

Joins

Joins allows us to analyze the data from more than one source.

Types of joins:

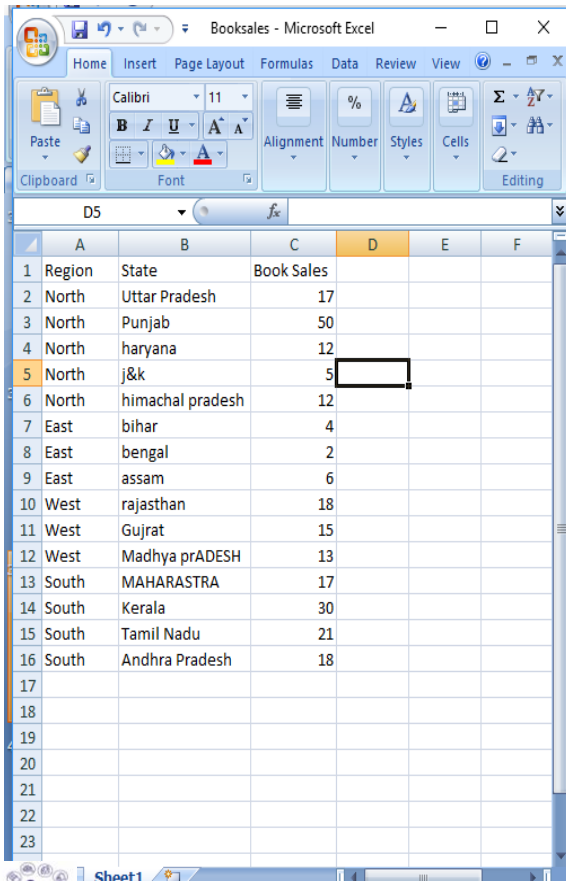
1. Inner Join
2. Left Join
3. Right Join
4. Full Join

Cross Database Join: Getting the data from different data sources.



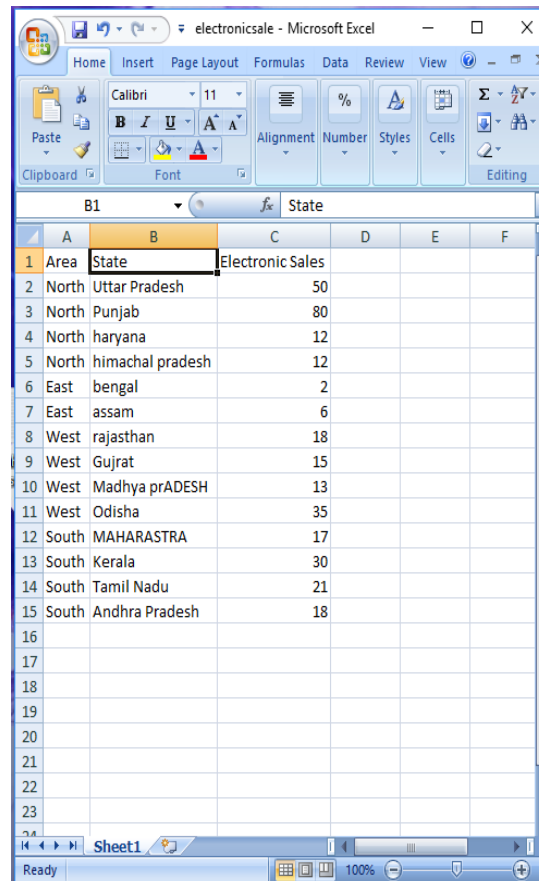
Data Blending

Like Joins data blending, allows us to analyze the data from more than one source and it gives more advanced options.



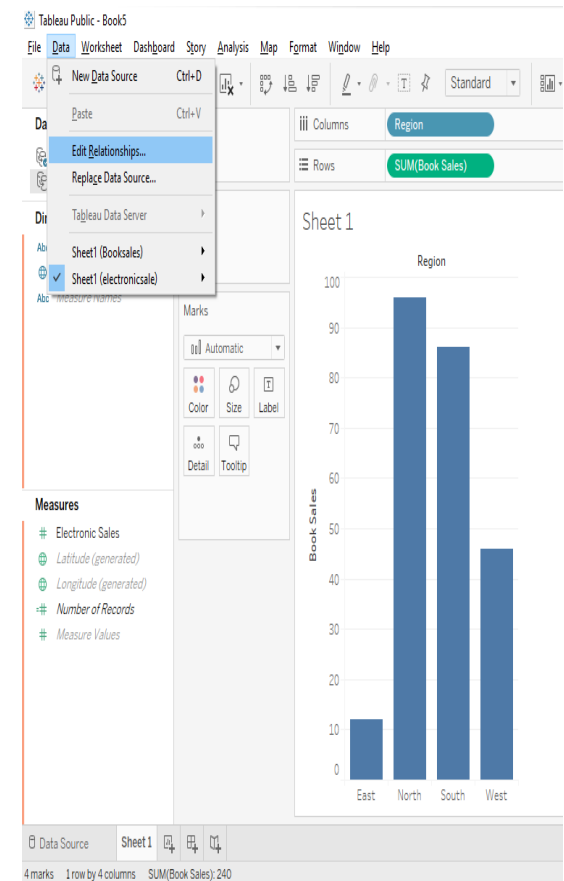
Booksales - Microsoft Excel

	A	B	C	D	E	F
1	Region	State	Book Sales			
2	North	Uttar Pradesh	17			
3	North	Punjab	50			
4	North	haryana	12			
5	North	j&k	5			
6	North	himachal pradesh	12			
7	East	bihar	4			
8	East	bengal	2			
9	East	assam	6			
10	West	rajasthan	18			
11	West	Gujrat	15			
12	West	Madhya prADESH	13			
13	South	MAHARASTRA	17			
14	South	Kerala	30			
15	South	Tamil Nadu	21			
16	South	Andhra Pradesh	18			



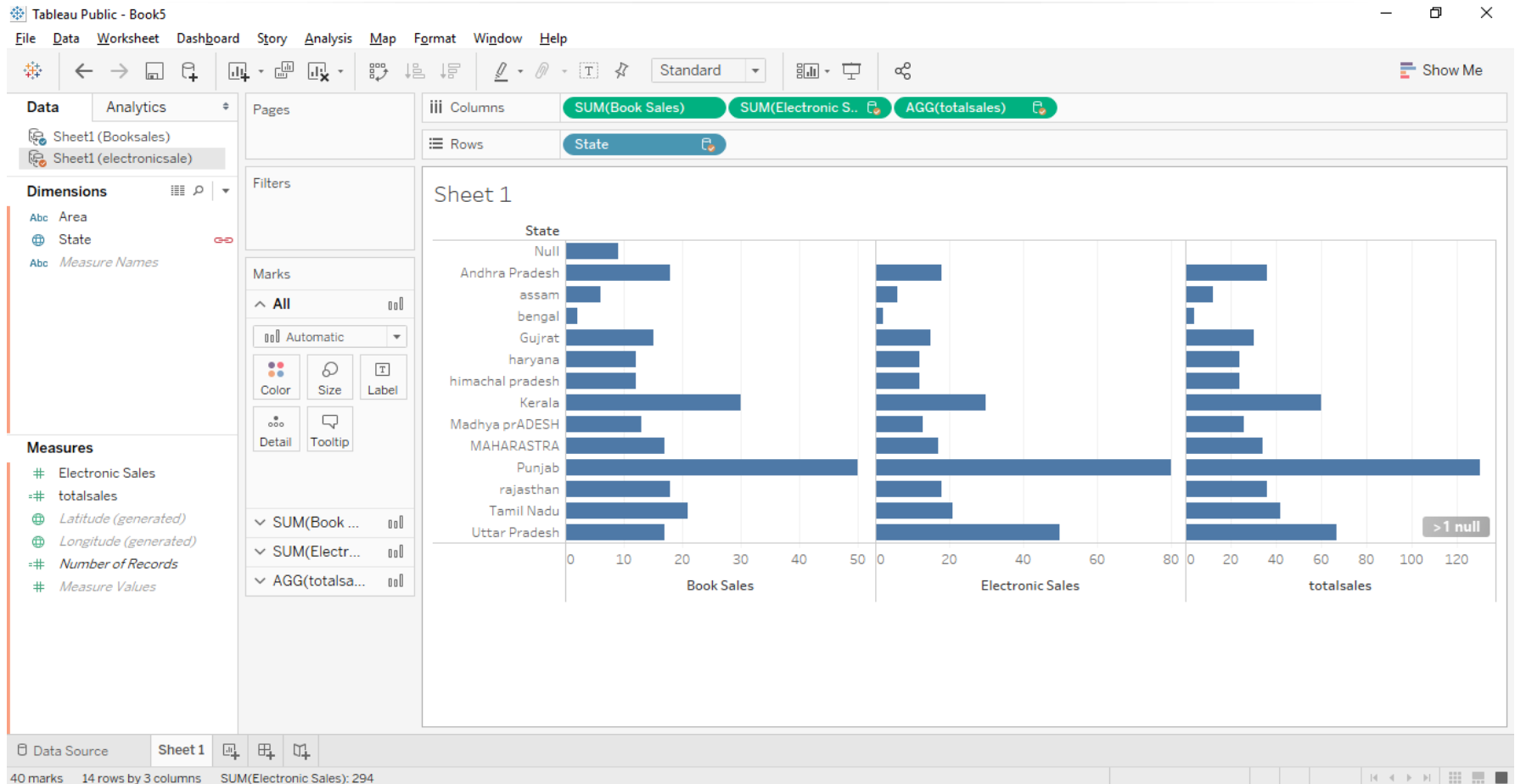
electronicsale - Microsoft Excel

	A	B	C	D	E	F
1	Area	State	Electronic Sales			
2	North	Uttar Pradesh	50			
3	North	Punjab	80			
4	North	haryana	12			
5	North	himachal pradesh	12			
6	East	bengal	2			
7	East	assam	6			
8	West	rajasthan	18			
9	West	Gujrat	15			
10	West	Madhya prADESH	13			
11	West	Odisha	35			
12	South	MAHARASTRA	17			
13	South	Kerala	30			
14	South	Tamil Nadu	21			
15	South	Andhra Pradesh	18			



Data Blending Calculations

We can also create calculated fields using data blending.



ASSIGNMENT



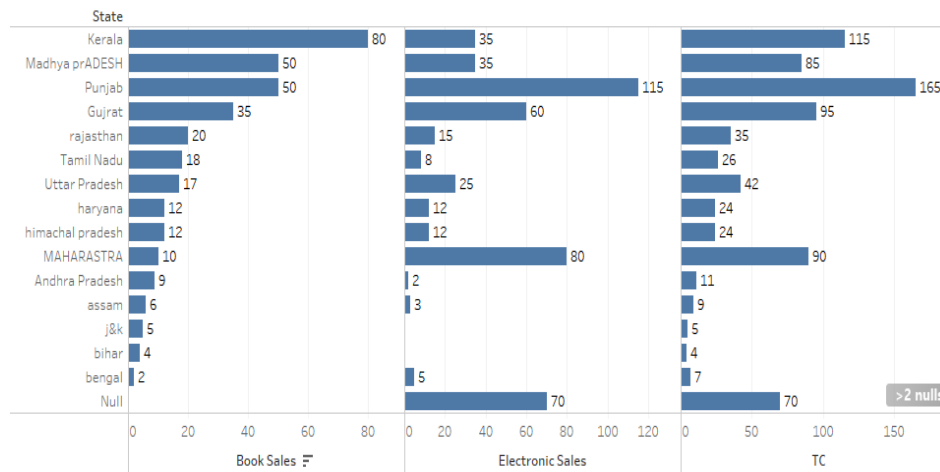
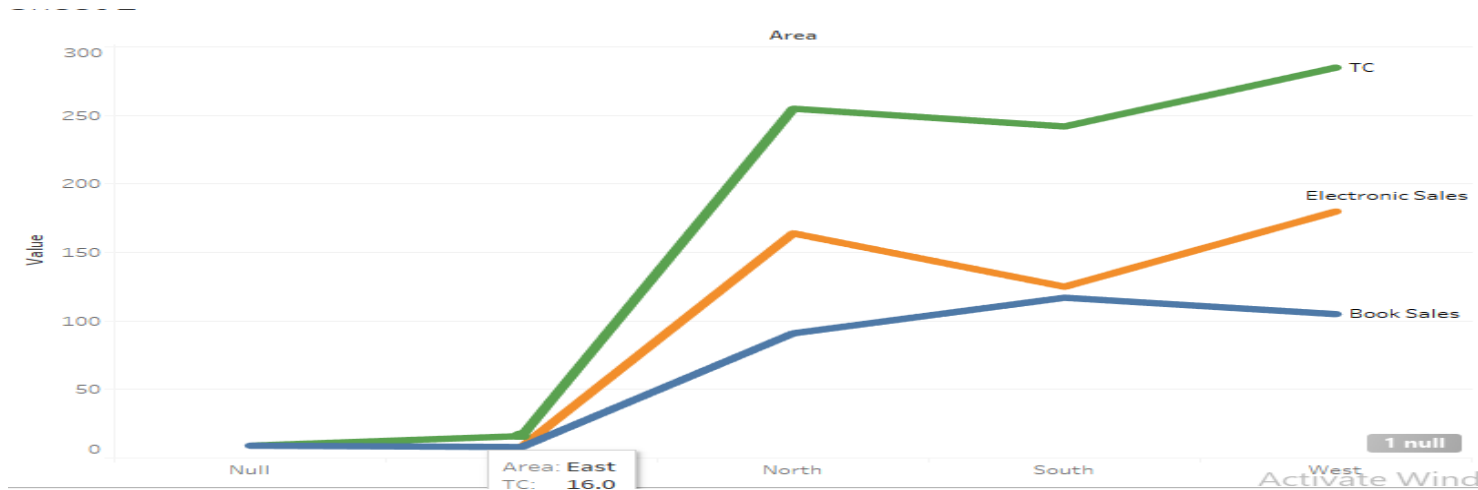
Use Inner Join to join electronic & books data source and in the Tabular format display electric, book & total sales on the basis of Region & State.

Use Full Join to join electronic & books sheets and create a line graph to display Area wise Electronic ,Book & Total sales in same plot area.

Blend the data from electronic & books data source and display Electronic ,Book & Total sales on the basis of state.



ASSIGNMENT



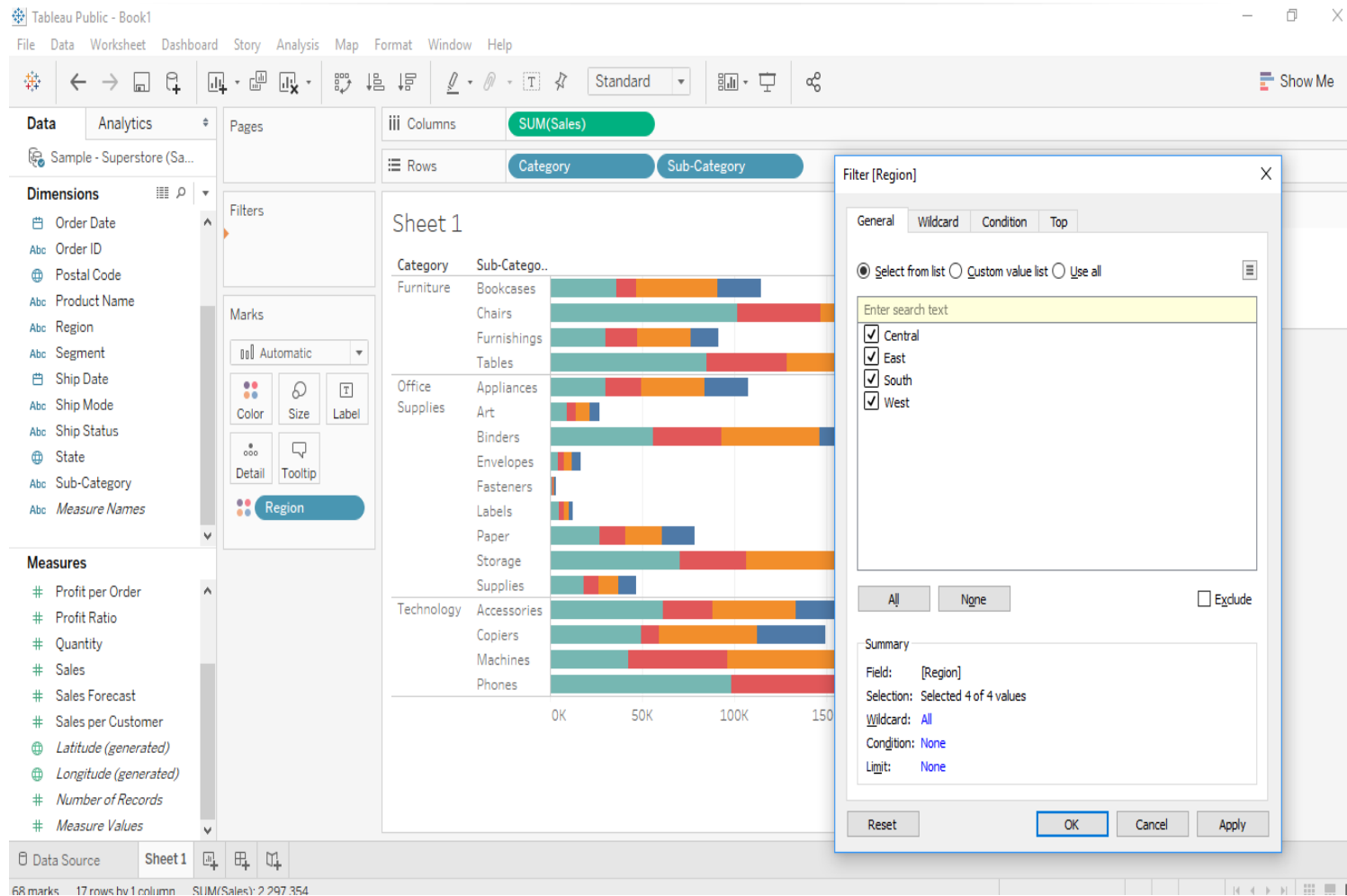
Region	State	Book Sales	Electronic Sales	TC
East	assam	6.0	3.0	9.0
	bengal	2.0	5.0	7.0
North	haryana	12.0	12.0	24.0
	himachal pradesh	12.0	12.0	24.0
	Punjab	50.0	115.0	165.0
	Uttar Pradesh	17.0	25.0	42.0
South	Andhra Pradesh	9.0	2.0	11.0
	Kerala	80.0	35.0	115.0
	MAHARASTRA	10.0	80.0	90.0
	Tamil Nadu	18.0	8.0	26.0
West	Gujrat	35.0	60.0	95.0
	Madhya prADESH	50.0	35.0	85.0
	rajasthan	20.0	15.0	35.0



Filtering Charts

Filters are used to filter the graphical view by four options:

- General
- Wildcard
- Condition
- Top



Filtering Charts

Filtering using condition tab.

Eg: Total sales of the products where quantity sold is greater than 10.

The screenshot displays the Tableau Public interface. The main view is 'Sheet 2', which contains a horizontal bar chart titled 'SUM(Sales)' on the Columns shelf and 'Category' on the Rows shelf. The chart shows three categories: Furniture (7,592), Office Supplies (21,716), and Technology (6,223). The x-axis represents sales values from 0K to 150K. The y-axis lists the categories. The 'Filters' shelf is empty, and the 'Marks' shelf is set to 'Automatic'. The 'Dimensions' pane on the left lists various fields, and the 'Measures' pane lists various calculations. A 'Filter [Product Name]' dialog box is open, showing the 'Condition' tab. The dialog is configured to filter by 'Quantity' (sum) greater than 10. The 'Range of Values' section has 'Min' and 'Max' input fields, and a 'Load' button. The 'By formula' section is also visible.

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

Sum(Sales)

Category

Sheet 2

Category

Furniture 7,592

Office Supplies 21,716

Technology 6,223

0K 50K 100K 150K

Product Name

Automatic

Color Size Label

Detail Tooltip

SUM(Quantity)

Filter [Product Name]

General Wildcard Condition Top

☐ None

☒ By field:

Quantity Sum

> 10

Range of Values

Min: Load

Max:

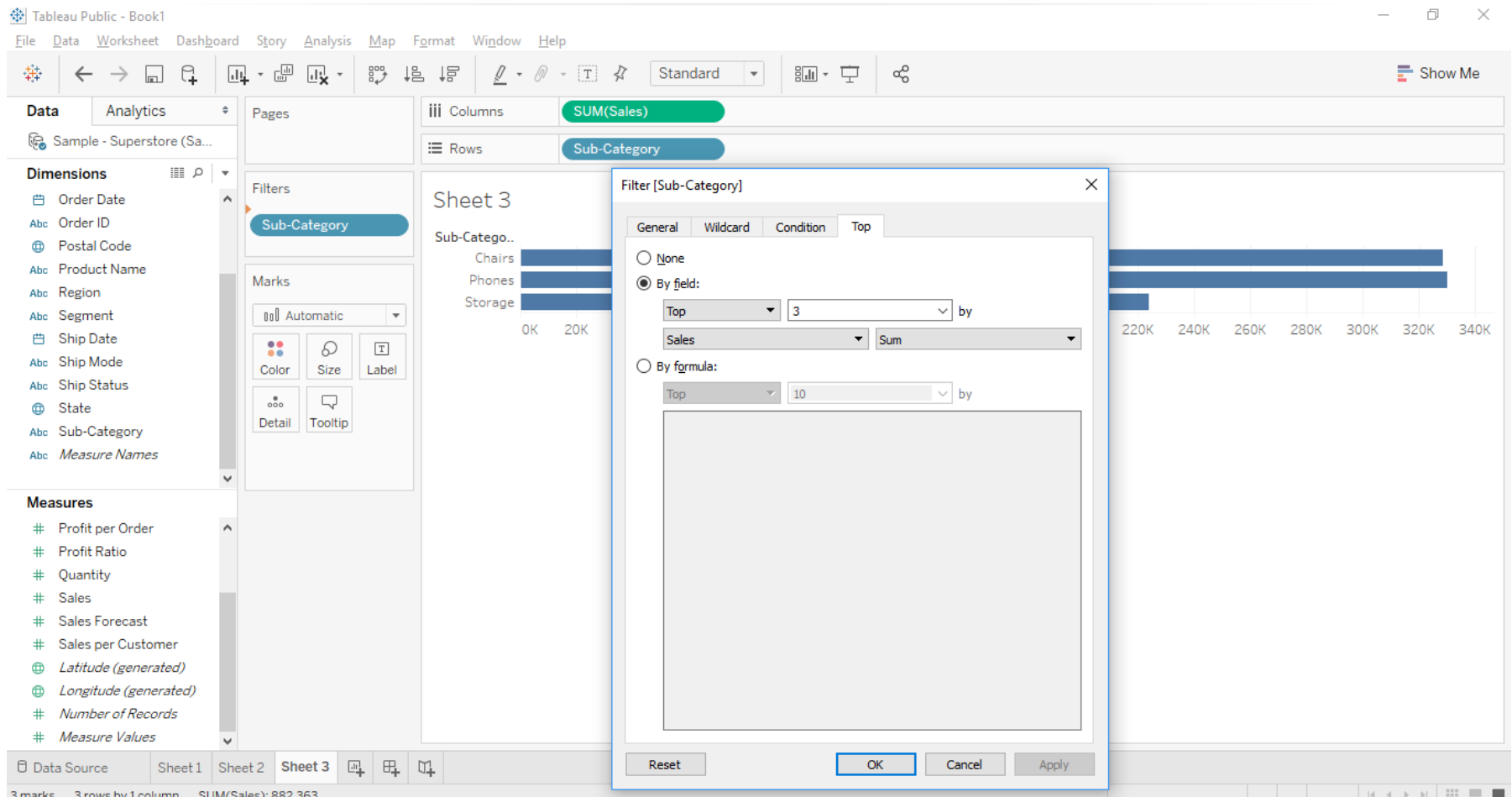
☐ By formula:

Reset OK Cancel Apply

Filtering Charts

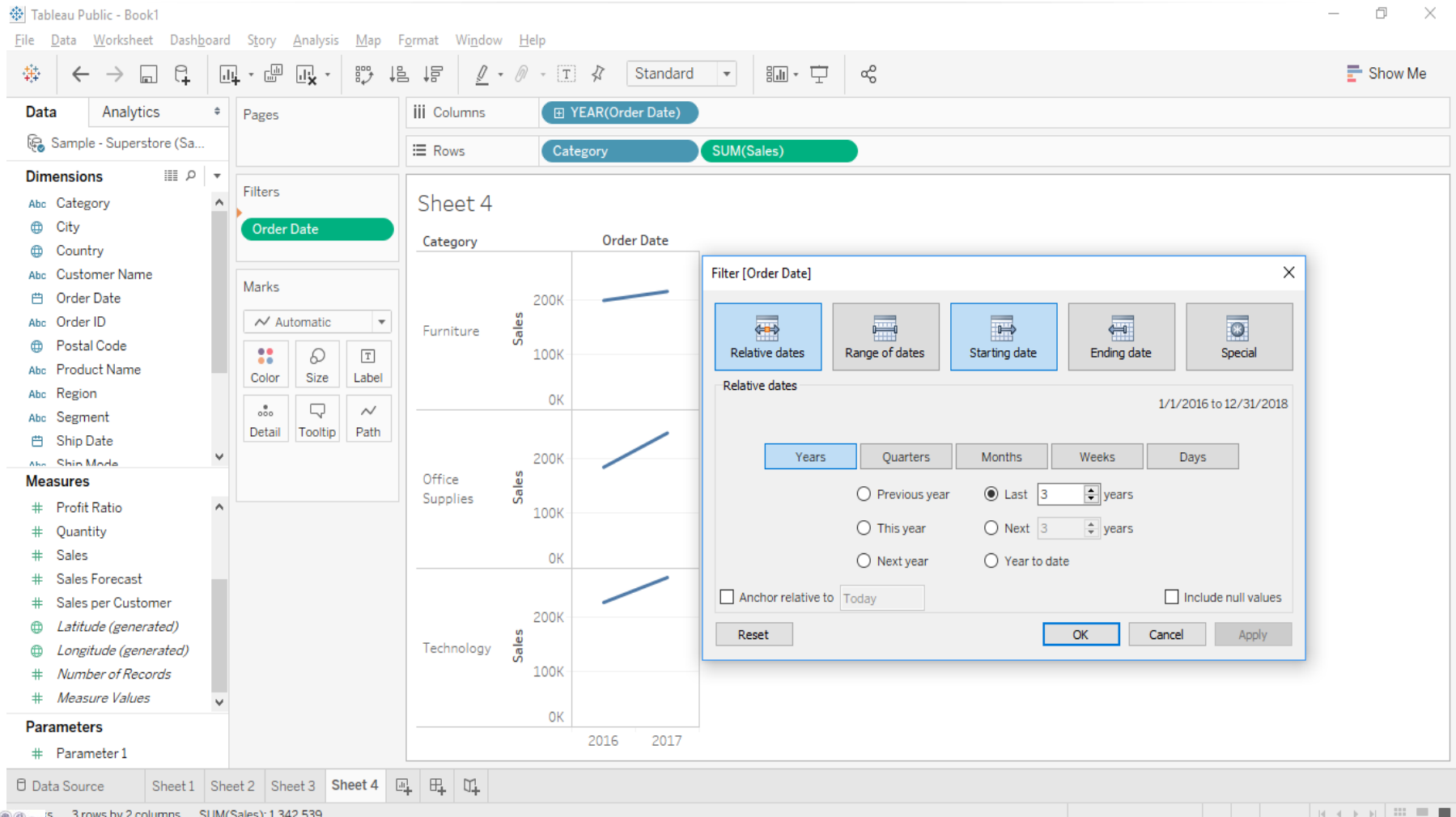
Filtering using Top tab.

Eg: Category wise Top / Bottom sales.



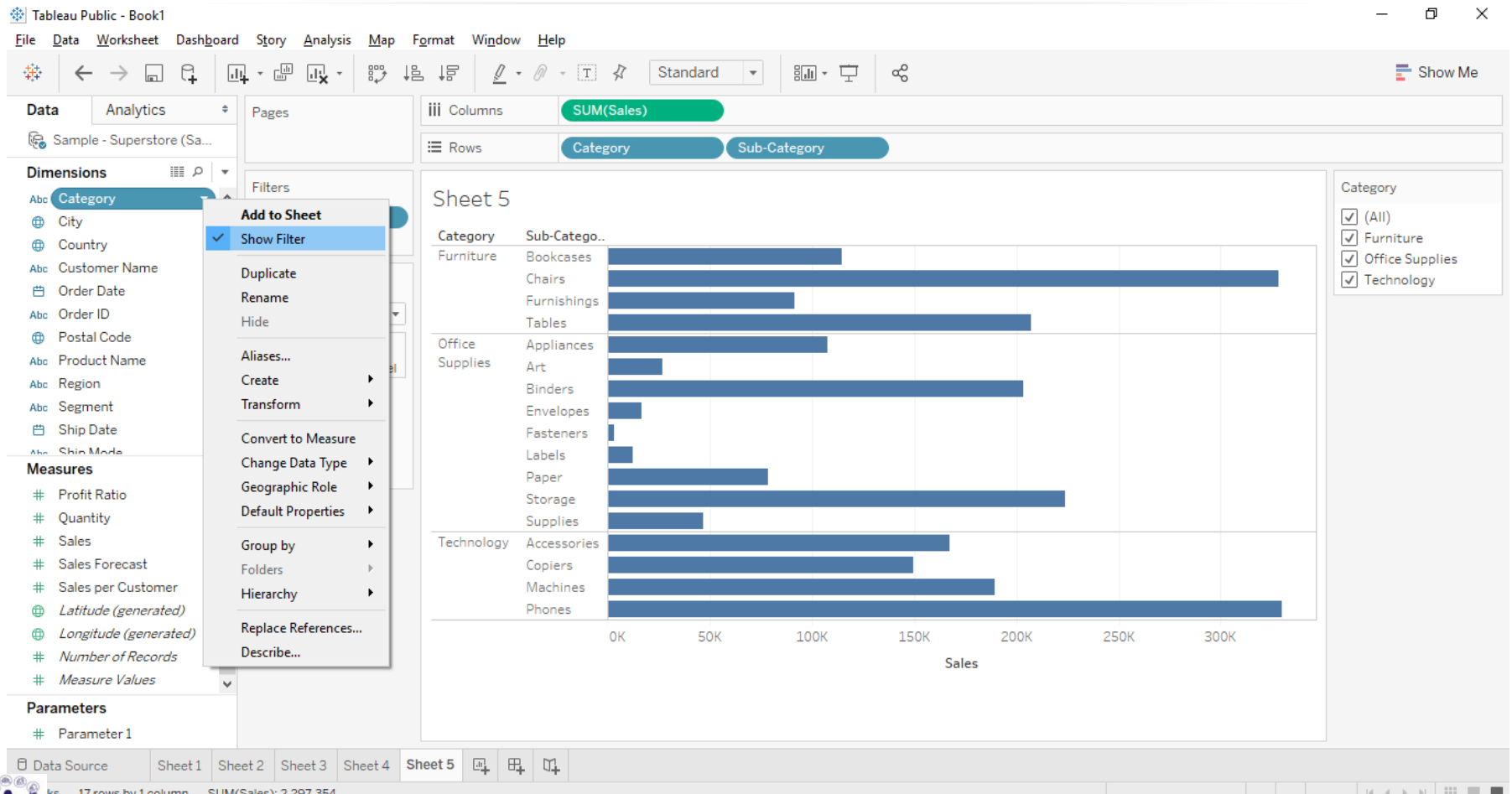
Filtering Dates

Tableau allows us to filter the data based on dates, months, quarters, years..



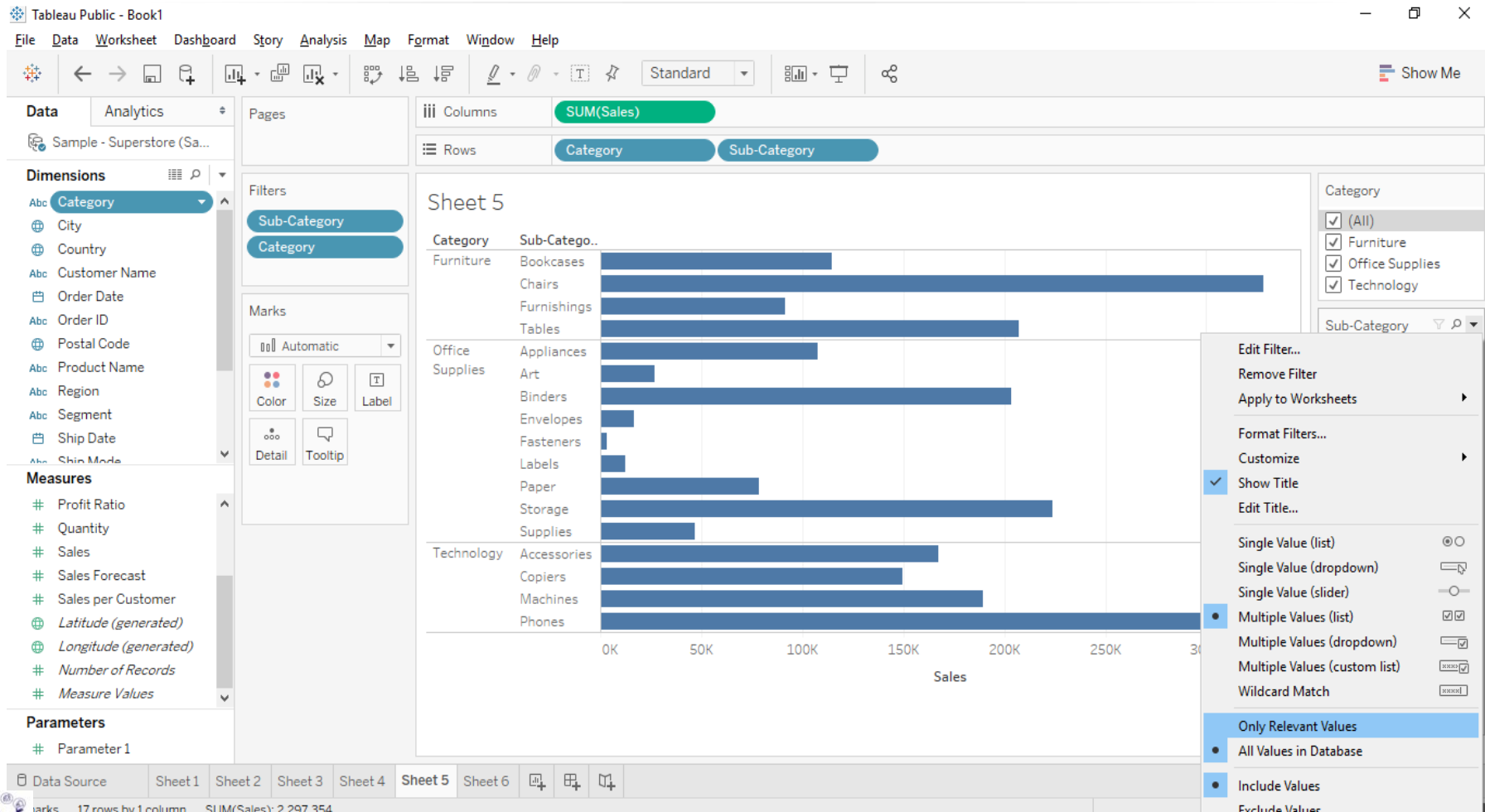
Interactive Filters

Interactive filters allows us to update the graph at runtime.



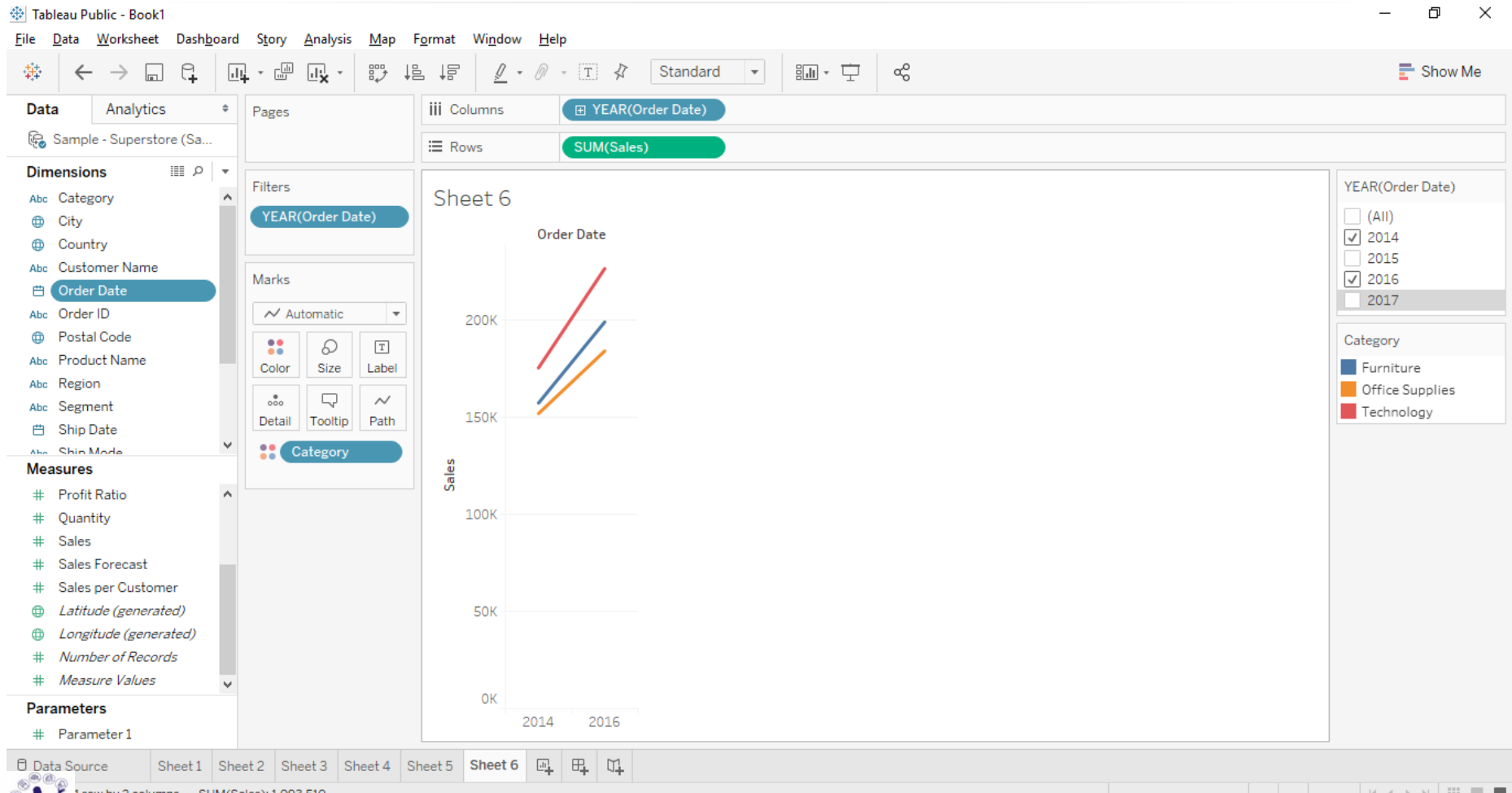
Advance Interactive Filters

Advance Interactive filters also referred to as dependent filters.



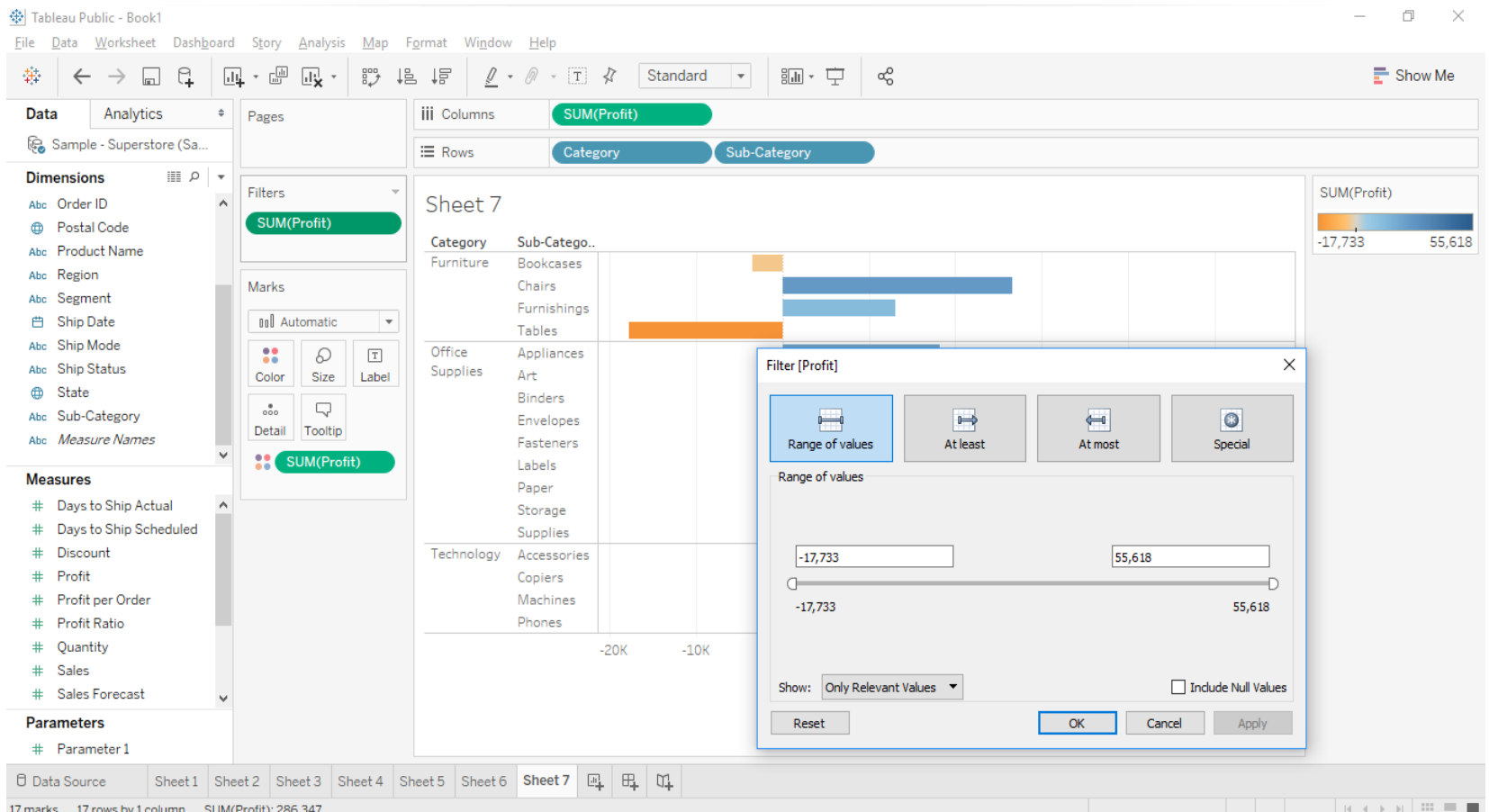
Interactive Date Filters

We can also use interactive filters with date fields.



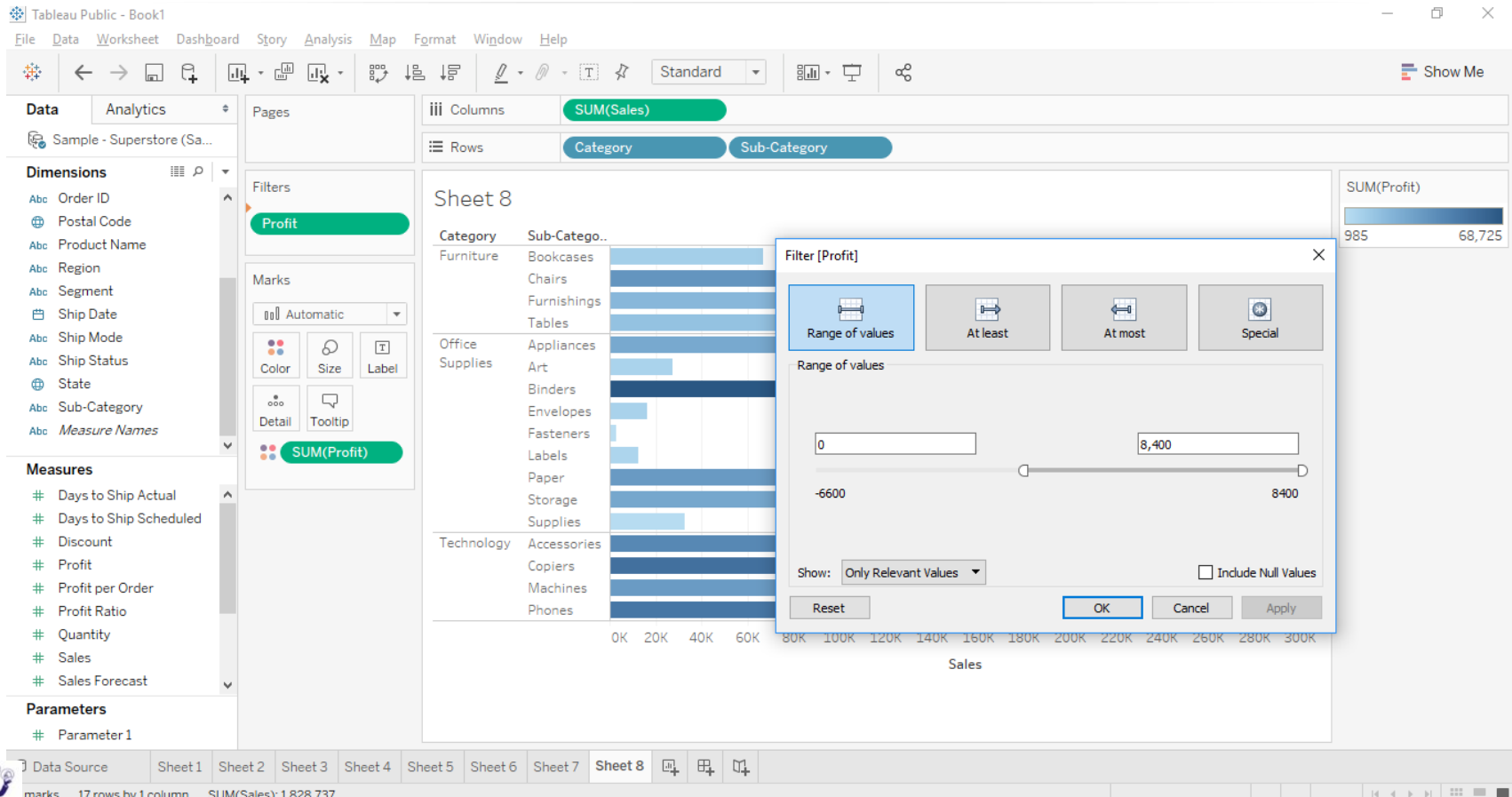
Where Filters

Summary Level Filters Eg: Analyzing the sales on the basis of profit i.e. showing only those categories where **the total profit** is positive.



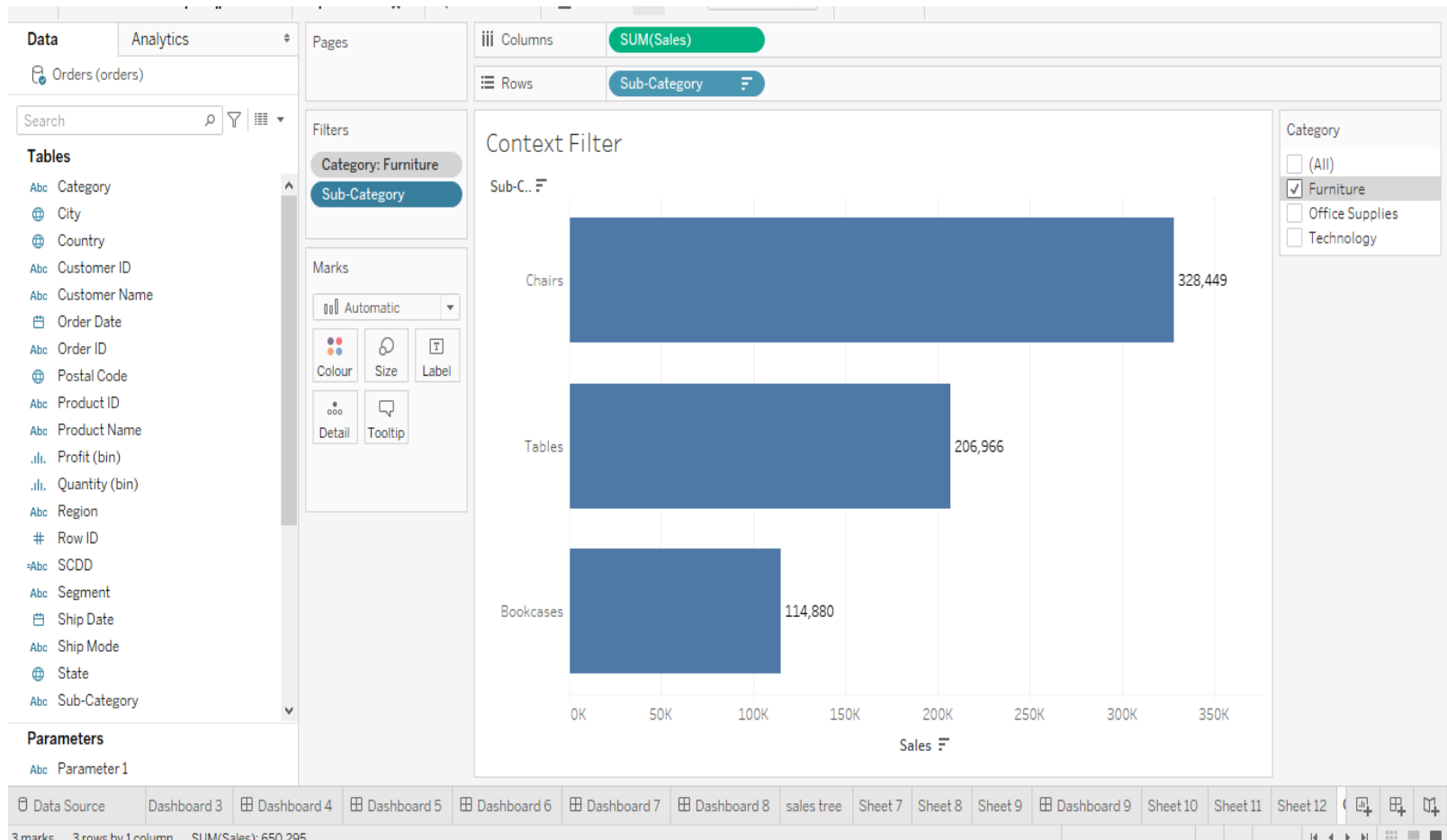
Where Filters

Record Level Filters Eg: Analyzing the sales on the basis of profit i.e. showing only those categories where **the profit** is positive.



Context Filter

The filters are independent to each other. If we want that the second filter to process on the records returned by the first filter, the second filter is known as dependent filters because they process only the data that passes through the context filter.



Data Source Filters

Data source filter will filter the data from the data source i.e. It will impact all the sheets created from the respective data .

The screenshot displays the Tableau Public interface with a bar chart titled 'Sheet 3' showing sales by region. The chart has 'Region' on the x-axis and 'SUM(Sales)' on the y-axis. Two bars are visible: 'Central' with sales around 500K and 'South' with sales around 400K. A context menu is open over the 'Data' pane, with 'Edit Data Source Filters...' selected. An 'Add Filter' dialog box is also open, showing a list of fields to filter by, including Category, City, Country, Customer Name, Days to Ship Actual, Days to Ship Scheduled, Discount, Order Date, Order ID, Postal Code, Product Name, Profit, Profit per Order, Profit Ratio, Quantity, Region, Sales, Sales Forecast, Sales per Customer, Segment, and Ship Date. The 'Filter' tab is active in the 'Edit Data Source Filters' dialog.

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Data Analytics Pages

Sample - Superstore (Sa...

Dimensions

- Order ID
- Order Date
- Postal Code
- Product Name
- Region
- Segment
- Ship Date
- Ship Mode
- Ship State
- State
- Sub-Category
- Measure

Measures

- Days to Ship Actual
- Days to Ship Scheduled
- Discount
- Profit
- Profit per Order
- Profit Ratio
- Quantity
- Sales
- Sales Forecast
- Sales per Customer

Columns: Region

Rows: SUM(Sales)

Sheet 3

Region

Sales

500K

400K

300K

200K

100K

0K

Central South

Edit Data Source Filters

Filter Details

Add... Edit... Remove

Add Filter

Select a field:

Enter search text

- Category
- City
- Country
- Customer Name
- Days to Ship Actual
- Days to Ship Scheduled
- Discount
- Order Date
- Order ID
- Postal Code
- Product Name
- Profit
- Profit per Order
- Profit Ratio
- Quantity
- Region
- Sales
- Sales Forecast
- Sales per Customer
- Segment
- Ship Date

OK Cancel

Data Source Sheet 1 Sheet 2 Sheet 3

2 marks 1 row by 2 columns SUM(Sales): 893,006



Ways to Filter

Filter by Self – Drag & Drop the desired pill in the filter self and set the options.

Interactive Filters – Click on the desired pill, from the drop down list select Show Filter.

Headers – In the Graph double click on the header, to filter for that header.

Legends – Click on the legend and select the Keep Only option.



Formatting Filter

In filters click on the drop down arrow and select format filters to get the filter formatting options.

The screenshot shows the Tableau Public interface with a horizontal bar chart titled 'Sheet 4'. The chart displays sales data by sub-category, with the x-axis labeled 'Sales' ranging from 0K to 300K. The y-axis lists sub-categories: Phones, Chairs, Storage, Tables, Binders, Machines, Accessories, Copiers, Bookcases, Appliances, Furnishings, Paper, Supplies, Art, Envelopes, Labels, and Fasteners. The bars are segmented by color, representing different regions. The 'Format Filters' panel is open on the left, showing options for Title, Body, and Marks. The 'Sub-Category' filter is selected in the Filters shelf. The 'Format Filters' dropdown menu is open, showing options like 'Edit Filter...', 'Remove Filter', 'Apply to Worksheets', 'Format Filters...', 'Customize', 'Show Title', 'Edit Title...', 'Single Value (list)', 'Single Value (dropdown)', 'Single Value (slider)', 'Multiple Values (list)', 'Multiple Values (dropdown)', 'Multiple Values (custom list)', 'Wildcard Match', 'Only Relevant Values', 'All Values in Database', 'Include Values', 'Exclude Values', and 'Hide Card'.

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Format Filters

Title

Font: Tableau Me...
Alignment: Left

Body

Font: Tableau Boo...
Shading: 0%
Border: None

Filters

Sub-Category

Marks

Automatic
Color Size Label
Detail Tooltip
Region

Columns: SUM(Sales)
Rows: Sub-Category

Sheet 4

Sub-Catego...

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

Sales

0K 20K 40K 60K 80K 100K 120K 140K 160K 180K 200K 220K 240K 260K 280K 300K

Format Filters...

- Edit Filter...
- Remove Filter
- Apply to Worksheets
- Format Filters...
- Customize
- Show Title
- Edit Title...
- Single Value (list)
- Single Value (dropdown)
- Single Value (slider)
- Multiple Values (list)
- Multiple Values (dropdown)
- Multiple Values (custom list)
- Wildcard Match
- Only Relevant Values
- All Values in Database
- Include Values
- Exclude Values
- Hide Card

Data Source Sheet 1 Sheet 2 Sheet 3 Sheet 4

68 marks 17 rows by 1 column SUM(Sales): 2,297,354



ASSIGNMENT



Create a Bar chart to display top 10 profit making subcategories along with the categories.

Chart to display only those Sub Categories & categories where the revenue is 200K to 250K.

Display month wise profit of each category . Should be interactive on the basis of year. Use a slider as filter.

Create a bar chart to represent category & subcategory wise sales, where the revenue is more than 200K and profit is more than 20K.

Using the data source filter update all the above charts only for Technology category.



test



Q1: Use the Superstore data to develop a visualization to show how long it takes, on average, for orders to ship (the time it takes to ship an order after the order is received) on a monthly basis. (Hint - this will require a calculation.). How does the average shipping time vary by state?

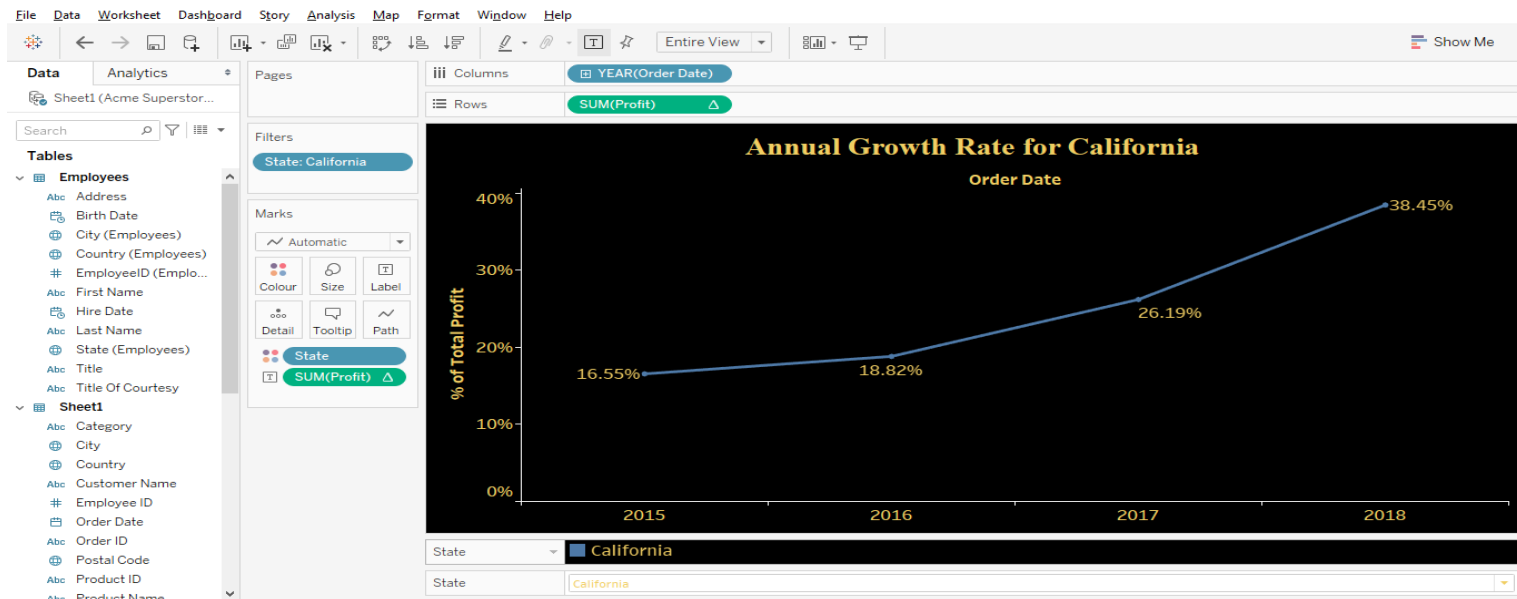
Q2: Use the Superstore data to produce a visualization to help managers understand annual growth (or lack thereof) in profit by state.

Q3: Use the Employees data to create a visualization that shows the number of customers per salesperson. Please display the salesperson's last name, not their ID. (Hint - you will need to join multiple tables so that the orders placed are attached to the employee who helped to place the order)

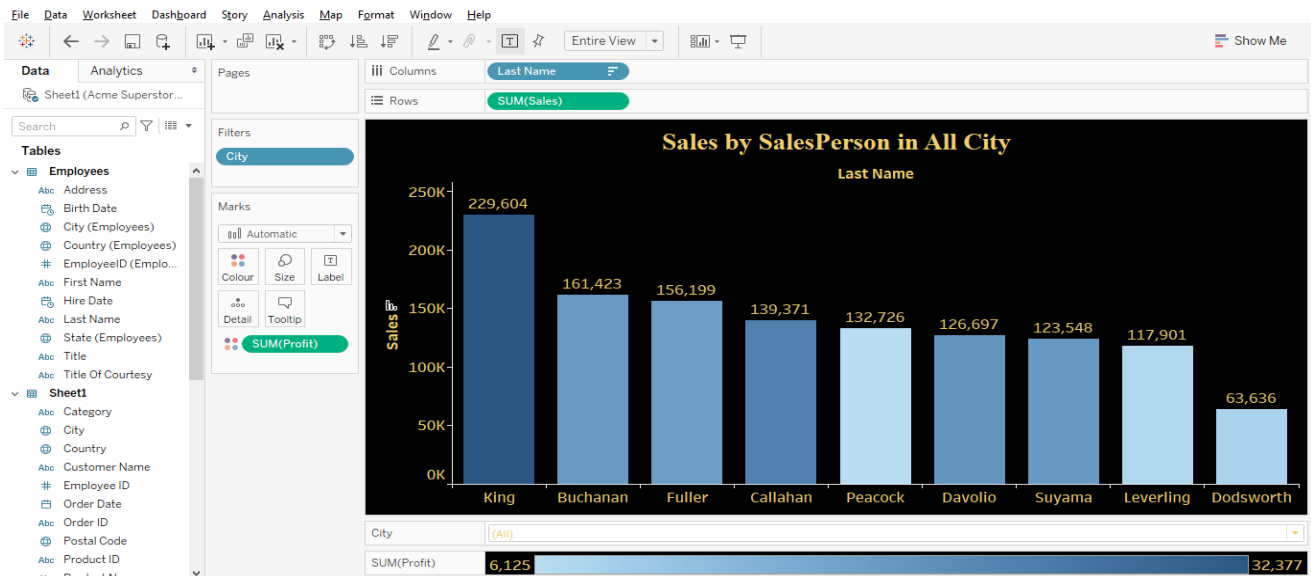
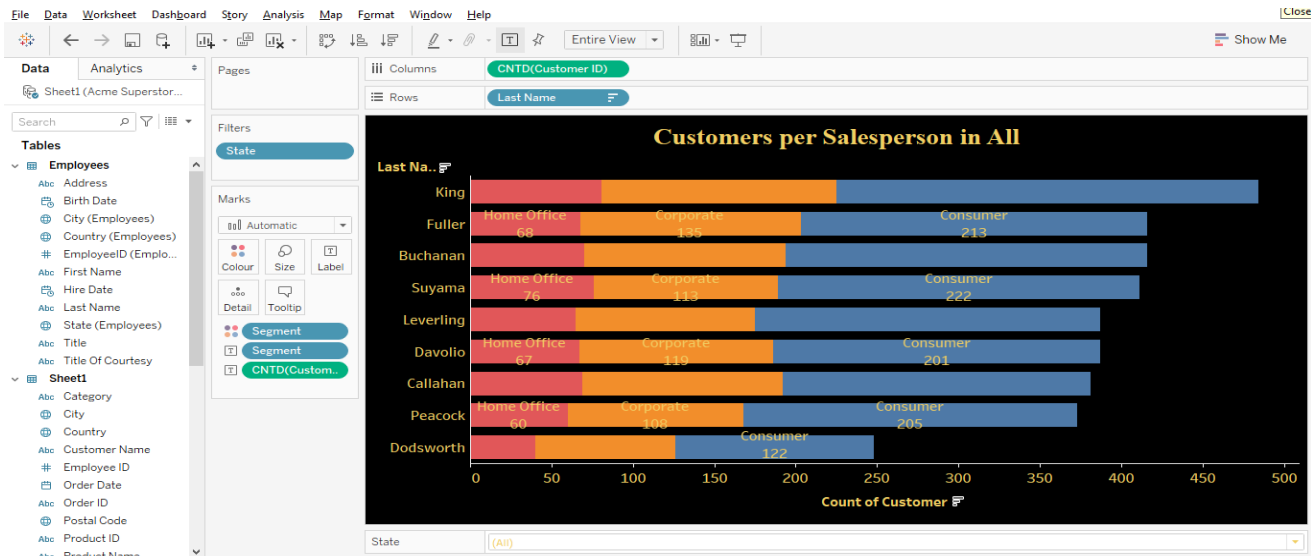
Q4: Use the Employees data to produce a visualization that shows total Sales by SalesPerson and City to analyze which salesperson is selling how much, and where they are selling.



test

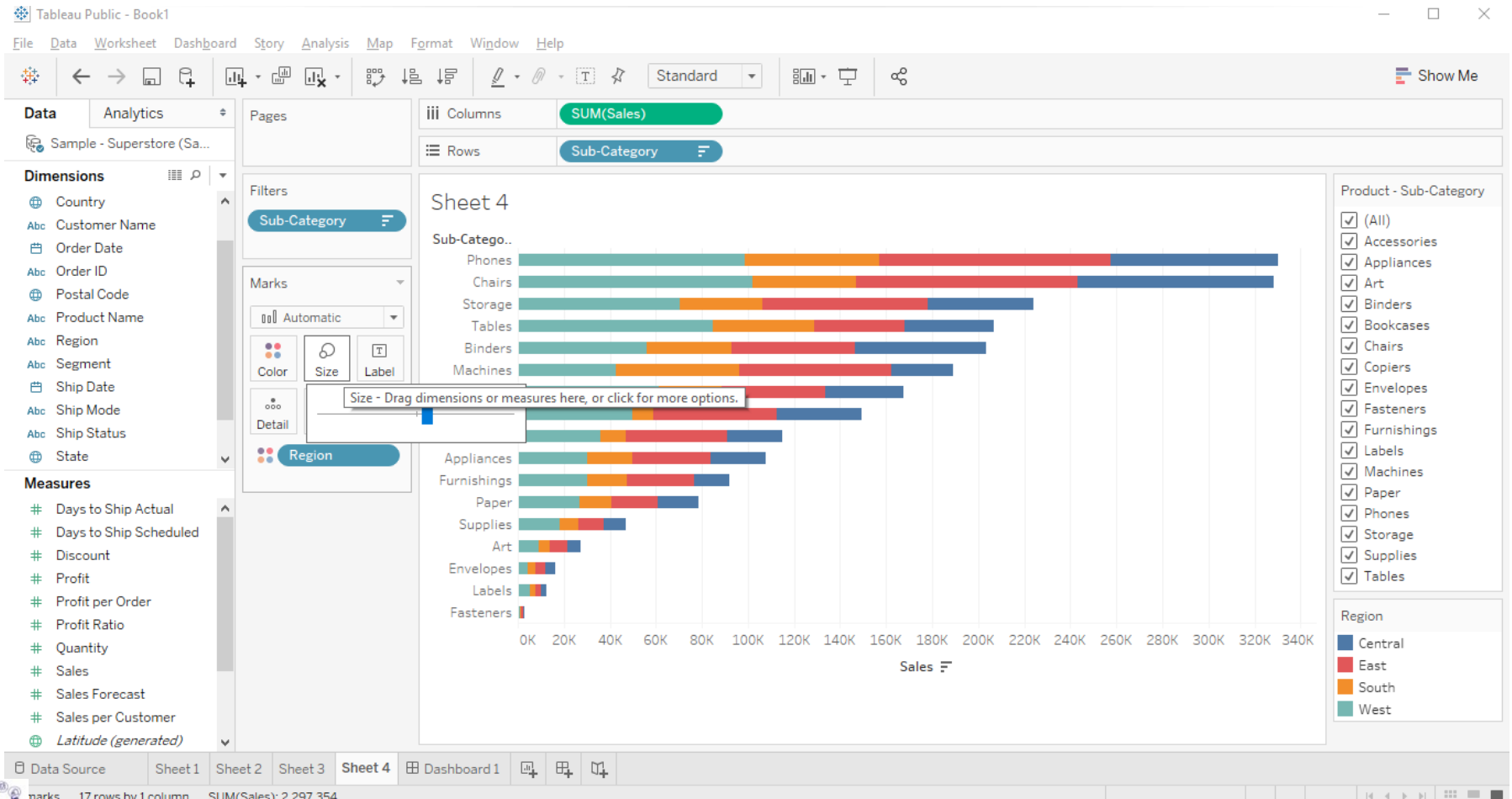


test



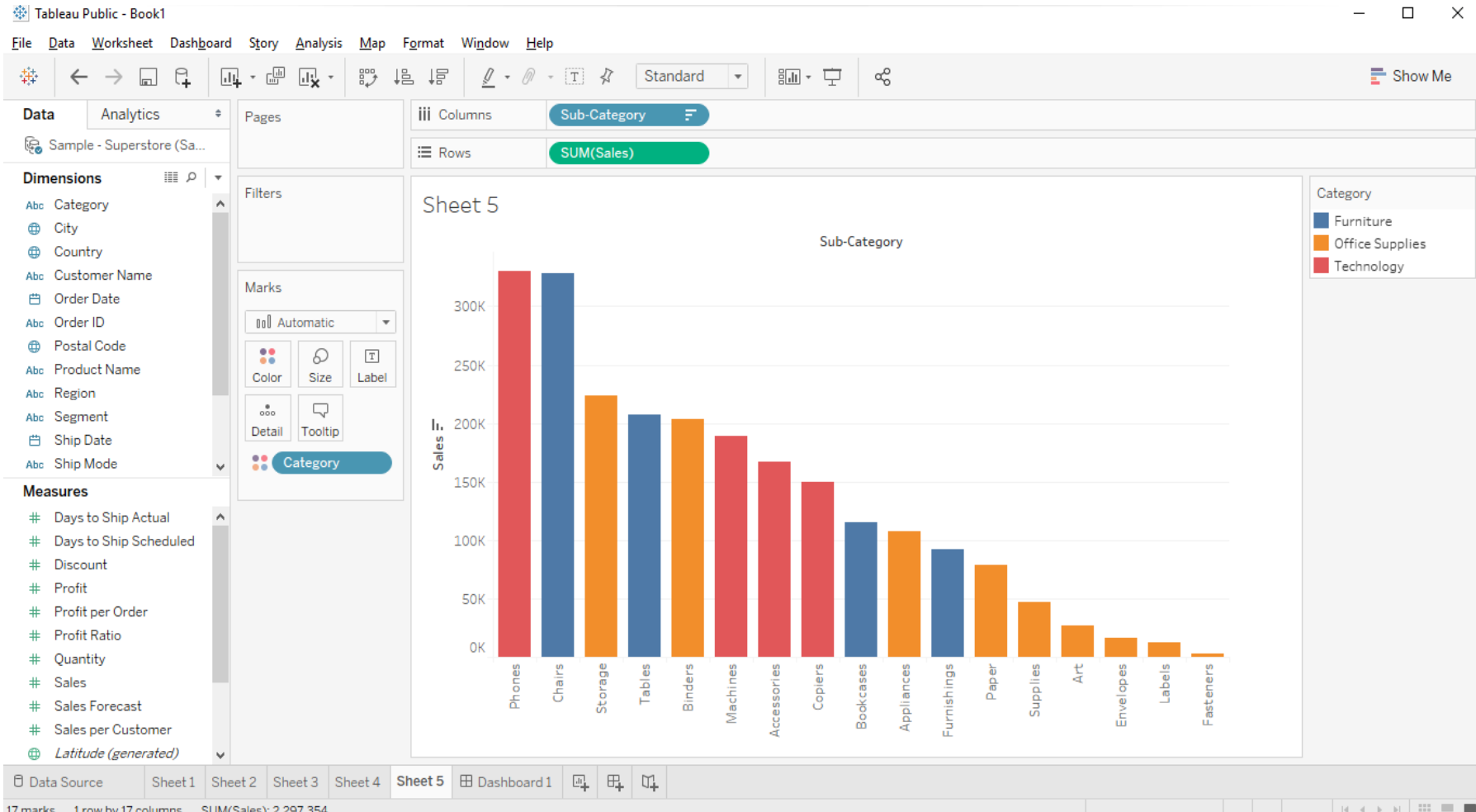
Manipulating Graph Size

The Size option in the Marks card allow us to alter the size of the graph.



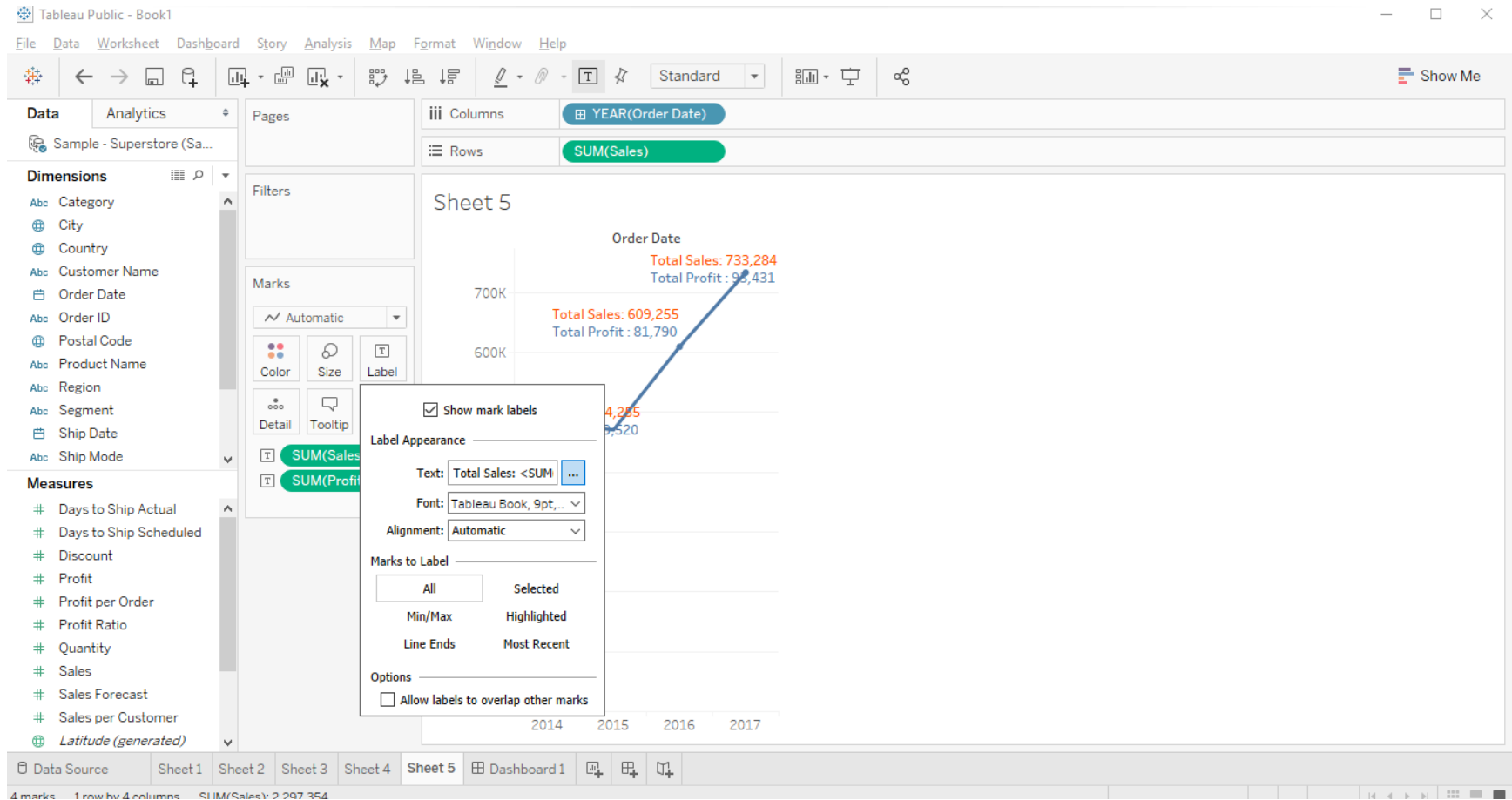
Manipulating Colors

Colors help us to further classify the data.



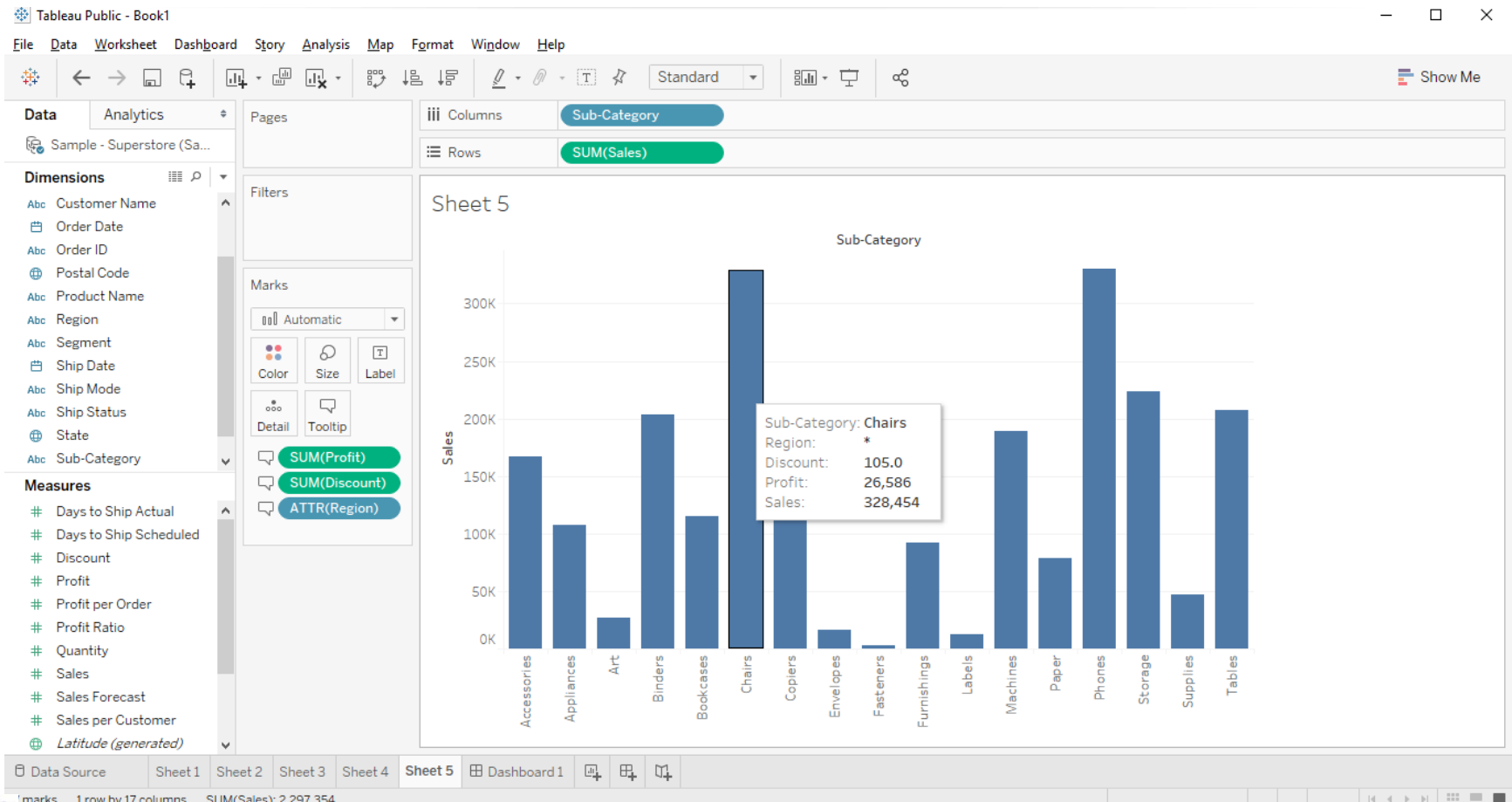
Displaying Text/Labels

Labels help us to show the exact data value.



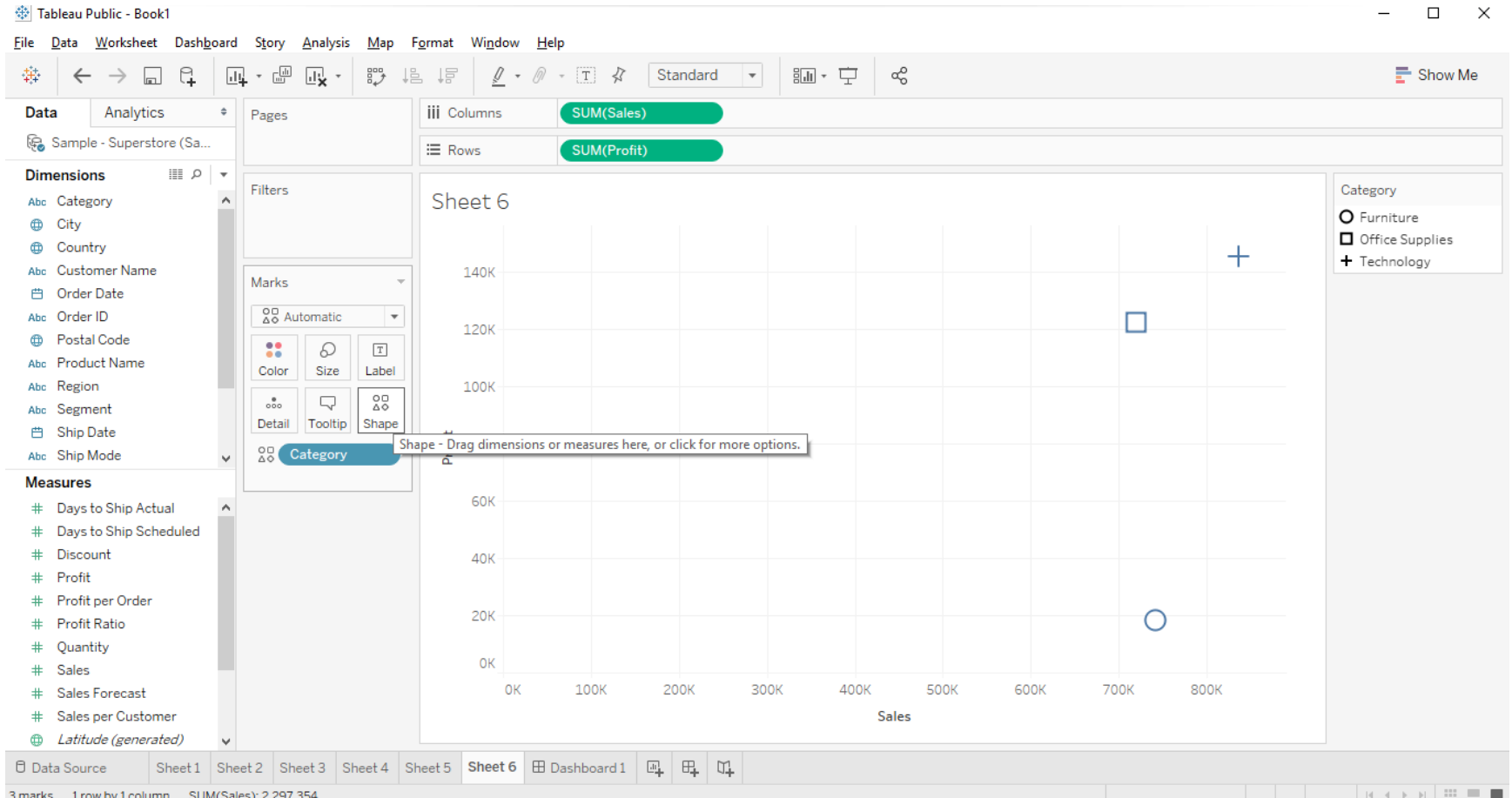
Getting Tooltip

When we click on any data point we get a small box known as tooltip. We can add any measure or dimension in the tooltip.



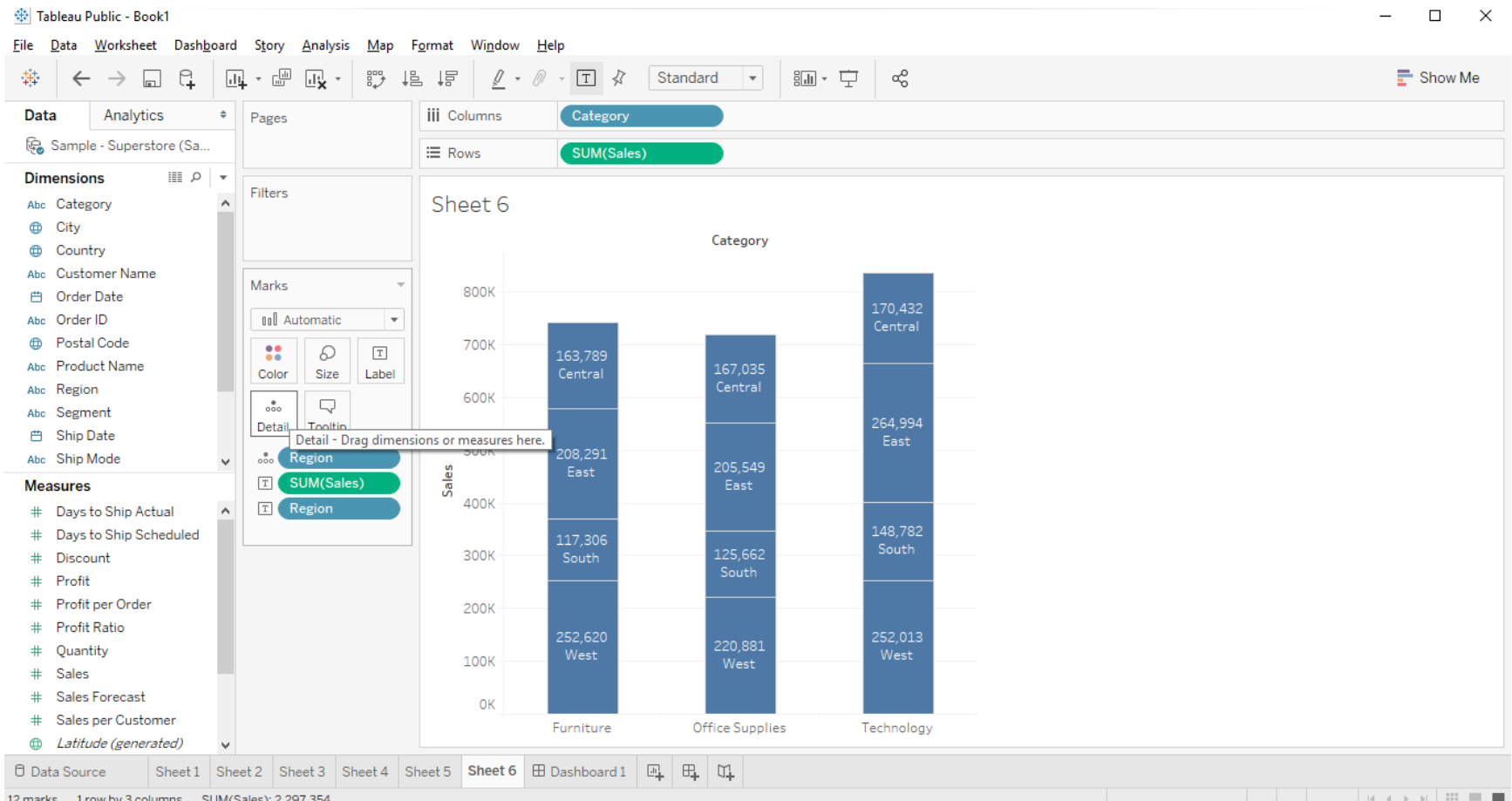
Assigning Shapes

Tableau also allows us to use default or customized shapes in charts.



Displaying Details

The Detail mark is similar to the color mark. Colors creates the section in various colors, however, detail creates the section in same color.



ASSIGNMENT



Create a bar chart to represent region wise profit. The Bars should also display category, sales & profit value.
Display sub category wise quantity sold & average profit using bar chart.



Formatting Data

Tableau also allows us to format the data in various ways. We can change Font, Alignment, Sheet Colors & Borders

The screenshot shows the Tableau Public interface with the 'Format' menu open. The menu options include: Dashboard..., Story..., Workbook..., Font..., Alignment..., Shading..., Borders..., Lines..., Reference Lines..., Drop Lines..., Annotations..., Title and Caption..., Field Labels..., Legends..., Filters..., Highlighters..., Parameters..., Cell Size, Copy Formatting, Paste Formatting, and Clear Worksheet Formatting. The 'Font...' option is currently selected.

The background shows a worksheet with a table of sales data by region. The table has columns for Region (East, South, West), Grand Tot., and a SUM(Sales) column. The data is formatted with various colors and bold text for totals.

Region	East	South	West	Grand Tot..	
	45,038	27,281	61,120	167,401	
	34,191	19,525	30,240	107,538	
	7,498	4,662	9,214	27,137	
	53,501	37,033	55,967	203,428	
	43,819	10,900	36,007	114,879	
	96,263	45,177	101,786	328,454	
	53,220	9,300	49,750	149,530	
	4,375	3,344	4,120	16,477	
	821	504	923	3,024	
	29,067	17,310	30,072	91,705	
	2,608	2,358	5,087	12,507	
	66,108	53,890	42,445	189,243	
	20,174	14,146	26,664	78,475	
	100,628	58,311	98,698	330,047	
	71,618	35,770	70,540	223,862	
	10,763	8,320	18,126	46,679	
Tables	39,152	39,142	43,919	84,755	206,968
Grand Total	501,256	678,834	391,750	725,514	2,297,354



Calculations

We can create calculated fields in Tableau. As in Excel it also provides us various function like sum, max, min, ceiling, floor etc...

The screenshot shows the Tableau Public interface. The 'Data' pane on the left lists dimensions (Order Date, Order ID, Postal Code, Product Name, Region, Segment, Ship Date, Ship Mode, Ship Status, State, Sub-Category, Measure Names) and measures (Days to Ship Actual, Days to Ship Scheduled, Discount, Min Sales, Profit, Profit per Order, Profit Ratio, Quantity, Sales, Sales Forecast, Sales per Customer). The 'Columns' shelf contains 'Measure Names' and the 'Rows' shelf contains 'Sub-Category'. The main view shows a table with columns 'Min Sales' and 'Sales'. The 'Min Sales' column has values 1 and 0, and the 'Sales' column has values 167,401.00 and 107,538.00. The 'Create' menu is open, showing options like 'Add to Sheet', 'Show Filter', 'Duplicate', 'Rename', 'Hide', 'Create', 'Convert to Discrete', 'Convert to Dimension', 'Change Data Type', 'Geographic Role', 'Default Properties', 'Group by', 'Folders', 'Replace References...', 'Describe...', 'Measure Values', 'AGG(Min Sales)', and 'SUM(Sales)'. The 'Create' menu is further expanded to show 'Calculated Field...', 'Group...', 'Bins...', and 'Parameter...'. The 'Calculated Field...' dialog box is open, showing the name 'Calculation1' and the formula 'MIN([Sales])'. The dialog box also has a 'The calculation is valid.' message and 'Apply' and 'OK' buttons.

Min Sales	Sales
1	167,401.00
0	107,538.00

Calculation1

MIN([Sales])

The calculation is valid.

Apply OK

Calculations

String Functions: Most of the string functions we use in Excel are available in Tableau. Left, Right, Upper, Lower, Len, etc...

The screenshot displays the Tableau Public interface with the 'Sample - Superstore (Sales)' data source. The 'Dimensions' pane on the left lists fields such as Calculation1, Category, City, Country, Customer Name, Order Date, Order ID, Postal Code, Product Name, Region, Segment, and Ship Date. The 'Measures' pane lists fields like Days to Ship Actual, Days to Ship Scheduled, Discount, Min Sales, Profit, Profit per Order, Profit Ratio, Quantity, Sales, Sales Forecast, and Sales per Customer. The 'Marks' card is set to 'Automatic'. A context menu is open for the 'Order ID' field, showing options like 'Add to Sheet', 'Duplicate', 'Rename', 'Hide', 'Aliases...', 'Create', 'Transform', 'Convert to Measure', 'Change Data Type', 'Geographic Role', 'Default Properties', 'Group by', 'Folders', 'Hierarchy', 'Replace References...', and 'Describe...'. The 'Transform' option is selected, and a sub-menu is open showing 'Split' and 'Custom Split...'. The 'Custom Split' dialog box is open, asking 'How should this data be split?'. It shows 'Use the separator' as '-' and 'Split off' as 'First' with a value of '1' and 'columns'.

Calculations

Table Calculations (Percentage of Total): These are the calculations we do on the output received.

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

Columns: Sub-Category

Rows: Sub-Category

Sheet 11

Sub-Category..

Accessories	7.29%
Appliances	4.68%
Art	1.18%
Binders	8.85%
Bookcases	5.00%
Chairs	14.30%
Copiers	6.51%
Envelopes	0.72%
Fasteners	0.13%
Furnishings	3.99%
Labels	0.54%
Machines	8.24%
Paper	3.42%
Phones	14.37%
Storage	9.74%
Running Total	2.03%
Difference	9.01%
Percent Difference	100.00%

Filter...

Show Filter

Format...

Include in Tooltip

Dimension

Attribute

Measure (Sum)

Discrete

Continuous

Edit in Shelf

Compute Using

Edit Table Calculation...

Clear Table Calculation

Quick Table Calculation

Percent of Total

Rank

Percentile

Moving Average

YTD Total

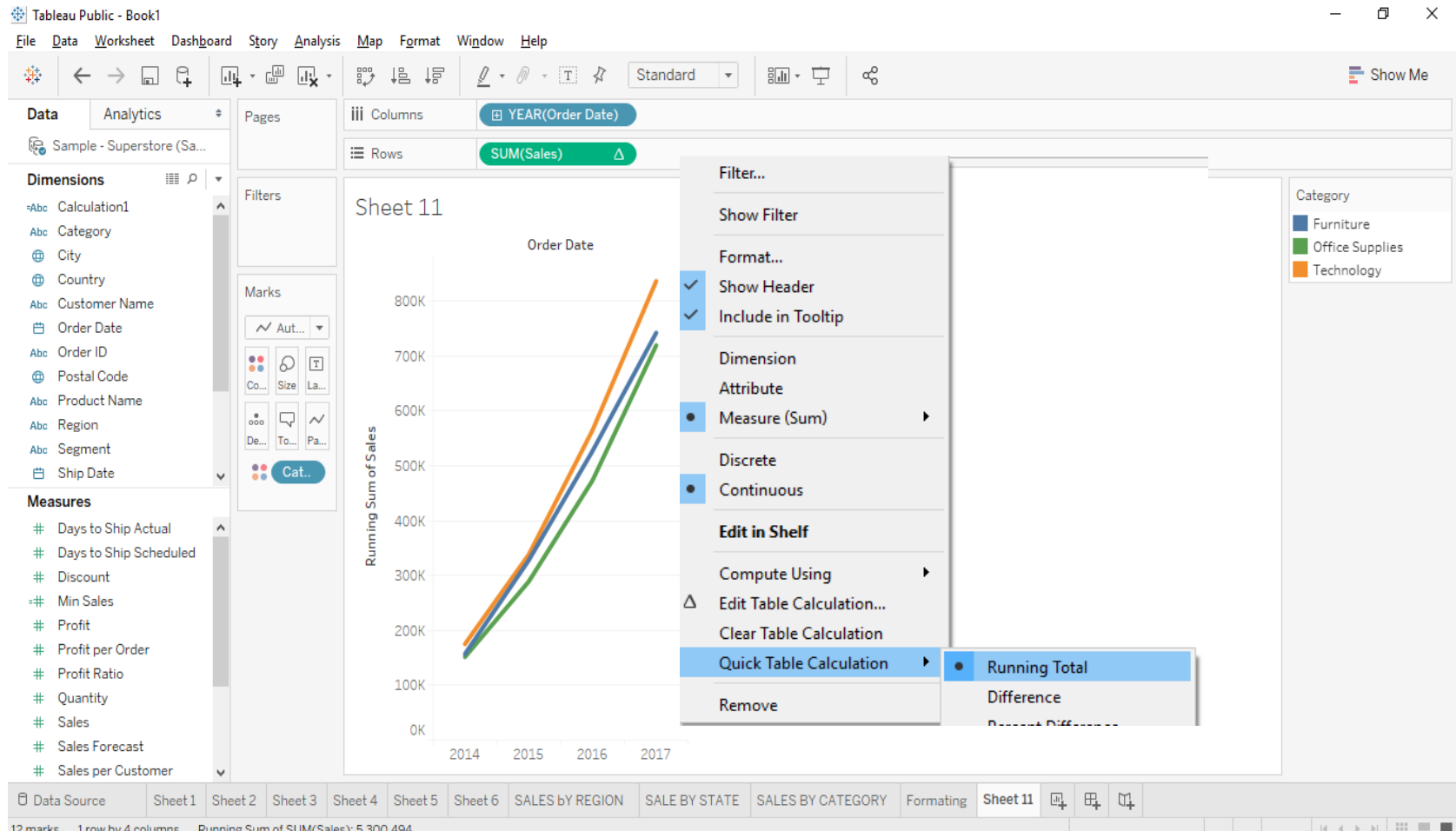
Compound Growth Rate

Data Source Sheet 1 Sheet 2

marks 18 rows by 1 column % of Total Sales

Calculations

Table Calculations (Running Total): These are the calculations we do on the output received.



Calculations

Table Calculations (Percentage Difference) : Gives the percentage difference between previous & current value

File Data Worksheet Dashboard Story Analysis Map Format Window Help

← → ↺ ↻ ↶ ↷ ↸ ↹ ↺ ↻ ↶ ↷ ↸ ↹

Fit Height

Show Me

Data Analytics

Orders (orders)

Search

Tables

- Segment
- Ship Date
- Ship Mode
- State
- Sub-Category
- Measure Names
- AvgSal
- BOT5
- COST
- Discount
- IND
- KPI
- LAS
- OrdCount
- PERDIFF
- POSIS
- POSITION
- Profit
- Quantity
- Sales

Parameters

- P1

Pages

Columns Measure Names

Rows YEAR(Order Date) MONTH(Order Date)

Filters

YEAR(Order Date): 2014

Measure Names

Marks

Automatic

Colour Size Text

Detail Tooltip

Measure Values

SUM(Sales)

SUM(Sales)

PER DIFF

Year of Order Date	Month of Order Date	Sales	% Difference in Sales from previous month
2014	January	14,237	
	February	4,520	-68.25%
	March	55,691	1,132.13%
	April	28,295	-49.19%
	May	23,648	-16.42%
	June	34,595	46.29%
	July	33,946	-1.88%
	August	27,909	-17.78%
	September	81,777	193.01%
	October	31,453	-61.54%
	November	78,629	149.98%
	December	69,546	-11.55%

YEAR(Order Date)

☐ (All)

☒ 2014

☐ 2015

☐ 2016

☐ 2017



Calculations

KPI (Key Performance Indicators) : highlight the trend of the value.

