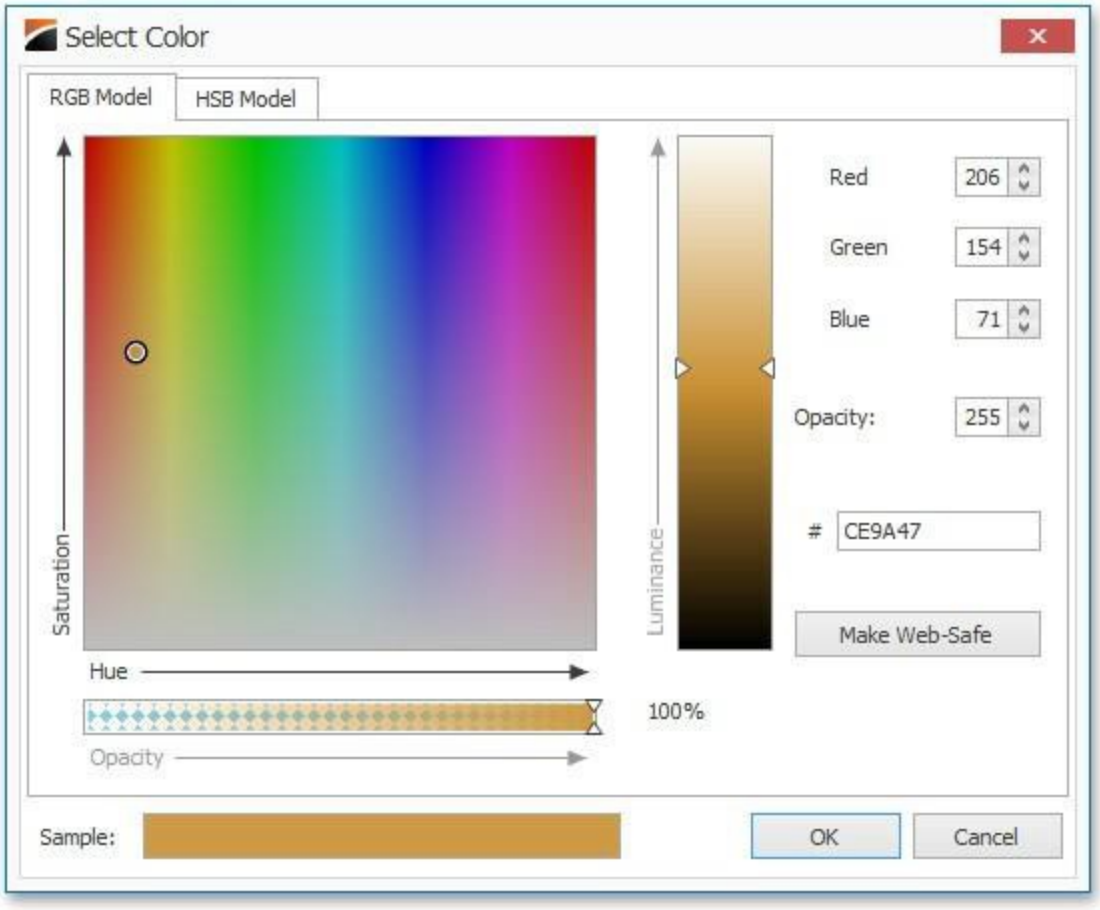
To retain the automatically assigned color for the selected value, right-click the required value in the Value column and select **Retain this color**.

This reserves the current palette color for the selected value.

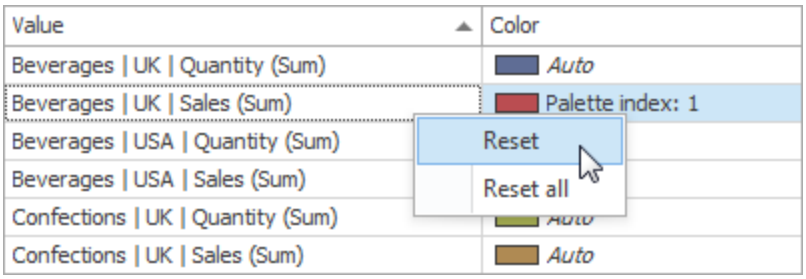
You can select another palette color by clicking the required cell in the **Color** column.



To specify a custom color, click **More Colors...** and pick any color using the RGB or HSB color model in the invoked **Select Color dialog**.

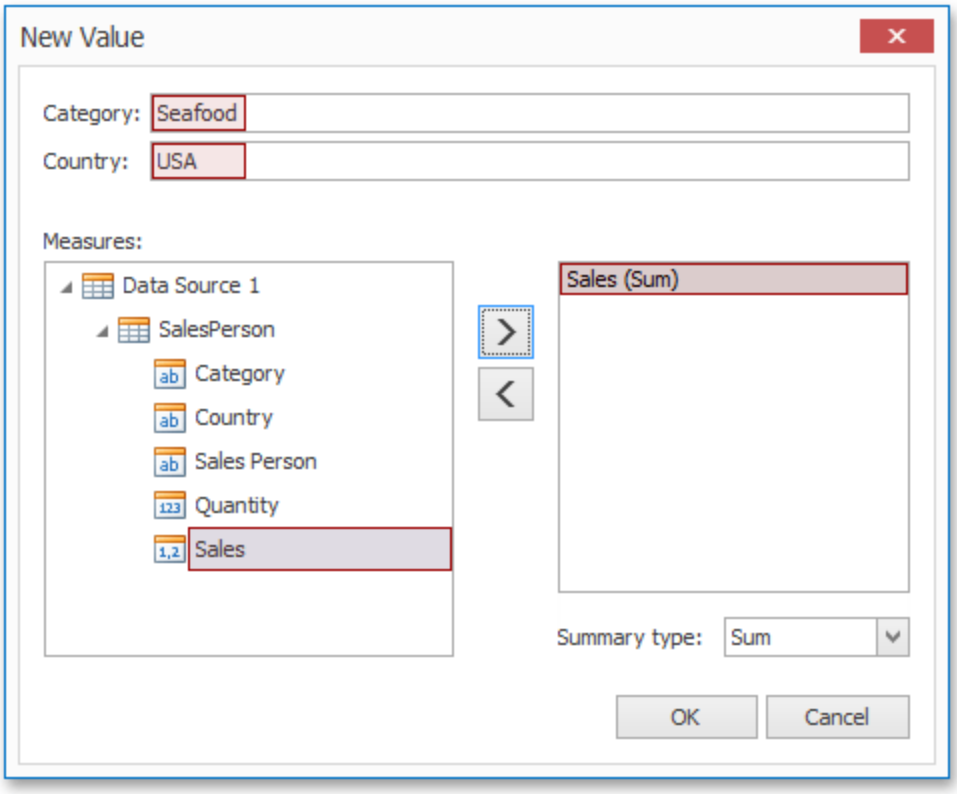


You can reset the customized color for the selected value using the **Reset** menu item.



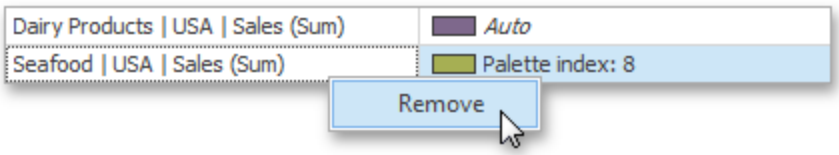
Add a New Value

The Color Scheme dialog allows you adding a new value with the specified color to the selected color table. To do this, click the **New Value...** button.



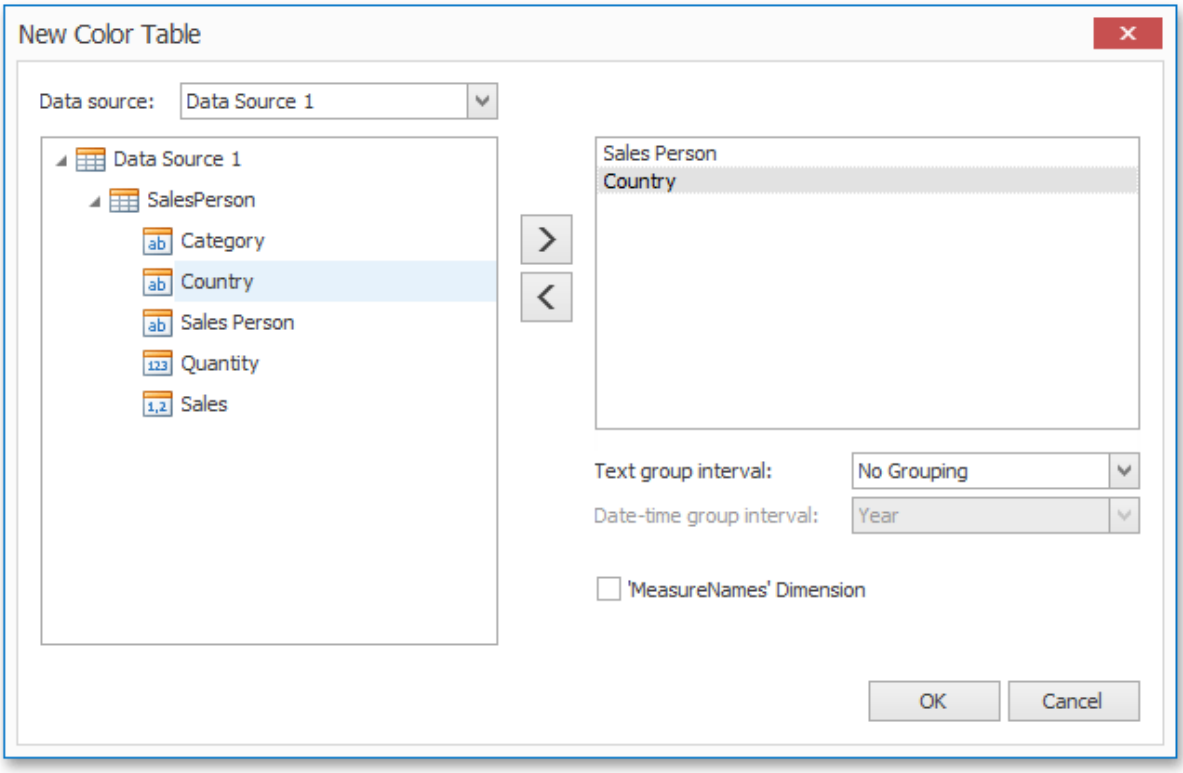
In the invoked New Value dialog, specify the dimension values, add the required measures and click **OK**. This creates a new value whose color can be specified as described in **Edit Colors**.

You can remove manually added values using the **Remove** context menu item.



Add a New Color Table

The Color Scheme dialog also allows you to add a new color table containing values whose colors are not yet assigned. To do this, click **New Color Table...** button.



In the invoked dialog, specify the data source, add the required dimensions and enable the 'MeasureNames' Dimension check-box if you need to add measures to a color table.

Click **OK** to add the color table to a color scheme. Then, you can add values to this table (see Add a New Value) and specify its colors (see Edit Colors).

Data Analysis

This section describes how to perform advanced data analysis using the aggregate and window functions, dashboard parameters, etc.

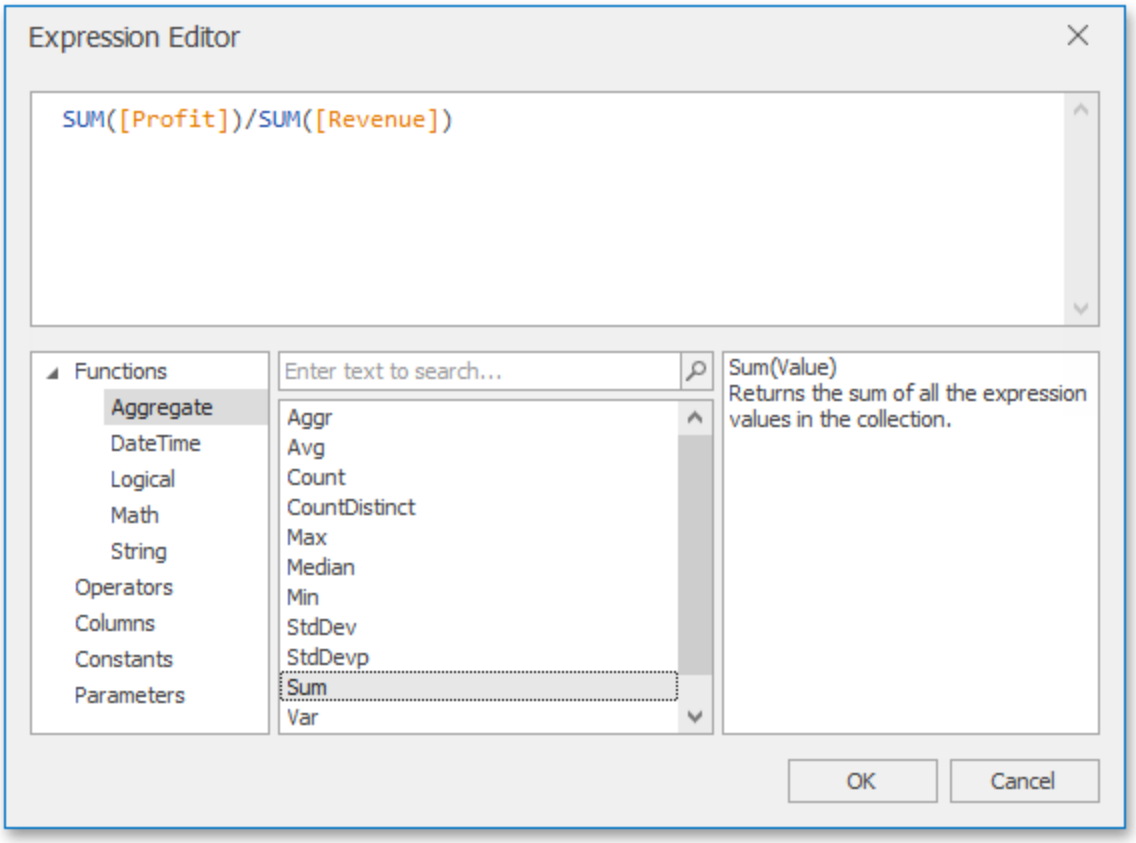
Aggregations

Topics in this section describe functions used to introduce additional aggregation levels to prepare underlying data.

Summary Level Aggregations

The BI Dashboard Designer allows you to perform aggregations when constructing a calculated field expression. This allows you to evaluate calculated fields on a summary level.

In the BI Dashboard Designer, you can use the following set of predefined aggregate functions.



Function	Description
Aggr (SummaryExpression, Dimensions)	Aggregates underlying data using the detail level specified by a predefined set of dimensions and a specified summary function. To learn more, see Intermediate Level Aggregations.
Avg(Value)	Returnstheaverageofallthevaluesinthe expression.
Count()	Returnsthenumberofvalues.
CountDistinct(Value)	Returnsthenumberofdistinct values.
Max(Value)	Returnsthemaximumvalueacrossall records.

Min(Value)	Returnstheminimumvalueacrossallrecords.
Median(Value)	Returnsthemedianofthevalues.
Sum(Value)	Returnsthesumofall values.
Var(Value)	Returns an estimate of the variance of a population where the sample is a subset of the entire population.

Varp(Value)	Returns the variance of a population where the population isthe entire data to besummarized.
StdDev (Value)	Returns an estimate of the standard deviation of a populationwherethesampleisasubsetoftheentire population.
StdDevp (Value)	Returns the standard deviation of a population where the population is the entire data to besummarized.

These functions can be used for all types of numeric fields

Intermediate Level Aggregations

The Dashboard can aggregate and summarize data on different levels.

- The **Query Builder** allows you to prepare an underlying data source before analyzing data. You can apply grouping, sorting, summarization and other data shaping operations during data selection.
- Dashboard items aggregate and summarize data at a visualization level using dimensions and measures, respectively.
- The **Aggr function** allows you to introduce an intermediate detail level that is not related to the visualization level. This allows you to create custom aggregations at different levels and combine these aggregations with existing visualizations.

The Aggr function aggregates and summarizes underlying data using the detail level specified by a predefined set of dimensions and a specified summary function. This function can be used during the creation of a new calculated field in the Expression Editor.

The Aggr function has the following syntax:

C#
```
Aggr(summaryExpression,dimension1,dimension2,...)
```

The first argument is a summary expression calculated against a specific data source field. The next arguments are the set of dimensions whose values are aggregated and used to calculate summaries specified using the first argument. For instance, the following function calculates sums of sales for each product within the specified category.

C#
```
Aggr(Sum([Sales]),[Category],[Product])
```

If you created the calculated field that includes the Aggr function and dropped the created field into an existing dashboard item, the Dashboard joins the resulting aggregation with the already displayed data. This means that you can add data with the increased or decreased granularity to the dashboard item. There are two main scenarios.

In the first scenario, an aggregation has a less detailed granularity than visualized data.

In this scenario, an underlying data source contains the list of orders for two categories and corresponding products.

Order ID	Category	Product	Sales
1	Beverages	Chai	10
2	Beverages	Chai	15
3	Beverages	Coffee	35
4	Beverages	Coffee	20
5	Confections	Chocolate	40
6	Confections	Chocolate	55
7	Confections	Biscuits	25
8	Confections	Biscuits	35

To aggregate this data by individual categories, create a calculated field with the following expression.

C#
```
Aggr(Sum([Sales]),[Category])
```

The following internal table will be generated for this calculated field.

Order ID	Category	Product	Sales
1	Beverages	Chai	10
2	Beverages	Chai	15
3	Beverages	Coffee	35
4	Beverages	Coffee	20
5	Confections	Chocolate	40
6	Confections	Chocolate	55
7	Confections	Biscuits	25
8	Confections	Biscuits	35

Beverages	80
Confections	155

The sample Grid dashboard item contains more detailed data and includes the following columns: Category, Product, and the sum of Sales.

Category	Product	Sales (Sum)
Beverages	Chai	$25
Beverages	Coffee	$55
Confections	Biscuits	$60
Confections	Chocolate	$95

If you drop the created calculated field to the Grid, the sum of sales for each category will be repeated for each Grid row.

Category	Product	Sales (Sum)
Beverages	Chai	$25
Beverages	Coffee	$55
Confections	Biscuits	$60
Confections	Chocolate	$95

Beverages	80
Confections	155

Category	Product	Sales (Sum)	Sales by Category (Sum)
Beverages	Chai	$25	$80
Beverages	Coffee	$55	$80
Confections	Biscuits	$60	$155
Confections	Chocolate	$95	$155

For instance, you can use these values later to calculate a contribution of each product to a categorys sales.

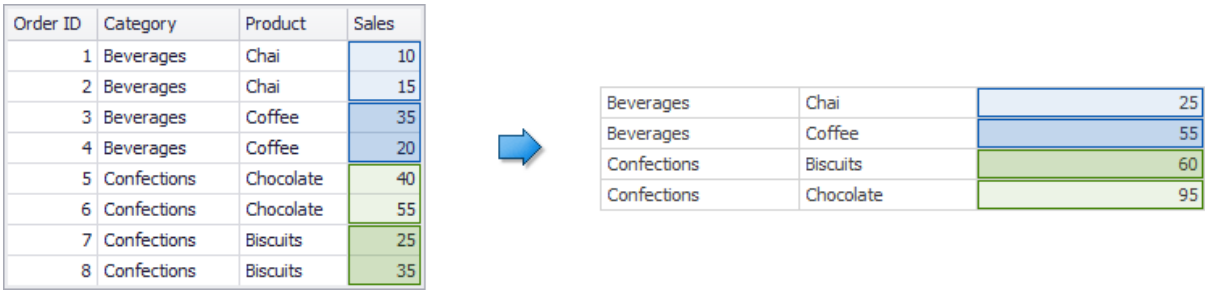
An aggregation has a more detailed granularity than visualized data.

To aggregate this data by categories and products, create a calculated field with the following expression.

C#

```
Aggr(Sum([Sales]),[Category],[Product])
```

The following internal table will be generated for this calculated field.



Order ID	Category	Product	Sales
1	Beverages	Chai	10
2	Beverages	Chai	15
3	Beverages	Coffee	35
4	Beverages	Coffee	20
5	Confections	Chocolate	40
6	Confections	Chocolate	55
7	Confections	Biscuits	25
8	Confections	Biscuits	35

Beverages	Chai	25
Beverages	Coffee	55
Confections	Biscuits	60
Confections	Chocolate	95

Drop the created calculated field to the Grid and set its summary type to **Min**. The Grid will display minimum product sales within each category.

Category	Sales (Sum)
Beverages	$80
Confections	$155

Summary type = Min

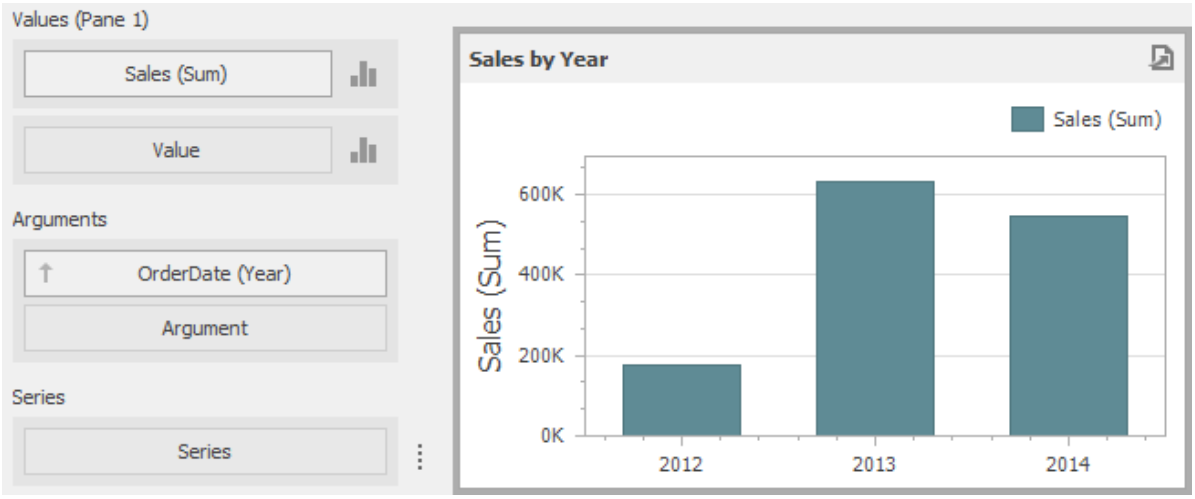
Beverages	Chai	25
Beverages	Coffee	55
Confections	Biscuits	60
Confections	Chocolate	95

Category	Sales (Sum)	Sales by Product (Min)
Beverages	$80	$25
Confections	$155	$60

Example 1: Best/Worst Sales by Year

The following example shows how to display best and worst monthly sales for each year.

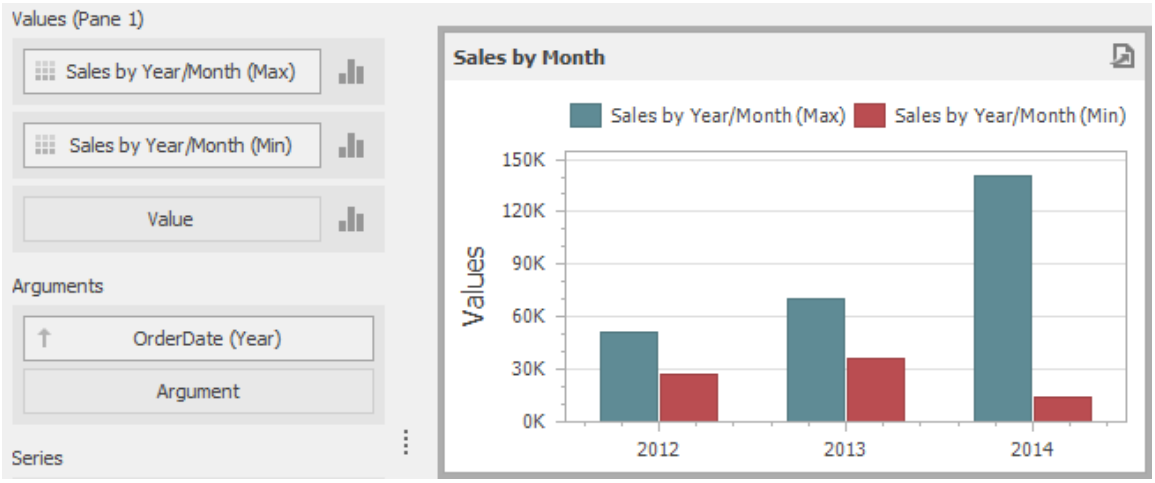
In this example, the Chart dashboard item shows the sum of sales by different years. The Sales field is placed in the Values section and the OrderDate (with the Year group interval) is placed in the Arguments section.



To display sales by the best/worst months for each year, create a new calculated field with the following expression.

C#
```
Aggr(Sum([Sales]),GetYear([OrderDate]),GetMonth([OrderDate]))
```

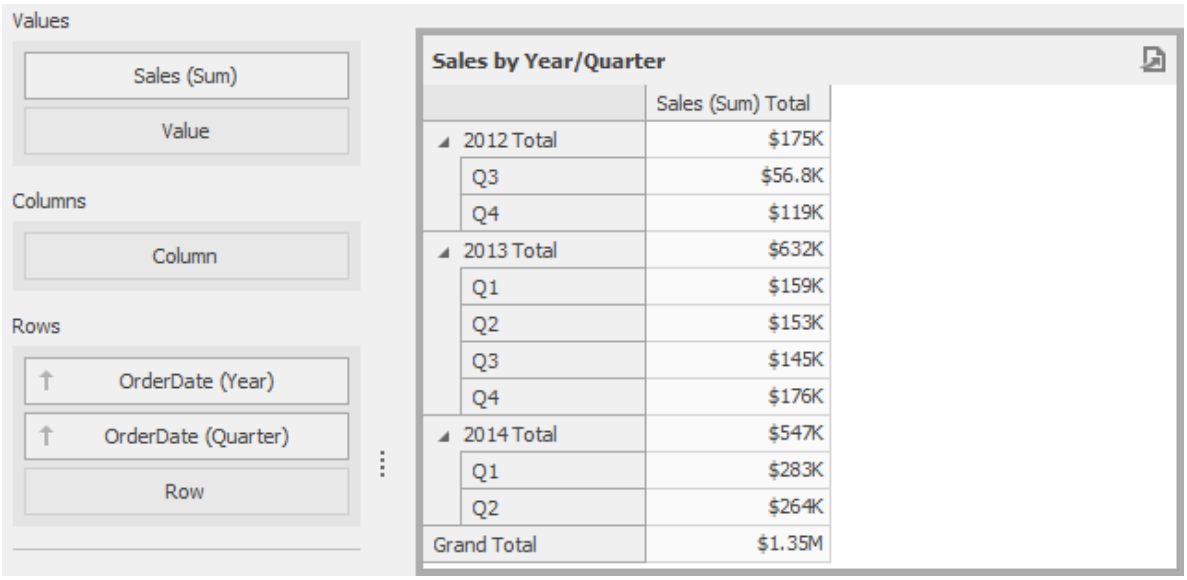
Drop this field (Sales by Year/M on th in the image below) to the Values section and set its summary type to **Max**. Then, drop this field to Values again and set its summary type to Min. The Chart will visualize sales by the best/ worst months in a year.



Example 2: Percent of Total

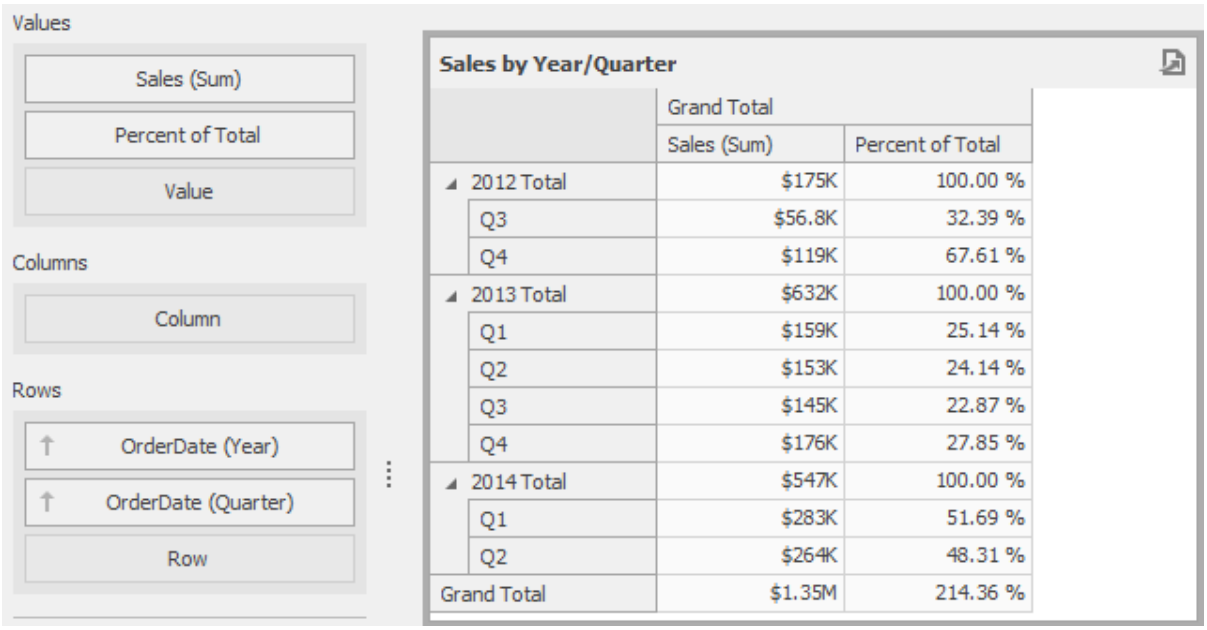
This example will demonstrate how to calculate a contribution of individual quarter sales to year sales.

In this example, the Pivot dashboard item displays the sum of sales by year/quarter. The Sales field is placed in the Values section and the hierarchy of OrderDate fields (with the Year and Quarter group intervals) is placed in Rows.



To calculate a contribution of each quarter to a year sales, do the following:

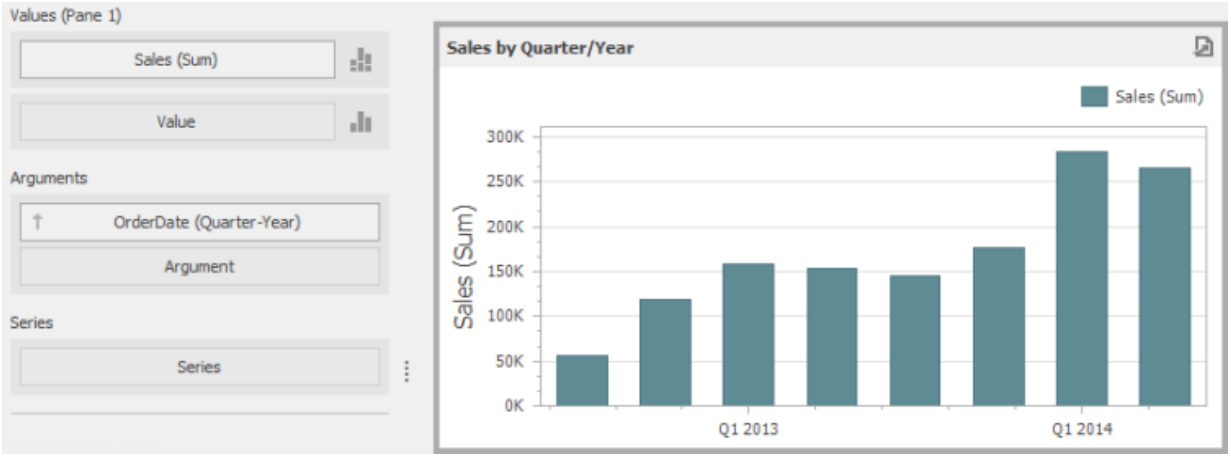
1. Calculate totals for each year using the Aggr function by creating the following calculated field.
2. C#
   Aggr(Sum([Sales]),GetYear([OrderDate]))
3. Set the name of the created field to **Sales by Year**.
4. Calculate a contribution of each quarter to year sales by creating the following calculated field.
5. C#
   Sum([Sales])/Max([SalesbyYear])
6. Name this field **Percent of Total** and drop it to Values to see the result.



Example 3: Customer Acquisition

In this example, a customer acquisition will be evaluated by grouping customers by the quarter/year of their first purchase to compare sales contributions.

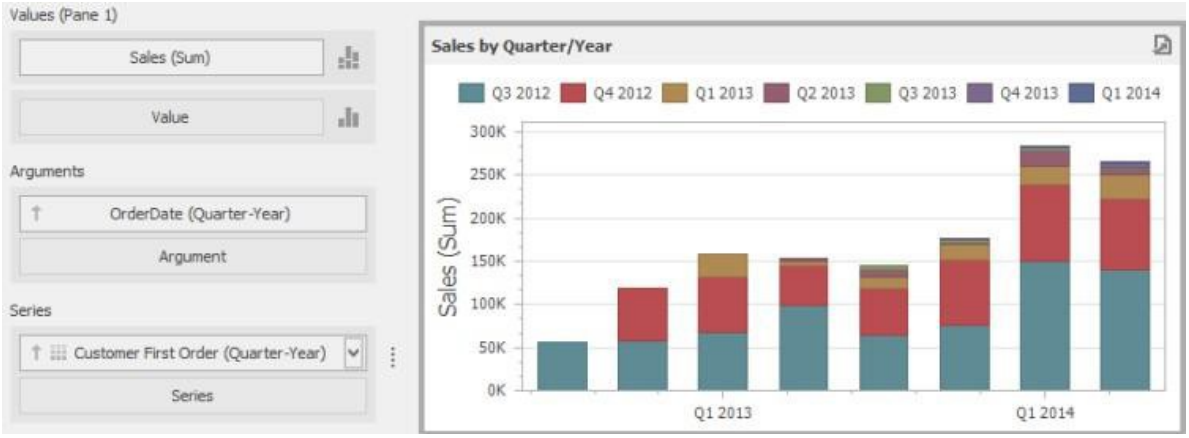
The Chart dashboard item below visualizes sales by quarter/year.



The following expression determines the minimum order date (the first purchase date) per customer.

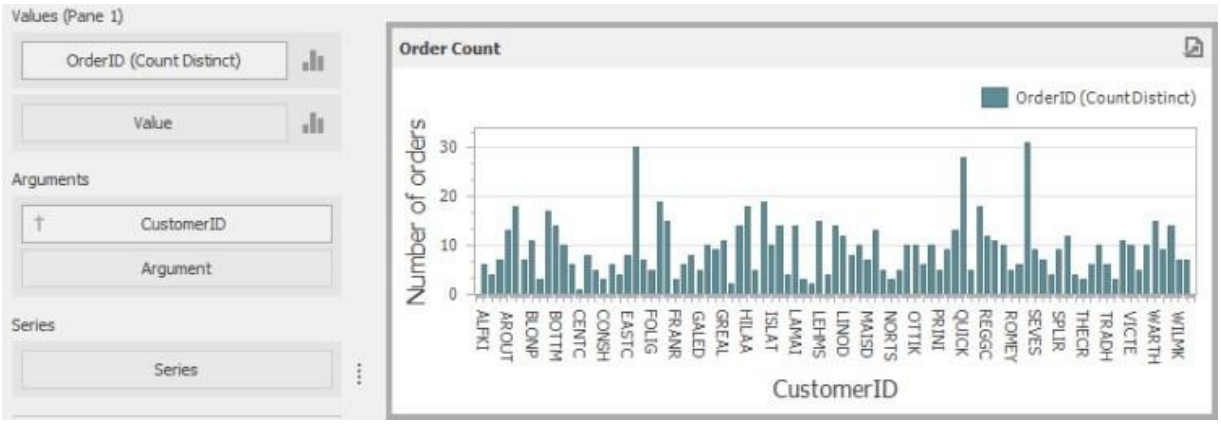
C#
Aggr(Min(GetDateQuarterYear([OrderDate])),[CustomerID])

Set the name of the created field to **Customer First Order** and drop this field to the Series section to see the result.



Example 4: Customer Order Count

In this example, you will learn how to divide customers count by the number of orders they made. The Chart below shows the number of orders that is made by each customer.



The calculated field below evaluates the number of unique orders made by each customer.

C#
Aggr(CountDistinct([OrderID]),[CustomerID])

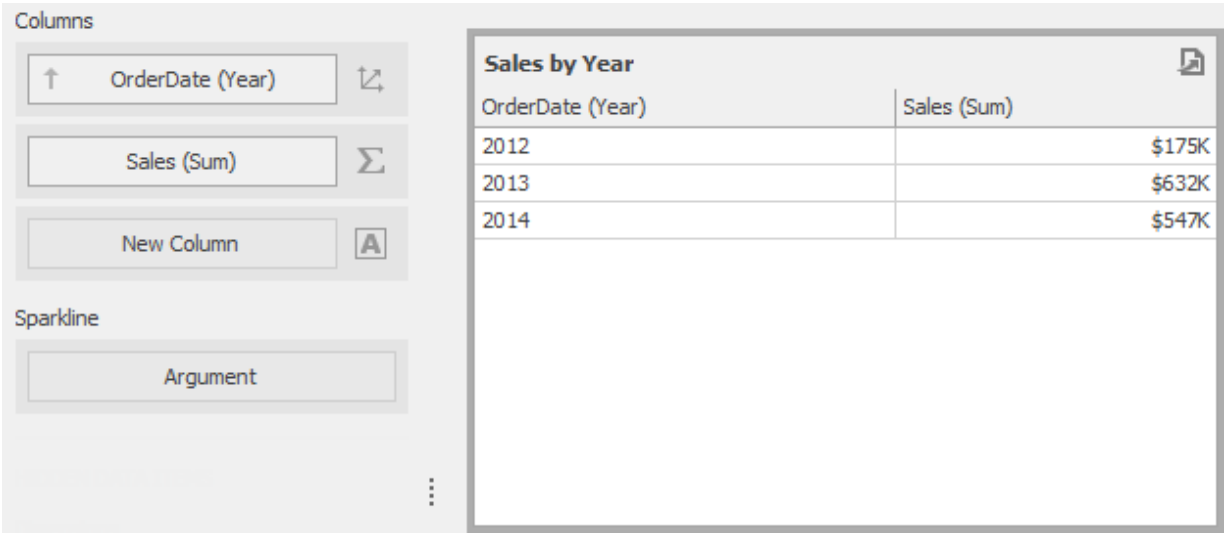
Set the name of this field to **Customer Order Count** and drop this field to arguments. Then, drop the CustomerID field to Values and change its summary type to **Count Distinct**.

The Chart will show the number of customers that made a specific number of orders.

Example 5: Best Product Sales by Year

This scenario requires the use of nested aggregations. In this example, the dashboard will show products with the best sales in a year along with sales values.

The initial Grid dashboard item shows sales of all products by year (the OrderDate column with the Year group interval and the Sales column). The data source also contains the Product Name field.



To implement this scenario, perform the following steps.

Create the calculated field that will return product sales for individual years.

C#
```
Aggr(Sum([Sales]),GetYear([OrderDate]),[ProductName])
```

Set its name to **Product Sales by Year**.

Create the calculated field that will return maximum sales values.

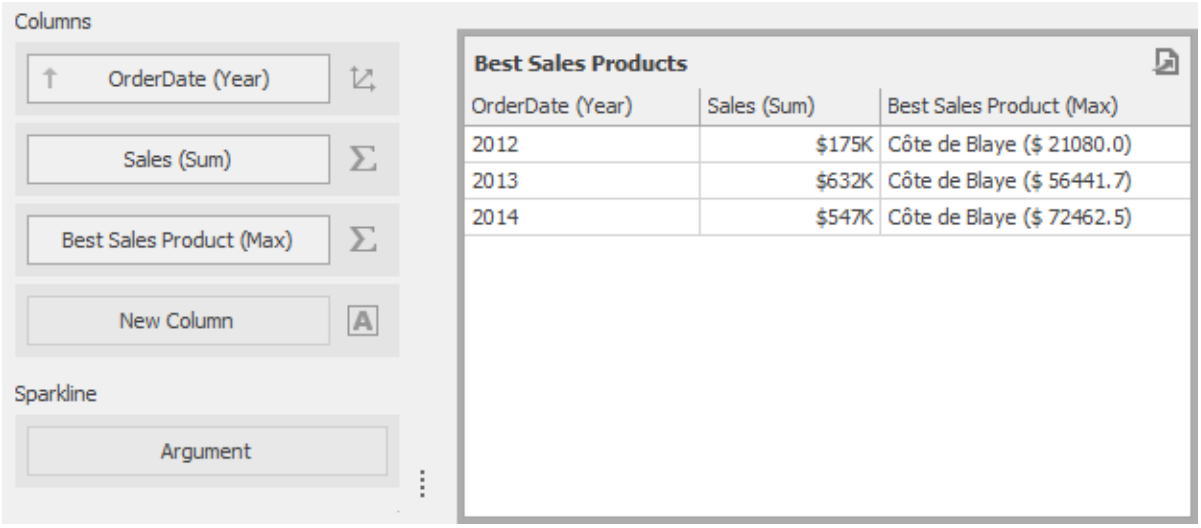
C#
```
Aggr(Max([ProductSalesbyYear]),GetYear([OrderDate]))
```

Set its name to **Max Product Sales by Year**.

Finally, create a calculated field returning the name of the product with the best sales and a corresponding sales value.

C#
```
Iif([MaxProductSalesbyYear]=[ProductSalesbyYear],[ProductName]+'($'+[ProductSa
```

Specify the name as **Best Sales Product**. Then, drop this field to the Columns section to see the result.



Window Calculations

Window calculations provide the capability to apply specific computations to measure values and allow you to perform different analytical tasks such as to compute running totals, percentages of totals, differences, etc.

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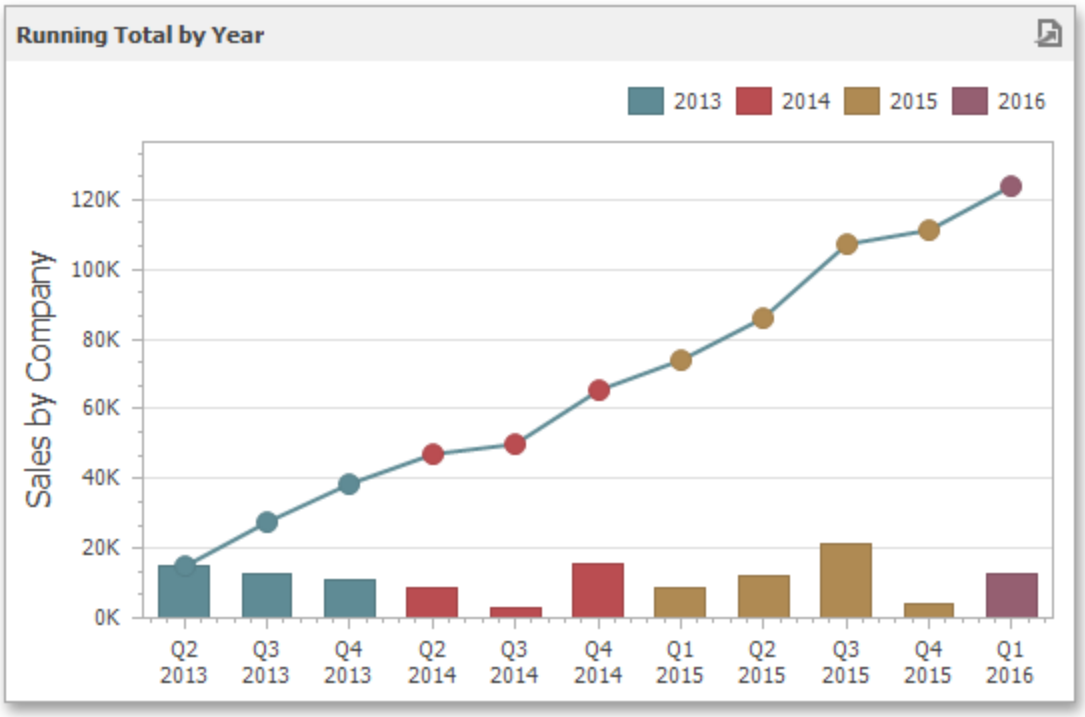


The Dashboard Designer allows you to apply window calculations to values of the specified measure. The following calculation types are supported:

Running Total: Allows you to calculate a cumulative total for a set of measure values.

Sales	Running Total	
10	10	
20	30	20+10
25	55	25+20+10
25	80	25+25+20+10
20	100	20+25+25+20+10

Moving Calculation: Allows you to apply a moving calculation, which uses neighboring values to calculate a total. Note that neighboring values are specified using offsets from the currently processed value.

Sales	Moving	StartOffset=-1; EndOffset=1
10	30	0+10+20
20	55	10+20+25
25	70	20+25+25
25	70	25+25+20
20	45	25+20+0

Difference: Allows you to compute differences between measure values.

Sales	Difference	
10		
20	10	20-10
25	5	25-20
25	0	25-25
20	-5	20-25

Percent of Total: Allows you to calculate a contribution of individual measure values to a total.

Sales	Percent	
10	10.00 %	10/100*100%
20	20.00 %	20/100*100%
25	25.00 %	25/100*100%
25	25.00 %	25/100*100%
20	20.00 %	20/100*100%

Rank: Allows you to rank values of the specified measure.

Sales	Rank	Competition rank
10	1	10 20 20 25 25
20	2	1 2 2 4 4
25	4	
25	4	
20	2	

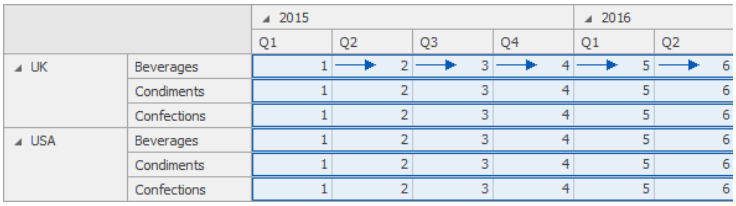
Note that the computing of calculations depends on two factors:

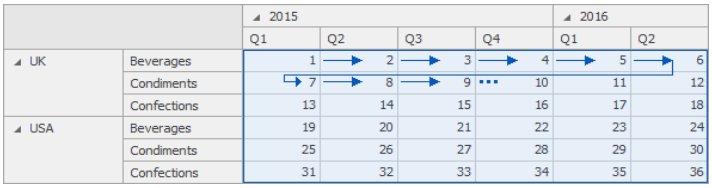
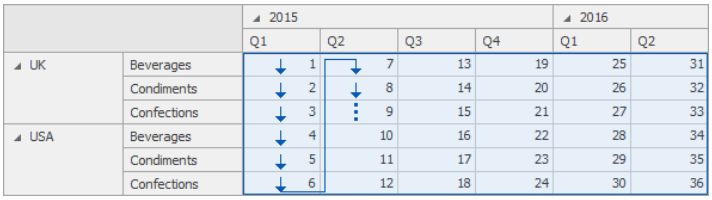
- The type of the dashboard item. In this case, you need to specify a calculation direction that depends on the dashboard item type. For instance, the Pivot dashboard item provides the capability to apply calculations along with its columns or rows.
- The set of dimensions that are used to calculate measure values. In this case, a calculation direction depends on the dimensions' order.

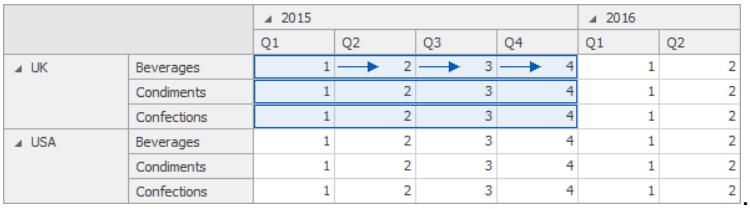
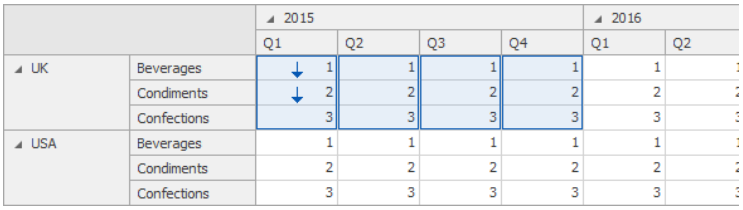
In both cases, measure values participating in a calculation fall into a specified window.

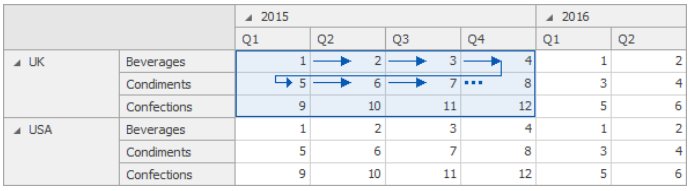
Dashboard Item Window Definition

The following table lists window definitions in terms of the Pivot dashboard item. A calculation is performed using the Index function along the following directions.

Direction	Description	Example Description
Columns	A calculation is performed horizontally through Pivot columns.	In this example, a window is a combination of Country/Category dimensions. 
Rows	A calculation is performed vertically through Pivot rows.	In this example, a window is a combination of Year/Quarter dimensions.

Columns/Rows	A calculation is performed horizontally through Pivot columns then rows.	In this example, a window is the entire pivot table. 
Rows/Columns	A calculation is performed vertically through Pivot rows then columns	In this example, a window is the entire pivot table. 

Columns within Groups	A calculation is performed horizontally through pivot columns within groups.	In this example, a window is a combination of the Country/Category and Year dimensions 
Rows within Groups	A calculation is performed vertically through pivot rows within groups.	In this example, a window is a combination of the Year/Quarter and Country dimensions. 

Columns/Rows within Groups	A calculation is performed horizontally through pivot columns then rows within groups.	In this example, a window is a combination of Country/Year dimensions. 
Rows/Columns within Groups	A calculation is performed vertically through pivot rows then columns within groups	In this example, a window is a combination of Country/Year dimensions.

*__Group__: An area that is limited by a set of values corresponding to the bottommost partitioning dimensions.

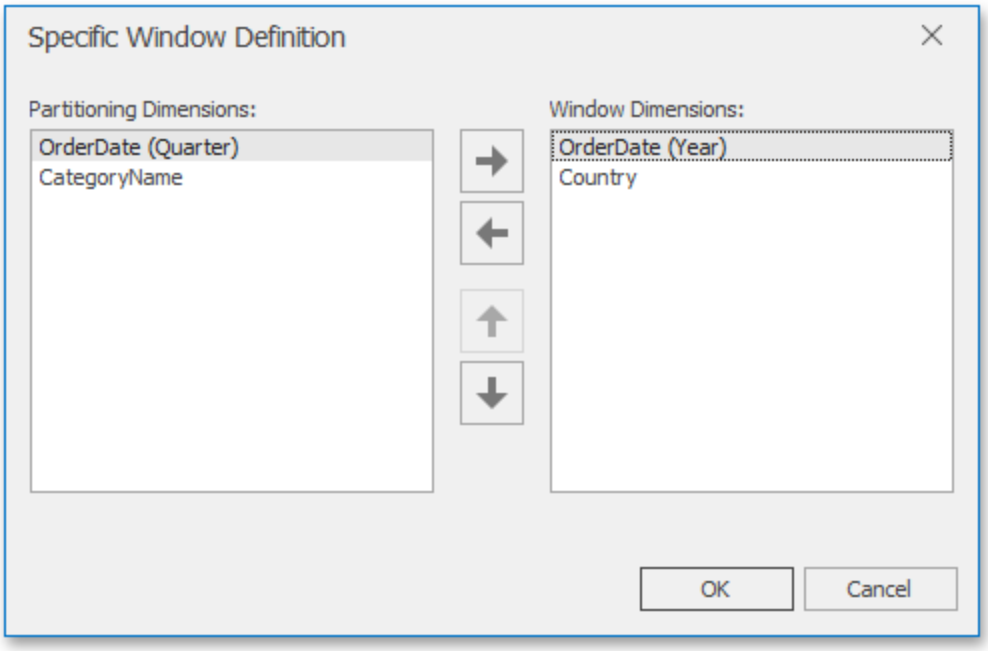
Specific Window Definition

If necessary, you can manually specify the set of dimensions that fall into the window. These dimensions are called window dimensions.

For instance, the Index function is applied to measure values of the pivot table below using the Order Date (Year) and Country window dimensions.

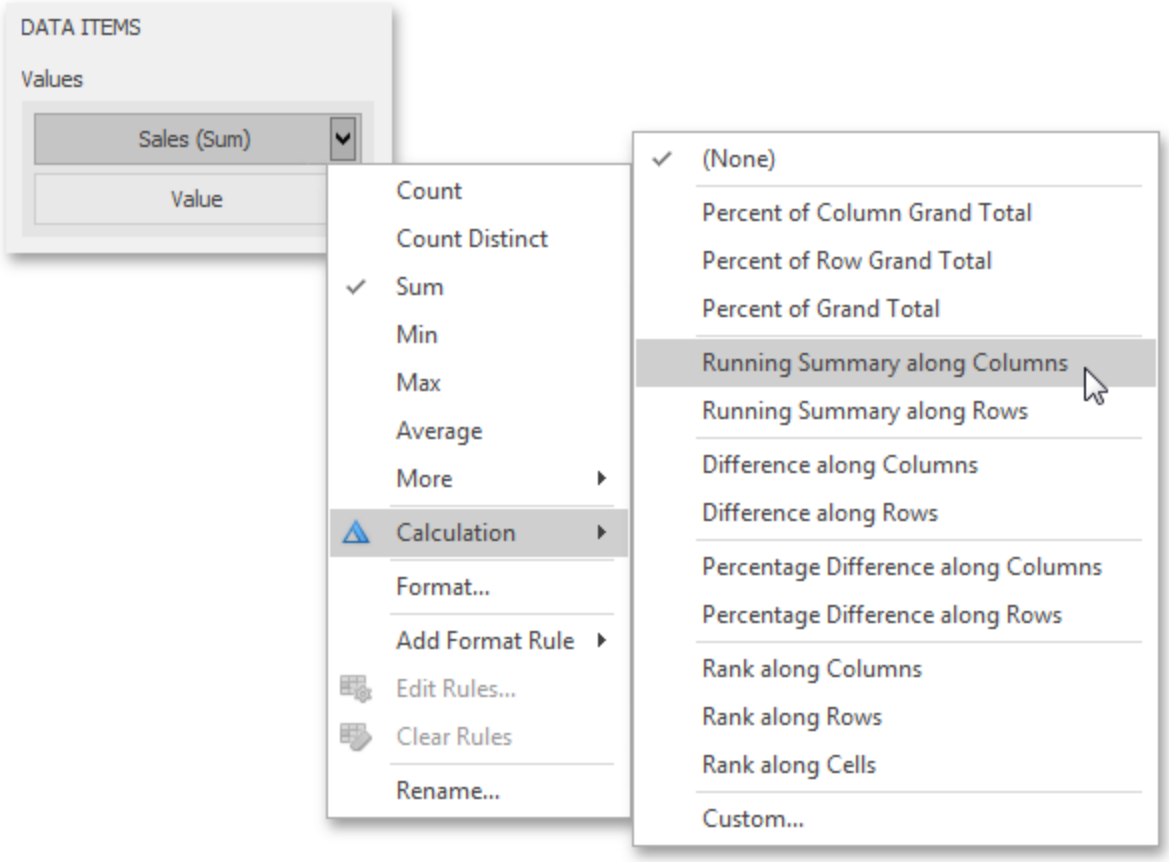
		2015				2016	
		Q1	Q2	Q3	Q4	Q1	Q2
UK	Beverages	1	1	1	1	3	3
	Condiments	1	1	1	1	3	3
	Confections	1	1	1	1	3	3
USA	Beverages	2	2	2	2	4	4
	Condiments	2	2	2	2	4	4
	Confections	2	2	2	2	4	4

The Specific Window Definition dialog allows you to do this.



Creating Window Calculations

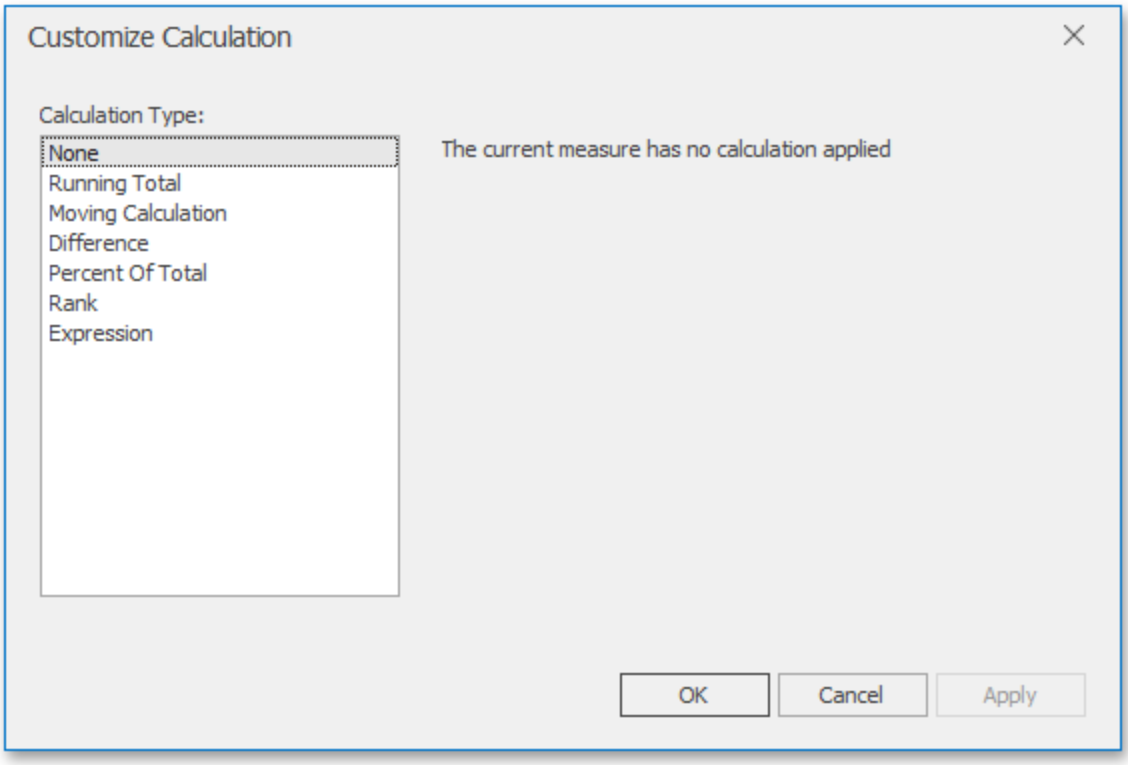
The Dashboard Designer allows you to add a window calculation for numeric measures. To do this, invoke the data item menu and select the required calculation type.



The image above shows a calculation menu of the Pivot dashboard item. The following items are available:

- **Percent of Column Grand Total**: Calculates a contribution of individual measure values to a column grand total.
- **Percent of Row Grand Total**: Calculates a contribution of individual measure values to a row grand total.
- **Percent of Grand Total**: Calculates a contribution of individual measure values to a grand total.
- **Running Summary along Columns**: Calculates a cumulative total for measure values along columns (horizontally).

- **Running Summary along Rows**: Calculates a cumulative total for measure values along rows (vertically).
- **Difference along Columns**: Calculates differences between measure values along columns (horizontally).
- **Difference along Rows**: Calculates differences between measure values along rows (vertically).
- **Percent Difference along Columns**: Calculates percentage differences between measure values along columns (horizontally).
- **Percent Difference along Rows**: Calculates percentage differences between measure values along rows (vertically).
- **Rank along Columns**: Ranks measure values along columns (horizontally).
- **Rank along Rows**: Ranks measure values along rows (vertically).
- **Rank along Cells**: Ranks measure values along cells (throughout the entire pivot table).
- **Custom...**: Allows you to create a custom calculation by specifying various settings. Clicking this invokes the Customize Calculation dialog that allows you to add additional customizations to



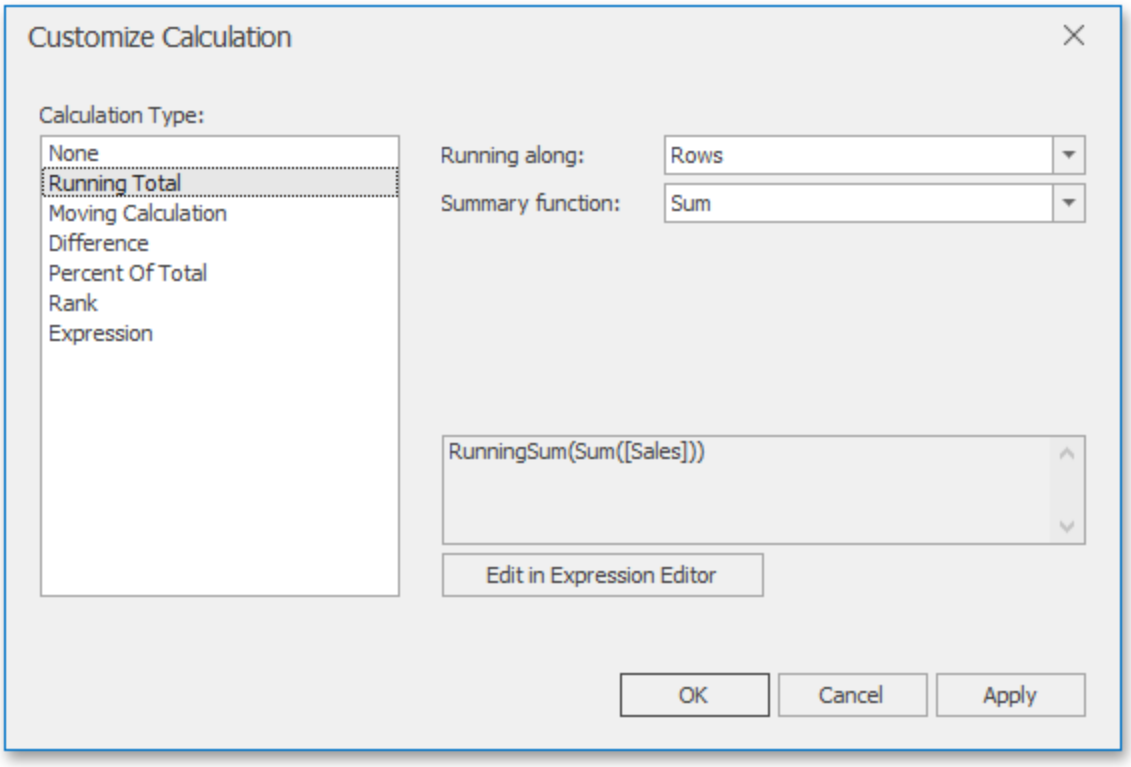
Note that the list of available items in this menu can be changed by the Dashboard Designer dynamically. For instance, if the Pivot dashboard item does not contain dimensions in the Rows section, menu items related to rows will be disabled.

Running Total

The Running Total calculation can be used to compute a cumulative total for the specified measure across a window. For example, the Grid below displays cumulative sales across all quarters.

Order Year	Order Quarter	Sales	Running Total
2015	Q1	$138K	$138K
	Q2	$143K	$281K
	Q3	$154K	$435K
	Q4	$182K	$617K
2016	Q1	$298K	$916K
	Q2	$142K	$1.06M

The Customize Calculation dialog provides the following settings for the Running Total calculation.



Running along: Specifies a window and direction used to calculate running totals.

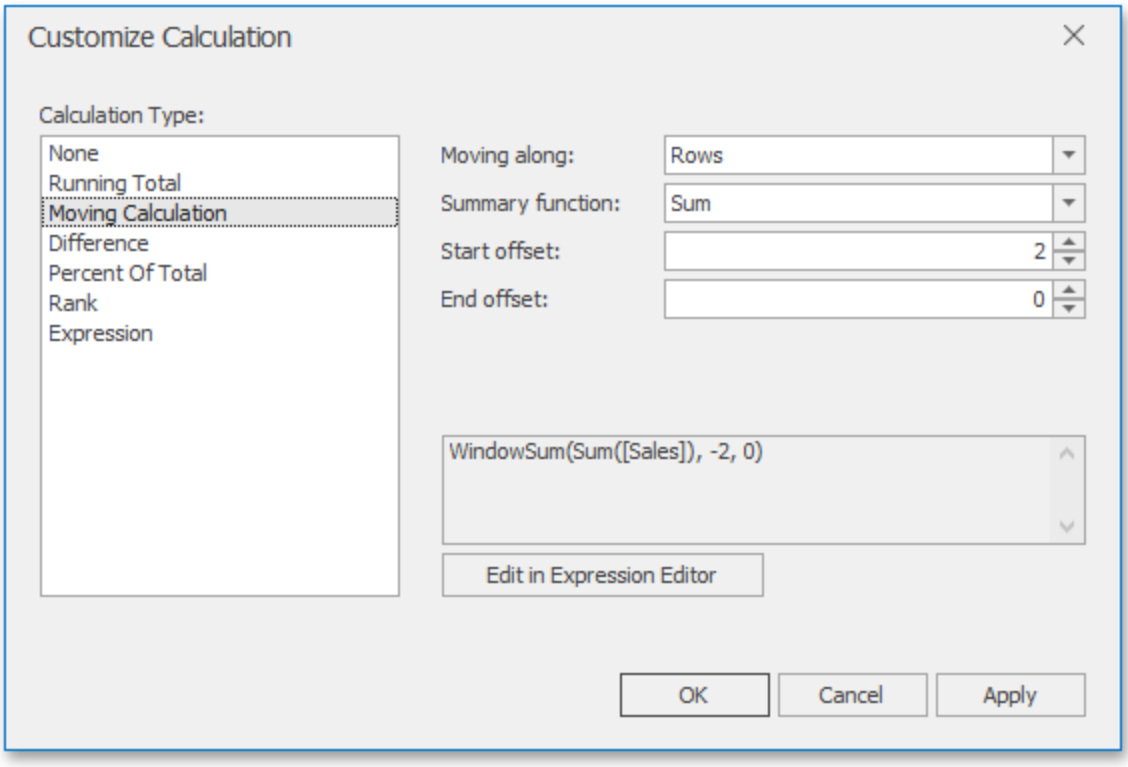
Summary function: Specifies a summary function used to apply calculation. To learn more about the available summary functions, see the Summary Function Types in the summary function topic.

Moving Calculation

The Moving calculation uses neighboring values to calculate a total. For example, the Grid below shows a moving average across all quarters.

Order Year	Order Quarter	Sales	Moving Average
2015	Q1	$138K	$138K
	Q2	$143K	$141K
	Q3	$154K	$145K
	Q4	$182K	$160K
2016	Q1	$298K	$211K
	Q2	$142K	$207K

The Customize Calculation dialog provides the following settings for the Moving calculation.



Moving along: Specifies a window and direction used to apply a calculation.

Summary function: Specifies a summary function used to apply a calculation. To learn more about the available summary functions, see the Summary Function Types in the summary function topic.

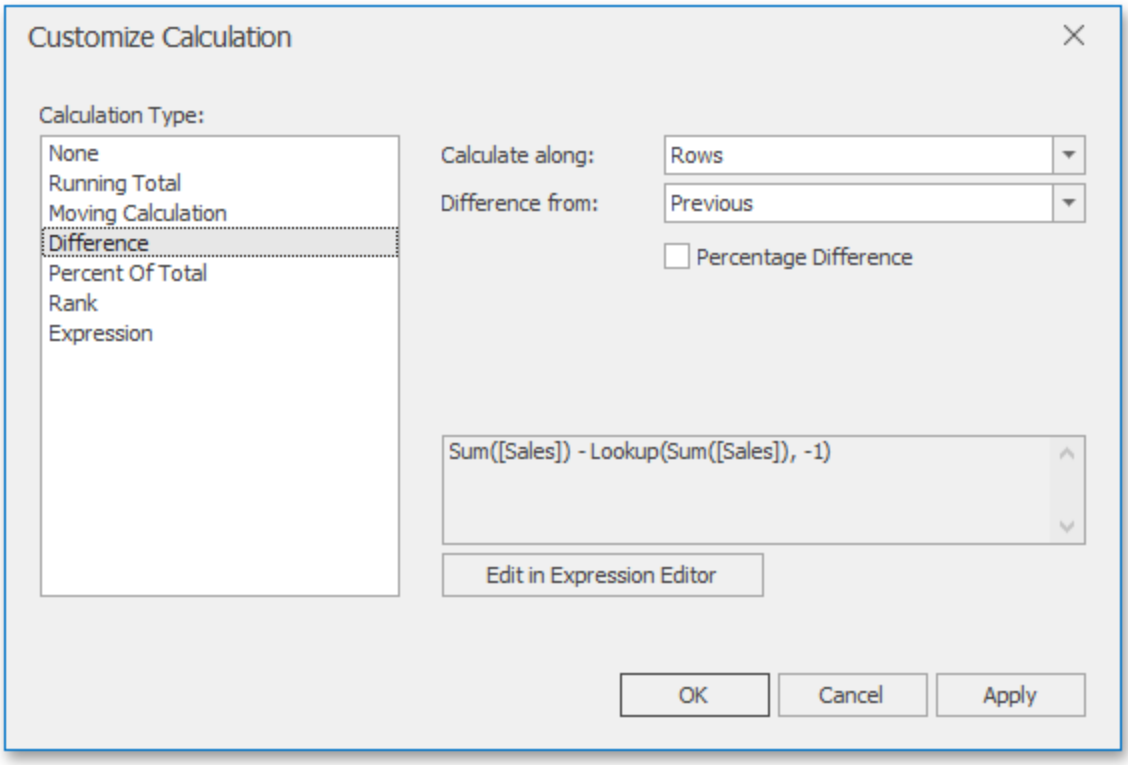
Start offset / End offset: Specify start/end offsets from the currently processed value. For instance, if you specified offsets as 1/1, the previous and next values will be used along with the current value to apply the Moving calculation.

Difference

The Difference calculation can be used to compute the difference between measure values across a window. For example, the Grid below shows absolute differences between quarterly sales.

Order Year	Order Quarter	Sales	Difference
2015	Q1	$138K	
	Q2	$143K	$4.89K
	Q3	$154K	$10.8K
	Q4	$182K	$27.7K
2016	Q1	$298K	$117K
	Q2	$142K	($156K)

The Customize Calculation dialog provides the following settings for the Difference calculation.



Calculate along: Specifies a window and direction used to calculate differences.

Difference from: Specifies the value used to calculate the difference. The following values are available: Previous, Next, First and Last.

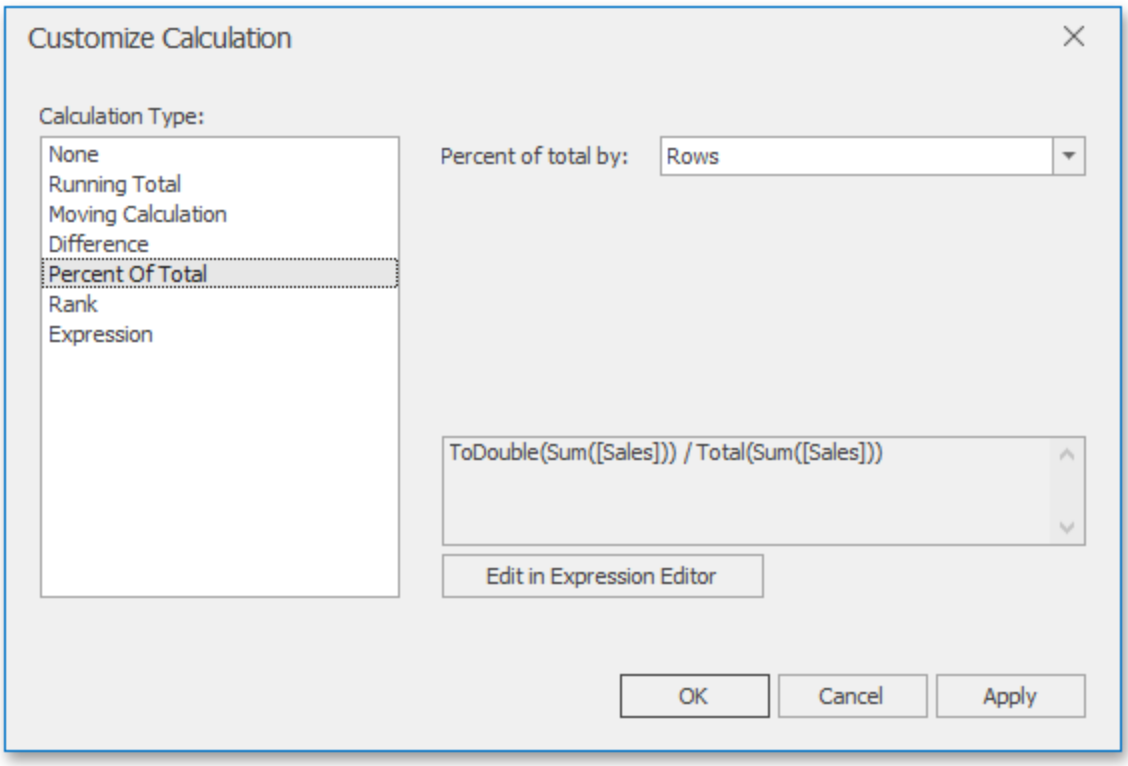
You can also use the Percent Difference option to specify whether the absolute or percentage difference is displayed.

Percent of Total

A calculation is used to compute a percentage of the total for the specified measure across a window. For example, the Grid below shows a contribution of individual quarterly sales to total sales.

Order Year	Order Quarter	Sales	Percent of Total
2015	Q1	$138K	13.07 %
	Q2	$143K	13.54 %
	Q3	$154K	14.55 %
	Q4	$182K	17.18 %
2016	Q1	$298K	28.22 %
	Q2	$142K	13.44 %

The Customize Calculation dialog provides the following settings for the Percent of Total calculation.



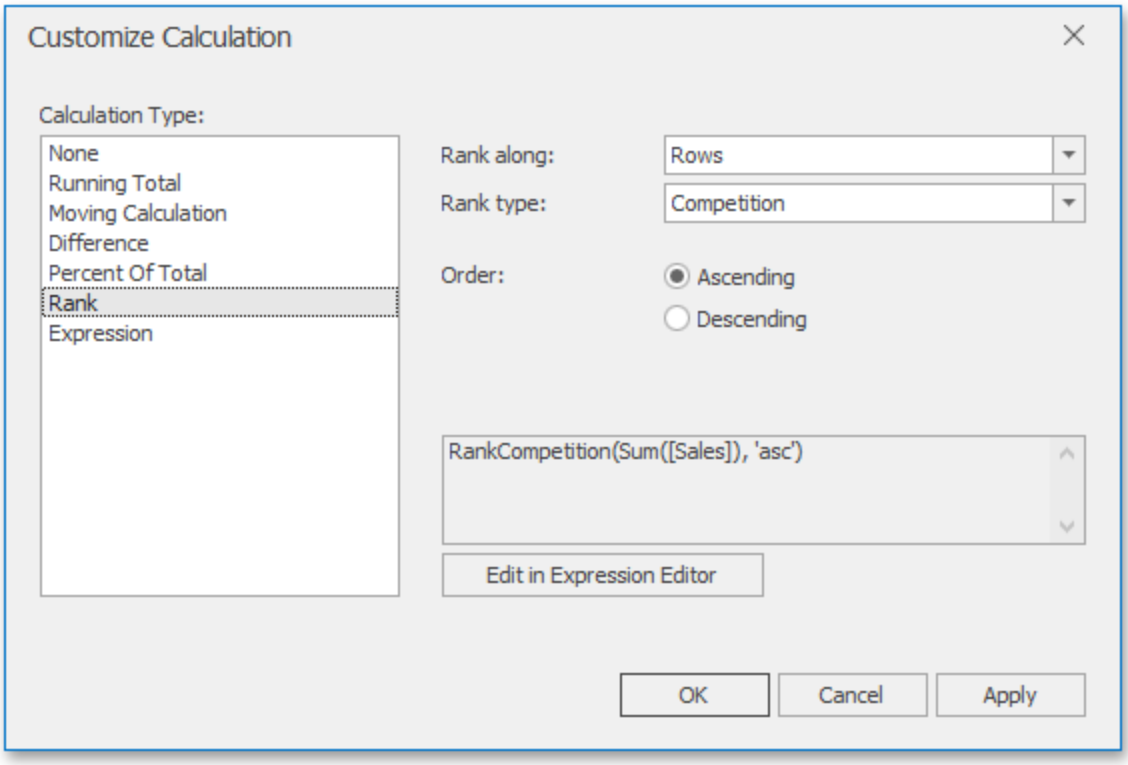
Percent of Total: Specifies a window and direction used to apply a Percent of Total calculation.

Rank

Use the Rank calculation to compute rankings for the specified measure across a window. For example, the Grid below shows a ranking of sales for individual quarters.

Order Year	Order Quarter	Sales	Rank
2015	Q1	$138K	6
	Q2	$143K	4
	Q3	$154K	3
	Q4	$182K	2
2016	Q1	$298K	1
	Q2	$142K	5

The Customize Calculation dialog provides the following settings for the Rank calculation.



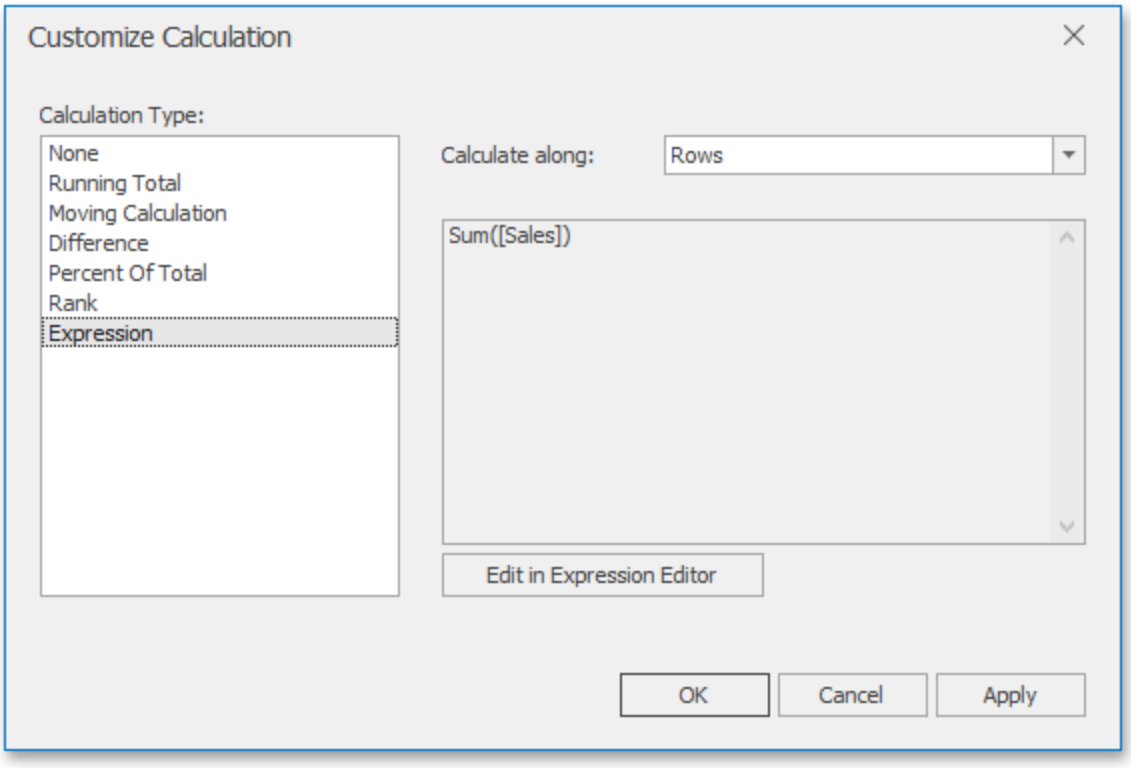
Rank along: Specifies a window and direction used to rank values.

Rank type: Specifies the type of ranking. The following rank types are available: Unique, Competition, Dense, Modified and Percentile.

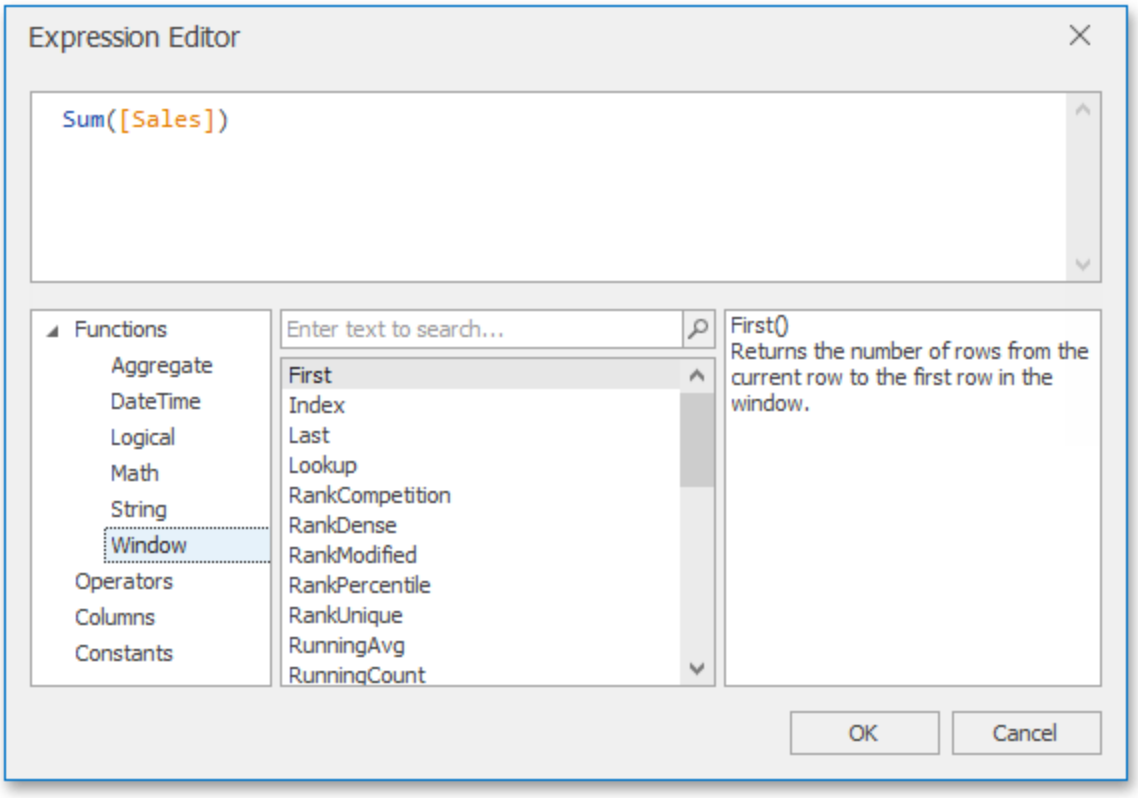
Order: Specifies the order of ranking. You can select Ascending or Descending.

Expression

Use Expression to specify a custom calculation by adding the required calculation functions inside the measure expression.



Click the **Edit in Expression Editor** button to invoke the Expression Editor and specify the required expression.

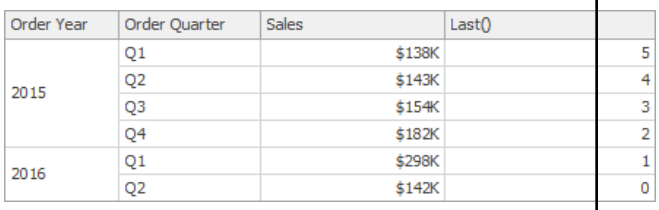
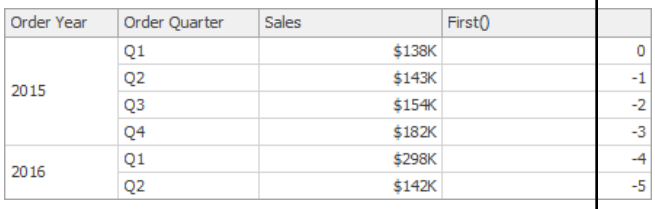
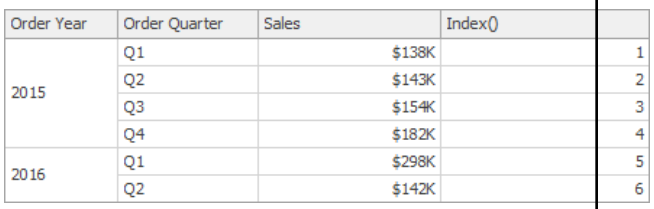
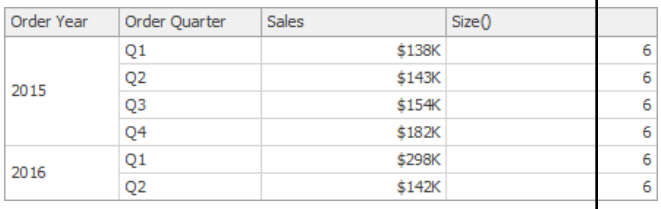


The Expression type provides the Calculate along option that specifies the window and direction used to calculate differences. Note that this option is in effect if the expression contains a calculation function.

Calculation Functions Reference

This topic contains the descriptions of window functions that can be used to specify measure expressions.

Function & Description	Example	Image

Last() Returns the number of rows from the current row to the last row in the window.	Last()	
First() Returns the number of rows from the current row to the first row in the window.	First()	
Index () Returns the index of the current row in the window.	Index()	
Size() Returns the number of rows in the window.	Size()	
Lookup (Summary Expression, Position) Returns the value of the expression in a target position specified as a relative offset from the current position.	Lookup(Sum ([Sales]), 3)	

Order Year	Order Quarter	Sales	Last()
2015	Q1	$138K	5
	Q2	$143K	4
	Q3	$154K	3
	Q4	$182K	2
2016	Q1	$298K	1
	Q2	$142K	0

Order Year	Order Quarter	Sales	First()
2015	Q1	$138K	0
	Q2	$143K	-1
	Q3	$154K	-2
	Q4	$182K	-3
2016	Q1	$298K	-4
	Q2	$142K	-5

Order Year	Order Quarter	Sales	Index()
2015	Q1	$138K	1
	Q2	$143K	2
	Q3	$154K	3
	Q4	$182K	4
2016	Q1	$298K	5
	Q2	$142K	6

Order Year	Order Quarter	Sales	Size()
2015	Q1	$138K	6
	Q2	$143K	6
	Q3	$154K	6
	Q4	$182K	6
2016	Q1	$298K	6
	Q2	$142K	6

Order Year	Order Quarter	Sales	Lookup(Sum([Sales]), 3)
2015	Q1	$138K	$18
	Q2	$143K	$29
	Q3	$154K	$14
	Q4	$182K	
2016	Q1	$298K	
	Q2	$142K	

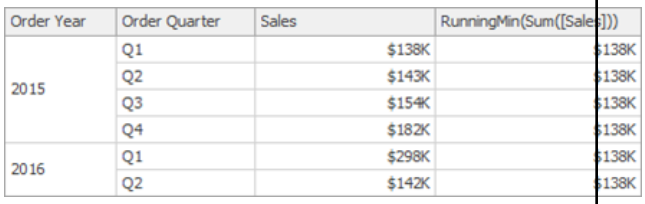
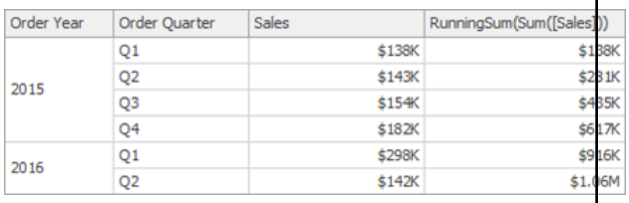
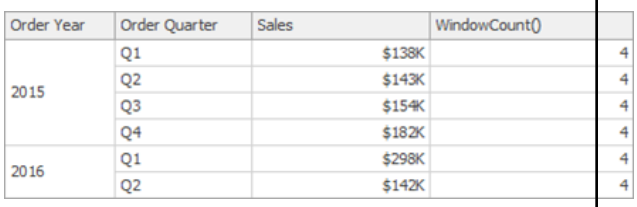
Ran Competition (Summary Expression, ['asc' | 'desc']) Returns the standard competition rank for the current row in the window.	RankCompeti tion (Sum ([Sales]), 'asc')	-
RankDense (SummaryExpressio n, ['asc' | 'desc']) Returns the dense rank for the current row in the window.	RankDense (Sum ([Sales]), 'asc')	-
RankUnique (SummaryExpressio n, ['asc' | 'desc']) Returns the unique rank for the current row in the window.	RankUnique (Sum ([Sales]), 'asc')	-
RankM odified (Summ aryExpression, ['asc' | 'desc']) Returns the modified competition rank for the current row in the window.	RankModified (Sum ([Sales]), 'asc')	-
RankPercentile (SummaryExpressio n, ['asc' | 'desc'])	RankPercentile (Sum ([Sales]), 'desc')	-

<table>
<tr><td>Returns the percentile rank for the current row in the window.</td><td></td><td></td></tr>
<tr><td>RunningAvg (SummaryExpression)

Returns the running average of the specified expression from the first row in the window to the current row.</td><td>Runnin gAvg (Sum ([Sales]))</td><td><table><tr><th>Order Year</th><th>Order Quarter</th><th>Sales</th><th>RunningAvg(Sum([Sales]))</th></tr><tr><td rowspan="4">2015</td><td>Q1</td><td>$138K</td><td>$138K</td></tr><tr><td>Q2</td><td>$143K</td><td>$141K</td></tr><tr><td>Q3</td><td>$154K</td><td>$145K</td></tr><tr><td>Q4</td><td>$182K</td><td>$154K</td></tr><tr><td rowspan="2">2016</td><td>Q1</td><td>$298K</td><td>$183K</td></tr><tr><td>Q2</td><td>$142K</td><td>$176K</td></tr></table></td></tr>
<tr><td>RunningCount (SummaryExpression)

Returns the running count of the specified expression from the first row in the window to the current row.</td><td>RunningCount(Sum ([Sales]))</td><td>-</td></tr>
<tr><td>RunningMax (SummaryExpression)

Returns the running maximum of the specified expression from the first row in the window to the current row.</td><td>RunningMax (Sum ([Sales]))</td><td><table><tr><th>Order Year</th><th>Order Quarter</th><th>Sales</th><th>RunningMax(Sum([Sales]))</th></tr><tr><td rowspan="4">2015</td><td>Q1</td><td>$138K</td><td>$138K</td></tr><tr><td>Q2</td><td>$143K</td><td>$143K</td></tr><tr><td>Q3</td><td>$154K</td><td>$154K</td></tr><tr><td>Q4</td><td>$182K</td><td>$182K</td></tr><tr><td rowspan="2">2016</td><td>Q1</td><td>$298K</td><td>$298K</td></tr><tr><td>Q2</td><td>$142K</td><td>$298K</td></tr></table></td></tr>
</table>

RunningMin (SummaryExpression) Returns the running minimum of the specified expression from the first row in the window to the current row.	RunningMin (Sum ([Sales]))	
RunningSum (SummaryExpression) Returns the running sum of the specified expression from the first row in the window to the current row.	RunningSum (Sum ([Sales]))	
WindowAvg (SummaryExpression, StartOffset, EndOffset) Returns the average of the expression within the window, which is define d using offsets from the current row.	WindowAvg (Sum ([Sales]), First(), Last())	
WindowCount (SummaryExpression, StartOffset, EndOffset)	WindowCount (Sum ([Sales]), First() +2, Last())	

Order Year	Order Quarter	Sales	RunningMin(Sum([Sales]))
2015	Q1	$138K	$138K
	Q2	$143K	$138K
	Q3	$154K	$138K
	Q4	$182K	$138K
2016	Q1	$298K	$138K
	Q2	$142K	$138K

Order Year	Order Quarter	Sales	RunningSum(Sum([Sales]))
2015	Q1	$138K	$138K
	Q2	$143K	$281K
	Q3	$154K	$435K
	Q4	$182K	$617K
2016	Q1	$298K	$916K
	Q2	$142K	$1.06M

Order Year	Order Quarter	Sales	WindowAvg()
2015	Q1	$138K	$176K
	Q2	$143K	$176K
	Q3	$154K	$176K
	Q4	$182K	$176K
2016	Q1	$298K	$176K
	Q2	$142K	$176K

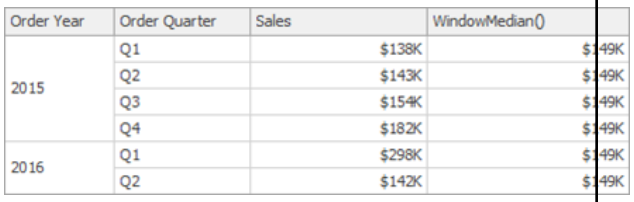
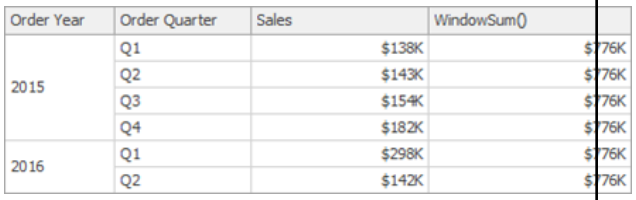
Order Year	Order Quarter	Sales	WindowCount()
2015	Q1	$138K	4
	Q2	$143K	4
	Q3	$154K	4
	Q4	$182K	4
2016	Q1	$298K	4
	Q2	$142K	4

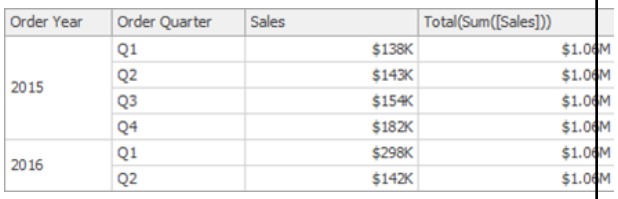
<table>
<tr><td>Returns the count of the expression within the window.</td><td></td><td></td></tr>
<tr><td>WindowCountDistinct (SummaryExpression, StartOffset, EndOff set)

Returns the distinct count of the expression within the window.</td><td>WindowCountDistinct (Sum ([Sales]), First(), Last())</td><td>-</td></tr>
<tr><td>Window Max (SummaryExpression, StartOffset, EndOffset)

Returns the maximum of the expression within the window.</td><td>WindowMax (Sum ([Sales]), First(), Last())</td><td><table><tr><th>Order Year</th><th>Order Quarter</th><th>Sales</th><th>WindowMax()</th></tr><tr><td rowspan="4">2015</td><td>Q1</td><td>$138K</td><td>$298K</td></tr><tr><td>Q2</td><td>$143K</td><td>$298K</td></tr><tr><td>Q3</td><td>$154K</td><td>$298K</td></tr><tr><td>Q4</td><td>$182K</td><td>$298K</td></tr><tr><td rowspan="2">2016</td><td>Q1</td><td>$298K</td><td>$298K</td></tr><tr><td>Q2</td><td>$142K</td><td>$298K</td></tr></table></td></tr>
<tr><td>WindowMin (SummaryExpression, StartOffset, EndOffset)

Returns the minimum of the expression within the window.</td><td>WindowMin (Sum ([Sales]), First(), Last())</td><td><table><tr><th>Order Year</th><th>Order Quarter</th><th>Sales</th><th>WindowMin()</th></tr><tr><td rowspan="4">2015</td><td>Q1</td><td>$138K</td><td>$138K</td></tr><tr><td>Q2</td><td>$143K</td><td>$138K</td></tr><tr><td>Q3</td><td>$154K</td><td>$138K</td></tr><tr><td>Q4</td><td>$182K</td><td>$138K</td></tr><tr><td rowspan="2">2016</td><td>Q1</td><td>$298K</td><td>$138K</td></tr><tr><td>Q2</td><td>$142K</td><td>$138K</td></tr></table></td></tr>
</table>

Window Median (SummaryExpression, StartOffset, EndOff set) Returns the median of the expression within the window.	Window Median (Sum ([Sales]), First (), Last())	 Order Year / Order Quarter / Sales / WindowMedian() 2015: Q1 $138K $149K; Q2 $143K $149K; Q3 $154K $149K; Q4 $182K $149K 2016: Q1 $298K $149K; Q2 $142K $149K
WindowSum (SummaryExpression, StartOffset, EndOffset) Returns the sum of the expression within the window.	WindowSum (Sum ([Sales]), First() +2, Last())	 Order Year / Order Quarter / Sales / WindowSum() 2015: Q1 $138K $776K; Q2 $143K $776K; Q3 $154K $776K; Q4 $182K $776K 2016: Q1 $298K $776K; Q2 $142K $776K
WindowVar (SummaryExpression, StartOffset, EndOffset) Returns the variance of the expression within thewindow.	WindowVar (Sum ([Sales]), First(), Last())	-
WindowVarp (SummaryExpression, StartOffset, EndOffset) Returns the biased variance of the expression within the window.	WindowVarp (Sum ([Sales]), First(), Last())	-

WindowStdDev (SummaryExpression, StartOffset, EndOffset) Returns the sample standard deviation of the expression within the window.	WindowStdDev (Sum ([Sales]), First (), Last())	-
WindowStdDevp (SummaryExpression, StartOffset, EndOffset) Returns the biased standard deviation of the expression within the window.	WindowStdDevp (Sum ([Sales]), First (), Last())	-
Total (SummaryExpression) Returns the total for the specified expression in a calculation window. Note that the Total function calculates the total based on values from the underlying data source.	Total (Sum ([Sales]))	

Order Year	Order Quarter	Sales	Total(Sum([Sales]))
2015	Q1	$138K	$1.06M
	Q2	$143K	$1.06M
	Q3	$154K	$1.06M
	Q4	$182K	$1.06M
2016	Q1	$298K	$1.06M
	Q2	$142K	$1.06M

Note that window functions cannot be used inside **Aggr**.

Window Calculation Limitations

Supported Dashboard Items

Window calculations can be applied to measures of the following dashboard items:

- Chart
- Grid
- Pies
- Cards
- Gauges
- Pivot
- Range Filter

Data Shaping Limitations

The use of calculations imposes the following limitations related to data shaping features.

- Sorting by measure cannot be applied if the target measure has a calculation applied.
- Top N cannot be applied if its target measure has a calculation.

Using Dashboard Parameters

You can use dashboard parameters when it is necessary to pass data of a certain type to a dashboard (e.g., to pass a specific value to the data source filter string or a calculated field).

Creating Parameters

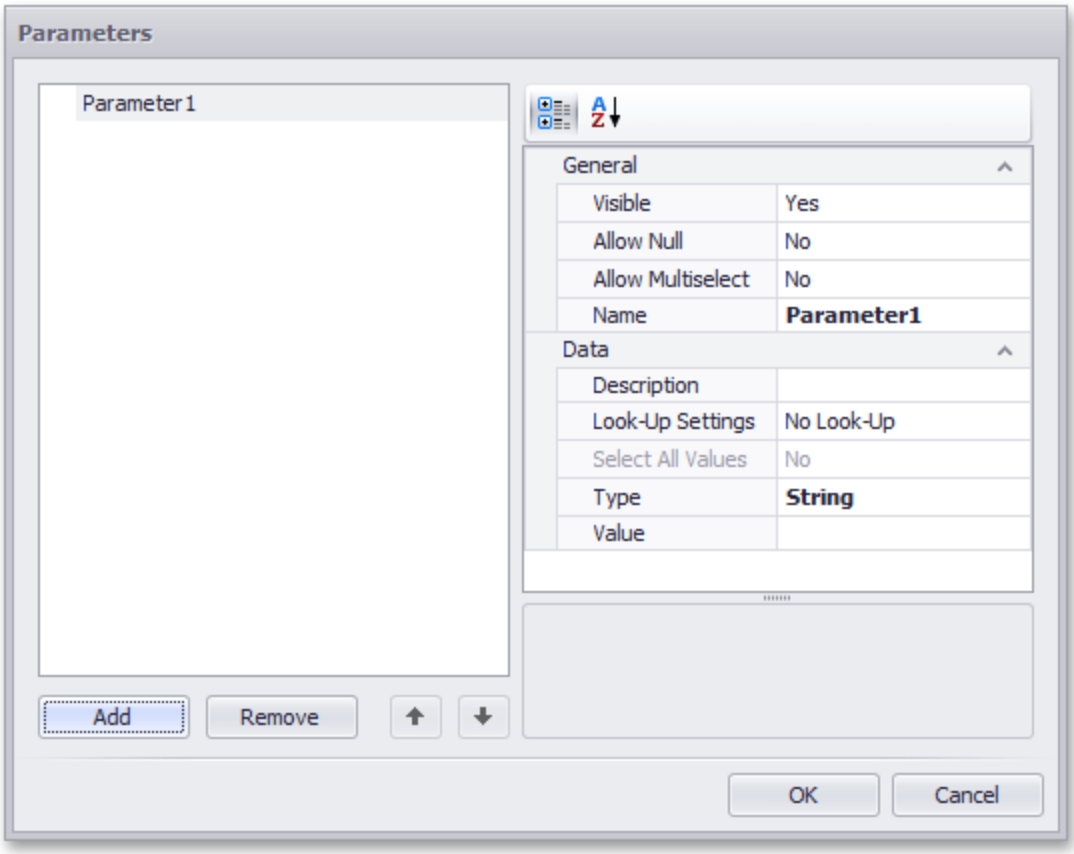
This topic explains how to create a new dashboard parameter and specify its settings.

Creating Parameters in the Dashboard Designer

To create dashboard parameters in the Dashboard Designer, do the following:

1. Click the **Parameters** button on the Ribbon's Data Source tab.

2. In the invoked dialog, click the **Add** button to add a new parameter.



3. Specify the following settings:

    - **Visible**: Specifies whether or not the parameter editor is visible in the Dashboard Parameters dialog.
    - **Allow Null**: Specifies whether or a not null value can be passed as a parameter value.
    - **Allow Multiselect**: Specifies whether or not multi-selection is enabled for the current parameter. The following limitations are applied to parameters with multi-selection enabled.
    - Use the **is any of** or **is none of** operators to pass a multi-select parameter to a filter criteria or to the Expression format condition.
    - Use the **In** or **Not In** operators to pass a multi-select parameter to a calculated field expression. Stored procedures used in the SQL data source do not support multi-select parameters.
    - **Name**: Specifies the parameter name. When creating and modifying parameter names, follow the rules below.
        - A name can contain letters, numbers and underscores.

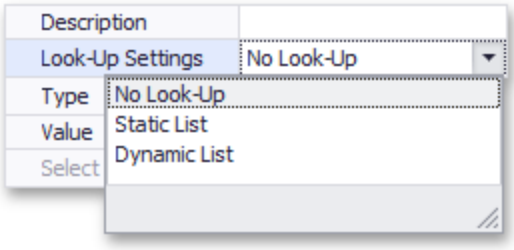
          A name cannot contain spaces.

          A name cannot be an empty string.
        - The dashboard cannot contain parameters with the same name.
        - Names are case-sensitive. For example, you can create the names Parameter and PARAMETER .
    - **Description**: Specifies the parameter's description. The parameter's description is the value displayed in the Parameter Name column of the Dashboard Parameters dialog.
    - **Look-Up Settings**: Specifies the parameter's look-up editor settings.
    - **Select All Values**: Specifies whether or not all parameter values should be selected in the initial state of the Dashboard Viewer.
        - Note that this option is in effect when Allow Multiselect is set to true.

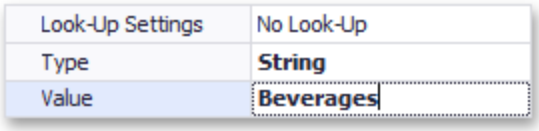
- **Type**: Specifies the parameter type.
- **Value**: Specifies the default parameters value. Note that when Allow Multiselect is set to true, the
    - Value option allows you to select multiple parameter values. Then, click OK to add the created parameters to the dashboard.

Look-Up Editor Settings

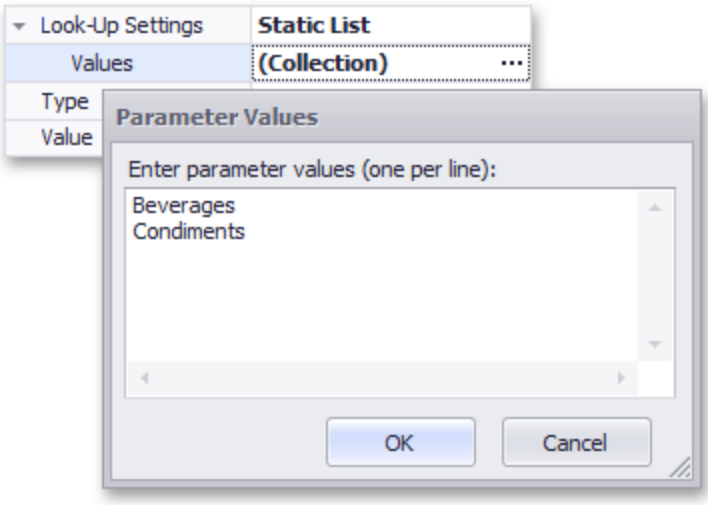
There are three types of look-up editor settings that can be specified for a parameter. Select the required type from the Look-UpSettings drop-down list.



No Look-Up: Set the Value to use a static value as a parameter.

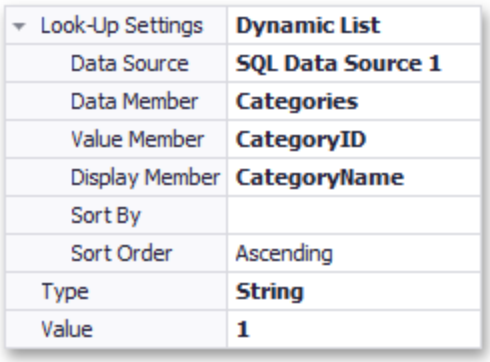


Static List: Click the ellipsis button to add static values for the current dashboard parameter.



In this case, the Value specifies the default parameter's value.

Dynamic List: Allows you to use a list of values from the existing data source as a parameter. You need to select the required Data Source from the list of available data sources and data members for the dashboard parameter's display name and value, respectively.



1. First, select the required **Data Source** from the list of available data sources. For the SQL data source, select the required **Data Member** that specifies the query from the selected Data Source.

2. Then, specify data members for the dashboard parameter's value and display name using **Value Member** and **Display Member**, respectively.

3. If necessary, specify the data member used to sort parameter values using the **Sort By** option. **Sort Order** specifies the required sort order.

Passing Parameter Values

In this topic, you will learn how to pass parameter values to a dashboard.

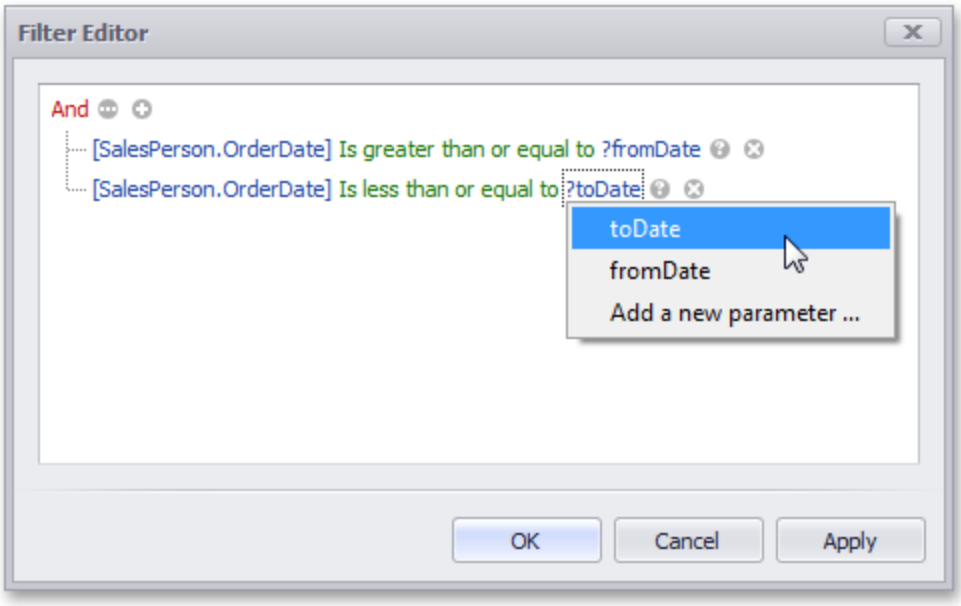
Filtering

You can filter the specified query or apply filtering to a specific dashboard item according to the current parameter value(s) using the Filter Editor.

In the Filter Editor, you can compare a field value with the following objects:

- A static value (represented by the icon). Click this button to switch to the next item mode ("another field value"), to compare the field value with another field value.
- Another field value (represented by the icon). Click this button to switch to the next item mode (parameter value), to compare the field value with a parameter value.
- A parameter value (represented by the icon). Click this button to switch back to the initial mode ("static value"), to compare the field value with a static value.

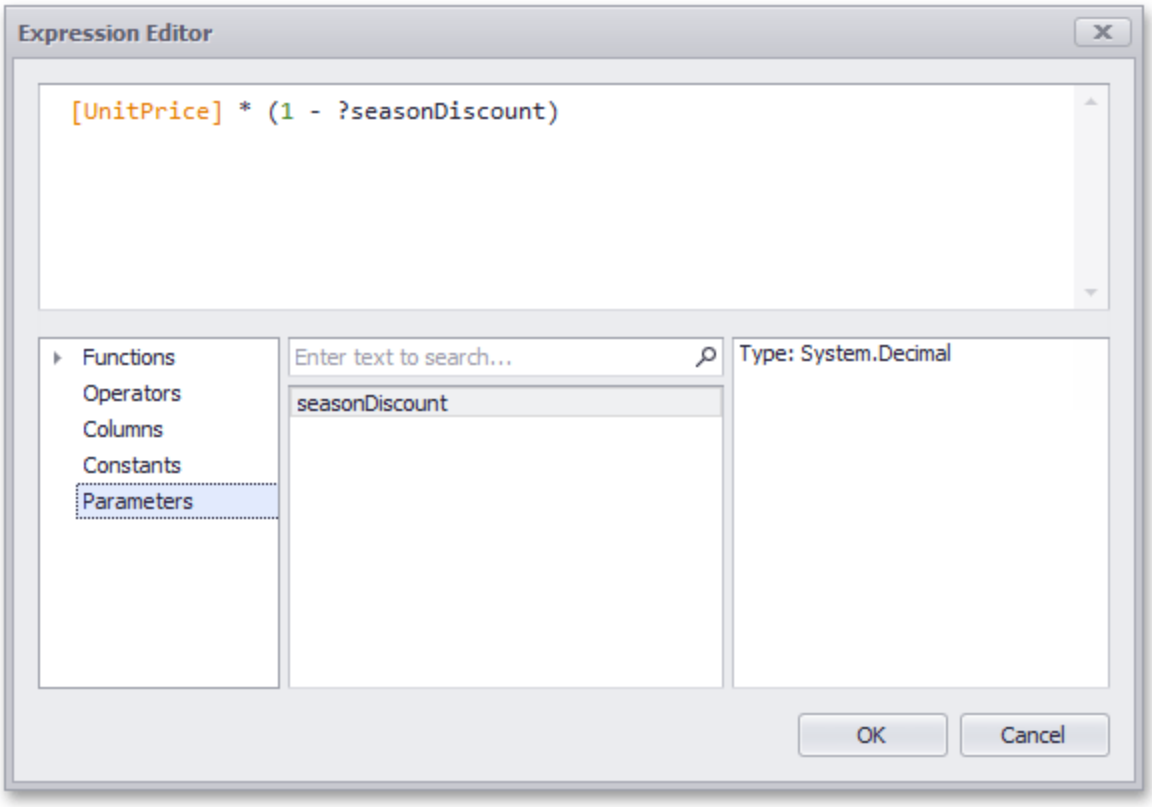
Thus, to compare a field value with a parameter value, click the button, then click the button.



Calculated Fields

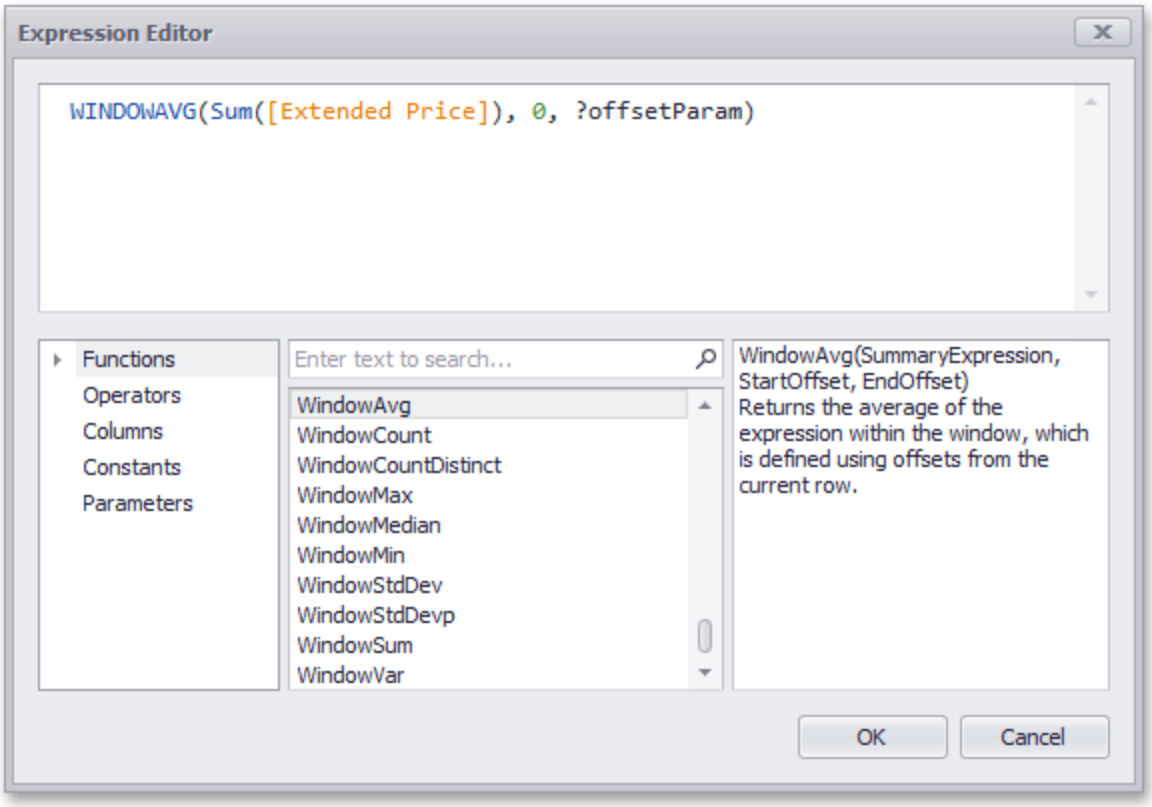
You can use parameters when constructing expressions for calculated fields. This allows you to dynamically evaluate values of the calculated field depending on the current parameter value.

To include the required parameter in the calculated field expression, click Parameters in the Expression Editor dialog and double-click the required parameter.



Window Calculations

You can use parameters when customizing expressions for window calculations. This allows you to apply a calculation dynamically, depending on the current parameter value.

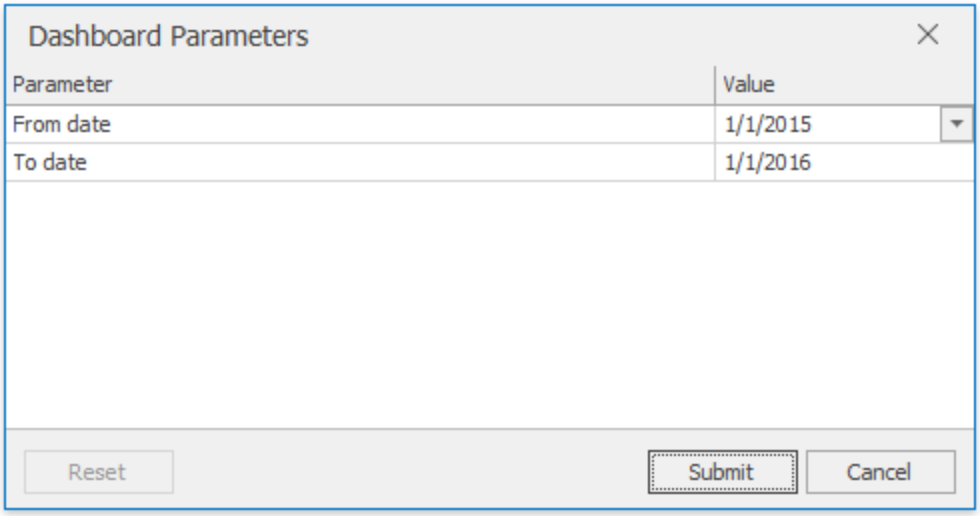


Requesting Parameter Values

The BI Dashboard provides a built-in Dashboard Parameters dialog, which provides the capability to change dashboard parameter values. This dialog is created automatically, depending on the parameter type and visibility settings.

To invoke the Dashboard Parameters dialog in the Dashboard Designer, click the Parameters (

) button in the dashboard title. Depending on the visibility state of the created dashboard parameters, this invokes the following dialog.



Select the required parameter values in the Dashboard Parameters dialog and click the **Submit** button to apply the changes.

To reset the changes to the default values, click the **Reset** button.

Printing and Exporting

The Dashboard Designer provides the capability to print or export an entire dashboard and individual items.

Printing and Exporting Dashboards

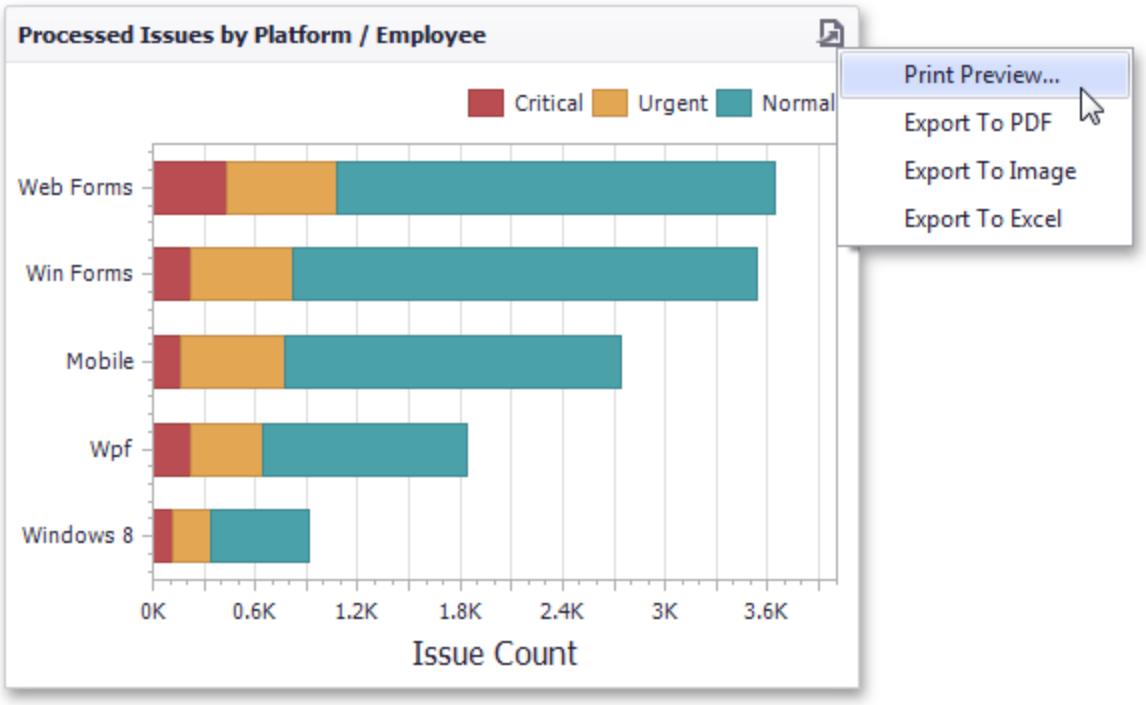
To print or export the entire dashboard, click the button in the dashboard title area and choose the required action.

Print Preview...

Allows you to customize the document before printing/exporting. For instance, the following settings can be changed: the orientation and size of the printed page, page margins, etc.

Printing and Exporting Dashboard Items

To print or export a dashboard item, click the button in its caption and choose the required action.



Print Preview...: Allows you to customize the document before printing/exporting.

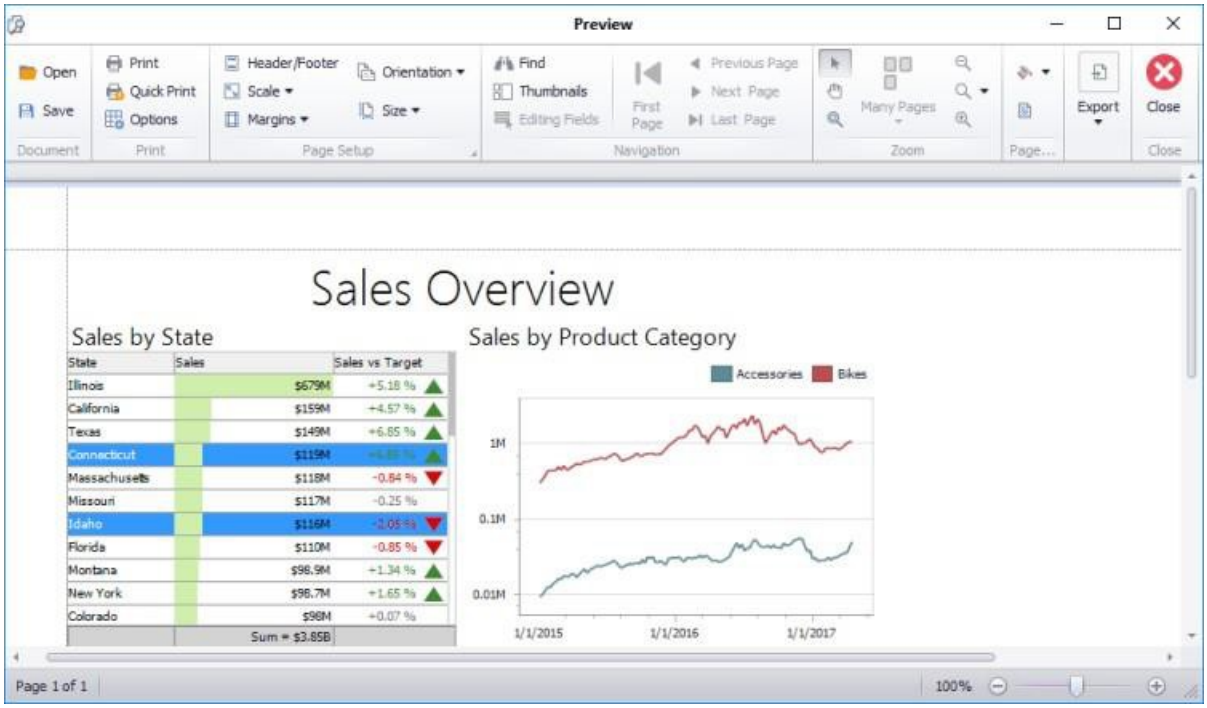
Export to PDF: Invokes a corresponding dialog that allows you to export a dashboard to a PDF file with specific options.

Export to Image: Invokes a corresponding dialog that allows you to export a dashboard to image in the specified format.

Export to Excel: Invokes a corresponding dialog that allows you to export a dashboard item's data to the Excel workbook or CSV file.

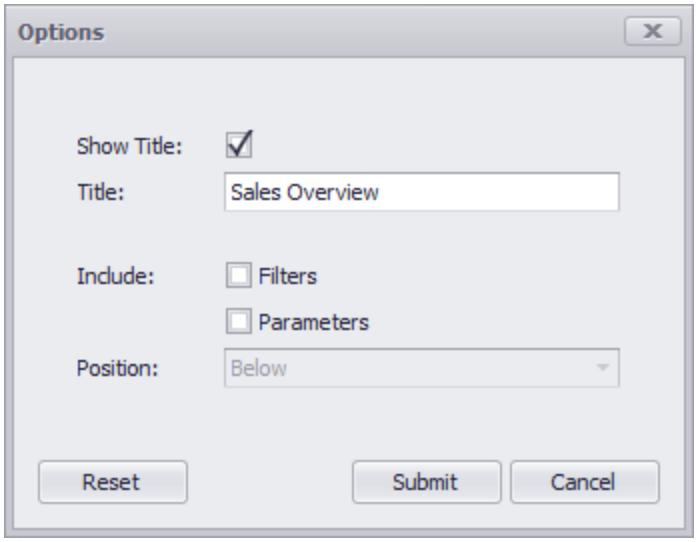
Print Preview

This document describes the Print Preview window, which displays the dashboard/dashboard item as it will appear on paper.



Specific Options

In the Print Preview, you can change the orientation and size of the printed page, specify the margins, scale the document, etc. You can also customize printing options specific to a dashboard/dashboard item. To do this, click the **Options** button in the Print group. When previewing the dashboard, the following Options dialog will be invoked:



Show Title: Specifies whether or not to show the dashboard title/dashboard item caption as the printed document title.

Title: Specifies the title of the printed document.

Include | Filters: Allows you to include master filter values to the printed document.

Include | Parameters: Allows you to include parameter values to the printed document.

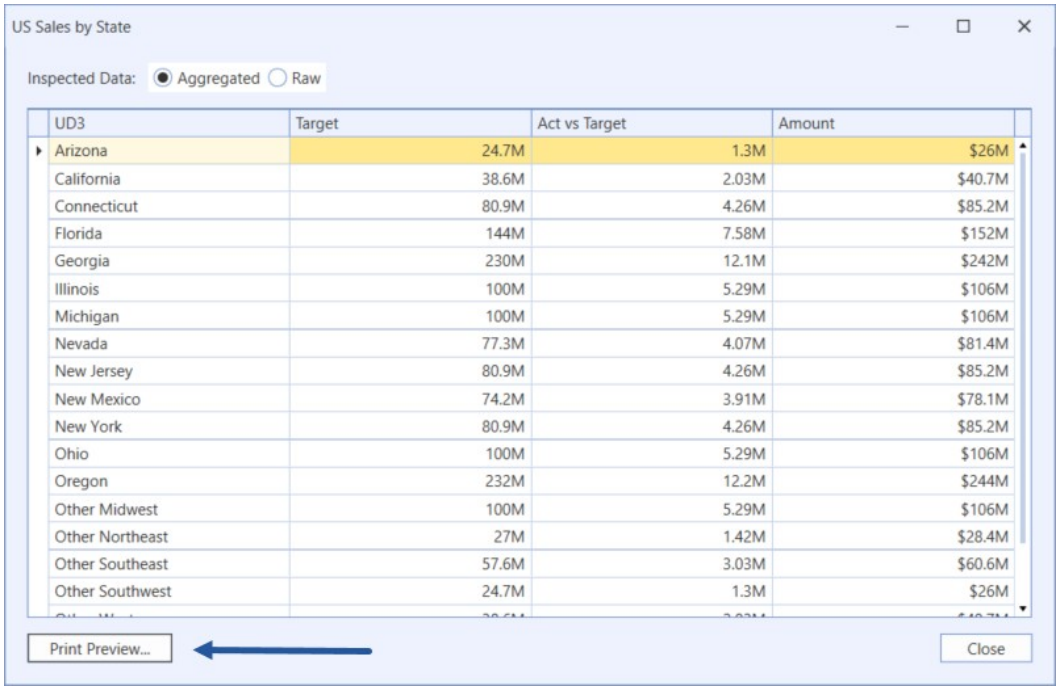
Position: Specifies the position of the master filter and parameter values in the printed document. You can select between Below and Separate Page.

This dialog can contain different options, depending on the dashboard item.

Export Data

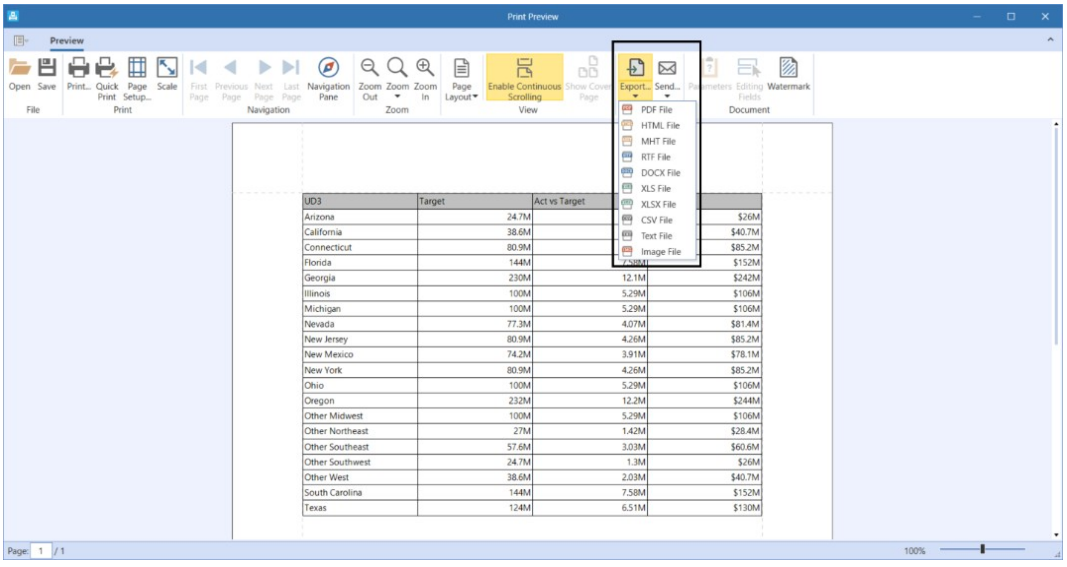
You can export data to different formats.

1. Click **Print Preview** to review the data that you will export.



UD3	Target	Act vs Target	Amount
Arizona	24.7M	1.3M	$26M
California	38.6M	2.03M	$40.7M
Connecticut	80.9M	4.26M	$85.2M
Florida	144M	7.58M	$152M
Georgia	230M	12.1M	$242M
Illinois	100M	5.29M	$106M
Michigan	100M	5.29M	$106M
Nevada	77.3M	4.07M	$81.4M
New Jersey	80.9M	4.26M	$85.2M
New Mexico	74.2M	3.91M	$78.1M
New York	80.9M	4.26M	$85.2M
Ohio	100M	5.29M	$106M
Oregon	232M	12.2M	$244M
Other Midwest	100M	5.29M	$106M
Other Northeast	27M	1.42M	$28.4M
Other Southeast	57.6M	3.03M	$60.6M
Other Southwest	24.7M	1.3M	$26M

2. Click **Export** and choose the format. For example, if you want to see the data in Excel, click XLS File.

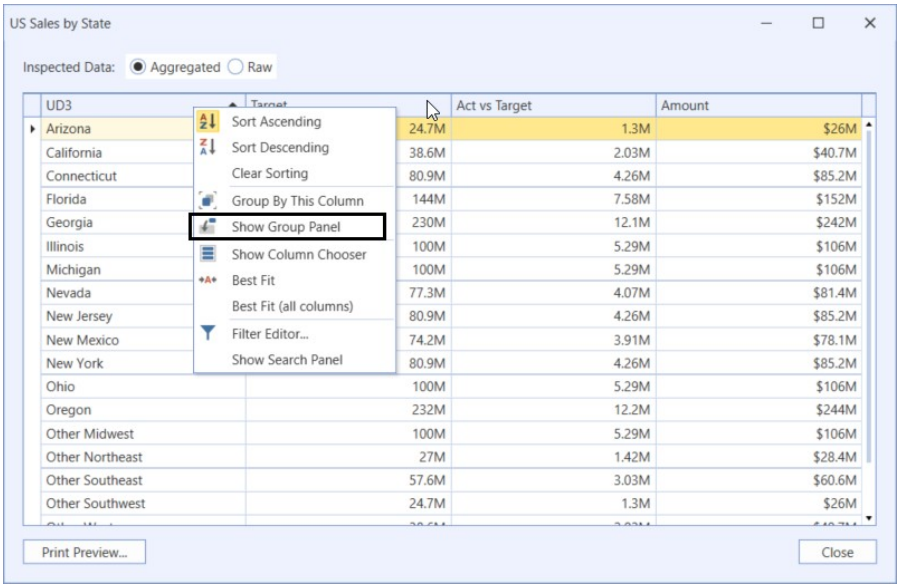


3. The results will show in Excel.

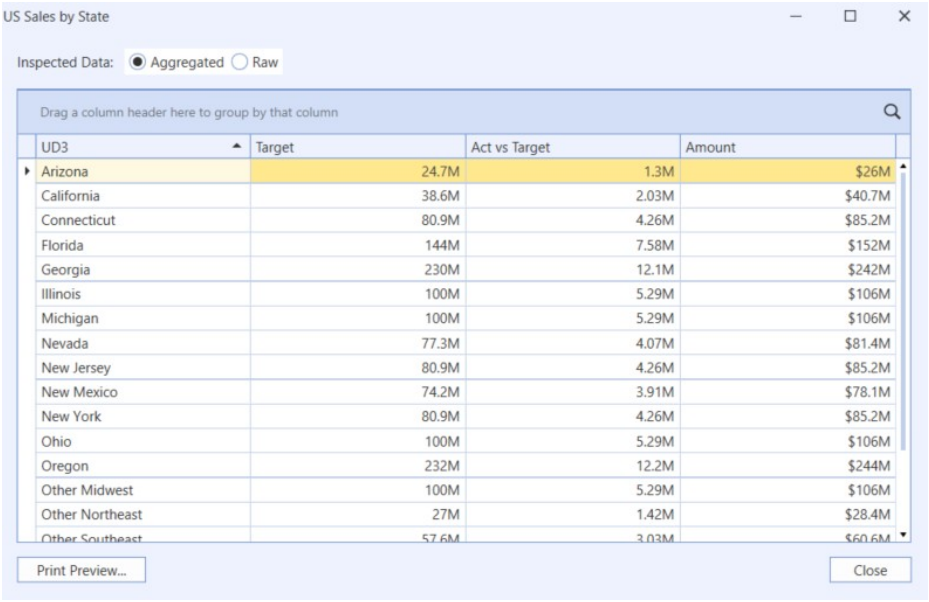
	A	B	C	D	E
1	UD3	Target	Act vs Target	Amount	
2	Arizona	24739641.2	1302086.379	26041727.58	
3	California	38644876.22	2033940.854	40678817.08	
4	Connecticut	80945081.48	4260267.446	85205348.93	
5	Florida	143939323.8	7575753.885	151515077.7	
6	Georgia	230302918.1	12121206.22	242424124.3	
7	Illinois	100489093.3	5288899.646	105777992.9	
8	Michigan	100489093.3	5288899.646	105777992.9	
9	Nevada	77289752.44	4067881.708	81357634.15	
10	New Jersey	80945081.48	4260267.446	85205348.93	
11	New Mexico	74218923.61	3906259.138	78125182.75	
12	New York	80945081.48	4260267.446	85205348.93	
13	Ohio	100489093.3	5288899.646	105777992.9	
14	Oregon	231869257.3	12203645.12	244072902.5	
15	Other Midwest	100489093.3	5288899.646	105777992.9	
16	Other Northeast	26981693.83	1420089.149	28401782.98	
17	Other Southeast	57575729.52	3030301.554	60606031.08	
18	Other Southwest	24739641.2	1302086.379	26041727.58	
19	Other West	38644876.22	2033940.854	40678817.08	
20	South Carolina	143939323.8	7575753.885	151515077.7	
21	Texas	123698206	6510431.896	130208637.9	
22					

Group Data

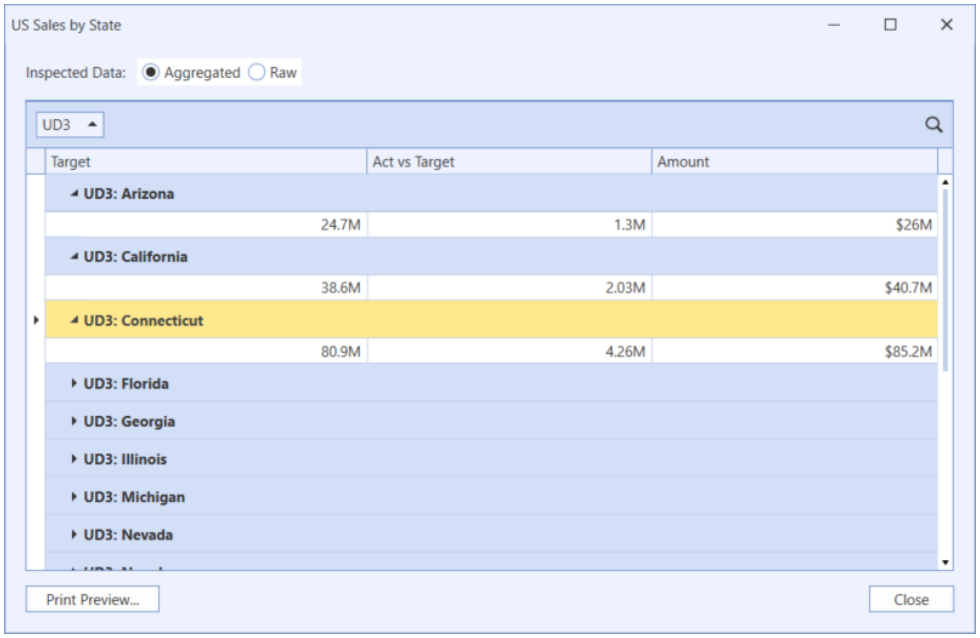
1. Right-click and choose **Show Group Panel**.



2. You can drag and drop your column groups into the header.

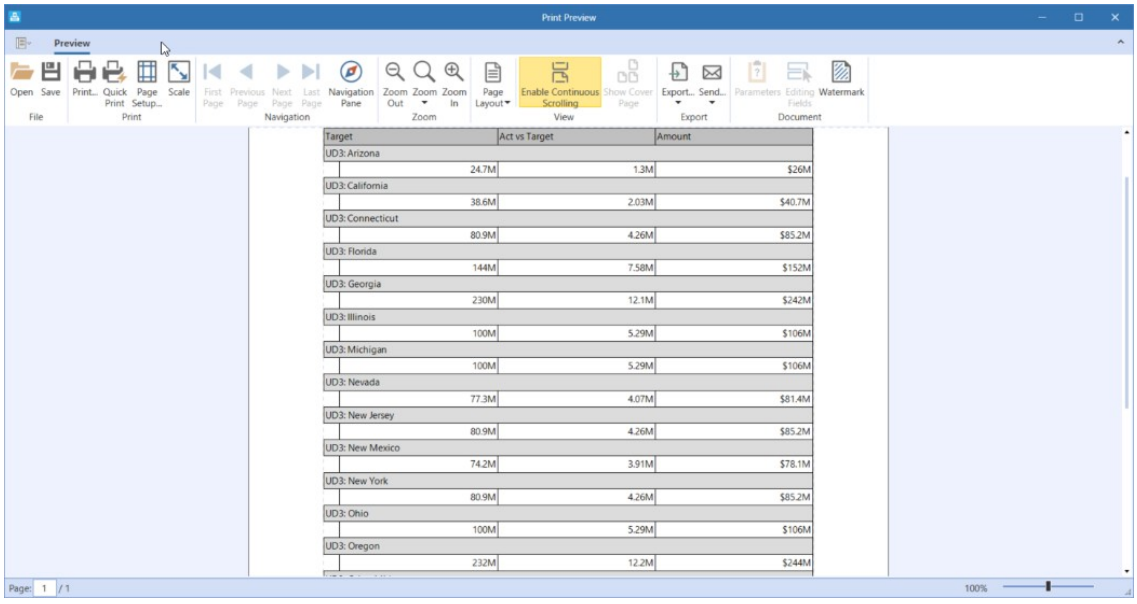


3. Giving you different ways to visualize your data.



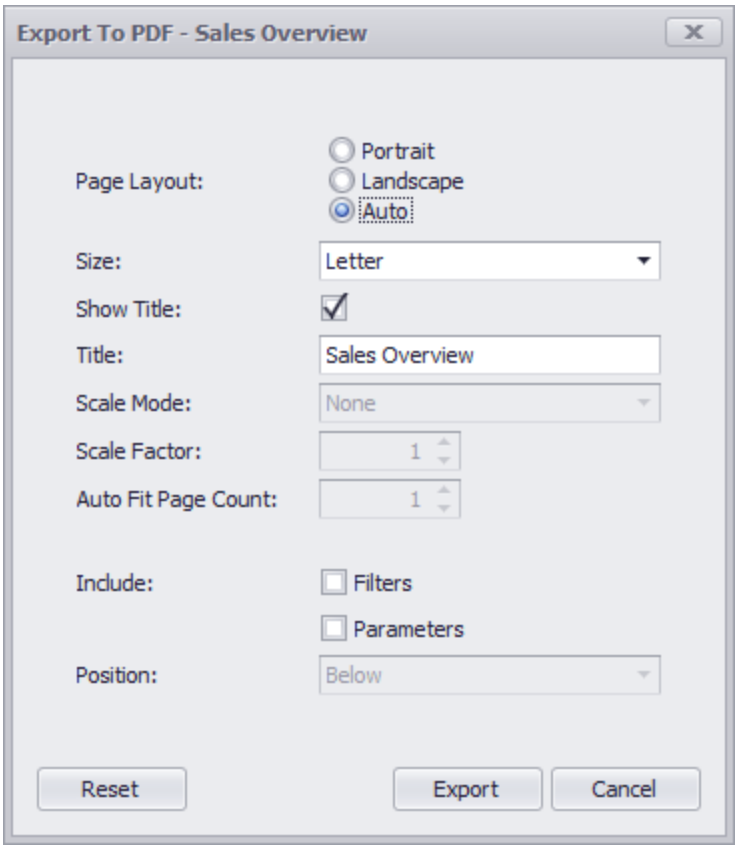
4. You can also filter, move columns, and hide columns.

5. Click **Print Preview** to see your results.



Export to PDF

Invokes a corresponding dialog that allows you to export a dashboard to a PDF file with specific options. The following options are available.



Page Layout: Specifies the page orientation used to export a dashboard. You can select between Portrait, Landscape, and Auto. Note that in the Auto mode, page orientation is selected automatically depending on the horizontal and vertical sizes of a dashboard.

Size: Specifies the standard paper size (for instance, Letter or A4).

Show Title: Specifies whether or not to apply the dashboard title to the exported document title.

Title: Specifies the title of the exported document.

Scale Mode: Specifies the mode for scaling when exporting a dashboard. This option is in effect when **Page Layout** is set to a value different from Auto.

Scale Factor: Specifies the scale factor (in fractions of 1) by which a dashboard is scaled. This option is in effect if Scale Mode is set to **Use Scale Factor**.

Auto Fit Page Count: Specifies the number of horizontal/vertical pages spanning the total width/height of a dashboard. This option is in effect if Scale Mode is set to **Auto Fit to Page Width**.

Include | Filters: Allows you to include master filter values to the exported document.

Include | Parameters: Allows you to include parameter values to the exported document.

Position: Specifies the position of the master filter and parameter values in the exported document. You can select between Below and Separate Page.

Export to Image

Invokes a corresponding dialog that allows you to export a dashboard to an image in the specified format. The following options are available.

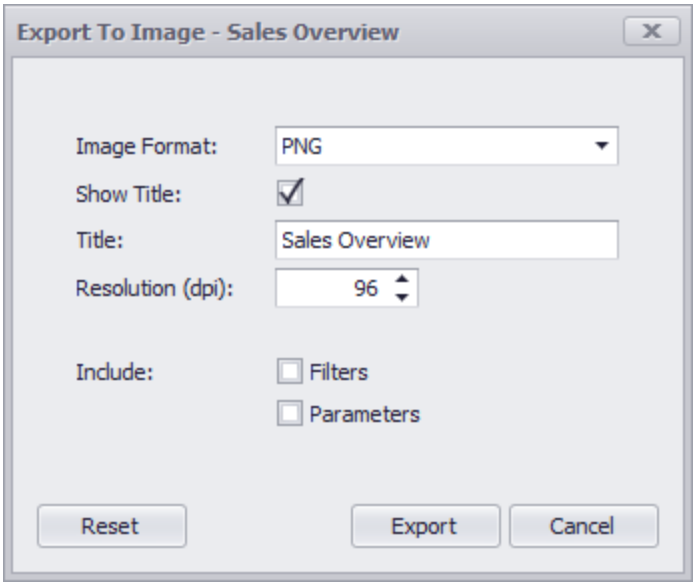


Image Format: Specifies the image format in which the dashboard is exported. The following formats are available: PNG, JPEG, and GIF.

Show Title: Specifies whether or not to apply the dashboard title to the exported document title.

Title: Specifies the title of the exported document.

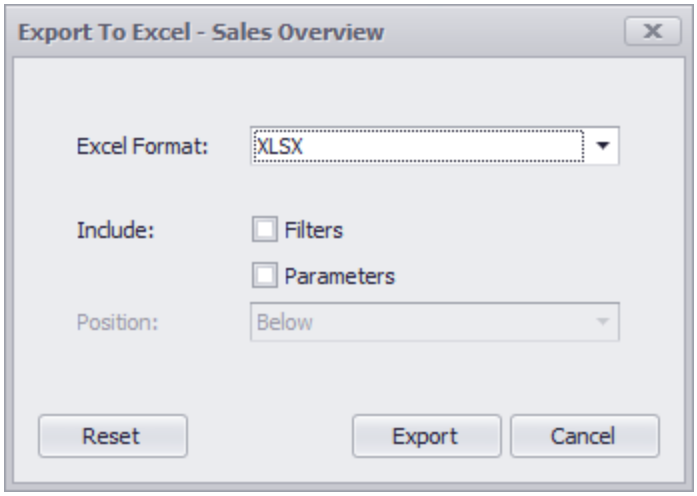
Resolution (dpi): Specifies the resolution (in dpi) used to export a dashboard.

Include | Filters: Allows you to include master filter values to the exported document.

Include | Parameters: Allows you to include parameter values to the exported document.

Export to Excel

Invokes a corresponding dialog that allows you to export dashboard's data to the Excel file. The following options are available:



Excel Format: Specifies the Excel workbook format in which the dashboard's data is exported. You can select between XL SX and XL S.

Include | Filters: Allows you to include master filter values to the exported document.

Include | Parameters: Allows you to include parameter values to the exported document.

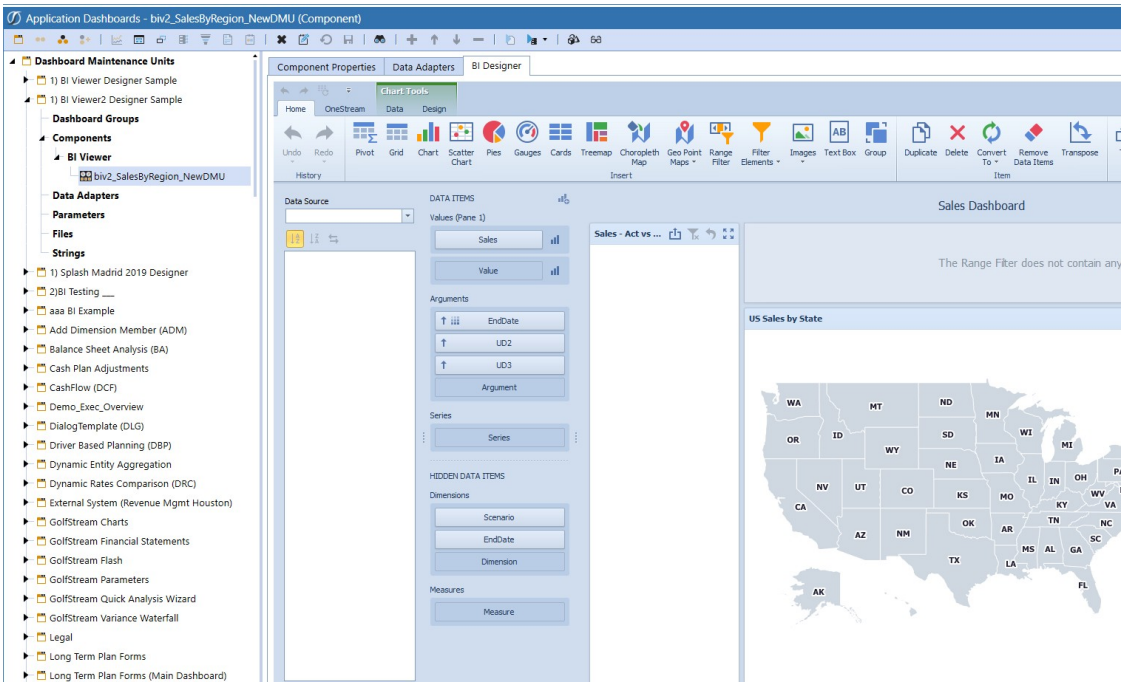
Position: Specifies the position of the master filter and parameter values in the exported document. You can select between Below and Separate Sheet.

Specify the required options in the invoked dialog and click the **Export** button to export the dashboard. To reset changes to the default values, click the **Reset** button.

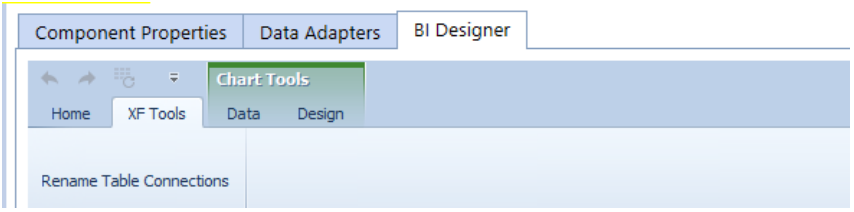
Rename Table Connections

This tab in the BI Designer is designed to Rename Table Connections in the event the Results Table Name from the Data Adapter changes names in the existing or new Dashboard Maintenance Unit. When a user changes the referenced results table name, the table connection can be reestablished by pointing the BI Designer to the correct table using this utility.

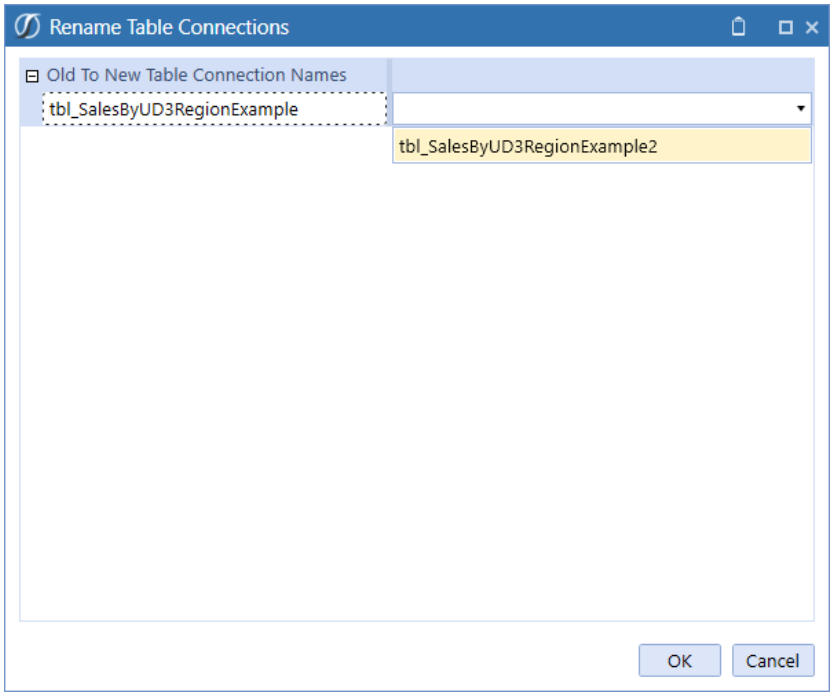
Existing BI Dashboard missing original table connection from data adapter. The dashboard items exist but without the supporting data.



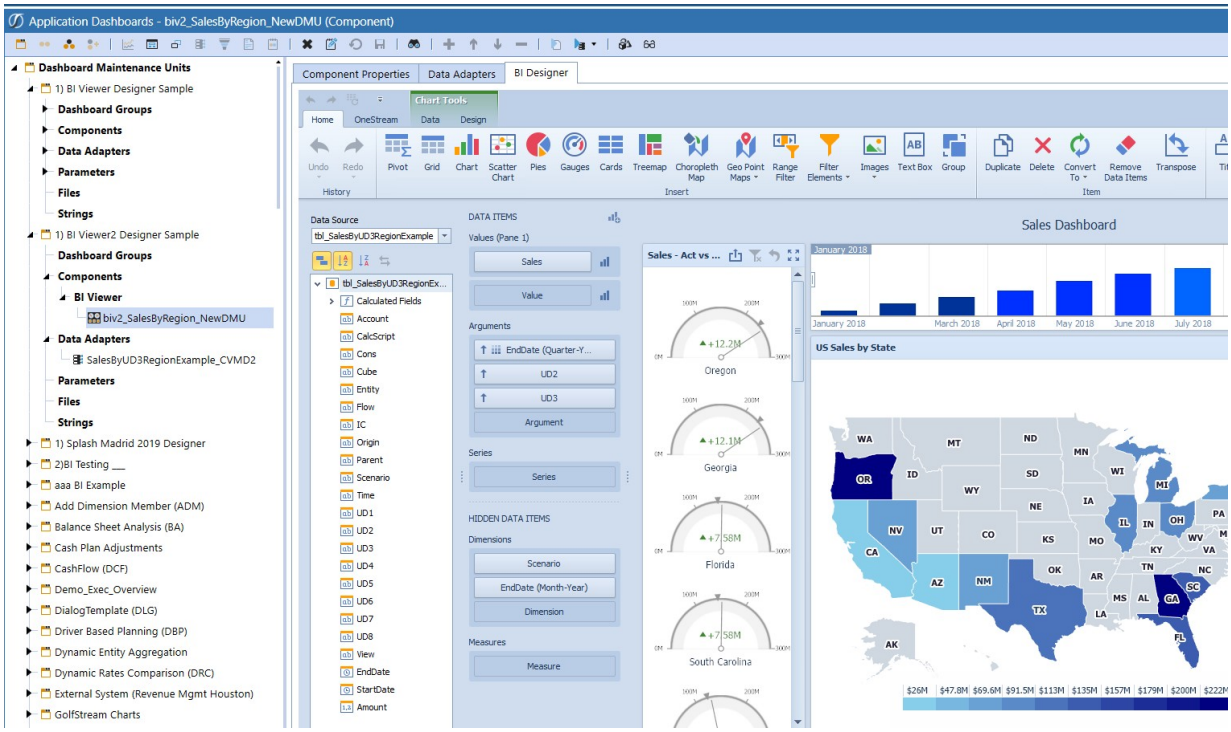
BI Designer XF Tools menu to access the Rename Table Connections utility.



Reestablish table connection using the utility.



Existing BI Dashboard with reestablished table connection from data adapter using Rename Table Connections utility. Data returns and redraws the BI Dashboard.


Application Dashboards - biv2_SalesByRegion_NewDMU (Component)
Dashboard Maintenance Units
1) BI Viewer Designer Sample
Dashboard Groups
Components
Data Adapters
Parameters
Files
Strings
1) BI Viewer2 Designer Sample
Dashboard Groups
Components
BI Viewer
biv2_SalesByRegion_NewDMU
Data Adapters
SalesByUD3RegionExample_CVMD2
Parameters
Files
Strings
1) Splash Madrid 2019 Designer
2)BI Testing ___
aaa BI Example
Add Dimension Member (ADM)
Balance Sheet Analysis (BA)
Cash Plan Adjustments
CashFlow (DCF)
Demo_Exec_Overview
DialogTemplate (DLG)
Driver Based Planning (DBP)
Dynamic Entity Aggregation
Dynamic Rates Comparison (DRC)
External System (Revenue Mgmt Houston)
GolfStream Charts
Component Properties
Data Adapters
BI Designer
Chart Tools
Home
OneStream
Data
Design
Undo
Redo
History
Pivot
Grid
Chart
Scatter Chart
Pies
Gauges
Cards
Treemap
Choropleth Map
Geo Point Maps
Range Filter
Filter Elements
Images
Text Box
Group
Insert
Duplicate
Delete
Convert To
Remove Data Items
Transpose
Item
Data Source
tbl_SalesByUD3RegionExample
Calculated Fields
Account
CalcScript
Cons
Cube
Entity
Flow
IC
Origin
Parent
Scenario
Time
UD1
UD2
UD3
UD4
UD5
UD6
UD7
UD8
View
EndDate
StartDate
Amount
DATA ITEMS
Values (Pane 1)
Sales
Value
Arguments
EndDate (Quarter-Y...
UD2
UD3
Argument
Series
Series
HIDDEN DATA ITEMS
Dimensions
Scenario
EndDate (Month-Year)
Dimension
Measures
Measure
Sales - Act vs ...
+12.2M
Oregon
+12.1M
Georgia
+7.58M
Florida
+7.58M
South Carolina
Sales Dashboard
January 2018
January 2018
March 2018
April 2018
May 2018
June 2018
July 2018
US Sales by State
WA
MT
ND
MN
OR
ID
SD
WI
MI
WY
IA
NE
IL
IN
OH
PA
NV
UT
CO
KS
MO
WV
KY
VA
CA
AZ
NM
OK
AR
TN
NC
SC
TX
MS
AL
GA
LA
FL
AK
$26M
$47.8M
$69.6M
$91.5M
$113M
$135M
$157M
$179M
$200M
$222M