Types of Filters in Tableau: Condition by Formula, Extract, Context

Data can be organized and simplified by using various techniques in Tableau. We will use the "Sample– Superstore.csv" text file for demonstration in this tutorial.

In this tutorial you will learn

- Types of Filters:
- Extract Filters:
- Filter condition in Tableau
- Filter Condition by Formula:
- Data Source Filter:
- Context Filter:
- Dimension Filters:

Types of Filters:

The filters can be applied in a worksheet to restrict the number of records present in a dataset. Various types of filters are used in Tableau Desktop based on different purposes. The different types of filters used in Tableau are given below. The name of filter types are sorted based on the order of execution in Tableau.

1. Extract Filters
2. Data Source Filters
3. Context Filters
4. Dimension Filters
5. Measure Filters

Extract Filters:

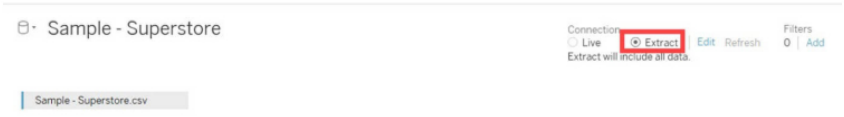
Extract filters are used to filter the extracted data from data source. This filter is utilized only if the user extracts the data from data source.

Once the text file is connected to Tableau, you can see the live and extract option in the top right corner of data source tab. Live Connection directly connects to a data source. Extract connection extracts the data from data source and creates a local copy in Tableau repository. The procedure for creating an extracting filter is given as follows.

Step 1) After connecting the text file into Tableau,

- Click on "Extract" radio button as shown in the figure.

This will create a local copy in Tableau repository.



Step 2) Next,

1. Click on the 'Edit' option placed near to Extract button.
2. It opens "Extract data" window. Click on 'Add' option present in the Window.

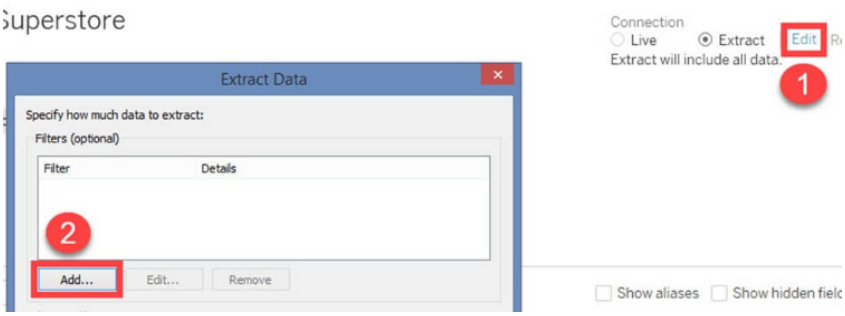
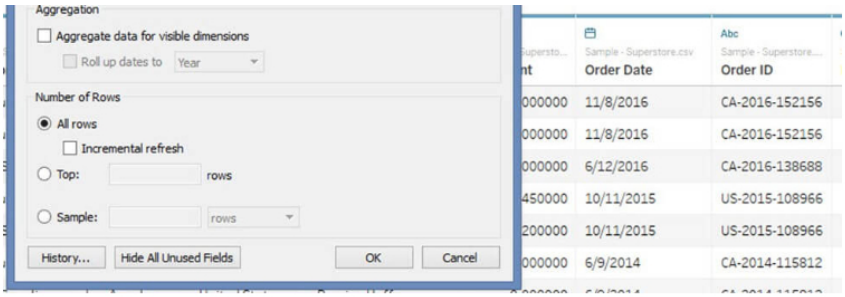


Tableau Tutorial

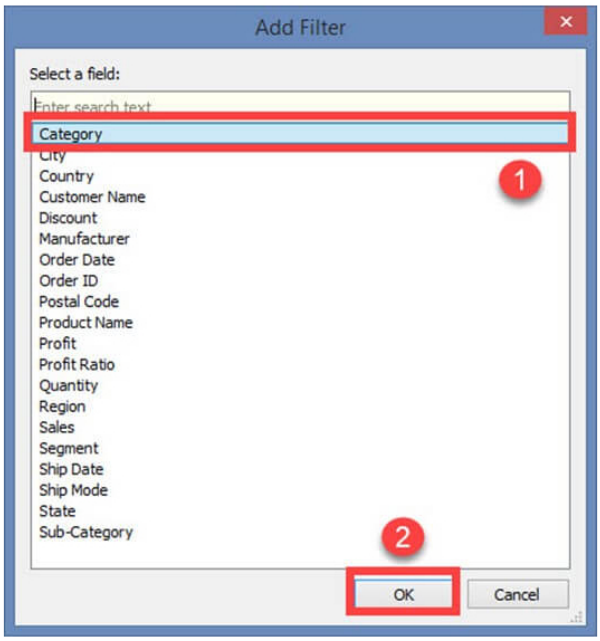
1) What is Tableau?
2) Tableau Architecture
3) Download & Install Tableau Desktop
4) Tableau Data Connections
5) Filter data in Tableau
6) Tableau Sort Data
7) Tableau Charts & Graphs
8) Tableau Alternatives



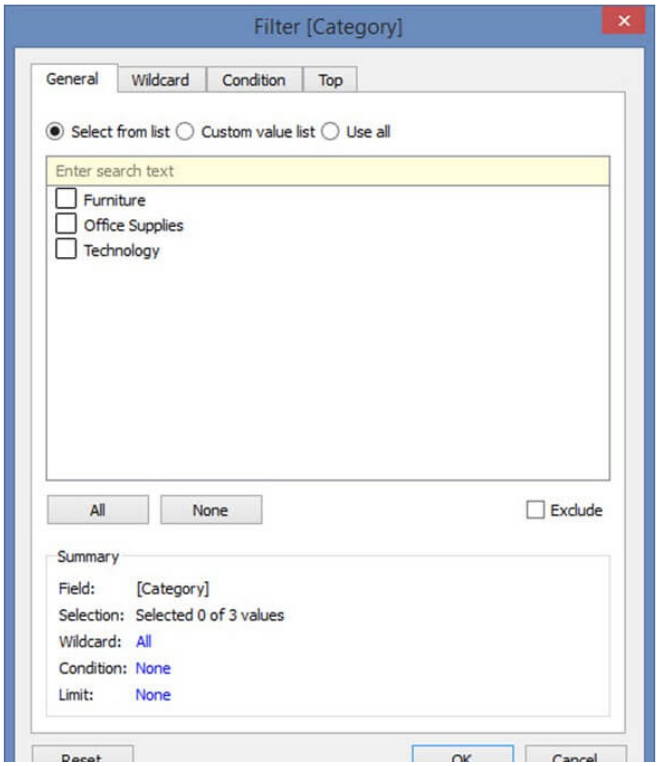
Step 3) "Add Filter" Window is open to select the filter conditions.

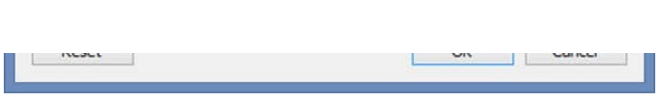
You can choose any of the fields and add as extract filter. In this example, we have selected'Category' as extract filter.

1. Select 'Category' from the list
2. Click on 'OK.'



Once you click on OK button, it opens a filter window.





The filter window has multiple options to filter 'Category' based on various use case. All the use cases and its filter conditions are explained below.

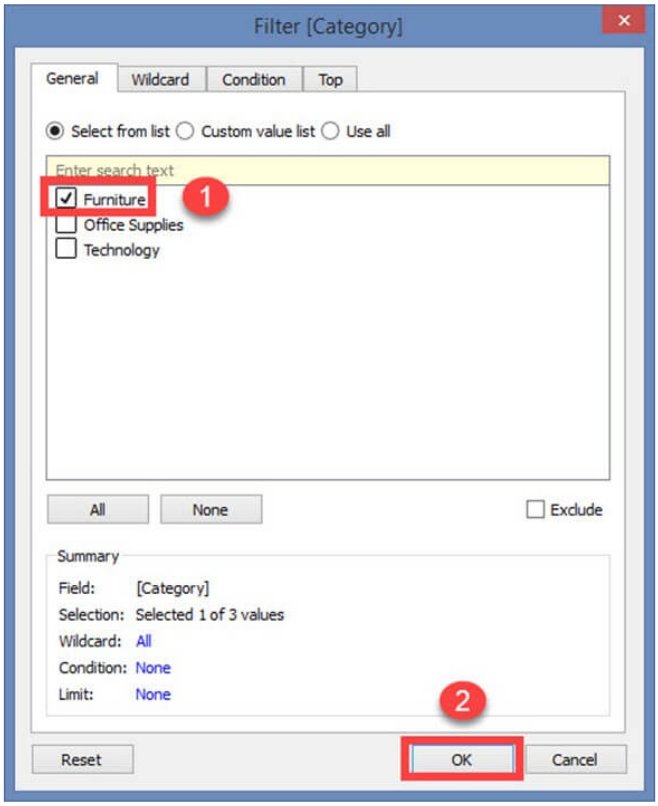
Filter condition in Tableau

Use Case 1: Select from List

By default, filter window opens the "Select from List" option. You can include or exclude the members present in the field using this option.

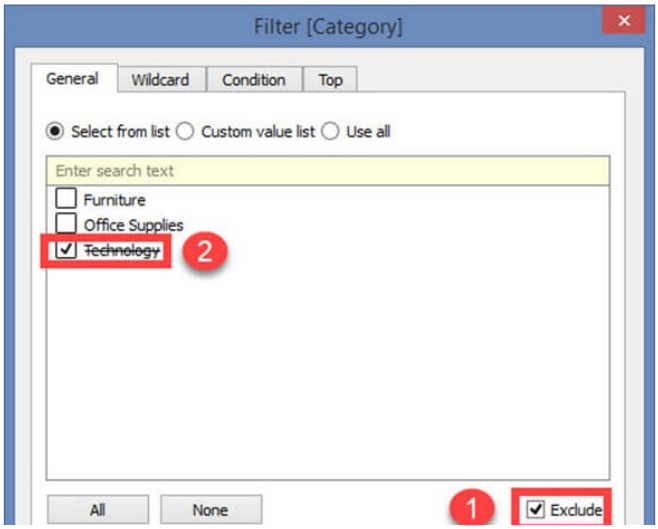
To include you can

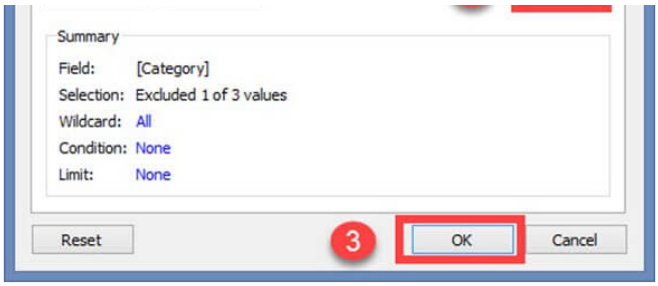
1. Select the members
2. Click on OK.



To exclude the selected members,

1. Click on exclude checkbox
2. Select the members to exclude
3. Click on OK.





There are two more option in the "Select from List".

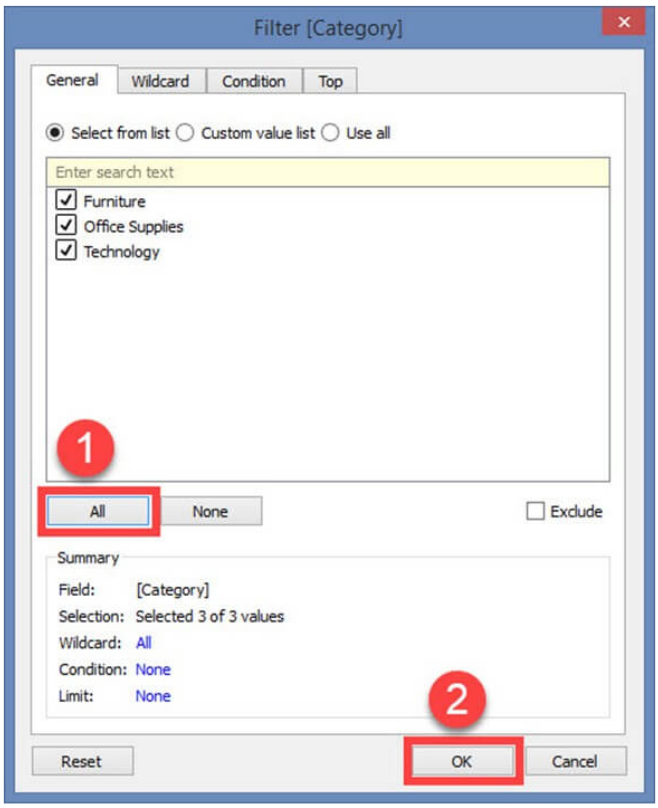
1. All
2. None

All:

This option includes or excludes all members present in the field. In this example, all members are included by clicking on "All" option.

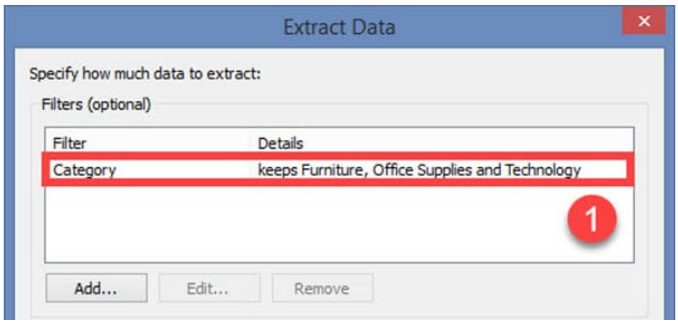
Step 1)

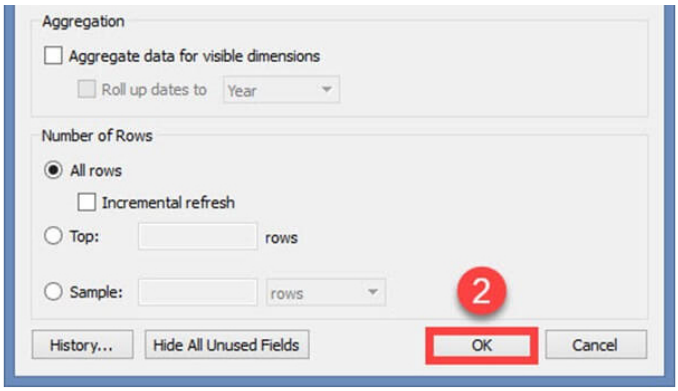
1. Select 'All' option.
2. Click on OK



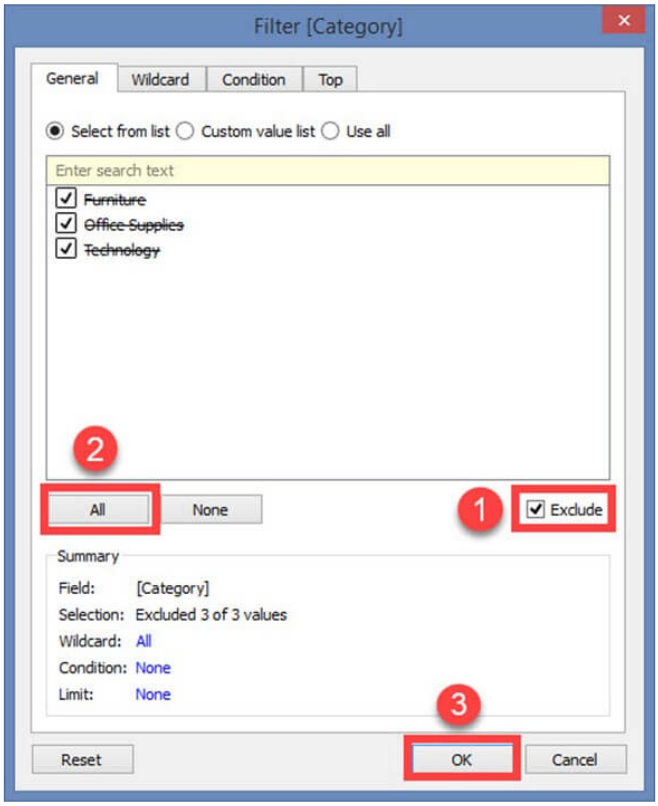
Step 2) Next,

1. It shows extract data filter. The filter condition is also added in the extract filter window.
2. Click on OK to add the extract filter.





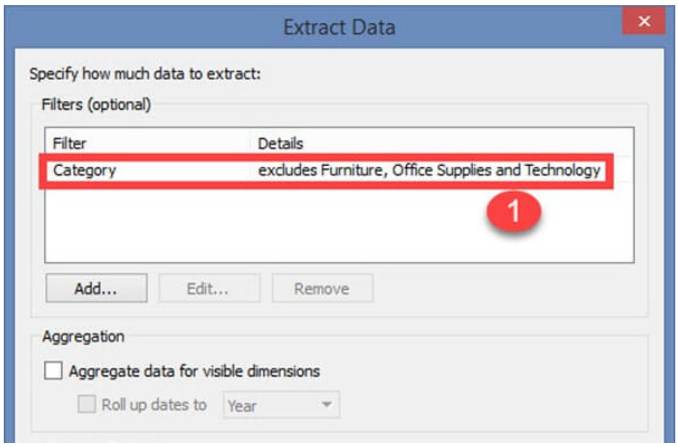
To exclude all the members in the list, first, click on 'Exclude' button. Then select 'All' option and click on OK. This procedure adds the filter in extract data filter window.

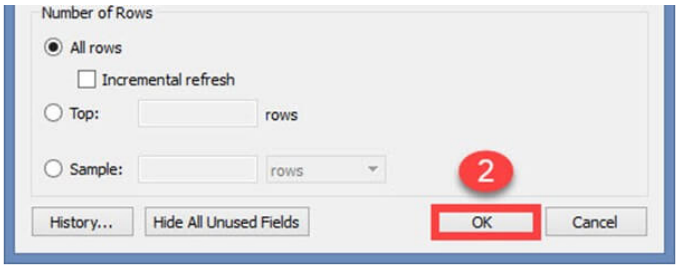


None:

If you want clear all the selection made in the filter window and start a new selection, you can use this 'none'option. None option clears all the selection made in the filter window. Once it is cleared you can select the new members.

1. Click on the 'None' option. Select the new members to be added as filter.
2. Click on OK to add the extract filter.



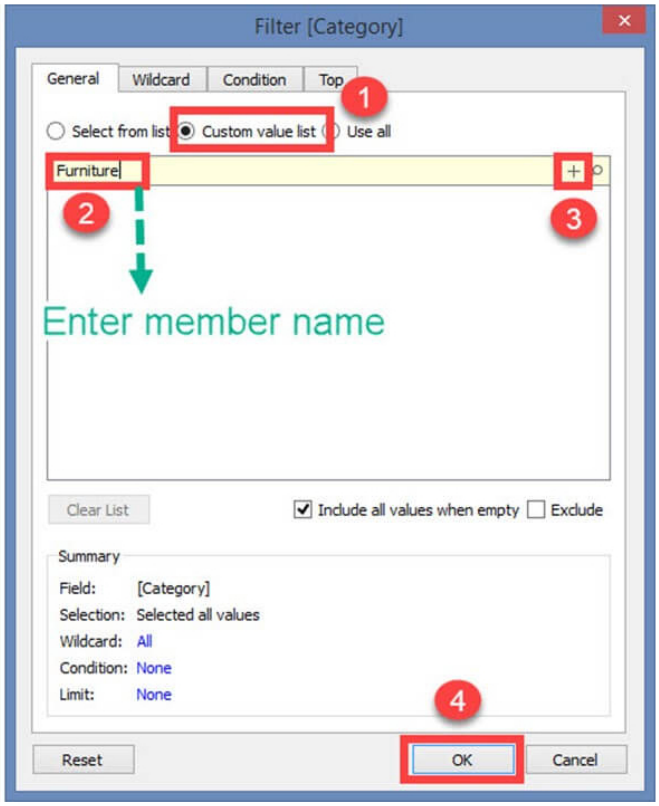


Use Case 2: Custom Value List

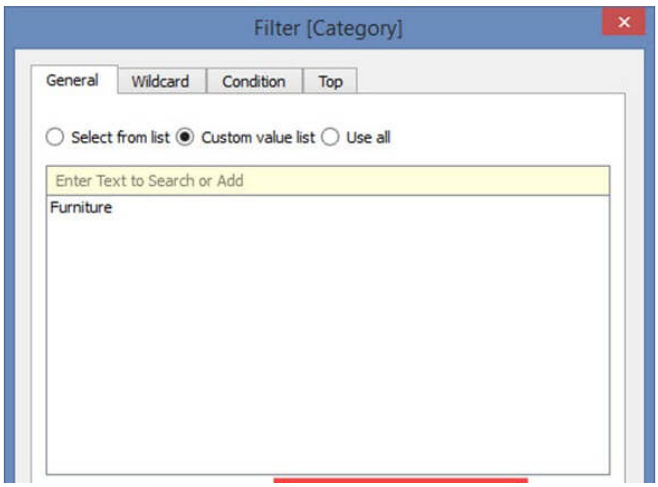
A custom value list allows the user to type the member name and filter the field accordingly. A custom value list can be created by following the given procedure.

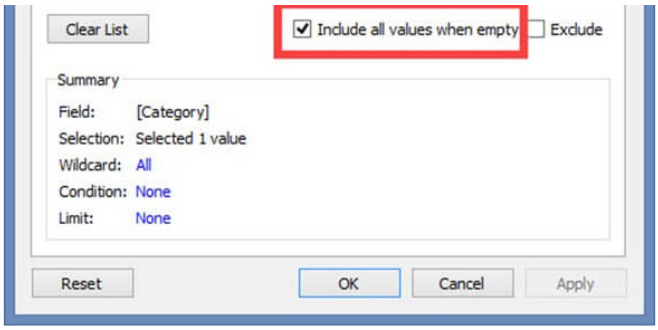
Step 1) In the Filter Screen

1. Click on "Custom value list" radio button.
2. Type the member name.
3. Click on '+' symbol to add the name in the list.
4. You can add multiple members in the list and click on OK

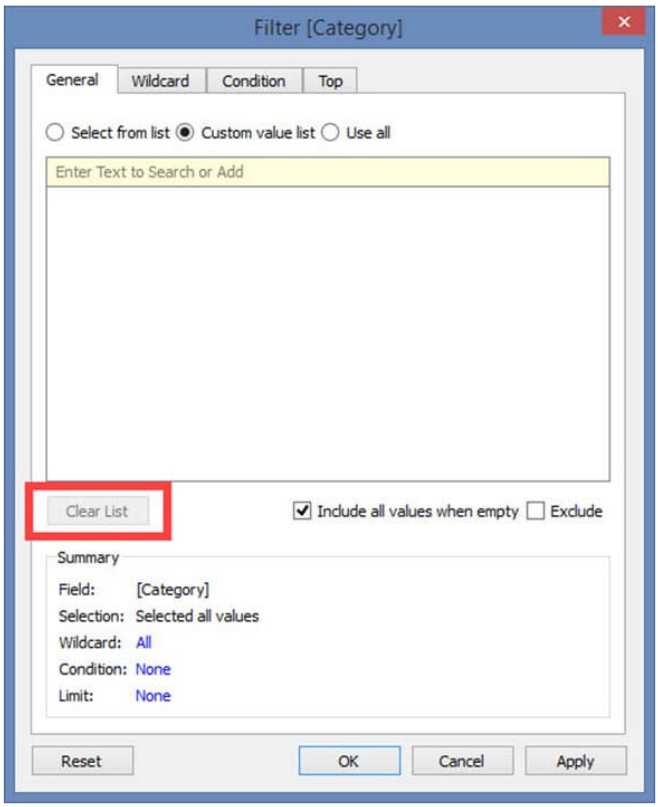


There is an option in the window "Include all values when empty." It can be selected to include all values present in the field when the selected member has no data.



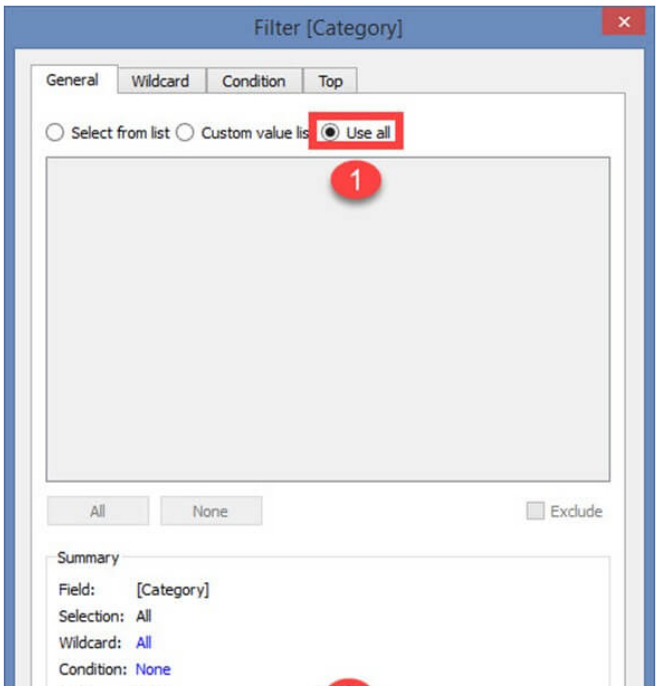


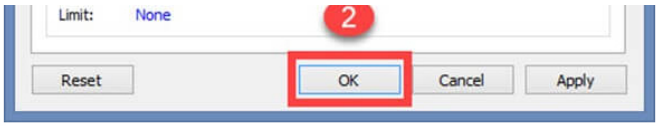
Clear List option clears the customs value list.



Use Case 3: Use all

This option selects all the members present in the field.





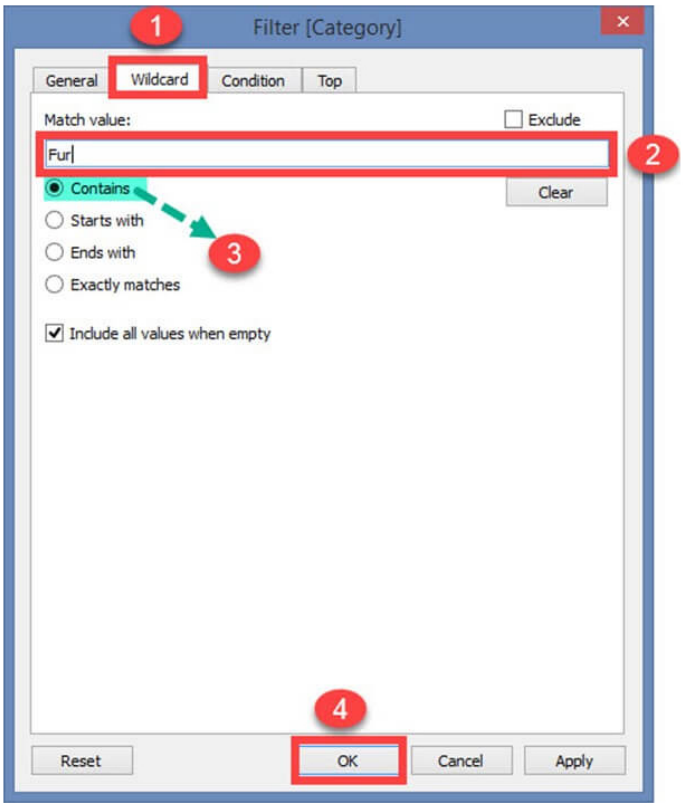
Use case 4: Wildcard

Wildcard option is used to filter the fields based on given wildcard match. Users can type the character and filter the field based on the match. The different types of matches are given as follows.

Contains	Select the members if the member name contains typed characters.
Starts with	Select the members if the member name starts with typed characters.
Ends with	Select the members if the member name ends with typed characters.
Exactly matches	Select the members if the member name exactly matches with typed characters.

Step 1)

1. Select the "Wildcard" tab.
2. Type the characters to match.
3. Select the type of match. In this example "Contains" match type is selected.
4. Click on OK.

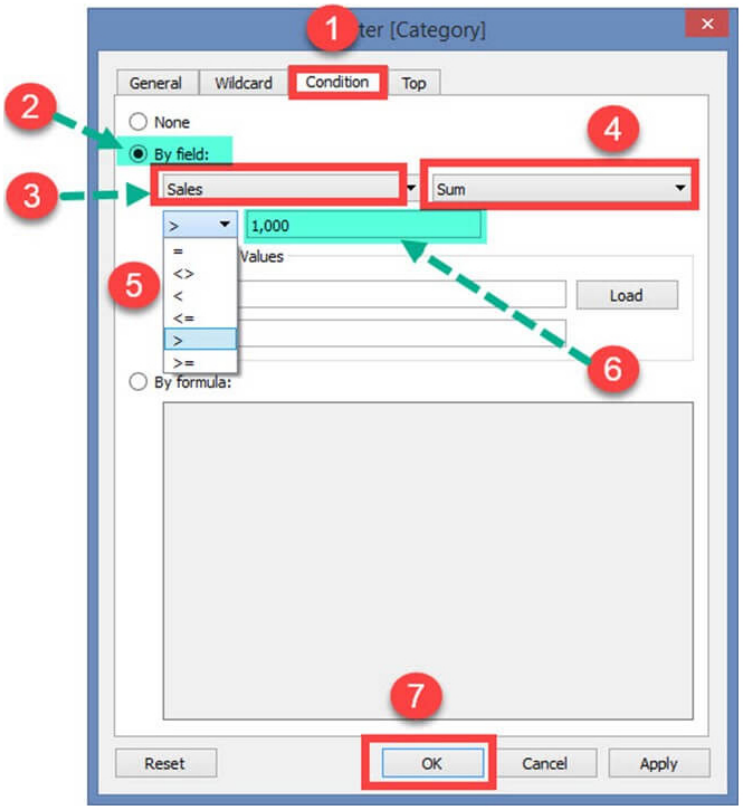


Use Case 5: Filter on Condition

This option is used to filter the data set by giving several conditions. Filer condition based on field is given below.

By Field:

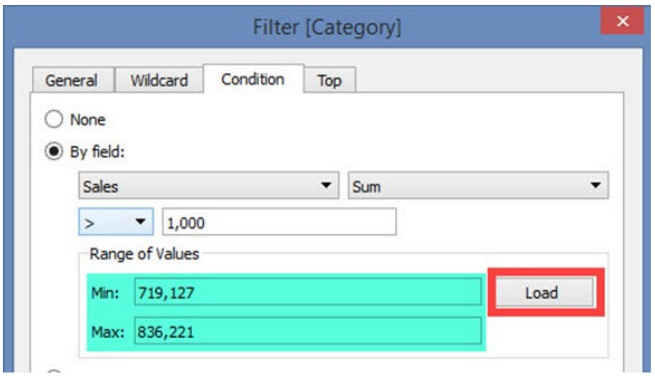
1. Select the 'Condition' tab in Filter Window.
2. Click on radio button 'By field.'
3. Select the name of the field to be filtered from the drop-down list.
4. Select the aggregation type like Sum, average and median from the drop-down list.
5. Choose the operator from the drop-down.
6. Enter the value to filter the selected field.
7. Click on OK.



In the above example, the dataset is filtered to see the data where the sum of sales is greater than 1000.

The range of Values:

This option shows the minimum and maximum value of the selected field by clicking on 'Load' button. It can be used to refer the values.

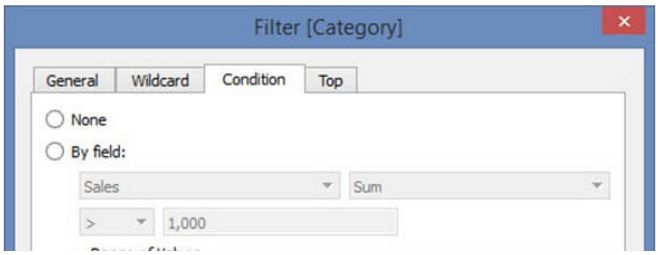


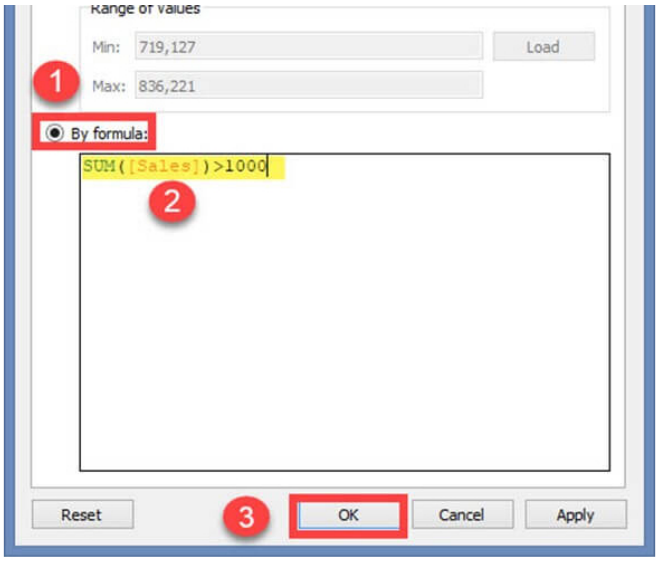
Filter Condition by Formula:

You can write a formula to filter the dataset using this option. The procedure is explained below.

Steps:

1. Click on radio button 'By formula.'
2. Enter the formula in the box as shown in the figure.
3. Click on Ok.





In the above example, the written formula filters the data where sum of sales is greater than 1000.

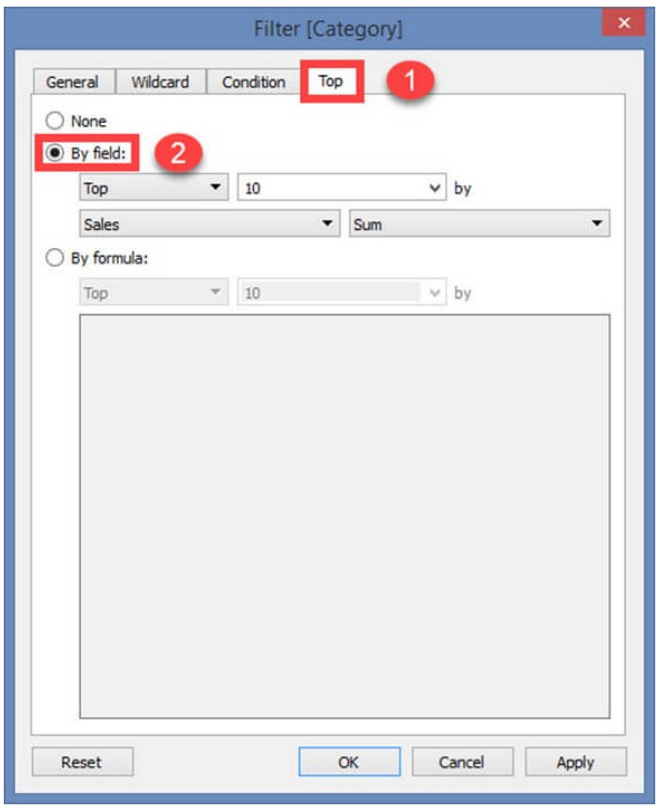
Use Case 6: Top or bottom filters

This option is used to select top or bottom 'n' number of records.

By Field:

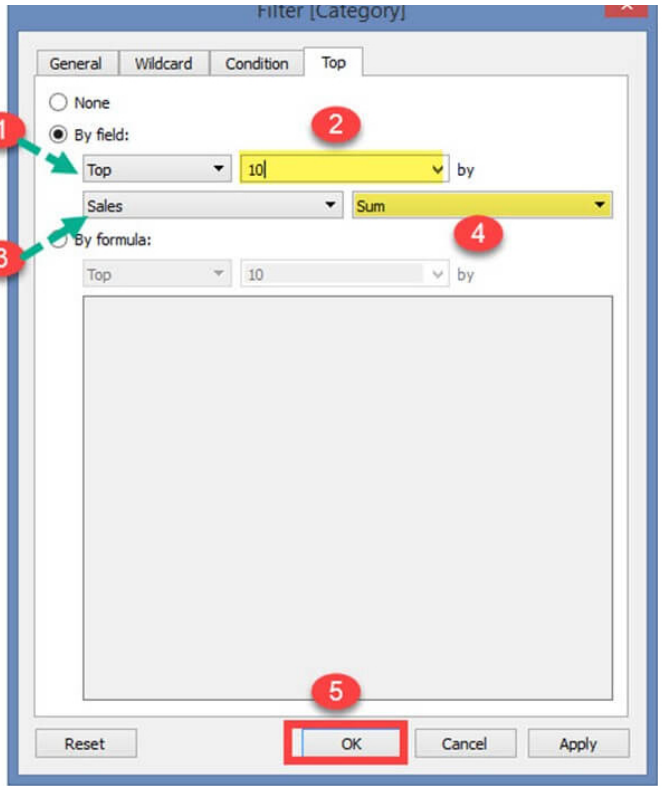
Step 1)

1. Select 'Top' tab from the filter window.
2. Click on radio button 'By field'.



Step 2)

1. Select 'Top' or 'Bottom'.
2. Choose the number of records.
3. Select the field.
4. Choose the aggregation type.
5. Click on Ok.



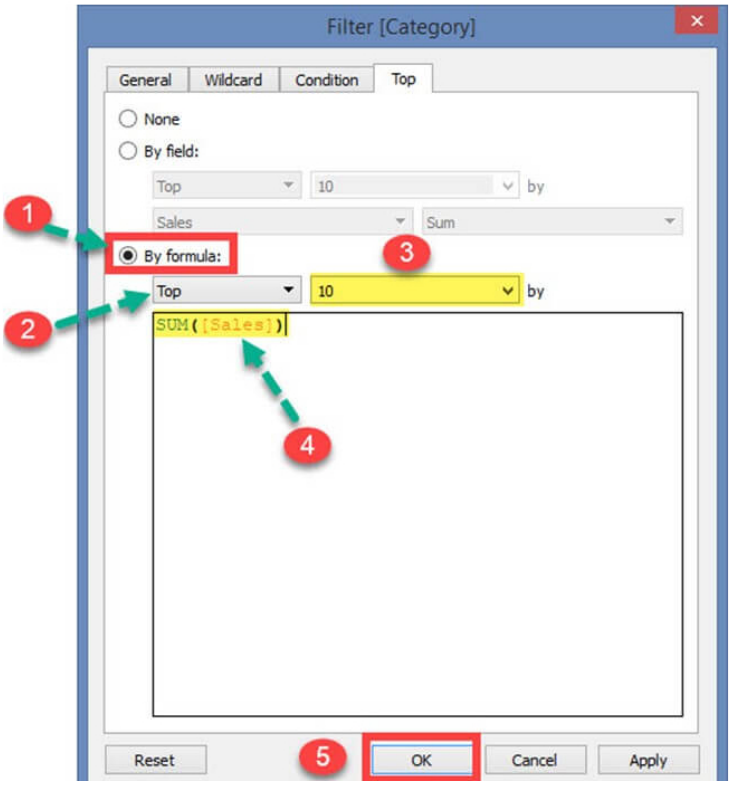
In the above example, the filter restricts the data set to show top 10 records based on the sum of sales.

By Formula:

The top or bottom condition can also be given through formula.

Steps:

1. Click on the radio button 'By Formula'.
2. Select 'Top' or 'Bottom'.
3. Choose the number of records.
4. Enter the formula.
5. Click on OK.

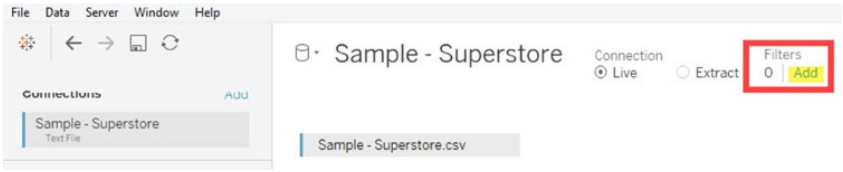


In the above example, the formula was written to show top 10 records based on the sum of sales.

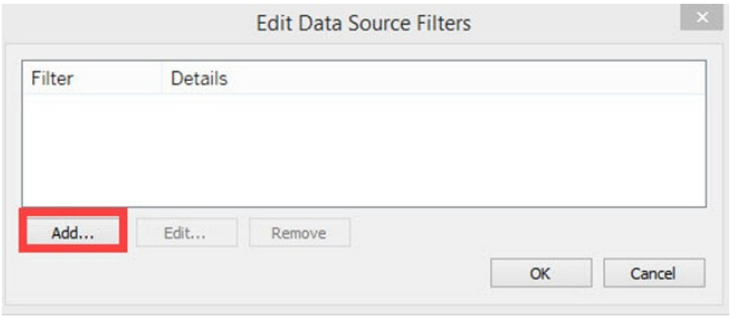
Data Source Filter:

A data source filter is used to filter the data in data source level. It can restrict the records present in the data set. This filter is similar to extract filter on securing the data. But data source filter and extract filter is not linked to each other. **Data source filter works on both live and extracts connection**. The procedure to select data source filter is given as follows.

Step 1) Click on the 'Add' button placed on the top right corner of the data source tab.



Step 2) It opens the 'Edit Data Source Filters' Window. Click on 'Add' Option present in the window.



After clicking on 'add' button, follow the remaining steps from the topic 'Extract Filters' -> Step 3.

Context Filter:

A Context filter is an independent filter that can create a separate dataset out of the original data set and compute the selections made in the worksheet. One or more categorical filter that separates the dataset into major parts can be used as a context filter. All other filters used in the worksheet works based on the selection of context filter. The functions of context filters can be explained through an excel sheet.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Category	City	Country	Customer Name	Discount	Order Date	Order ID	Postal Code	Manufacturer	Profit	Quantity	Region	Sales
2	Furniture	Henderson	United States	Claire Gute	0%	11/8/2016	CA-2016-152156	42420	Bush	$42	2	South	$262
3	Furniture	Henderson	United States	Claire Gute	0%	11/8/2016	CA-2016-152156	42420	Hon	$220	3	South	$732
4	Office Supplies	Los Angeles	United States	Darrin Van Huff	0%	6/12/2016	CA-2016-138688	90036	Universal	$7	2	West	$15
5	Furniture	Fort Lauderdale	United States	Sean O'Donnell	45%	10/11/2015	US-2015-108966	33311	Bretford	($383)	5	South	$958
6	Office Supplies	Fort Lauderdale	United States	Sean O'Donnell	20%	10/11/2015	US-2015-108966	33311	Eldon	$3	2	South	$22
7	Furniture	Los Angeles	United States	Brosina Hoffman	0%	6/9/2014	CA-2014-115812	90032	Eldon	$14	7	West	$49
8	Office Supplies	Los Angeles	United States	Brosina Hoffman	0%	6/9/2014	CA-2014-115812	90032	Newell	$2	4	West	$7
9	Technology	Los Angeles	United States	Brosina Hoffman	20%	6/9/2014	CA-2014-115812	90032	Mitel	$91	6	West	$907
10	Office Supplies	Los Angeles	United States	Brosina Hoffman	20%	6/9/2014	CA-2014-115812	90032	DXL	$6	3	West	$19
11	Office Supplies	Los Angeles	United States	Brosina Hoffman	0%	6/9/2014	CA-2014-115812	90032	Belkin	$34	5	West	$115
12	Furniture	Los Angeles	United States	Brosina Hoffman	20%	6/9/2014	CA-2014-115812	90032	Chromcraft	$85	9	West	$1,706
13	Technology	Los Angeles	United States	Brosina Hoffman	20%	6/9/2014	CA-2014-115812	90032	Other	$68	4	West	$911
14	Office Supplies	Concord	United States	Andrew Allen	20%	4/15/2017	CA-2017-114412	28027	Xerox	$5	3	South	$16
15	Office Supplies	Seattle	United States	Irene Maddox	20%	12/5/2016	CA-2016-161389	98103	Fellowes	$133	3	West	$408
16	Office Supplies	Fort Worth	United States	Harold Pawlan	80%	11/22/2015	US-2015-118983	76106	Holmes	($124)	5	Central	$69
17	Office Supplies	Fort Worth	United States	Harold Pawlan	80%	11/22/2015	US-2015-118983	76106	Storex	($4)	3	Central	$3
18	Office Supplies	Madison	United States	Pete Kriz	0%	11/11/2014	CA-2014-105893	53711	Other	$13	6	Central	$666
19	Office Supplies	West Jordan	United States	Alejandro Grove	0%	5/13/2014	CA-2014-167164	84084	Fellowes	$10	2	West	$56
20	Office Supplies	San Francisco	United States	Zuschuss Donatelli	0%	8/27/2014	CA-2014-143336	94109	Newell	$2	2	West	$9
21	Technology	San Francisco	United States	Zuschuss Donatelli	20%	8/27/2014	CA-2014-143336	94109	Cisco	$16	3	West	$213
22	Office Supplies	San Francisco	United States	Zuschuss Donatelli	20%	8/27/2014	CA-2014-143336	94109	Wilson Jones	$7	4	West	$23
23	Office Supplies	Fremont	United States	Ken Black	0%	12/9/2016	CA-2016-137330	68025	Newell	$5	7	Central	$19
24	Office Supplies	Fremont	United States	Ken Black	0%	12/9/2016	CA-2016-137330	68025	Acco	$16	7	Central	$60

The figure shows a sample dataset. From the dataset, it is identified that 'Category' can be used as context filter as it can divide the dataset into major parts. Once the filter is applied to the dataset, the following data can be obtained.

A	B	C	D	E	F	G	H	I	J	K	L	M
Category	City	Country	Customer Name	Discount	Order Date	Order ID	Postal Code	Manufacturer	Profit	Quantity	Region	Sales
Furniture	Henderson	United States	Claire Gute	0%	11/8/2016	CA-2016-152156	42420	Bush	$42	2	South	$262
Furniture	Henderson	United States	Claire Gute	0%	11/8/2016	CA-2016-152156	42420	Hon	$220	3	South	$732
Furniture	Fort Lauderdale	United States	Sean O'Donnell	45%	10/11/2015	US-2015-108966	33311	Bretford	($383)	5	South	$958
Furniture	Los Angeles	United States	Brosina Hoffman	0%	6/9/2014	CA-2014-115812	90032	Eldon	$14	7	West	$49
Furniture	Los Angeles	United States	Brosina Hoffman	20%	6/9/2014	CA-2014-115812	90032	Chromcraft	$85	9	West	$1,706

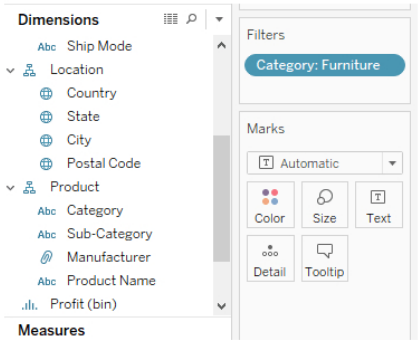
When the category "Furniture" is selected, the data available in the particular category is shown in the figure. Other filters that can be applied in the sheet will be dependent on the category filter. This is the basic function of using context filter. Tableau creates a temporary dataset in repository engine based on the context filter selection. Once context filter is selected, all other selections and filters depend on the selection of specific context filter. The temporary table or data set that is created on

selecting context filter loads whenever the context filter is changed.

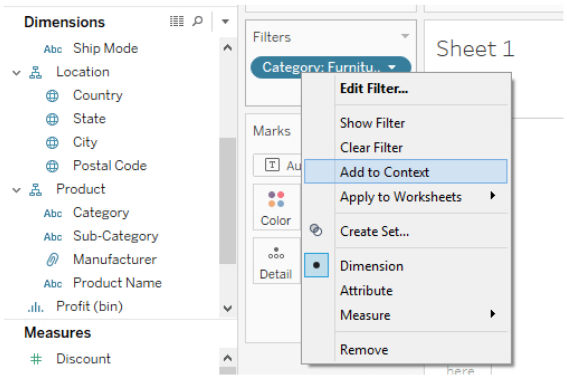
Apply Context Filters in Worksheet:

Any dimension can be added as context filter by following the steps given below:

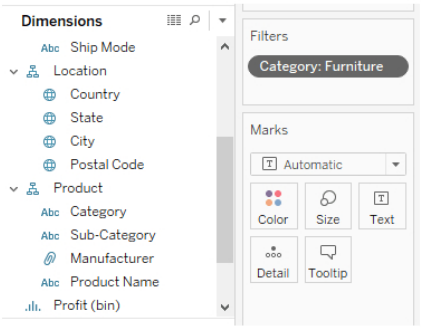
Step 1) The dimension to be added as context filter needs to be added in filter section box as given in the image.



Step 2) Right click on the dimension added in the filter section and select "Add to Context" option.

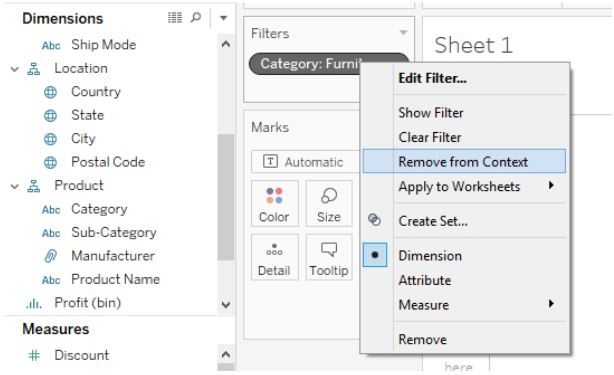


Step 3) Once the filter is selected as a context filter, the color of dimension box changes to grey color. This grey color box is an indication of context filter.



Removing Context Filter:

Any context filter can be changed back to normal filter by selecting the "Remove from Context" option which is available when right-clicking on the dimension. The color of dimension box will also change back to blue color as an indication.



Advantages of Using Context Filters:

Improve Performance:

When context filter is used in large data sources, it can improve the performance as it creates a temporary dataset part based on the context filter selection. The performance can be effectively improved through the selection of major categorical context filters.

Dependent Filter Conditions:

Context filters can be used to create dependent filter conditions based on the business requirement. When the data source size is large, context filter can be selected on the major category, and other relevant filters can be executed.

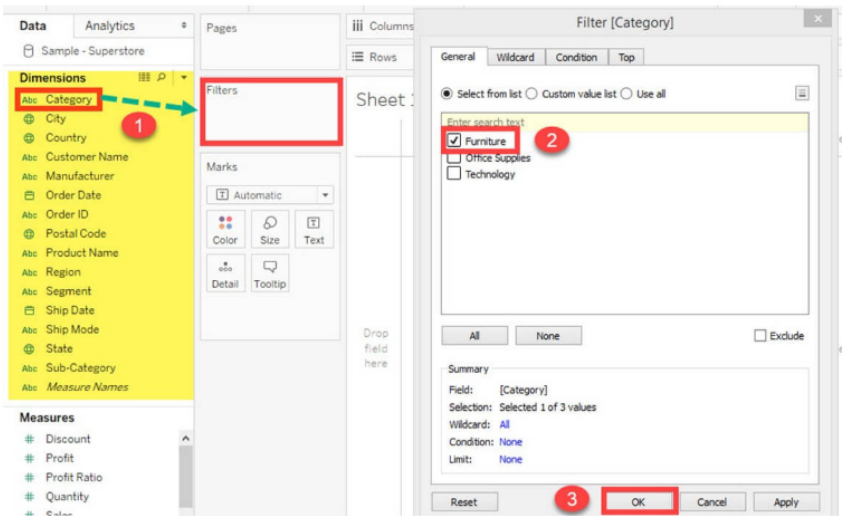
Dimension Filters:

When a dimension is used to filter the data in a worksheet, it is called as Dimension filter. It is a non-aggregated filter where a dimension, group, sets and bin can be added. A dimension filter can be applied through the top or bottom conditions, wildcard match and formula.

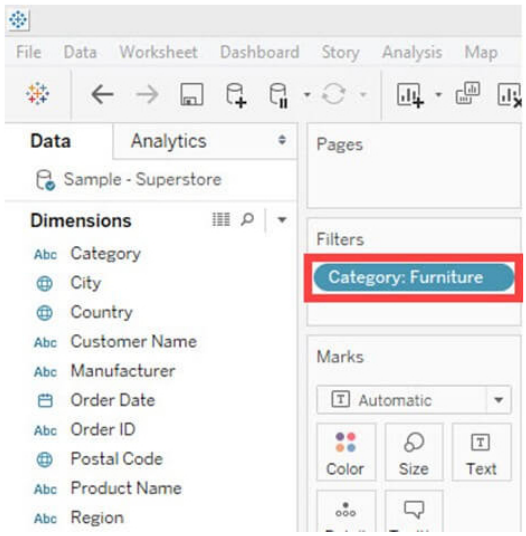
The members present in a dimension can be included or excluded from the list using this filter. Dimension filter can be shown in a sheet or dashboard to change the filter condition dynamically. The process for adding a dimension as the filter is given as follows.

Step 1) Go to a worksheet as given in above topics and follow the steps.

1. Select a dimension from the dimension list. In this example 'Category' is chosen from the dimension list. Drag the dimension into 'Filters' box.
2. It opens the 'Filter' Window. Select the member from the list.
3. Click on OK.



The above procedure filters data set to show the records only for category 'Furniture.'

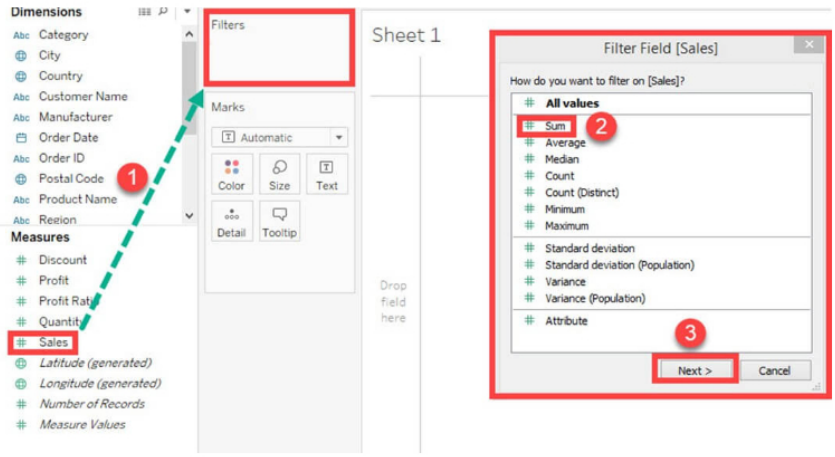


Measure Filter:

A measure filter can filter the data based on the values present in a measure. The aggregated measure values can be used in measure filter to modify the data. A measure filter can be applied in a worksheet by following the procedure.

Step 1) Go to a Worksheet

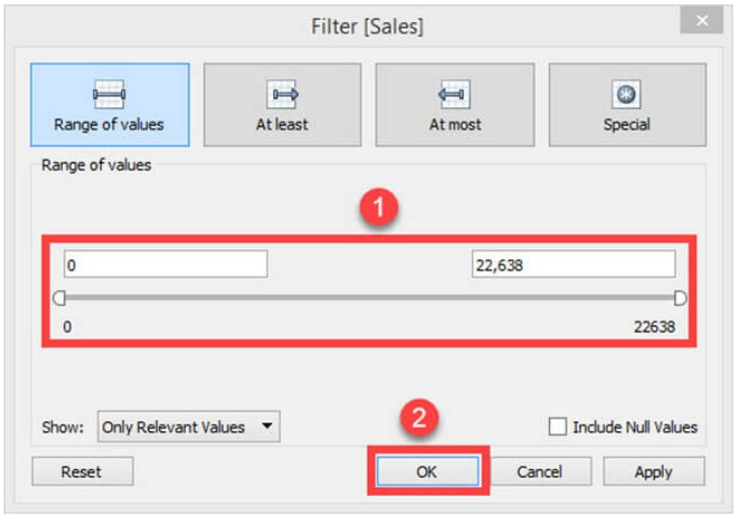
1. Select a measure present in the Measures tab. In this example, 'Sales' is selected. Drag the measure into 'Filter' box.
2. It opens a 'Filter field' window. Select any of the aggregation from the list. In this example, Sum is taken as aggregation type.
3. Click on 'Next' button.



Step 2) It opens a window where you need to select the range of values. The other types of options present in the window are given as follows.

Range of values	Minimum and maximum range of measure value can be given and filtered.
At least	A minimum value of a measure is given to filter the data.
At most	A maximum value of a measure is given to filter the data.
Special	An option to select null or non-null values and filter the data.

1. Select the range of values. You can modify the upper and lower limit for the range of values.
2. Click on OK.



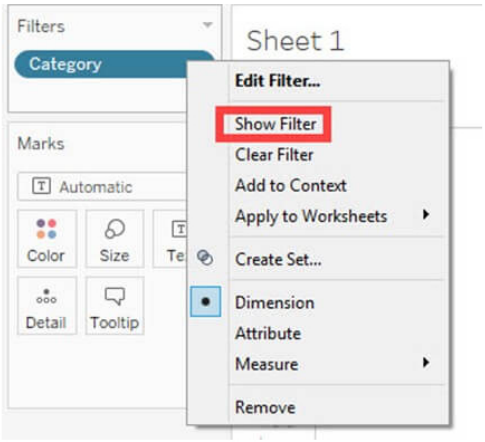
The above example filters the data set based on the sum of sales value between 0 and 22638.

Custom or Quick Filter:

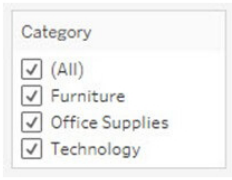
Filters can be customized based on the user selection. The filters can customize worksheets and dashboards to modify the data dynamically. The procedure to customize the filter is given as follows.

Step 1) Add the 'Category 'filter as shown in the topic Dimension filter.

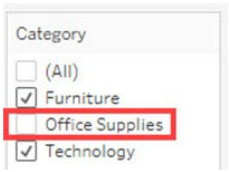
1. Right-click on the filter added.
2. Select 'Show Filter' option.



Step 2) It shows the 'Category' filter box in the right side of the worksheet. By default, the filter shows the multi-value list as shown in the figure.



Step 3) You can select or unselect members present in the filter and modify the data.

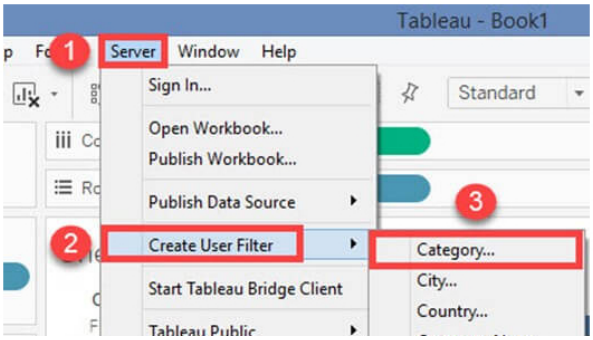


User Filter:

User filter secure the row level data present in a dataset. It can be used when publishing the workbook on a server. Different filter conditions can be applied for different users. For example, assume there are three departments in a firm namely Furniture, Office Supplies, and Technology. By using the user filter, we can allow the users to show only the data relevant to their department. i.e., Users from 'Furniture' department can only see the data from category 'Furniture'. This can assure the security of row level data. The procedure to apply the user filter is given as follows.

Step 1)

1. Click on the Server option present in the Menu bar.
2. Hover over the 'Create User Filter' option.
3. Select the field to create user filter. In this example, the category is selected as user filter.




Technology
0K
100K
Customer Name...
Manufacturer...
Order Date...

Step 2)

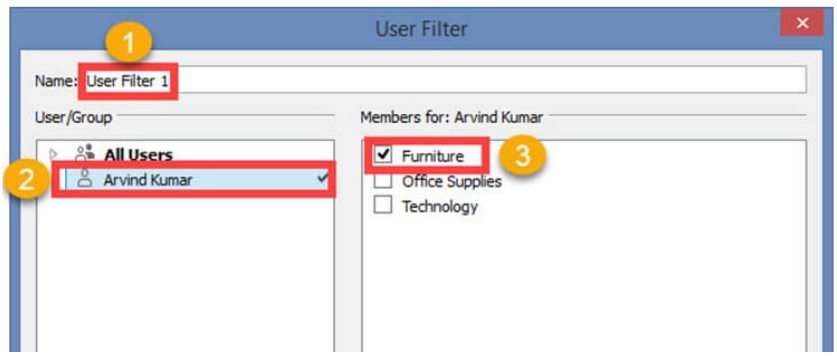
1. It opens a 'Tableau Server Sign in' window.
2. Click on 'Tableau Online' option present in the window.

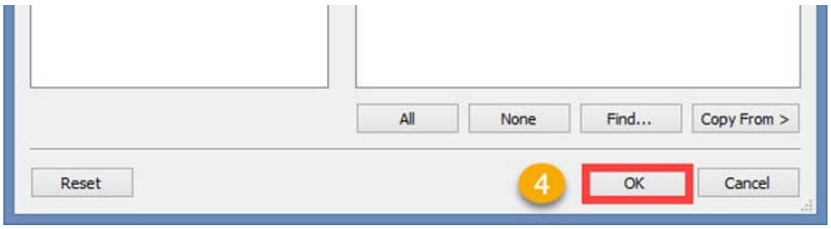
Step 3)

1. It opens a Tableau Online Sign in Window. Enter your registered email id and password.
2. Click on Sign In option.

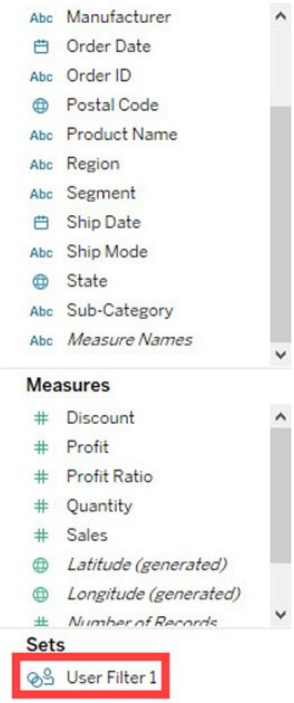
Step 4) It opens a 'User Filter' window. Follow the below steps to add user filter.

1. Enter a name for the user filter.
2. Select a user form the user's list.
3. Check in the required members need to show for the selected member.
4. Click on OK.





It creates a user filter in Tableau. You can view the user filter under sets pane as shown below.



When the workbook is published in the server, only the filtered data is shown to the user. User filter can be created for multiple users to secure the data.

Summary:

- Tableau has features to organize and simplify the data present in the data set.
- Filter restricts the number of records present in data set based on given condition.
- Various types of filters used in Tableau are extract filters, data source filters, context filters, dimension filters and measure filters.
- Extract filters modify the data in the local copy of data set which is extracted from the data source.
- Data source filters modify the data based on given condition. These filters apply on both live and extract connection.
- Context filter creates a temporary table in Tableau engine and acts as a primary filter. All the other filters applied on a worksheet depend on the Context filter.
- When a dimension is used to filter the data, it is called as dimension filter. It can include or exclude the members present in the dimension.
- When a measure is used to filter the data, it is called as measure filter. It can modify the data based on the comparison of measured value.
- A quick or custom filter is used to modify the filter condition dynamically.
- User filters secure the row level data published in a server.
- Users can sort the fields present in the data set.
- Groups can be building to group the members present in a dimension.
- Users can build hierarchy to show the granularity level present in the dataset.
- Sets can be created to select or exclude one or more members from a field. A set can be added as a separate dimension in Tableau.

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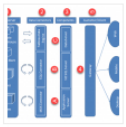

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