NANYANG THE INNOVATIVE POLYTECHNIC School of Information Technology

LAB 10: USING PARAMETERS

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Learning Outcome

At the end of this session, learners will be able to:

- Create string parameters with dynamic axis titles
- Use parameters to make views more interactive
- Use parameters to add multiple view to your visualization
- Use parameters to change colors

Data Preparation

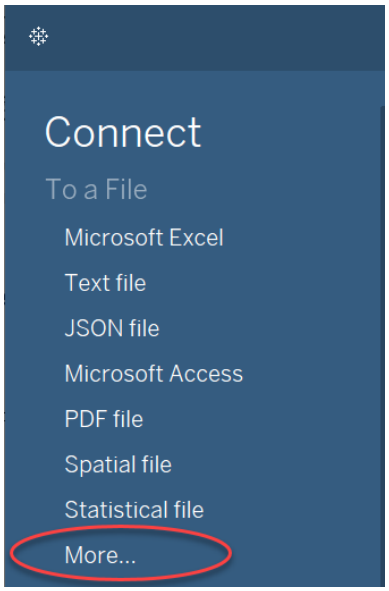
Create a Tableau work book that connect to the **Sample - Superstore Subset (Excel) data source**.

We are going to use this data source for all the tasks of this lab.

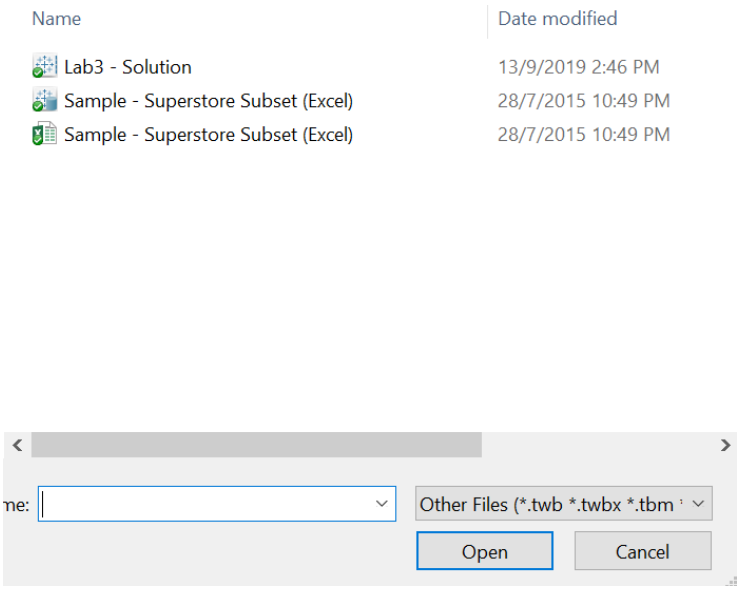
Step 1. Launch Tableau. Under Connect To a File, select **More…**

Step 2. From the file open window, select the **Sample - Superstore Subset (Excel) Tableau Datasource** file.

Step 1



Step 2

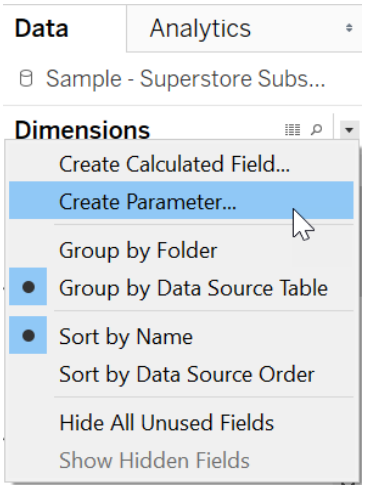


Task 1: Creating String Parameters with Dynamic Title and Axis Labels

In this exercise, you will be creating string parameters that allows users to choose between different fields. User will be allowed to choose between seeing the Sales for each region and Profit for each region. We will use the parameter to change the chart title and axis label based on what field is chosen in the parameter.

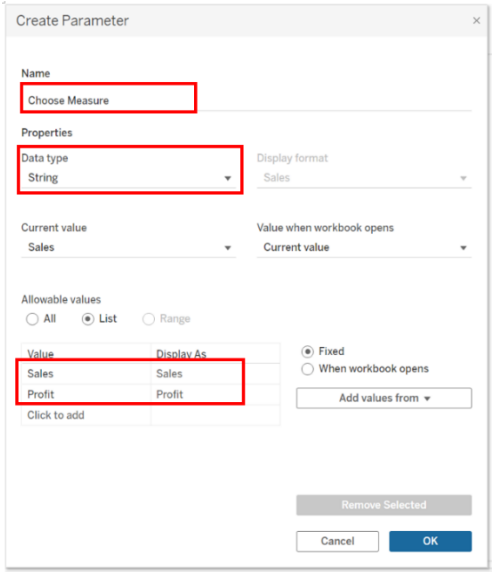
1. Click **Sheet1** tab at the left bottom corner to open the chart designer. Rename it as **Task 1**.

2. Click on the drop-down list near the **Dimensions** pane. Select **Create Parameter**.

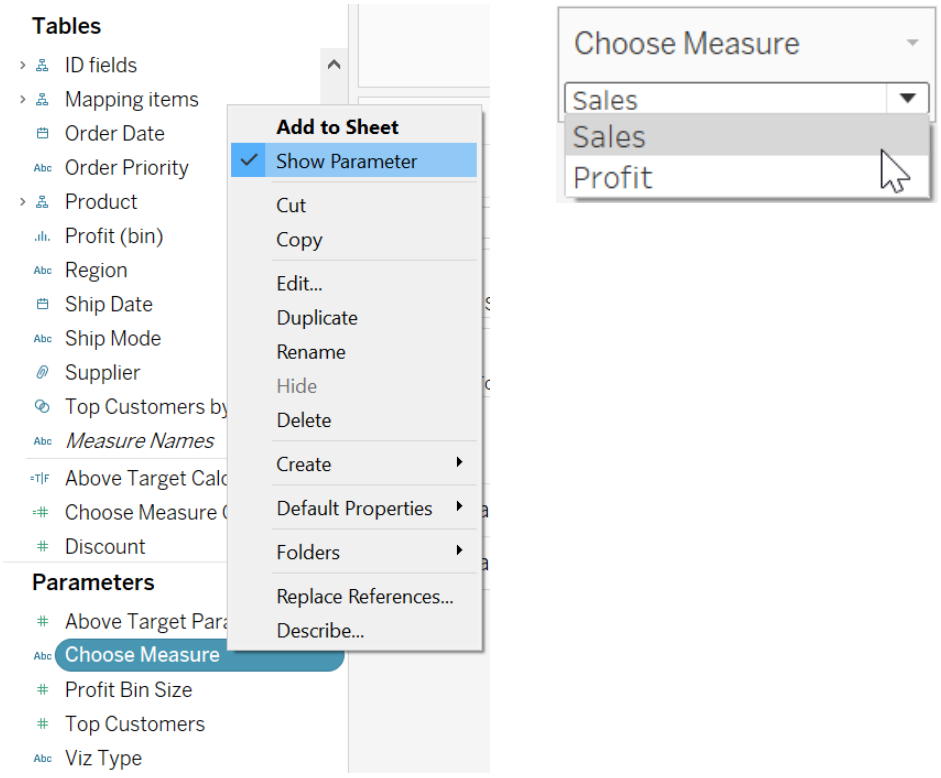


3. Name the Parameter as **Choose Measure**.
   a. Select **String** as **Data type**
   b. Select **List** from the **Allowable values** section
   c. Type in the names of options for the parameter drop-down in the **List of values** section

   Tips: Value are used in our calculation in string while Display As are what the user will see in the drop-down menu.

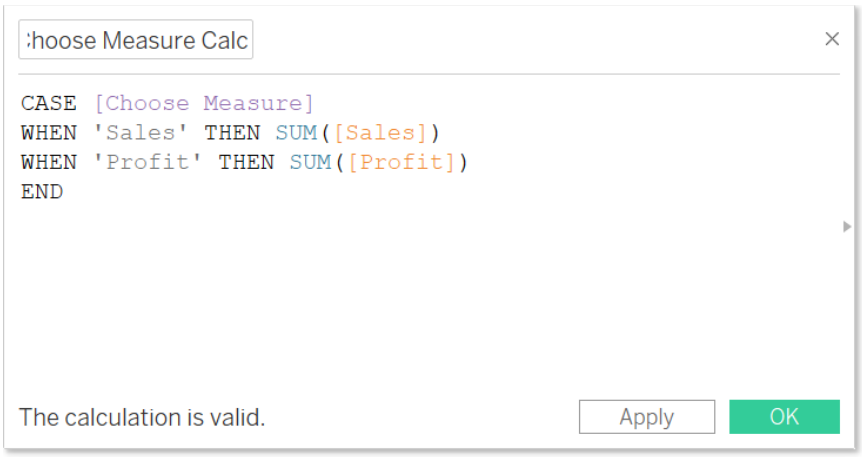


4. In the **Parameters** pane, right-click on **Choose Measure**, select **Show Parameter Control**.

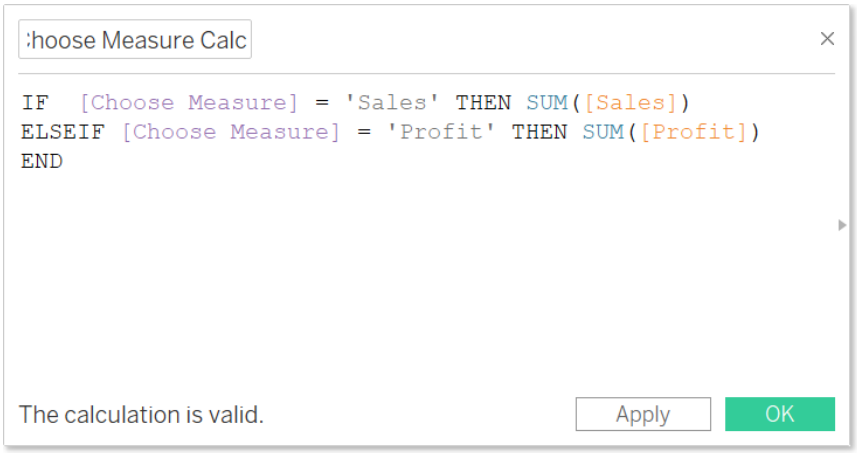


5. Next, we will create a calculation that links the option in the drop-down with your data. Select **Analysis → Create Calculated Field**. Name the field as **Choose Measure Calc** and enter the following formula. You can use **CASE** function or **IF** function, whichever you prefer.

```
CASE [Choose Measure]
WHEN 'Sales' THEN SUM([Sales])
WHEN 'Profit' THEN SUM([Profit])
END
```




```
IF [Choose Measure] = 'Sales' THEN SUM([Sales])
ELSEIF [Choose Measure] = 'Profit' THEN SUM([Profit])
END
```

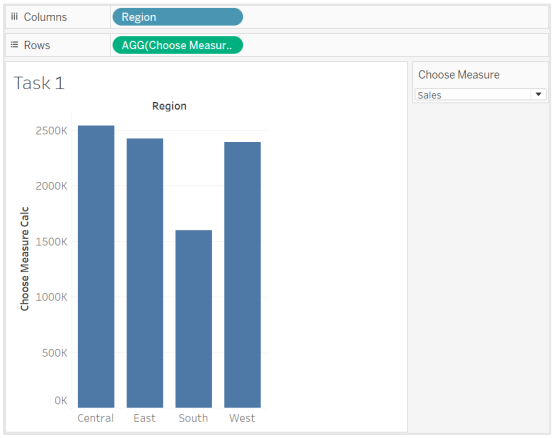


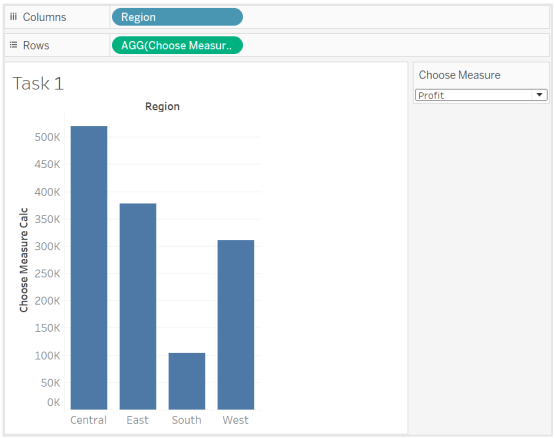
6. Drag and drop **Region** from the **Dimensions** pane into the **Columns** shelf.

7. Drag and drop **Choose Measure Calc** from the **Measures** pane into the **Rows** shelf.

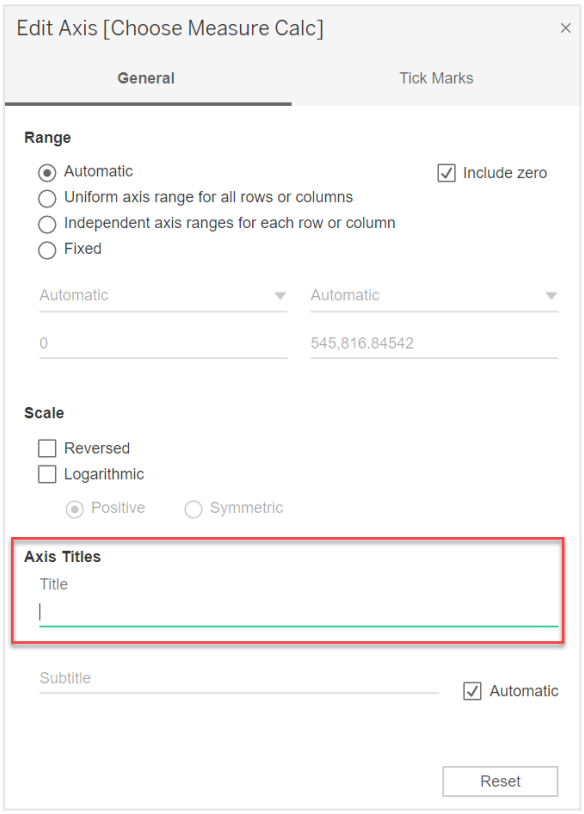
8. You should be able to use the drop-down list on the right to change the measures between **Sales** and **Profit**.

   Sales **Profit**


Columns
Region
Rows
AGG(Choose Measur..
Task 1
Region
Choose Measure
Sales
Choose Measure Calc
2500K
2000K
1500K
1000K
500K
0K
Central
East
South
West

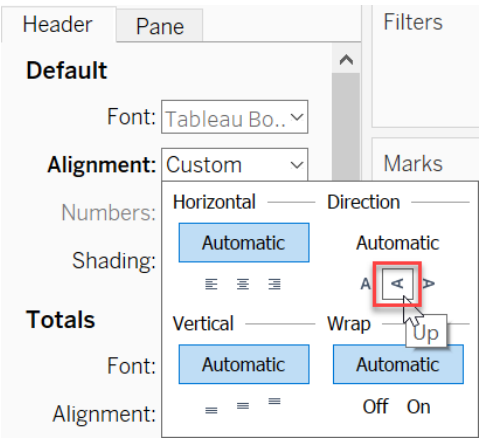

Columns
Region
Rows
AGG(Choose Measur..
Task 1
Region
Choose Measure
Profit
Choose Measure Calc
500K
450K
400K
350K
300K
250K
200K
150K
100K
50K
0K
Central
East
South
West

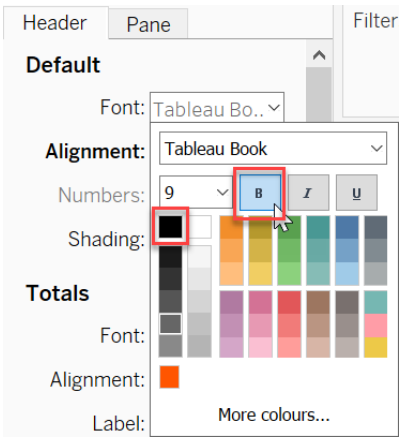
9. Double click the Y axis label and set the **Axis Titles blank**.



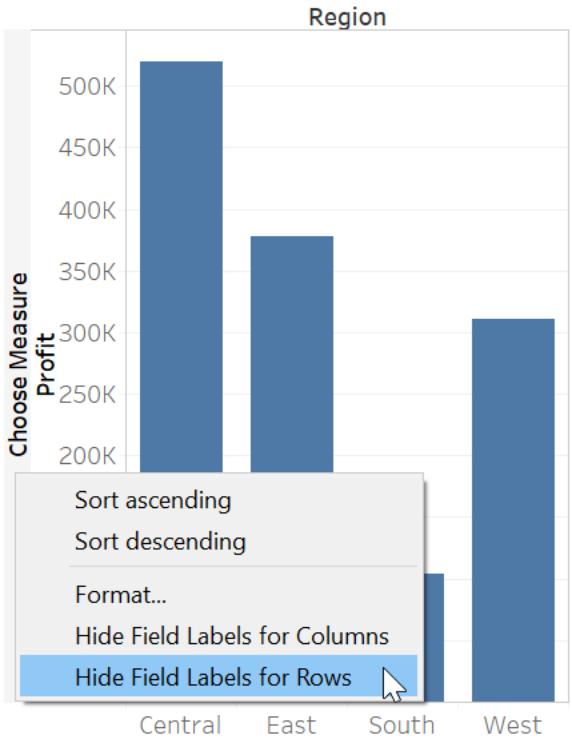
10. Drag and drop **Choose Measure** from the **Parameters** pane and place it on the **AGG(Choose Measure)** in the **Rows** shelf.

11. Right click on the new Y axis title select **Format**. Set the text direction to **Up** and **bold** the text and change the font color to **black**.



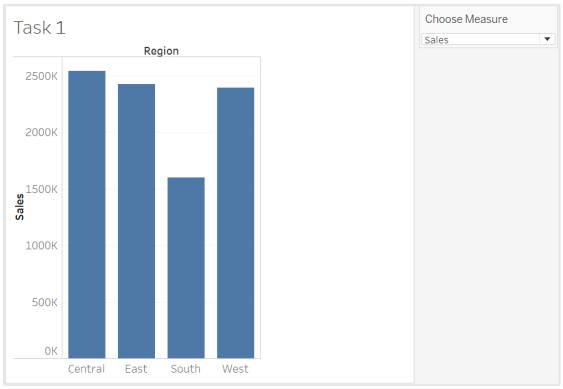


12. Right click on the parameter name in the axis and select **Hide Field Labels for Rows**.

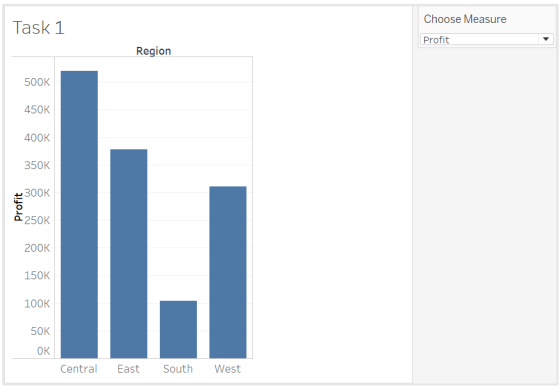


13. You should be able to use the drop-down list on the right to change the measures between **Sales** and **Profit**. Notice that the axis label changes according to your selection.

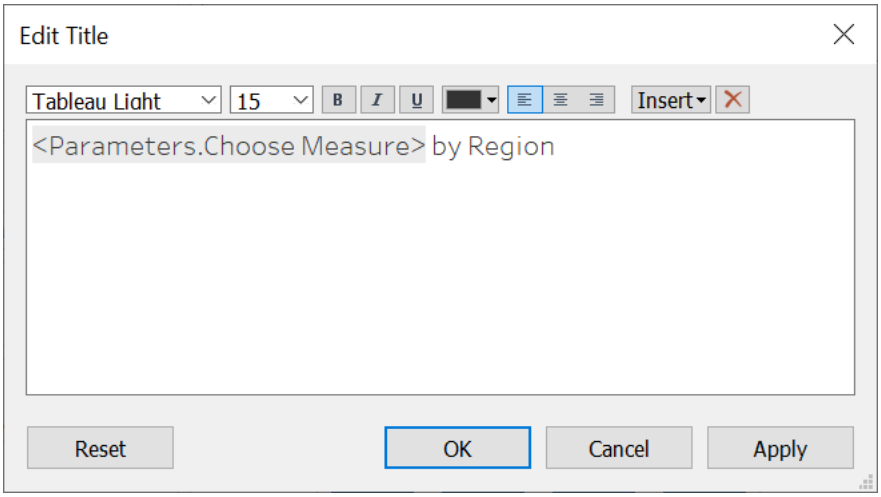
Sales



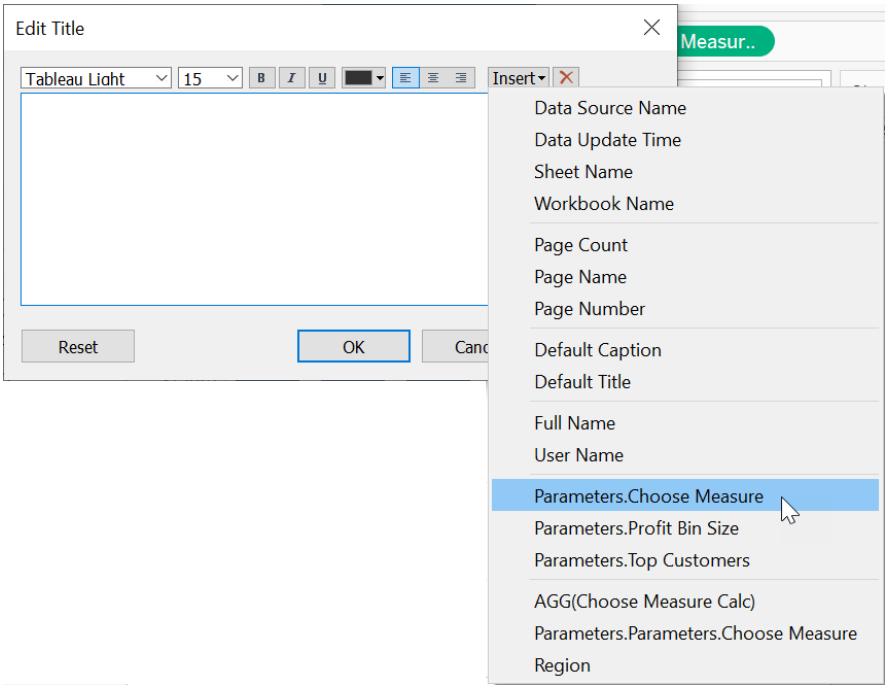
Profit



14. Double click the chart title. Edit the title as follows:

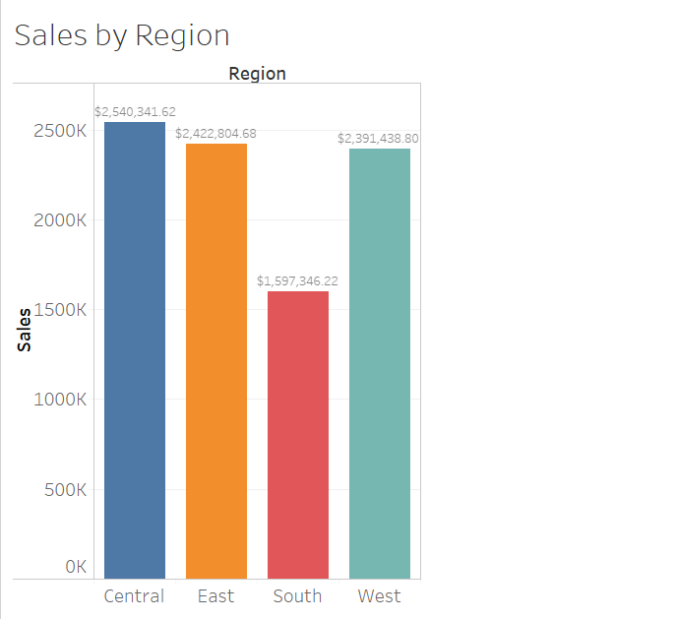


*Tips: you can use the insert drop-down to insert the **Choose Measure** parameter.*

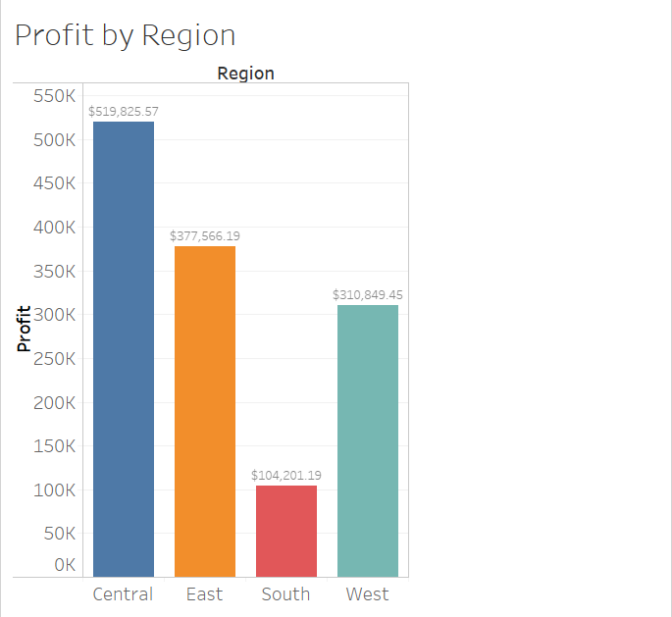


15. Drag region into colour under the Marks card. Your completed chart after some formatting:

Sales



Profit



Adapted from: https://www.thedataschool.co.uk/kolsuma-aktar/creating-string-parameters-with-dynamic-axis-titles/

Task 2: Using Parameters to change Colors

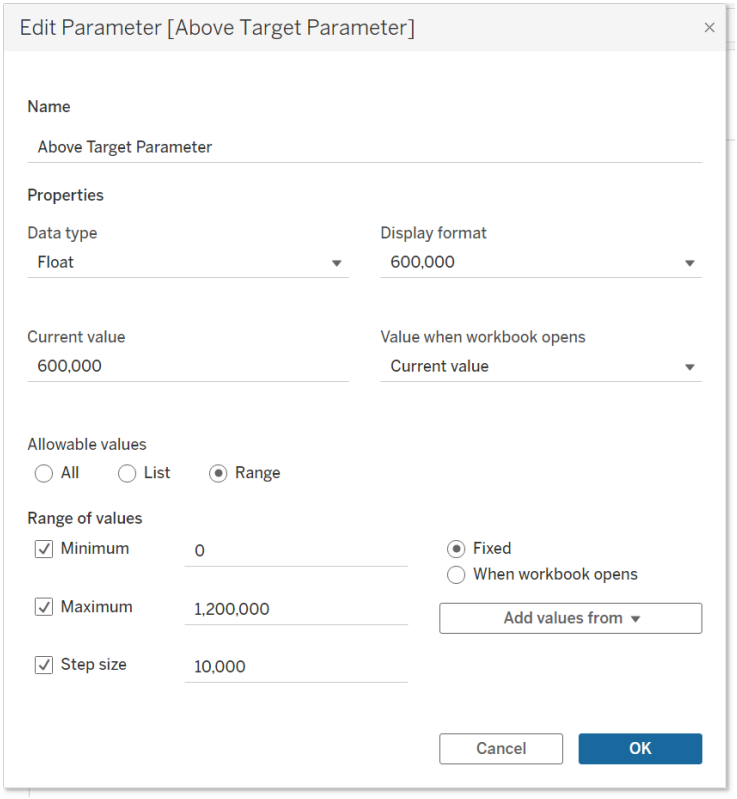
Using parameters is a great way to improve your visualization by allowing users to interact and make their own choices about how you would like to explore the visualization.

In this exercise, you will create a parameter which will automatically change the color of a bar graph depending on whether a target has been met or not. The aim of this visualization is to be able to quickly and easily identify what categories have met their targets.

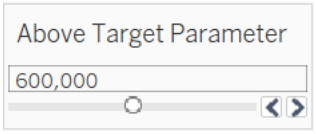
1. Click **New Worksheet** at the bottom left corner to create a new worksheet. Rename it as **Task 2**.

2. Click on the drop-down list near the **Dimensions** pane. Select **Create Parameter**.

3. Name the Parameter as **Above Target Parameter**.
    a. Select **Float** as **Data type**
    b. Set the **Current Value** as **600,000**
    c. Select **Range** from the **Allowable values** section
    d. Set the **Minimum** as **0**, **Maximum** as **1,200,000** and **Step size** as **10,000**

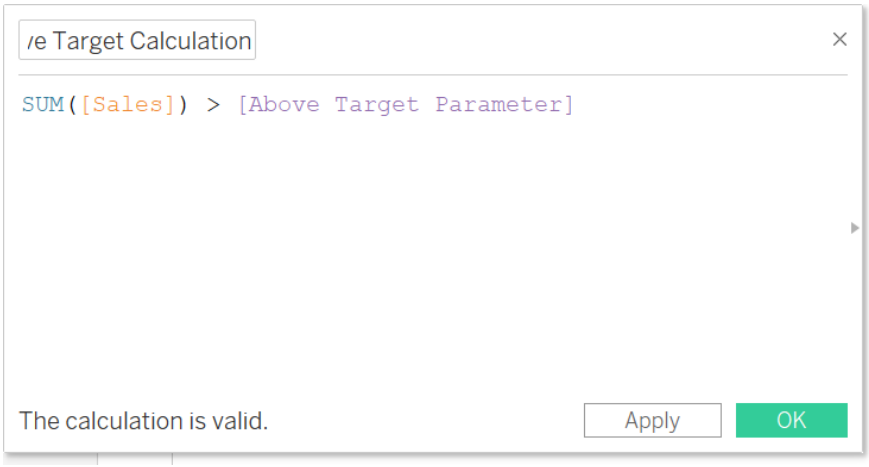


4. In the **Parameters** pane, right-click on **Above Target Parameter**, select **Show Parameter Control**.



5. Next, we will create a calculation that can be used by the parameter. Select **Analysis** → **Create Calculated Field**. Name the field as **Above Target Calculation** and enter the following formula. Within the calculation we need to identify when the **Sales** are greater than the value within the **Above Target Parameter**.

```
SUM([Sales]) > [Above Target Parameter]
```

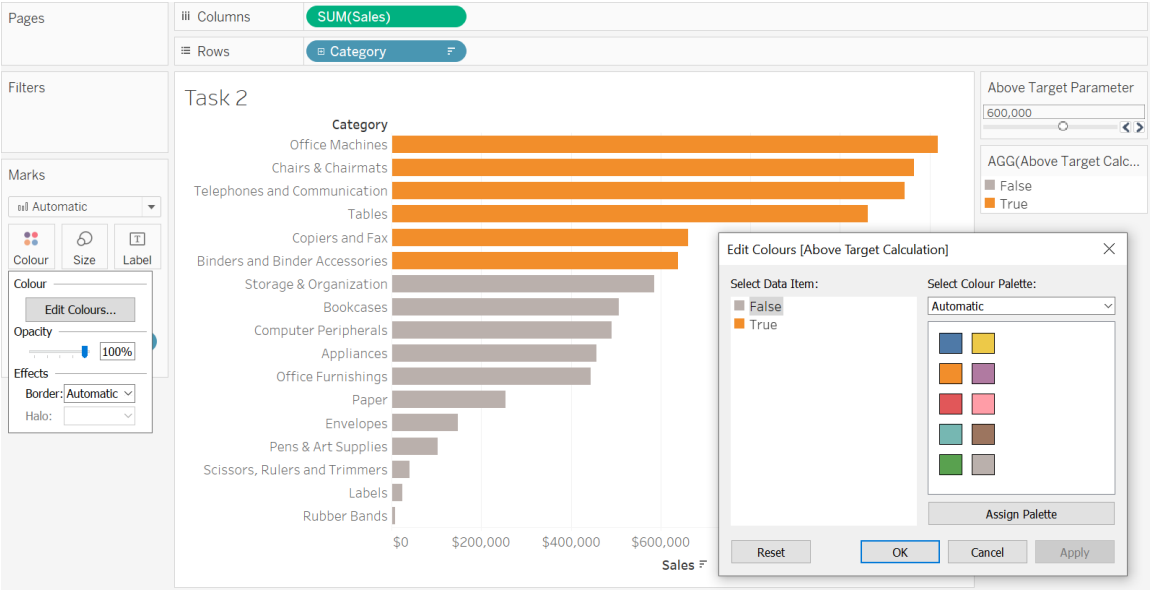


6. Drag and drop **Product** → **Category** from the **Dimensions** pane into the **Rows** shelf.

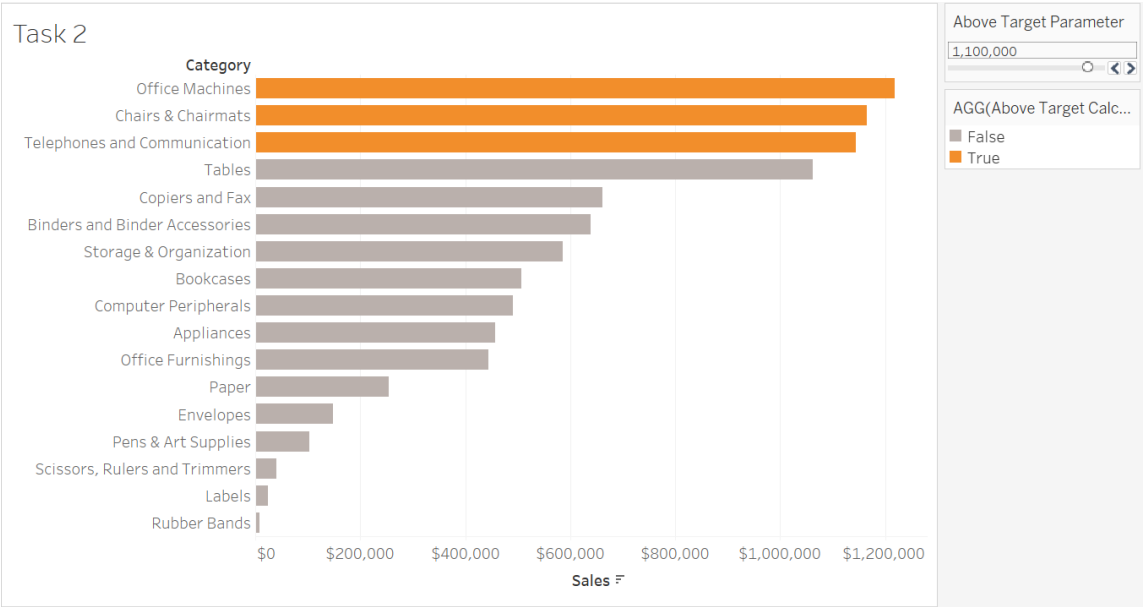
7. Drag and drop **Sales** from the **Measures** pane into the **Column** shelf.

8. Drag and drop the **Above Target Calculation** from the **Measures** pane to the **Color** Marks card, as we want the color of the bars to change depending on the value in our parameter.

9. Click on the Color Marks card to edit the color. Set the **False** data item to **gray** color.

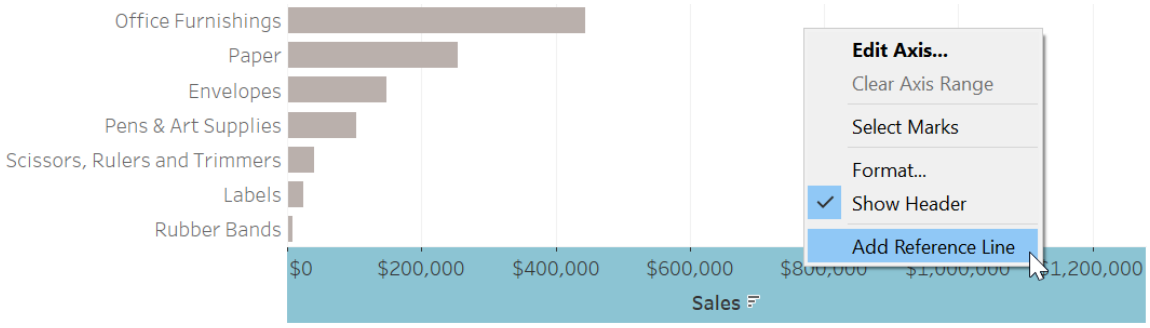


10. You should be able to use the slider on the right to change the above target value. The bar chart will change the color according to the above target value.

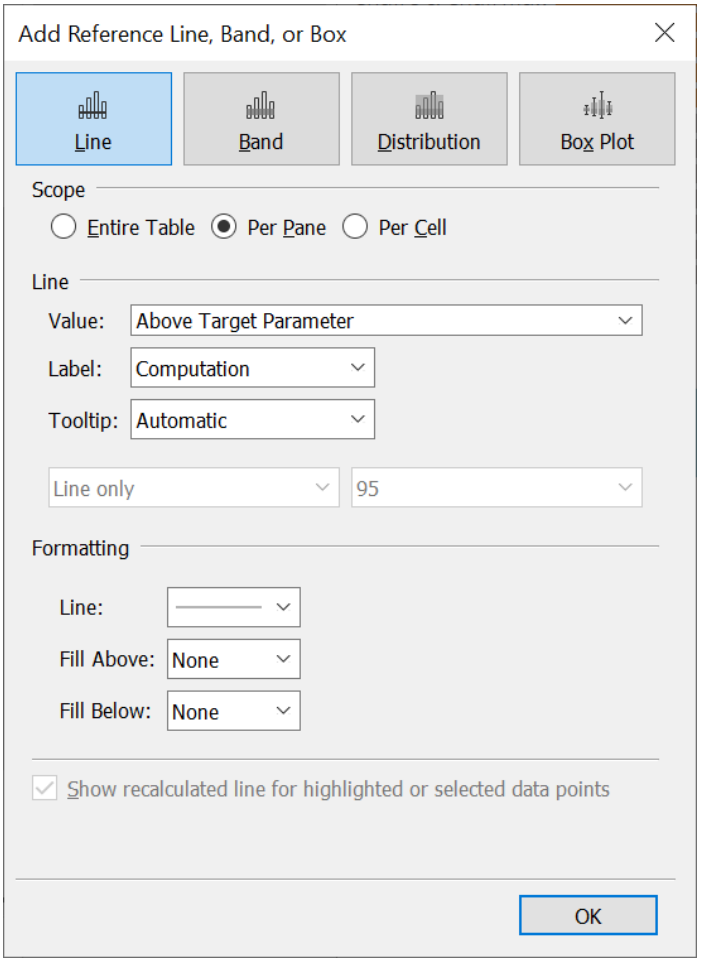


11. To make this even better, we can add a reference line to give even more visual emphasis for the viewer. This again can be linked to the parameter so that when the parameter is adjusted, the reference line will also change to reflect this.

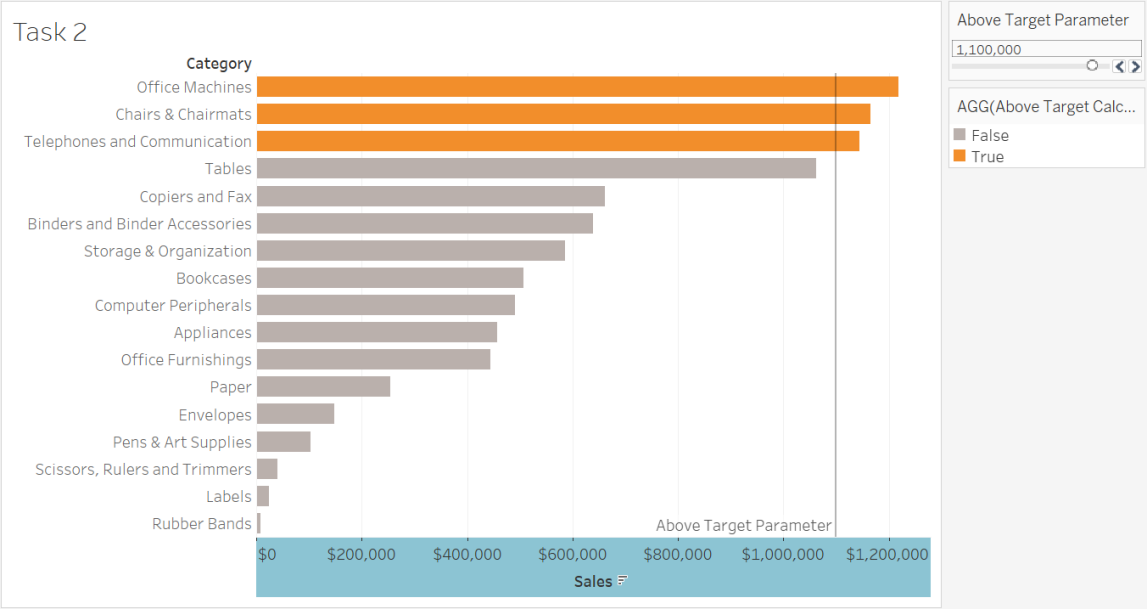
Right-click on the **Sales** axis select **Add Reference Line**.



12. In the Add Reference Line, Band or Box dialog, select **Above Target Parameter (Parameters)** for the Line Value.



13. You can see in the chart, the reference line marking the above target value.



Adapted from: https://www.thedataschool.co.uk/tom-prowse/using-parameters-to-change-colours/

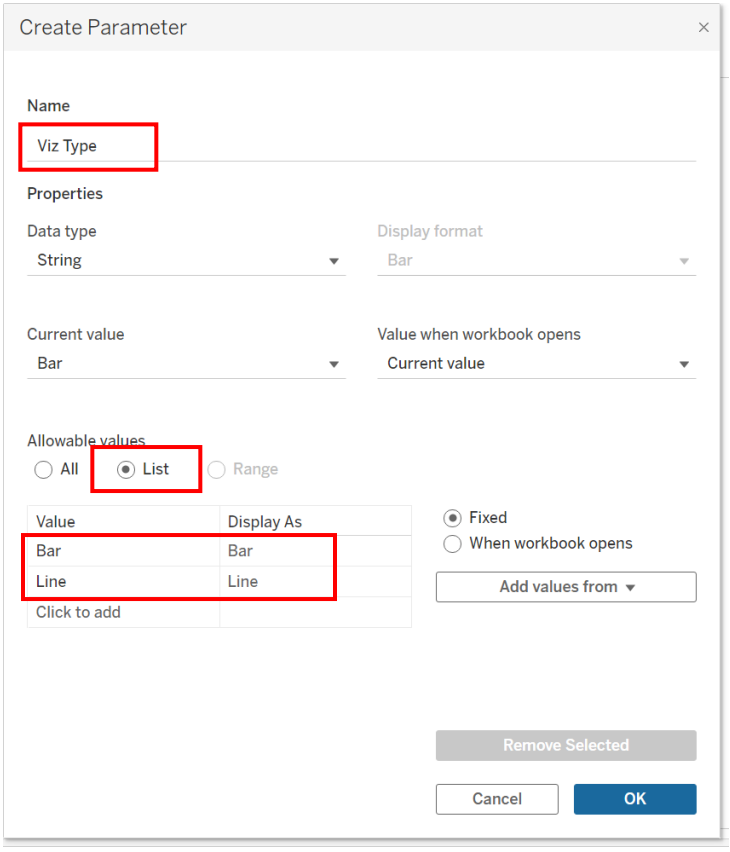
Task 3: Change Chart Type of a Single Chart using Parameter

In this exercise, we will create a single chart that allows the user to choose between a bar chart or a line chart visualization using a parameter.

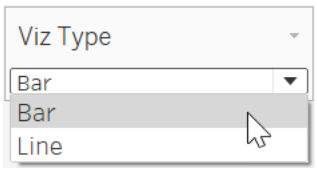
1. Click **New Worksheet** at the bottom left corner to create a new worksheet. Rename it as **Task 3**.

2. Click on the drop-down list near the **Dimensions** pane. Select **Create Parameter**.

3. Name the Parameter as **Viz Type**.
   a. Select **String** as **Data type**
   b. Select **List** from the **Allowable values** section
   c. Type in the names of options for the parameter drop-down in the **List of Values** section



4. In the **Parameters** pane, right-click on **Viz Type**, select **Show Parameter Control**.



5. Next, we will create a calculation that can be used by the parameter. Select **Analysis** → **Create Calculated Field**. Name the field as **Sales Bar** and enter the following formula.

```
IIF([Viz Type]='Bar',[Sales],null)
```

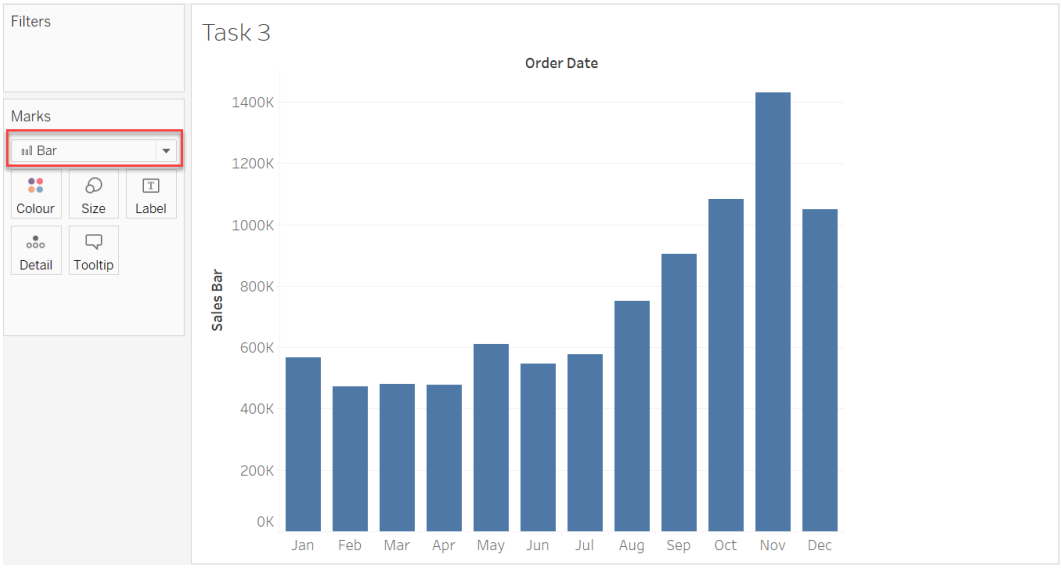
6. Create another calculated field named **Sales Line** with the following formula.

```
IIF([Viz Type]='Line',[Sales],null)
```

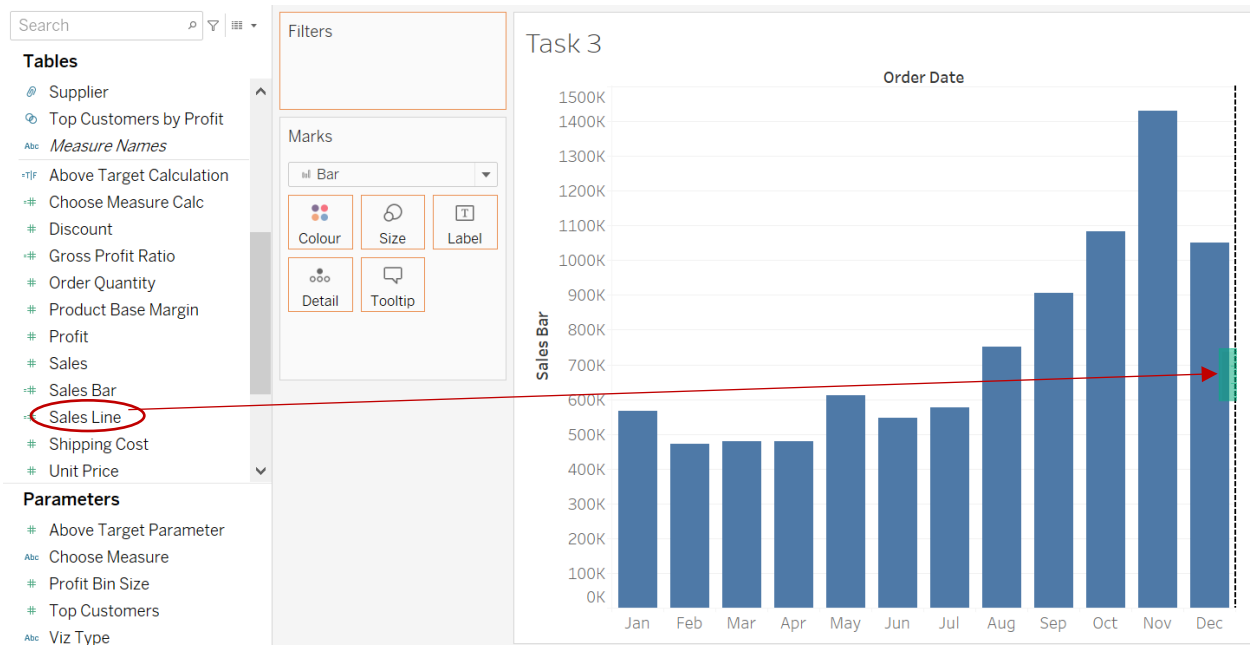
7. From the **Dimensions** pane, drag the **Order Date** field to the **Columns** shelf, and right-click the **YEAR(Order Date)** field, and select **Month**.

8. Drag and drop **Sales Bar** from the **Measures** pane into the **Rows** shelf.
9. In the Marks card, change the type to **Bar**. Right-click the **MONTH(Order Date)** field, and click **Format**.

10. In the Format window, next to **Dates**, select **Abbreviation** to display the month name with three letters

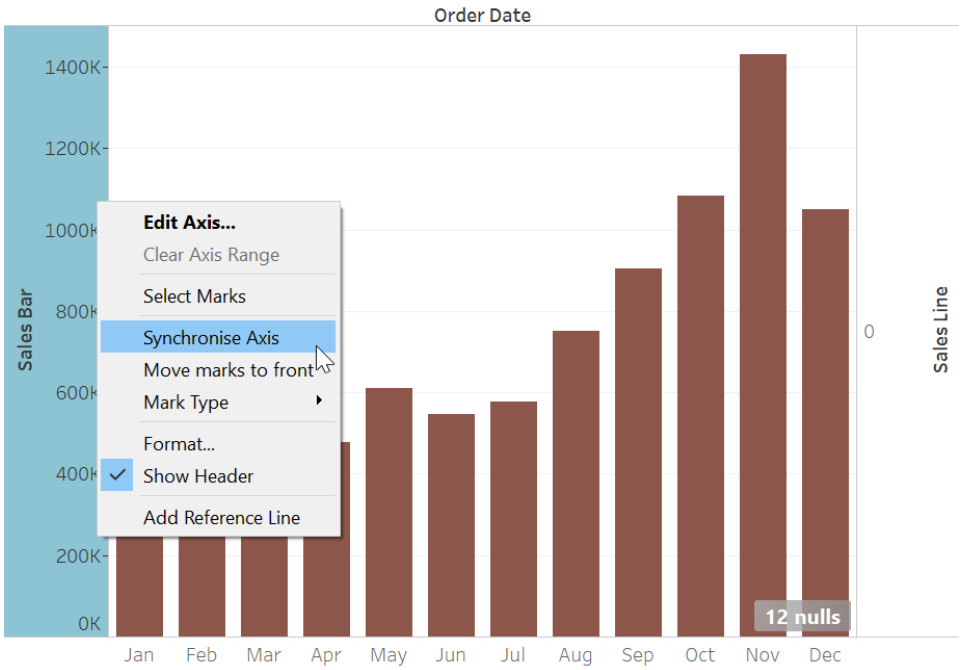


11. From the **Dimensions** pane, drag **Sales Line** and place it to the right of bar chart when you see the dotted vertical line to create a dual axis chart.

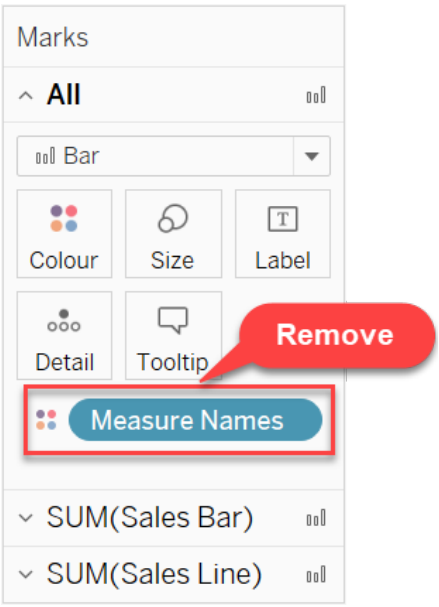


Notice that the bars have changed color and the secondary axis only shows zero.

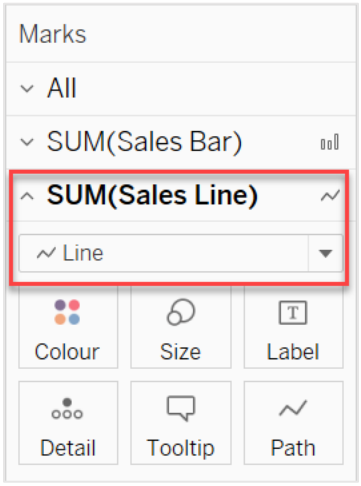
12. To fix the axis scale, align the two axes by right-click the dual axis and select **Synchronize Axis**.



13. To fix the color, make sure you have selected the **All** on the Marks card. Remove **Measure Names** from the **Color** shelf.



14. Change the Mark type for the secondary axis to a line. Make sure you have selected **SUM(Sales Line)** on the Marks card, select **Line** for the type.

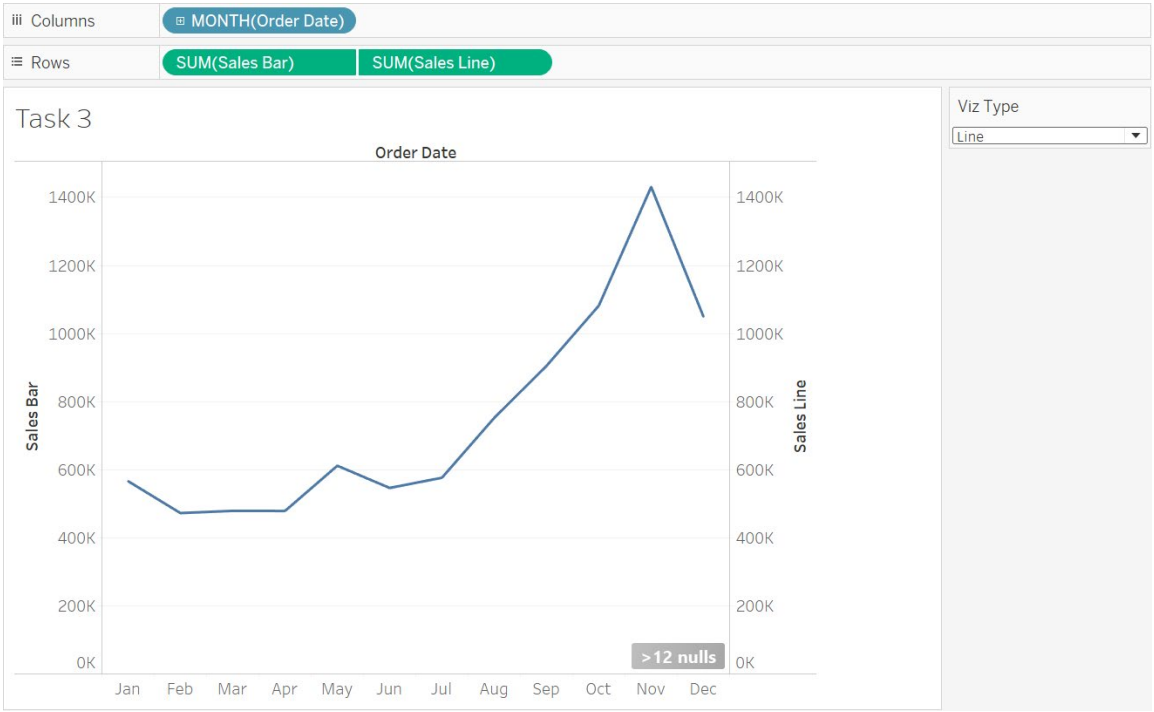


15. You should be able to use the drop-down list on the right to change the chart type between **Bar** and **Line**.

Bar


Columns
MONTH(Order Date)
Rows
SUM(Sales Bar)
SUM(Sales Line)
Task 3
Order Date
Sales Bar
Sales Line
1400K
1200K
1000K
800K
600K
400K
200K
0K
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
>12 nulls
Viz Type
Bar

Line



Adapted from: http://www.vizwiz.com/2013/10/tableau-tip-change-chart-type-of-single.html