Tableau Module 15 to 20

Create Calculated Fields in a Blend:

Blend Your Data

Data blending is a method for combining data from multiple sources. Data blending brings in additional information from a secondary data source and displays it with data from the primary data source directly in the view.

There are several ways to combine data, each with their own strengths and weaknesses.

Relationships are the default method and can be used in most instances, including across tables with different levels of detail. Relationships are flexible and are adaptable to the structure of the analysis on a sheet by sheet basis. However, relationships cannot be formed between tables from data sources published to Tableau Server or Tableau Online. Relationships also can't be formed based on calculated fields.

Joins combine tables by adding more columns of data across similar row structures. This can cause data loss or duplication if tables are at different levels of detail, and joined data sources must be fixed before analysis can begin.

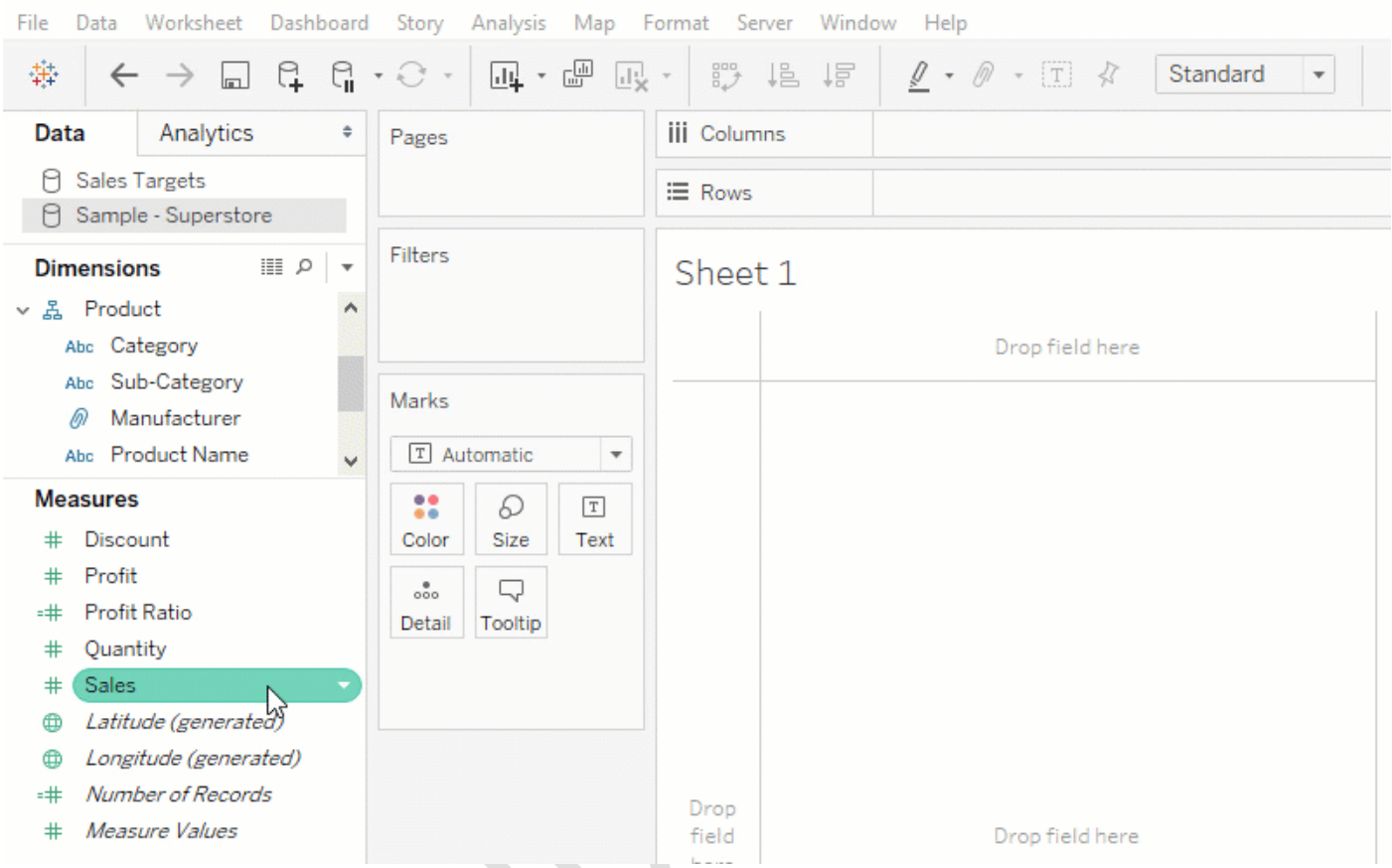
Blends, unlike relationships or joins, never truly combine the data. Instead, blends query each data source independently, the results are aggregated to the appropriate level, then the results are presented visually together in the view. Because of this, blends can handle different levels of detail and working with published data sources. Blends are also established individually on every sheet and can never be published, because there is no true "blended data source", simply blended results from multiple data sources in a visualization.

Data blending is particularly useful when the blend relationship—linking fields—need to vary on a sheet-by-sheet basis, or when combining published data sources.

Steps for blending data

Data blending is performed on a sheet-by-sheet basis and is established when a field from a second data source is used in the view. To create a blend in a workbook already connected to at least two data sources, bring a field from one data source to the sheet—it becomes the primary

data source. Switch to the other data source and use a field on the same sheet—it becomes a secondary data source. An orange linking icon will appear in the data pane, indicating which field(s) are being used to blend the data sources.



Note: images in this topic have not been updated to reflect the most current UI. The Data pane no longer shows Dimensions and Measures as labels.

1. Ensure that the workbook has multiple data sources. The second data source should be added by going to **Data** > **New data source**.

***Tip**: Adding another connection to the first data source enables relationships and joins on the Data Source page. Blending requires two or more distinct data sources, listed independently in the Data pane.*

2. Drag a field to the view. Whichever data source this first field comes from will become the primary data source.

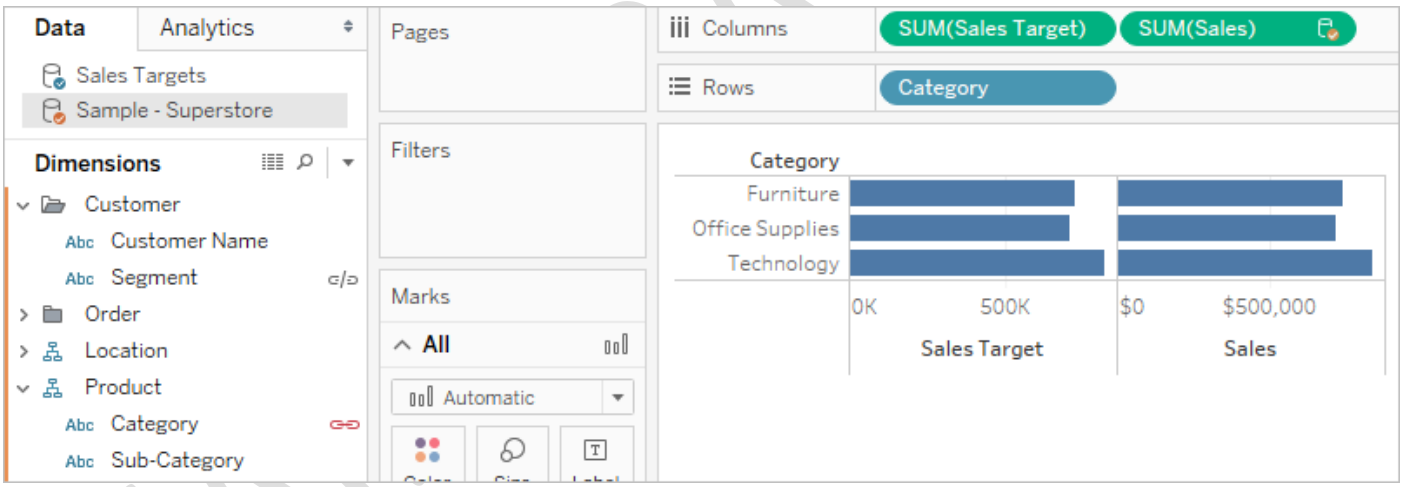
3. Switch to another data source and make sure there is a blend relationship to the primary data source.

- If there is an orange linking field icon (🔗), the data sources are automatically linked. As long as there is at least one active link, the data can be blended.
- If there are gray, broken link icons (⛓), click the icon next to the field that should link the two data sources. It will turn orange, representing an active link.

4. Drag a field into the view from the secondary data source.

   As soon as this second data source is used in the same view, a blend is established. In the example below, our primary data source is **Sales Targets** and the secondary data source is **Sample - Superstore**

- The primary data source is indicated with a blue check mark on the data source. Fields from the primary data source used in the view have no indication.
- The secondary data source is indicated with an orange check mark on the data source and an orange bar down the side of the Data pane. Fields from the secondary data source used in the view have an orange check mark.



Understand primary and secondary data sources

Data blending requires a primary data source and at least one secondary data source. The first data source used in the view becomes the primary data source and defines the view. This can restrict values from the secondary data source—only values that have corresponding matches in the primary data source appear in the view. This is comparable to a left join.

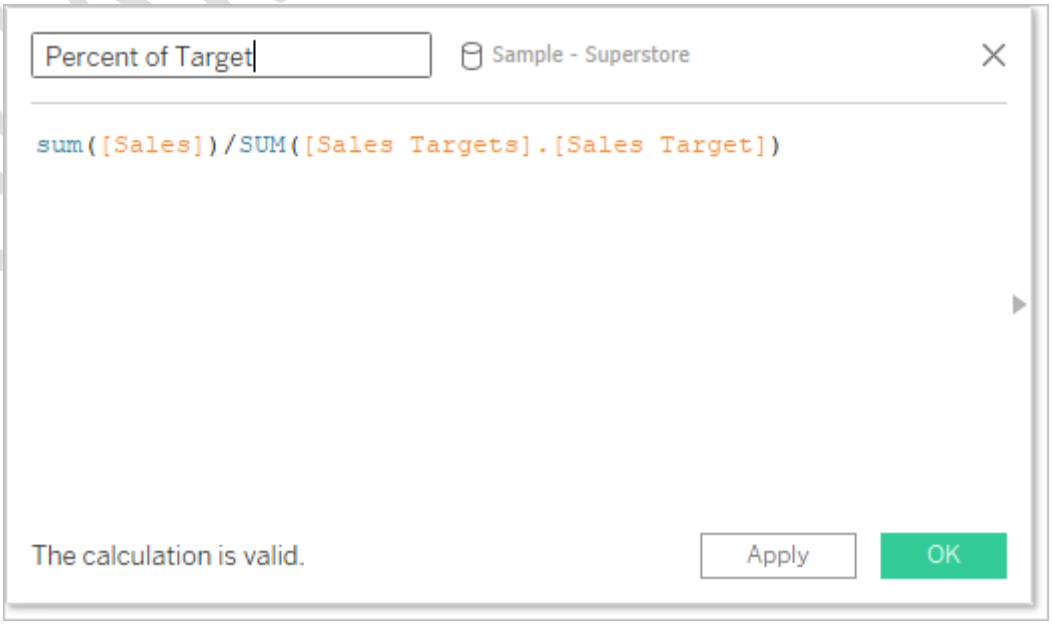
For example, if the primary data source has a Month field that only contains April, May, and June, any view built around months will only display April, May, and June, even if the secondary data source has values for twelve months. If the desired analysis involves all twelve months, try switching which data source is primary by rebuilding the sheet and using the other data source first.

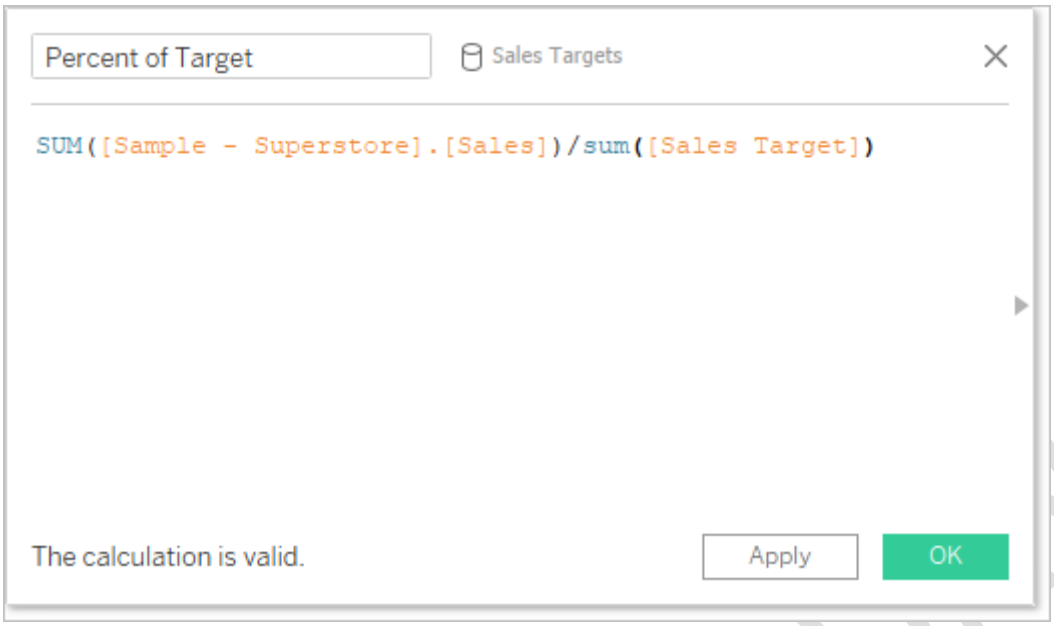
Work across blended data sources

Due to the nature of a data blend, there are some things to keep in mind when working across blended data sources.

Performing calculations with fields from more than one data source can be slightly different than an ordinary calculation. A calculation must be created in one data source; this is indicated at the top of the calculation editor.

- **Aggregation**. Any fields used from another data source will come in with an aggregation—by default, SUM, but this can be changed. Because calculations cannot mix aggregate and non-aggregate arguments, fields from the data source where the calculation is being made must also be aggregated. (In the images below, the **SUM** aggregation was added automatically and the **sum** aggregation was added manually.)
- **Dot notation**. Any field referenced in the calculation that belong to another data source will refer to its data source using dot notation. (In the images below, for the calculation built in **Sample - Superstore**, the Sales Target field becomes **[Sales.Targets].[Sales Target]**. When the calculation is built in **Sales Targets**, the Sales field becomes **[Sample - Superstore].[Sales]**.)
- These are equivalent versions of the same calculation built in each data source. In both cases, this is SUM(Sales) / SUM(Sales Target).





In addition to handling calculations slightly differently, there are some limitations on secondary data sources. You may not be able to sort by a field from a secondary data source, and action filters may not work as expected with blended data

Define blend relationships for blending

In order for Tableau to know how to combine the data from multiple sources, there must be a common dimension or dimensions between the data sources. This common dimension is called the linking field. Active linking fields are identified in the Data pane for the secondary data source with an active link icon ( ) and potential linking fields are identified with a broken link icon ( ).

For example, in a blend of transactional and quota data, a geographic field might be the desired the linking field so you can analyze a region's quota and performance towards that quota.

Establish a link

If the linking field in the primary and secondary data sources have the same name, Tableau automatically creates the relationship. When a primary data source has been established (that is, a field is in use in the view) and the secondary data source is selected in the Data pane, any fields with the same name between the two data sources will display a link icon (or) in the *secondary* data source. If the related field from the primary data source is used in the view, the link becomes active automatically.

If there are no link icons on the secondary data source, you may need to help Tableau establish the link in one of two ways:

1. If common dimensions don't have the same name (such as "Region" and "Sales Region"), renaming one will let Tableau identify them as common dimensions and establish the link.

2. Alternatively, you can manually define a relationship between the fields in the primary and secondary data sources. See below for more information on creating manual link relationship

   There can be as many active or potential linking fields as necessary. Click the broken link icon ( ) in the data pane to make the relationship active.

Multiple links

As with relationships or joins, there are times when the links between the data sources are defined by more than one field. For example, if regional sales quotas are monthly, a blend between transactional sales data and quota data needs to be established on both region and month for the correct data to be brought together in the view. Multiple links can be active at the same time.

Differences between joins and data blending

Data blending simulates a traditional left join. The main difference between the two is when the aggregation is performed. A join combines the data and then aggregates. A blend aggregates and then combines the data.

Left join

When you use a left join to combine data, a query is sent to the database where the join is performed. A left join returns all rows from the left table and any corresponding rows from the right table. The results of the join are then sent back to Tableau and aggregated for display in the visualization.

A left join takes all rows from the left table. The common columns are **User ID** and **Patron ID**; where there is corresponding information from the right table, that data is returned. Otherwise, there is a null.

User ID	District	Level	Type
1	2	3	G
2	3	4	J
4	5	6	M
1	2	3	W

Branch	Patron ID	District	Level
A001	1	2	3
B001	2	3	4
C001	1	2	3

User ID	District	Level	Branch	Type
1	2	3	A001	G
1	2	3	A001	W
1	2	3	C001	G
1	2	3	C001	W
2	3	4	B001	J
4	5	6	*null*	M

Suppose you have the same tables, but flip the order. This new left join produces different results. Again, a left join takes all the data from the new left table, but essentially ignores a row from the right table. The row of data for User ID = 4 is not included because there is no row for Patron ID = 4 in the left table.

Branch	Patron ID	District	Level
A001	1	2	3
B001	2	3	4
C001	1	2	3

User ID	District	Level	Type
1	2	3	G
2	3	4	J
4	5	6	M
1	2	3	W

User ID	District	Level	Branch	Type
1	2	3	A001	G
1	2	3	A001	W
1	2	3	C001	G
1	2	3	C001	W
2	3	4	B001	J

Data blending

When you use data blending to combine data, a query is sent to the database for each data source that is used on the sheet. The results of the queries are sent back to Tableau as aggregated data and presented together in the visualization.

The view uses all values from the primary data source (functioning as the left table) and the corresponding rows from the secondary data source (the right table) based on the linking field(s).

Suppose you have the following tables. If the linking fields are **User ID** and **Patron ID**, not all values can be a part of the resulting table because of the following:

- A row in the left table does not have a corresponding row match in the right table, as indicated by the null value in the results.
- There are multiple corresponding values in the rows in the right table, as indicated by the asterisk (*) in the results.

User ID	District	Level	Type
1	2	3	G
2	3	4	J
4	5	6	M
1	2	3	W

Branch	Patron ID	District	Level
A001	1	2	3
B001	2	3	4
C001	1	2	3

User ID	District	Level	Branch	Type
1	2	3	*	G
2	3	4	B001	J
4	5	6	*null*	M
1	2	3	*	W

When measures are involved, they are also aggregated, as seen below:

Branch	Patron ID	District	Level	Fines
A001	1	2	3	10.00
B001	2	3	4	20.00
C001	1	2	3	30.00

User ID	District	Level	Type
1	2	3	G
2	3	4	J
4	5	6	M
1	2	3	W

Branch	Patron ID	District	Level	Fines
*	1	2	3	40.00
B001	2	3	4	20.00
*	1	2	3	40.00

User ID	District	Level	Type	Branch	Fines
1	2	3	G	*	40.00
2	3	4	J	B001	20.00
4	5	6	M	*null*	*null*
1	2	3	W	*	40.00

Data blending at a glance

- Data blending occurs on a sheet-by sheet basis.
- The order in which fields are used determines which data source is the primary versus the secondary data source.
- The primary data source is indicated with a blue check mark, any secondary data sources and fields from secondary data sources have an orange check mark.

- Linking fields can be automatically determined based on shared field names or the blend relationship can be manually created.
- Data blending behaves similarly to a left join, which may result in missing data from the secondary data source.
- Asterisks (*) may appear. This indicates multiple dimension values in a single mark, because data blending takes aggregated results and combines them in the view.
- A secondary data source can be used to re-alias the field values in a primary data source.

Data blending limitations

- There are some data blending limitations around non-additive aggregates, such as COUNTD, MEDIAN, and RAWSQLAGG.
- Blended data sources cannot be published as a unit. Instead, publish each data source separately (to the same server) and then blend the published data sources.
- Data from secondary data sources must always be aggregated in calculations.
- If you are blending a cube data source, it must be the primary data source.

Assigning Geographical Roles to Data Elements :

We can customize the geo graphical areas in our dataset which are not recognised by Tableau in following methods:

1. I the data type of location field is not coming as Geo type then:
2. If there are some null/ missing value in the map:
   Click on Null values option, in the window that opens, edit locations to:

   Change country name OR

   Correct city name if misspell OR

   Add latitude & longitude details

A geographic role associates each value in a field with a latitude and longitude value. When you assign a geographic role to a field, Tableau assigns latitude and longitude values to each location in your data based on data that is already built in to the Tableau map server.

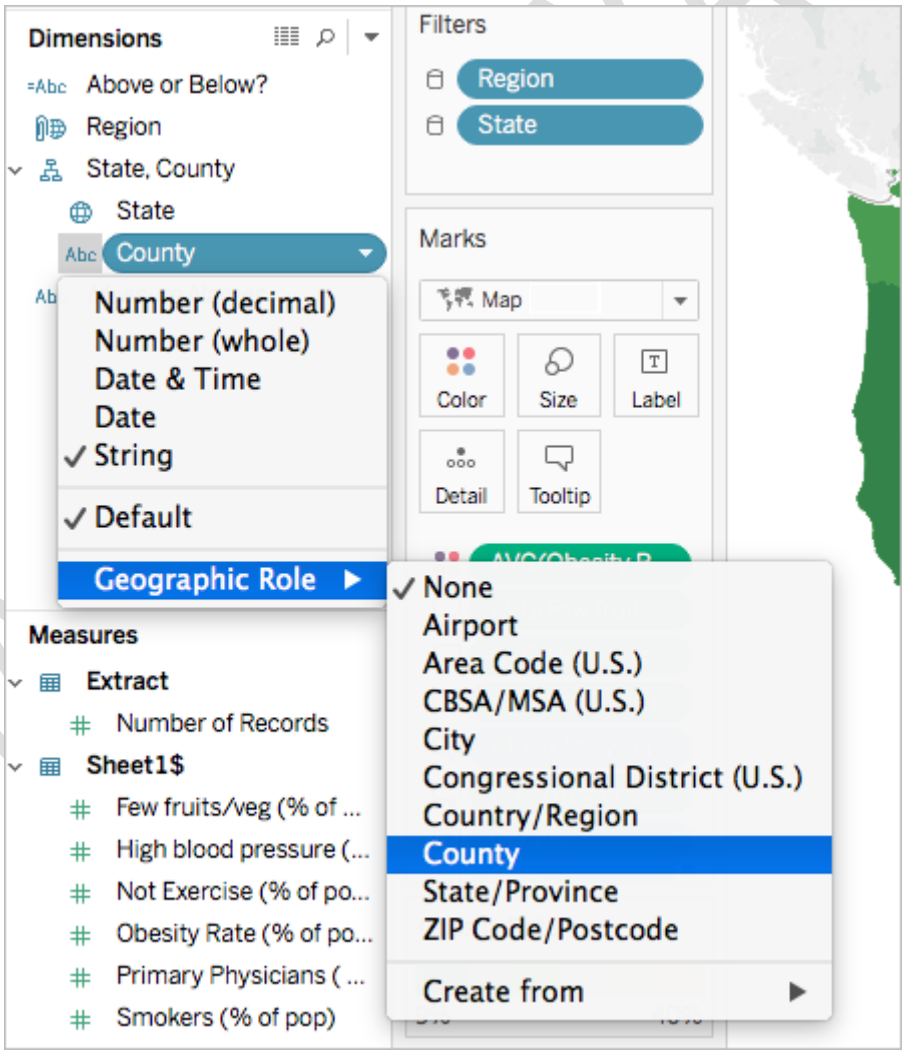
Assign a geographic role to a field

Assigning a geographic role based on the type of location (such as state versus postcode) helps ensure that your data is plotted correctly on your map view. For example, you can assign the City geographic role to a field that contains a list of city names.

When a field is assigned a geographic role, Tableau creates a map view when you add the field to **Detail** on the **Marks** card. In other words, Tableau *geocodes* the information in that field.

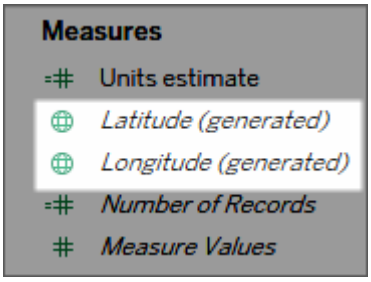
To assign a geographic role to a field:

- In the Data pane, click the data type icon next to the field, select **Geographic Role**, and then select the geographic role you want to assign to the field.



When you assign a geographic role to a field, Tableau adds two fields to the **Measures** area of the **Data** pane: Latitude (generated) and Longitude (generated).

These fields contain latitude and longitude values and are assigned the Latitude and Longitude geographic roles. If you double-click each of these fields, Tableau adds them to the Columns and Rows shelves and creates a map view using the Tableau background map.



Types of geographic roles in Tableau

The following table describes the geographic roles available in Tableau. Many of the roles are international, but some are limited to the U.S. only.

You can assign geographic roles to your fields based on the type of geographic data they contain. For example, you can assign the Airport geographic role to a field that contains International Air Transport Association (IATA) codes.

If your location data does not fit into one of these roles, you may have to import custom geocoding to plot the data on a map.

Geographic Role	Assign this role to a field if it contains:
Airport	International Air Transport Association (IATA) or International Civil Aviation Organization (ICAO) airport codes.
Area Code (U.S.)	U.S. telephone area codes; numbers only.
CBSA/MSA (U.S.)	U.S. Core Based Statistical Areas (CBSA), which includes Metropolitan Statistical Areas (MSA), as defined by the U.S. Office of Management and Budget. CBSA/MSA Codes and Names are recognized.
City	Worldwide cities with population of 15,000 or more. Names are in English (UK or US), French, German, Spanish, Brazilian-Portuguese, Japanese, Korean, and Chinese (Simplified and Traditional).
Congressional District (U.S.)	U.S. congressional districts.

Country/Region	Worldwide countries, regions, and territories. Names are in English (UK or US), French, German, Spanish, Brazilian-Portuguese, Japanese, Korean, and Chinese (Simplified and Traditional). Tableau also recognizes, FIPS 10, ISO 3166-1 alpha 2, and ISO 3166-1 alpha 3. Names are included in various forms, including long, short, and various abbreviations.
County	Second-level administrative divisions for select countries. For example, U.S. counties, French départements, German kriese, etc. **Note:** Second-level administrative division definitions vary by country. In Tableau, all second-level administrative divisions are geocoded with the County geographic role.
NUTS Europe	NUTS (Nomenclature of Territorial Units for Statistics) levels 1 - 3 codes. Codes and names, including synonyms, are supported.
Latitude	Latitude in decimal degrees. Only available for numeric fields.
Longitude	Longitude in decimal degrees. Only available for numeric fields.
State/Province	Worldwide state, province, and other first-level administrative divisions. Names are in English (UK or US), French, German, Spanish, Brazilian-Portuguese, Japanese, Korean, and Chinese (Simplified and Traditional). **Note:** Some names are available only in their local form.
ZIP Code/Postcode	ZIP codes and postcodes for select countries. For example, U.S. five-digit zip codes, Australian four-digit postcodes, German five-digit postcodes, etc.

Export Results from Tableau

There are multiple formats in which data can be exported out of Tableau workbook, some of them are:

1. PDF
2. Images
3. Database
4. Excel
5. Power Point

You can export the data in a Tableau data source, including all or part of the records from your original data. Alternatively, you can export only the portion of data used to generate the view.

Export data in the data source

After you join tables from one or more connections and make general customizations (for example, create a calculated field, pivot fields, create groups, apply data source or extract filters, etc.) to your Tableau data source, you might want to share or reuse the data in its new form. You can do this by using one of the methods listed below.

1. Export your data to .csv file
2. Extract your data
3. Export the data source

Note: *The export may exclude some table calculations and level of detail expressions.*

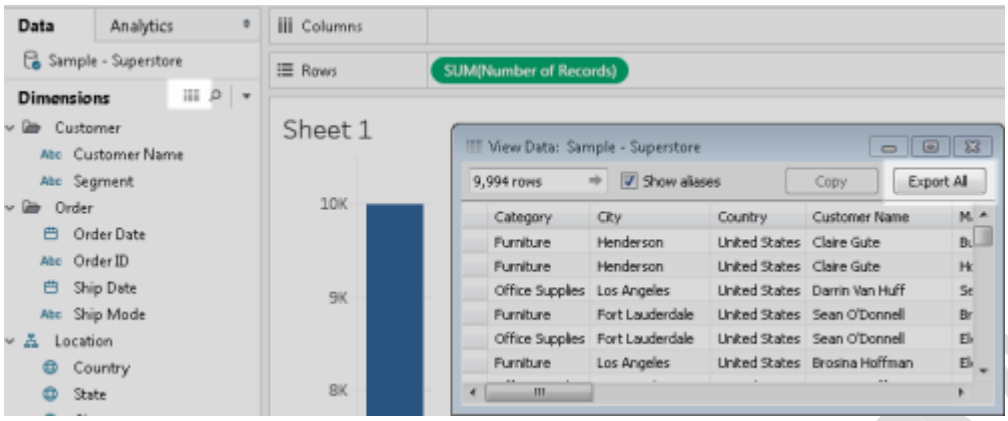
Export your data to .csv file

Because the .csv format is one of the most simple structured formats for data, it's supported by a wide range of tools, databases, and programming languages. Exporting your data in the Tableau data source using this format creates an independent data set and can be a convenient and flexible way to share your data with others.

There are two primary ways you can export your data in the data source to a .csv file in Tableau: from the Data Source page and from the view.

- **From the Data Source page:** On the Data Source page, select **Data** > **Export Data to CSV** to export all the data in your data source to .csv file.

- **From the view:** On the sheet tab, drag a field to the Columns or Rows shelf, click the View Data icon in the Data pane, and click the **Export All** button.



Extract your data

Another way to export all of your data or a subset of your data in the data source is to create an extract (.hyper) file. An extract functions as an independent data set, which you can use to connect directly from Tableau.

Export the data source

After you connect to your data, you can export and save your data source as a Tableau data source (.tds) file. Saving the data source creates a shortcut to your remote data and allows you to avoid having to create a new connection to a specific data set each time.

Export data used in the view

After you create a view, you can also export just the data used to generate that view.

The fields that are exported come from the fields on the shelves of the sheet. However, fields that function as external filters, in other words, the fields that appear only on the **Filters** shelf, are not included in the export. If you want to include other fields with the exported data without changing the baseline view, you can place those fields on the **Detail** shelf.

The various methods for exporting the data used to generate the view is listed below.

- Export data in the view to Microsoft Access or .csv
- Export crosstab of data in the view to Excel
- Copy data in the view to clipboard

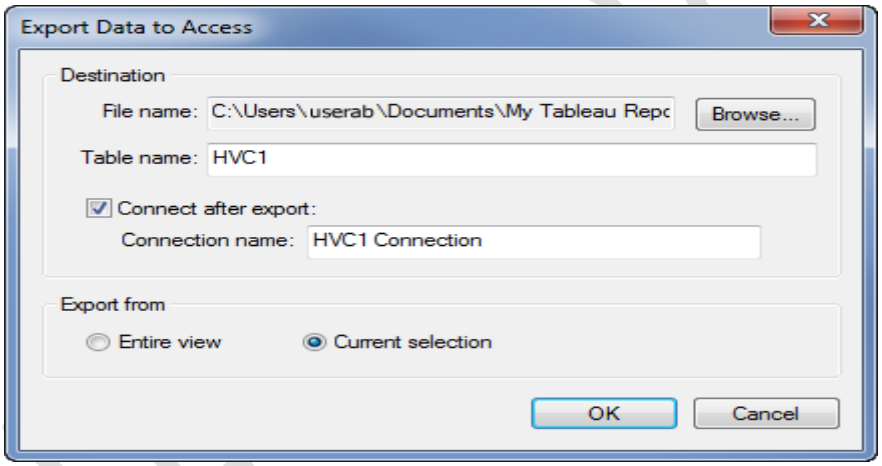
- Copy crosstab of data in the view to clipboard

Export data in the view to Microsoft Access or .csv

Export the data that is used to generate the view as an Access database (Windows only) or .csv file (Mac only).

1. In Tableau Desktop, select **Worksheet** > **Export** > **Data**.
2. Select a location and type a name for your Access database or .csv file.
3. Click **Save**.

   If you're on Windows, the Export Data to Access dialog box displays to give you the option to immediately use the new Access database and continue working in Access without interrupting your work flow.



Export crosstab of data in the view to Excel

You can export directly to Excel the data used to generate the view formatted as a crosstab. When you export your view as a crosstab, Tableau automatically opens the Excel application and pastes a crosstab version of the current view into a new Excel workbook.

Although this option provides a direct method for exporting your data to another application, performance of the export can be affected because it is simultaneously copying and formatting the data. If the view you are exporting contains a lot of data, a dialog box opens asking whether you want to export the formatting. In this case, if you choose to exclude the formatting from the export, performance of the export might improve.

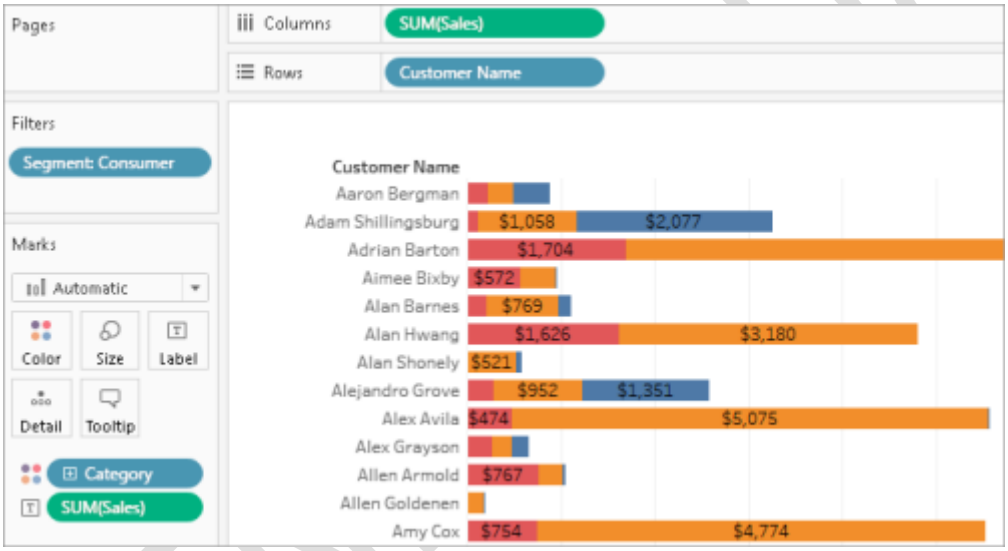
- In Tableau Desktop: select **Worksheet** > **Export** > **Crosstab to Excel**.
  If you're using a Mac, this option opens a dialog box where you can save the file. You must then manually open the file in Excel.

- In Tableau Server or Tableau Online, open a view or dashboard and select **Download** > **Crosstab**. Select which sheets from the workbook to export data from.

Copy data in the view to clipboard

Copy the data used to generate the view so that you can paste it into another application.

1. Create a view.



2. Select **Worksheet** > **Copy** > **Data**.

3. Open another application, such as Word, and paste the data into the document.

   In this example, the fields placed on the Columns, Rows, and Color shelves are copied into the document. However, the **Customer Segment** field is not copied because it is an external filter because it appears only on the Filters shelf.

Category	Customer Name	Sales
Furniture	Aaron Bergman	$391
Furniture	Adam Shillingsburg	$2,077
Furniture	Adrian Barton	$1,280
Furniture	Aimee Bixby	$16
Office Supplies	Aaron Bergman	$274
Office Supplies	Adam Shillingsburg	$1,058

Copy crosstab of data in the view to clipboard

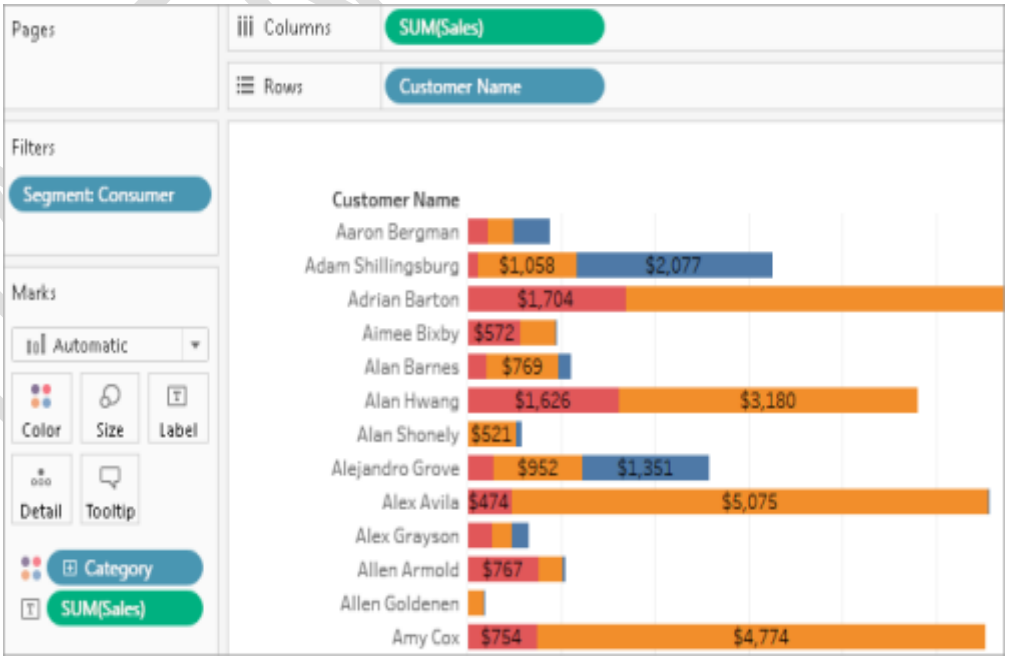
You can copy a crosstab version of a view so that you can paste or transfer the data into another application. The pasted data always appears as a crosstab, even if the initial view of the data in Tableau did not use a crosstab format.

Copying a crosstab is restricted by some general conditions:

- You must copy all records in the view. You cannot copy a subset of records.
- This option is valid for aggregated views only. It cannot be used on disaggregated views of data because a crosstab is by definition an aggregated view of data. This means the **Aggregate Measures** option on the Analysis menu must be selected in order for copying a crosstab to work properly.
- You cannot copy a crosstab if the view contains continuous dimensions such as continuous dates and times.
- Other restrictions may apply depending on the data in your view.

After the general conditions are met, copy the crosstab.

1. Create a view.



2. Select **Worksheet** > **Copy** > **Crosstab**.

3. Open another application, such as Excel, and paste the crosstab.

	A	B	C	D	E
1		Category	Category	Category	
2	Customer Name	Furniture	Office Sup	Technology	
3	Aaron Bergman	$391	$274	$222	
4	Adam Shillingsburg	$2,077	$1,058	$120	
5	Adrian Barton	$1,280	$11,489	$1,704	
6	Aimee Bixby	$16	$379	$572	
7	Alan Barnes	$131	$769	$213	

Create Data Hierarchies & Drill Downs:-

Hierarchies arrange data fields in a level

By creating hierarchies in Tableau, we set our data on different levels of detail and organize it.

For Example:

1. A Geography hierarchy would have a region, country, state, city, area levels.
2. A Time hierarchy has a year, month, week, day as its levels.

Create Hierarchies

When you connect to a data source, Tableau automatically separates date fields into hierarchies so you can easily break down the viz. You can also create your own custom hierarchies. For example, if you have a set of fields named Region, State, and County, you can create a hierarchy from these fields so that you can quickly drill down between levels in the viz.

Create a hierarchy

To create a hierarchy:

1. In the **Data** pane, drag a field and drop it directly on top of another field.

Note: *When you want to create a hierarchy from a field inside a folder, right-click (control-click on a Mac) the field and then select* ***Create Hierarchy***.

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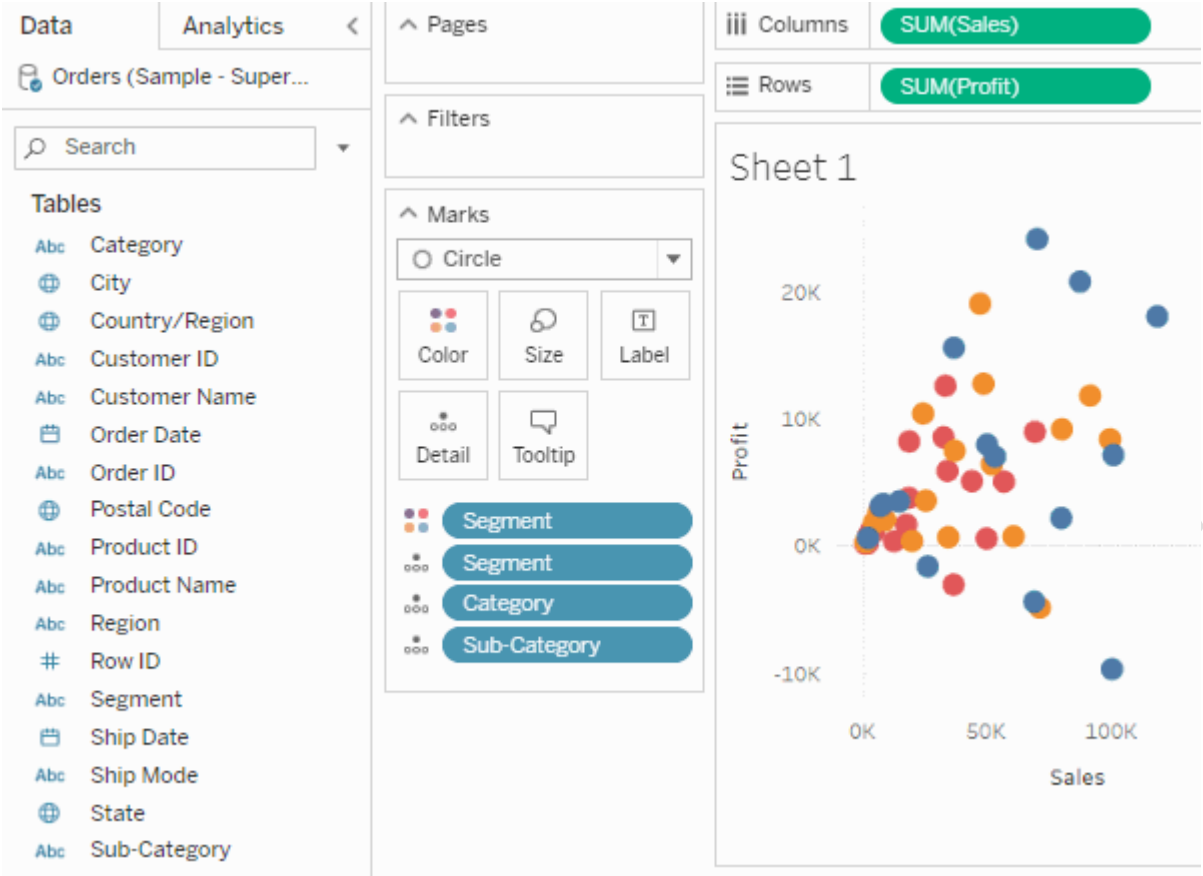
2. When prompted, enter a name for the hierarchy and click **OK**.
3. Drag additional fields into the hierarchy as needed. You can also re-order fields in the hierarchy by dragging them to a new position.

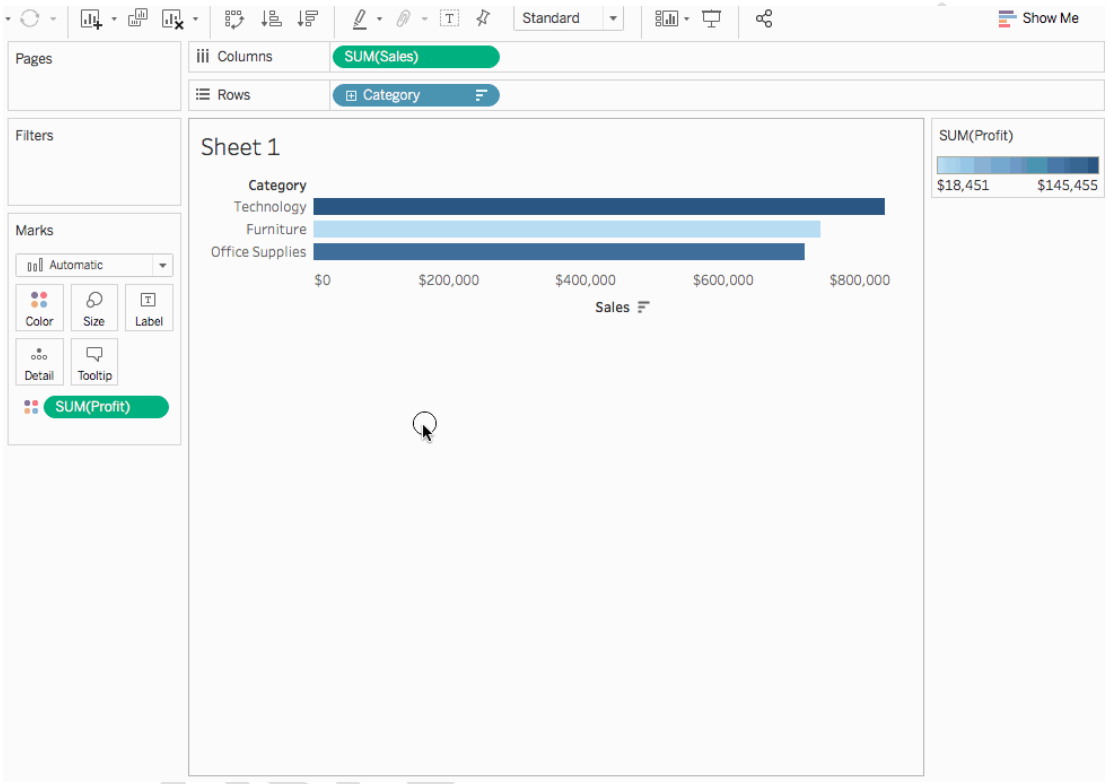

Data
Analytics
Orders (Sample - Super...
Search
Tables
Abc Category
City
Country/Region
Abc Customer ID
Abc Customer Name
Order Date
Abc Order ID
Postal Code
Abc Product ID
Abc Product Name
Abc Region
Row ID
Abc Segment
Ship Date
Abc Ship Mode
State
Abc Sub-Category
Pages
Filters
Marks
Circle
Color
Size
Label
Detail
Tooltip
Segment
Segment
Category
Sub-Category
Columns
SUM(Sales)
Rows
SUM(Profit)
Sheet 1
20K
10K
0K
-10K
Profit
0K
50K
100K
Sales

Drill up or down in a hierarchy

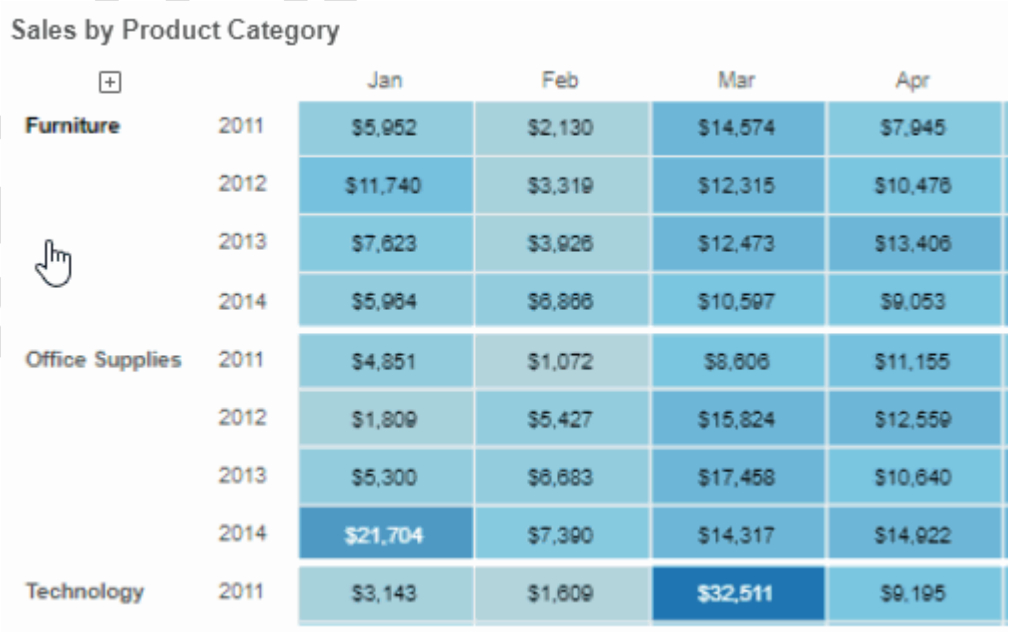
When you add a field from a hierarchy to the visualization, you can quickly drill up or down in the hierarchy to add or subtract more levels of detail.

To drill up or down in a hierarchy in Tableau Desktop or in web authoring:

- In the visualization, click the + or - icon on the hierarchy field.



When you are editing or viewing the visualization on the web, you have the option of clicking the + or - icon next to a field label.



Remove a hierarchy

To remove a hierarchy:

- In the **Data** pane, right-click (control-click on a Mac) the hierarchy and select **Remove Hierarchy**.

  The fields in the hierarchy are removed from the hierarchy and the hierarchy disappears from the Data pane.

Drilling Down and Up in a Cube Data Source Hierarchy

Multidimensional (cube) data sources contain hierarchies. One of the most useful ways to navigate hierarchies is to drill down or drill up. For example, if you are examining the sales totals for various years, you can then drill down and view sales for all of the months within each year. Alternatively, if you are examining sales totals for all months, you can then drill up and view the sales for each year.

Hierarchies in cube data sources

When connected to cube data sources, you cannot create or customize hierarchies in Tableau. Hierarchies must be created in the cube **before** you connect to it in Tableau.

Hierarchies appear with the following icon in the Data pane:

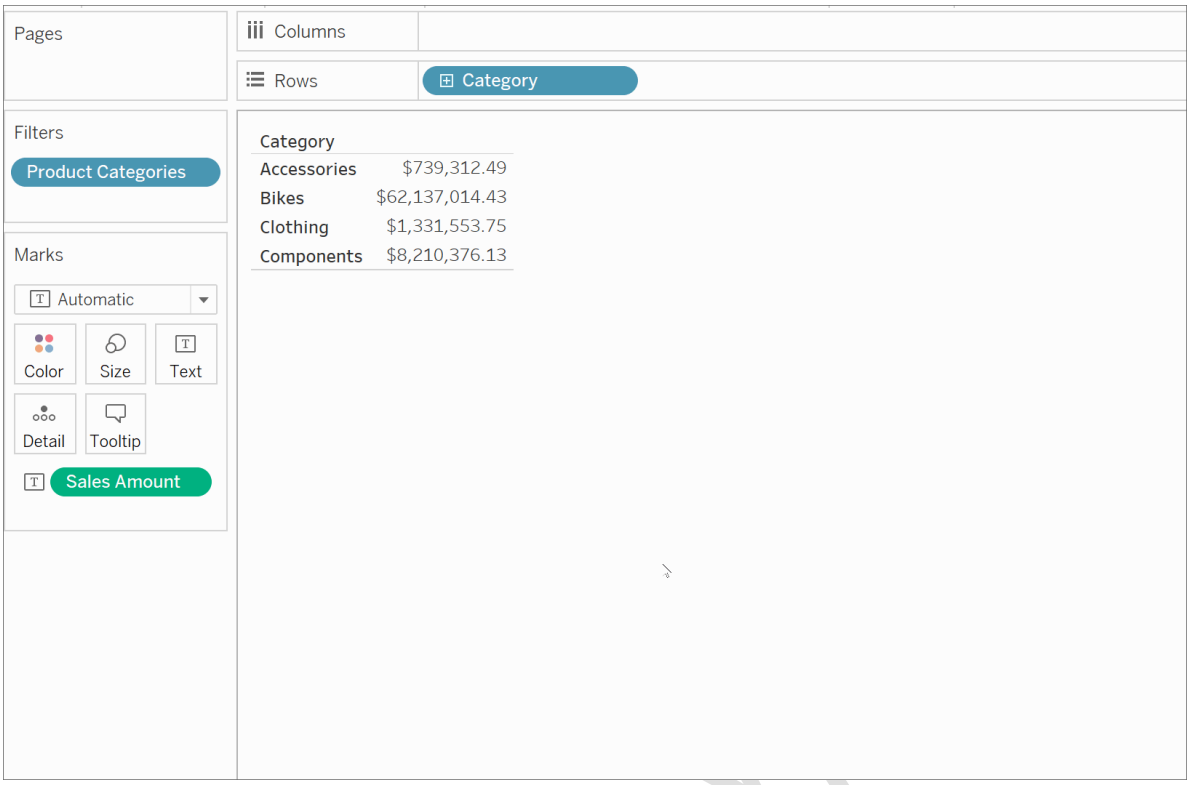
You can see an example of a hierarchy below:

***Note**: You can only drill up or down in fields that are part of a hierarchy.*

Drill up and down for all dimension members in a hierarchy

To drill up or down for all dimension members in a hierarchy:

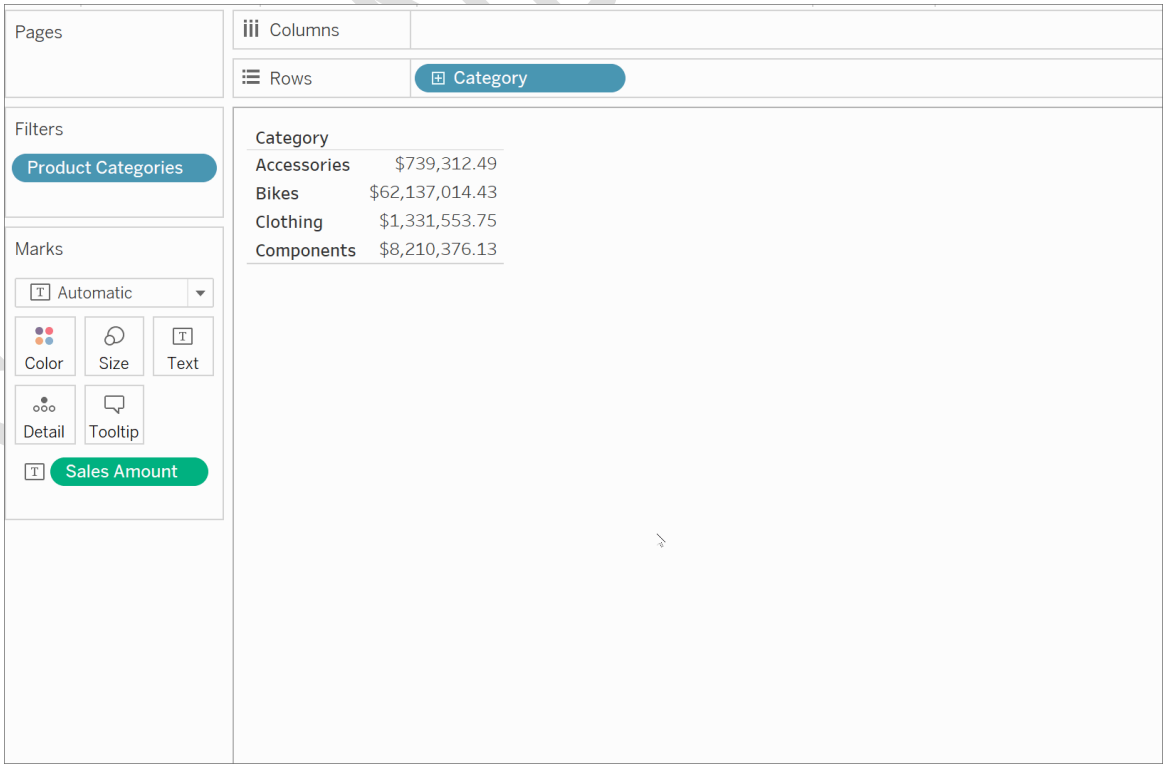
- On the Columns or Rows shelf, or the Marks card, click the plus sign (+) on a field to drill down, or the minus sign (-) to drill up.



Drill up and down for individual dimension members in a hierarchy

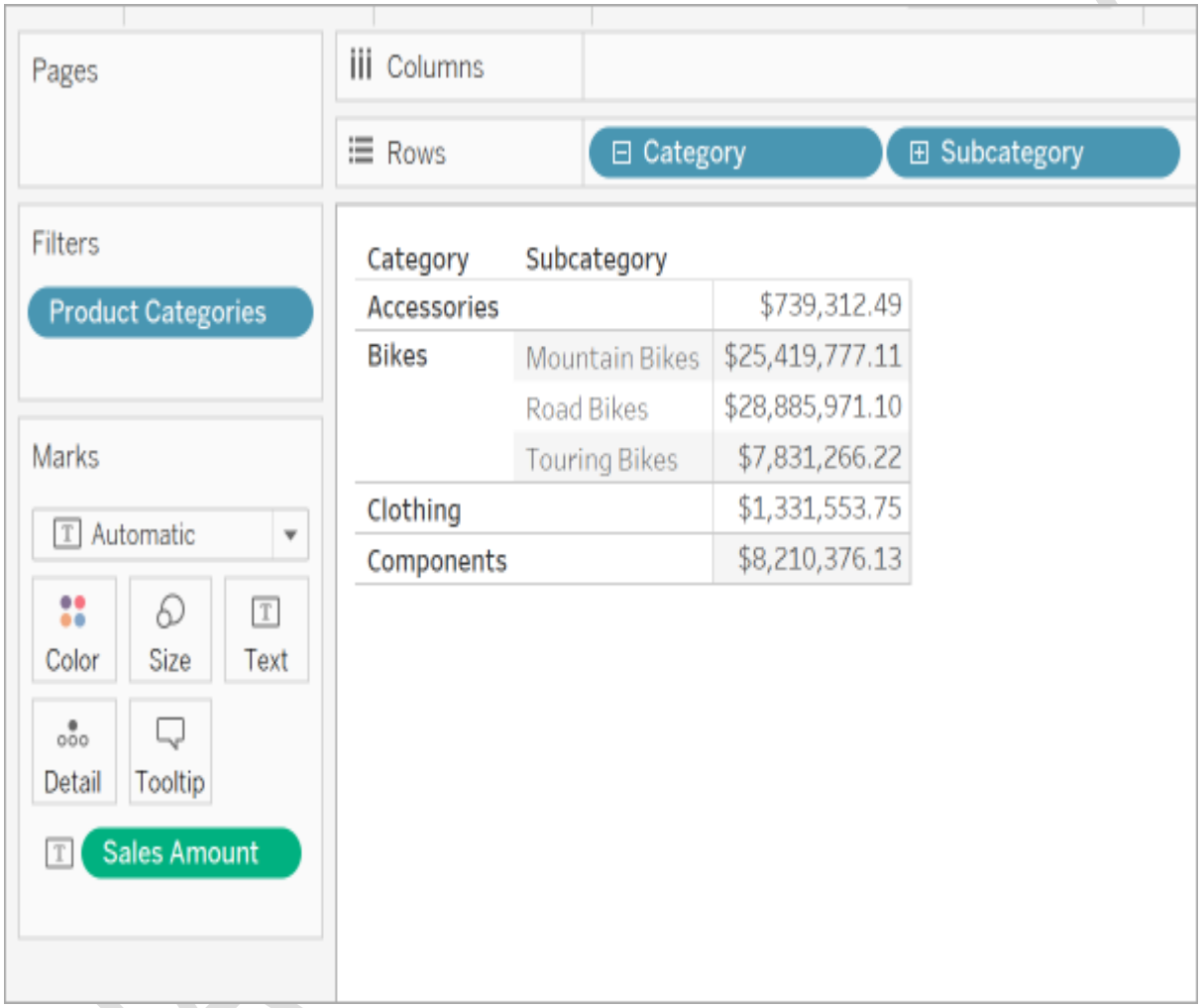
To drill down and drill up for individual dimension members in a hierarchy:

- Right-click a table header and select **Drill Down** or **Drill Up** .

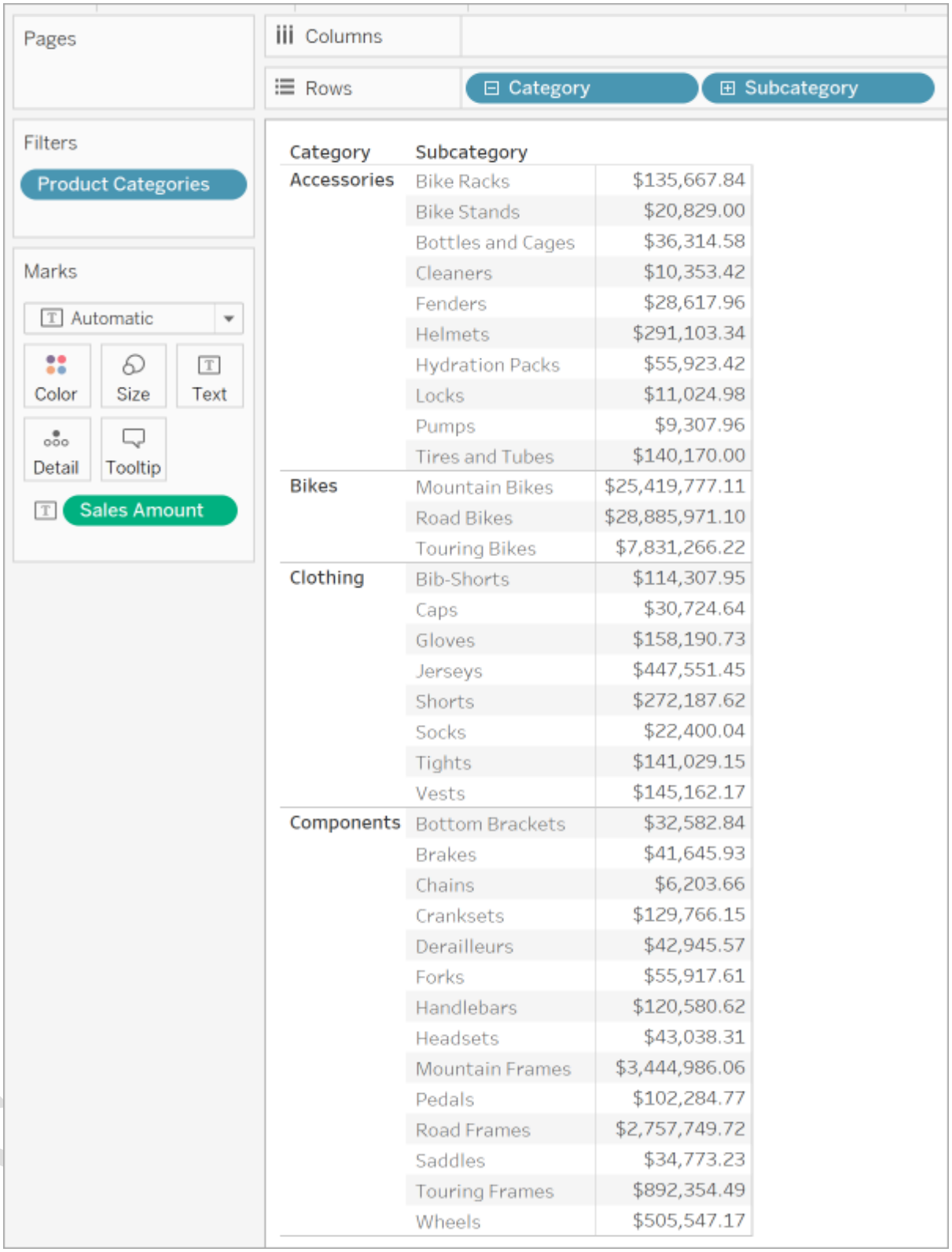


This is often referred to as non-uniform drill down because you expose only the members of interest instead of exposing all the members of a given level.
For example, you can see the difference between drilling down for all dimension members and drilling down for individual dimension members below.

Individual dimension member: Bikes



All dimension members



Category	Subcategory	
Accessories	Bike Racks	$135,667.84
	Bike Stands	$20,829.00
	Bottles and Cages	$36,314.58
	Cleaners	$10,353.42
	Fenders	$28,617.96
	Helmets	$291,103.34
	Hydration Packs	$55,923.42
	Locks	$11,024.98
	Pumps	$9,307.96
	Tires and Tubes	$140,170.00
Bikes	Mountain Bikes	$25,419,777.11
	Road Bikes	$28,885,971.10
	Touring Bikes	$7,831,266.22
Clothing	Bib-Shorts	$114,307.95
	Caps	$30,724.64
	Gloves	$158,190.73
	Jerseys	$447,551.45
	Shorts	$272,187.62
	Socks	$22,400.04
	Tights	$141,029.15
	Vests	$145,162.17
Components	Bottom Brackets	$32,582.84
	Brakes	$41,645.93
	Chains	$6,203.66
	Cranksets	$129,766.15
	Derailleurs	$42,945.57
	Forks	$55,917.61
	Handlebars	$120,580.62
	Headsets	$43,038.31
	Mountain Frames	$3,444,986.06
	Pedals	$102,284.77
	Road Frames	$2,757,749.72
	Saddles	$34,773.23
	Touring Frames	$892,354.49
	Wheels	$505,547.17

One reason to use a non-uniform drill down is if your data source has a ragged hierarchy (asymmetric layout). You also might want to view the children for just the member of interest.

***Note**: Drilling down and drilling up results in filtering the data.*

Adding Actions to Dashboard:

Actions:

Actions are objects created by user which will perform some activity when we trigger some event.

There are 3 types of Actions:

1. Actions Filter
2. Actions
3. Actions URL
4. Actions Sheet
5. Actions Change
6. Actions Change Set Values

Version 9

Version 10

Actions

Add context and interactivity to your data using actions. Users interact with your visualizations by selecting marks, or hovering, or clicking a menu, and the actions you set up can respond with navigation and changes in the view.

For example, in a dashboard showing home sales by neighbourhood, you could use actions to display relevant information for a selected neighborhood. Selecting a neighborhood in one view can trigger an action that highlights the related houses in a map view, filters a list of the houses sold, then opens an external web page showing census data for the neighborhood.

Here's how you use the different types of actions:

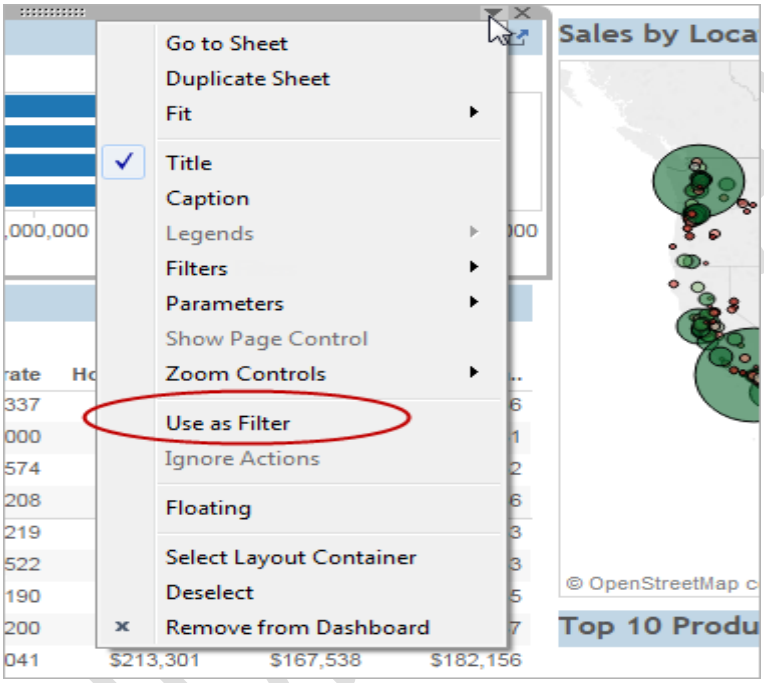
- **Filter**. Use the data from one view to filter data in another to help guide analysis.
- **Highlight**. Call attention to marks of interest by coloring specific marks and dimming all others.
- **Go to URL**. Create hyperlinks to external resources, such as a web page, file, or another Tableau worksheet.
- **Go to Sheet**. Simplify navigation to other worksheets, dashboards, or stories.
- **Change Parameter**. Let users change parameter values by directly interacting with marks on a viz.
- **Change Set Values**. Let users change the values in a set by directly interacting with marks on a viz.

Filter Actions

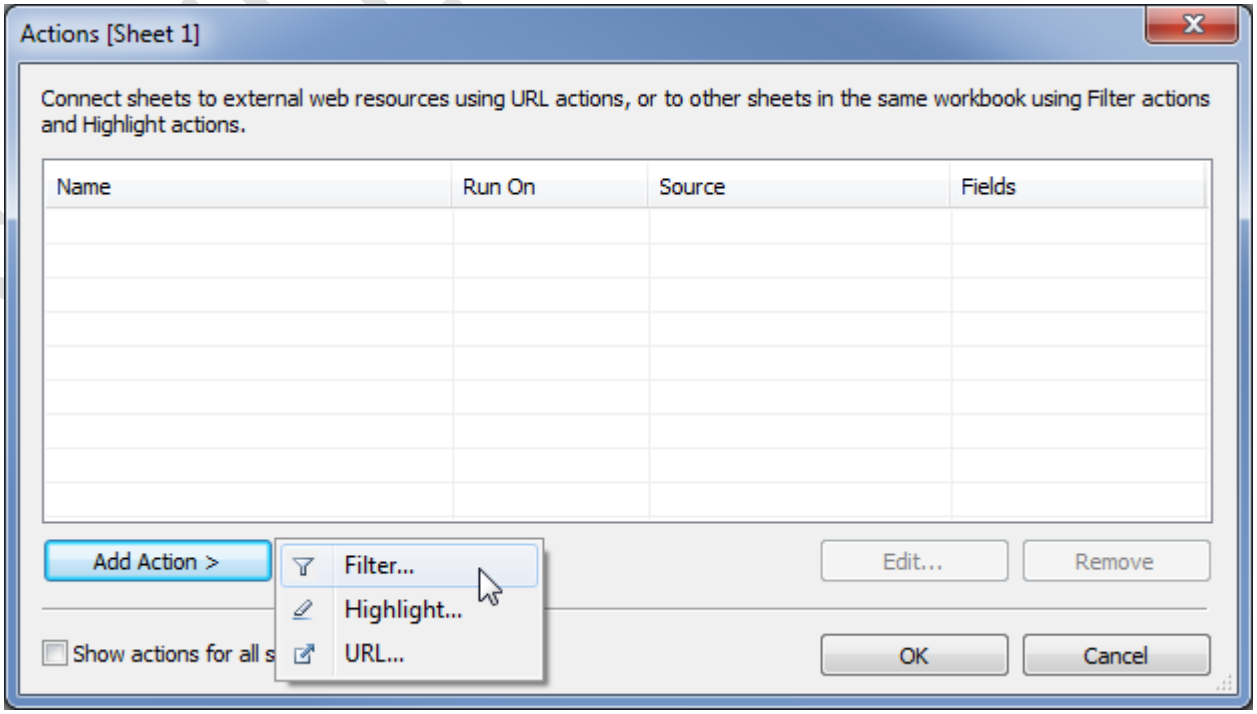
Filter actions send information between worksheets. Typically, a filter action sends information from a selected mark to another sheet showing related information. Behind the scenes, filter actions send data values from the relevant source fields as filters to the target sheet.

Create a filter action

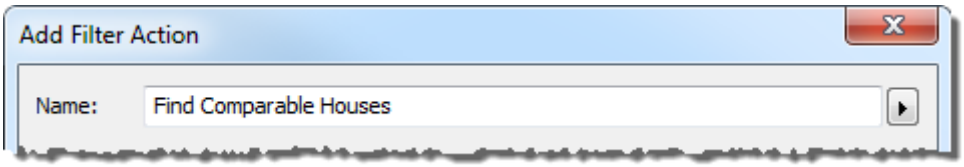
1. Do either of the following:
   - On a worksheet, select **Worksheet** > **Actions**, and then continue to step 2.
   - On a dashboard, select **Dashboard** > **Actions**. Or, from the drop-down menu of a sheet, select **Use as Filter**.



2. In the Actions dialog box, click **Add Action**, and then select **Filter**. Or select an existing action, and choose **Edit**.



3. Specify a name for the action.



Tip: *If you plan to launch an action from a menu, use a descriptive name so users will understand the action's purpose. You can use variables in the name that are drawn from the values of the selected field.*

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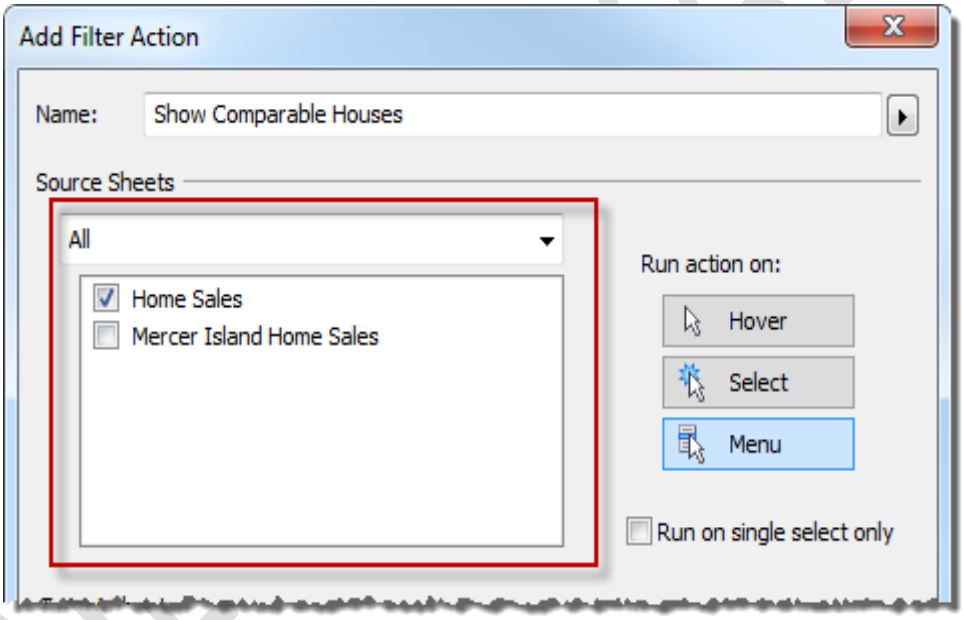
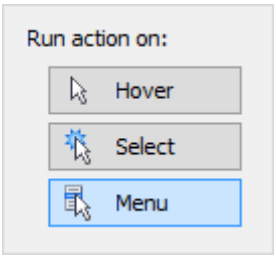
4. Select a source sheet or data source. If you select a data source or dashboard, you can select related sheets you want to launch the action from.



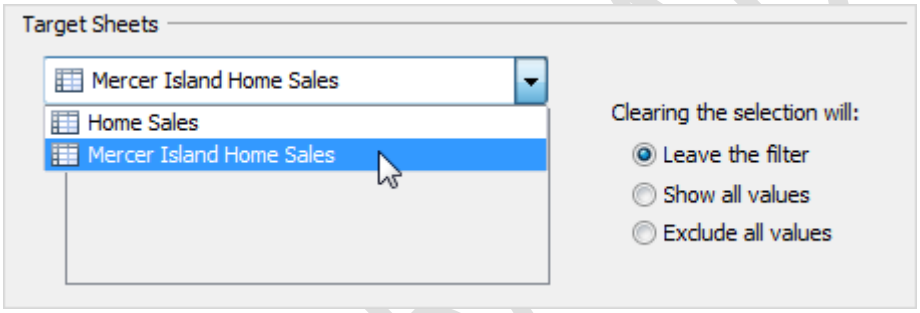
5. Specify how the action runs:
   - **Hover** - Rest the pointer over a mark in the view to run the action. This option works well for highlight and filter actions within a dashboard.
   - **Select** - Click a mark in the view to run the action. Selecting multiple marks will also run this action. This option works well for all types of actions.

     If you select the **Run on single select only** option, the action will run only when a single mark is selected. The user must click the mark again to deselect it.

- **Menu** - Right-click (Windows) or Control-click (macOS) a selected mark in the view, and then select an option on the context menu. This option works well for filter and URL actions.



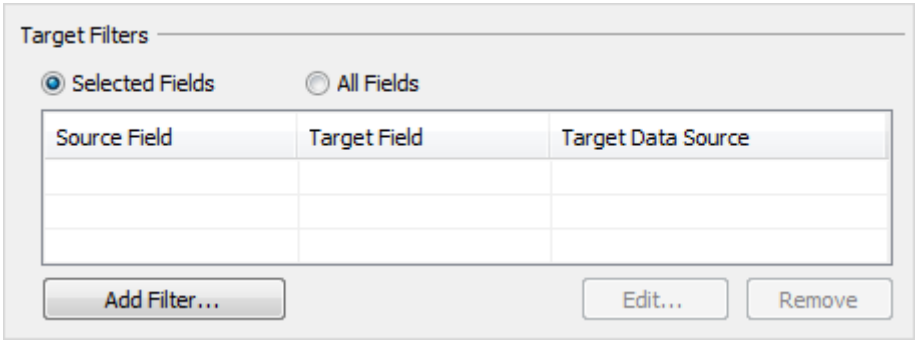
6. Select a target sheet. When you select a dashboard, you can select one or more sheets within it.



7. Specify what happens when the selection is cleared in the view:
   - **Leave the filter** - Continues to show filtered results on the target sheets.
   - **Show all values** - Changes the filter to include all values.
   - **Exclude all values** - Changes the filter to exclude all values. This option is useful when you're building dashboards that only show some sheets if a value in another sheet is selected.

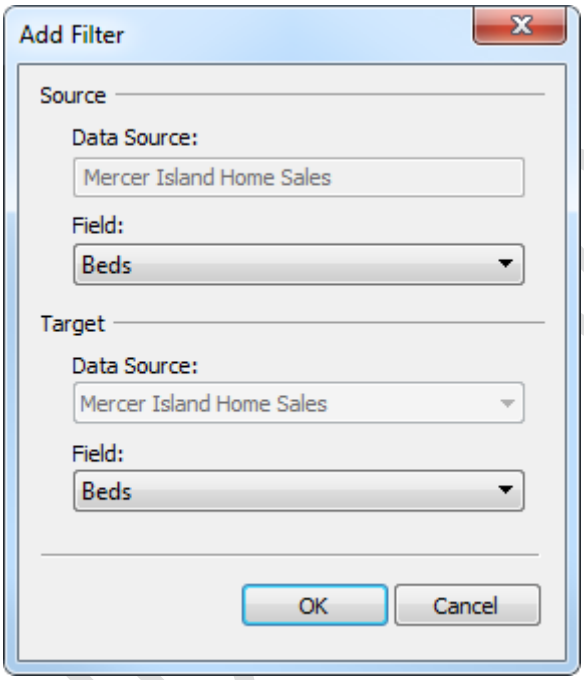
8. Specify the data that you want to show on the target sheets. You can filter on **All Fields** or **Selected Fields**.

9. If you chose **Selected Fields**, click **Add Filter**.



In the Add Filter dialog box, select source and target data sources and fields. When you run the action from a specific mark on the source sheet, a filter is added to the target sheet that only includes values for the target field that match the source field.

In the comparable houses example, if the Source Field and Target Field are both set to Beds, when you click a sheet link for a house with three bedrooms, the target worksheet shows only three-bedroom houses.



***Note**: Note: Filter actions that depend on a user function, such as USERNAME(), will not work. This is because of row-level security, which restricts access to the data.*

Highlight Actions

Highlight actions allow you to call attention to marks of interest by coloring specific marks and dimming all others. You can highlight marks in the view using a variety of tools. For example, you can manually select the marks you want to highlight, use the legend to select related marks, use the highlighter to search for marks in context or create an advanced highlight action.
The following table describes the different methods you can use to highlight marks in a view, dashboard, or story.

Highlight method	**Benefits**	**When you might use this**
Select marks	• Manually select a group of marks to highlight in a view. • Your selection is saved with the workbook.	• When you want to manually highlight a selection of marks and dim all others. • Works well with small domains or views with a small amount of data.
Legends	• Supports one-way and two-way highlighting. • Highlight on color, size, or shape. • You can disable or enable the highlighting action for the workbook or sheets from the toolbar. • Your selection is saved with the workbook and can be included in dashboards and stories and when publishing.	• When you want to focus on select members in a view and dim all others. • When you want to highlight using onlythe legend or the legend and the view. • Works well with small domains or views with a small amount of data.
Highlighter	• Search for data points in a view using keywords or select from a drop-down list. • Highlight marks while maintaining the context of the other data points. • Values automatically update when the underlying data is updated.	• When you want to highlight a mark or group of marks for a discrete field that is included in the view. • When you want to do ad hoc comparisons with instant highlighting.

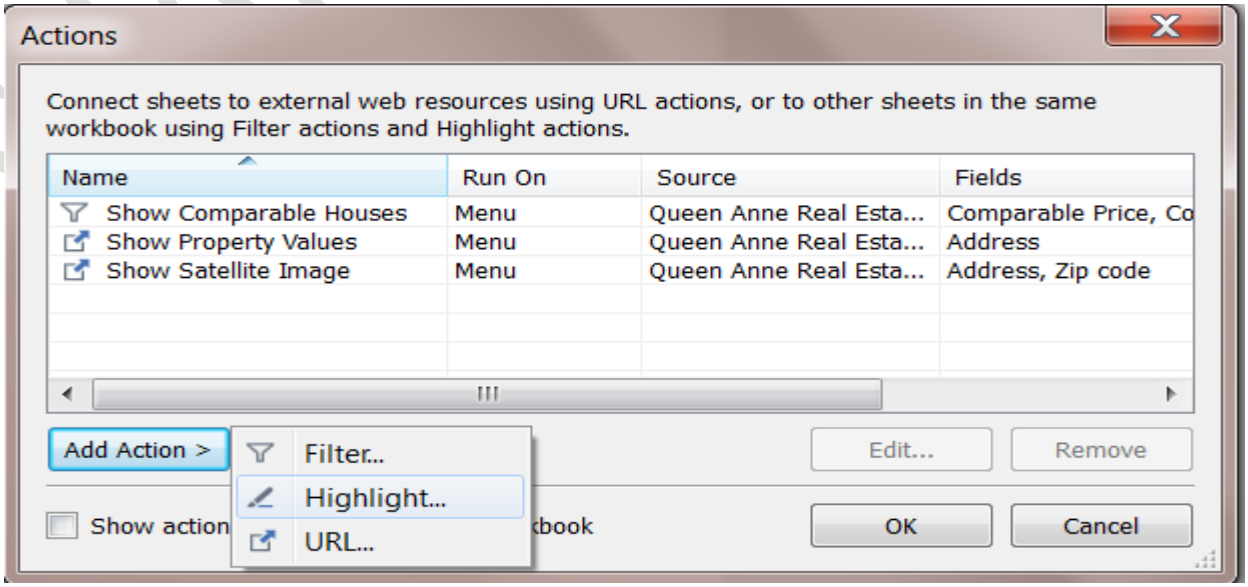
	• Highlighters added to worksheets also appear on dashboards and stories.	• Works well with large domains and large amounts of data.
Actions (Tableau Desktop only)	• Highlight data based on criteria that you define. • Specify the source and target sheets to apply the highlight action to. • Specify the fields to use for highlighting. • You can specify different types of actions to run on the same click (for example, filter and highlight).	• When you want to build interactive exploration into a dashboard. • When you want to highlight data points in a dashboard using specific fields.

Create Advanced Highlight Actions

In Tableau Desktop, you can define more advanced highlight actions using the Actions dialog box. There you can specify source and target sheets and the fields you want to use for highlighting. Follow the steps below to create a highlight action.

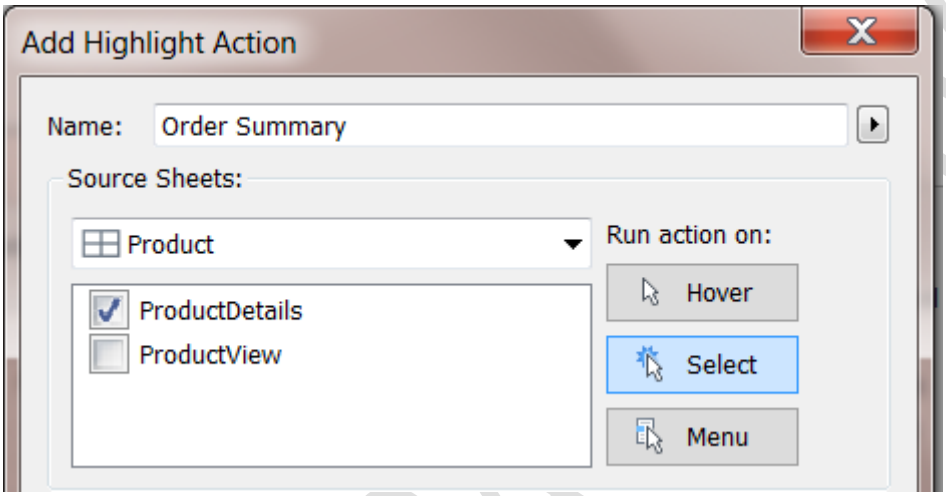
Create a highlight action

1. On a worksheet select **Worksheet >Actions**. From a dashboard, select **Dashboard >Actions**.
2. In the Actions dialog box click the **Add Action** button and then select **Highlight**.



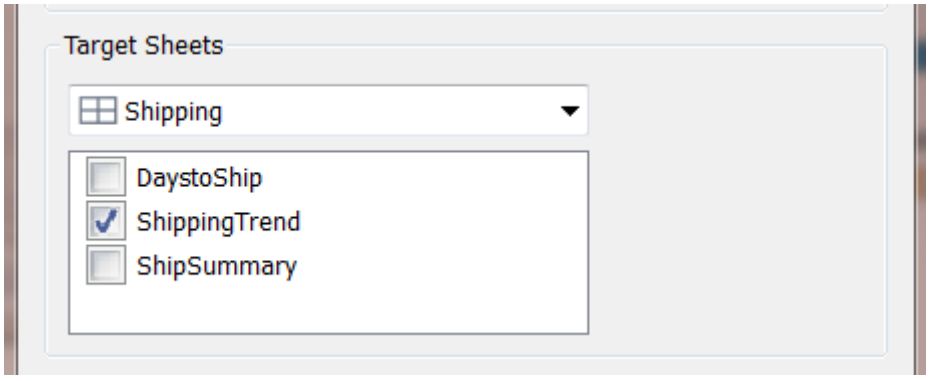
3. Name the action to identify it in the Actions dialog box. Try to make the name descriptive, such as, *Highlight Products Shipped by Delivery Truck*. You can select variables from a drop-down list and use them in the name. Then they are filled in based on the values of the selected field.

4. Use the drop-down list to select the source sheet or data source. If you select a data source or a dashboard sheet, you can further select individual sheets within them.

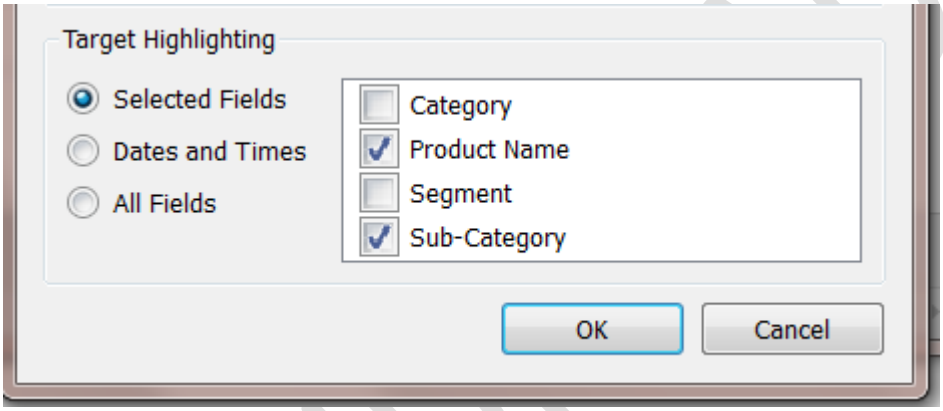


5. Select how you want to trigger the action. You can select from the following options:
    - **Hover** - Rest the pointer over a mark in the view to run the action. This option works well for highlight and filter actions within a dashboard.
    - **Select** - Click a mark in the view to run the action. This option works well for all types of actions.
    - **Menu** - Right-click (control-click on Mac) a selected mark in the view and then select an option on the context menu. This option works well for filter and URL actions.

6. Select a target sheet. If you select a dashboard, you can further select individual sheets within the dashboard.



7. Select the fields you want to use for highlighting. Select from the following options:
    - **Selected Fields** - Marks in the target sheet are highlighted based on select fields. For example, highlighting using the Ship Mode field will result in an action that highlights all marks in the target sheet that have the same ship mode as the selected mark in the source sheet.
    - **Dates and Times** - Marks in the target sheet are highlighted when their date and time match those of the marks selected in the source sheet. The source and target worksheets can only have one date field each, however the date fields can have different names.
    - **All Fields** - Marks in the target sheet are highlighted when they match the marks selected in the source sheet. All fields are considered when determining a match.

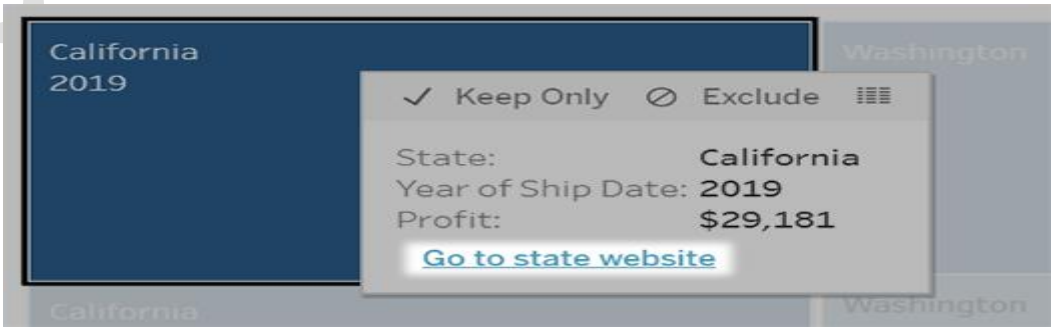


8. When finished, click **OK** twice to close the dialog boxes and return to the view.

URL Actions

A URL action is a hyperlink that points to a web page, file, or other web-based resource outside of Tableau. You can use URL actions to create an email or link to additional information about your data. To customize links based on your data, you can automatically enter field values as parameters in URLs.

Open a web page with a URL action



A URL action run from a tooltip menu. The link reflects the action name, not the target URL.

1. On a worksheet, select **Worksheet >Actions**. From a dashboard, select **Dashboard >Actions**.

2. In the Actions dialog box, click **Add Action** and then select **Go to URL**.

3. In the next dialog box, enter a name for the action. To enter field variables in the name, click the arrow to the right of the **Name** box.

Note: *Give the action a descriptive name, because in tooltip menus the link reflects that name, not the URL. For example, when linking to more product details, a good name could be "Show More Details".*

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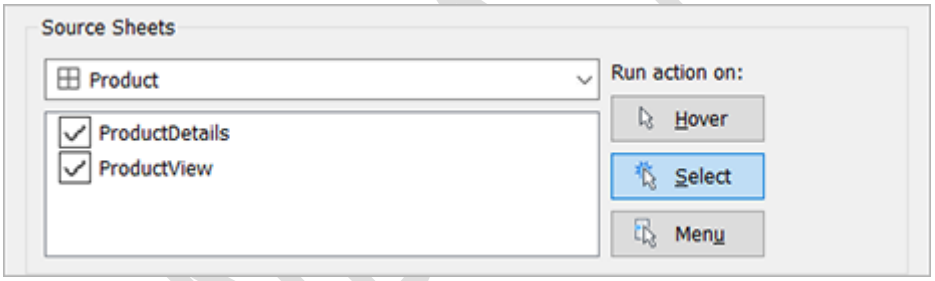
4. Use the drop-down list to select a source sheet or data source. If you select a data source or dashboard you can select individual sheets within it.



5. Select how users will run the action.

If you choose this option...	The action is run when the user...
Hover	Mouses over a mark in the view. This option works best for highlight and filter actions within a dashboard.
Select	Clicks a mark in the view. This option works well for all types of actions.
Menu	Right-clicks (control-clicks on Mac) a selected mark in the view, then clicks an option in a tooltip menu. This option works particularly well for URL actions.

6. Specify a URL with an ftp, http, or https prefix. As a security best practice, other protocols and UNC paths are not supported.

To enter field and filter values as parameters in the URL, click the arrow to the right of the URL box. Be aware that any referenced fields must be present in the view, not just a related data source.

***Note**: On a dashboard, you can specify an ftp address only if the dashboard doesn't contain a web object. If a web object exists, the ftp address won't load.*

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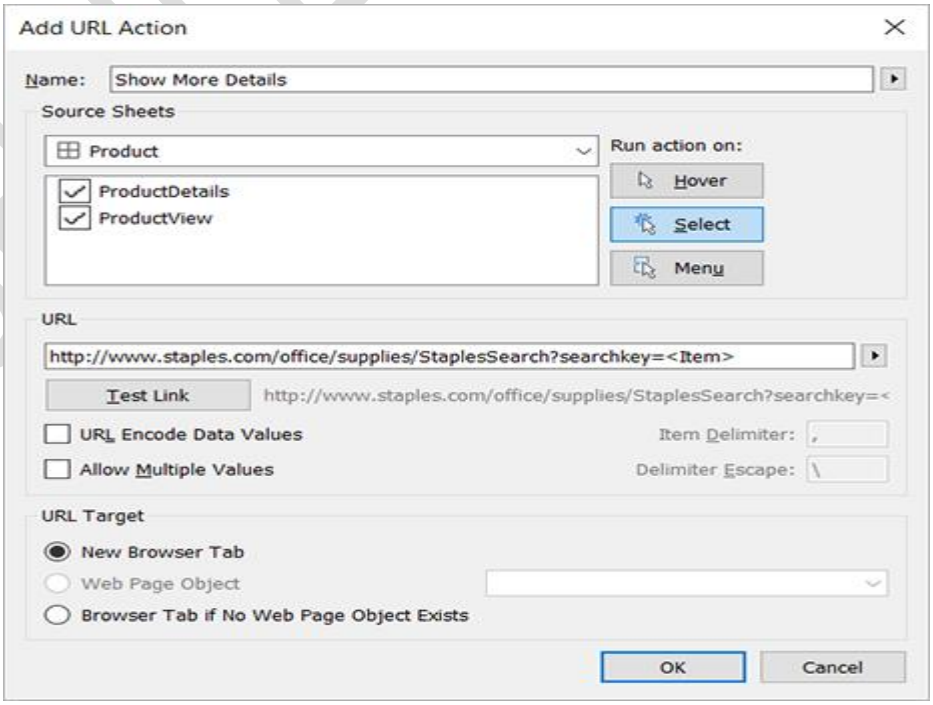
7. (Optional) Select any of the following options:
    - **URL Encode Data Values** - Select this option if your data contains values that use characters that browsers don't allow in URLs. For example, if one of your data values contains an ampersand, such as “Sales & Finance,” the ampersand must be translated into characters that your browser understands.
    - **Allow Multiple Values** - Select this option if you are linking to a web page that can receive lists of values via parameters in the URL. For example, say you select several products in a view and you want to see each product’s details hosted on a webpage. If the server can load multiple product details based on a list of identifiers (product ID or product name), you could use multi-select to send the list of identifiers as parameters.

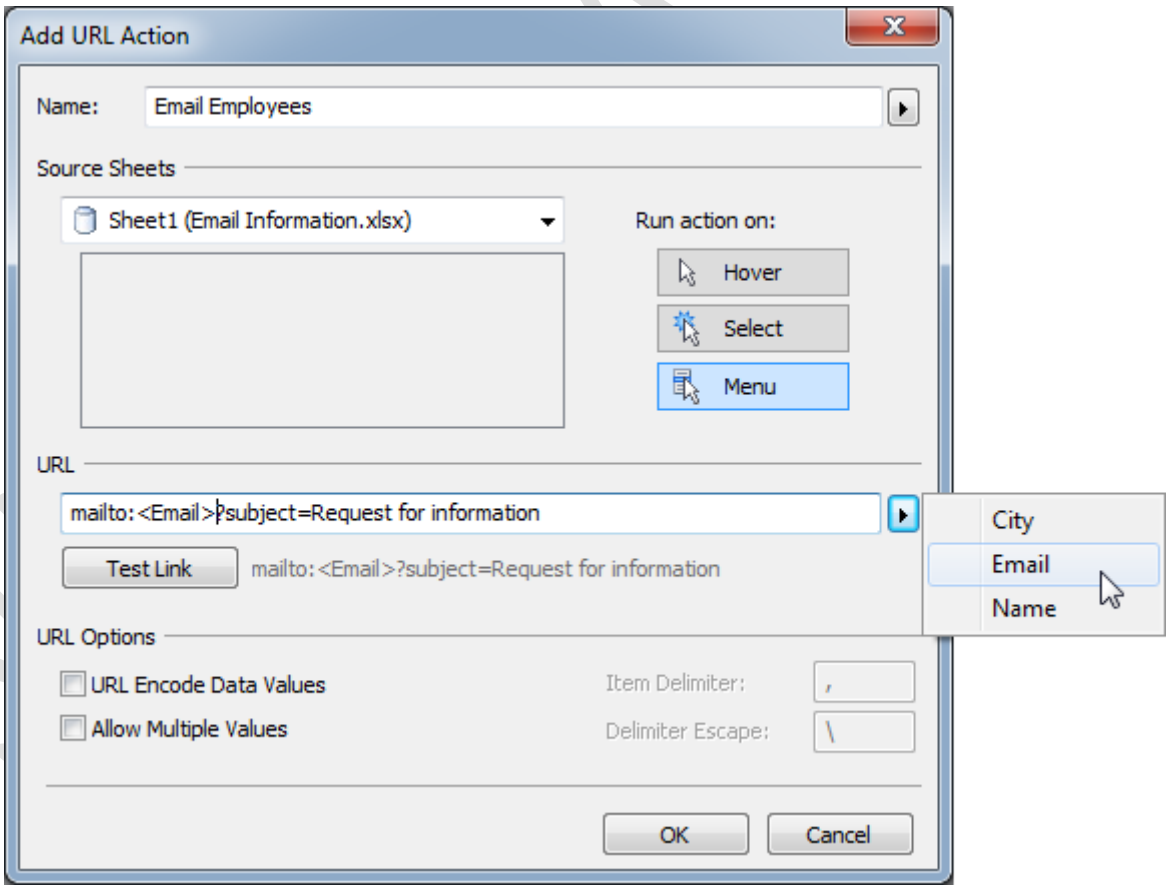
      When you allow multiple values, you must also define the item delimiter, which is the character that separates each item in the list (for example, a comma). You must also define the Delimiter Escape, which is used if the delimiter character is used in a data value.



8. For URL Target, specify where the link will open:
    - **New Browser Tab** - Opens in the default browser.
    - **Web Page Object** - (Dashboards only) Opens in the web page object you select.
    - **Browser Tab if No Web Page Object Exists** - Ensures that the URL opens in a browser on sheets that lack web page objects. This is a good choice when Source Sheets is set to All or a data source.

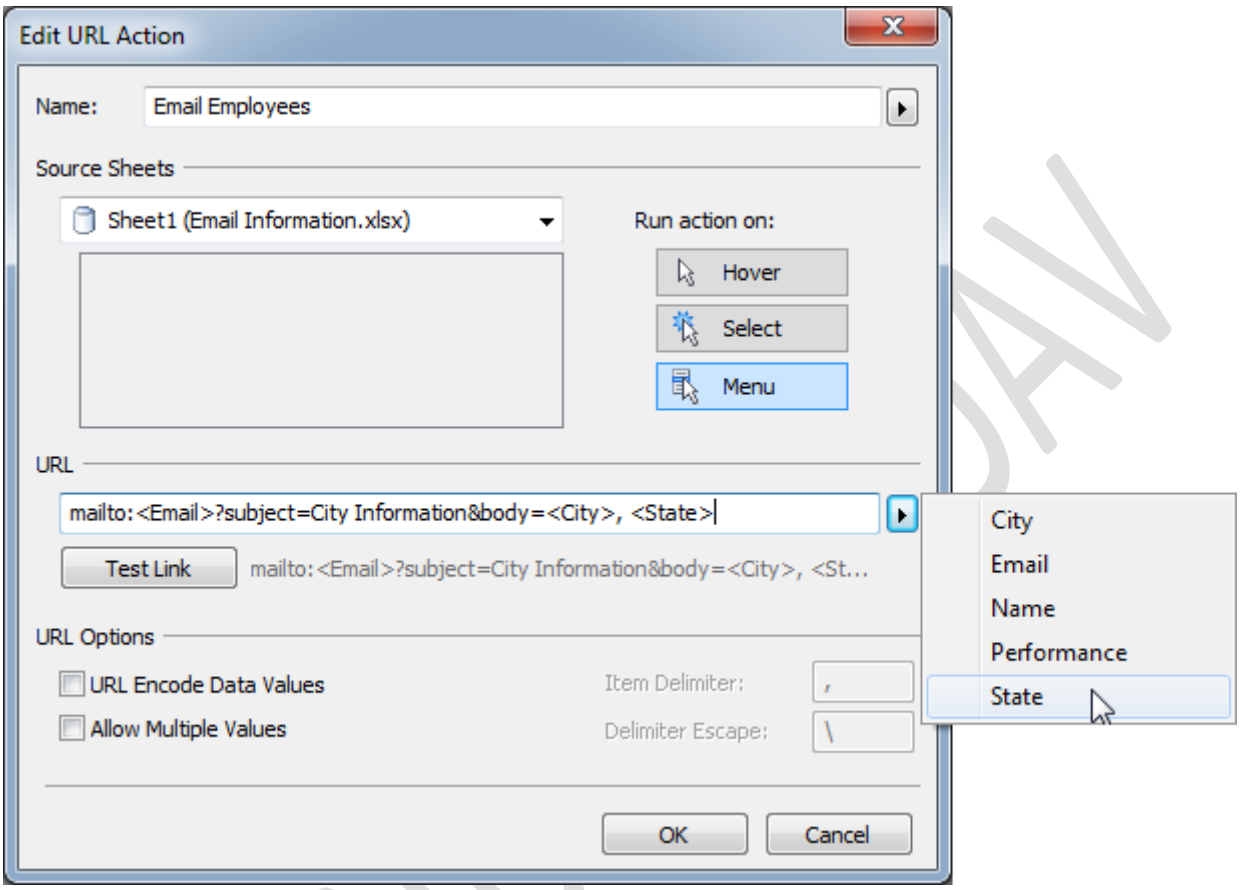
Create an email with a URL action

1. Select **Worksheet** > **Actions**.
2. In the Actions dialog box, click the **Add Action** button and select **Go to URL**.
3. In the Source Sheets drop-down list, select the sheet that contains the field with the email addresses you want to send to.
4. In the URL textbox, type **mailto:**, click the arrow button to select the field in your data that contains the email addresses. Type **?subject=** and enter text for the Subject line if you want to. For example, in dialog below, the subject is Request for information.



5. Type **&body=**, and click the arrow button to select the fields of information that you want to include in the body of the email.

In the example below, the “Email” field contains the email addresses, the subject is “City Information”, and the body text of the email consists of the city and state information that is associated with the email address.



6. (Optional) Display data from your workbook in the body of your email as a vertical list instead of the default horizontal list. For example, suppose you have a horizontal list of cities, such as Chicago, Paris, Barcelona, which you would rather display vertically, like this:

   Chicago
   Paris
   Barcelona

   To make the list vertical, in the Edit URL Action dialog box, do the following:

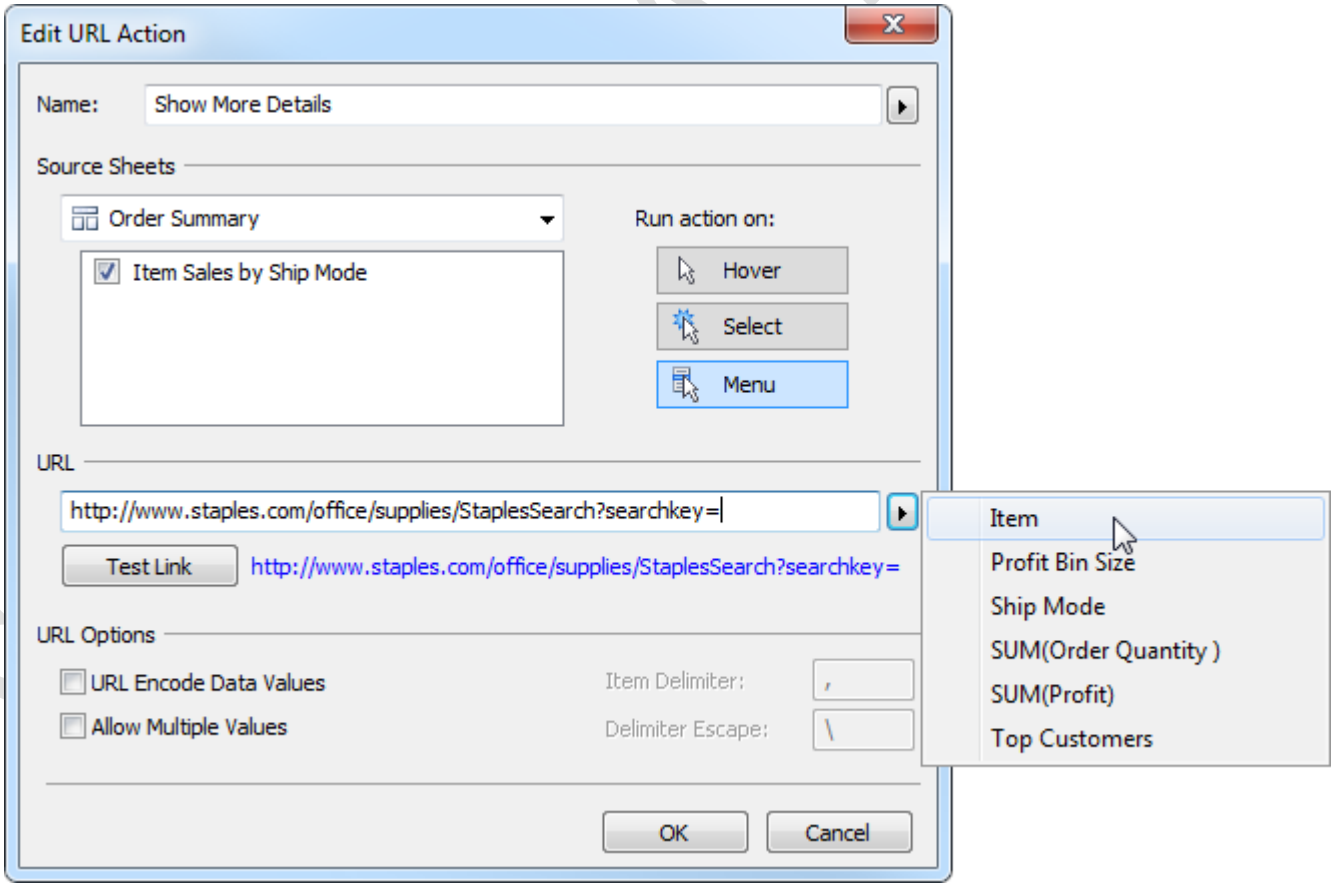
   - Under URL Options, verify that the **URL Encode Data Values** check box is clear.
   - Under URL Options, select the **Allow multiple values** check box.
   - Type **%0a** in the **Item Delimiter** text box to add a line break. This are the URL-encoded characters for a line break.
   -

Using field and filter values in URLs

When users trigger URL actions from selected marks, Tableau can send field, filter, and parameter values as variables in the URL. For example, if a URL action links to a mapping website, you could insert the address field to automatically open the currently selected address on the website.

1. In the Edit URL Action dialog box, begin typing the URL for the link.
2. Place the cursor where you want to insert a field, parameter, or filter value.
3. Click the arrow to the right of the text box and select the field, parameter, or filter you want to insert. The variable appears within angle brackets. You can continue adding as many variables as you need.

Note: *Any referenced fields must be present in the view, not just a related data source. Otherwise, the link won't display in the viz, even if it functions when you click Test Link.*



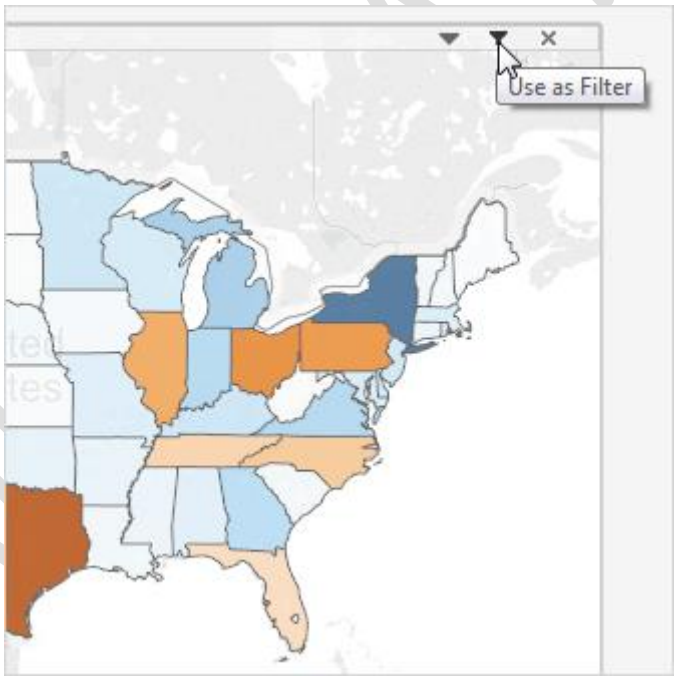
Actions and Dashboards

Actions often have unique behaviour when the source or destination is a dashboard. Because a dashboard can contain multiple views, a single filter or highlight action can have broad impact. Dashboards can also contain web page objects, which you can target with interactive URL actions.

Use a single view to filter other views in a dashboard

Imagine you have a dashboard that contains three views about profitability: a map, a bar chart, and a table of customer names. You can use a filter action to make one of the views in your dashboard, such as the map, the "master." When your users select a region in the map, the data in the other views is filtered so that it relates to just that region.

1. On the dashboard, select the view you want to use as a filter.
2. On the view's shortcut menu, choose **Use as Filter**. You can perform the same action by clicking the Use as Filter icon .

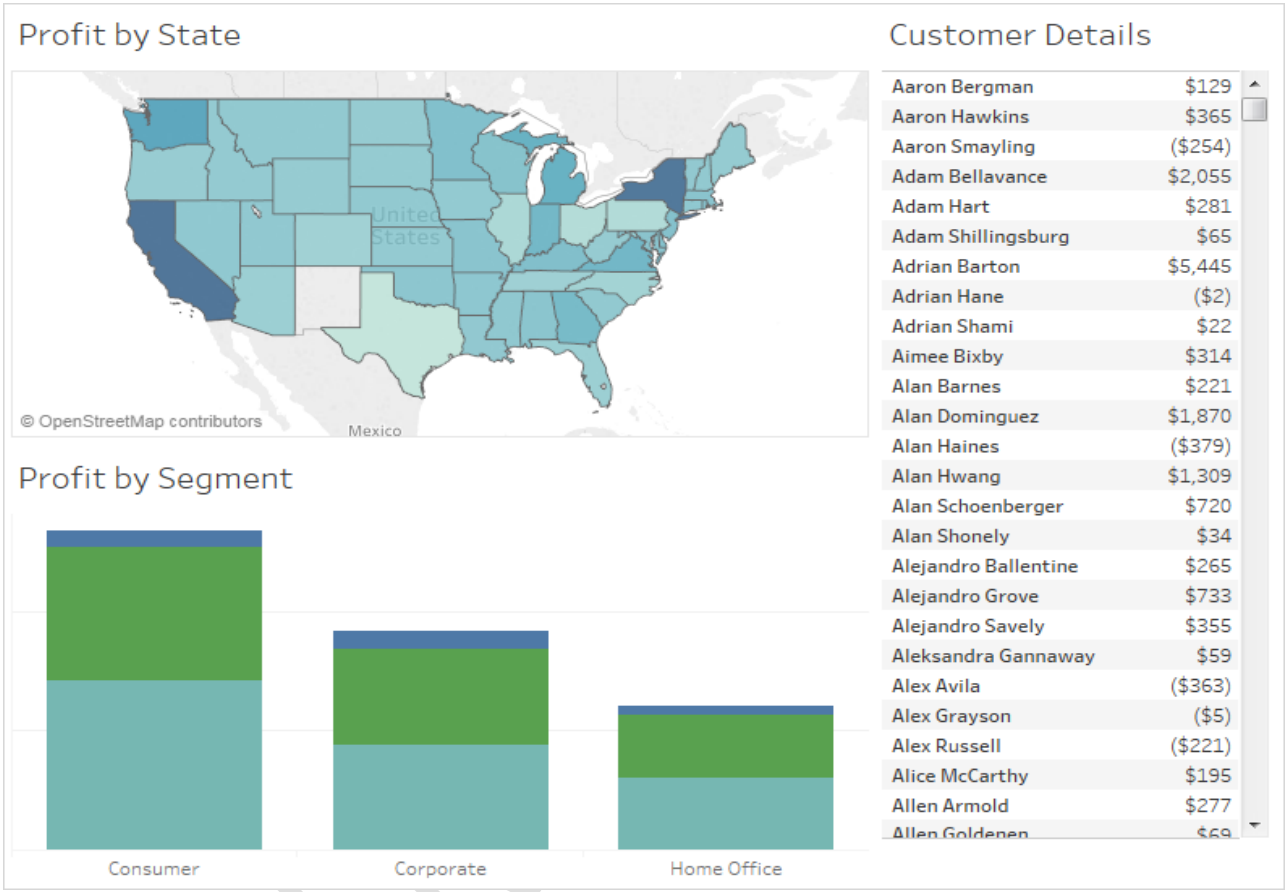


You can also use filter actions to filter the data on a dashboard when the data comes from multiple data sources.

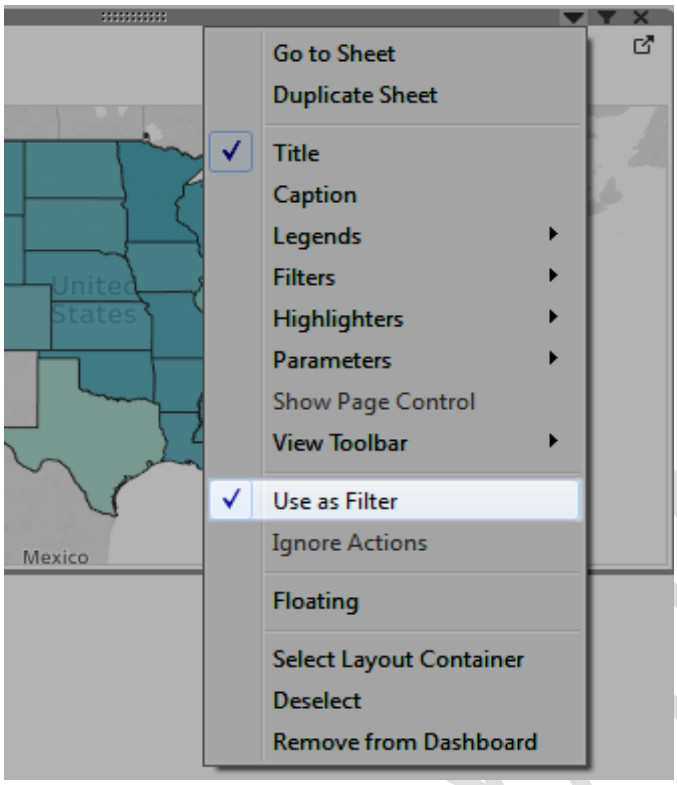
Use multiple views to filter other views in a dashboard

Similar to how you can use a single view to filter other views in a dashboard, you can also use multiple views as a filter. This is sometimes called having a "multi-master" dashboard. The trick is to not only use the master views as filters, but to also disable their ability to be filtered themselves.

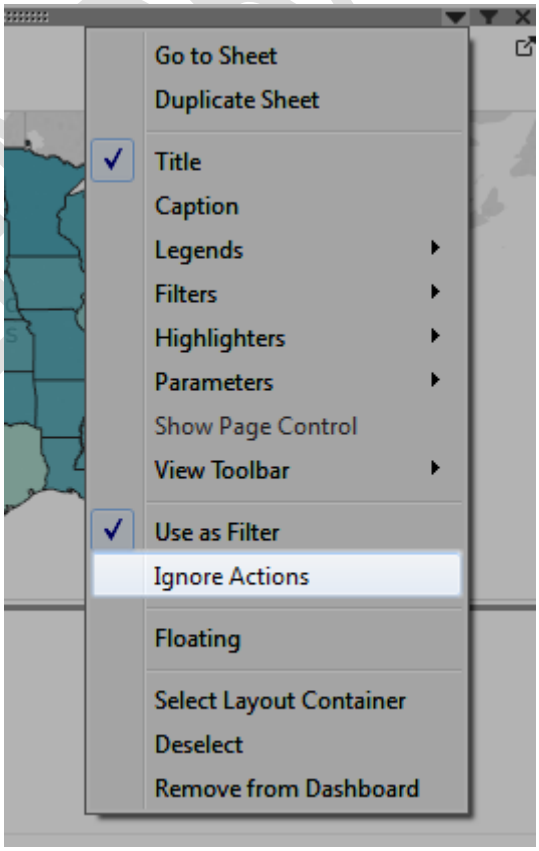
1. Create or open a dashboard that has at least three views.



2. Select the first view that you want to use as a filter (such as a map), and from its shortcut menu, select **Use as Filter**.

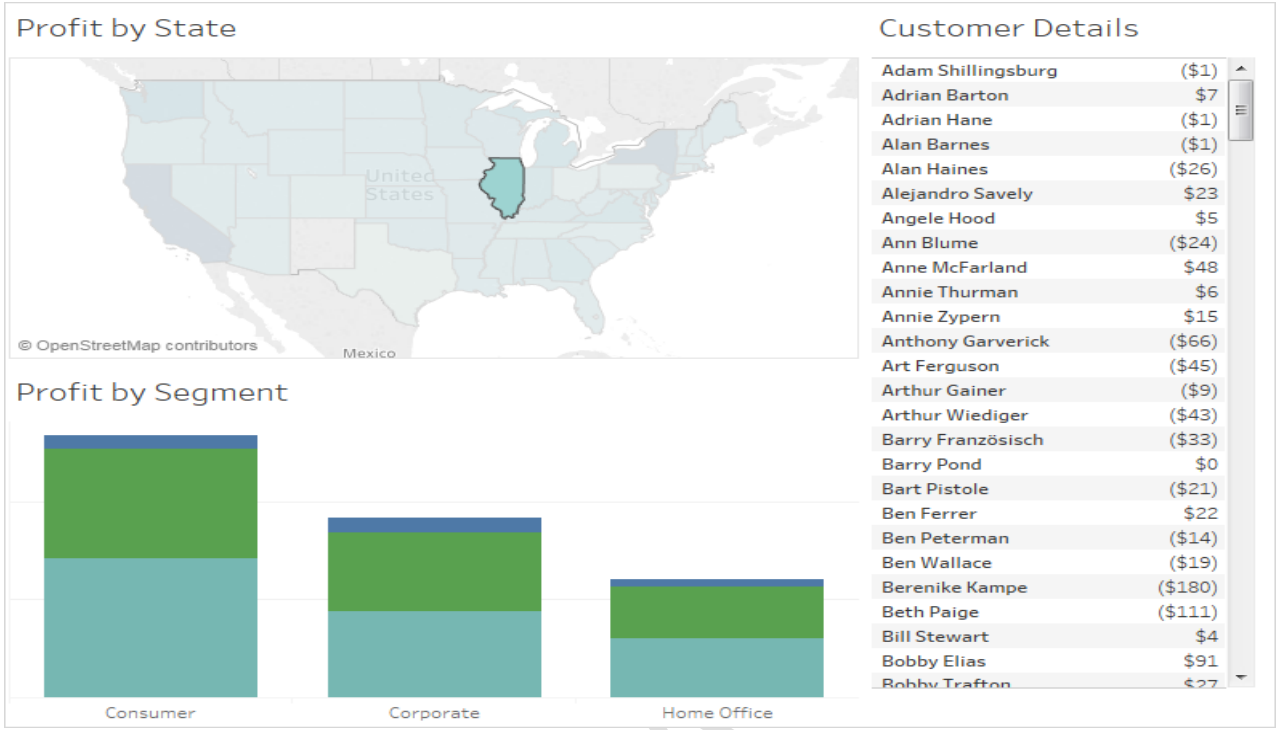


3. Open the same view's shortcut menu again and select **Ignore Actions**. This ensures that other filter actions, including the one you'll create next, will not affect this view.



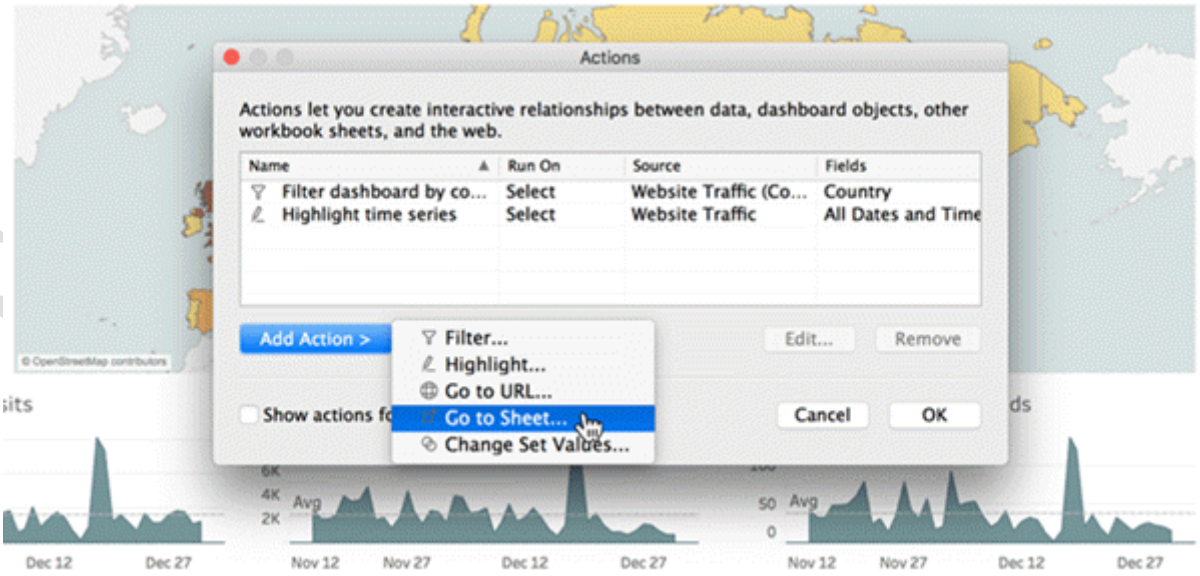
4. Repeat the steps 2 and 3 for any other views you want to use as a filter.

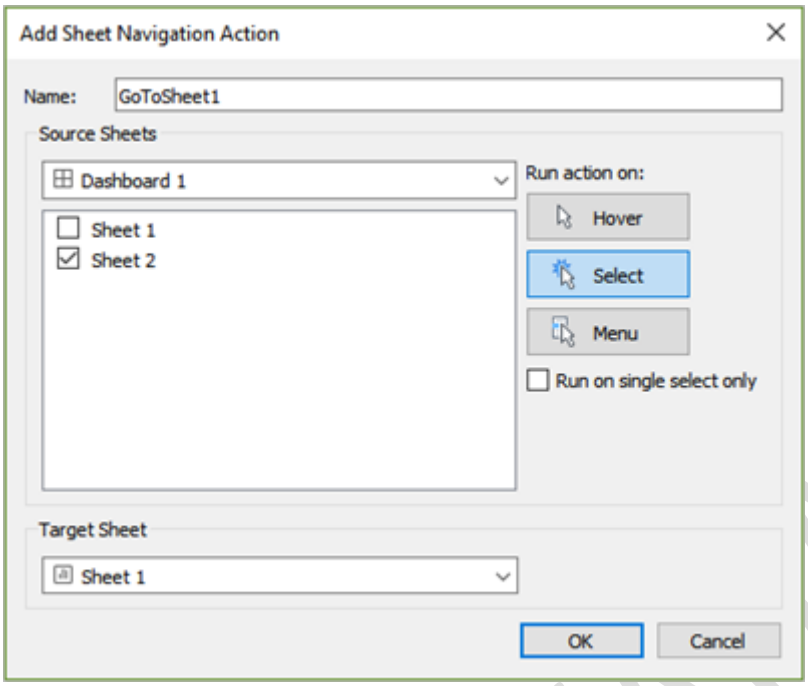
Now, selecting marks in a master view filters data in one or more detail views—all without affecting any other masters.



Navigate from one view to another view, dashboard, or story (Create in Tableau Desktop)

Use the Go to Sheet action to let users quickly navigate to a related visualization—a dashboard, sheet, or story—when they click on a mark or a tooltip menu item in the original view.





1. From your dashboard, select **Dashboard** > **Actions**.
2. In the Actions dialog box, click **Add Action** and then select **Go to Sheet**.
3. Specify a name for action. (If you choose to run the action using a menu, the name you specify here is what's displayed.)
4. Under Source Sheets, select the view that will initiate the action.
5. Specify how people viewing your dashboard will run the action. **Select** or **Menu** are the best choices for a navigation action.

   If you choose **Select**, consider selecting the **Run on single select** option so users won't navigate away from the view when exploring multiple marks.
6. For Target Sheet, select the navigation destination that appears when users click marks or tooltip menu items in the source sheet. Then click **OK**.

Interactively display a web page in a dashboard (Create in Tableau Desktop)

To interactively display information from the web inside a dashboard, you can use a URL action with a web page object. For example, you might have a dashboard that shows profits by country. In addition to showing the profit data in your dashboard, you also want to display supplemental information about the countries from a web site.

Tip: *To easily organize and target multiple web page objects in a dashboard, rename them.*

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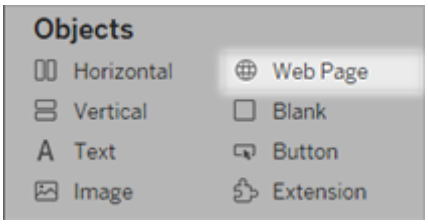
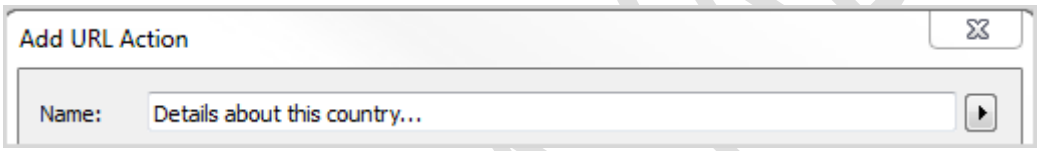
1. Drag a **Web Page** object onto your dashboard, and enter a URL.



2. From your dashboard, select **Dashboard** > **Actions**.

3. In the Actions dialog box, click **Add Action** and then select **Go to URL**.

4. Specify a name for the link. If you choose to run the action using a menu, such as a menu option on a tooltip, the name you specify here is what's displayed.

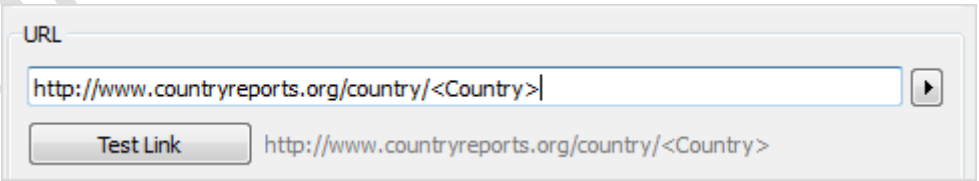


5. Under Source Sheets, select the view or data source that will initiate the action. For example, if you want the action to be initiated when a user clicks a link on a map's tooltip, select the map view.

6. Specify whether people viewing your dashboard will run the action on hover, select, or menu.

7. Enter the URL, starting with the http:// or https:// prefix, such as http://www.example.com.

   You can use field values as parameters in your URL. For example, if Country is a field used by a view in your dashboard, you can use <Country> as a parameter in your URL



8. For URL Target, select **Web Page Object**, and select the object you created in step 1.

   When you launch the action, a web page automatically loads within the dashboard rather than opening a separate browser window.

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Brazil

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This article is about the country. For other uses, see Brazil (disambiguation).

Brazil (/brəˈzɪl/; Portuguese: *Brasil* [braˈziw][10]), officially the **Federative Republic of Brazil** (Portuguese: *República Federativa do Brasil*, listen (help·info)[11]), is the largest country in both South America and Latin America. As the world's fifth-largest country by both area and population, it is the