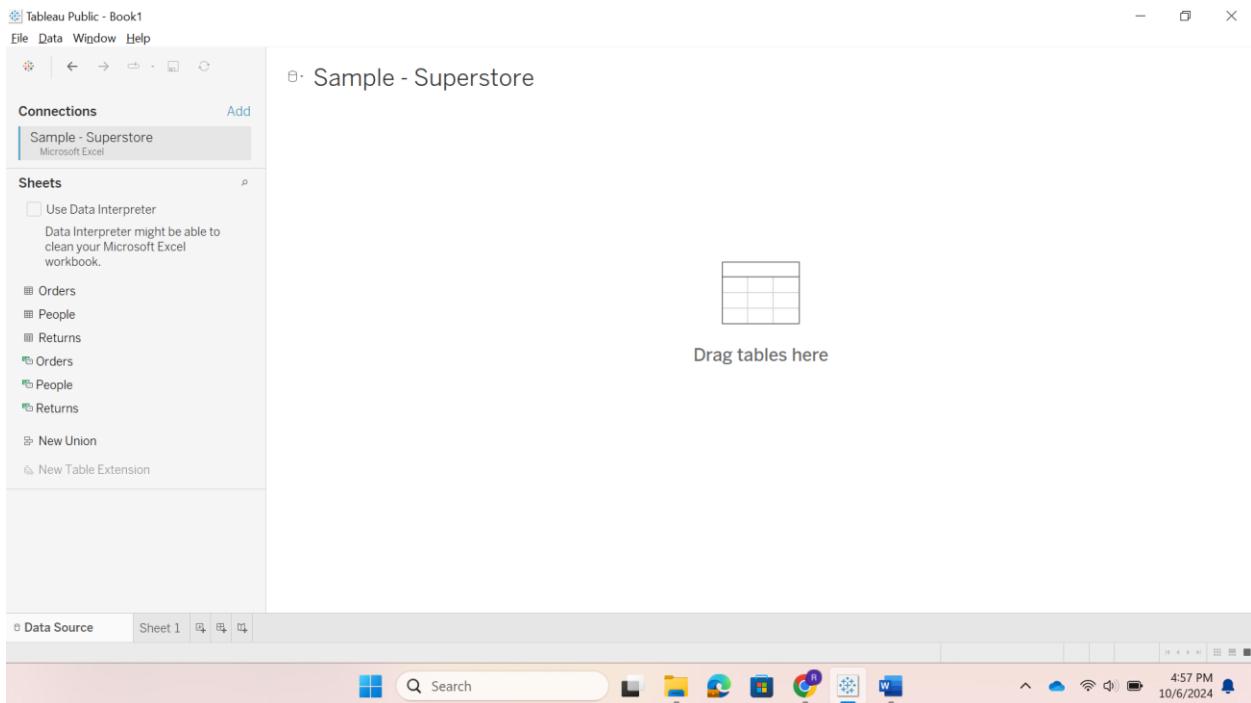


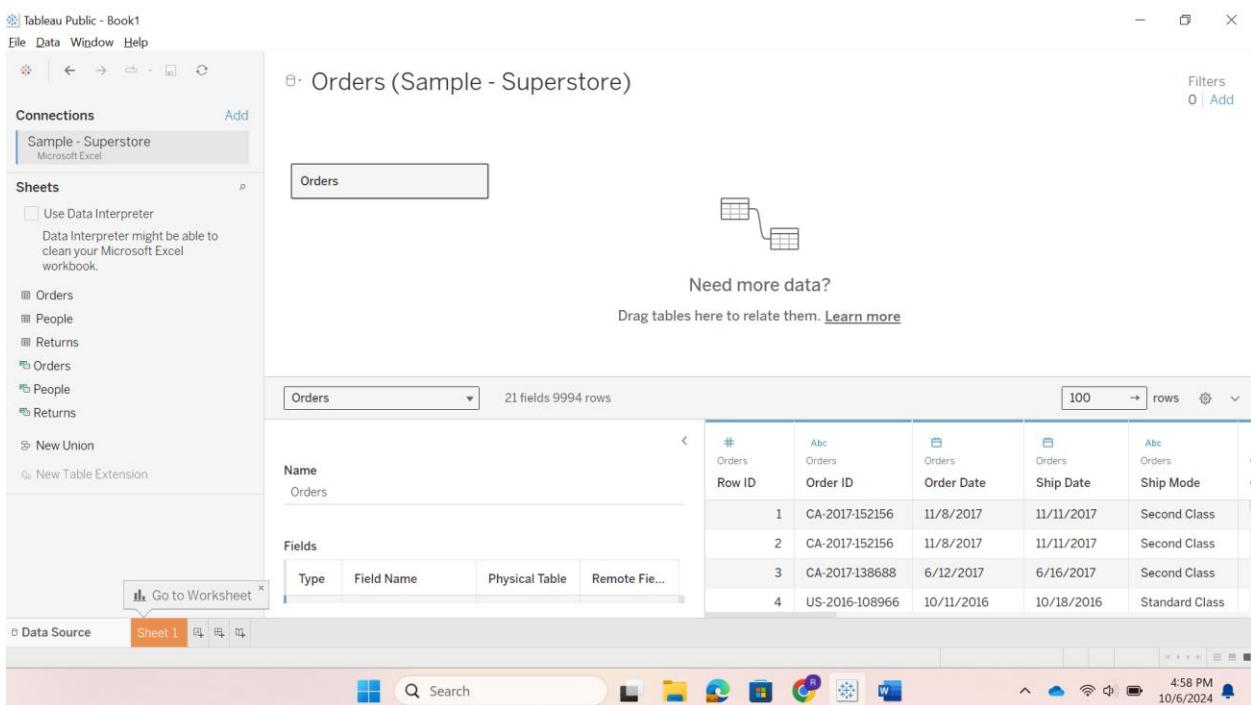
TABLEAU

Task1:

Step1: Download the **Sample-Superstore** Excel File and Connect to the Data.



Step2: In the Data Source tab, drag the Orders table from the left pane to the data canvas.



Step3: Double click on the Orders table box to display the Orders table.

The screenshot shows the Tableau Public interface. On the left, the Connections pane shows 'Sample - Superstore' is connected via Microsoft Excel. The Sheets pane lists 'Orders', 'People', 'Returns', and others. A tooltip 'Go to Worksheet' points to the 'Orders' entry. The main workspace displays the 'Orders (Sample - Superstore)' view. It shows that 'Orders' is made of 1 table, containing 21 fields and 9994 rows. A preview table shows columns: Row ID, Order ID, Order Date, Ship Date, and Ship Mode. The data starts with row 1: CA-2017-152156, 11/8/2017, 11/11/2017, Second Class. The bottom status bar shows the date as 10/6/2024 and the time as 4:58 PM.

Step4: Next, drag the Returns table onto the canvas and drop it near the Orders table.

The screenshot shows the Tableau Public interface after joining the 'Returns' table to the 'Orders' table. The main workspace displays the 'Orders+ (Sample - Superstore)' view. It shows that 'Orders' is now made of 2 tables: 'Orders' and 'Returns'. The preview table shows 23 fields and 3226 rows. The data starts with row 19: CA-2015-143336, 8/27/2015, 9/1/2015, Second Class. The bottom status bar shows the date as 10/6/2024 and the time as 4:59 PM.

Step5: Tableau will prompt you with a **Join** configuration window. Ensure the join is set on the **Order ID** field. Select **Left Join**. Confirm the join and review the preview of the joined data to ensure the **Order ID** fields match.

Tableau Public - Book1

File Data Window Help

Connections Add

Sample - Superstore Microsoft Excel

Sheets

Use Data Interpreter
Data Interpreter might be able to clean your Microsoft Excel workbook.

Orders People Returns Orders People Returns

New Union New Table Extension

Go to Worksheet

Data Source Sheet 1

Orders is made of 2 tables. ⚭

Orders — Returns

Join

- Inner
- Left
- Right
- Full Outer

Data Source Returns

Order ID = Order ID ...

Add new join...

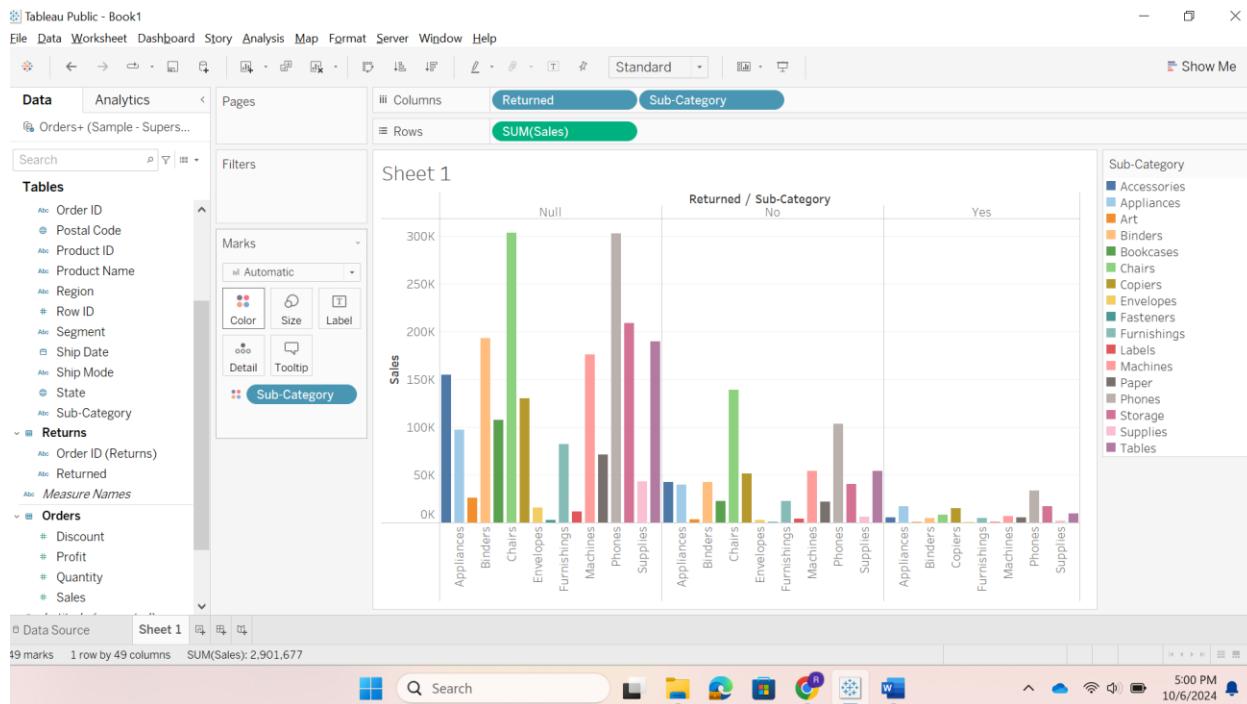
Orders 23 fields 12420 rows

#	Orders	Abs Orders	Orders	Orders	Abs Orders
Row ID	Order ID	Order Date	Order Date	Ship Date	Ship Mode
1	CA-2017-152156	11/8/2017	11/11/2017	Second Class	
2	CA-2017-152156	11/8/2017	11/11/2017	Second Class	
3	CA-2017-138688	6/12/2017	6/16/2017	Second Class	
4	US-2016-108966	10/11/2016	10/18/2016	Standard Class	

Search 4:59 PM 10/6/2024

Step6: Go to Sheet 1 to start building your visualization.

Drag the Sales field from the Orders table onto the Rows shelf. Drag Returned and Sub-category from the Returns and Orders table onto the Columns shelf. Drag the Sub-category to the Color shelf in the Marks card.

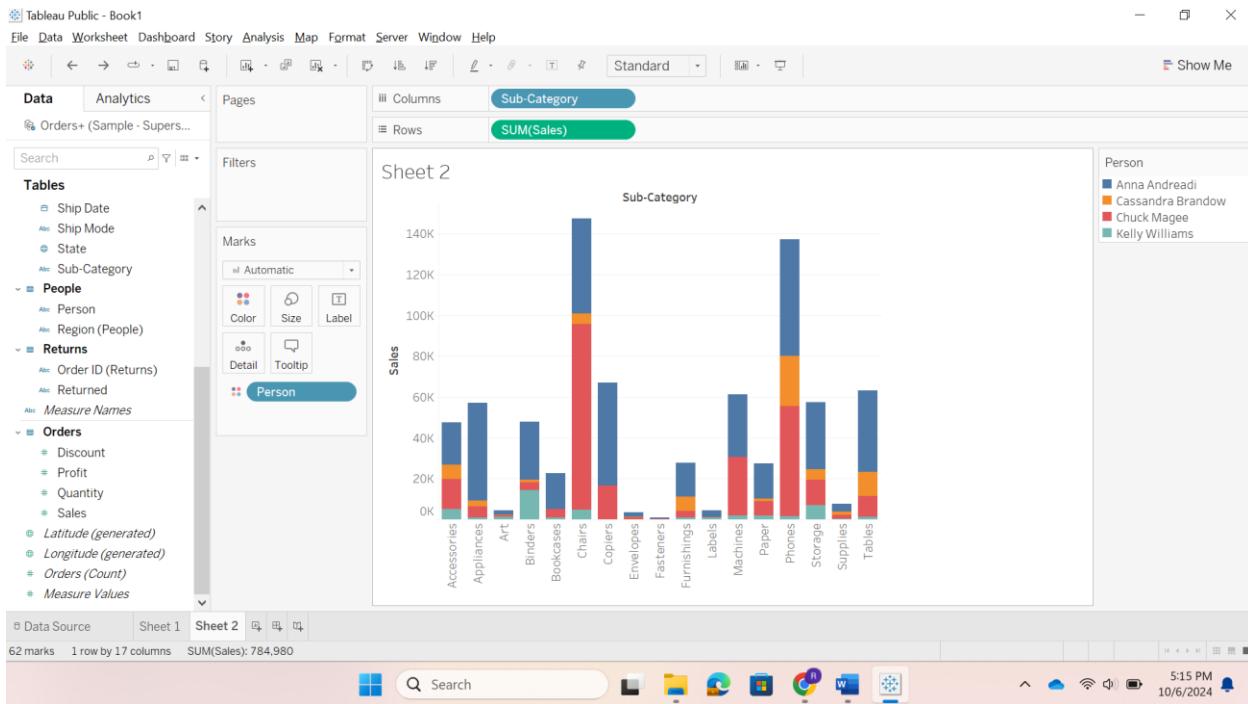


The chart breaks down sales by sub-category (Appliances, Chairs, etc.) and whether those items were returned (Yes, No, or Null for missing data in the Returns field). Each bar's color represents a different sub-category of products. The chart includes both returned and not returned items, enabling easy comparison of how returns affect sales per sub-category.

Step 7: Go back again to the Data Source Tab. Drag the **People** table from the left pane to the data canvas. Ensure the join is set on the **Customer Name** from **Orders** and **Person** from **People**. Select **Inner Join**.

The screenshot shows the Tableau Public interface with the 'Data Source' tab selected. On the left, the 'Connections' pane shows 'Sample - Superstore' is connected. The 'Sheets' pane lists 'Orders', 'People', 'Returns', 'Orders', 'People', and 'Returns'. A note about 'Use Data Interpreter' is present. The main workspace shows the 'Orders' table with 12420 rows. A join dialog is open between 'Orders' and 'People' tables, with 'Inner' selected. The 'People' table is also listed in the data preview area, which shows columns like Row ID, Order ID, Order Date, Ship Date, and Ship Mode. The bottom status bar shows the date and time as 10/9/2024 at 5:45 PM.

Step 8: Go to **Sheet 2** to start building your visualization. Drag the **Sales** field from the **Orders** table onto the **Rows** shelf. Drag **Sub-category** from the **Orders** table onto the **Columns** shelf. Drag the **Person** from the **People** table to the **Color** shelf in the **Marks** card.



The above visualization displays total sales data broken down by product sub-categories (e.g., Tables, Appliances, Chairs) and further segmented by individual salespersons. Each stacked bar represents the sum of sales for a sub-category, with different colors showing contributions from different persons. Notably, sub-categories like Storage and Chairs dominate in total sales, with certain individuals contributing more significantly to those categories. In contrast, smaller categories like Fasteners have relatively low sales figures. The visual breakdown reveals key insights into product performance and team contribution, suggesting potential areas for sales optimization and resource allocation.

Question 1:

Analyze the Impact of Joins. Switch between different types of joins (e.g., Inner Join, Left Join, Right Join, Full Outer Join) and analyze how the visualizations change.

Tableau Public - Book1

File Data Window Help

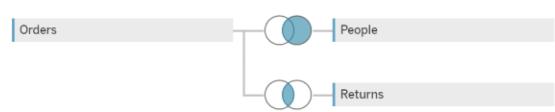
Connections Add

Sample - Superstore Microsoft Excel

Sheets

Use Data Interpreter
Data Interpreter might be able to clean your Microsoft Excel workbook.

- Orders
- People
- Returns
- Orders
- People
- Returns
- New Union
- New Table Extension

Orders is made of 3 tables. 

Orders 25 fields 3226 rows 100 rows

#	Orders	Abs Orders	Orders	Orders	Abs Orders
Row ID	Order ID	Order Date	Order Date	Ship Date	Ship Mode
19	CA-2015-143336	8/27/2015	8/27/2015	9/1/2015	Second Class
19	CA-2015-143336	8/27/2015	8/27/2015	9/1/2015	Second Class
19	CA-2015-143336	8/27/2015	8/27/2015	9/1/2015	Second Class
20	CA-2015-143336	8/27/2015	8/27/2015	9/1/2015	Second Class

Data Source T1.1 T1.1 (2) T1.2 

Search 5:56 PM 10/9/2024

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Data Analytics < Show Me

Orders+ (Sample - Superstore)

Pages Columns Returned Sub-Category

Rows SUM(Sales)

Search 

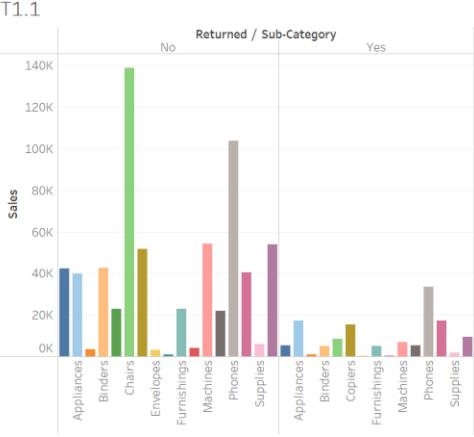
Tables Ship Date Ship Mode State Sub-Category People Person Region (People) Returns Order ID (Returns) Returned Measure Names Orders Discount Profit Quantity Sales Latitude (generated) Longitude (generated) Orders (Count) Measure Values

Marks Automatic Color Size Label Detail Tooltip Sub-Category

Filters

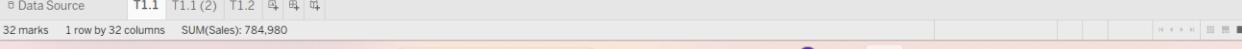
T1.1 Returned / Sub-Category No Yes

Sales



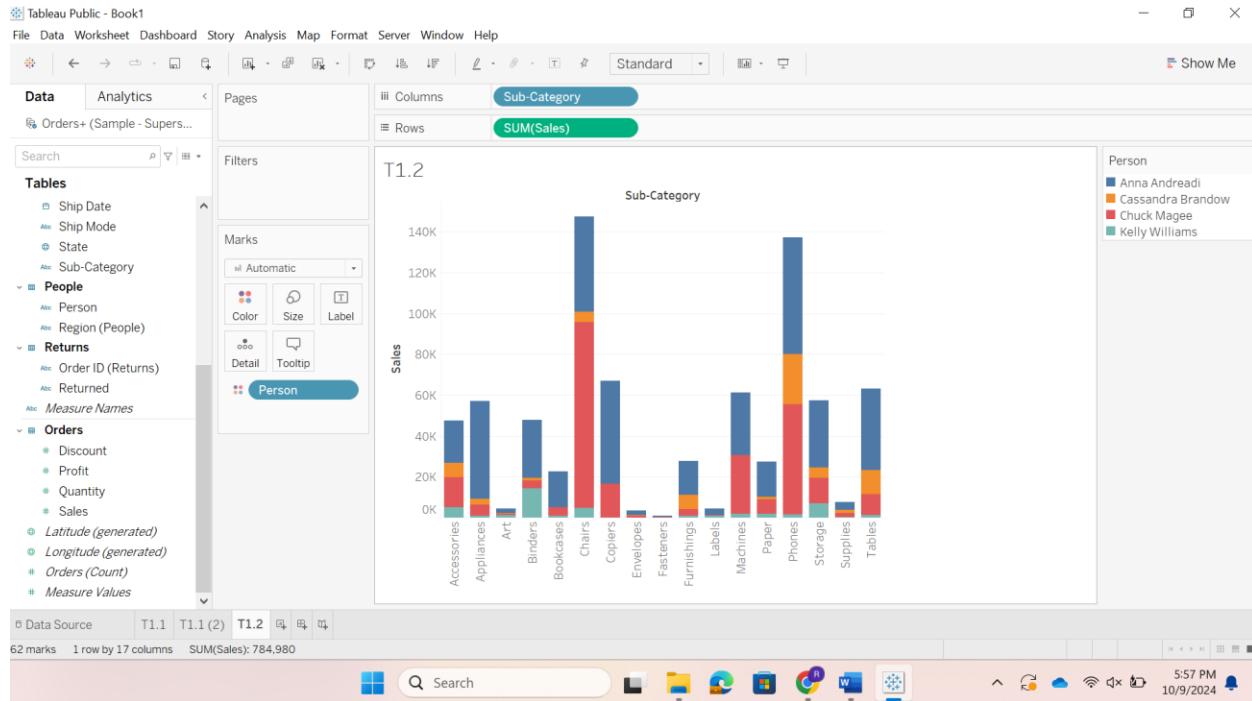
Sub-Category

- Accessories
- Appliances
- Art
- Binders
- Bookcases
- Chairs
- Copiers
- Envelopes
- Fasteners
- Furnishings
- Labels
- Machines
- Paper
- Phones
- Storage
- Supplies
- Tables

Data Source T1.1 T1.1 (2) T1.2 

32 marks 1 row by 32 columns SUM(Sales): 784,980 5:56 PM 10/9/2024

Search 



Explanation:

Here, I have put a inner join between Orders and Returns and a Right join between Orders and People. The visualization changes, and the number of observation reduces compared to the relations in question 1. When there is a left join between Orders and Returned, Null value answers were also displayed in the column chart, but after changing it to Right join, all the null values are not taken.

TASK 2

Step1: Download the "Superstore" Excel file. Open Tableau and connect to the Excel data source.

Tableau Public - Book2

File Data Window Help

Connections Add

Superstore-1 Microsoft Excel

Sheets Orders New Union New Table Extension

Orders (Superstore-1)

Filters 0 | Add

Orders 21 fields 9994 rows 100 → rows

Name Orders

Fields Type Field Name Physical Table Remote File...

Go to Worksheet

Data Source Sheet 1

Search 5:19 PM 10/6/2024

Step2: In a new worksheet, click on the drop-down arrow next to the View Data, and then select **Create Parameter** to open the parameter creation dialog box.

Tableau Public - Book2

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Data Analytics < Pages Columns Rows

Orders (Superstore-1)

Create Calculated Field... Create Parameter... Group by Folder Group by Data Source Table Sort by Name Sort by Data Source Order Hide All Unused Fields Show Hidden Fields Expand All Collapse All

Abs: Region # Row ID Abs: Segment □ Ship Date Abs: Ship Mode □ State Abs: Sub-Category Abs: Measure Names

Discount # Profit

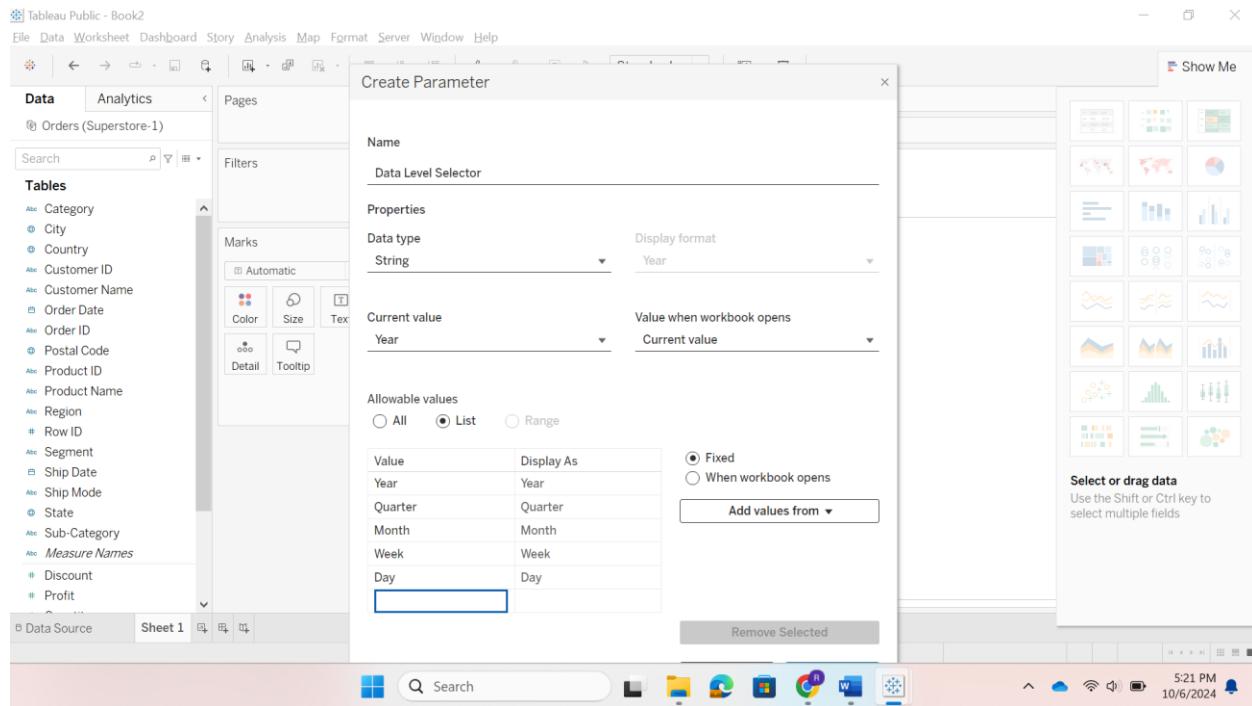
Drop field here Drop field here

Select or drag data Use the Shift or Ctrl key to select multiple fields

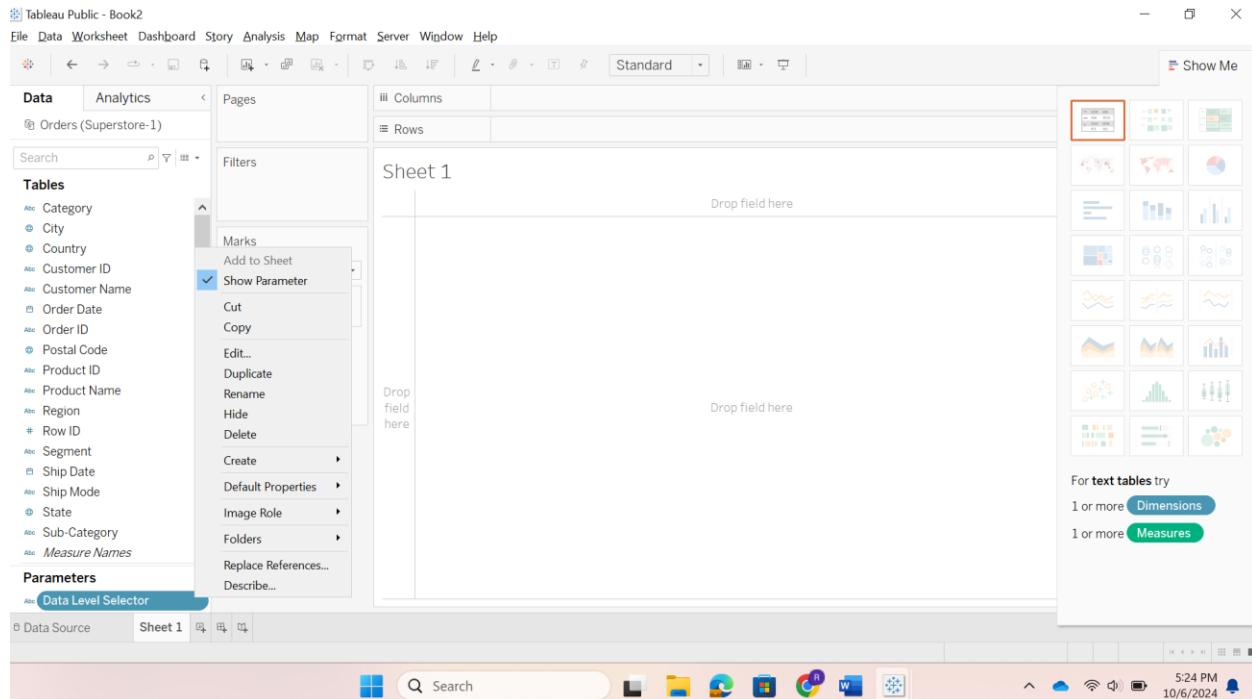
Data Source Sheet 1

Search 5:20 PM 10/6/2024

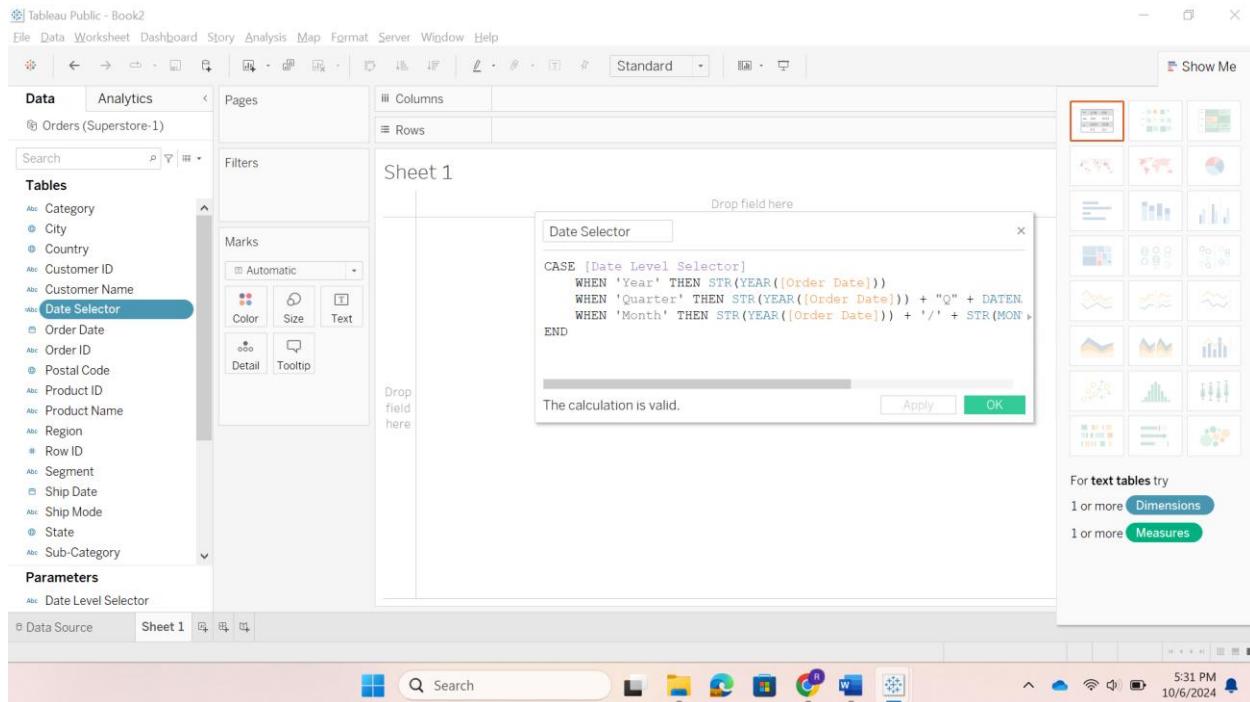
Step3: Enter the parameter name, choose the data type, and select 'List' for allowable values. Then, input the specific values you want to include in the parameter. Click ok.



Step4: You can now see the newly created parameter, listed under the Parameters section. Click on show Parameter as shown below.

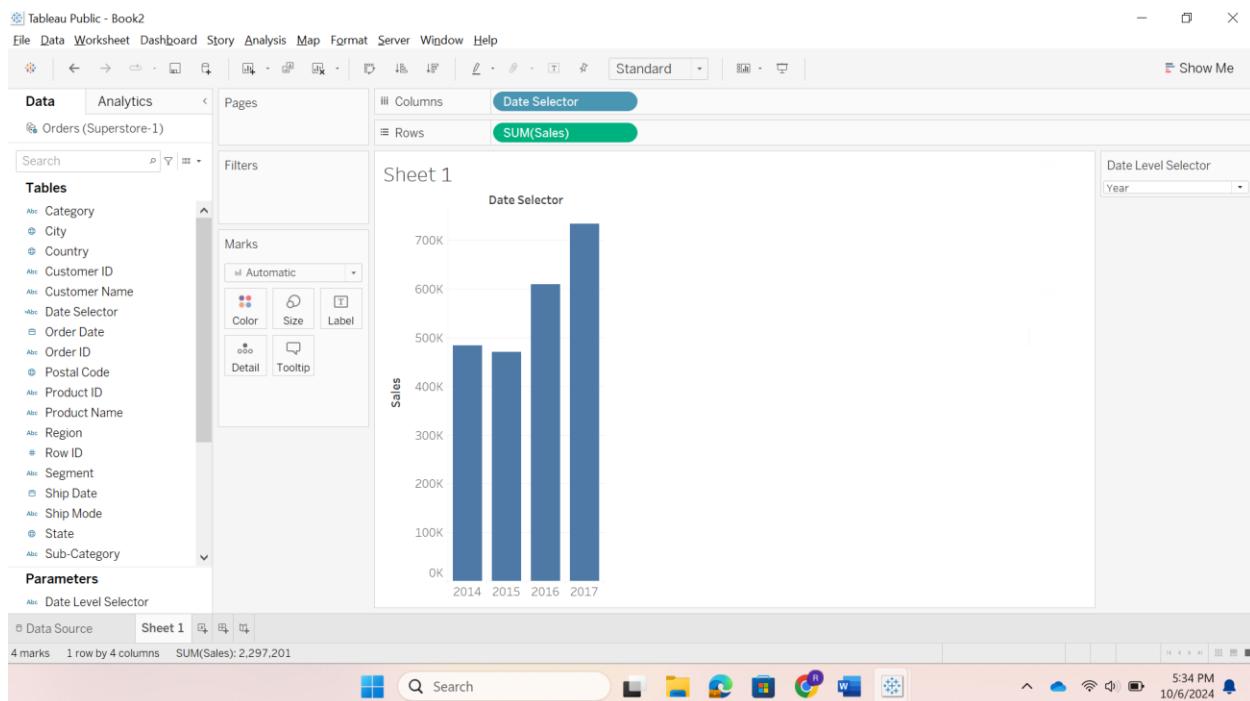


Step5: Next, create a new calculated field named **Date Selector** and enter the following function:

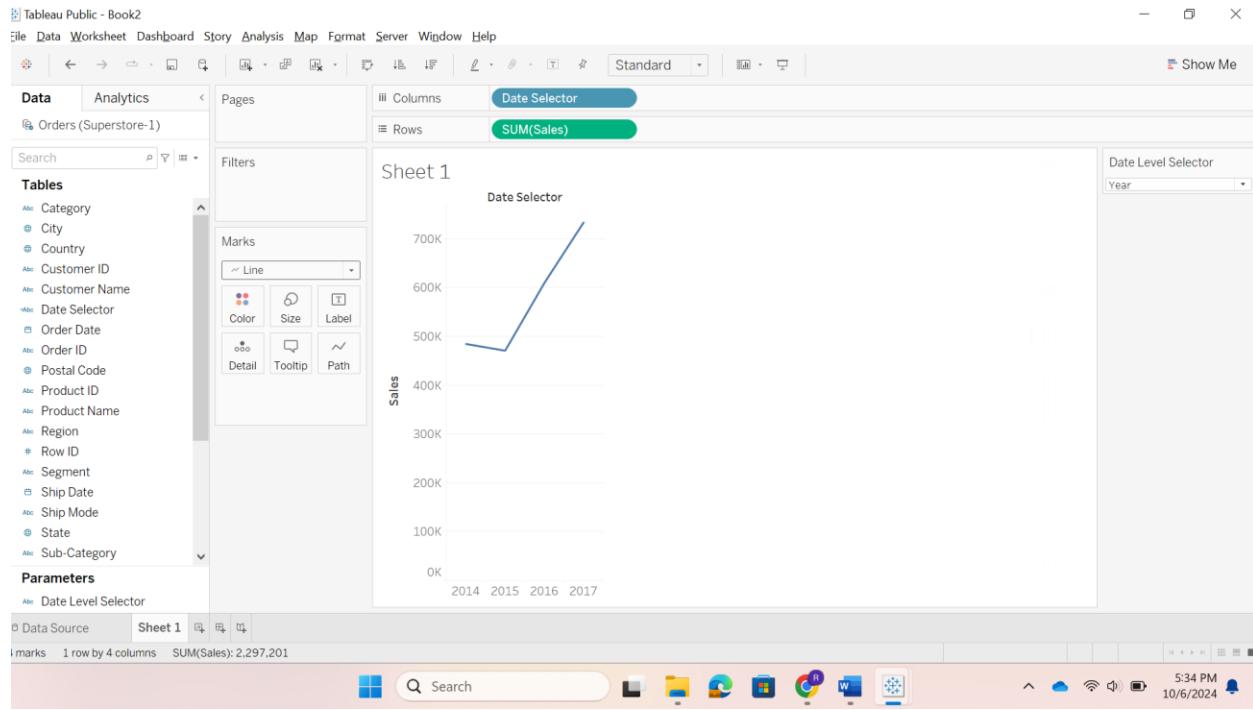


Here, **Date Level Selector** is the parameter you created in the previous step. This calculated field will dynamically adjust the OrderDate format based on the selection in the parameter. Click Apply and then OK to save the new calculated field named **Date Selector**.

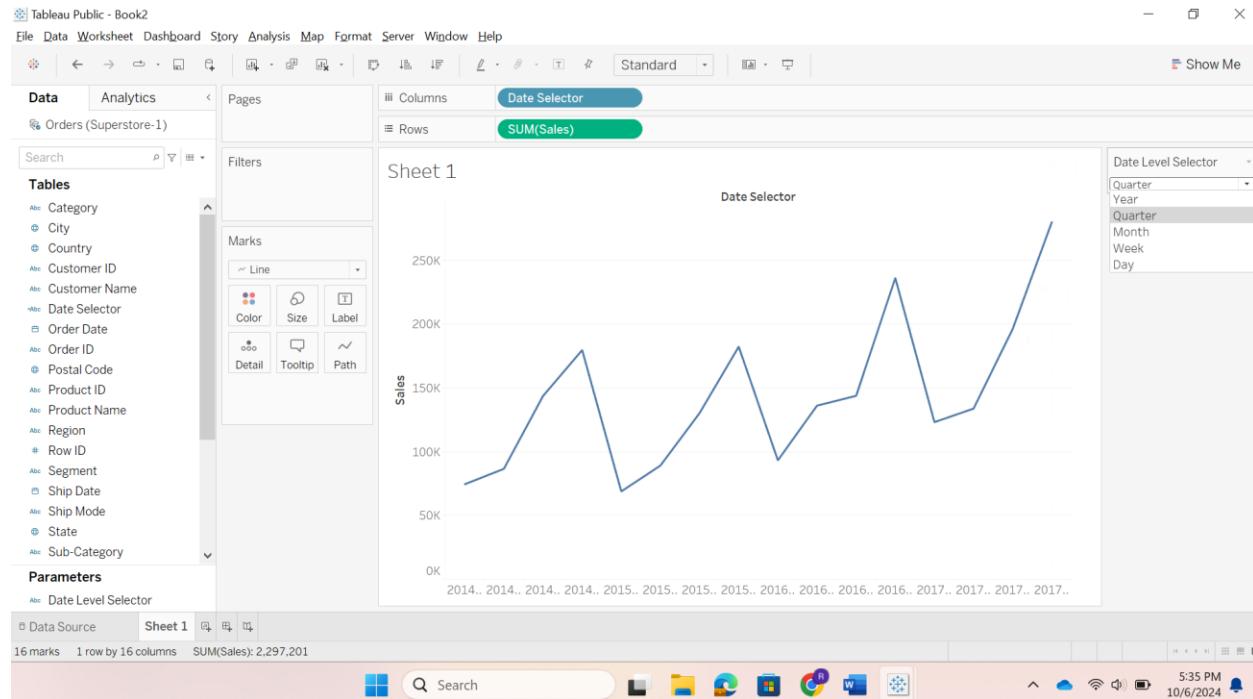
Step6: Drag the **Date Selector** calculated field to the **Columns** shelf and the **Sales** attribute to the **Rows** shelf. This setup will create a visualization that displays sales data.



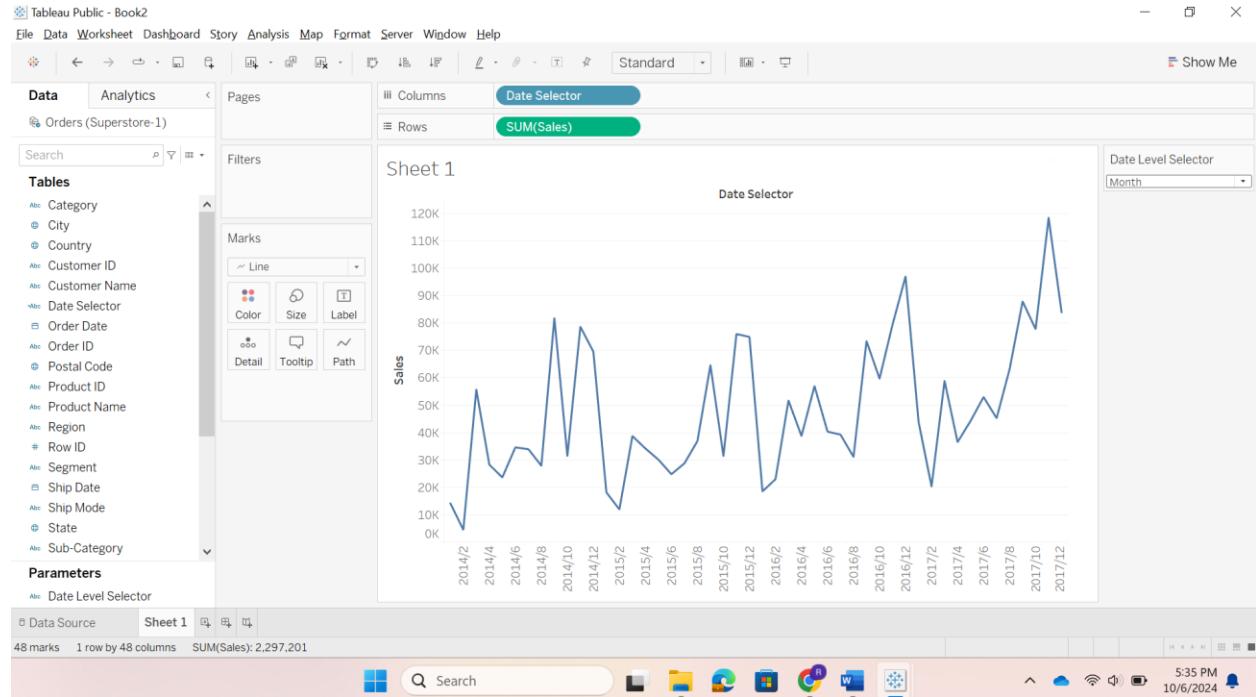
Step7: In the Marks section, change the mark type to 'Line'. This will transform your visualization to a line chart, allowing you to better visualize trends in sales over the selected date intervals.



Step8: Change the Date Level Selector parameter to **Quarter**. This will allow you to view the sales data in months, displaying the sales figures within the selected quarters in your line chart.

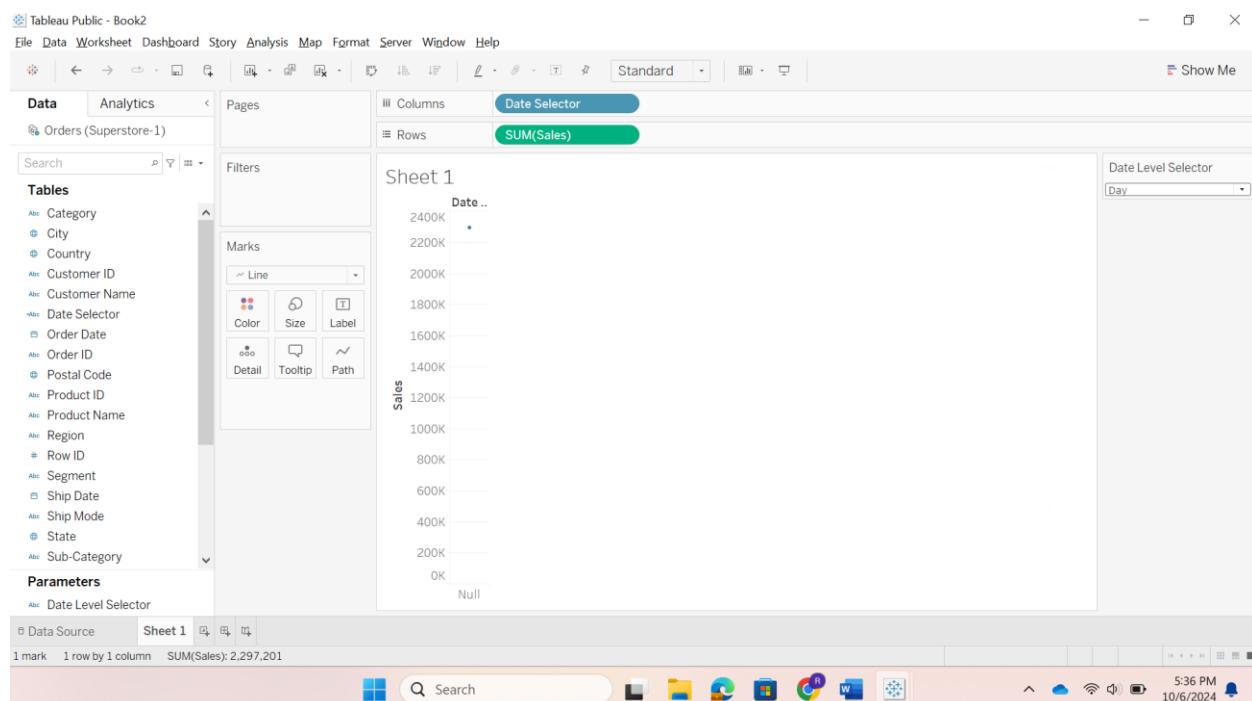
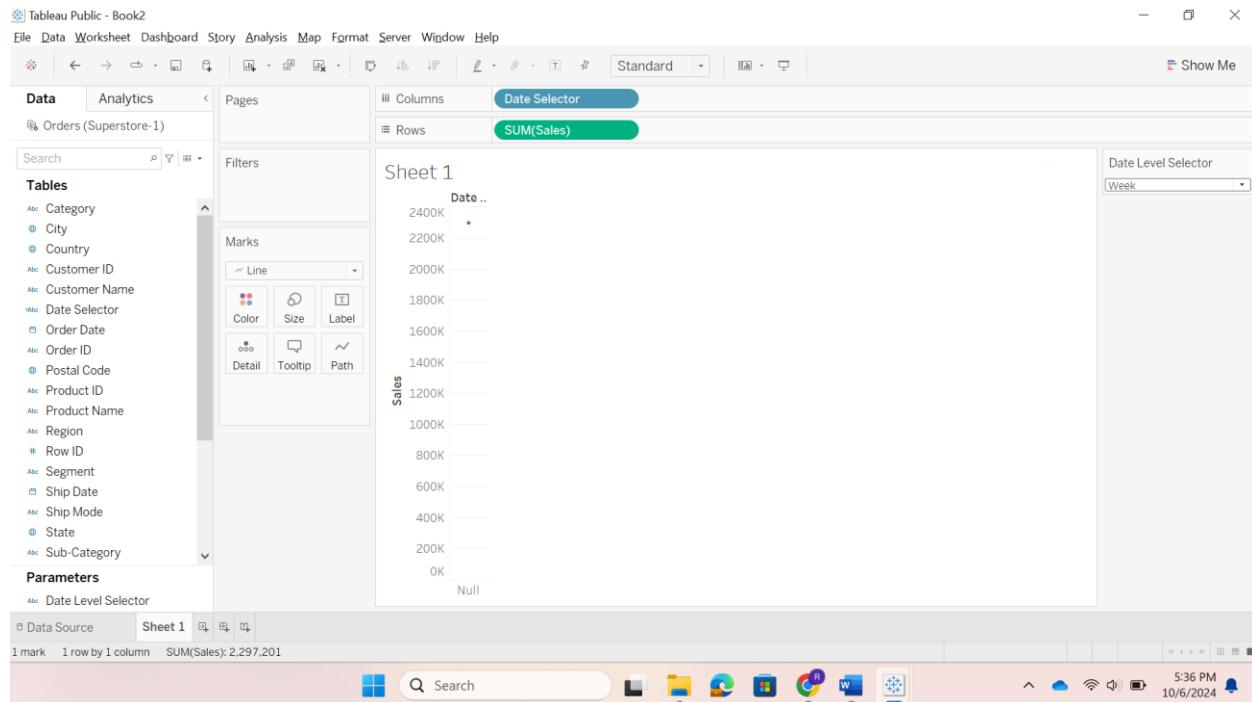


Step9: Similarly, you can change the Date Level Selector parameter to **Month** to view the monthly sales data. This will adjust the visualization to display sales figures for each individual month, allowing for a more detailed analysis of sales trends over time.



Step 10: Furthermore, you can extend this analysis by adding additional options to the **Date Level Selector** parameter for **Week** and **Day**.

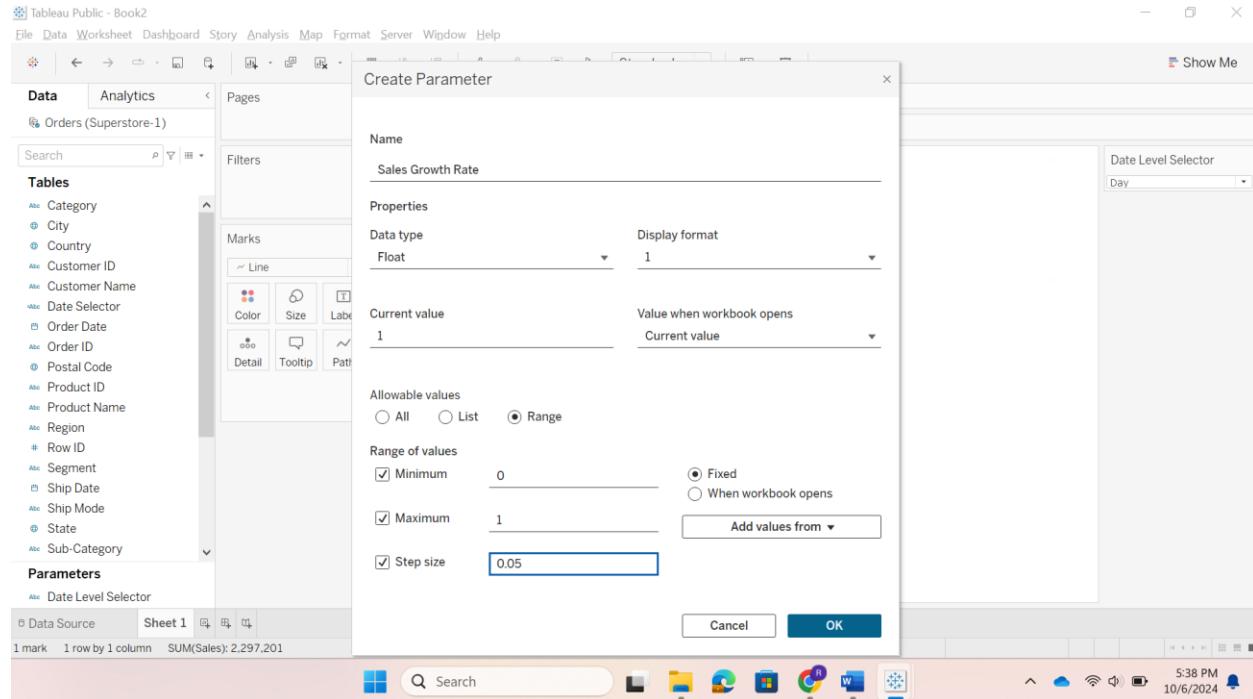
- Even though we can directly add date attributes like Year/Month/Quarter/Week/Day to the column shelf, in this case, you are creating a parameter based on the **Order Date** and writing a custom function. This approach also allows us to analyze the data at various time intervals dynamically.
- It helps in understanding trends and patterns over time at multiple levels of granularity, such as year, quarter, month, week, and day, all within a single view. This method gives users more control over the visualization and enables insights into the data.



QUESTION 2:

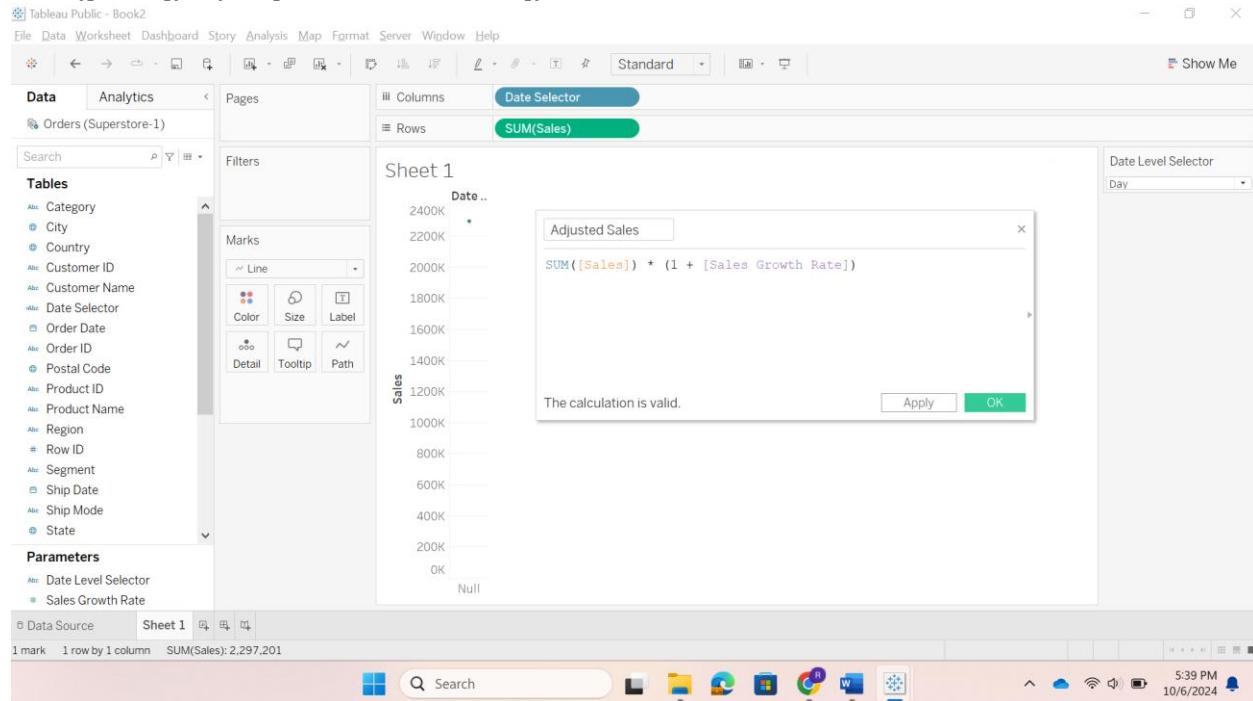
1. Continue in the above tutorial,
Create a new parameter as **Sales Growth Rate**.
Set the **Data Type** to **Float**.

**For Allowable Values, select Range.
Set the Minimum value to 0,
the Maximum value to 1, and
the Step Size to 0.05.**

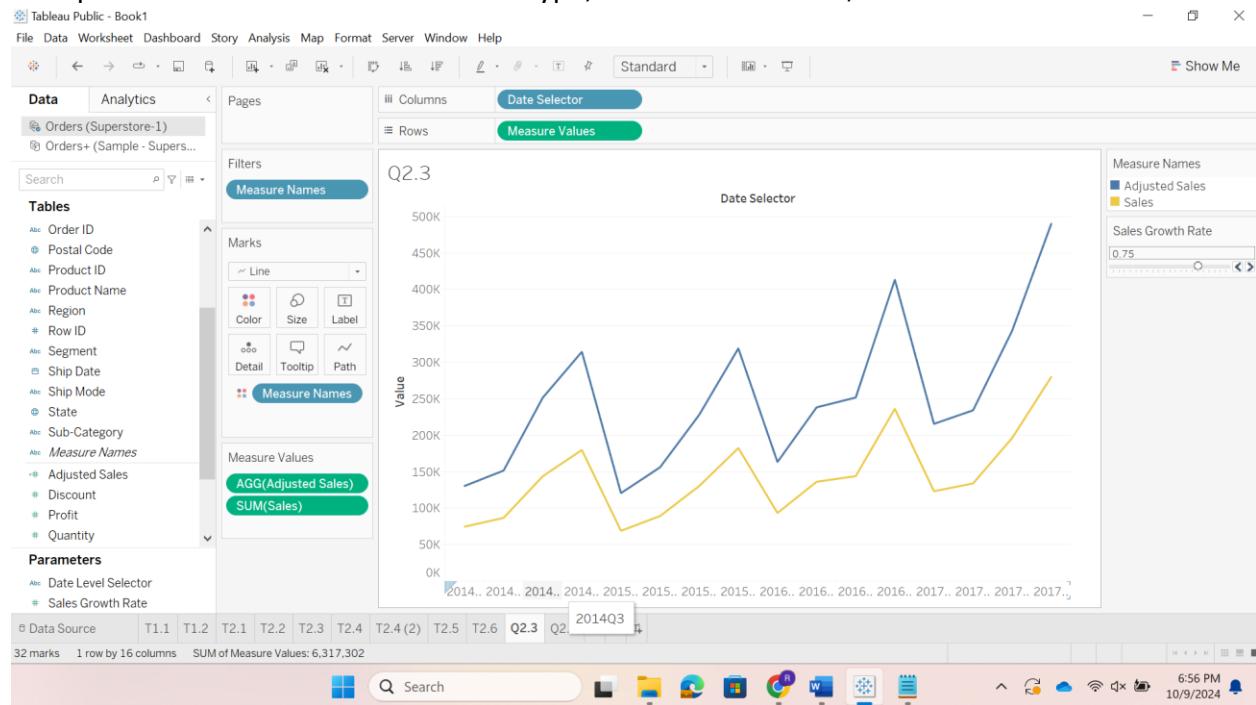


2. create a new calculated field named 'Adjusted Sales'

Enter the following function in editor,
SUM([Sales]) * (1 + [Sales Growth Rate])

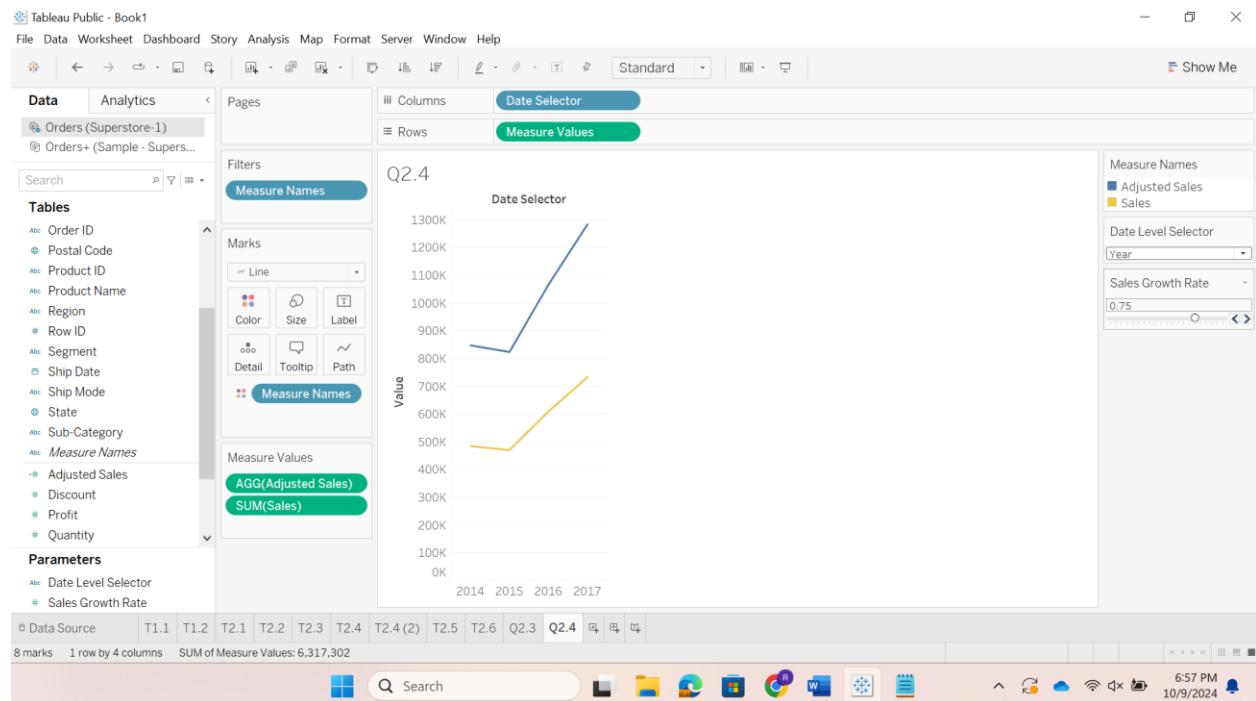


3. Utilize the '**Adjusted Sales**' calculated field to compare sales by modifying the 'Sales Growth Rate parameter'. Select a suitable chart type, such as a line chart, to visualize the trends.

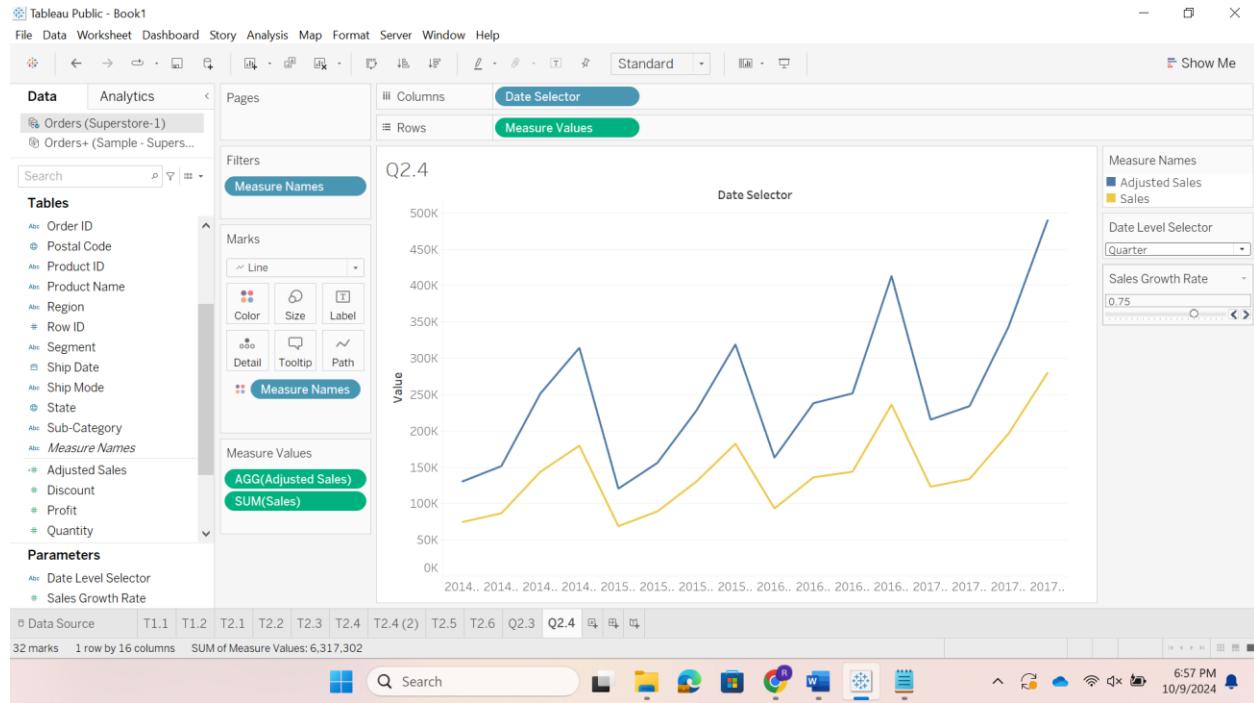


4. Switch between Year, Quarter, Month using the '**Date Level Selector**' parameter to analyze the impact.

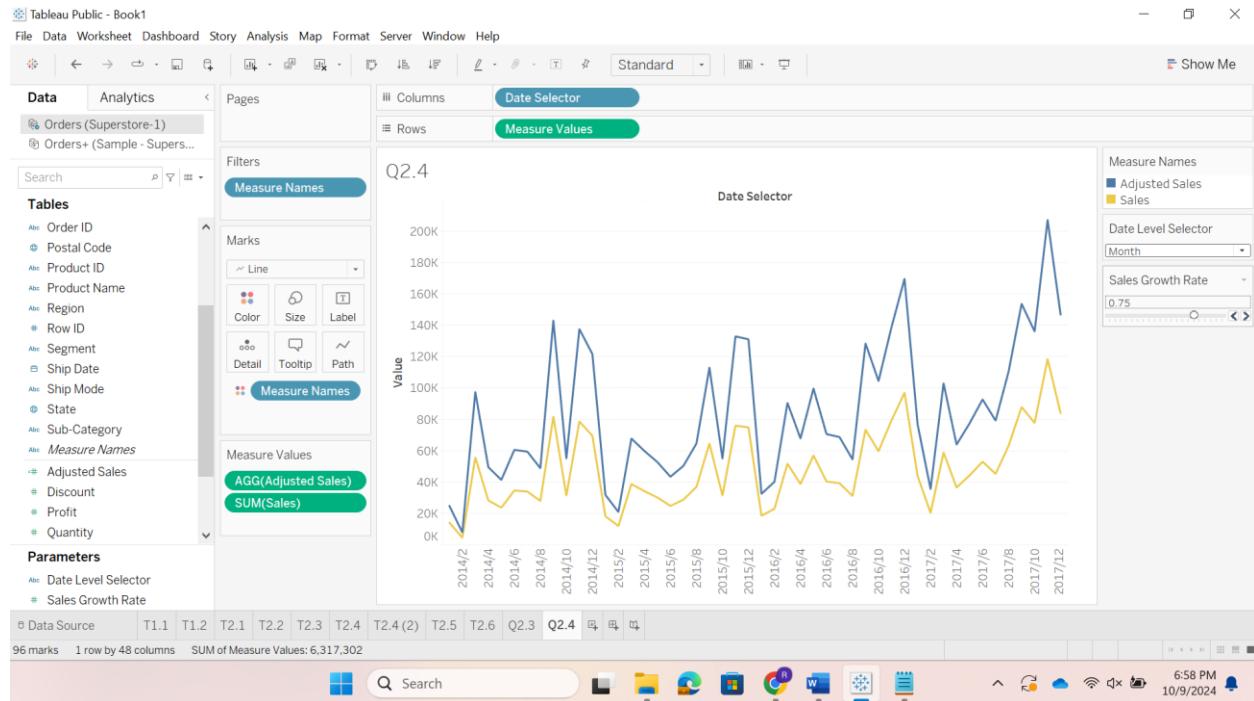
For Year



For Quarter:



For Month:



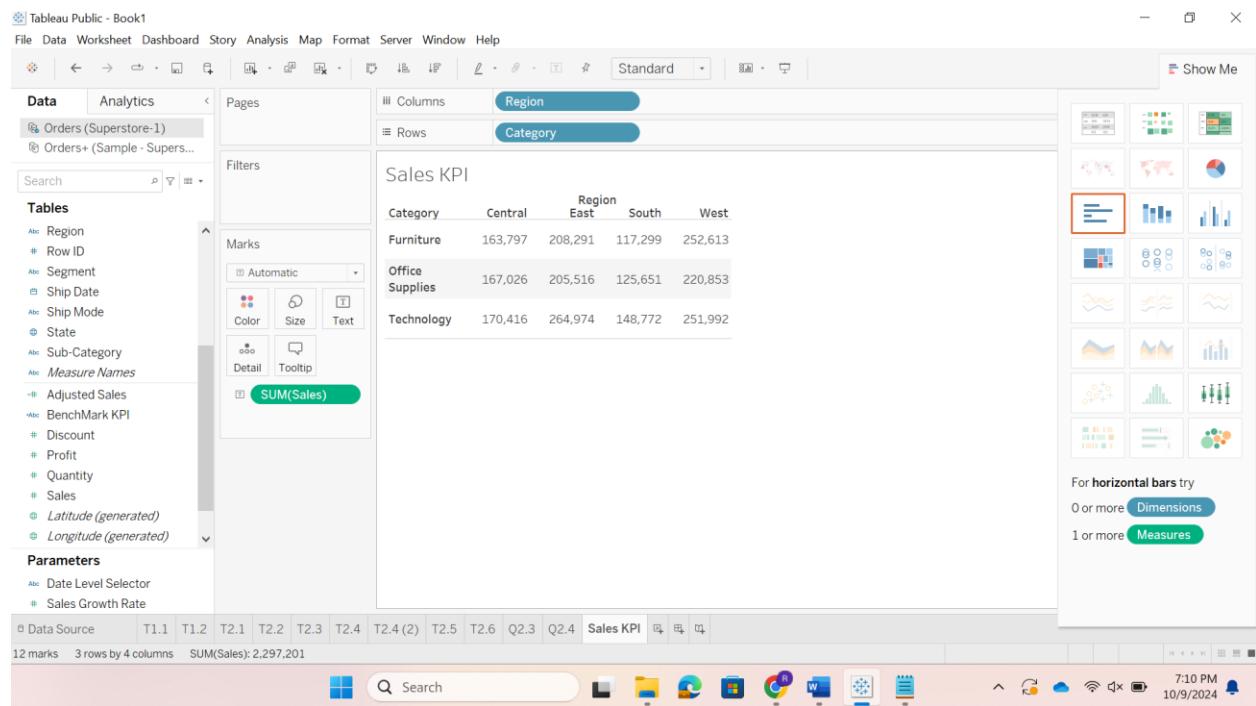
5. Analyze the visualizations and explain your understanding of the task.

There was a decrease in sales by 2014 and then it started growing steadily as time went on until 2017. There are a lot of oscillation-type movements observed in sales over time when switching from quarters, months to days)

In this task, I have understood how to create parameters and calculated fields and use them to get better insights. For example, we have used data parameters to get sales insights by year, months, quarters, weeks, and days.

TASK 3:

Step 1: Use the Superstore dataset and create a new worksheet titled "Sales KPI." Place the **Categories** in the Rows shelf, **Sales** in the Text shelf, and regions in the Columns shelf.



Step2: Create a calculated field called "BenchMark KPI" and give the function as shown.Click ok.

The screenshot shows the Tableau interface with a calculated field dialog open. The calculated field is named 'BenchMark KPI' and contains the following logic:

```

IF SUM([Sales]) > 125000 THEN
    "Above Bench Mark"
ELSE
    "Below Bench Mark"
END

```

The message at the bottom of the dialog says, "The calculation is valid." There are 'Apply' and 'OK' buttons at the bottom right.

Step3: Drag the "BenchMark KPI" field to the Color shelf.

The screenshot shows the Tableau interface with the 'Color' shelf selected in the Marks card. The calculated field 'BenchMark KPI' is now mapped to the color of the bars in the chart.

Category	Region		
	Central	East	South
Furniture	163,797	208,291	117,299
Office Supplies	167,026	205,516	125,651
Technology	170,416	264,974	148,772
			252,613

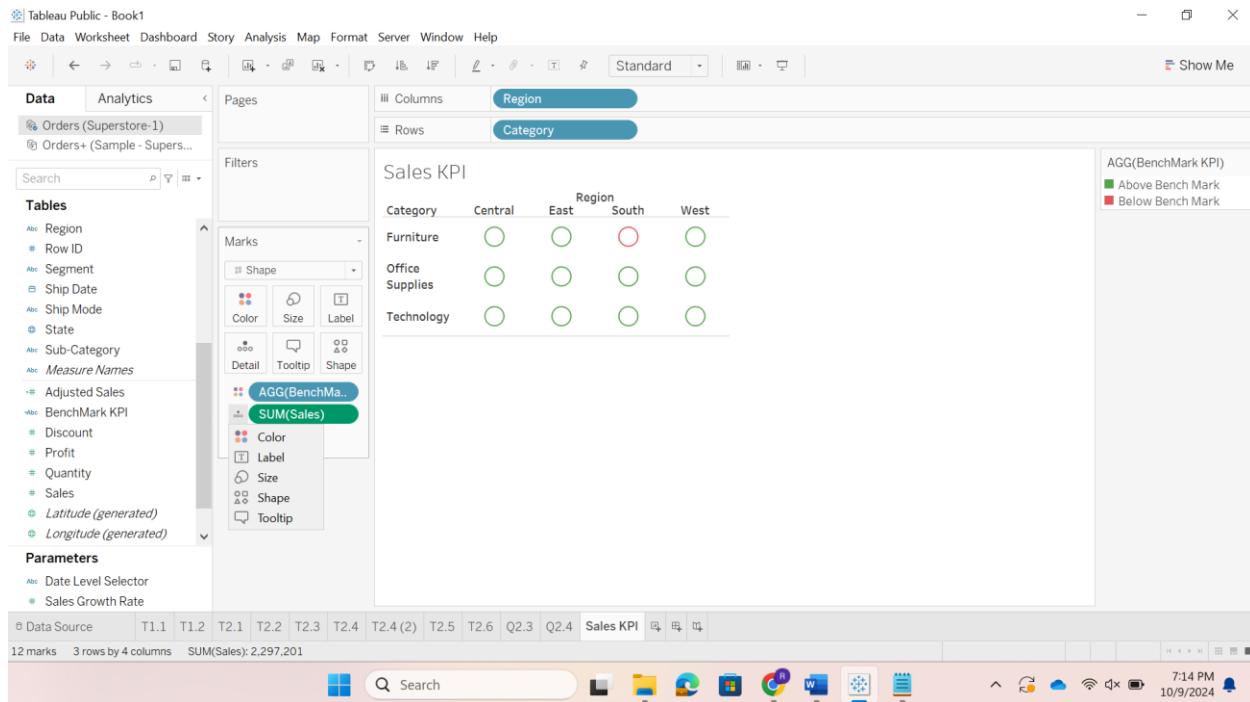
Step4: You can customize the colors by edit. Assign green for values above the benchmark and red for values below the benchmark, based on the conditions you set in the calculated field. This visual distinction helps quickly identify performance relative to the target.

The screenshot shows the Tableau interface with the 'Sales KPI' view open. A color palette dialog is overlaid on the interface, titled 'Edit Colors [BenchMark KPI]'. It displays a grid of colors for two data items: 'Above Bench Mark' (green) and 'Below Bench Mark' (orange). The 'Automatic' color scheme is currently selected. The main workspace shows a table with four columns: Category, Central, East, South, and West. The data values are: Furniture (Central: 163,797, East: 208,291, South: 117,299, West: 252,613); Office Supplies (Central: 167,026, East: 205,516, South: 125,651, West: 220,853); Technology (Central: 170,416, East: 264,974, South: 148,772, West: 251,992).

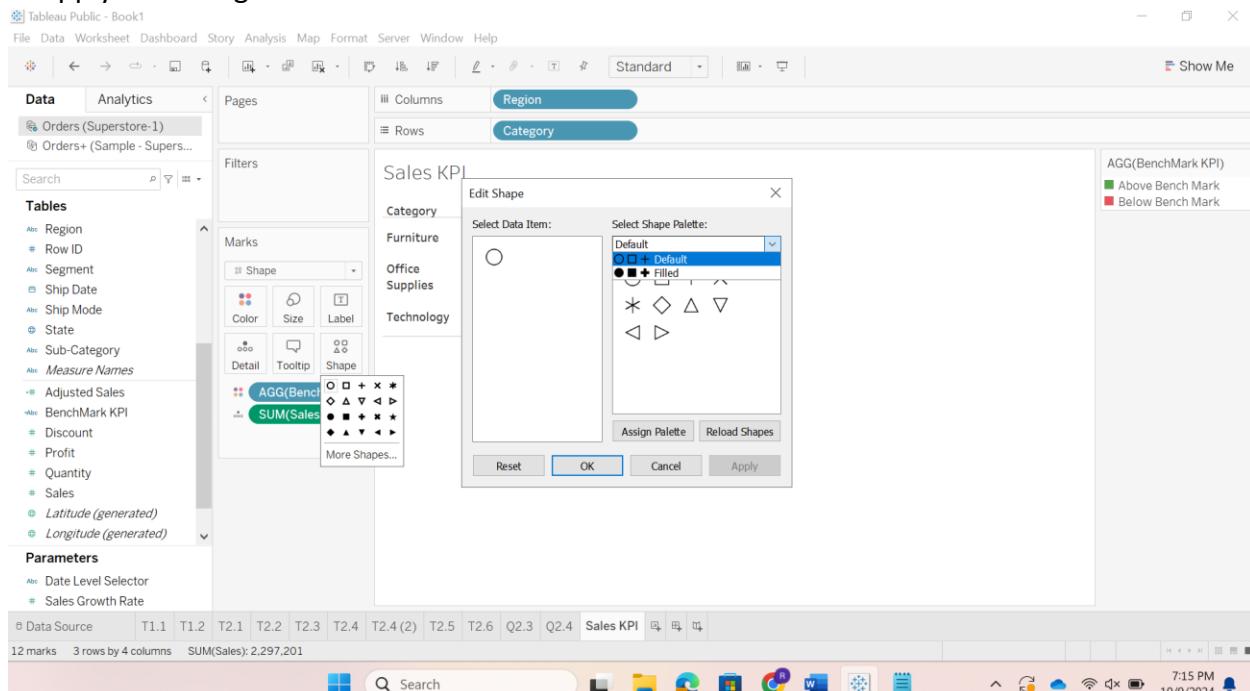
Step5: Change the mark type to Shape

The screenshot shows the Tableau interface with the 'Sales KPI' view open. The 'Marks' shelf has been modified; the 'Shape' button is selected, and the 'Color' button is highlighted. The main workspace shows the same table as before, but the sales values are now represented by hollow circles (yellow for above benchmark, orange for below benchmark) instead of text. The data values remain the same as in Step 5.

Step6: By default, Tableau uses a hollow circle shape. Since we don't need the sales values displayed, you can move the sales information to the Detail shelf.

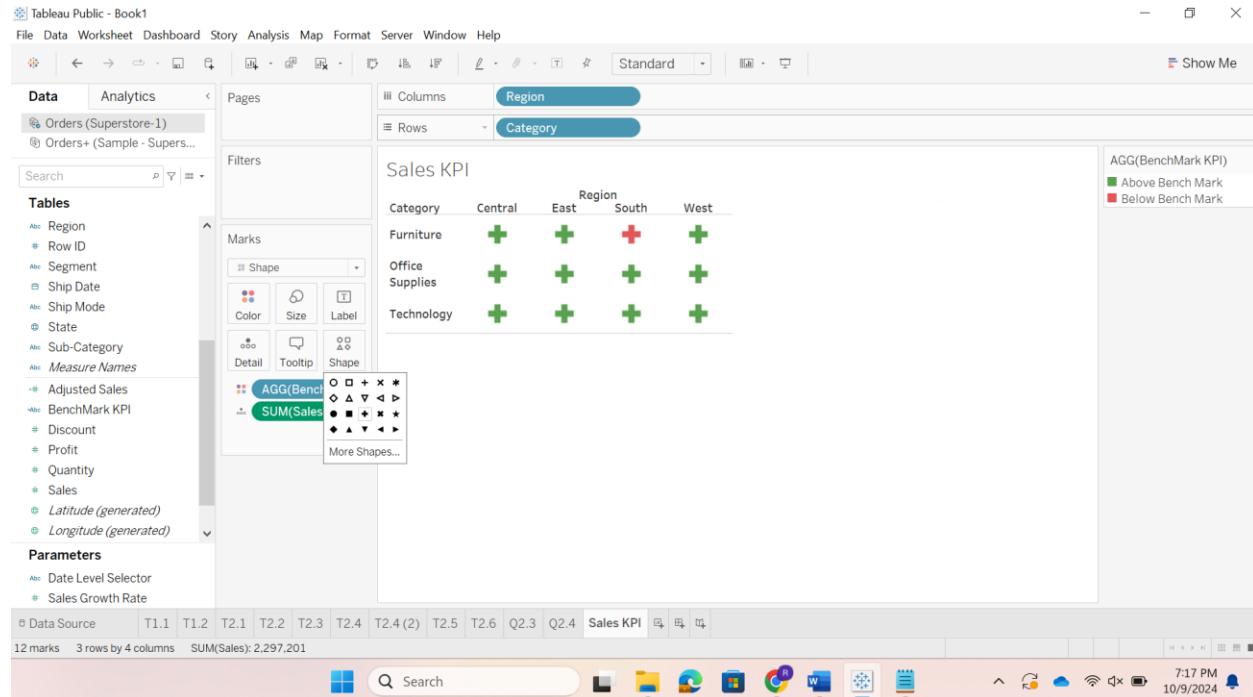


Step7: To change the shape, click on the **Shape** shelf, then select **More Shapes**. Choose **KPI** from the Shape Palette and select the desired shape for visually more attractive. Once done, click **OK** to apply the changes.



(In my Tableau Version, KPI is not there...so I will be using the default shapes)

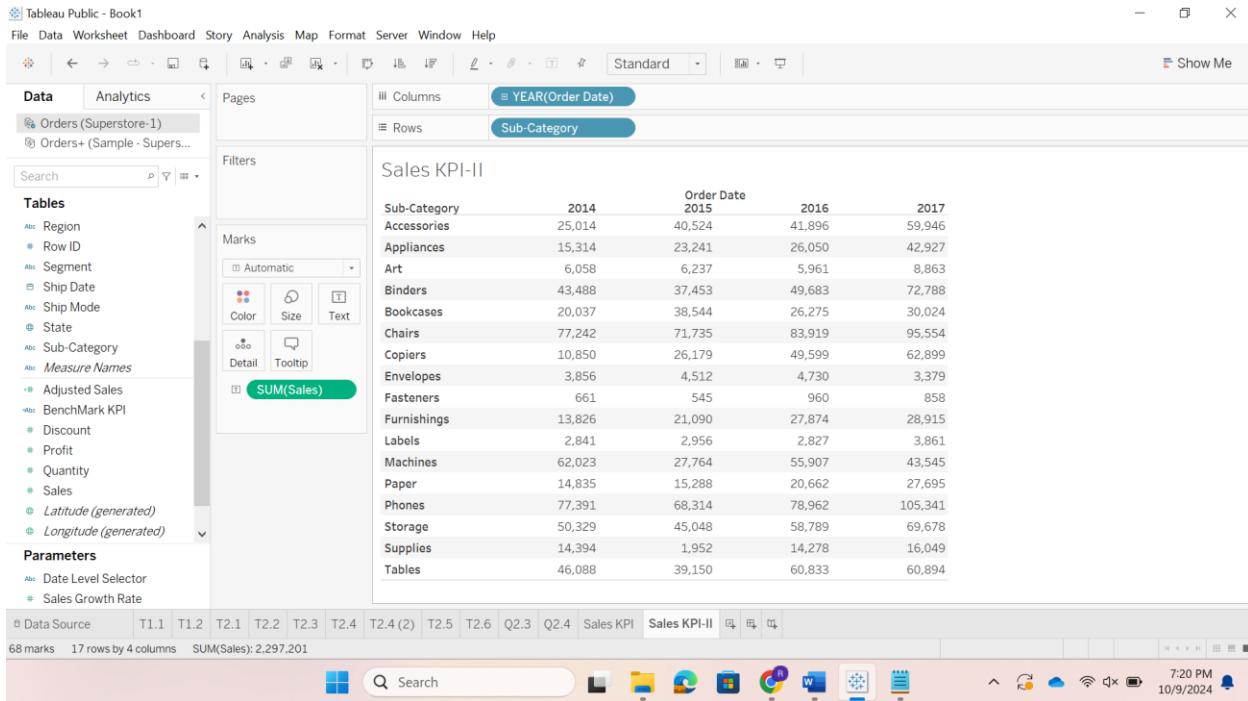
Step8: You can see that the **Furniture** category is not performing great in the **South** region, indicating that the business should focus on improving sales in this area, as it falls below the benchmark.



QUESTION 3:

1. Create a new worksheet titled **Sales KPI-II**. Set up the visualization by dragging the following fields to the appropriate shelves:

Sub-category to the Rows shelf
Order Date to the Columns shelf
Sales to the Text shelf



2. Evaluate the performance of subcategories based on their **Sales** across different **years**.

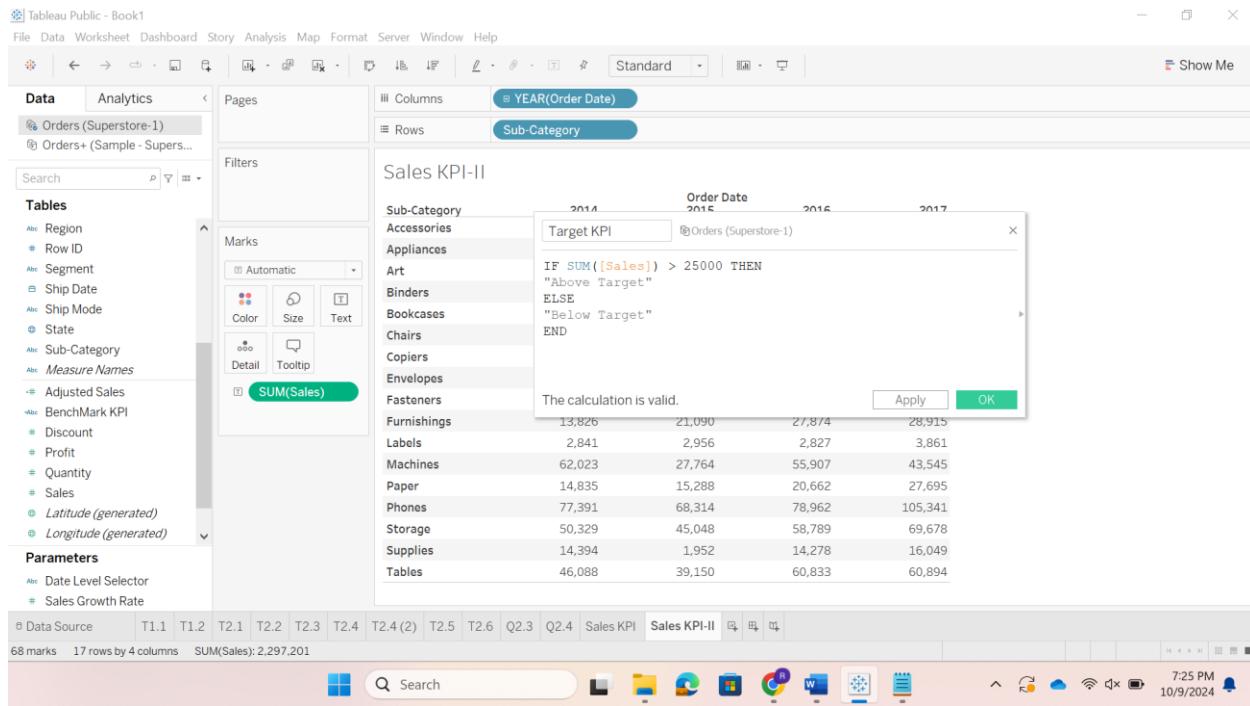
Create a calculated field named **Target KPI** with the following criteria :

- If the total sales for any subcategory in any year exceed 25,000, categorize it as "**Above Target.**"
- If the total sales for any subcategory in any year are 25,000 or lower, categorize it as "**Below Target.**"

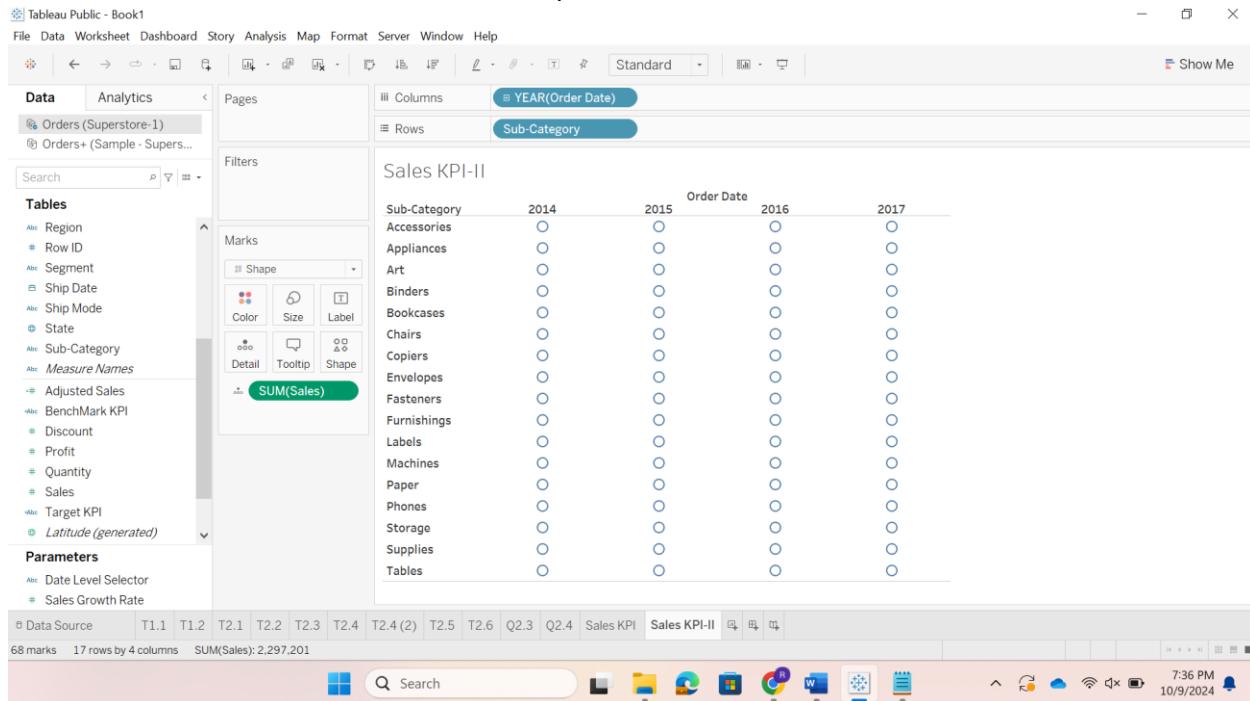
Write the function for the **Target KPI** calculated field in the calculated field editor for the given criteria.

Function:

```
IF SUM([Sales]) > 25000 THEN
"Above Target"
ELSE
"Below Target"
END
```



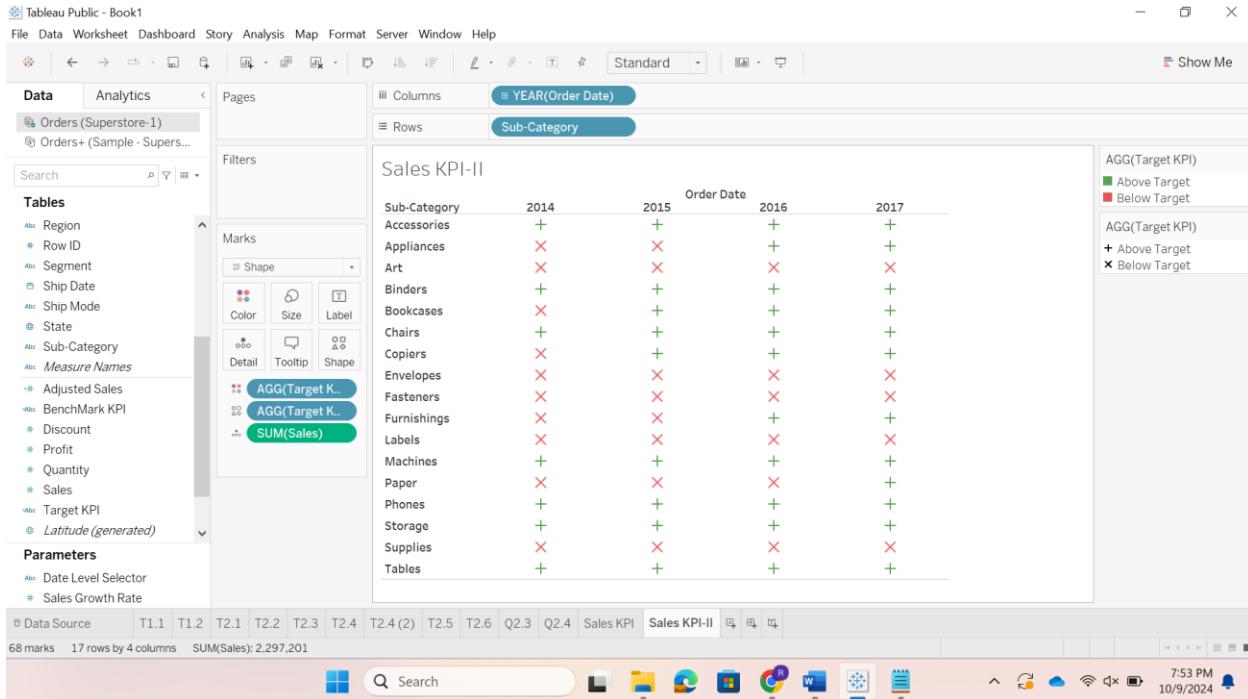
3. Change the mark type to **Shape**, as specified in Step 5, and move the **Sales** field from the Text shelf to the Detail shelf, as indicated in Step 6.



4. Drag the **Target KPI** field to the Color shelf. By default, "Above Target" will be represented in a circle shape, while "Below Target" will appear as a square shape.

Change the shape to a tick mark from the KPI palette and assign the colors as specified below.

- ✓ Above Target
- ✗ Below Target



(since my version does not have KPI palette, I have used plus sign instead of tick mark)

5. Analyze the visualization and explain your understanding.

Explanation: The visualization separates sales data <25,000 as “Below Target” and the rest as “Above Target”. I have learned using Different shapes and colors to represent data in visualizations. I have learnt creating functions and parameters to get sales insights by year, months, quarters, weeks, and days.