Tableau

Module 2

Working with Filters & Parameters

Creation of Sets

Agenda

Working with Filters

- Filters (Addition and Removal)
- Filtering continuous dates
- Dimensions and measures
- Interactive Filters
- Marks card and hierarchies
- How to create folders in Tableau?
- Sorting in Tableau and types of sorting
- Filtering in Tableau and types of filters
- Filtering order of operations

Creation of Sets

- Marks
- Highlighting
- Sort and Group
- Working with Sets
- Constant Sets & Computed Sets
- Bins

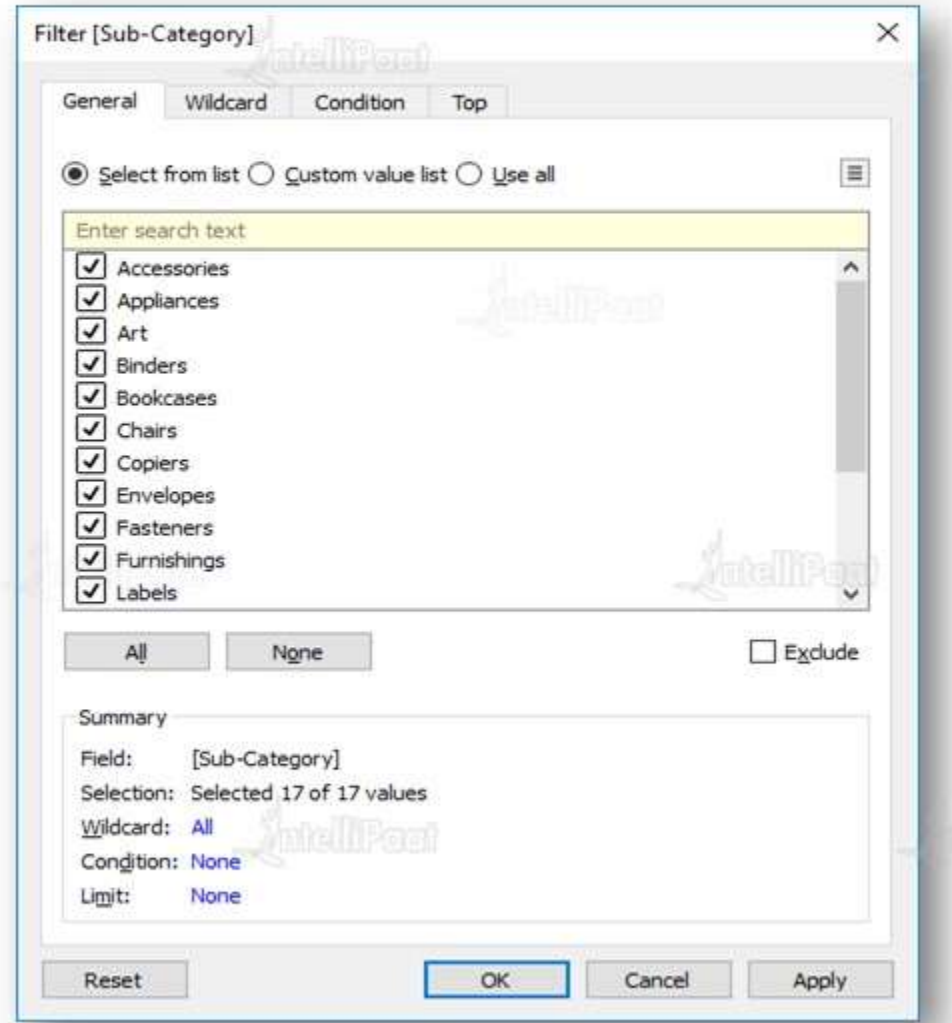
Working with Parameters

- Creating Parameters
- Parameters in Calculations
- Using Parameters with Filters
- Column Selection Parameters
- Chart Selection Parameters
- How to use Parameters in Filter Session?
- How to use Parameters in Calculated Fields?
- How to use Parameters in Reference Line?

Working with Filters

Filters

- **Tableau filters** change the content of the data that may enter a **Tableau** workbook, dashboard or view.
- **Tableau** has multiple **filter** types, and each type is created with different purposes.
- It is important to understand who can change them and the order of each type of **filter** is executed



Types of Filters

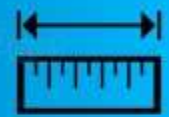
IntelliPaat

01

Dimension Filters

Filters on dimensions; you can think of the SQL WHERE clause

02



Measure Filters

Filters on measures; you can think of the SQL HAVING clause

03

Quick Filters

Commonly used end-user filters

04

Dependent Quick Filters

Quick filters depending on other quick filters that can quickly multiply and slow down the dashboard performance

05

User Filters

Can be changed by anyone in Tableau Desktop, Web Edit mode or regular dashboard mode in a web browser

Types of Filters

Context Filters

You can think of a context filter as being an independent filter. Any other filters that you set are defined as dependent filters because they process only the data that passes through the context filter. Context filters are often used to improve performance.

Data Source Filters

To be “secure”, they must be defined on a data source when it is published. If they are defined in the workbook with live connection, Tableau Desktop users can still edit them. Think of these as a “global” filter that applies to all data that comes out of the data source. There is no way to bypass a data source filter.

FILTERING ORDER OF EXECUTION

- EXTRACT FILTERS
- DATA SOURCE FILTERS
- CONTEXT FILTERS
- MEASURE FILTERS
- DIMENSION FILTERS

EXTRACT FILTERS (EXTRACT MODE ONLY)

- PRE-CONDITION FILTER - APPLIED BEFORE EXTRACT CREATION
- AFFECTS THE VOLUME OF DATA IN THE EXTRACT
- FILTERED DATA IS SAVED AS THE EXTRACT

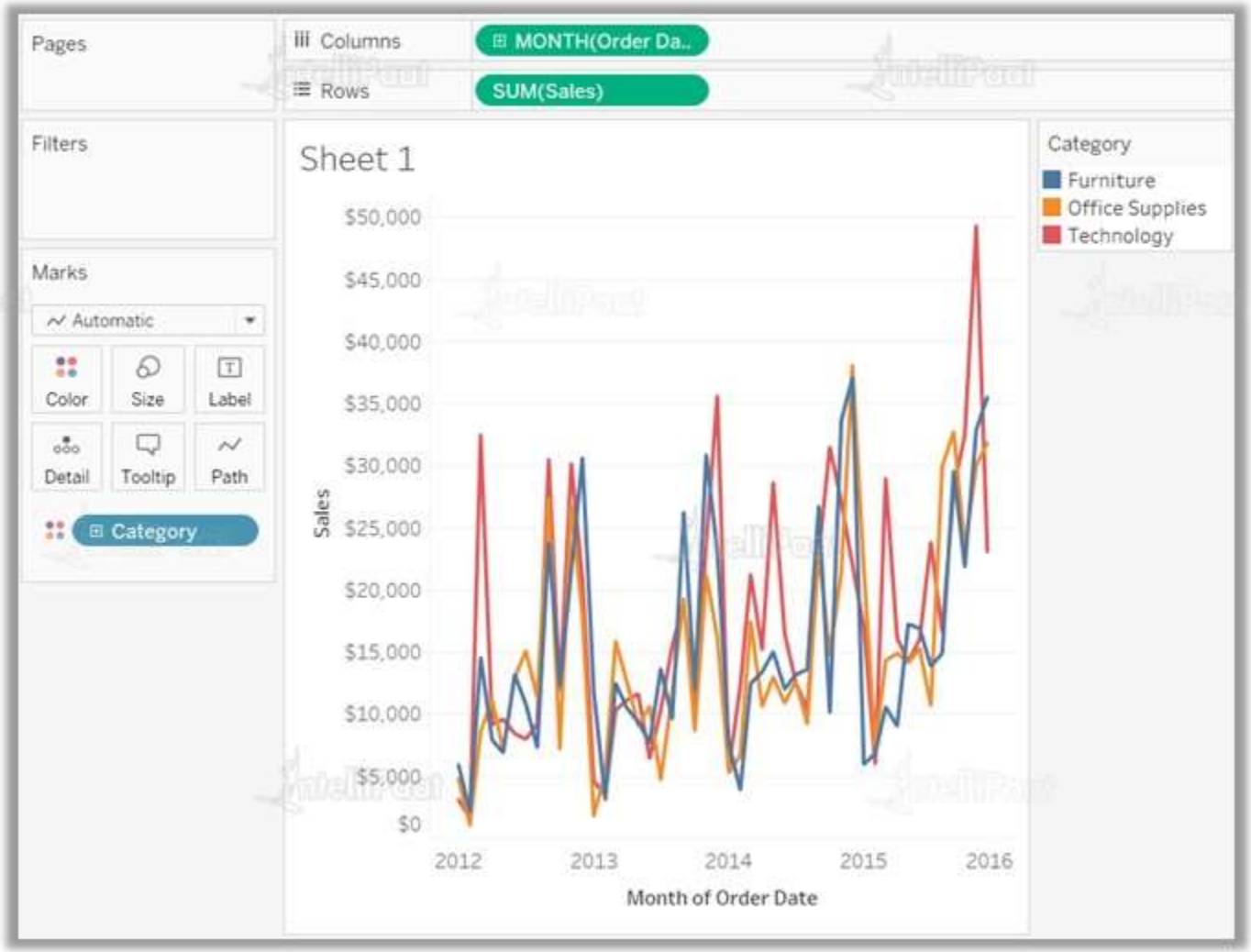
DATA SOURCE FILTERS (LIVE AND EXTRACT MODE)

- POST CONDITION FILTER - APPLIED AFTER EXTRACT CREATION
- EXTRACT IS CREATED WITH FULL VOLUME OF DATA
- APPLIES TO THE BACKGROUND QUERY - ONLY DURING VIZUALISATION

Filtering Continuous Dates

- Once the field is placed on a shelf, one can treat a date as a continuous quantity.
- This can be done by selecting one of the continuous date options on the field's context menu.
- Continuous dates draw a quantitative axis for date values.
- Treating dates as a continuous quantity is particularly useful when you use Gantt bars or want to see trends using line charts.

Filtering Continuous Dates



- For example, this view displays the sales as a function of a continuous order date and is color-encoded by category. As you can see, the color of the **Order Date** field changes from blue to green after it is converted to a continuous quantity.

Dimension Filters

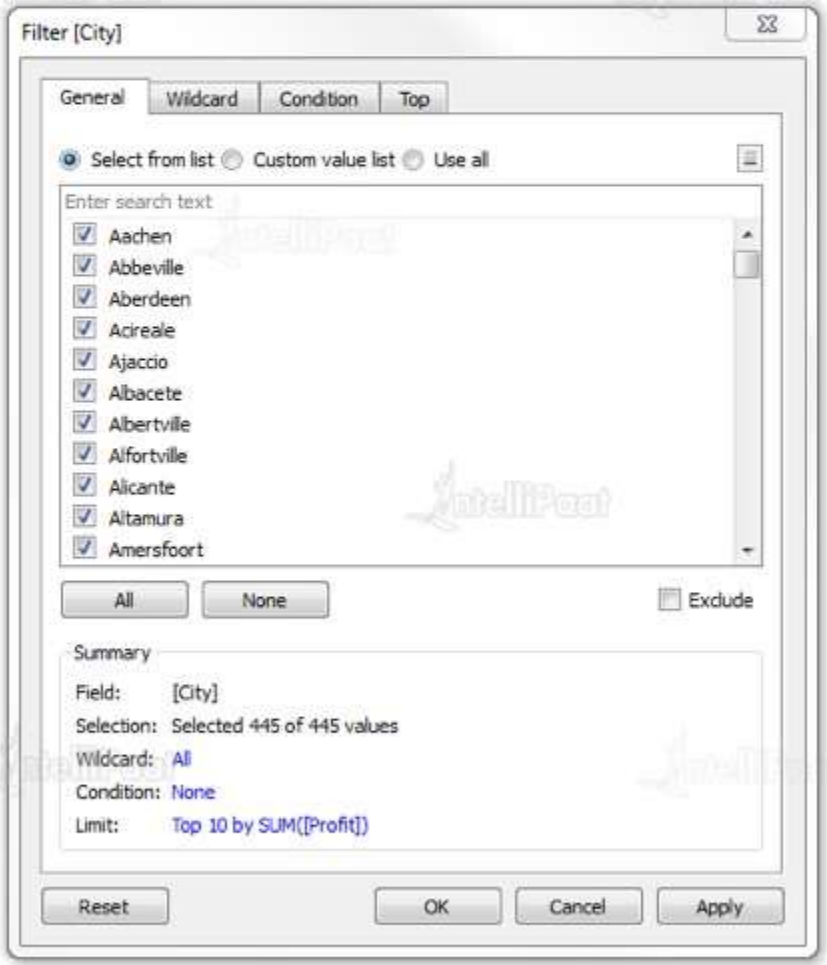
- Dimension filters can be applied by both dragging them on the **Filters** pane or right-clicking on the specific dimension and selecting **Show Filter**.

- You can choose to either only show the things highlighted or tick **Exclude** to filter out the dimensions selected.

- In the dimension filter dialog that pops up, there are three tabs such as **Wildcard**, **Condition** and **Top**.

- The filters can be edited at any time by right-clicking on the pill and **Edit Filter**.

Dimension Filters

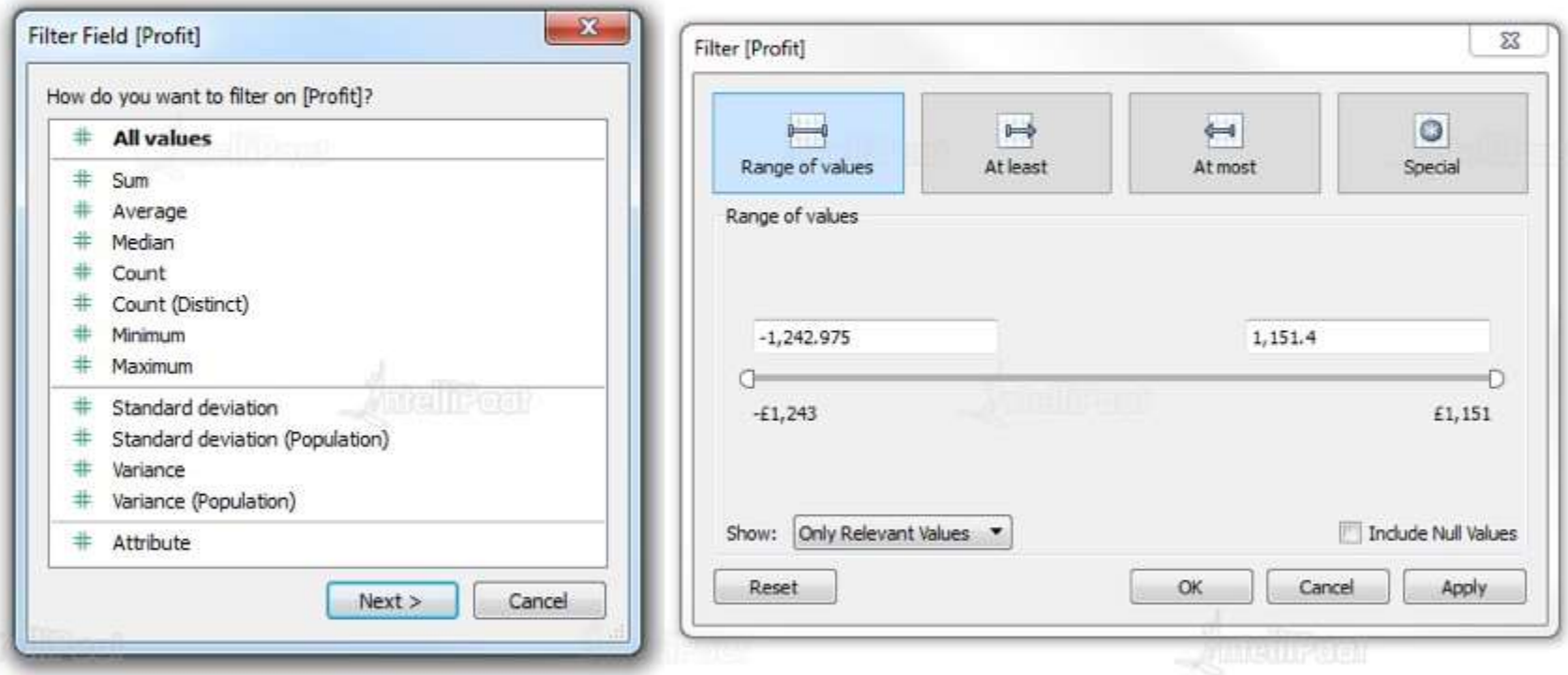


Measure Filters

Aggregated filters are applied after non-aggregated filters, no matter in what order they are shown on the Filters pane. When dragging it on, Tableau will ask you how would you want to filter—in other words, what aggregation to use (Sum, Avg, Median, Standard Deviation, etc.)

If nothing is chosen, it will automatically aggregate by Sum. The second step will give you four options: Range of values, At least, At most and Special. You can choose to drag or type in the number you want to filter on. Special is if you want to include Null values or not.

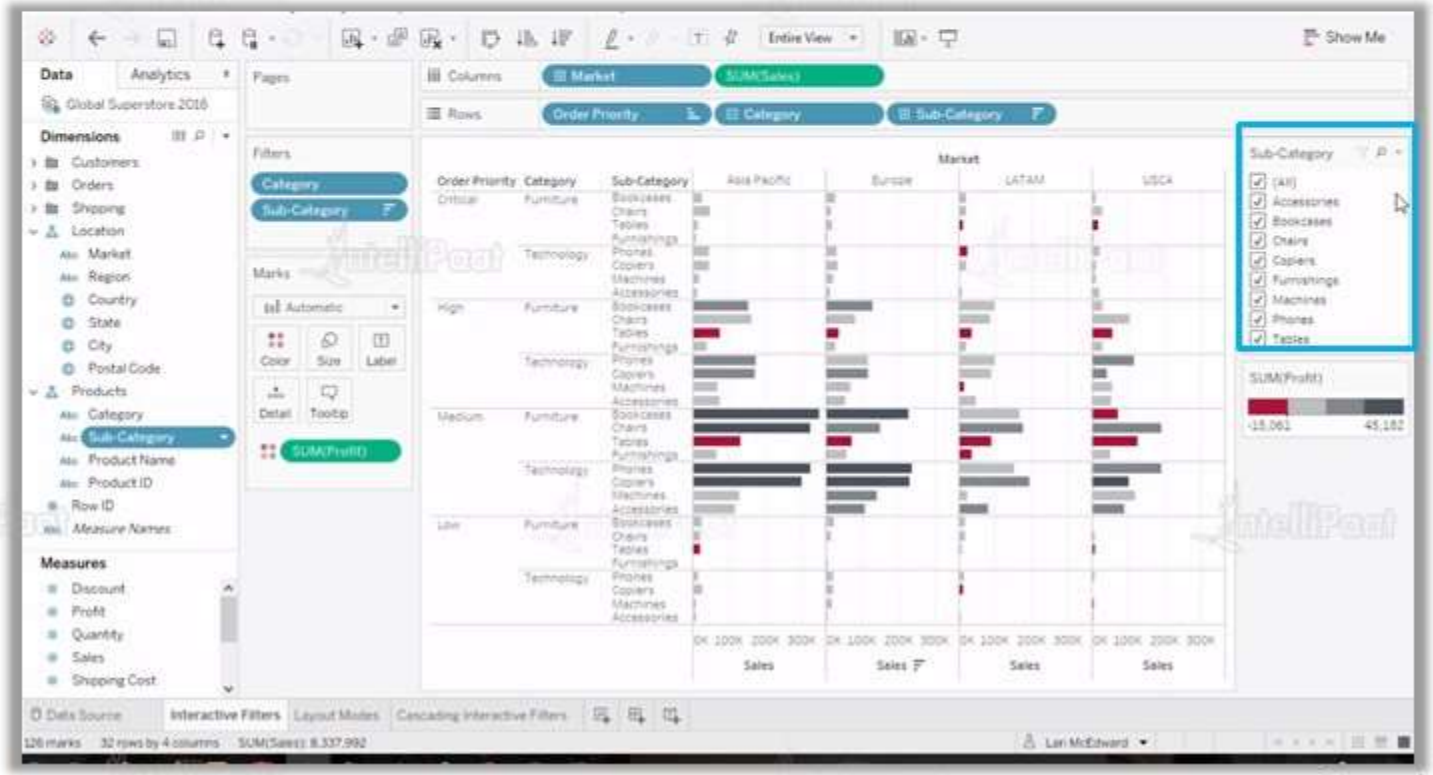
Measure Filters



Interactive Filters

- Dragging a field to filter shelf is an easy way to filter, but what if you want to modify the filters directly from the view.

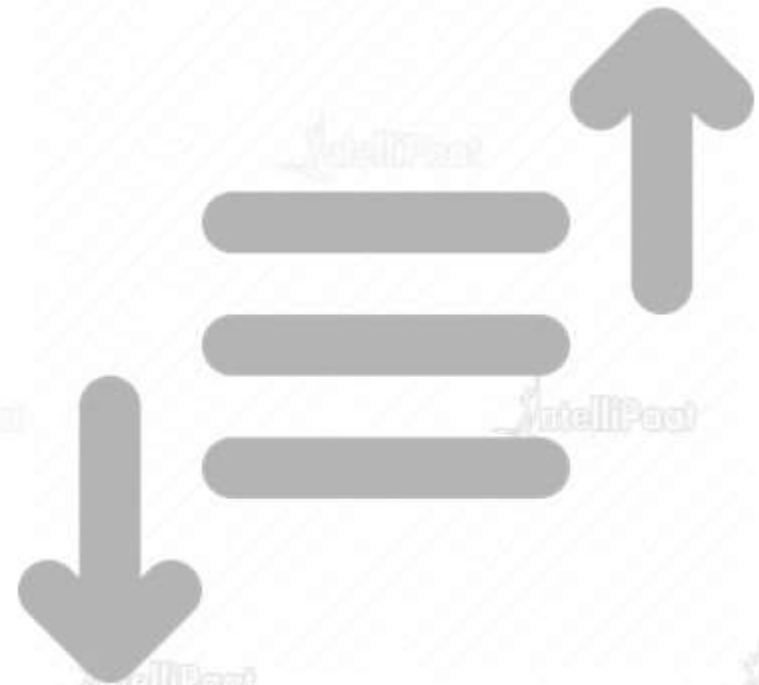
- Right-click on Sub-category and click on “show filter”. We will get interactive filters automatically on the view.



Sorting

Data can be sorted in ascending or descending order by one of these three options:

- Data source order: The order in which the data source naturally orders the data. Generally, for relational data sources, this tends to be in the alphabetical order
- Alphabetic order: In the order of letters in the alphabet
- Field order: Orders the data based on the associated values of another field

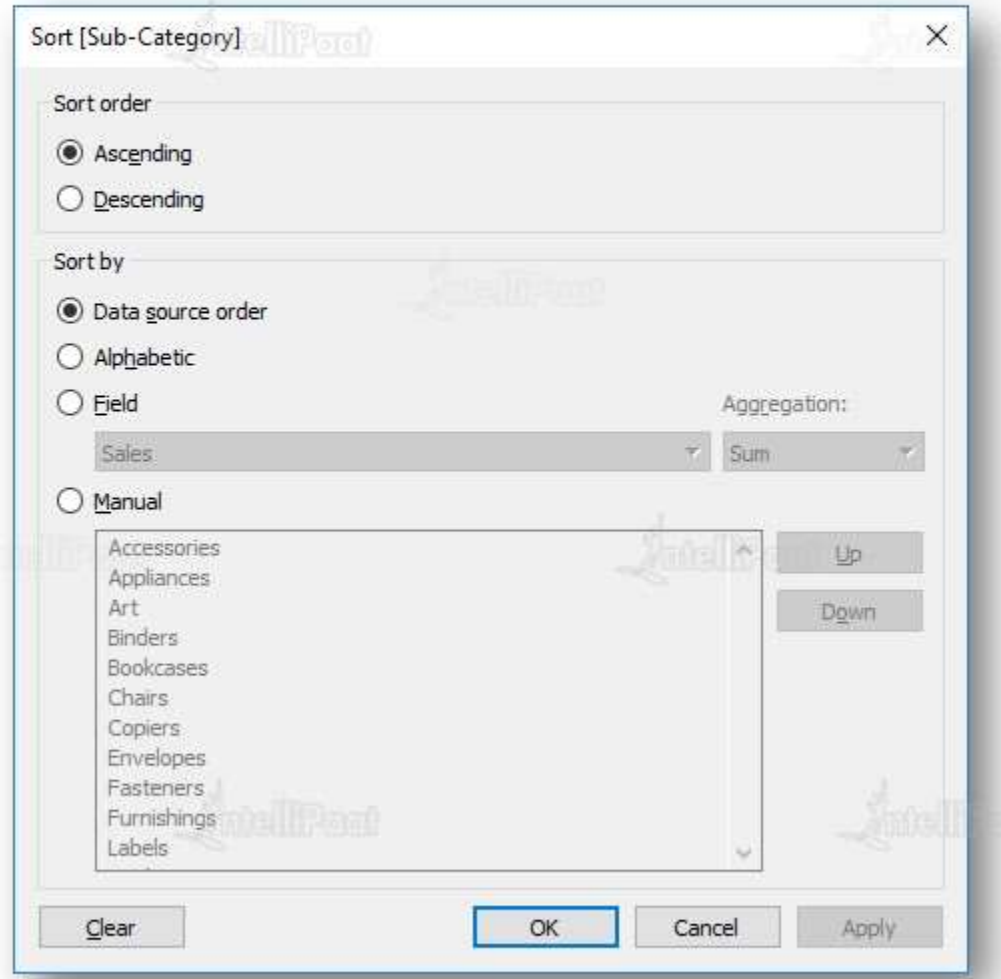


Types of Sorting

Types of Sorting

Computed Sorting is the sort directly applied on an axis using the sort dialog button.

Manual Sorting is used to rearrange the order of dimension fields by dragging them next to each other in an ad hoc fashion.



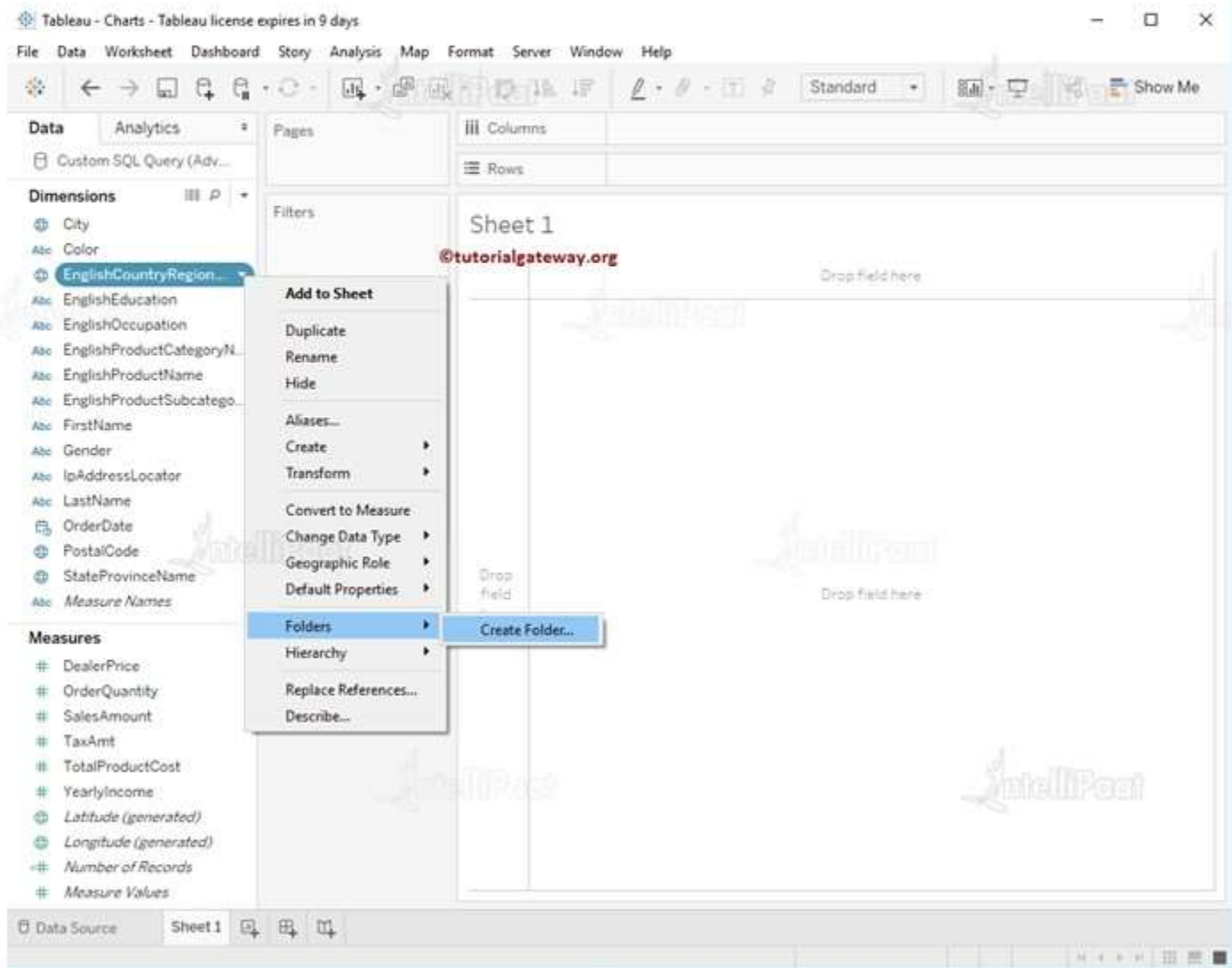
Creating Folders in Tableau

- Folders in Tableau helps you organize the dimension fields and measure fields.
- **Following are the steps to create folders in Tableau.**

Step 1: Right-click on the Dimension name for which you want to create a folder.

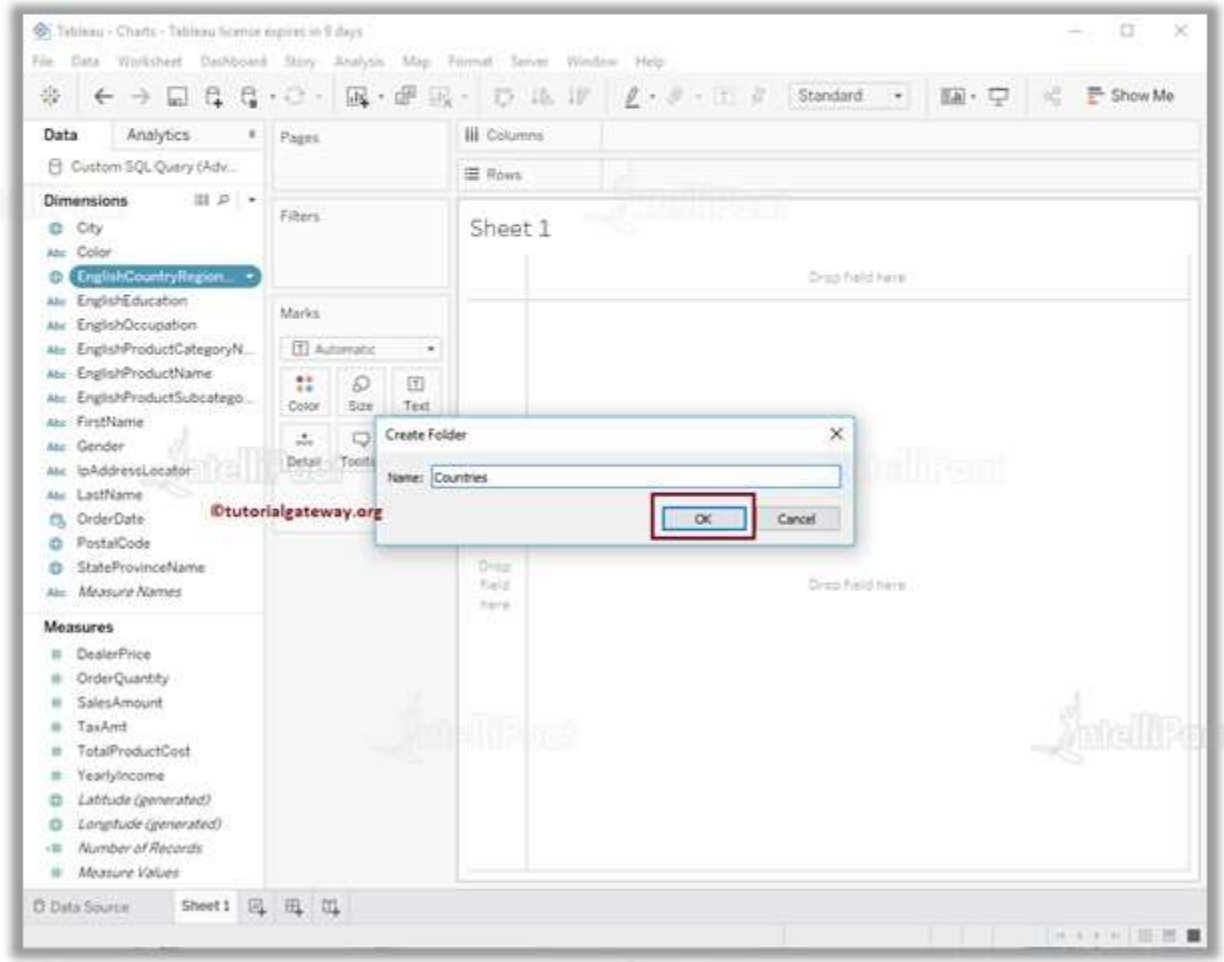
Select “Folders” option from the drop-down menu and then click on ”Create Folder”

Creating Folders in Tableau



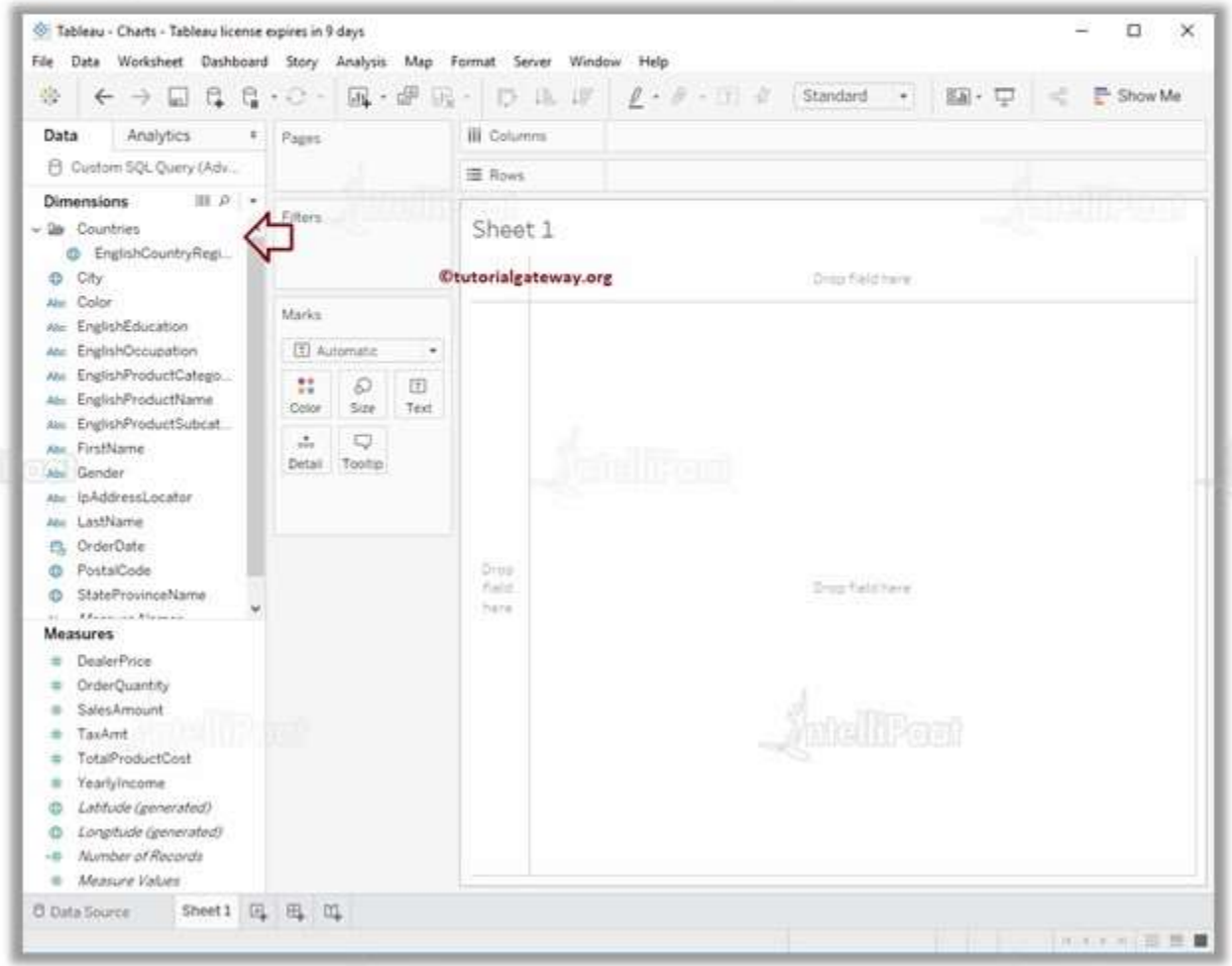
Creating Folders in Tableau

Step 2: You will get a popup window, where you can enter the name of the folder.



Creating Folders in Tableau

Step 3: Once you click the OK button, you can see the newly created folder with English Country Region Name member.

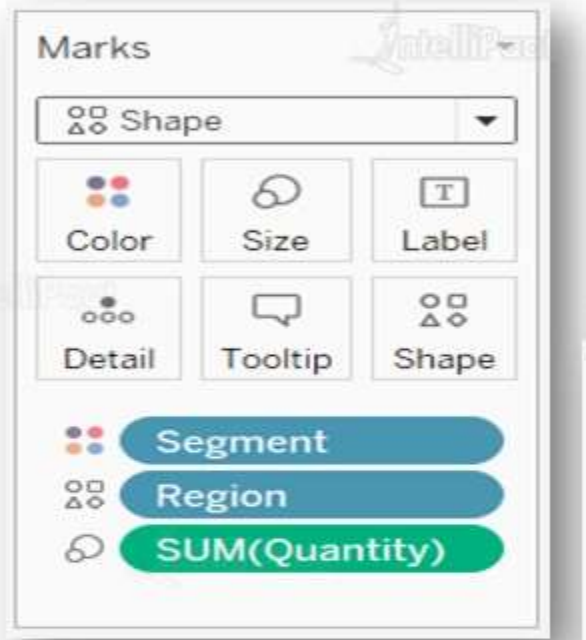


Filtering Order of Operations

- Before you begin filtering data in Tableau, it's important to understand the order in which Tableau executes filters in your workbook.
- Tableau performs actions on your view in a very specific order; this is called the Order of Operations.
- When it comes to filtering, different types of filters are executed in the following order:
    I. Extract filters
    II. Data source filters
    III. Context filters
    IV. Filters on dimensions (whether on the Filters shelf or in Filter cards in the view)
    V. Filters on measures (whether on the Filters shelf or in Filter cards in the view)

Marks Card

- The Marks card is where you drag fields to control mark properties such as type, color, size, shape and so on. The fields on the Marks card are listed at the bottom of the card. Each field has an icon next to it to identify the mark property it is setting.
- For example, the Marks card given here has three fields: Segment is on Color, Region is on Shape and Quantity is on Size.



Hierarchies & Drill Down/Up

- **Creating Hierarchies and drill down/up:**

  Logical groupings can be made out of dimensions for easy drill down and drill up in the views.

- Multidimensional (Cube) data sources contain hierarchies. One of the most useful ways to navigate hierarchies is to drill down or drill up.

Creation of Sets

Marks Card

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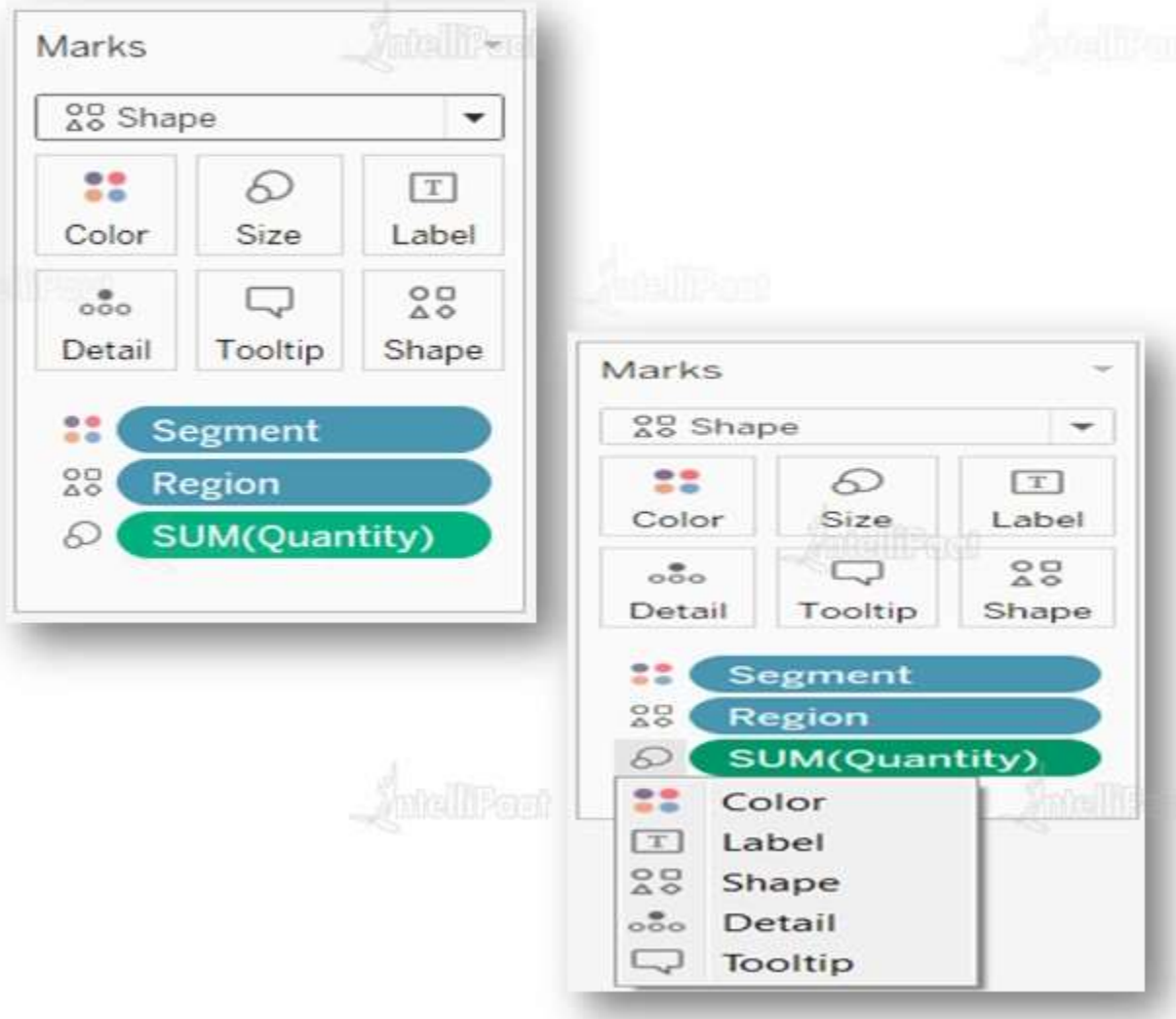

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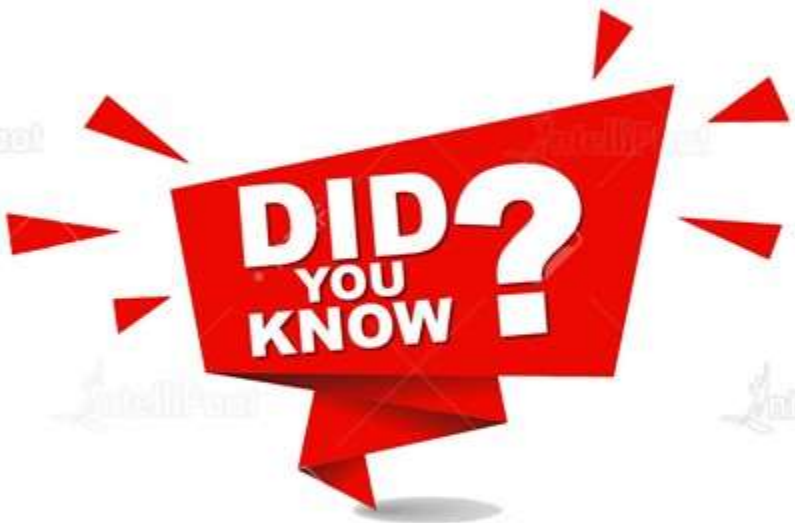
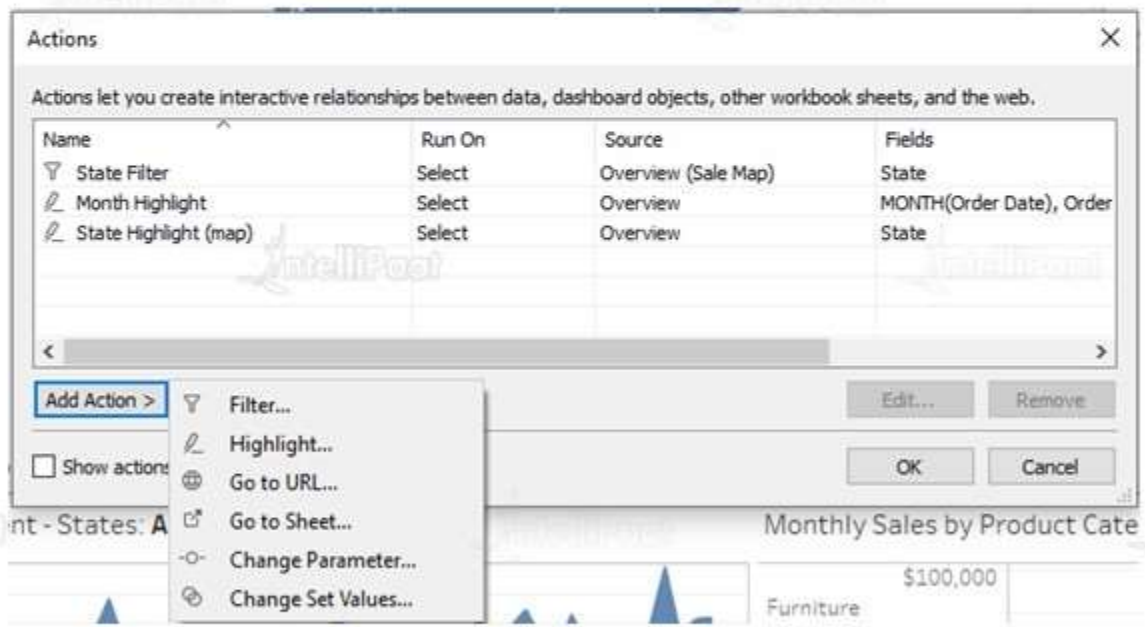
Highlighting



- Tableau has an option to highlight any particular field or data on your Tableau view.
- This feature is mainly used whenever you have lot of marks on your view.
- Highlighter is a free text field and drop-down menu that can be used to quickly find and highlight your data.
- This means you don’t need a parameter or a color legend to find what you are looking for and therefore does not clutter or alter your visualization.

Highlighting

- To highlight your text, open your dashboard and click on “**Actions**”.
- In the “**Actions**” dialog box, click on the **Add Action** button and then select **Highlight**.



TYPES OF ACTIONS

1)BY FILTER - Use the data from one view to filter data in another

2)BY HIGHLIGHT - Showing attention to marks of interest by coloring specific marks and dimming all others

3)Go to URL - Create hyperlinks to external resources, such as a web page

4)Go to Sheet - Simplify navigation to other worksheets, dashboards, or stories

5)Change Parameter - Let users change parameter values by directly interacting with marks on a viz

6)Change set values - Let users change the values in a set by directly interacting with marks on a viz

Sorting

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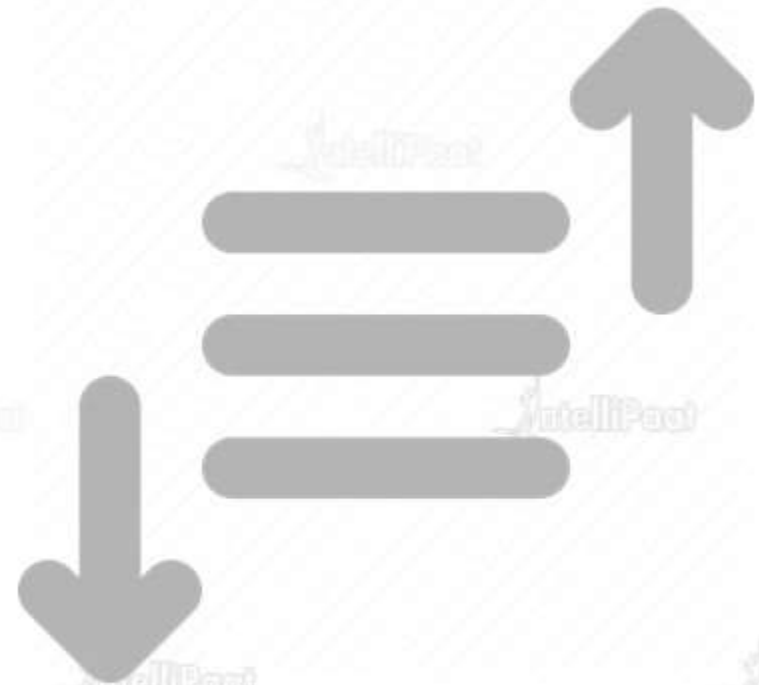
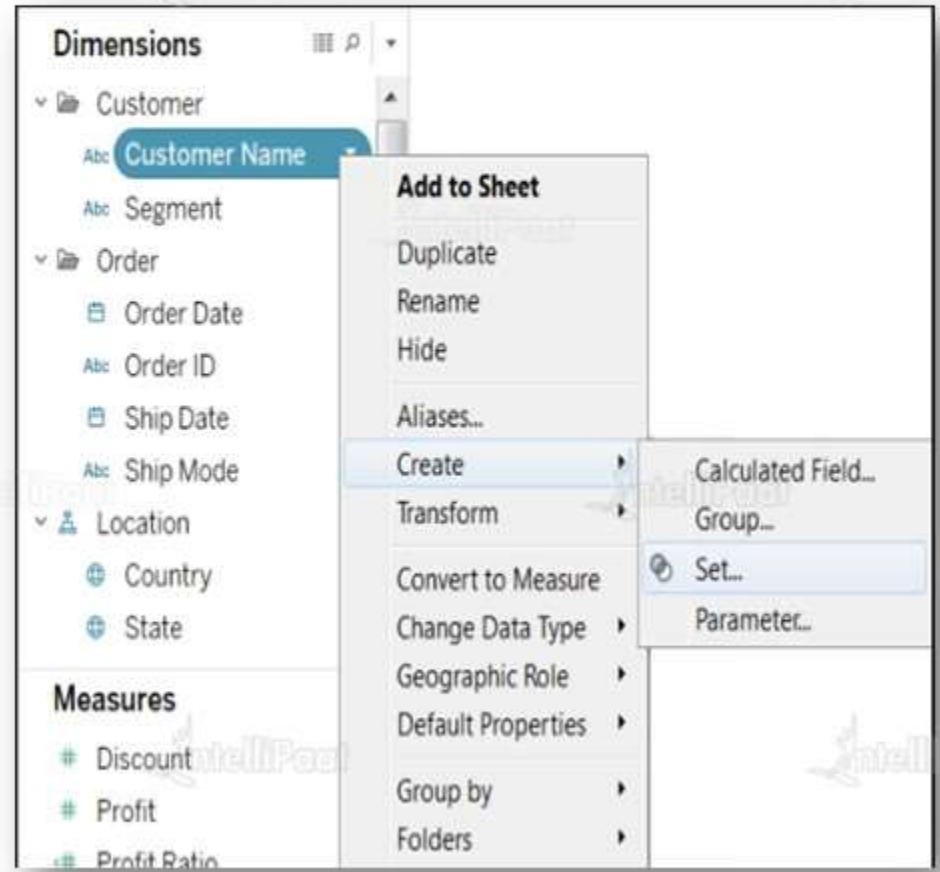


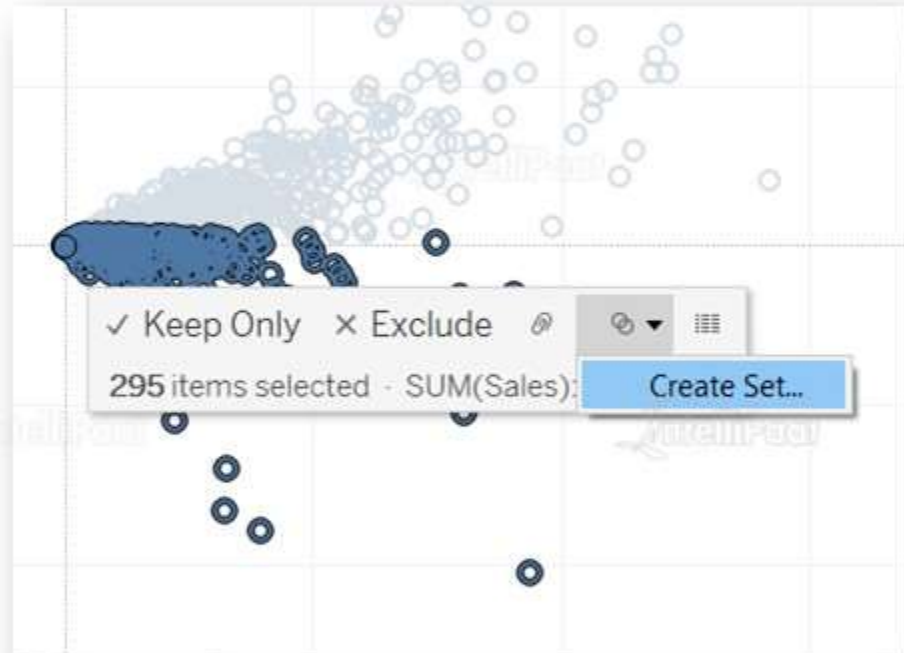
Groups

- Groups are used to combine dimension members into higher level categories.
- You can group a dimension that contains states into regions.
- Groups are marked with the paper clip icon on the Data pane.



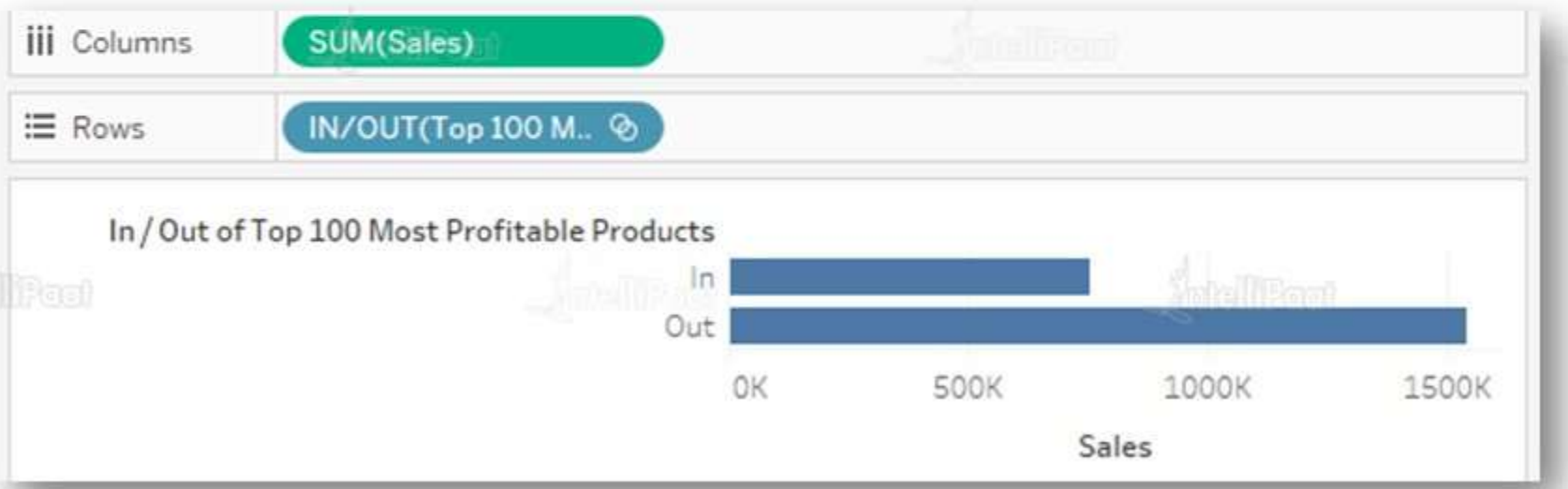
Sets

- A subset of your data that meets certain conditions based on existing dimensions
- Sets offer greater flexibility as you can link them to a condition
- Sets appear in a separate window below your Measures and subsequently are easier to locate, and they do not create clutter
- You can group only within one dimension, while with sets you can group across multiple dimensions



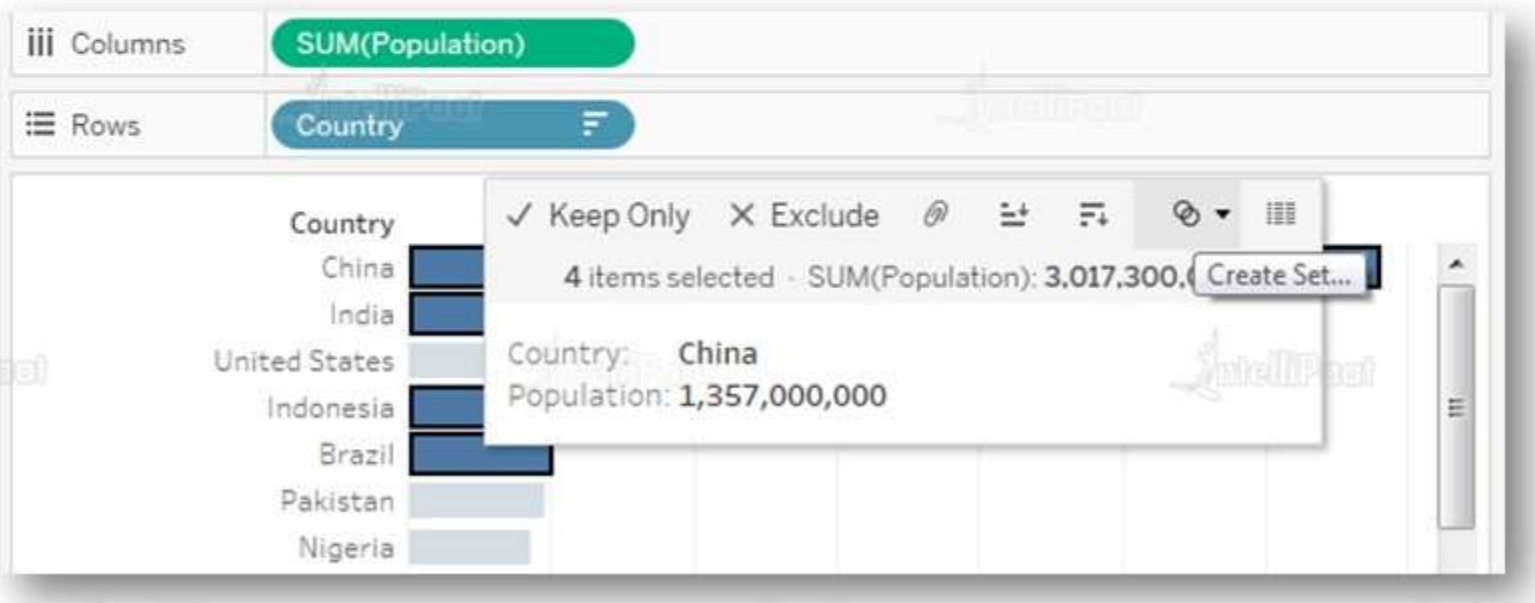
Show In/Out of a Set

- In most cases, when you drag a set to the view, Tableau displays the set using the In/Out mode.
- This mode separates the set into two categories:
  - In: The members in the set
  - Out: Any members that are not part of the set



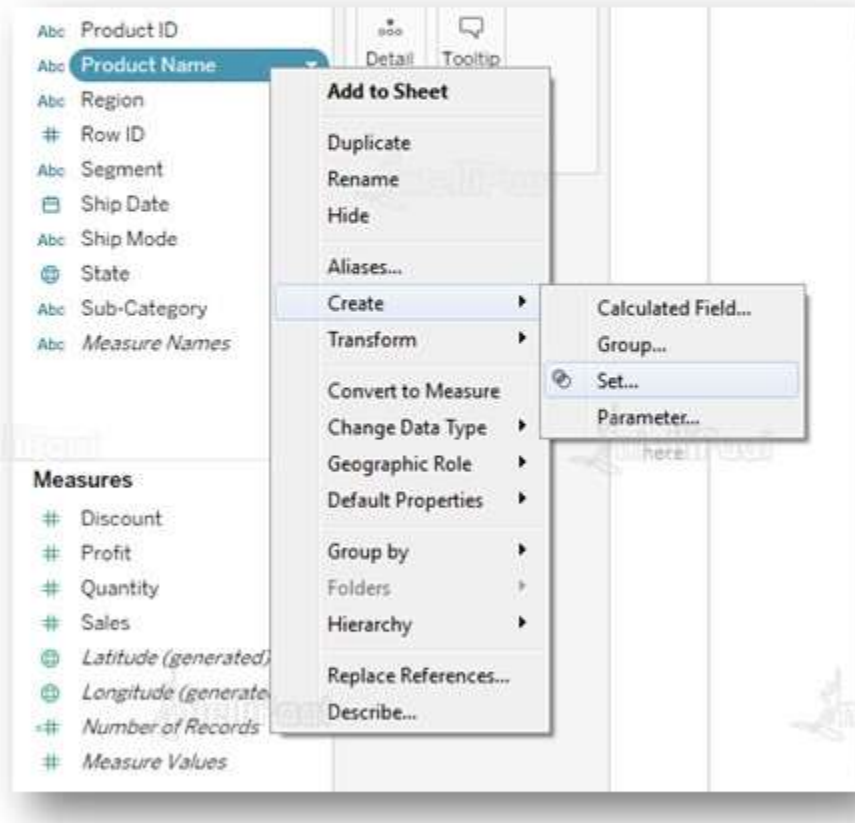
Constant Sets

- Constant sets are sets that once created do not change.
- Even if the underlying data changes, the membership of the constant set does not change to reflect these differences.
- These are also known as manually created sets.



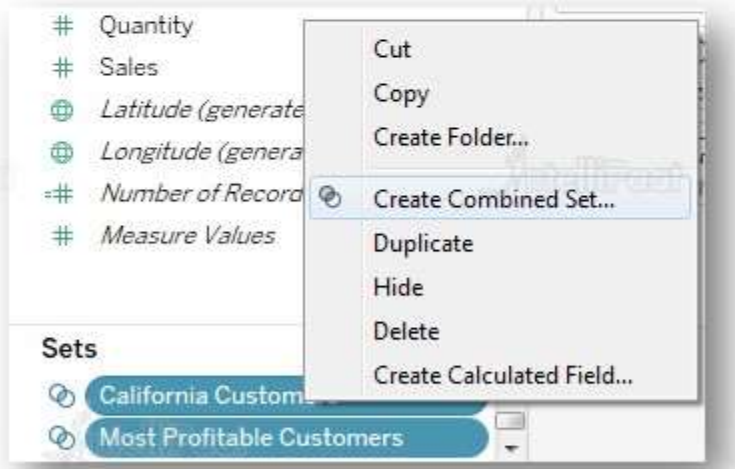
Computed Sets

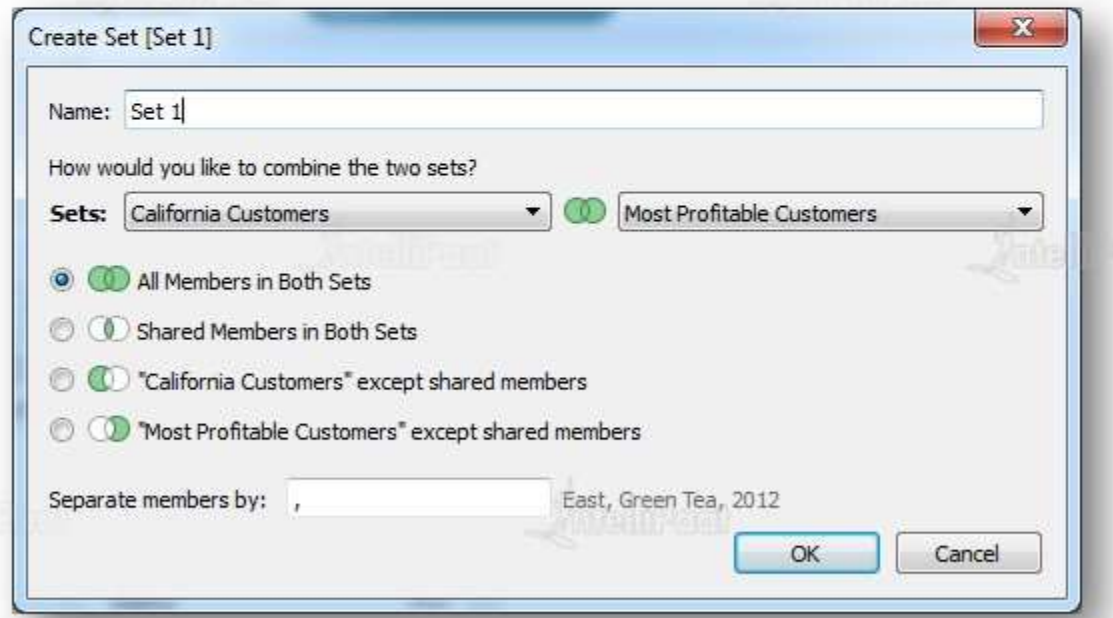
- Computed sets use logic to dynamically update the membership of the set.
- This is the key distinction between constant sets and computed ones.
- Changes to the data will change the set itself as it recomputes what gets classified as IN the set and what gets classified as OUT of the set.
- Computed sets can only use a single dimension, whereas constant sets might have multiple dimensions.



Combined Sets

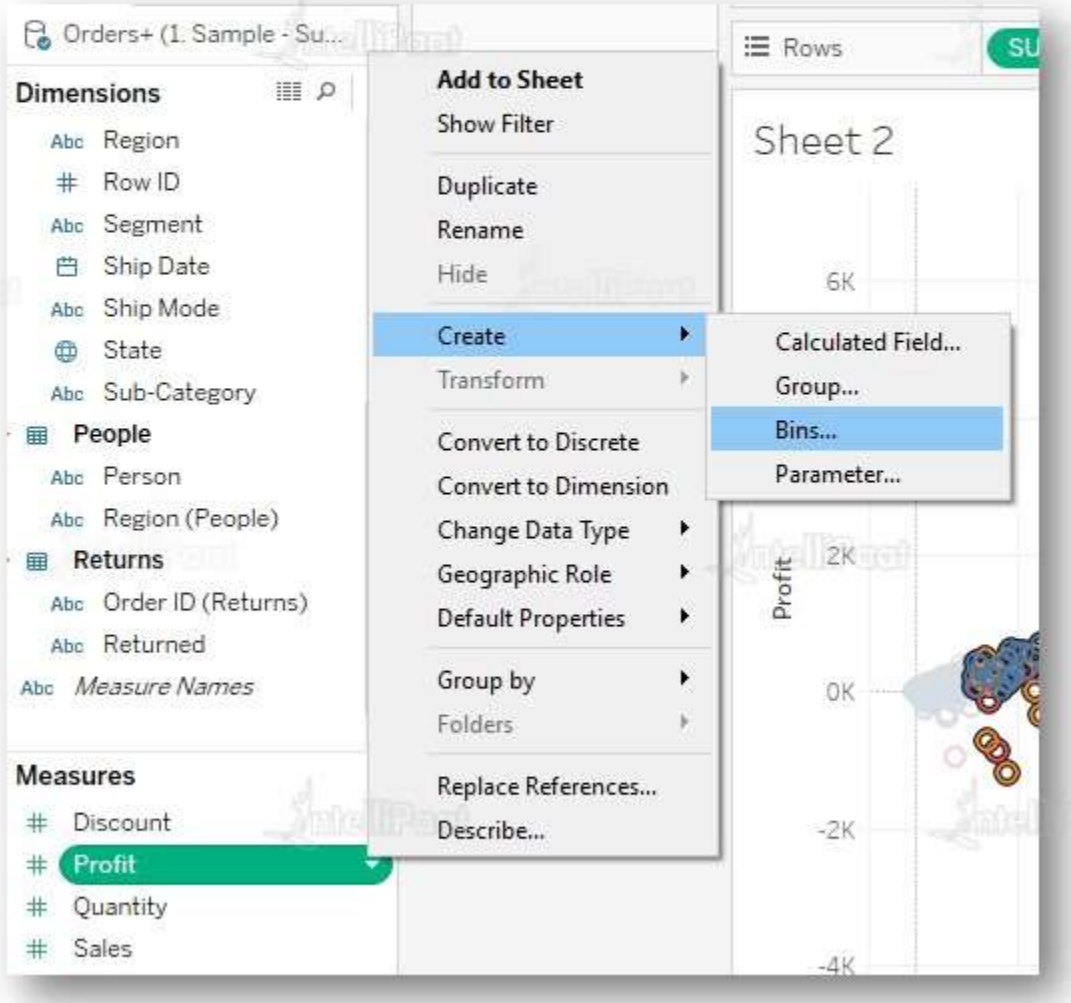
- We can combine sets.
- The two combining sets should be based on the same dimension.





Bins

- Sometimes, it's useful to organize the values of a measure into bins.
- For example, suppose you have a measure that holds the ages of customers ranging from 18 to 90. If you wanted to analyze how customer value breaks down by different age groups, you would bin the data.
- Also, to create a histogram, you must first bin the data.



Working with Parameters

Parameters

- Parameters are dynamic values that can replace constant values in calculations, filters and reference lines.
- Parameters are static. You can populate the list or range of values within a parameter by using a field from your data source, but it will not update the values even if your field values change in your data source. It will be static from the moment the parameter is created.

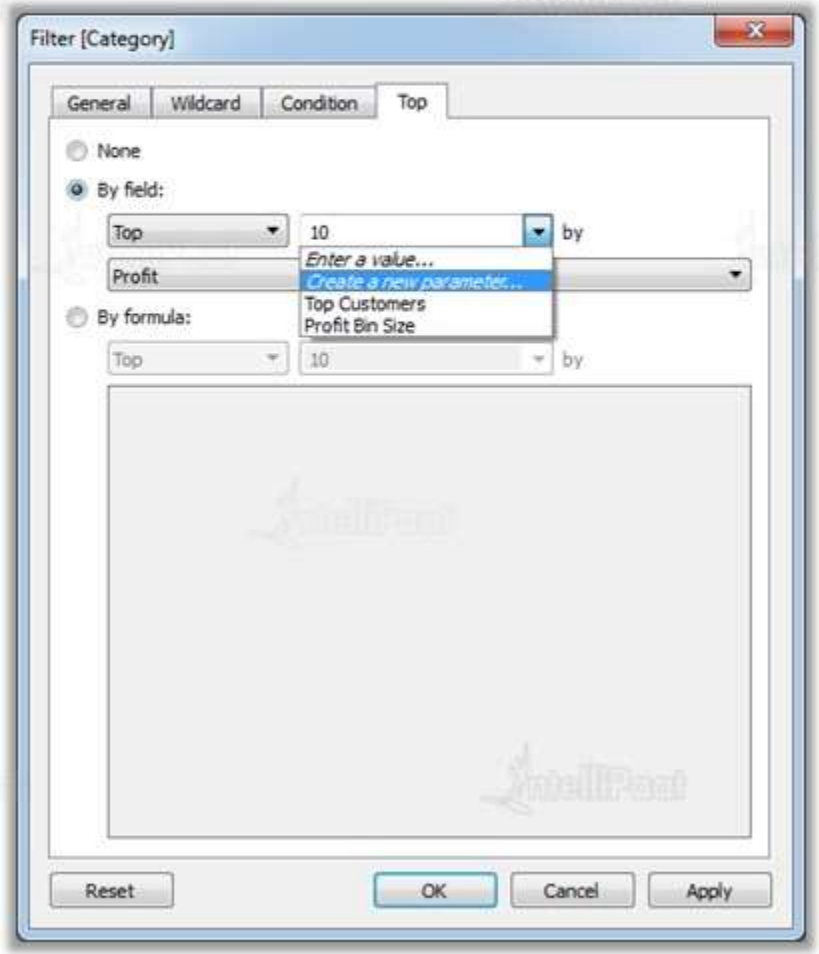
Parameters

Parameter values can be:

Defined by the Desktop user

Entered as an input by the report consumer

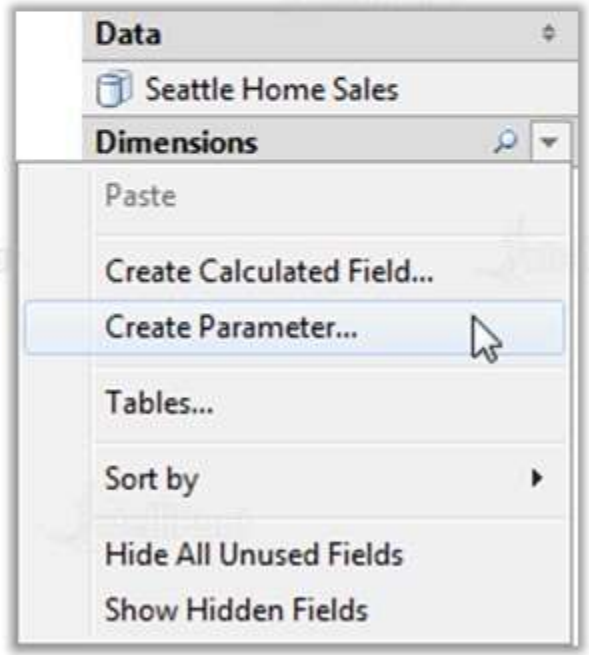
Populated with the values of a field from the data source



Creating Parameters

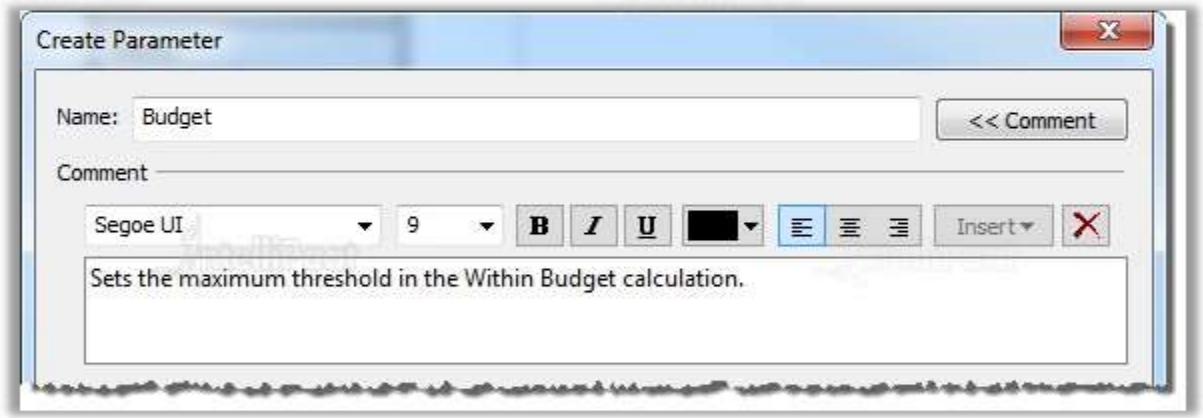
Here are the steps to create a parameter:

Step 1: Go to Data pane and choose “Create Parameter”



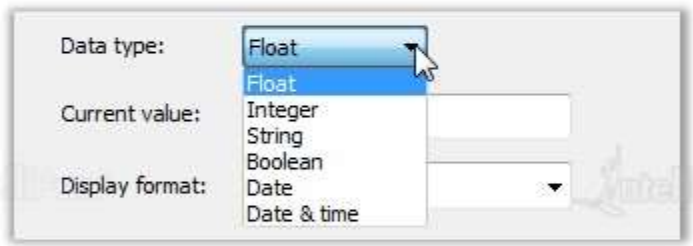
Creating Parameters

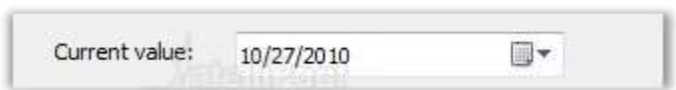
Step 2: Type the name of the parameter and a small description about the parameter

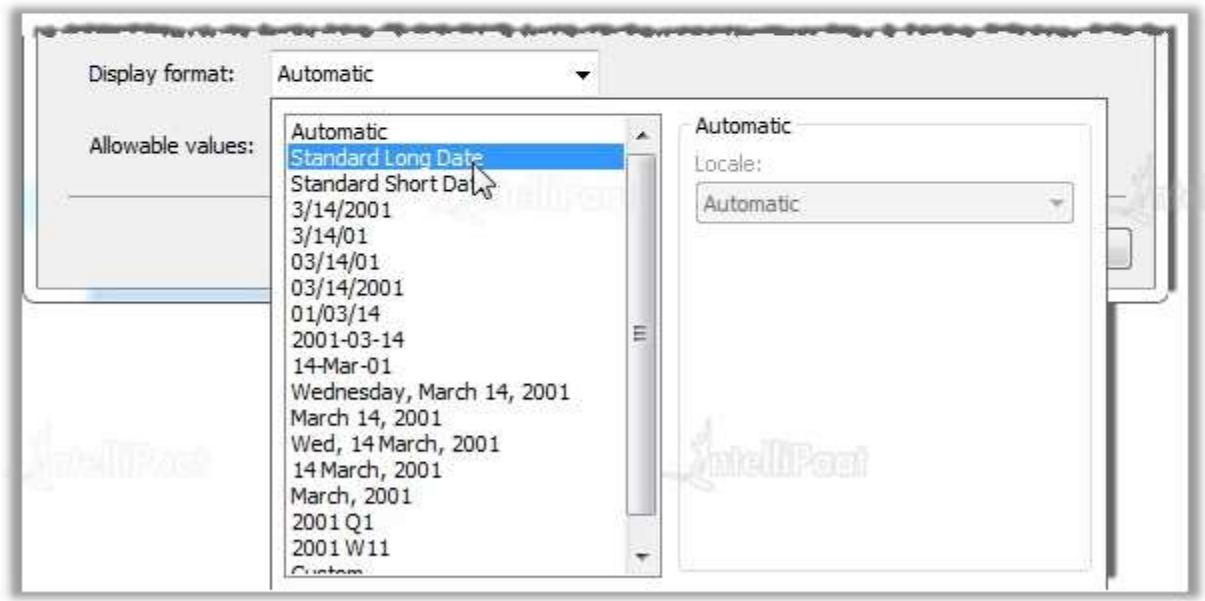


Creating Parameters

Step 3: Specify the data type for values and current values. Also, specify the format to use in the parameter control



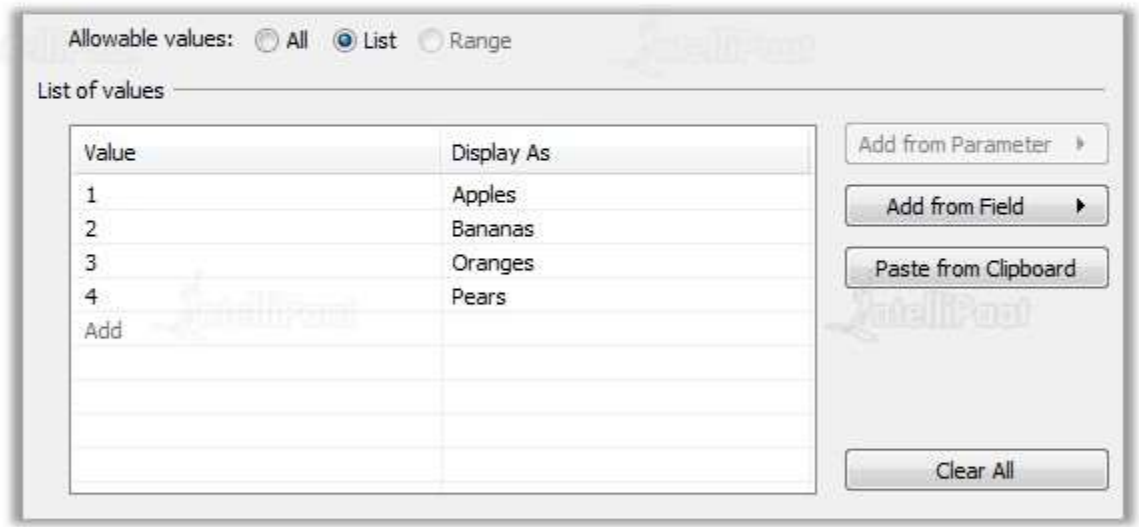




Creating Parameters

Step 4: Specify how the parameter will accept values. You can select from the following options:

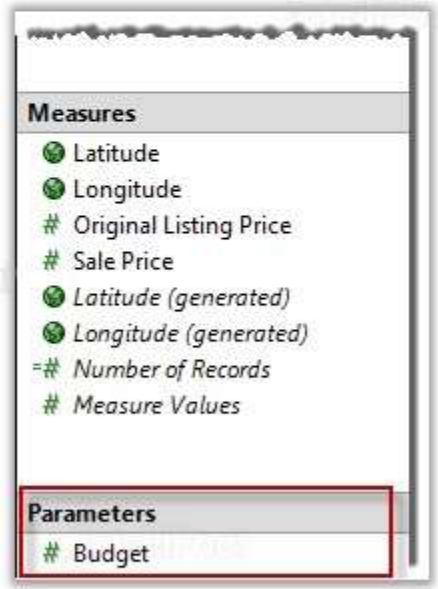
- **All:** the parameter control is a simple type in field.
- **List:** the parameter control provides a list of possible values for you to select from.
- **Range:** the parameter control lets you select values within a specified range.



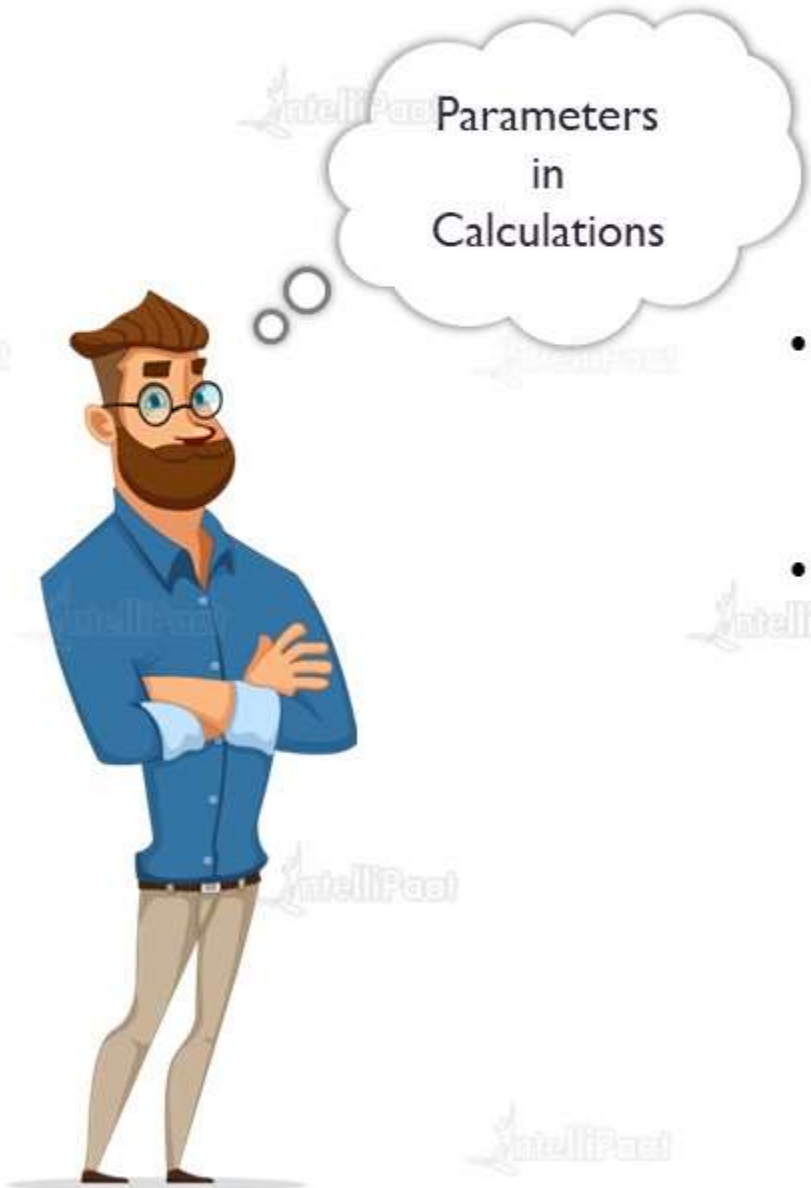
Creating Parameters

Step 5: Click on “OK”

The parameter is listed in the **Parameters** section at the bottom of the **Data** pane.



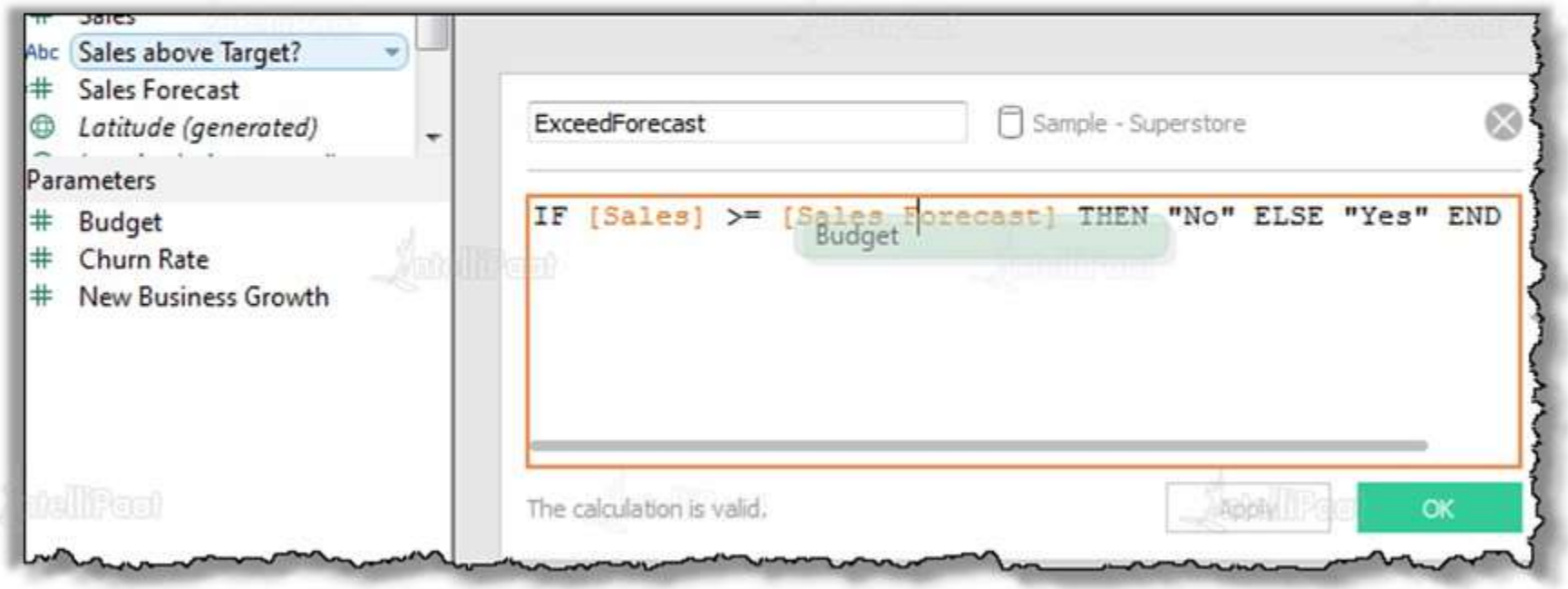
Parameters in Calculations



- One can edit parameters dynamically in a calculation. Rather than manually editing the calculation, you can use a parameter.
- If you want to change the value, you can open the parameter control, change the value, and all calculations that use that parameter will be updated.

Parameters in Calculations

To use a parameter in a calculation, drag the parameter from the Data pane and drop it in the calculation editor, either at a new location in the formula or to replace a part of the current formula.

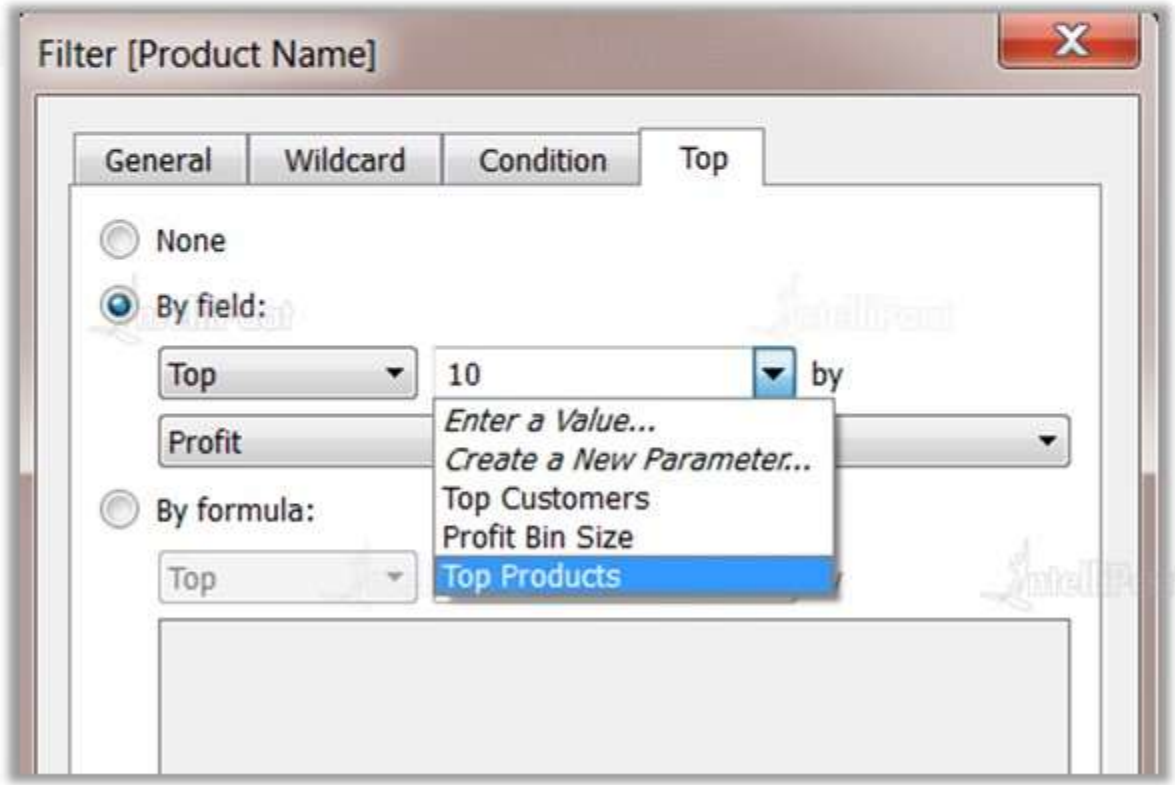


Parameters with Filters

- Parameters provide an option to dynamically modify values in a top N filters. Instead of setting up manually, you can use a parameter to show the number of values in the filter.
- If you want to change the value, you can open the parameter control and the filter updates.
- For example, when creating a filter to show the top 10 products based on total profit, you may want to use a parameter instead of the fixed “10” value. That way, you can quickly update the filter to show the top 10, 20 or 30 products.

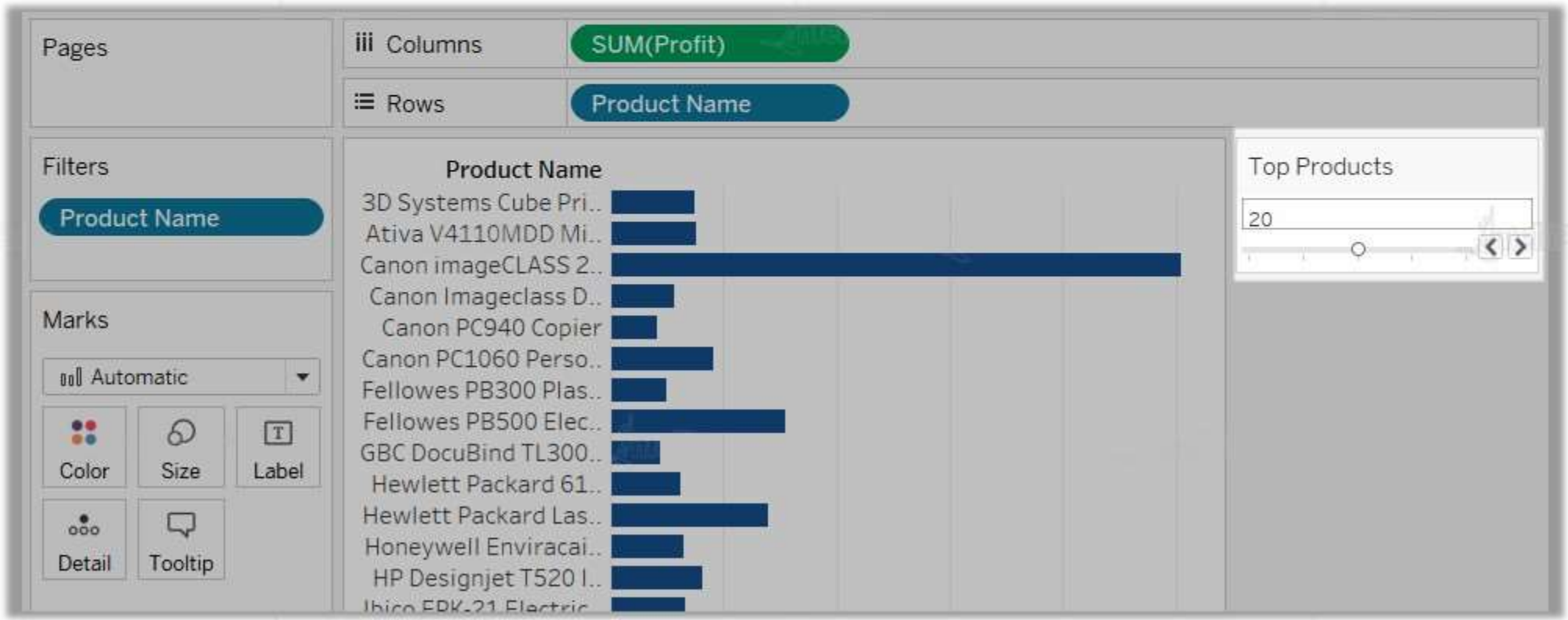
Parameters with Filters

- A list of parameters is available in the drop-down list on the **Top** tab of the **Filter** dialog box. Select the parameter you want to use in the filter.

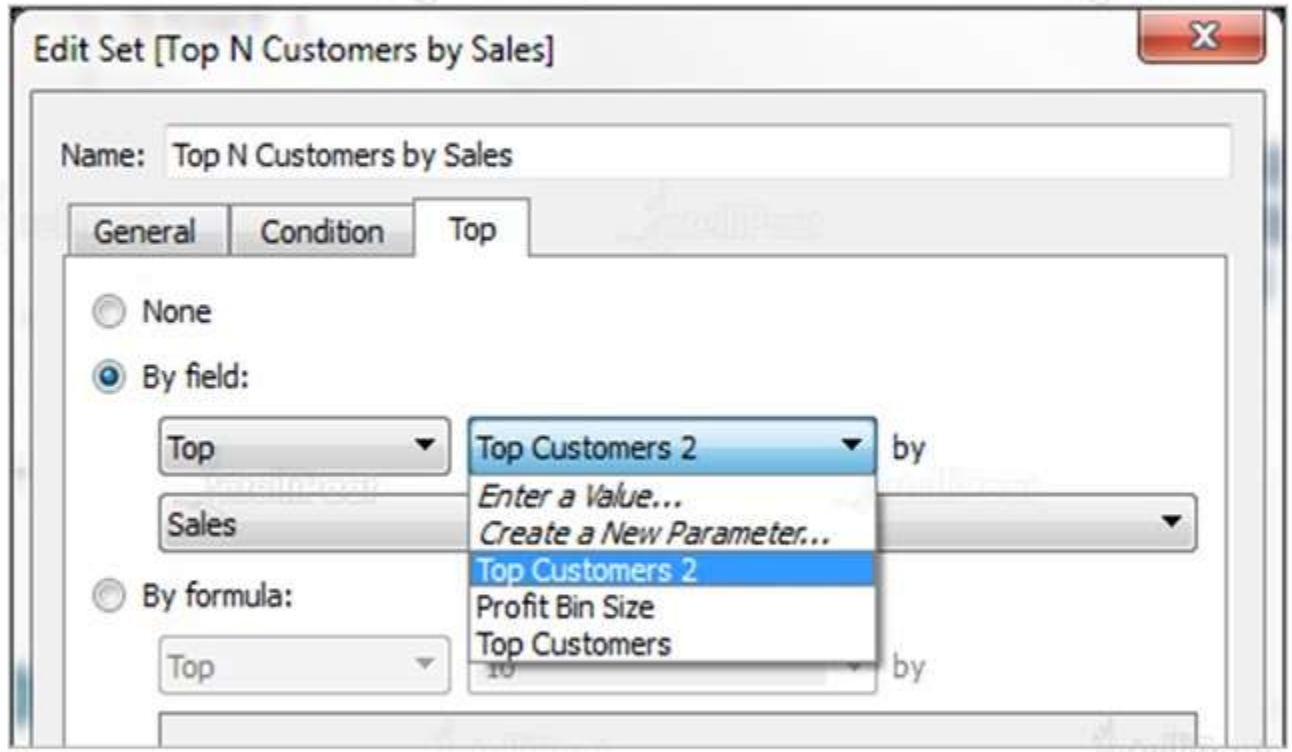


Parameters with Filters

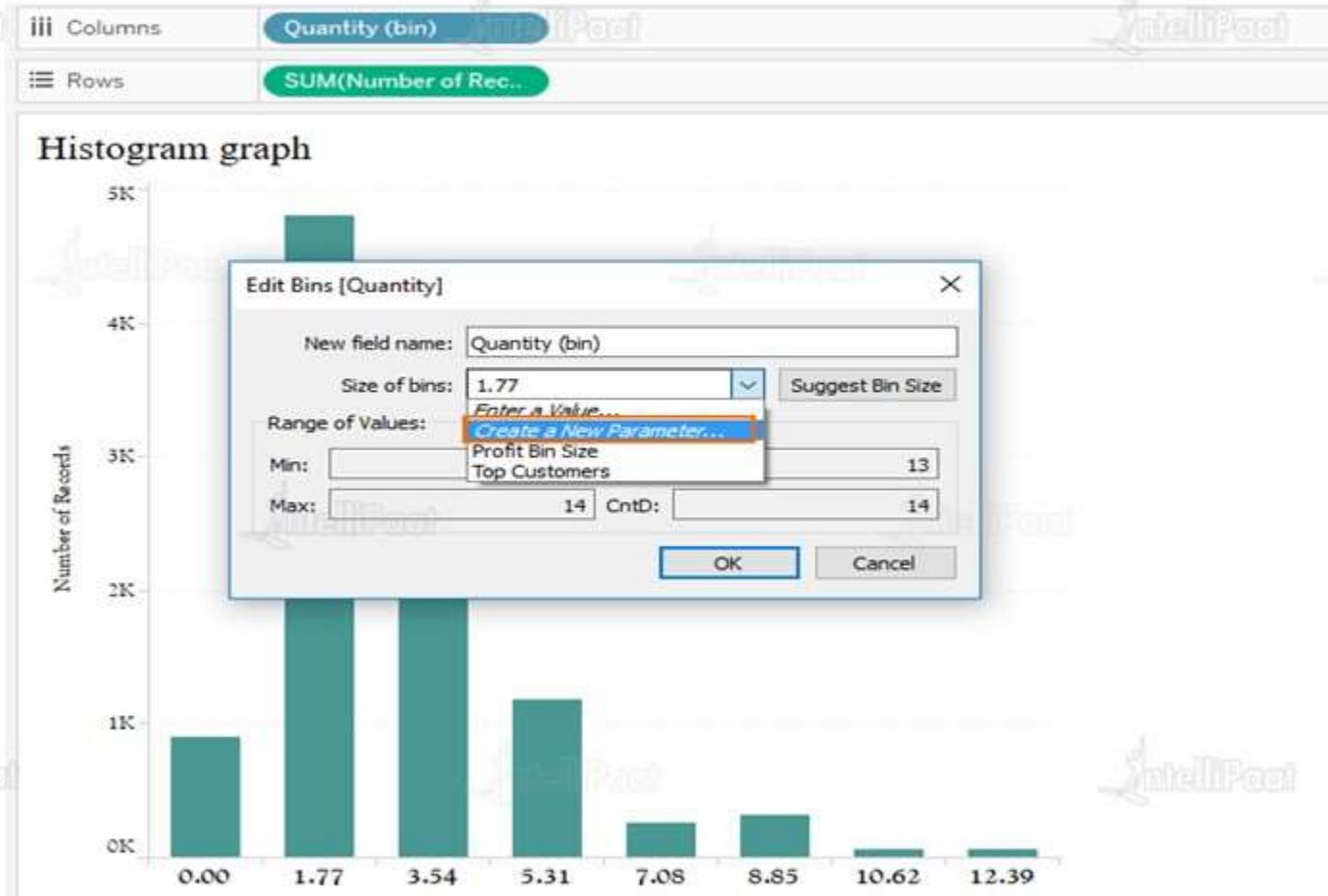
- The parameter control can be shown by right-clicking the parameter in the **Data** pane and selecting the **Show Parameter Control**. Use the parameter control to modify the filter to show the top 10 products, 15 products, 20 products and so on.



Parameters with SETS

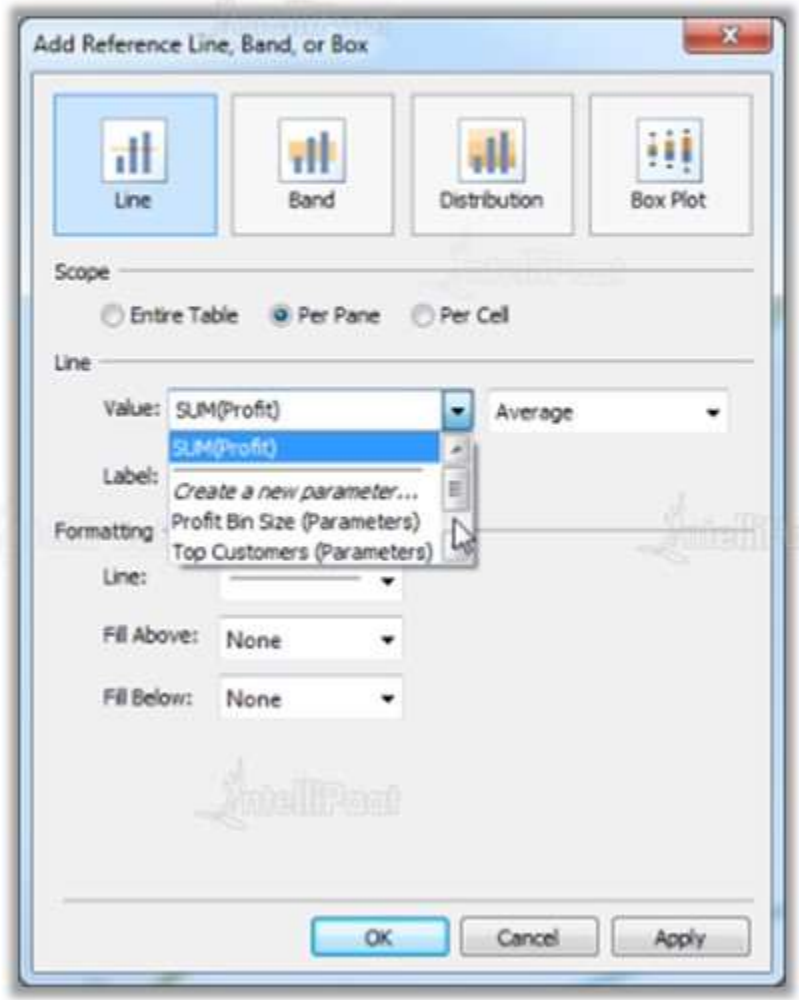


Parameters with BINS



Parameters in Reference Line

- Reference line, band or box can be dynamically modified by using parameters.
- For example, instead of showing a reference line at a fixed location on the axis, you can reference a parameter. Then, you can use the parameter control to move the reference line.
- A list of parameters is available in the **Value** drop-down list in the **Add Reference Line, Band, or Box** dialog box. Select the parameter you want to use.



Parameters in Calculated Fields

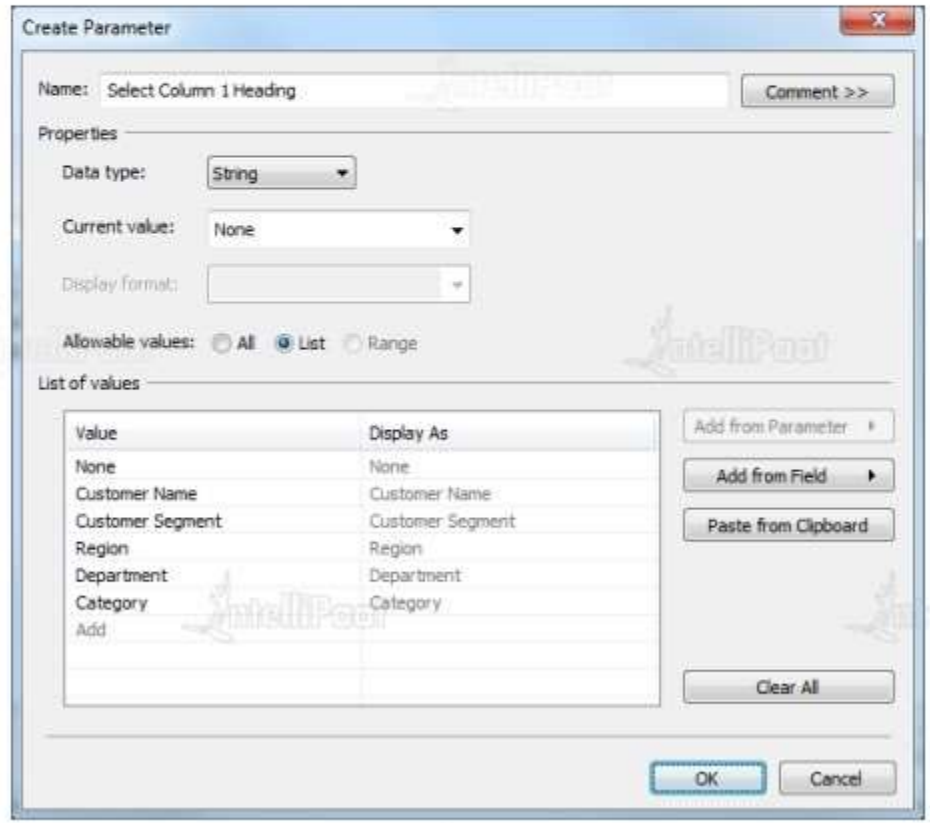
Step 1: Go to analysis and choose Create Calculated fields. You will get a dialogue box, in which type the name of the category.

Step 2: Click on Create and enter the approximate parameter. For example, Select column 1 Heading.

Choose the data type as “string”, select “list” and choose “none” and then press Enter.

Complete the list by typing the names of the additional dimension fields that you want to expose through the parameter.

Click on “OK”



Parameters in Calculated Fields

Step 3:

Repeat the previous step to create additional parameters.

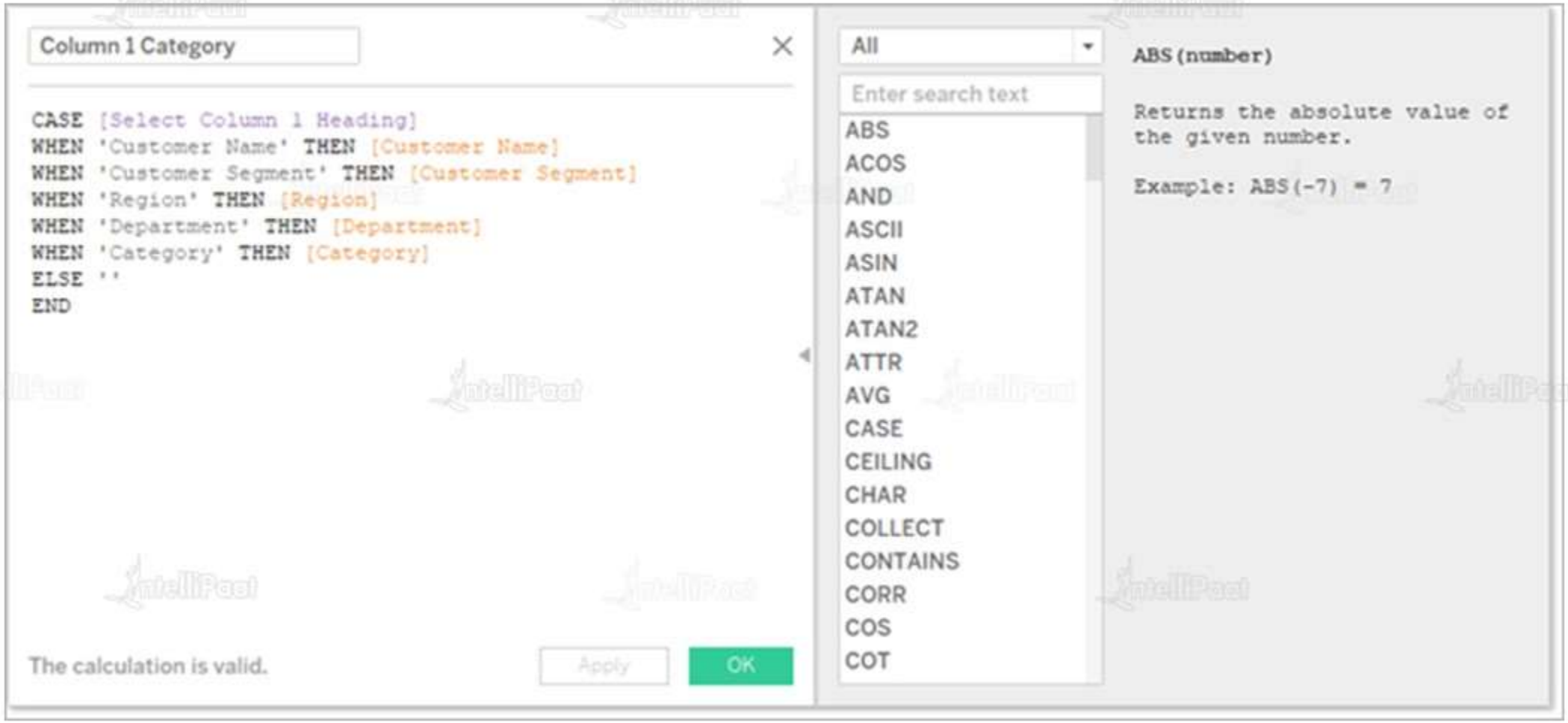
- Select Column 2 Heading
- Select Row 1 Heading
- Select Row 2 Heading

Step 4:

In the Calculated Field dialog box, for **Formula**, build the following calculation:

```
CASE [Select Column 1 Heading]
WHEN 'Customer Name' THEN [Customer Name]
WHEN 'Customer Segment' THEN [Customer Segment]
WHEN 'Region' THEN [Region]
WHEN 'Department' THEN [Department]
WHEN 'Category' THEN [Category]
ELSE ''
END
```

Parameters in Calculated Fields



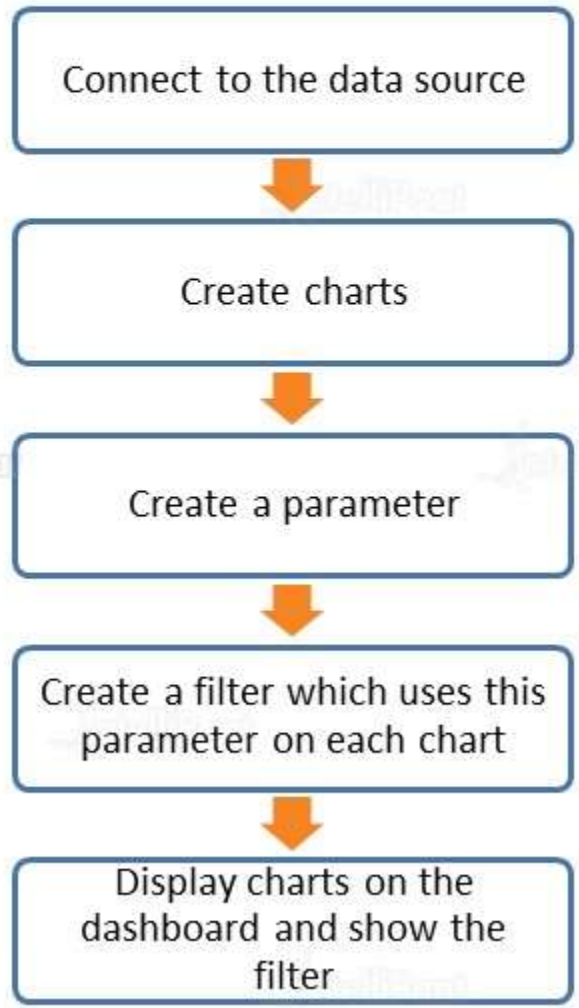
Parameters in Calculated Fields

Step 5: Create three more calculated fields, one for each of the additional parameters you created:

Parameter name	Calculated field name
Select Column 2 Heading	Column 2 Category
Select Row 1 Heading	Row 1 Category
Select Row 2 Heading	Row 2 Category

Chart Selection Parameters

Whenever you want to display charts based on user selection, this can be accomplished in Tableau.



Thank You