

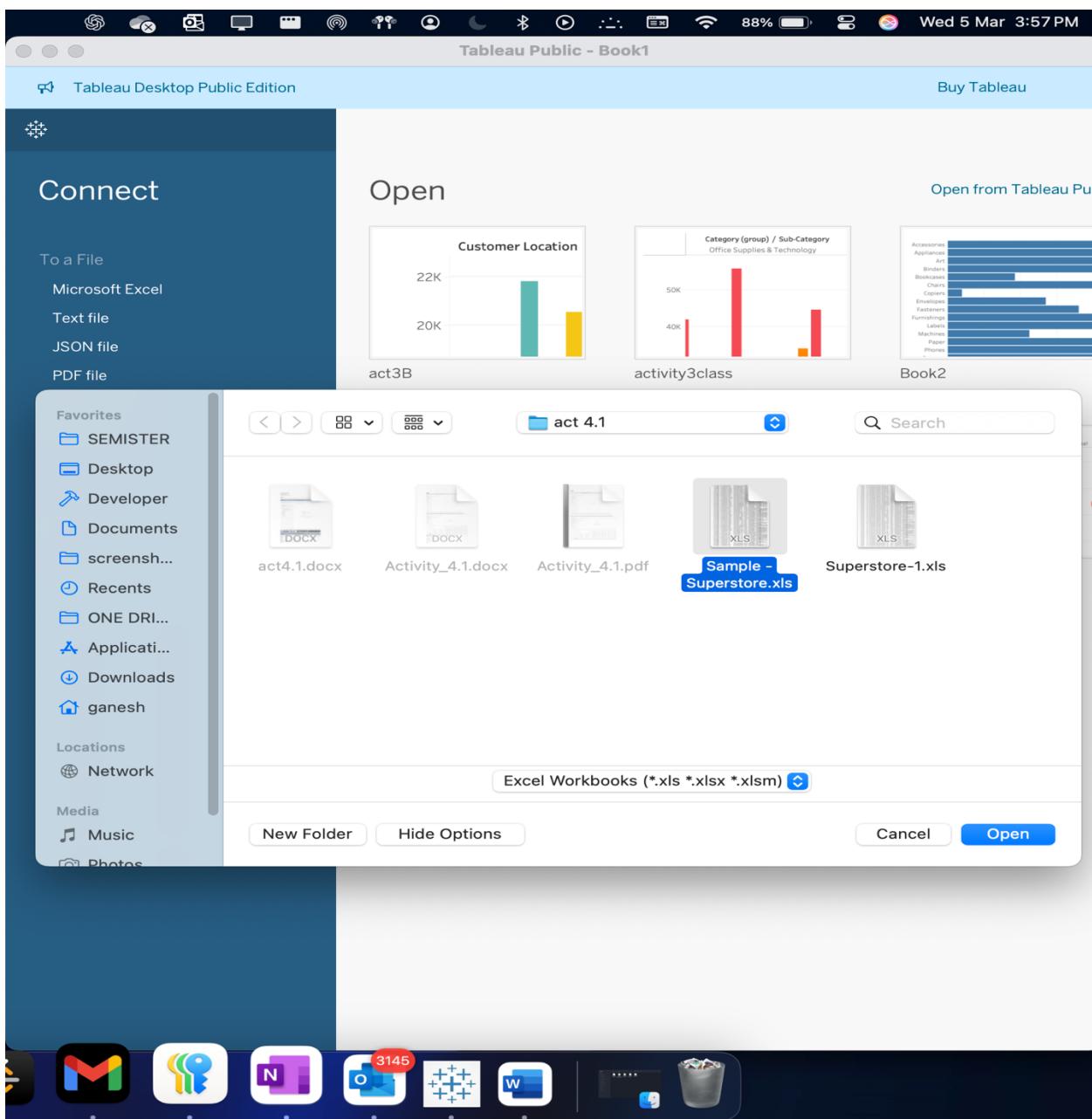
Data Visualization:

Activity 4.1

Ganesh Gundekarla

Task 1 :

Step 1 : We have connected the sample superstore file and connected to it in the Tableau app.



Step 2 and step 3: selecting the Orders from the imported excel file.

The screenshot shows the Tableau Desktop Public Edition interface. The top bar displays system icons and the date/time: "Wed 5 Mar 3:57 PM". The main title bar says "Tableau Public - Book1". Below the title bar, there's a navigation bar with icons for back, forward, search, and refresh, followed by "Tableau Desktop Public Edition" and "Buy Tableau".

The left sidebar has sections for "Connections" (with "Sample - Superstore" selected), "Sheets" (listing "Orders", "People", "Returns", and their respective sub-sheets), and "New Union". A "Use Data Interpreter" checkbox is present with a note about cleaning the Excel workbook.

The central workspace shows the "Orders" sheet selected. At the top right of the workspace are "Filters" (0) and an "Add" button. The workspace itself displays the "Orders" data source details: "Orders" (21 fields, 9994 rows), a preview of the first 100 rows, and a table of fields with their types and physical tables.

At the bottom, there are tabs for "Data Source" and "Sheet 1" (which is currently active). The dock at the bottom contains icons for various applications: Mail, Keychain, Notes, Reminders, Calendar (with a red notification badge showing 3145), Contacts, Word, and a trash bin.

Type	Field Name	Physical Table	Remote Fiel...
#	Row ID	Orders	Row ID
Abc	Order ID	Orders	Order ID
Blc	Order Date	Orders	Order Date
Clc	Ship Date	Orders	Ship Date
All	Ship Mode	Orders	Ship Mode

Step 4 : Dragging of the returns table and placing it beside Orders in order to draw relationships.

Tableau Public - Book1

Tableau Desktop Public Edition Buy Tableau

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 23 fields 3226 rows 100 rows

Orders

Name
Orders

Fields

Type	Field Name	Physical Table	Remote Fiel...
#	Row ID	Orders	Row ID
Abc	Order ID	Orders	Order ID
Def	Order Date	Orders	Order Date
Def	Ship Date	Orders	Ship Date
All	Ship Mode	Orders	Ship Mode

Go to Worksheet

Data Source Sheet 1

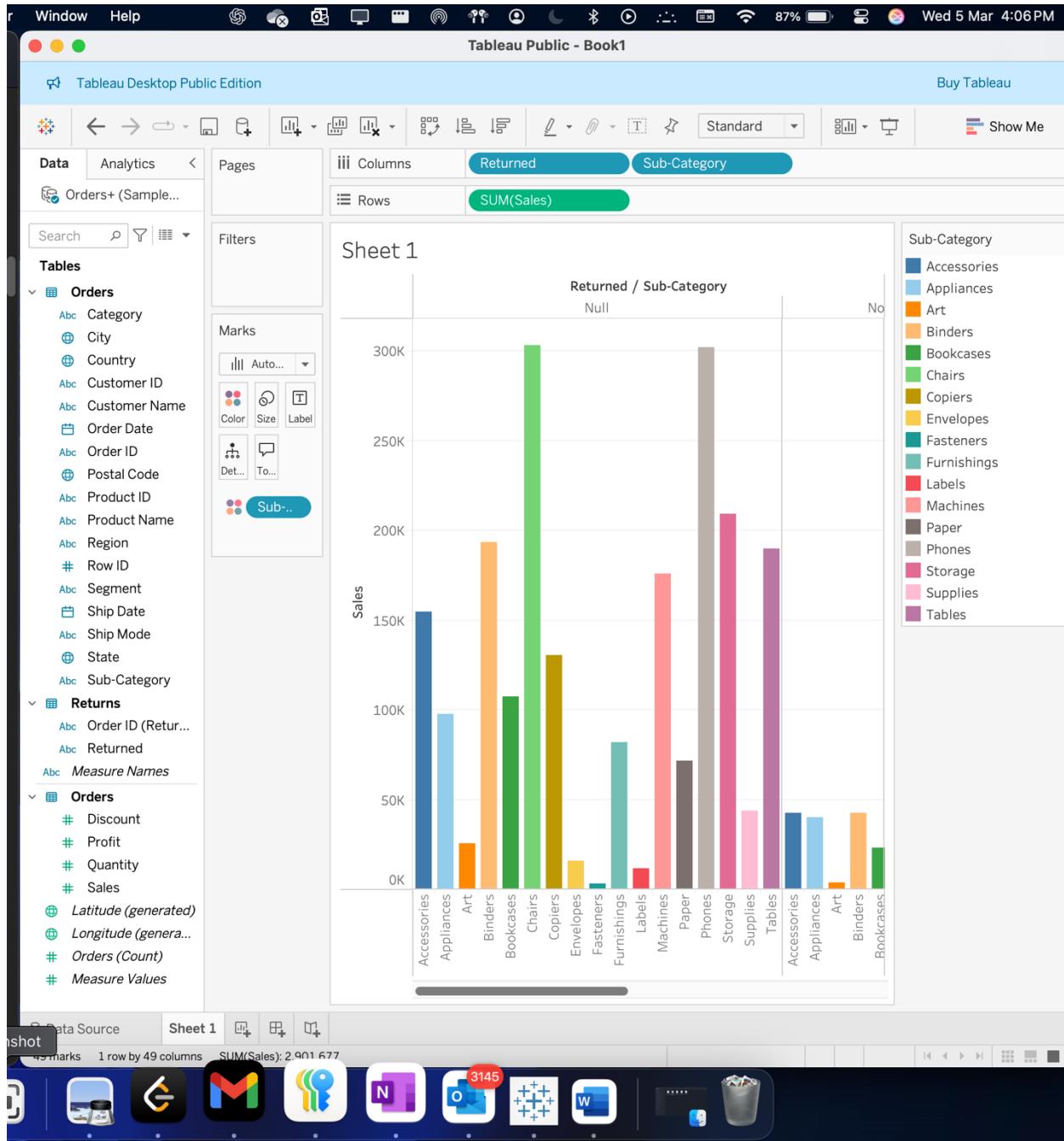
88% Wed 5 Mar 3:59 PM

The screenshot shows the Tableau Desktop interface with the 'Orders' data source selected. A tooltip 'Go to Worksheet' is visible over the 'Sheet 1' tab. A modal window displays a relationship diagram between 'Orders' and 'Returns'. The 'Fields' section of the data source details view lists columns such as Row ID, Order ID, Order Date, Ship Date, and Ship Mode, along with their physical table and remote field names.

Step 5 : Join configuration using the tableau where we can select left join or the right ones or total .

The screenshot shows the Tableau Desktop Public Edition interface. On the left, the 'Connections' pane displays a single connection named 'Sample - Superstore' (Microsoft Excel). The 'Sheets' pane lists several sheets: 'Orders', 'People', 'Returns', and their respective expanded views ('Orders', 'People', 'Returns'). A 'New Union' option is also present. Below these is a 'New Table Extension' button. The main workspace shows the 'Orders+' (Sample - Superstore) data source. A tooltip window is open over the 'Orders' sheet, stating 'Orders is made of 2 tables.' It shows a diagram of two overlapping circles labeled 'Orders' and 'Returns' with a line connecting them. Below the diagram is a 'Join' section with four options: 'Inner', 'Left', 'Right', and 'Full Outer'. Under 'Data Source', it shows 'Order ID = Order ID ...'. At the bottom of the workspace, there's a table titled 'Fields' with columns for Type, Field Name, Physical Table, and Remote Field. The table includes fields like Row ID, Order ID, Order Date, Ship Date, and Ship Mode. To the right of the table, a preview of the data is shown with columns for Row ID, Order ID, Order Date, Ship Date, and Ship Mode, with rows numbered 1 through 8.

Step 6 : performing visualizations in the sheet one where each color will be representing us the different sub category of the products.

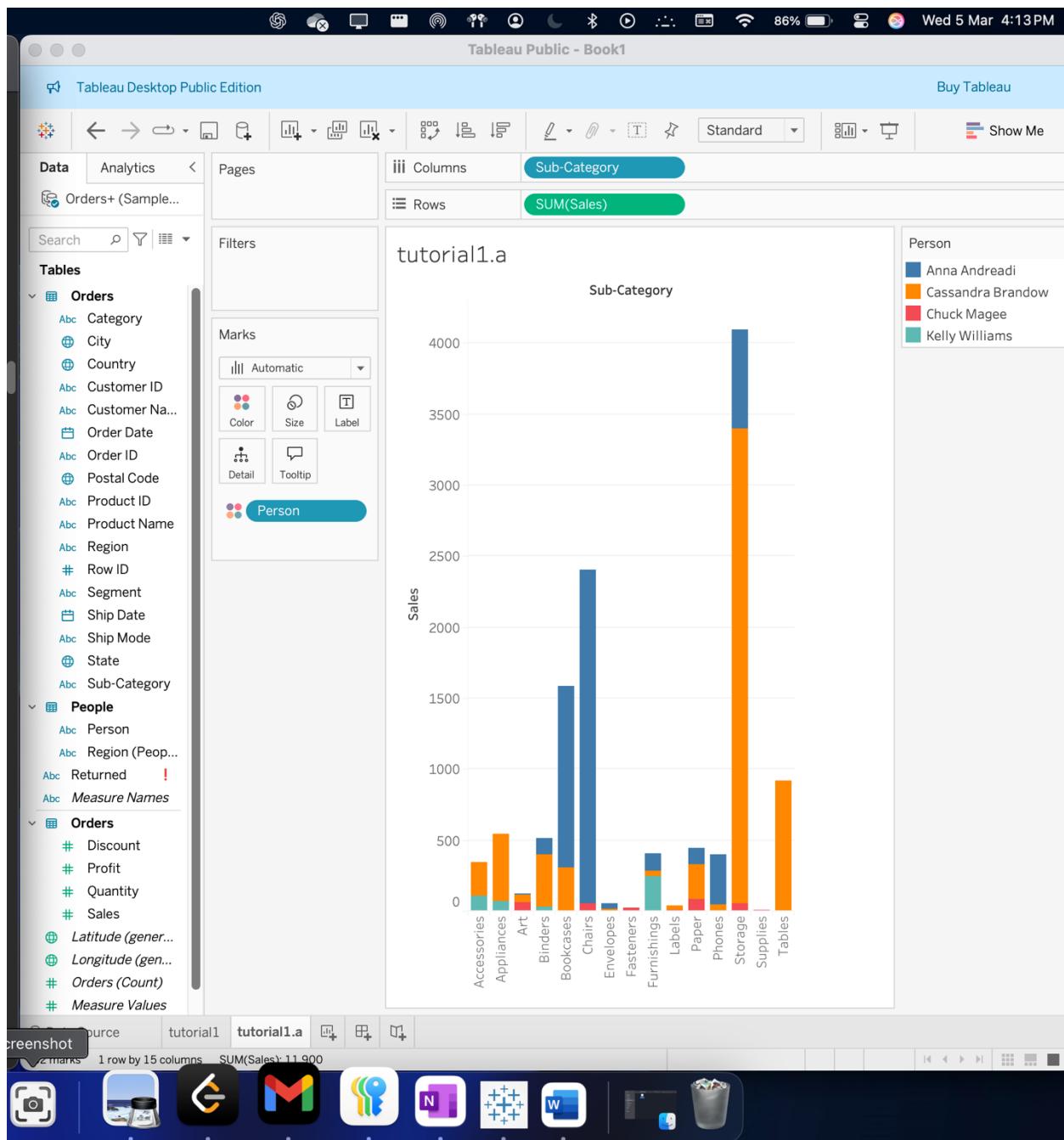


Step 7. : Performing a inner join from the orders and the people tables and selecting the inner join.

The screenshot shows the Tableau Desktop Public Edition interface. On the left, the 'Connections' pane shows 'Sample - Superstore Microsoft Excel'. The 'Sheets' pane lists 'Orders', 'People', 'Returns', and 'New Union'. A 'Data Interpreter' checkbox is checked, with a note about cleaning the Microsoft Excel workbook. The main area shows a join dialog for 'Orders' and 'People' tables, with 'Customer Name' = 'Person'. Below it, the 'Orders' data source preview shows 24 fields and 58 rows. The bottom navigation bar includes icons for Data Source, Sheet 1, and various applications like Mail, OneDrive, and Word.

Step 8 : building the visualization on sheet 2 :

Here, the visualization basically displays us the total number of sales which are being divided into different sub categories and then it is categorized or being visualized using each persons type. So , the stacked bar graph here basically represents us the sum of total sales on each different sub category .



Question 1 :

When performed inner join between two tables .

Visualization :

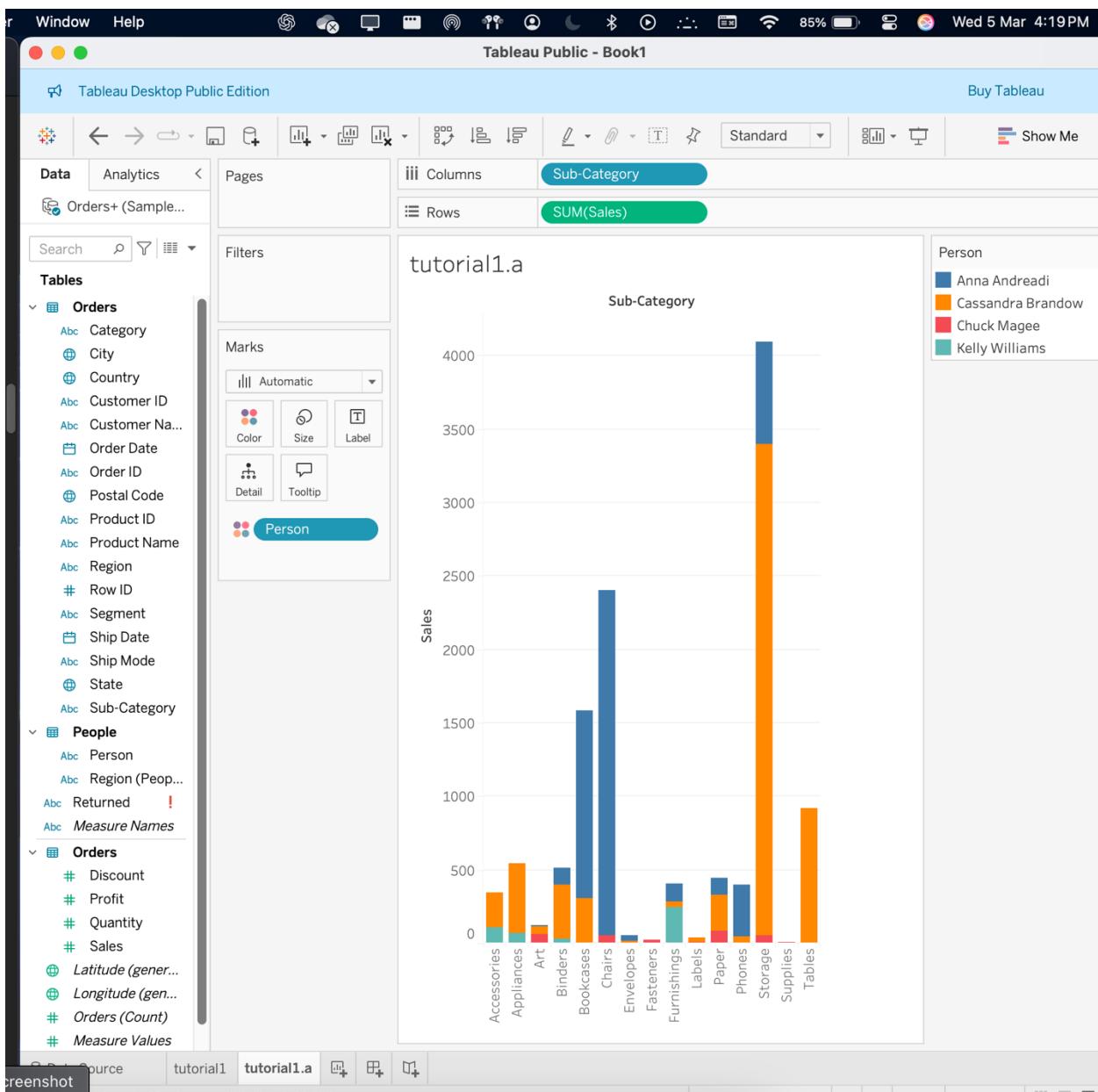
Tableau Desktop Public Edition

Orders+ (Sample - Superstore)

Filters
0 | Add

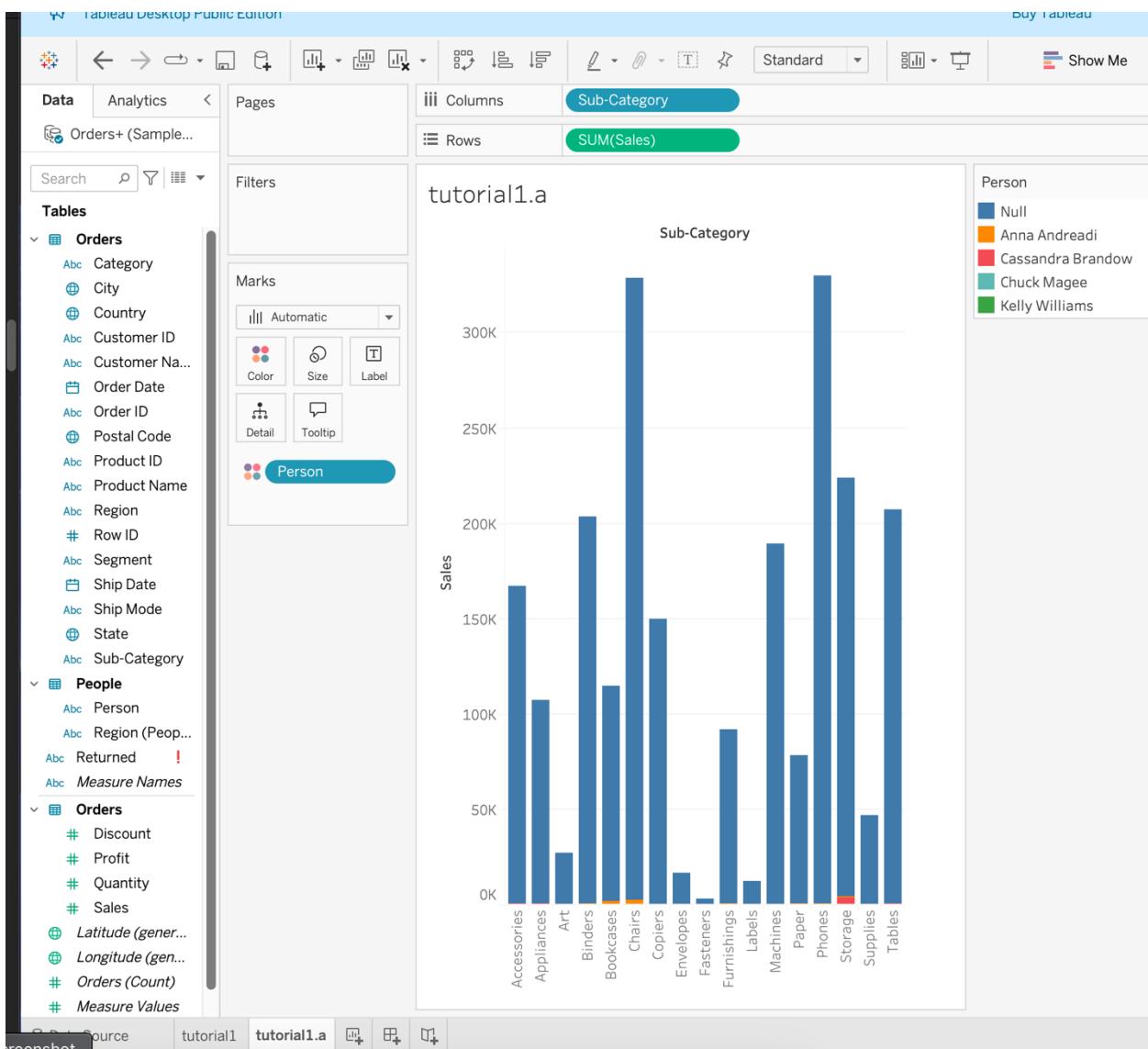
Orders is made of 2 tables. ⓘ

Orders — People



Let us perform full outer join :

The screenshot shows the Tableau Prep interface. On the left, under 'Connections', there is a connection to 'Sample - Superstore Microsoft Excel'. Under 'Sheets', there are four sheets: 'Orders', 'People', 'Returns', and 'Orders' (selected). A note about the 'Data Interpreter' is present. On the right, a modal window titled 'Orders' shows that it is made of two tables: 'Orders' and 'People'. It displays four join types: Inner, Left, Right, and Full Outer. The 'Full Outer' option is selected. The join condition is set to 'Customer Name = Person'. Below the join configuration, there is a note: 'Add new join clause'.



Impact of joins in tables and their impact on visualizations :

Here , joins in tables are based on the columns of the table and joins are performed on required ones. So , the choice of the join type will greatly effect the results as the whole table gets altered depending on the join we had performed .

- a. Inner join : this is a middle join which focuses only on the common data and the other un remained data will be omitted.
- b. Resulting dataset will be smaller but more accurate and corrective.

C : **left join** will be keeping most of the data on the left table and the dataset will be comprised much from the left table and the columns common with the right table.

Impact on the visualization : Here , dataset will be a bit bigger , with less unmatched records also present , if the resulted ones have ‘null’ values , then this will result us in incorrect visualizations / some empty spots / some inaccuracies.

D : RIGHT JOIN : Similar to the left join , but this appears in reverse as , most of the data basically is disappeared from the left table this time .

E : Full outer join : Full outer join will be resulting us the largest dataset as it will combine everything from two tables. Null values will be appearing from both tables and more frequent values and this will lead to incomplete bars or missing data points.

So , this is how dataset’s get affected impacting the overall visualization .

Task 2 :

Step 1 : loading up the tableau application and connecting it with ‘superstore’ file in the data source .

The screenshot shows the Tableau Desktop Public Edition interface. The top bar displays the title "Tableau Public - Book1" and the date "Wed 5 Mar 4:39 PM". The left sidebar shows "Connections" with "Superstore-1 Microsoft Excel" selected, and "Sheets" with "Orders" selected. A tooltip "Go to Worksheet" points to the "Orders" sheet tab. The main area displays the "Orders" table with 21 fields and 9994 rows. A preview window shows the first 100 rows of the "Orders" table, which includes columns like Row ID, Order ID, Order Date, and Ship Date. The data shows various order IDs and dates from 2014 to 2016.

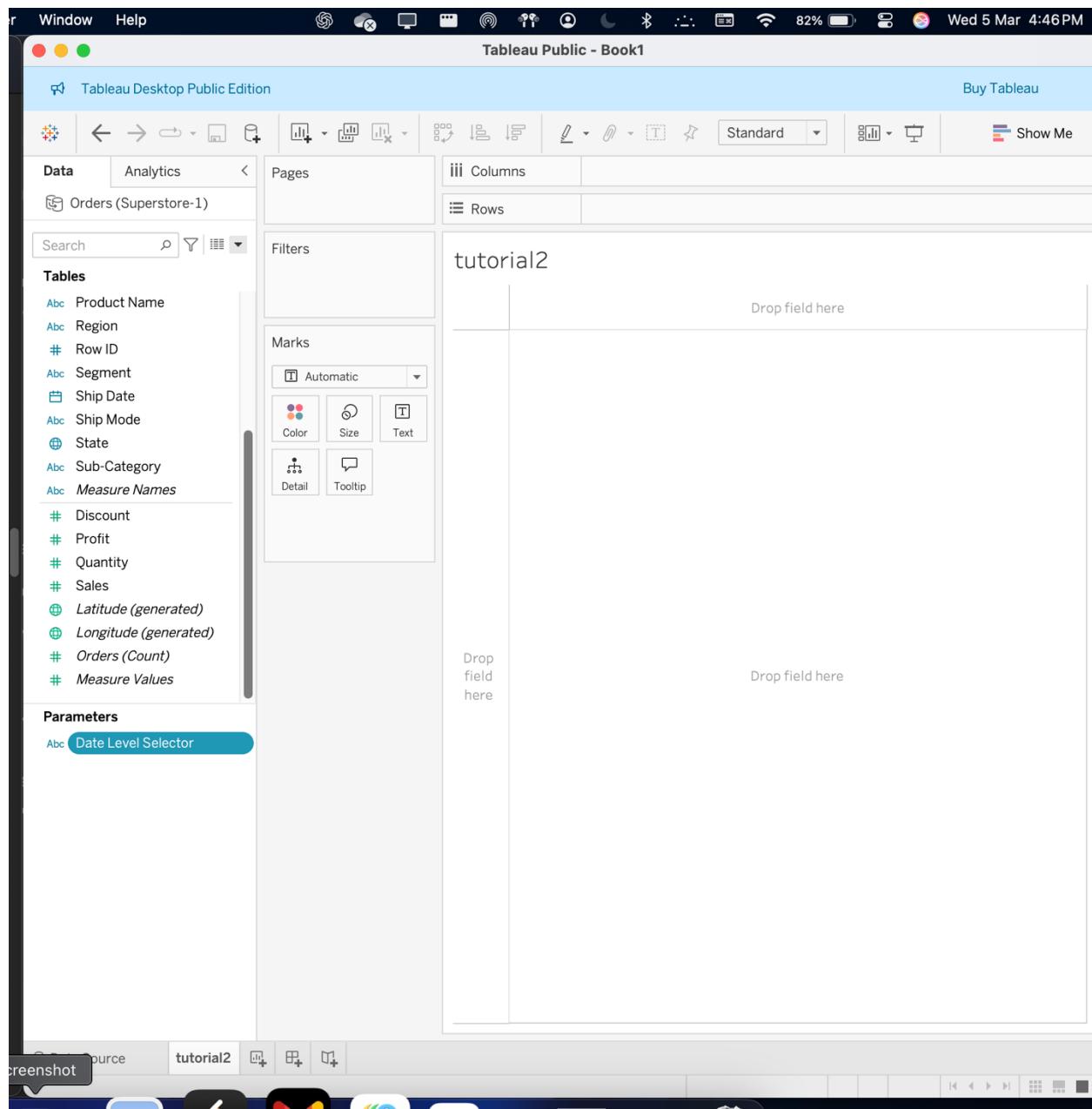
#	Abc	Ord
Row ID	Orders	Order ID
1	CA-2016-152156	08/
2	CA-2016-152156	08/
3	CA-2016-138688	12/0
4	US-2015-108966	11/1
5	US-2015-108966	11/1
6	CA-2014-115812	09/
7	CA-2014-115812	09/
8	CA-2014-115812	09/

Step 2 :

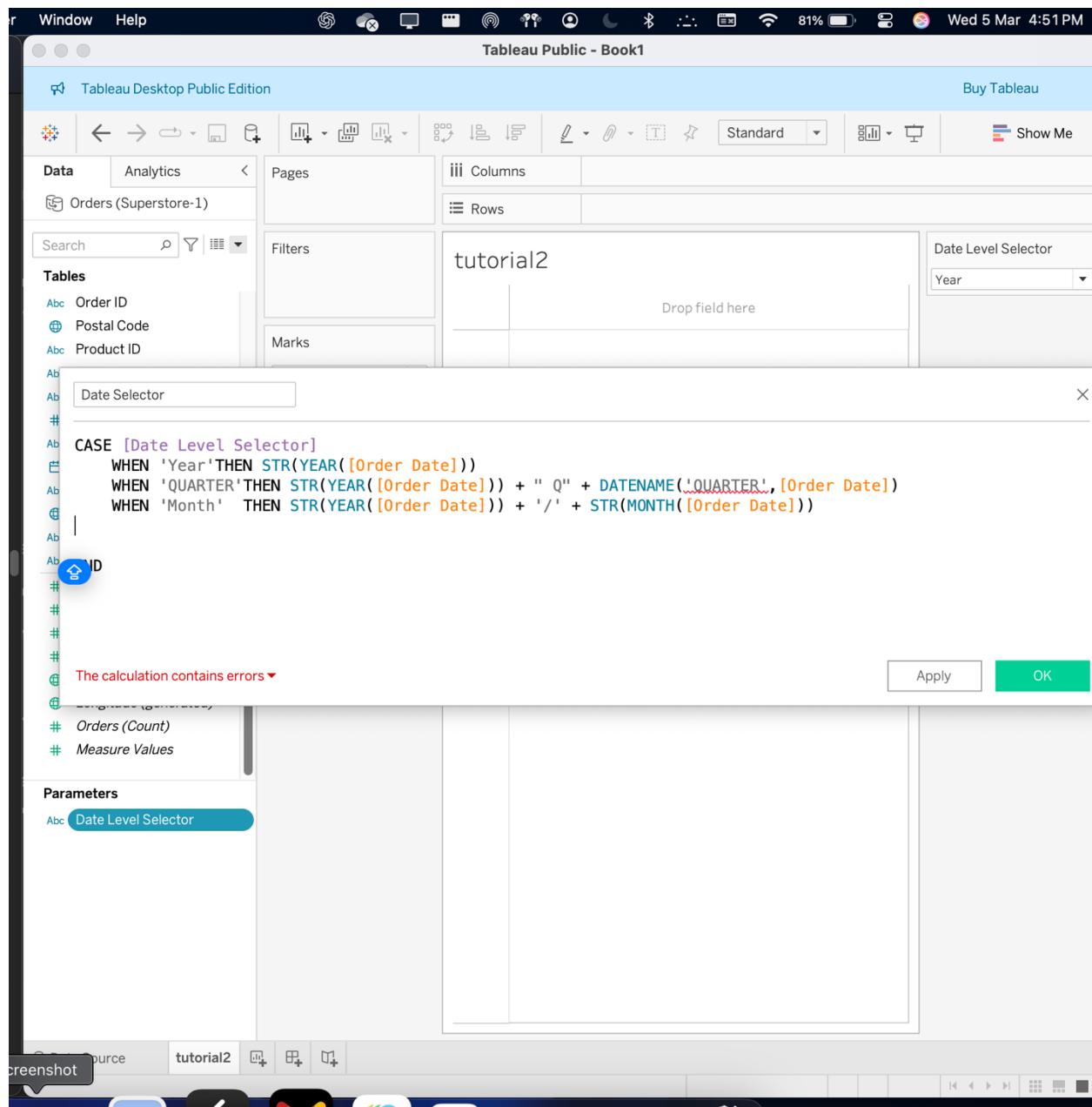
Creating a parameter and creating it using specific values.

The screenshot shows the Tableau Desktop Public Edition interface. The main workspace displays a 'Pages' shelf with 'Columns' and 'Rows' sections, and a 'Filters' shelf containing a filter named 'tutorial2'. On the left, the 'Tables' shelf lists various data sources and measures. A 'Create Parameter' dialog box is open in the foreground, titled 'Date Level Selector'. It includes fields for 'Name' (set to 'Date Level Selector'), 'Properties' (data type 'String' and display format 'Year'), 'Current value' (set to 'Year'), and 'Value when workbook opens' (set to 'Current value'). Under 'Allowable values', the 'List' option is selected, and a table shows values like 'Year', 'Quarter', 'Month', 'Week', and 'Day' with their corresponding display formats. Buttons for 'Cancel' and 'OK' are at the bottom right of the dialog.

Step 4 : viewing the parameter under the parameters section .

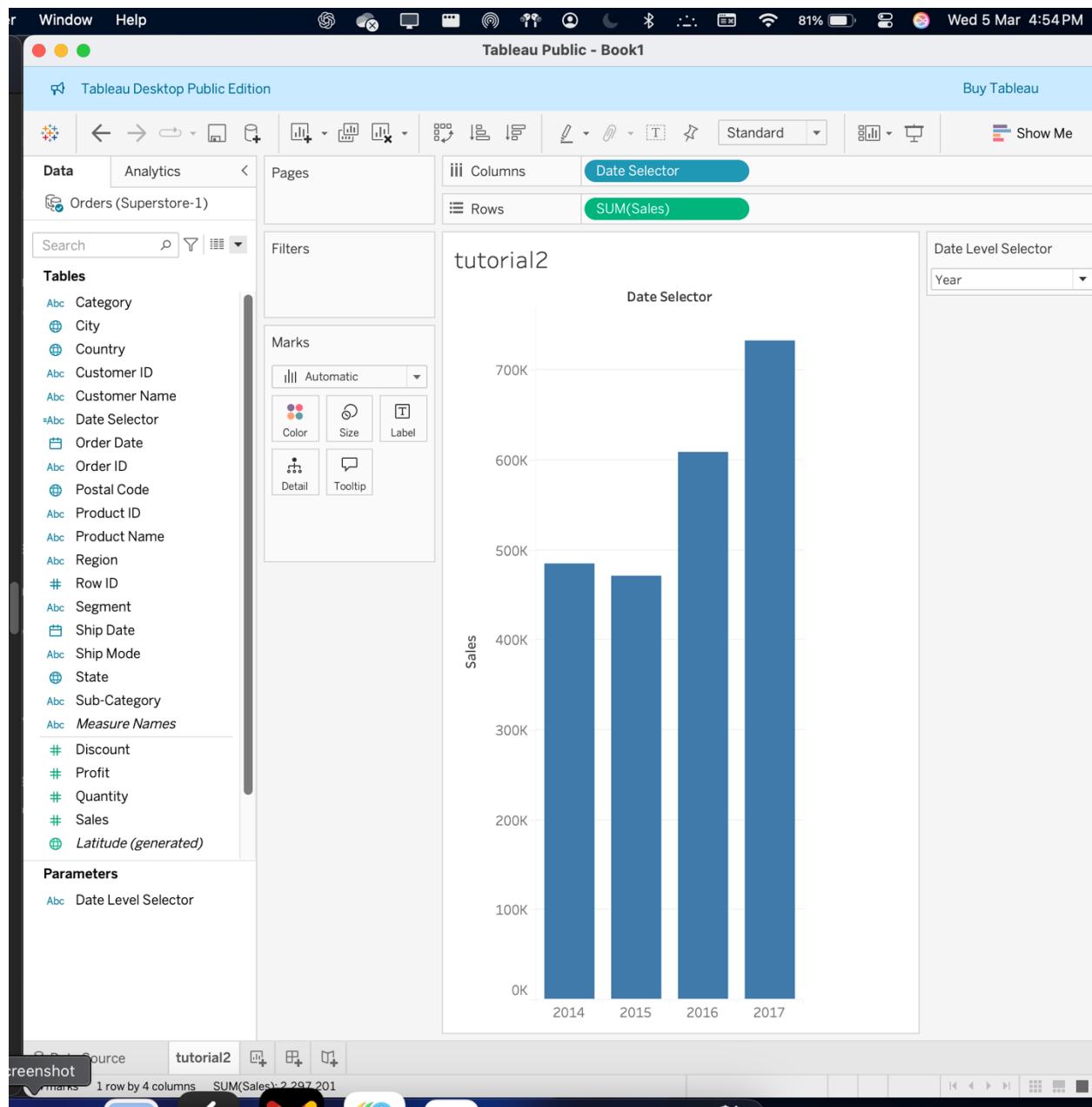


Step 5 : creating a new calculated field and naming it as date selector .

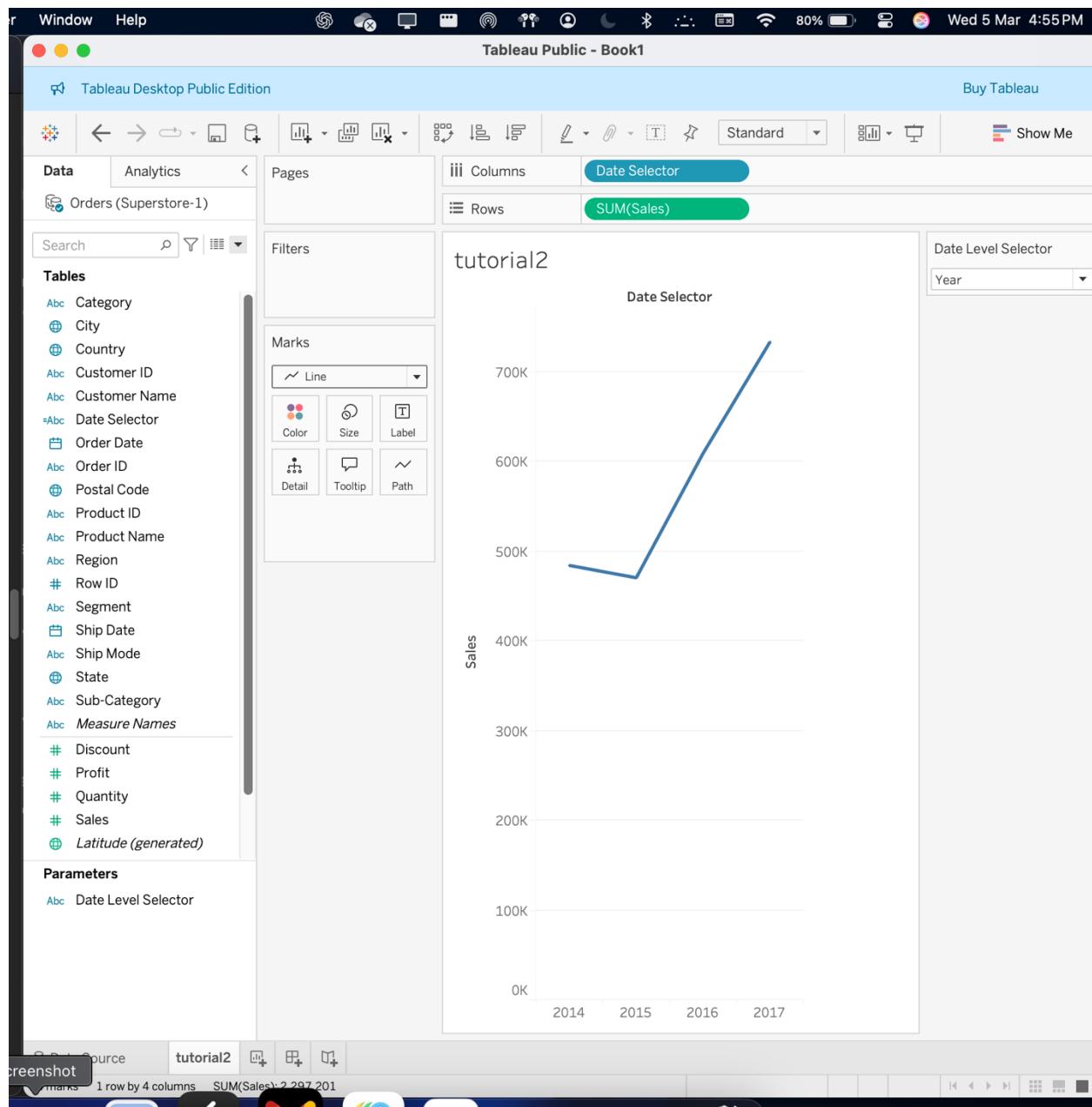


Step 6 : visualization of the sales data.

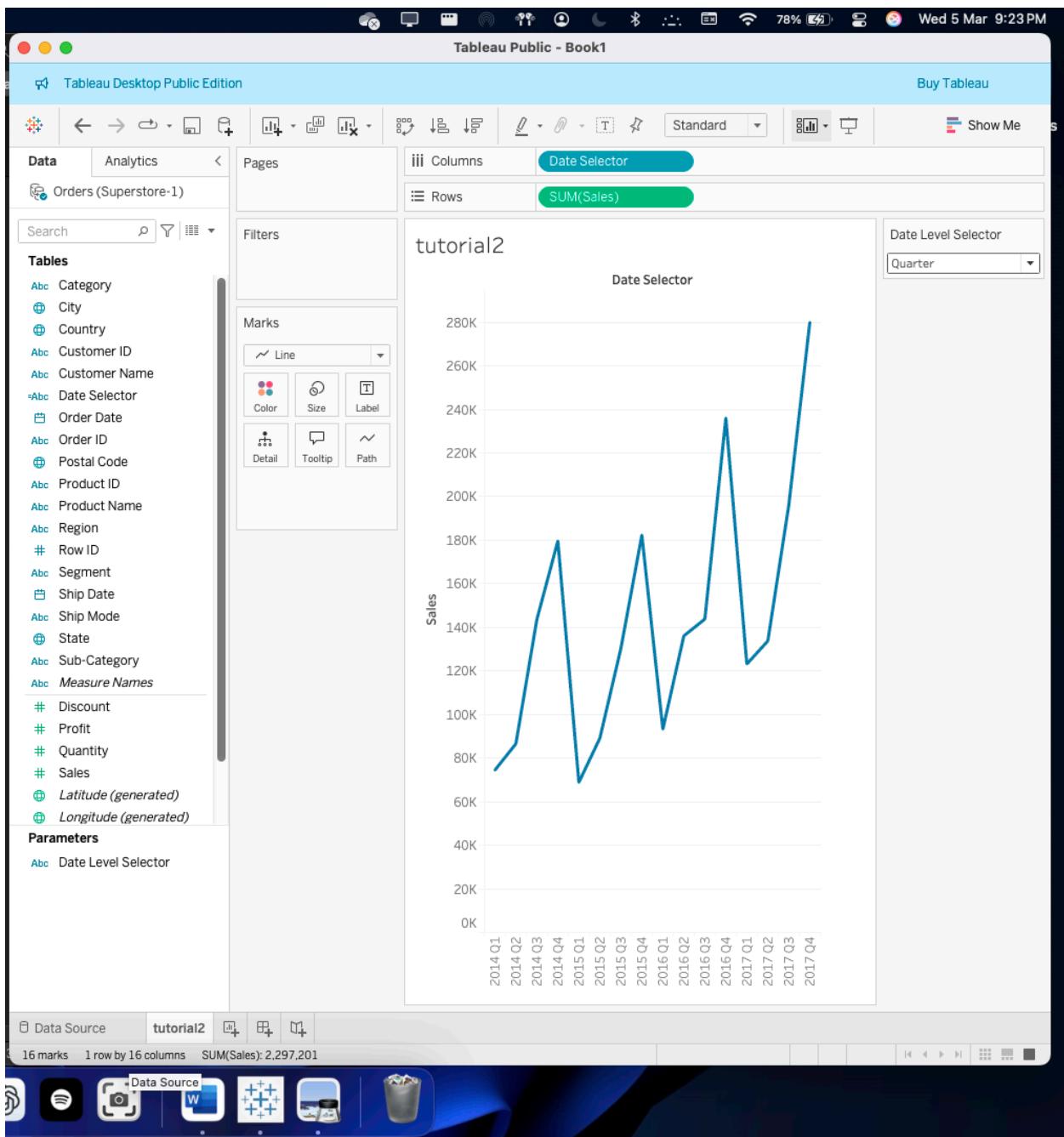
Dragging the required attributes in order to create a visualization to display the sales data.



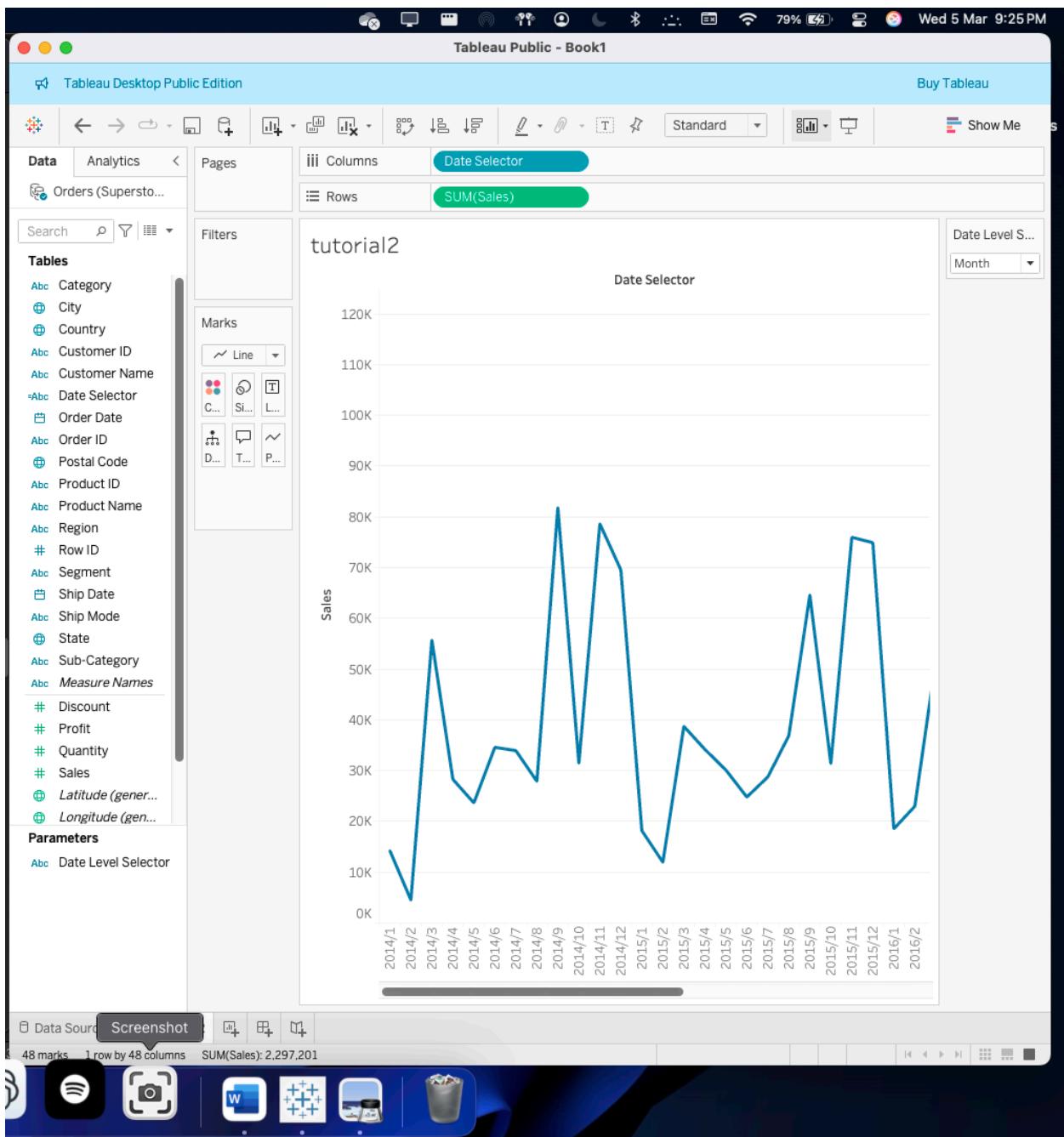
Step 7 : changing the mark type to line , transforming into a line chart.

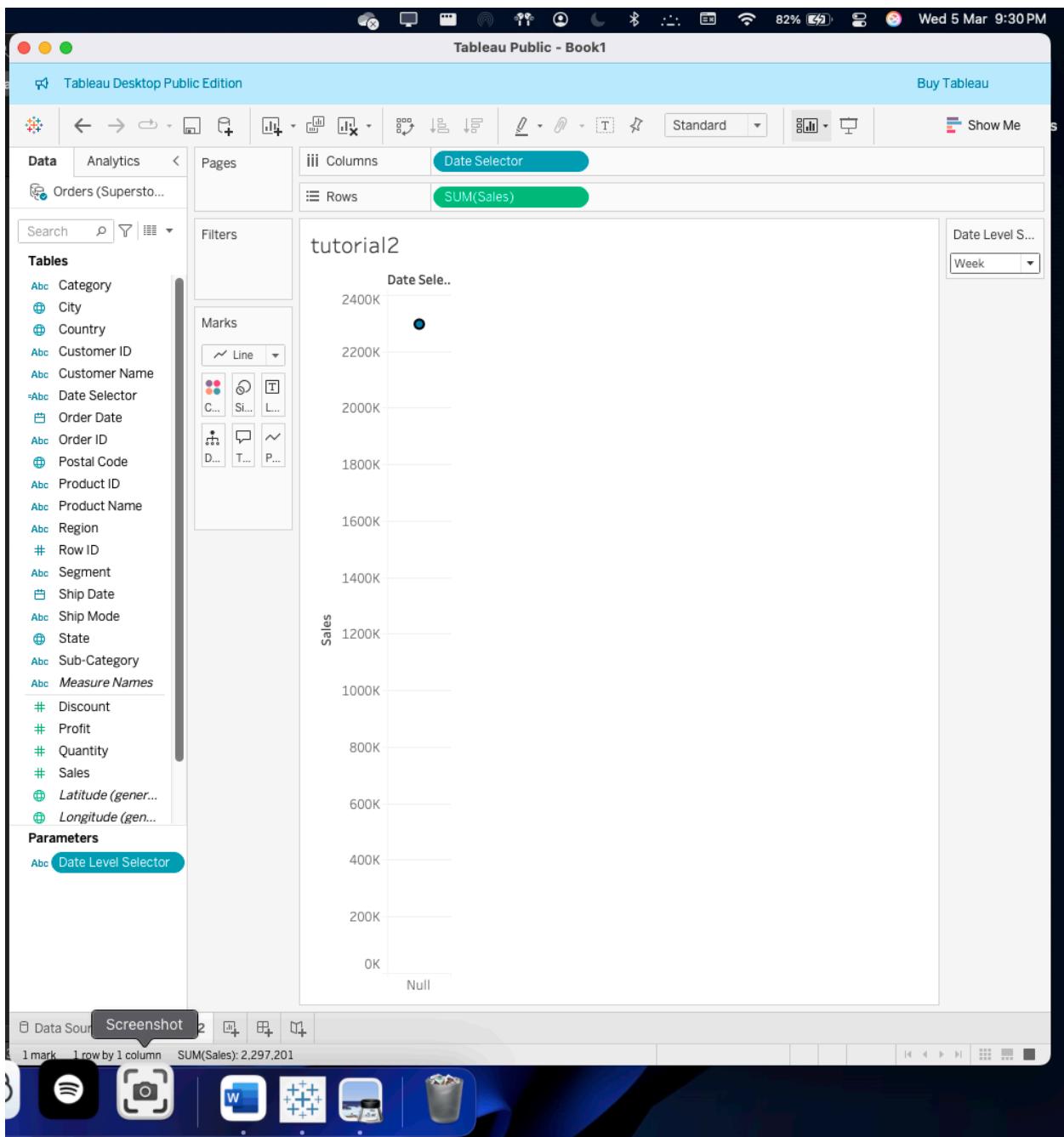


Step 8 : changing the customized date selector values to quarter to be able to display the data in months.



Step 9 : similarly we're here changing the date level to months now .





Question 2 :

- Create a new parameter called as Sales Growth Rate

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Show Me

Data Analytics <

Orders (Superstore)

Search

Tables

- Category
- City
- Country
- Customer ID
- Customer Name
- Date Selector
- Order Date
- Order ID
- Postal Code
- Product ID
- Product Name
- Region
- Row ID
- Segment
- Ship Date
- Ship Mode
- State
- Sub-Category
- Measure Names
- Discount
- Profit
- Quantity
- Sales
- Latitude (gener...
- Longitude (gen...

Parameters

Date Level Selector

Pages Columns Rows

Filters questrion2

Create Parameter

Name: Sales Growth Rate

Properties

Data type: Float Display format: 1

Current value: 1 Value when workbook opens: Current value

Allowable values

All List Range (selected)

Range of values

Minimum: 0 Fixed (selected) When workbook opens

Maximum: 1 Add values from ▾

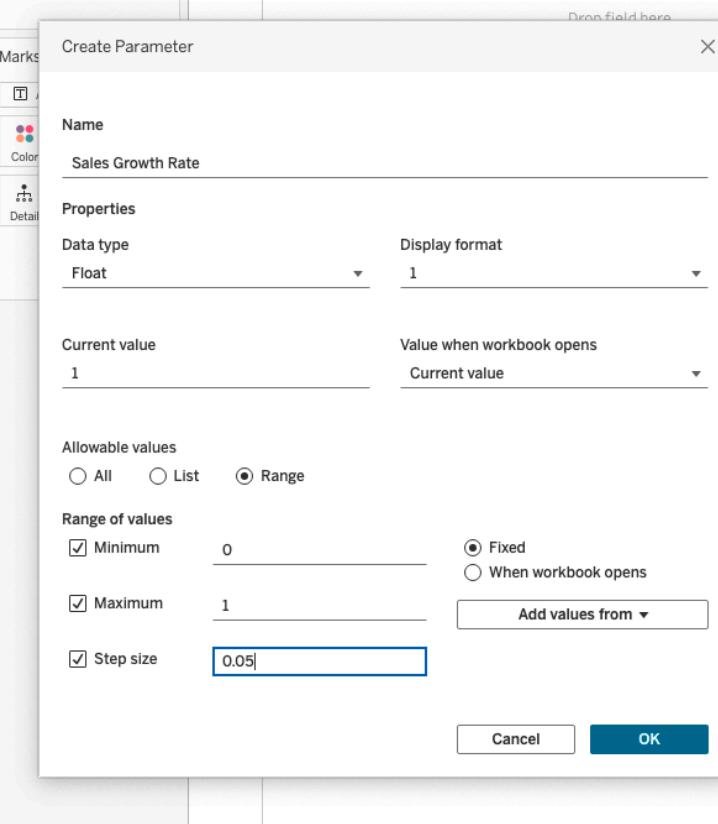
Step size: 0.05

Cancel OK

Screenshot

Data Source: questrion2

Icons: Spotify, Camera, Word, Excel, Power BI, Trash



2. created a new field called as Adjusted Sales

Tableau Public - Book1

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Data Analytics <

Orders (Superstore)

Search

Tables

Category

City

Country

Customer ID

Customer Name

Adjusted Sales

SUM([Sales]) * (1 + [Sales Growth Rate])

The calculation is valid.

Discount

Profit

Quantity

Sales

Latitude (gener...

Longitude (gen...

Parameters

Date Level Selector

Sales Growth Rate

Screenshot

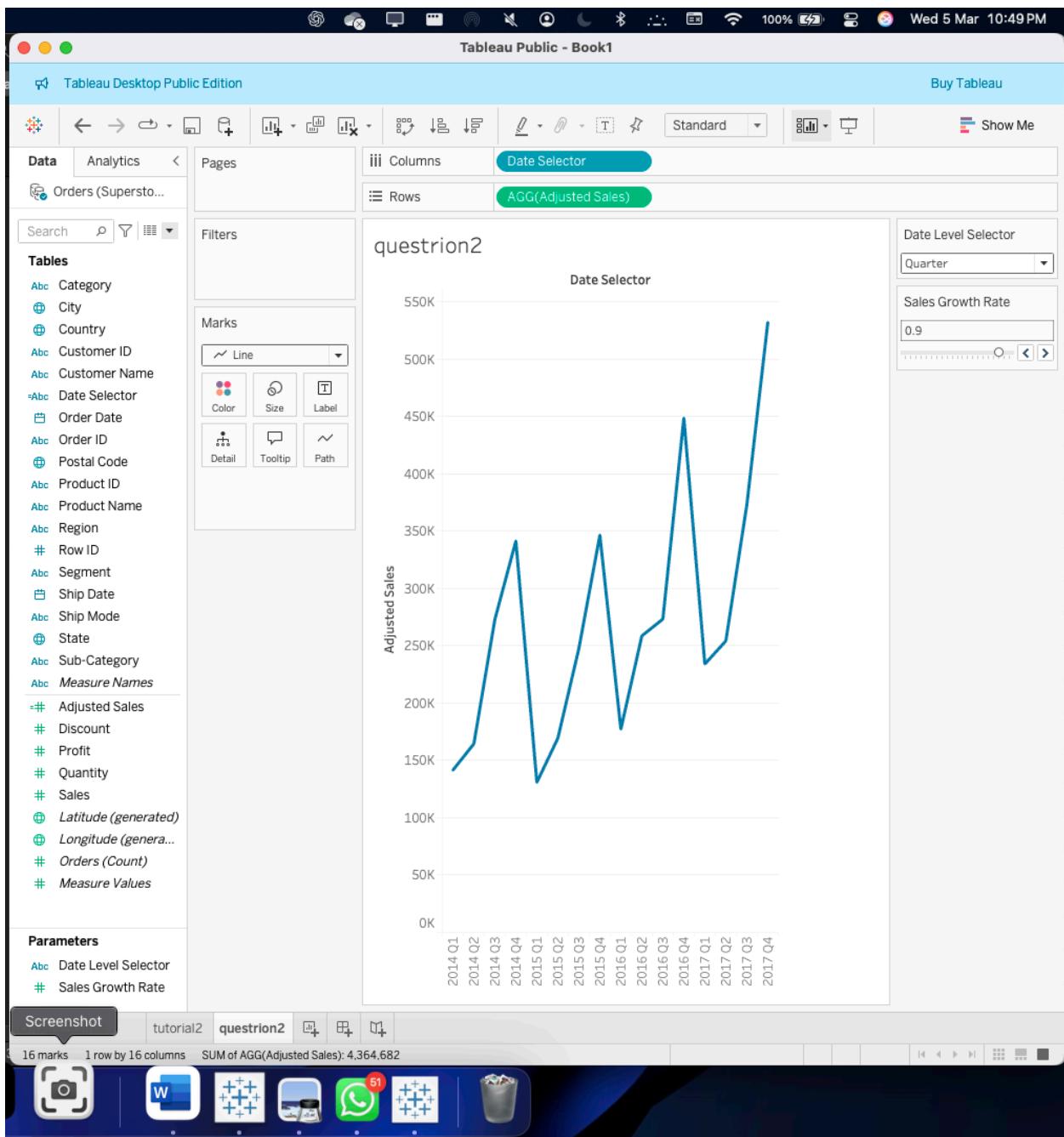
questrion2

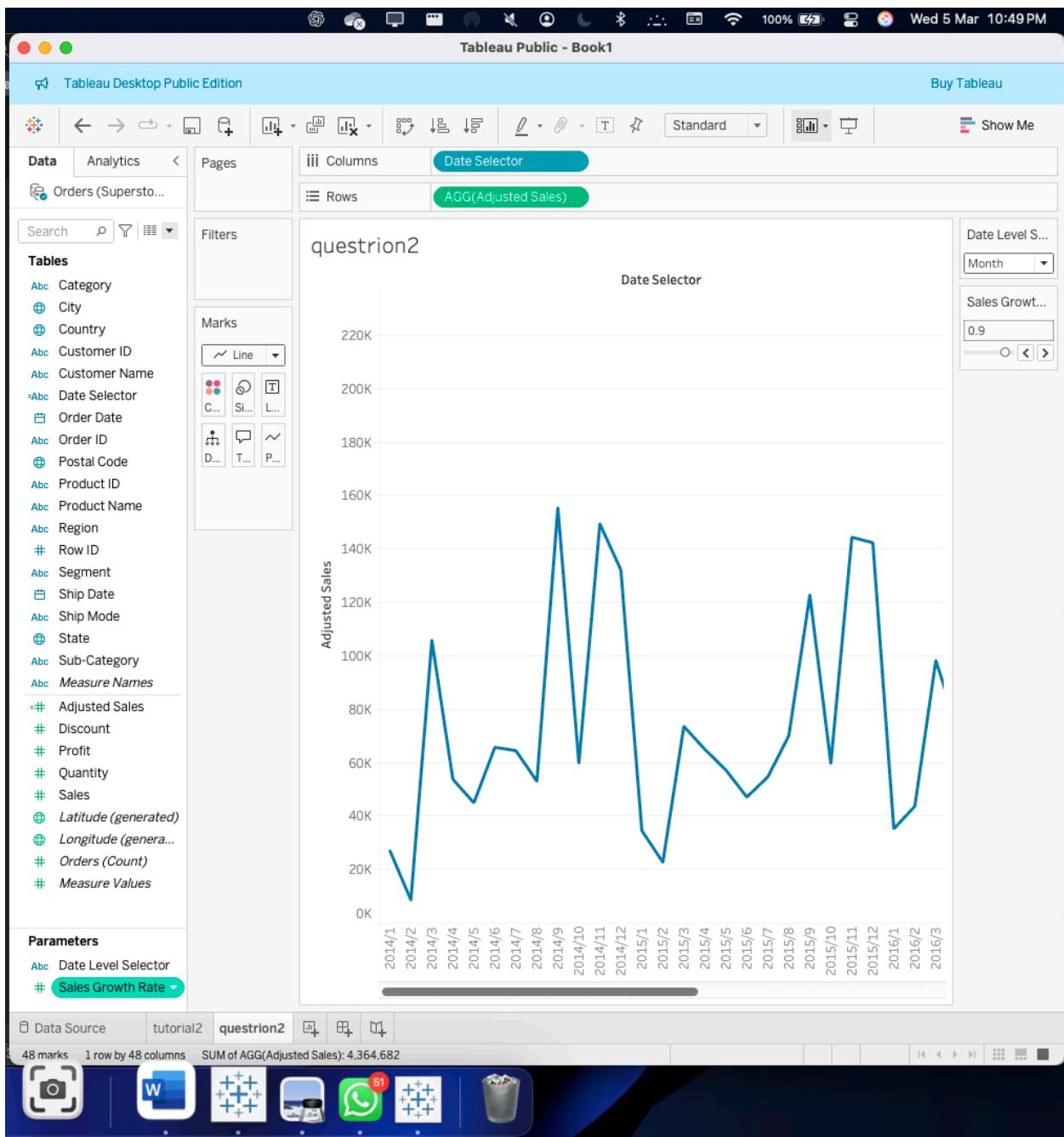
Drop field here

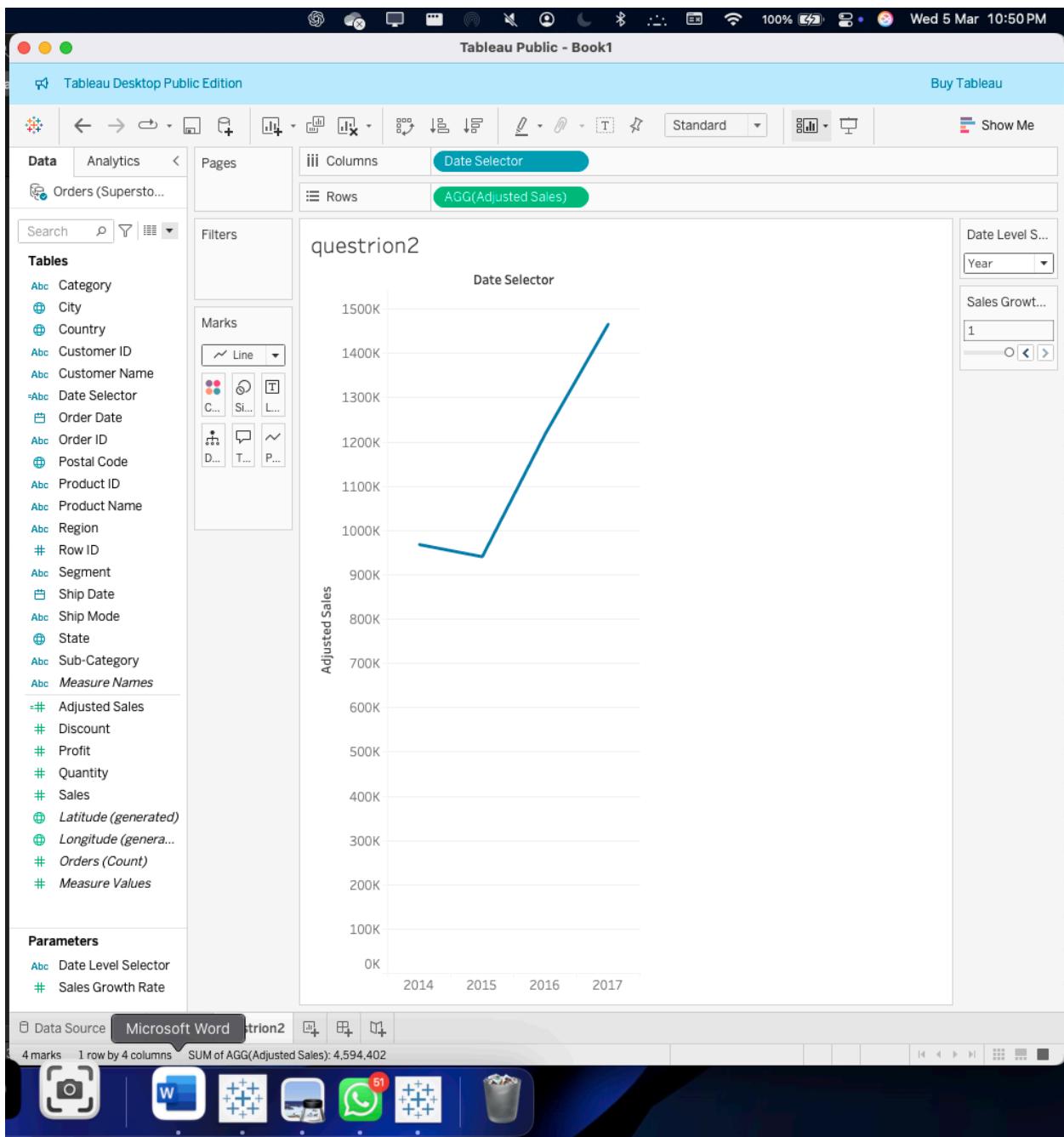
Apply OK

This screenshot shows the Tableau Desktop interface with a calculated field dialog open. The dialog title is 'Adjusted Sales' and contains the formula 'SUM([Sales]) * (1 + [Sales Growth Rate])'. A message below the formula states 'The calculation is valid.' At the bottom right of the dialog are 'Apply' and 'OK' buttons. The background shows the Tableau workspace with a sheet titled 'questrion2' and various data sources and parameters listed in the sidebar.

I had applied to show 'Date level parameters and also the sales growth rate filters to visualize them in 'years' , 'quarters' , 'months''weeks'.







Question 2.5

Analyzation : Dynamic analysis of the trends(sales) on different growth assumptions and time periods.

- Basically this visualization will allows us to have a track on the adjusted sales over the time .

- b. By able to switch between 'year' , quarters and months , this can be able to analyze the different patterns of trends over the time or different granularities.
- c. Sales growth rate , a new added parameter over here would help us see how the sales would change under various assumptions over the rate between 0 and 1 .

Task 3 :

Key performance indicator.

Step 1 :using the superstore dataset and then creating a new worksheet :

The screenshot shows the Tableau Desktop Public Edition interface. On the left, the 'Tables' pane lists various dimensions and measures from the Superstore dataset. In the center, the 'Marks' card is open, showing settings for 'Automatic' marks, with 'Color' selected. Below it, a green button labeled 'SUM(Sales)' is highlighted. At the top of the main workspace, 'Region' is assigned to the 'Columns' shelf, and 'Category' is assigned to the 'Rows' shelf. The resulting visualization is a table titled 'Sales KPI' with the following data:

Category	Region			
	Central	East	South	West
Furniture	163,797	208,291	117,299	252,613
Office Supplies	167,026	205,516	125,651	220,853
Technology	170,416	264,974	148,772	251,992

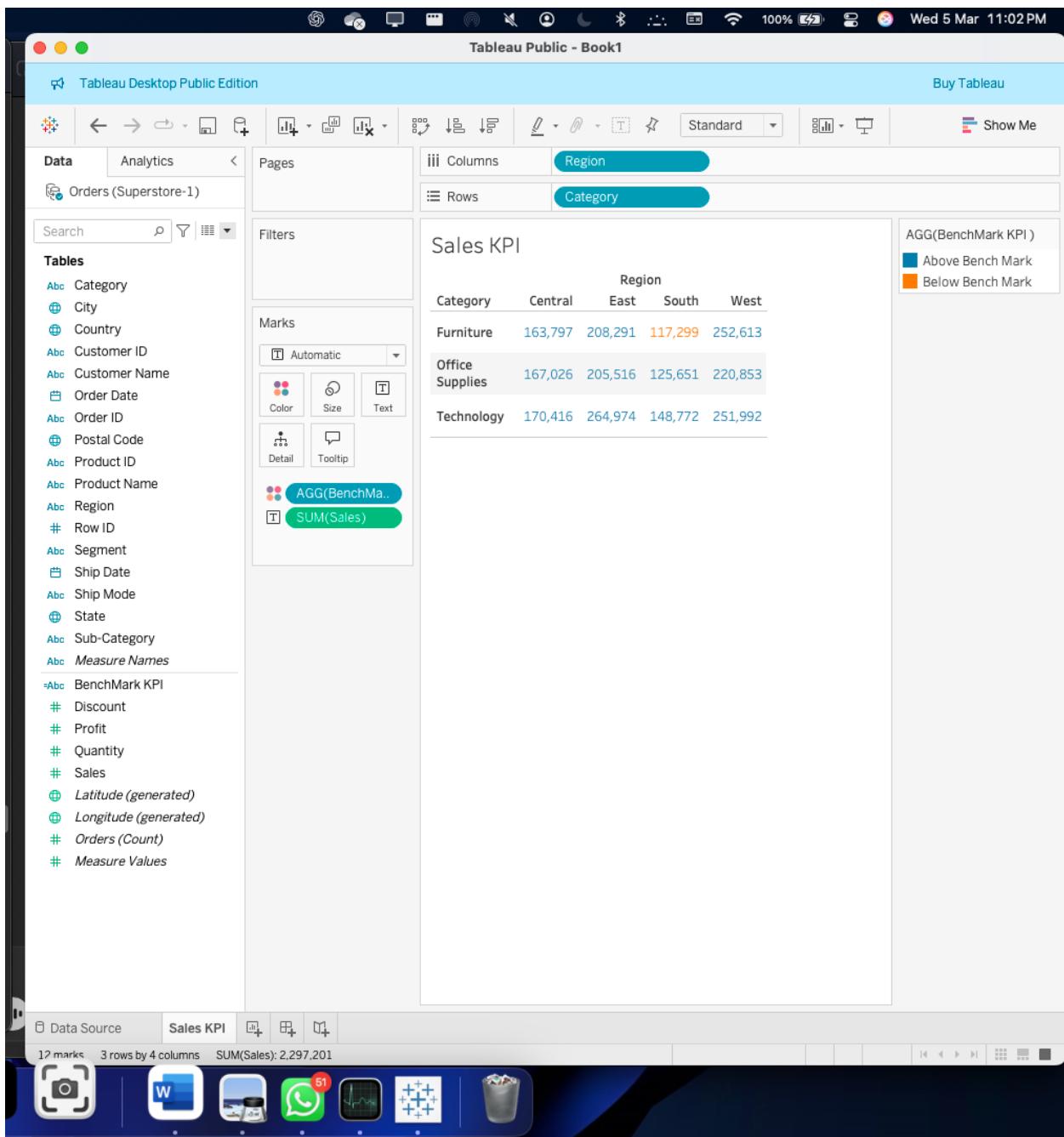
Step 2 : creating a calculated field accordingly .

The screenshot shows the Tableau Desktop Public Edition interface. In the top right corner, it says "Tableau Public - Book1" and "Wed 5 Mar 11:01PM". The main area displays a data source named "Orders (Superstore-1)" with tables like Category, City, Country, Customer ID, and Customer Name. A dashboard titled "Sales KPI" is visible, showing a table with columns "Region" (Central, East, South, West) and rows "Category" (Furniture, Office). The Furniture row has values 163,797, 208,291, 117,299, and 252,613 respectively. The Office row has values 167,026, 205,516, 125,651, and 220,853. A calculated field dialog box is open, titled "BenchMark KPI". It contains the following code:

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

The message "The calculation is valid." is displayed below the code. At the bottom of the dialog are "Apply" and "OK" buttons. To the left of the dialog, there is a list of available measures: Discount, Profit, Quantity, Sales, Latitude (generated), Longitude (generated), Orders (Count), and Measure Values. The bottom of the screen shows the Tableau ribbon with tabs like Screenshot, Sales KPI, and various icons.

Step 3 : dragging the calculated field to the color shelf which gives us the values with a color showing us which and which are above and below the bench (the value) / the threshold we have set up .



Step 4 : customizing the colors

Tableau Desktop Public Edition

Tableau Public - Book1

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Data Analytics < Pages Columns Region

Orders (Superstore-1) Rows Category

Search

Tables

- Abc Category
- Abc City
- Abc Country
- Abc Customer ID
- Abc Customer Name
- Abc Order Date
- Abc Order ID
- Abc Postal Code
- Abc Product ID
- Abc Product Name
- Abc Region
- # Row ID
- Abc Segment
- Abc Ship Date
- Abc Ship Mode
- Abc State
- Abc Sub-Category
- Abc Measure Names
- +Abc BenchMark KPI
- # Discount
- # Profit
- # Quantity
- # Sales
- Latitude (generated)
- Longitude (generated)
- # Orders (Count)
- # Measure Values

Filters

Sales KPI

Edit Colors [BenchMark KPI]

Select Data Item:

- Above Bench Mark
- Below Bench Mark

Select Color Palette:

Automatic

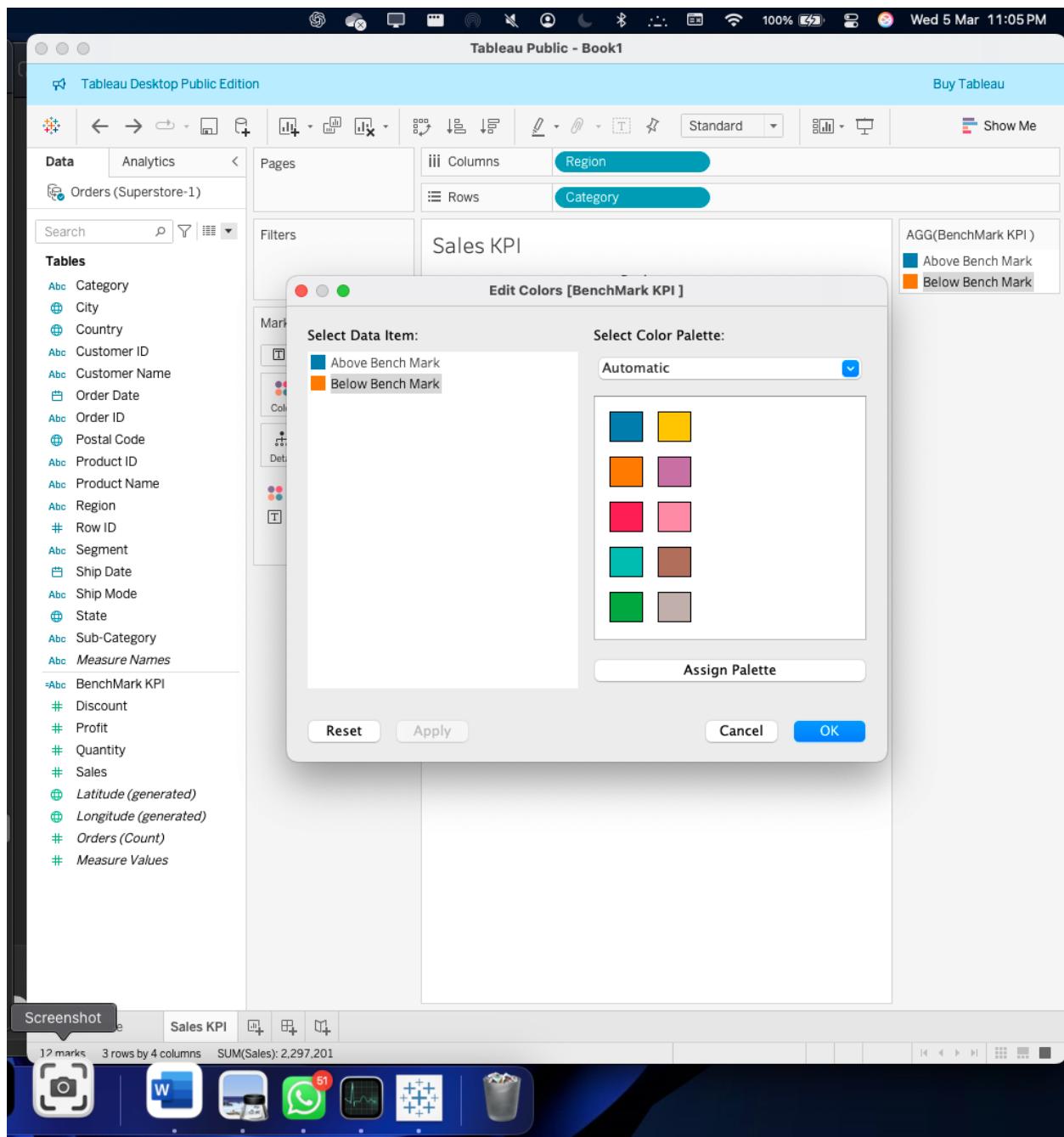
Blue	Yellow
Orange	Purple
Red	Pink
Cyan	Brown
Green	Grey

Assign Palette

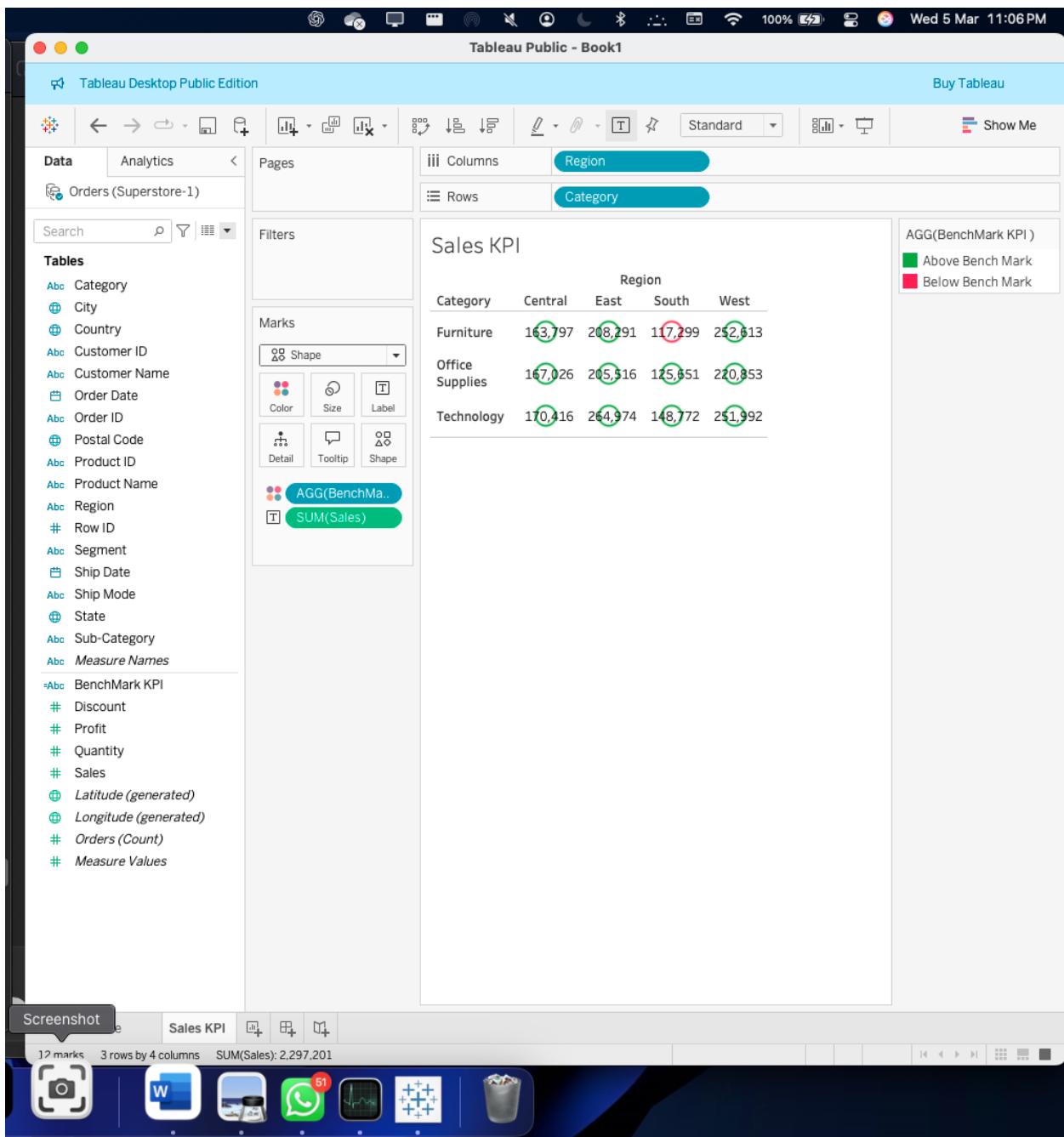
Reset Apply Cancel OK

Screenshot

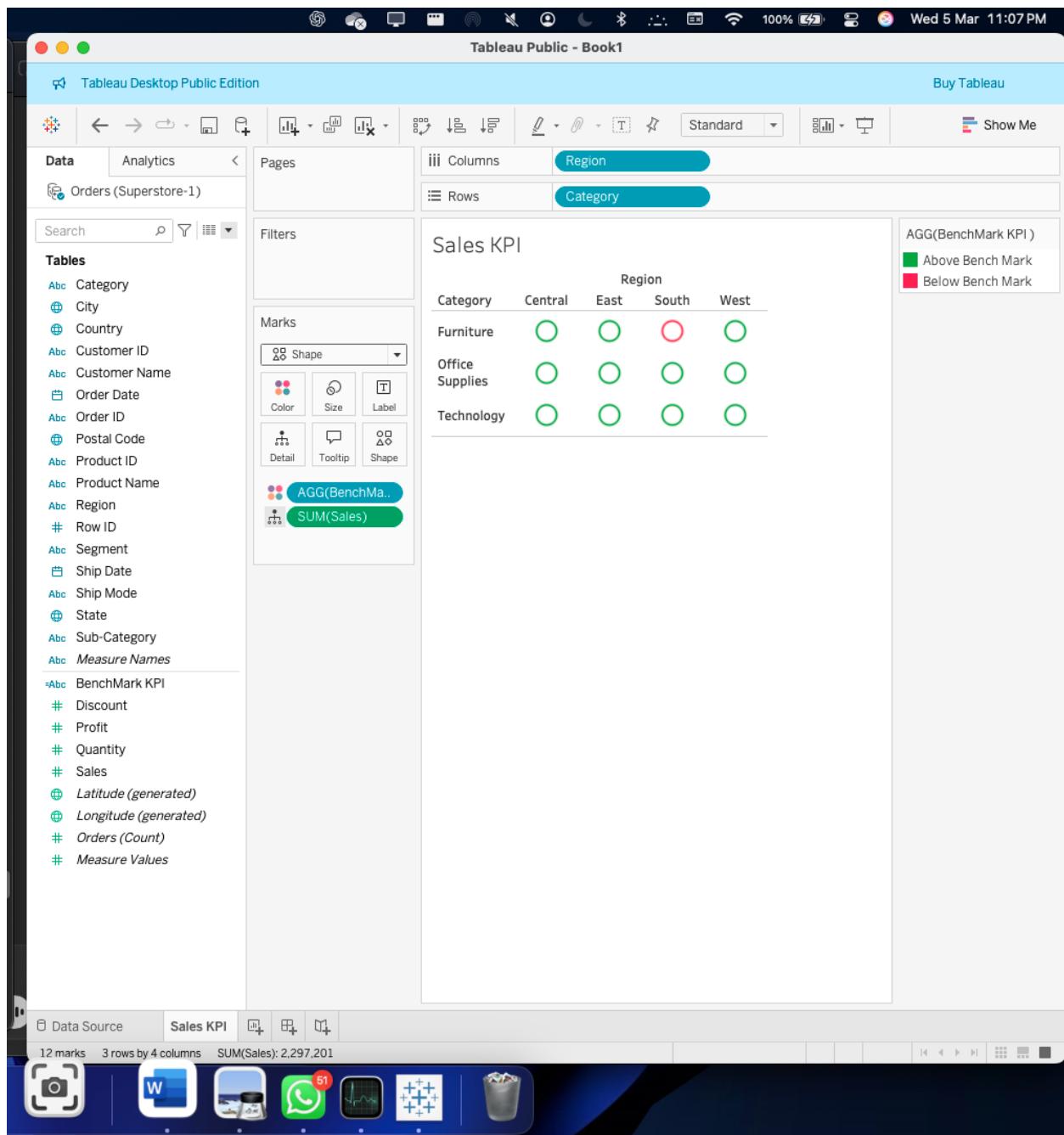
12 marks 3 rows by 4 columns SUM(Sales): 2,297,201



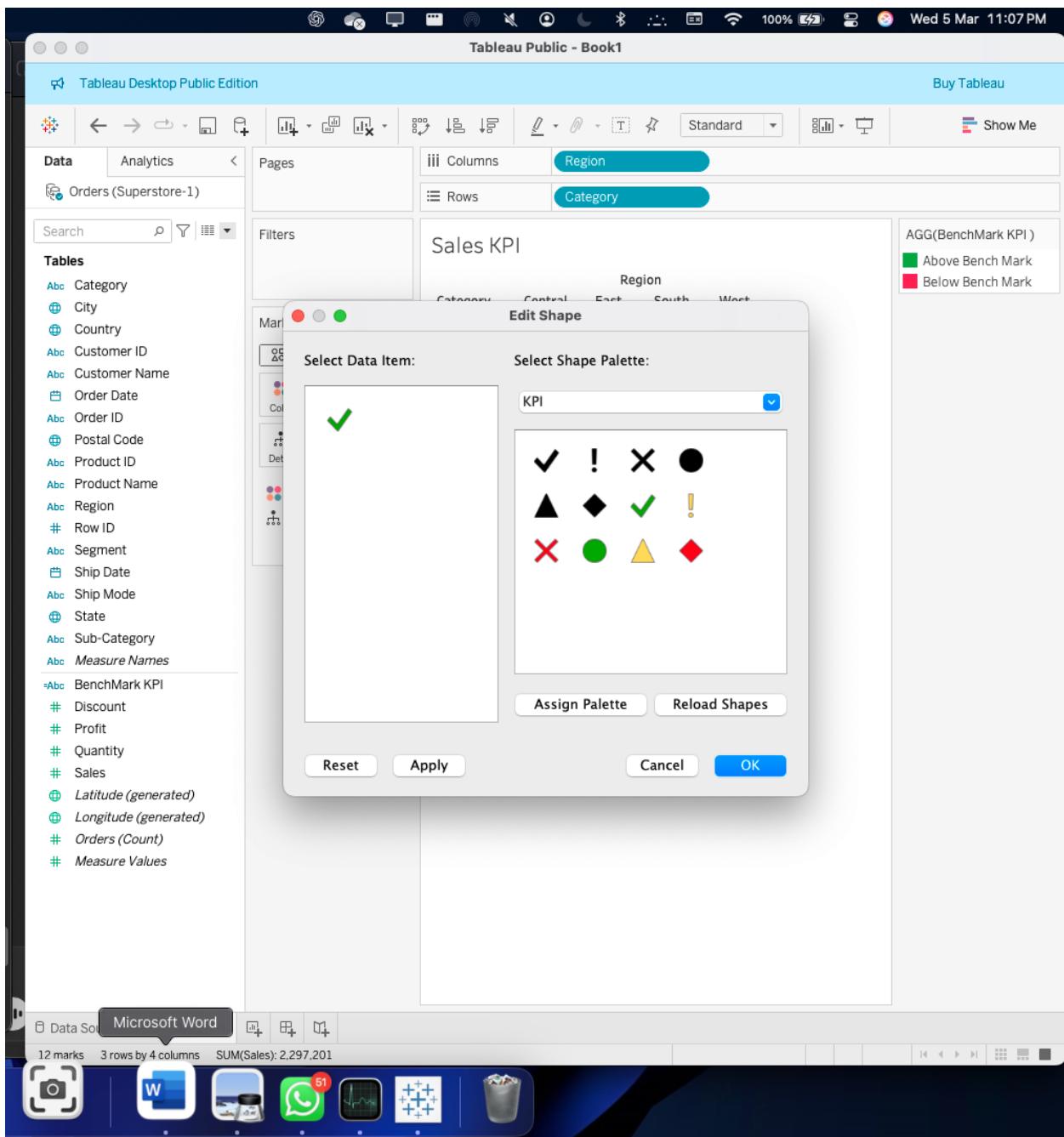
Step 5 : changing the mark type to shape :



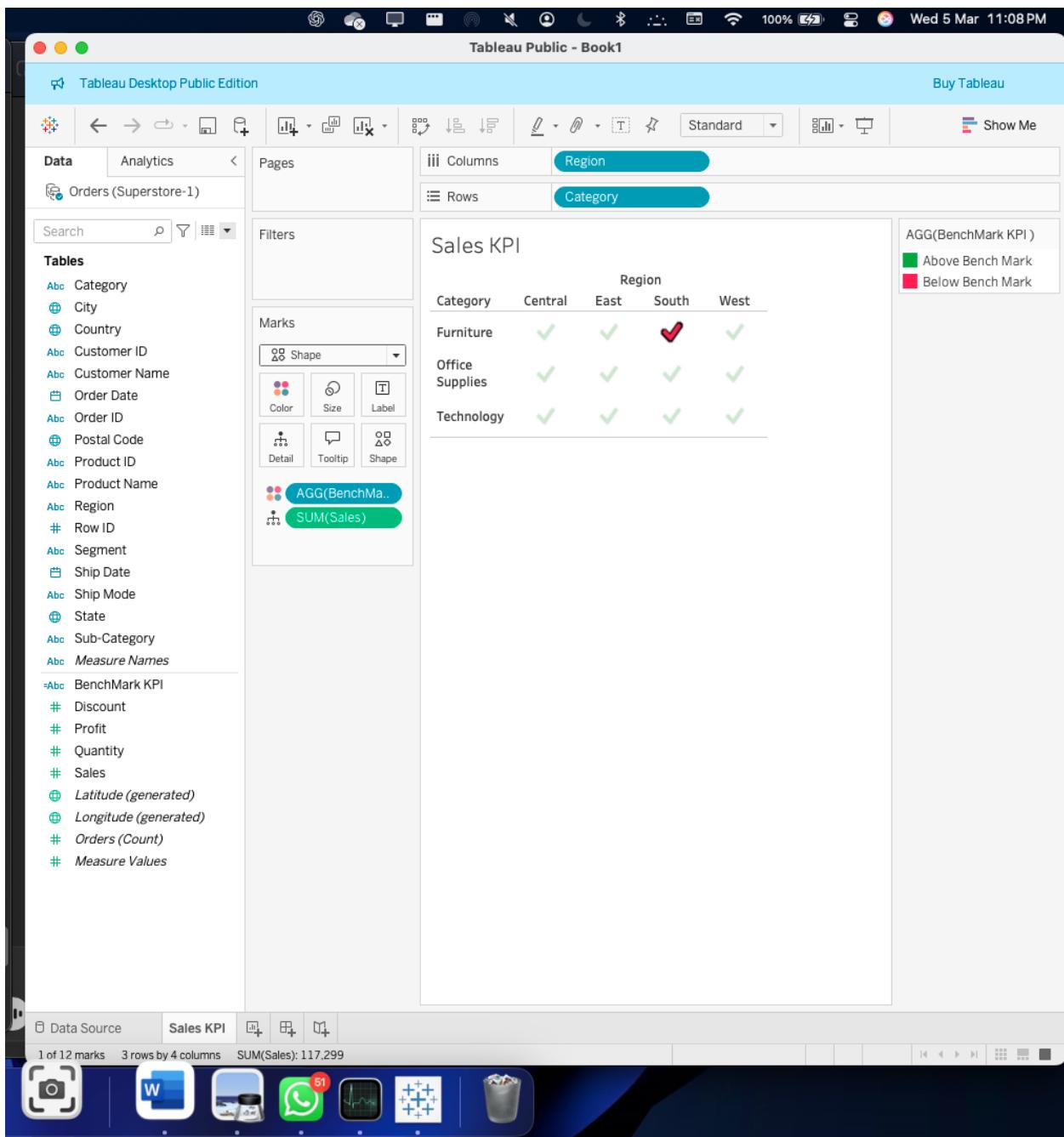
Step 6 :



Step 7 : more customization using shapes .



Step 8 : we can spot that the furniture has been underperforming in the south region .



Question 3 :

- Placing the given values

Tableau Public - Book1

Tableau Desktop Public Edition

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Data Analytics < Pages Columns YEAR(Order Date)

Orders (Superstore-1) Rows Sub-Category

Search

Tables

- Abc Category
- Abc City
- Abc Country
- Abc Customer ID
- Abc Customer Name
- Order Date
- Abc Order ID
- Abc Postal Code
- Abc Product ID
- Abc Product Name
- Abc Region
- # Row ID
- Abc Segment
- Ship Date
- Abc Ship Mode
- Abc State
- Abc Sub-Category
- Abc Measure Names
- =Abc BenchMark KPI
- # Discount
- # Profit
- # Quantity
- # Sales
- Latitude (generated)
- Longitude (generated)
- # Orders (Count)
- # Measure Values

Marks Automatic

Color Size Text Detail Tooltip

T SUM(Sales)

ques3:SALES KPI-2

Sub-Catego..	2014	2015	2016	2017
Accessories	25,014	40,524	41,896	59,946
Appliances	15,314	23,241	26,050	42,927
Art	6,058	6,237	5,961	8,863
Binders	43,488	37,453	49,683	72,788
Bookcases	20,037	38,544	26,275	30,024
Chairs	77,242	71,735	83,919	95,554
Copiers	10,850	26,179	49,599	62,899
Envelopes	3,856	4,512	4,730	3,379
Fasteners	661	545	960	858
Furnishings	13,826	21,090	27,874	28,915
Labels	2,841	2,956	2,827	3,861
Machines	62,023	27,764	55,907	43,545
Paper	14,835	15,288	20,662	27,695
Phones	77,391	68,314	78,962	105,341
Storage	50,329	45,048	58,789	69,678
Supplies	14,394	1,952	14,278	16,049
Tables	46,088	39,150	60,833	60,894

Microsoft Word question3

68 marks 17 rows by 4 columns SUM(Sales): 2,297,201

2. evaluation of the performance :

Tableau Public - Book1

Tableau Desktop Public Edition

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Data Analytics < Pages Columns YEAR(Order Date)

Orders (Superstore-1) Rows Sub-Category

Search

Tables

- Abc Category
- Abc City
- Abc Country
- Abc Customer ID
- Abc Customer Name

ques3:SALES KPI-2

Sub-Catego..	2014	2015	2016	2017
Accessories	25,014	40,524	41,896	59,946
Appliances	15,314	23,241	26,050	42,927
Art	6,058	6,237	5,961	8,863

Target KPI

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

The calculation is valid.

Apply OK

Discount
Profit
Quantity
Sales
Latitude (generated)
Longitude (generated)
Orders (Count)
Measure Values

Screenshot Sales KPI question3

68 marks 17 rows by 4 columns SUM(Sales): 2,297,201

Function has been displayed with the values above and below are being displayed.

Tableau Public - Book1

Tableau Desktop Public Edition

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Data Analytics < Pages

Orders (Superstore-1)

Search

Tables

- Abc Category
- Abc City
- Abc Country
- Abc Customer ID
- Abc Customer Name
- Order Date
- Abc Order ID
- Abc Postal Code
- Abc Product ID
- Abc Product Name
- Abc Region
- # Row ID
- Abc Segment
- Ship Date
- Abc Ship Mode
- Abc State
- Abc Sub-Category
- Abc Measure Names
- =Abc BenchMark KPI
- # Discount
- # Profit
- # Quantity
- # Sales
- =Abc Target KPI
- Abc Latitude (generated)
- Abc Longitude (generated)
- # Orders (Count)
- # Measure Values

Filters

AGG(Target KPI): Bel..

Marks

Automatic

Color, Size, Text, Detail, Tooltip

SUM(Sales)

Columns: YEAR(Order Date)

Rows: Sub-Category

ques3:SALES KPI-2

Order Date

Sub-Catego..	2014	2015	2016	2017
Appliances	15,314	23,241		
Art	6,058	6,237	5,961	8,863
Bookcases	20,037			
Copiers	10,850			
Envelopes	3,856	4,512	4,730	3,379
Fasteners	661	545	960	858
Furnishings	13,826	21,090		
Labels	2,841	2,956	2,827	3,861
Paper	14,835	15,288	20,662	
Supplies	14,394	1,952	14,278	16,049

AGG(Target KPI)

(All)

Above Target

Below Target

Data Source: Sales KPI question3

29 marks 10 rows by 4 columns SUM(Sales): 260,921

Icons: Camera, Word, Cloud, WhatsApp, Heart Rate Monitor, Plus

Tableau Public - Book1

Tableau Desktop Public Edition

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Show Me

Data Analytics < Pages Columns YEAR(Order Date)

Orders (Superstore-1) Rows Sub-Category

Search

Tables

- Abc Category
- Abc City
- Abc Country
- Abc Customer ID
- Abc Customer Name
- Order Date
- Abc Order ID
- Postal Code
- Abc Product ID
- Abc Product Name
- Abc Region
- # Row ID
- Abc Segment
- Ship Date
- Abc Ship Mode
- State
- Sub-Category
- Abc Measure Names
- =Abc BenchMark KPI
- # Discount
- # Profit
- # Quantity
- # Sales
- =Abc Target KPI
- Latitude (generated)
- Longitude (generated)
- # Orders (Count)
- # Measure Values

Filters AGG(Target KPI)

Marks Automatic

Color Size Text Detail Tooltip

AGG(Target KP... SUM(Sales))

ques3:SALES KPI-2

Order Date

Sub-Catego..	2014	2015	2016	2017
Accessories	25,014	40,524	41,896	59,946
Appliances	15,314	23,241	26,050	42,927
Art	6,058	6,237	5,961	8,863
Binders	43,488	37,453	49,683	72,788
Bookcases	20,037	38,544	26,275	30,024
Chairs	77,242	71,735	83,919	95,554
Copiers	10,850	26,179	49,599	62,899
Envelopes	3,856	4,512	4,730	3,379
Fasteners	661	545	960	858
Furnishings	13,826	21,090	27,874	28,915
Labels	2,841	2,956	2,827	3,861
Machines	62,023	27,764	55,907	43,545
Paper	14,835	15,288	20,662	27,695
Phones	77,391	68,314	78,962	105,341
Storage	50,329	45,048	58,789	69,678
Supplies	14,394	1,952	14,278	16,049
Tables	46,088	39,150	60,833	60,894

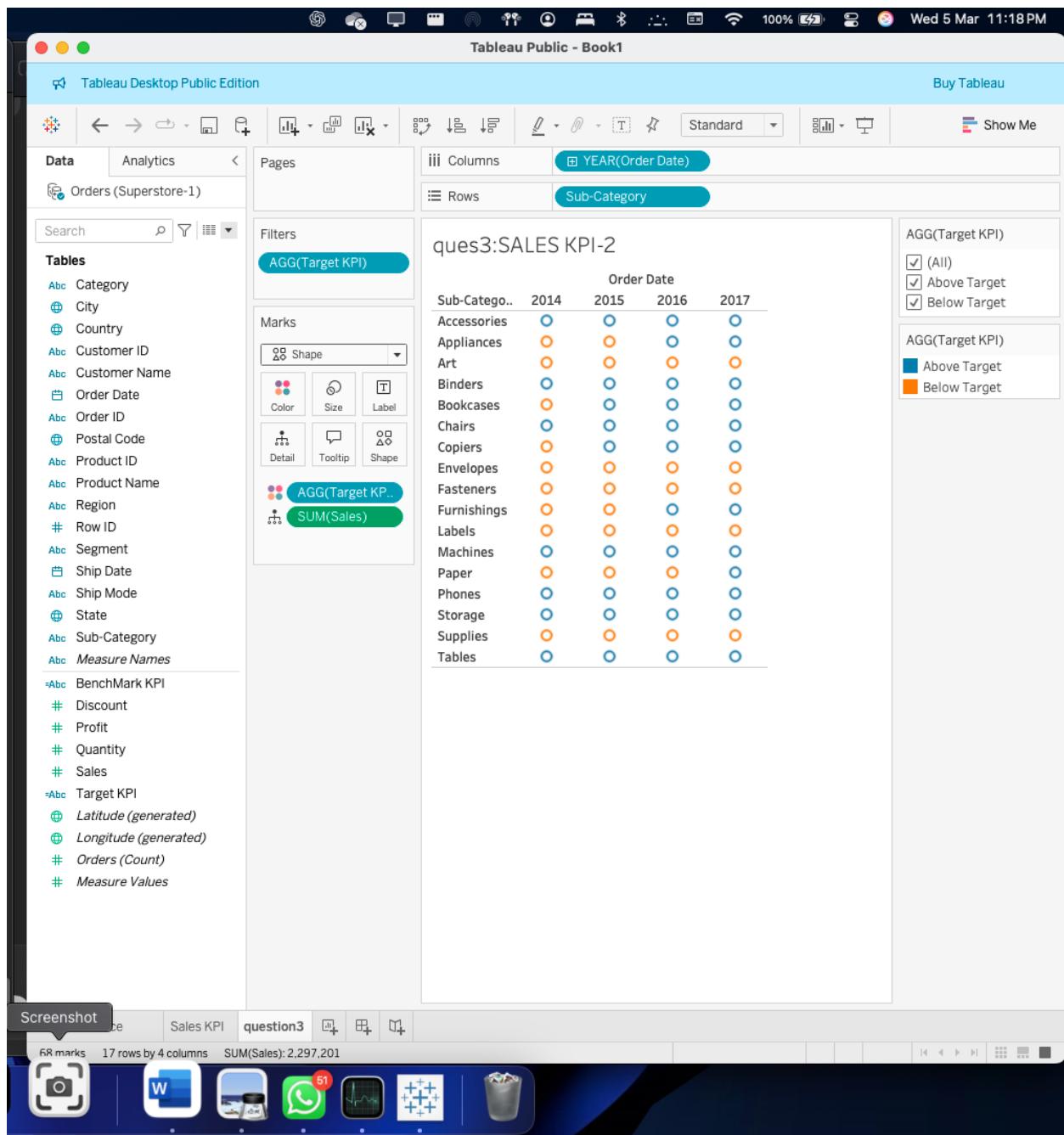
AGG(Target KPI)

Above Target Below Target

Data Source Microsoft Word question3 68 marks 17 rows by 4 columns SUM(Sales): 2,297,201

WPS Office WhatsApp ECG Data Analysis

Question 3 : changing the shapes to the given values



Question 4 :

Tableau Public - Book1

Tableau Desktop Public Edition

Buy Tableau

Show Me

Data Analytics < Pages

Orders (Superstore-1)

Search

Tables

- Abc Category
- Abc City
- Abc Country
- Abc Customer ID
- Abc Customer Name
- Order Date
- Abc Order ID
- Abc Postal Code
- Abc Product ID
- Abc Product Name
- Abc Region
- # Row ID
- Abc Segment
- Ship Date
- Abc Ship Mode
- Abc State
- Abc Sub-Category
- Abc Measure Names
- Abc BenchMark KPI
- # Discount
- # Profit
- # Quantity
- # Sales
- Abc Target KPI
- Latitude (generated)
- Longitude (generated)
- # Orders (Count)
- # Measure Values

Columns: YEAR(Order Date)

Rows: Sub-Category

ques3:SALES KPI-2

Order Date

Sub-Catego..	2014	2015	2016	2017
Accessories	□	□	□	□
Appliances	□	□	□	□
Art	□	□	□	□
Binders	□	□	□	□
Bookcases	□	□	□	□
Chairs	□	□	□	□
Copiers	□	□	□	□
Envelopes	□	□	□	□
Fasteners	□	□	□	□
Furnishings	□	□	□	□
Labels	□	□	□	□
Machines	□	□	□	□
Paper	□	□	□	□
Phones	□	□	□	□
Storage	□	□	□	□
Supplies	□	□	□	□
Tables	□	□	□	□

AGG(Target KPI)

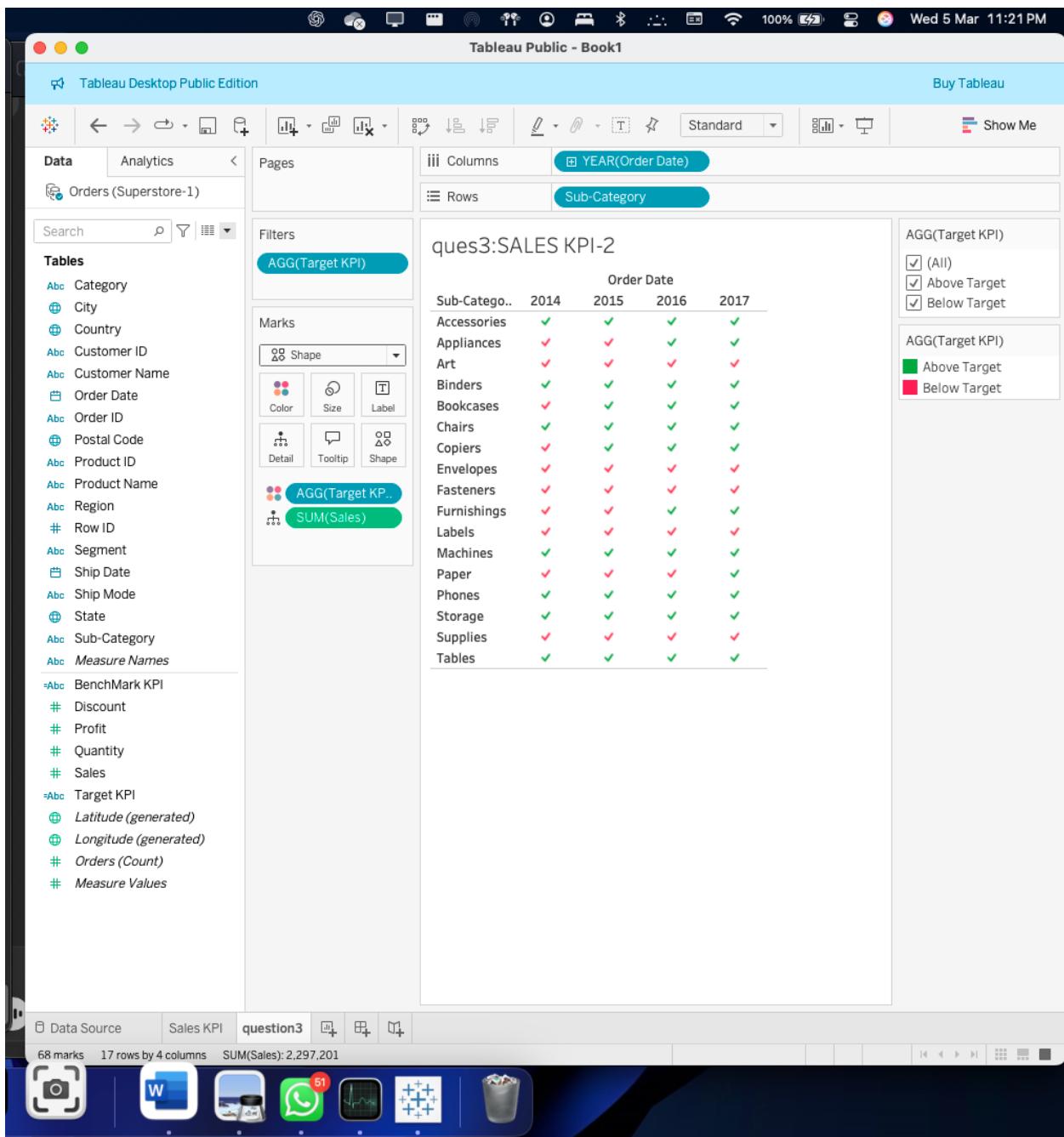
- (All)
- Above Target
- Below Target

AGG(Target KPI)

- █ Above Target
- █ Below Target

Screenshot

68 marks 17 rows by 4 columns SUM(Sales): 2,297,201



Question 5 :

Analyzation :

- This visualization shows us with the performance of the subcategories of data which is based on the sales that had happened across years 2014 and 2017 .
- Here ,each category is listen as rows and the years are being represented in the columns .
- The kpi performance has been visually indicated using the checkmarks as asked .

Observations :

- a. Consistent high performance has been recorded for some categories like the phone , tables and chairs etc with a recording high sales performance.
- b. There has been performance drops for categories like the copiers and bookcases and binders which has affected their overall sales.
- c. Some had fallen consistently below their set target like “fasteners , labels and envelopes ” which fail to meet their criteria showing it’s issues like low in demand.
- d. Overall it’s a mix of above and below target performance.