A Step-by-Step Guide for Data Visualization using Tableau

PART-1

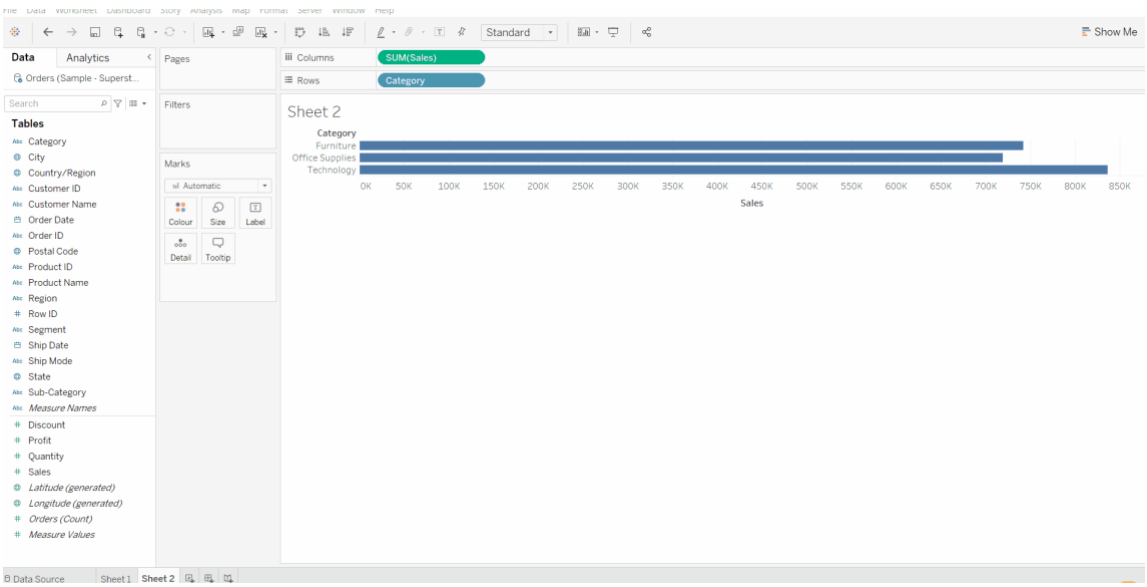
Connect Tableau to the data file:

1. To open the application, click the Tableau icon on your desktop (or in your Start menu).
2. In the Connect panel at the left side of the Start page, click the Excel link under the **"To a File"** heading to the open file selection option.
3. Using the file selection box, select the Excel worksheet that you want to open, and then click the Open button to continue
4. Select
   the Orders sheet from the navigation menu on the left and drag it onto
   the Drag Sheets Here area, as shown in the above gif.
5. After loading we can perform data cleaning, data preprocessing, feature extraction to some extent.

Creating Visuals in Tableau

Follow these steps:

1. drag the dimension and measure in row and column input field and it will automatically suggest a graph best fitted on data.
2. you can change the graph by clicking on the **show me** button and select whichever graph you want.
3. you can also remove the axis just by dragging and dropping them under the marks card (remove field).
4. Show Me: When you click this label, a palette appears, giving you rapid access to many options for showing the selected types of fields. The palette changes depending on the fields in the worksheet you've selected or are active.



From the above image, you might have observed that the default aggregation on the measure is **sum** but you can change the aggregation to **sum, avg, min, max,** etc, you can also customize the axis name, orientation, size, show-hide axis as shown in the above image.

Enhancing The Analysis:

In order to create a beautiful interactive visual, you must understand the following features:

a. Marks card

Marks card is very important for plotting graphs. In marks card we have:

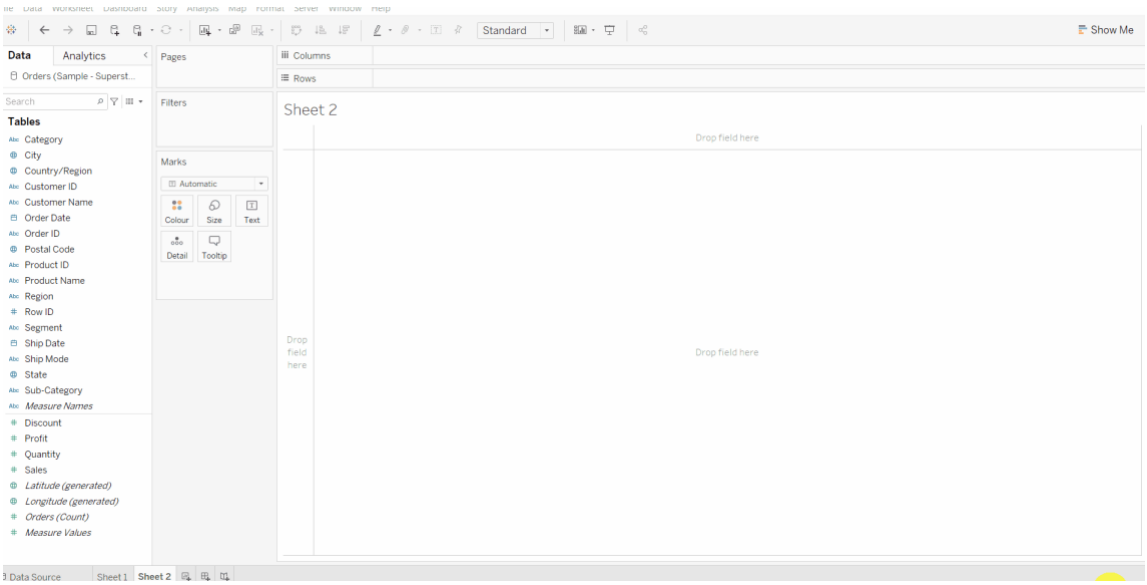
Colour button which is used to give different colors to different categories and measures,

Size button is used to give size which depends on how big a value is. The bigger the value means bigger the size of a particular mark

Label button which is used to show labels to graphs, clicking on the label button throws us some settings where you can set the formatting of labels.

Tooltips, here you can add information like (profit, quantity, sales, discount, category, state, etc.) which will be visible on hovering over the graph

The **Details** button allows you to display more information without affecting the table's structure. which is used to show details about particular points. dragging a field on details buttons will show the details of that point, and this feature is majorly used for maps to show more details of a particular point.



b. Filter

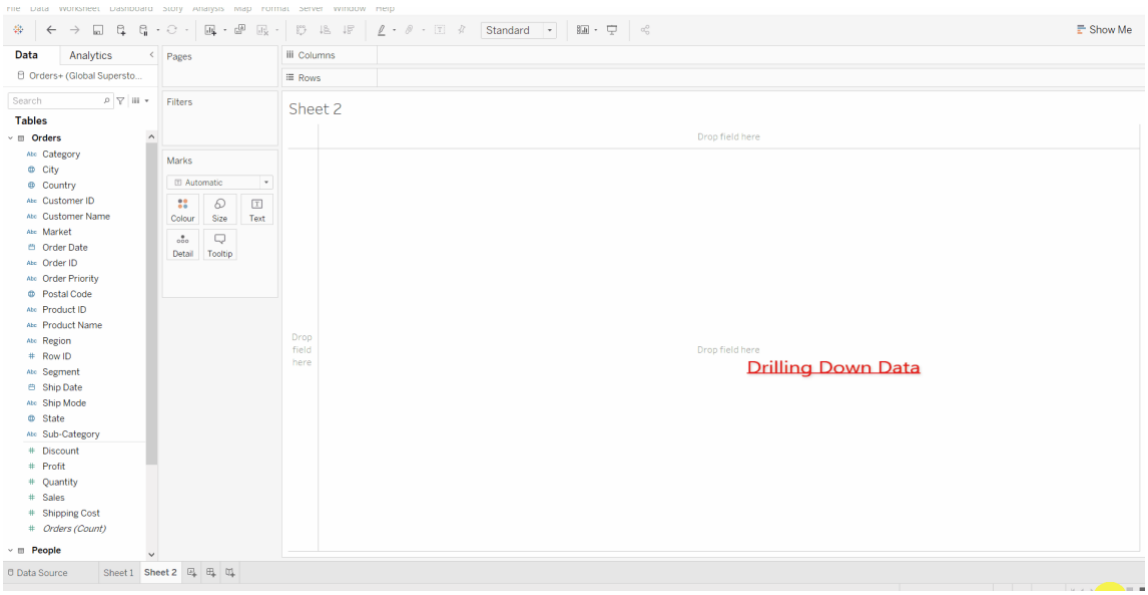
After creating some plots you might want to use different filters, to do so **follow these steps**:

1. On the **filter** shelf, you can drag any measure or dimension whichever you want to apply a filter on.
2. As you drop the field a box will appear, now you can select any particular category, or top-n rows according to measure values or you can write some rules to select top rows or by using some parameters.
3. Now click on **show filter** after selecting the filter you just applied.
4. You may want to apply multiple filters, to do so you will need to add previous filters into context by clicking on **add to context** here **Context Filter** is a Tableau filter that is applied before all other filters. You can choose different options **standard, fit width, fit height, entire view** from the toolbar in order to fit the visualization into the worksheet.

c. Hierarchy

You can quickly establish hierarchies with **Tableau** to keep your data organized.

Hierarchy is nesting the same type of related data together. Tableau calendar data is an example of a hierarchy.

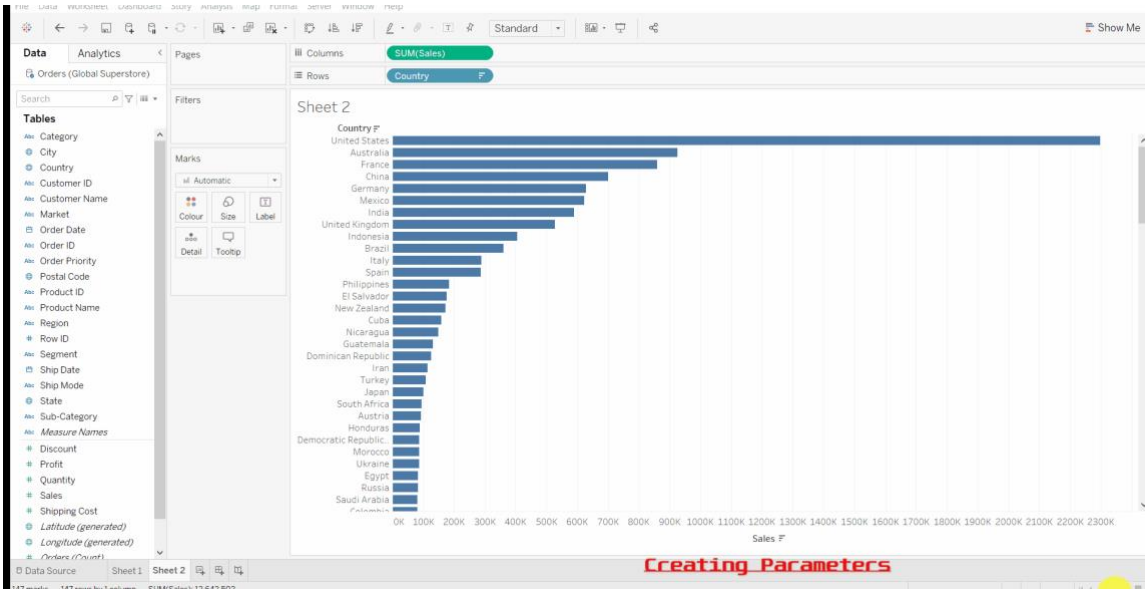


Date-time, calendar is in the form of hierarchy in Tableau, which can be drilled down to year -> quarter ->month -> day by clicking on the "**+**" button on the features tab,

You also can create your own hierarchy like country -> state -> city -> postal code, just by dragging features to another and when needed clicking on '+' button you can drill down further to city, state, postal code.

d. Parameter

A parameter is a workbook variable like a number, date, or string that can be readily managed by the user to replace a constant value in a calculation.



In the above image, our goal was to choose the top **N** countries having maximum sales but here we wanted to let the user select how many top countries they want to list. To accomplish so, we'll need to create the following parameters:

1. Click the down arrow to the right of Dimensions in the Data pane and select Create Parameter from the pop-up menu that appears, as shown in the above image. and give a name **variable1**.
2. Select a data type from the Data Type drop-down menu, in my case, I have chosen to **int** range from 1–100 list and the **current value** will be 5.
3. Click on **show parameter** will show the parameter with a slider. but it hasn't yet connected with any working.

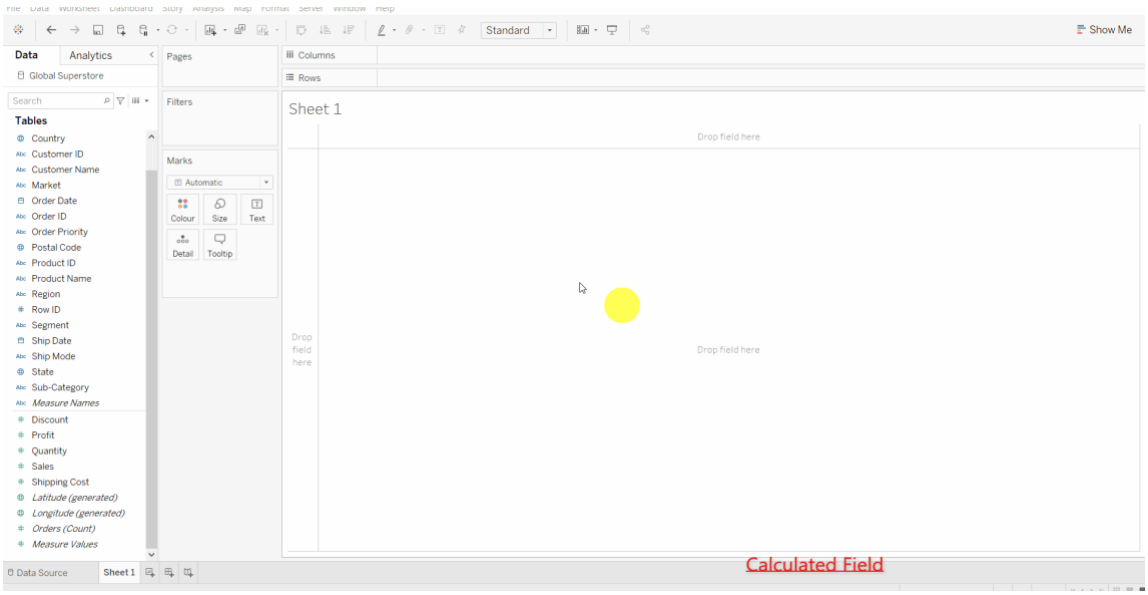
4. Here we wanted to choose top-N countries based on the sales. drag country field to filter shelf and choose **top** tab and then choose **variable1** in **by field section** and choose **SUM(SALES).**
5. Now slide the parameter value and observe the difference.

e . Calculated field

Tableau gives us the option to create a calculated field where we can create our own new field(column). Tableau comes with many functions like if-else, switch, case, date diff, level of dimension which is extensively used for our visualization

- To segment data
- level of details(LOD)
- To change a field's data type, for example, from a string to a date.
- To aggregate data
- handling date time
- To filter results
- To calculate ratios

In Tableau, select **Analysis** > **Create Calculated** Field then we give some rules to create a calculated field and it will create a new field in the data shelf. which we can use by dragging to the axis.



Creating Calculated Field:

Here our goal is to calculate delivery days using order date and ship date:

1. Select **Analysis** > **Create Calculated** Field and give the name **delivery days**
2. Give the Rule to calculate delivery days in the rule box. here we will use the **DATEDIFF** function to subtract two dates.
3. Type Rule: **delivery days = DATEDIFF('day', [shipdate],[order date])**
4. now drag the delivery days field in rows or cols.

f. Format

Formatting in Tableau is very easy. Just click on the format button wherever you want to format. we can format text, numbers, percentage, decimals, date-time format, label color, label size, axis line color, worksheet, columns, header, etc . as shown in the above image.