LEARNING TABLEAU PART II TECHNIQUES

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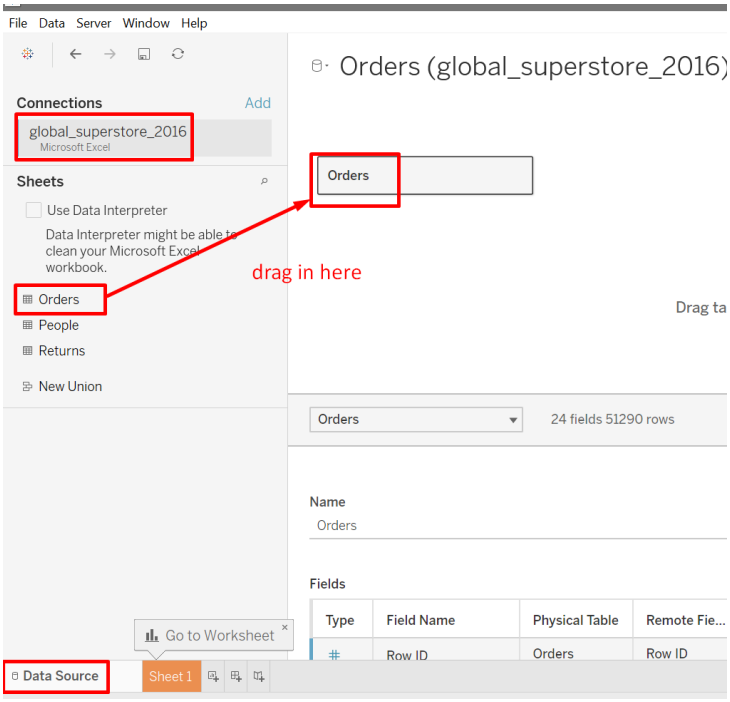
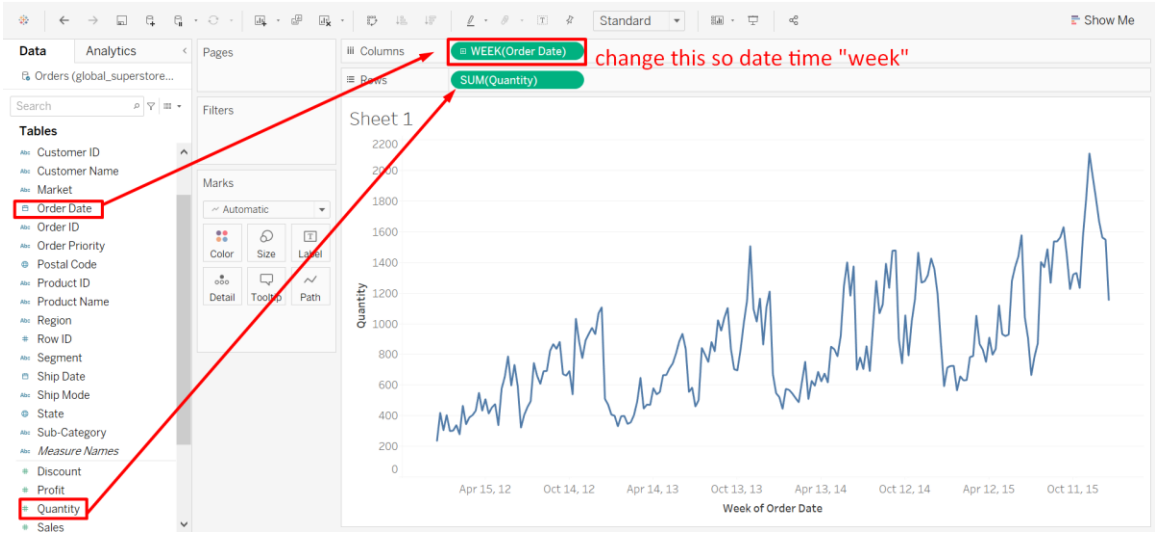
I. ANALYTICS

A. REFERENCE LINE

Data source is found here: https://www.alvinang.sg/s/global_superstore_2016.xlsx





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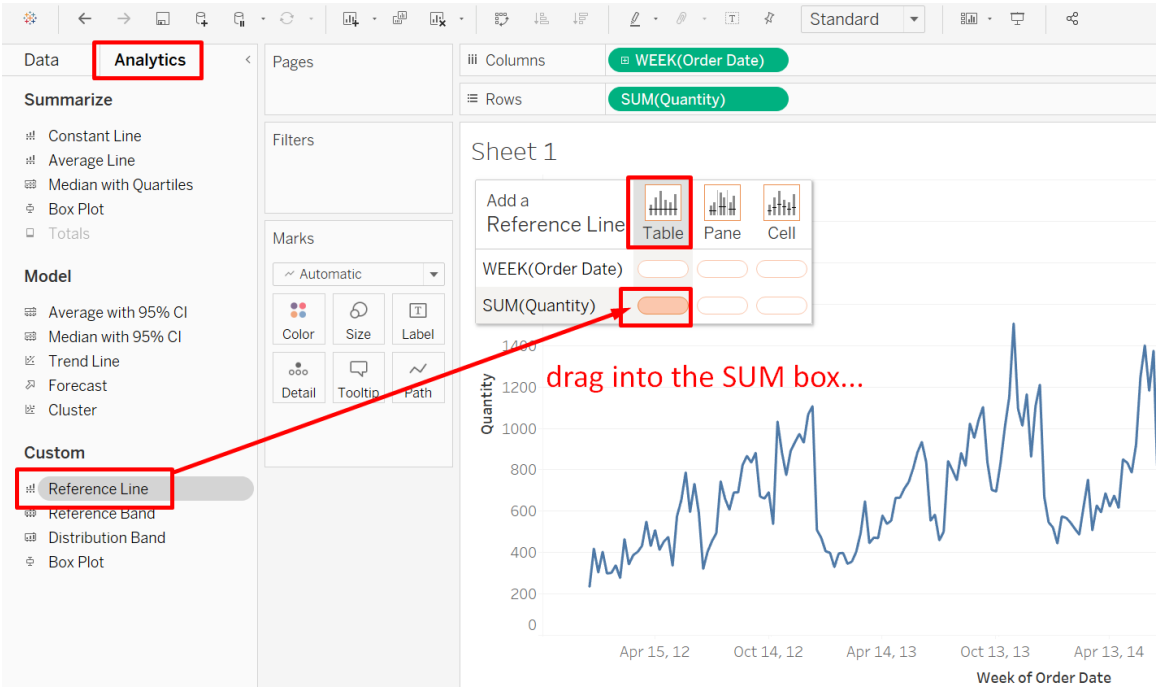

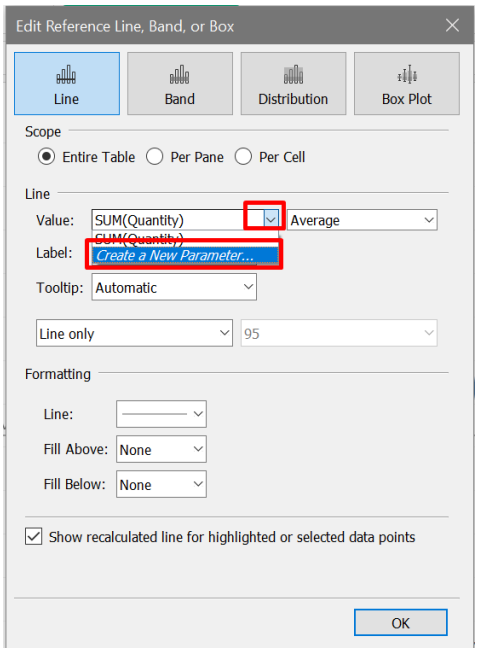

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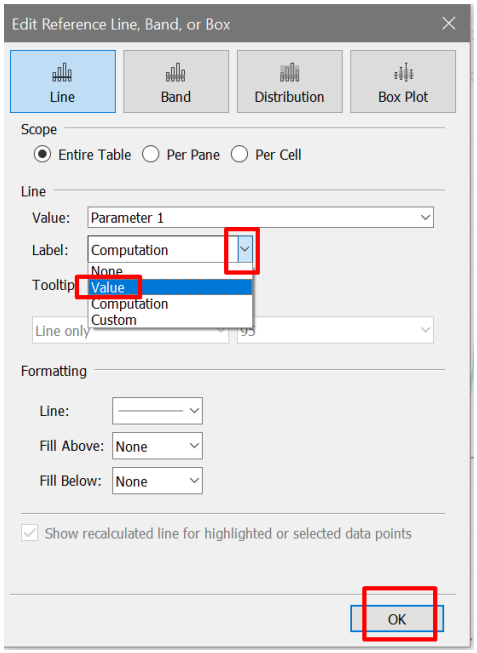

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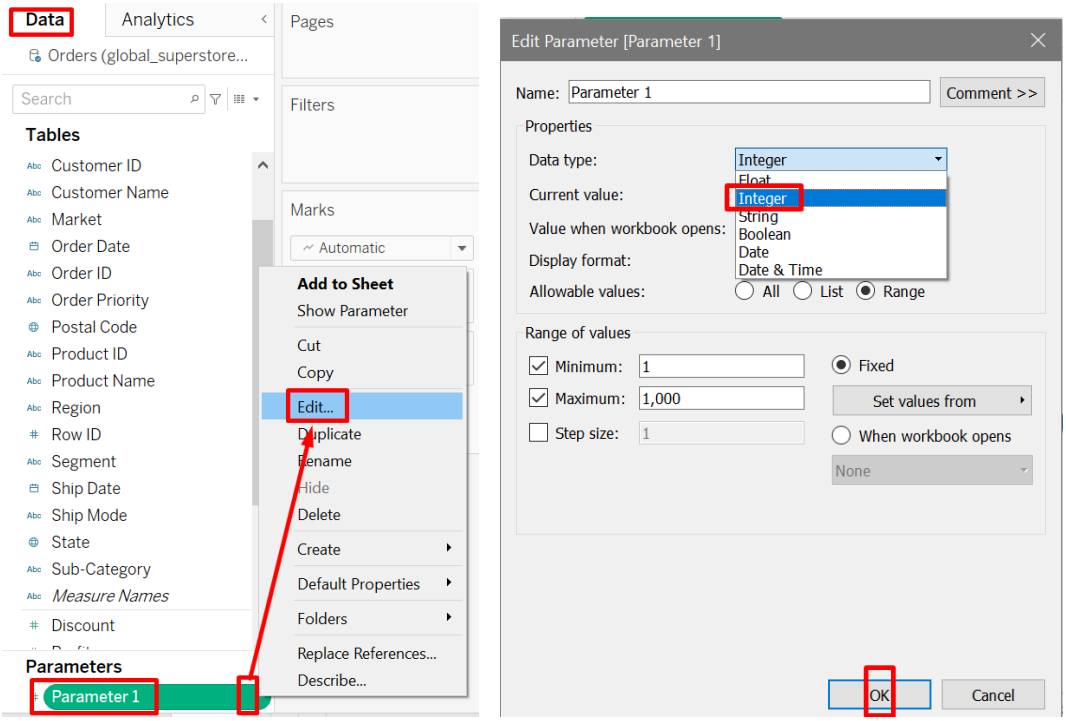

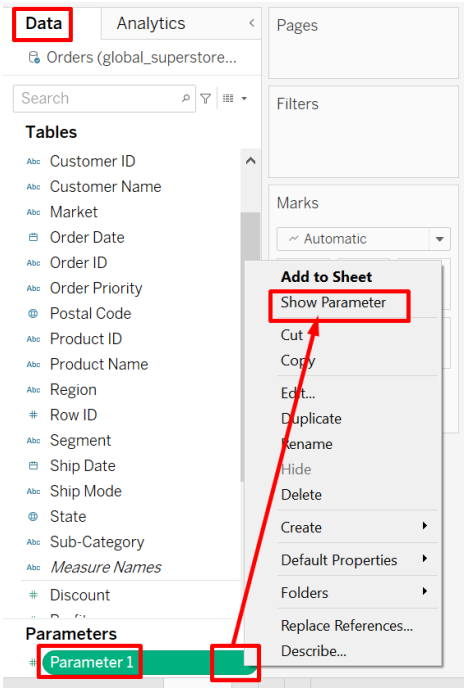

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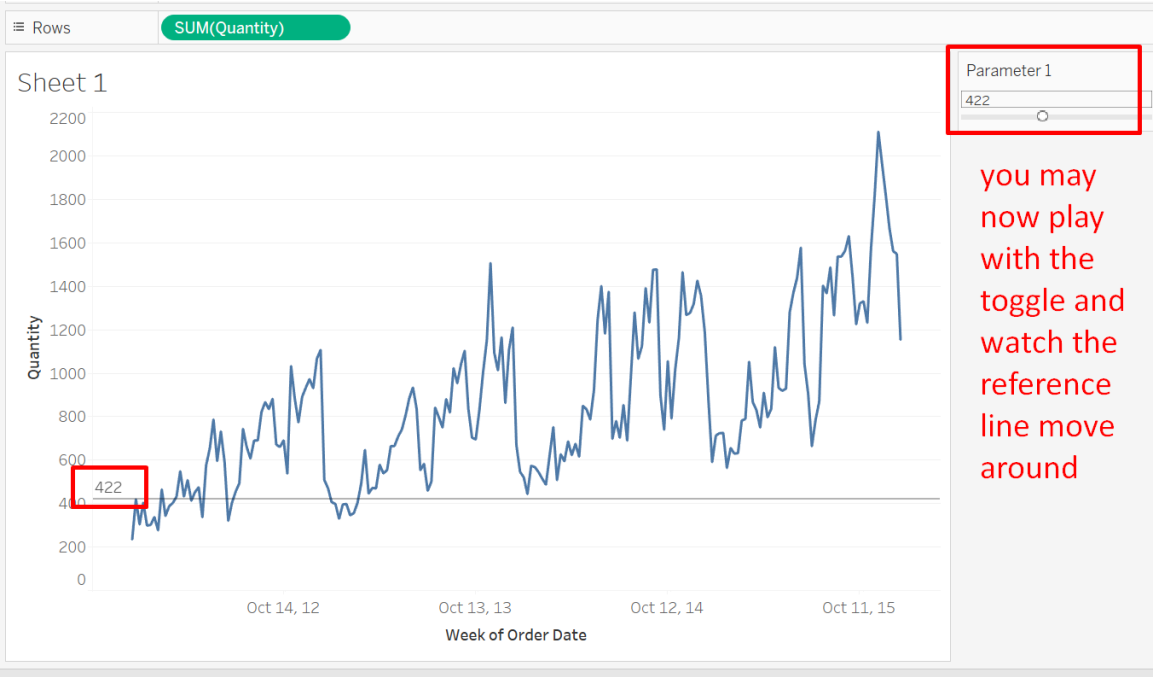

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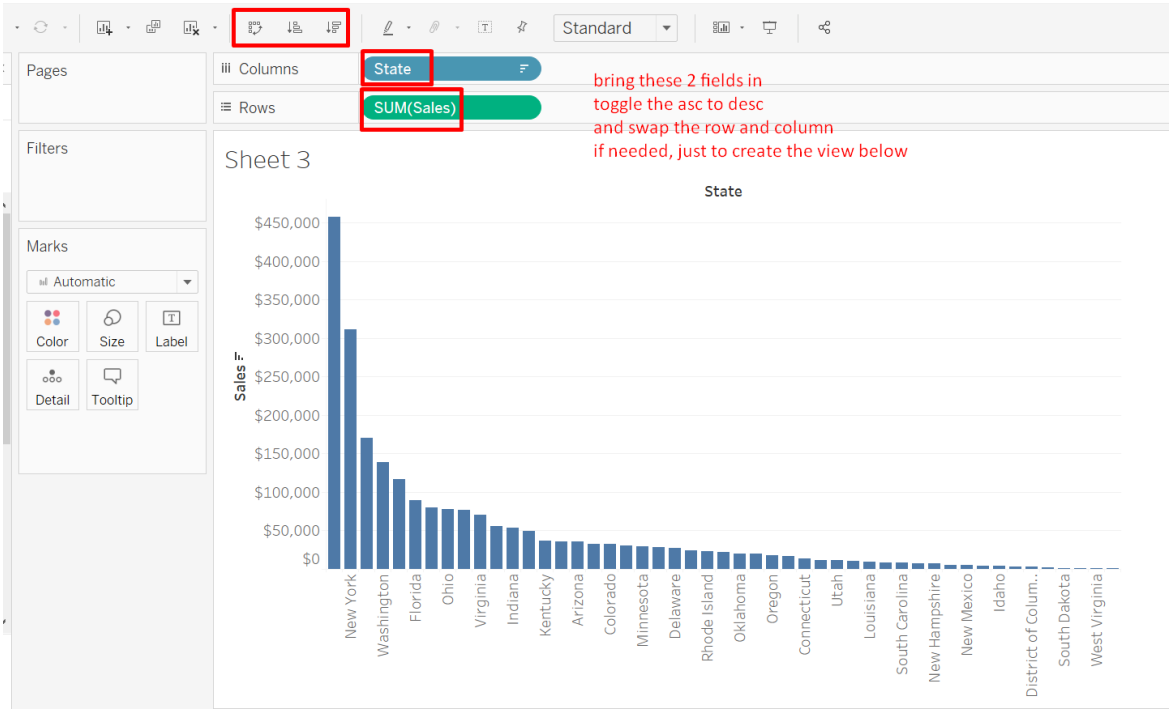
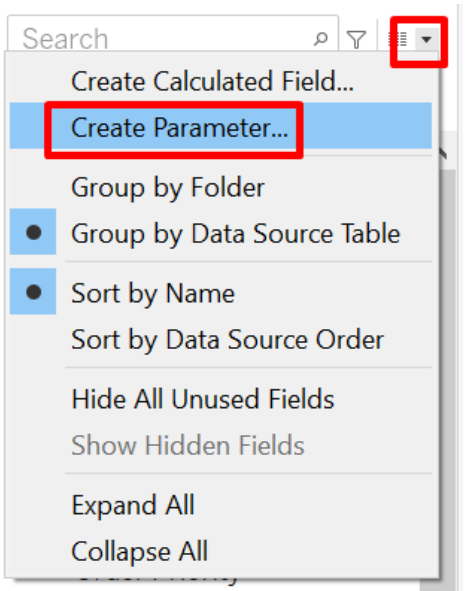
1. REFERENCE LINE USING PARAMETER

https://www.alvinang.sg/s/Sample-Superstore-USA.xls





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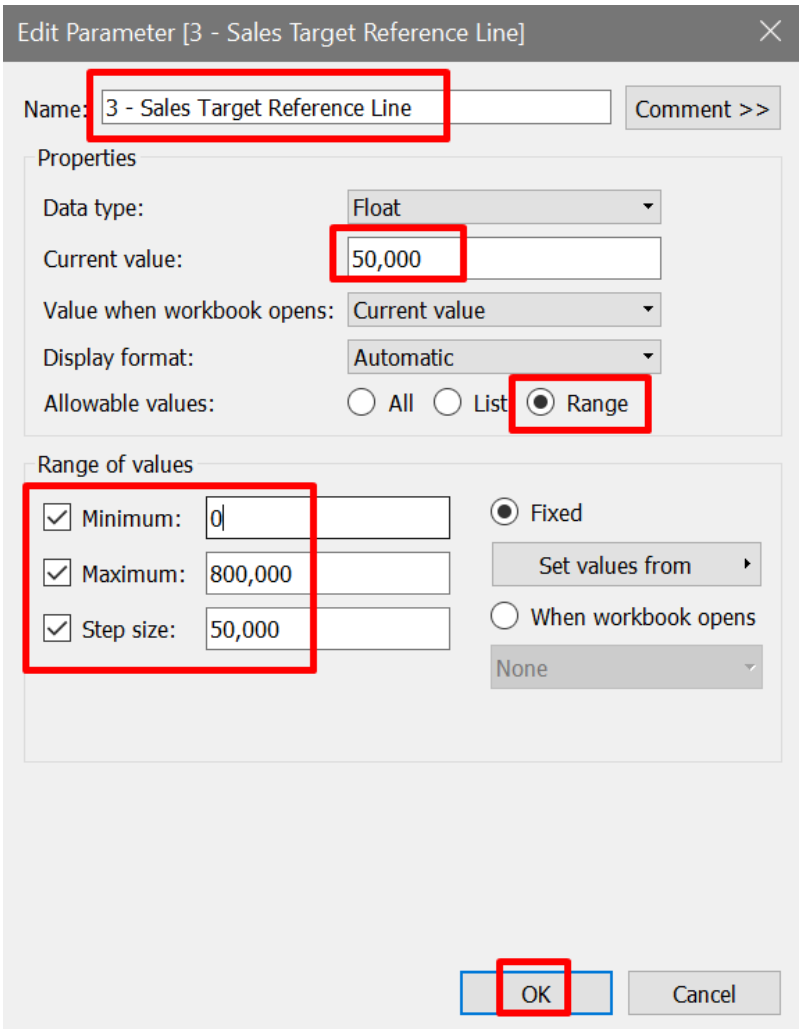

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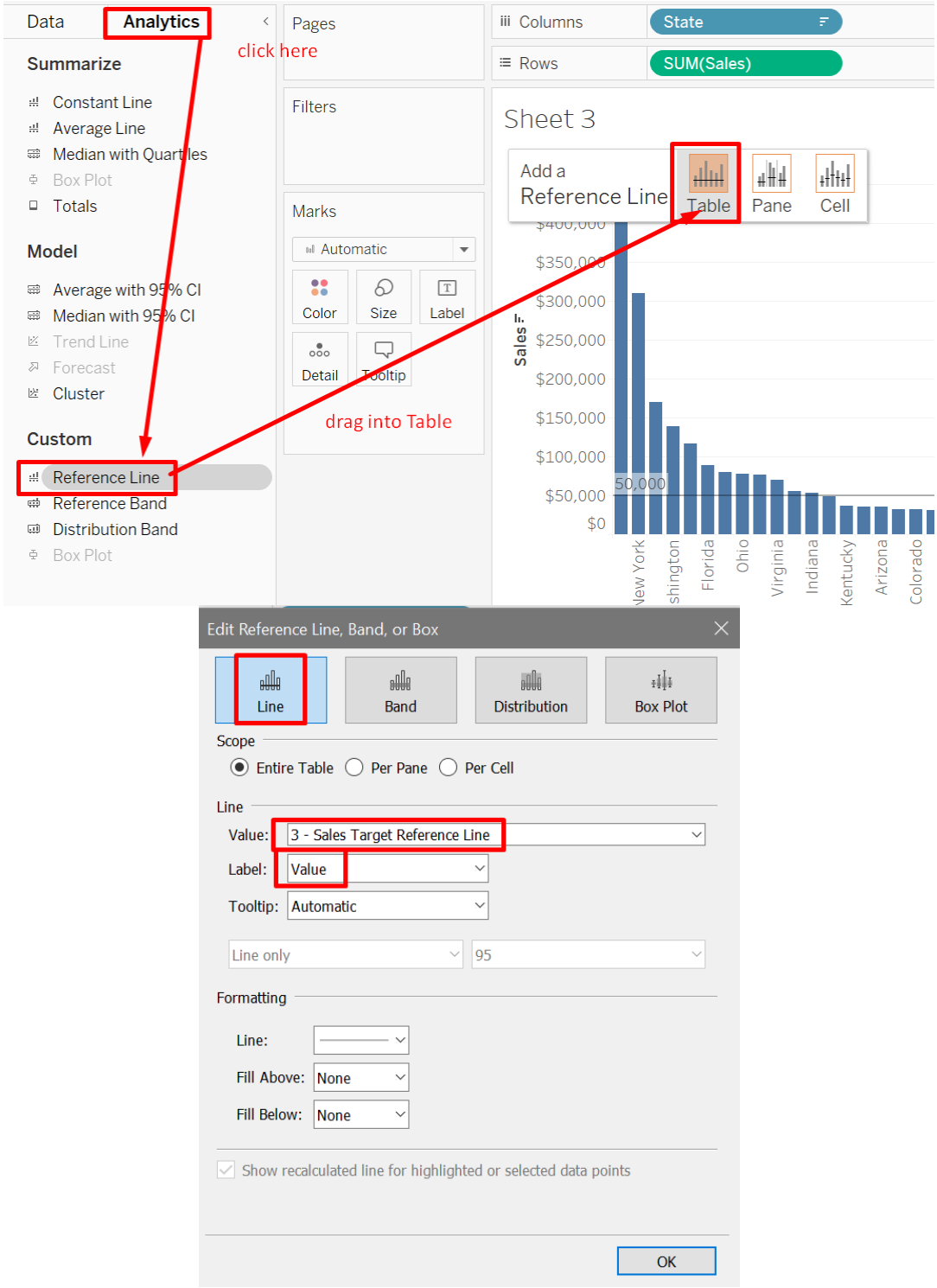

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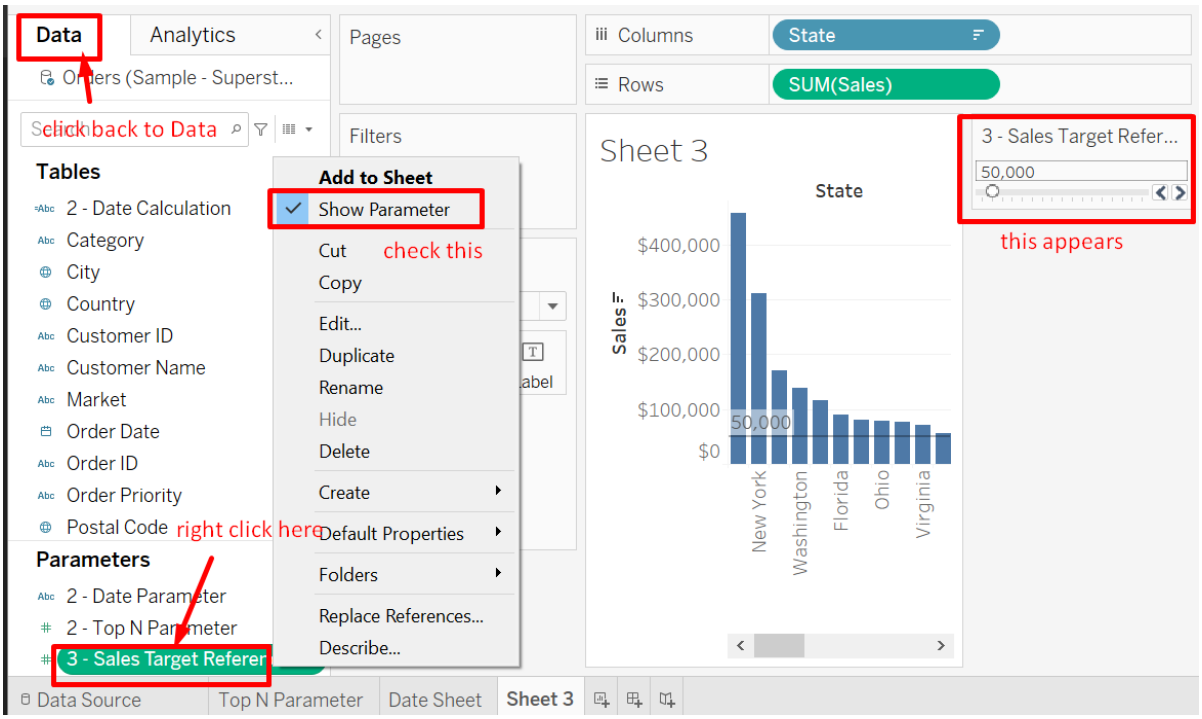

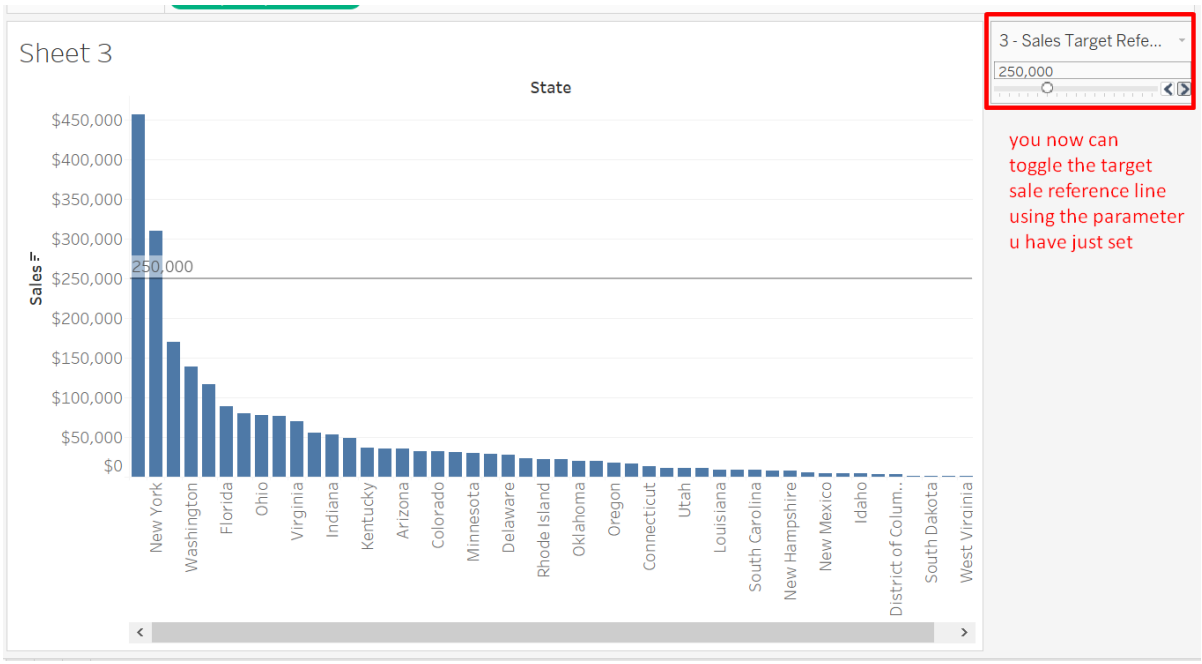

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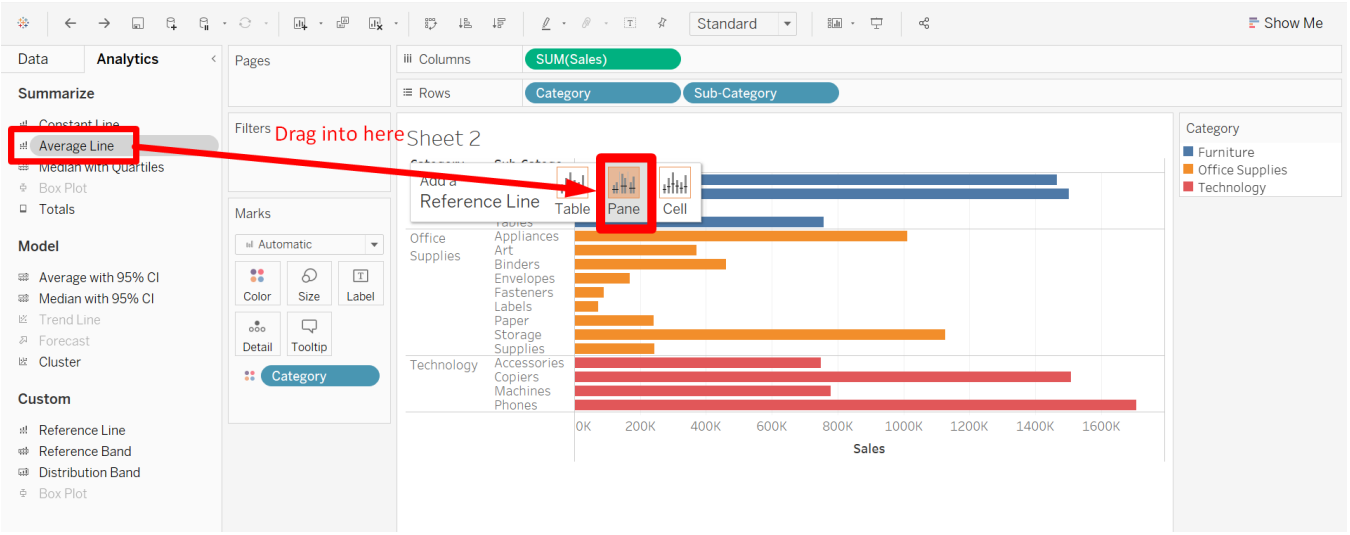

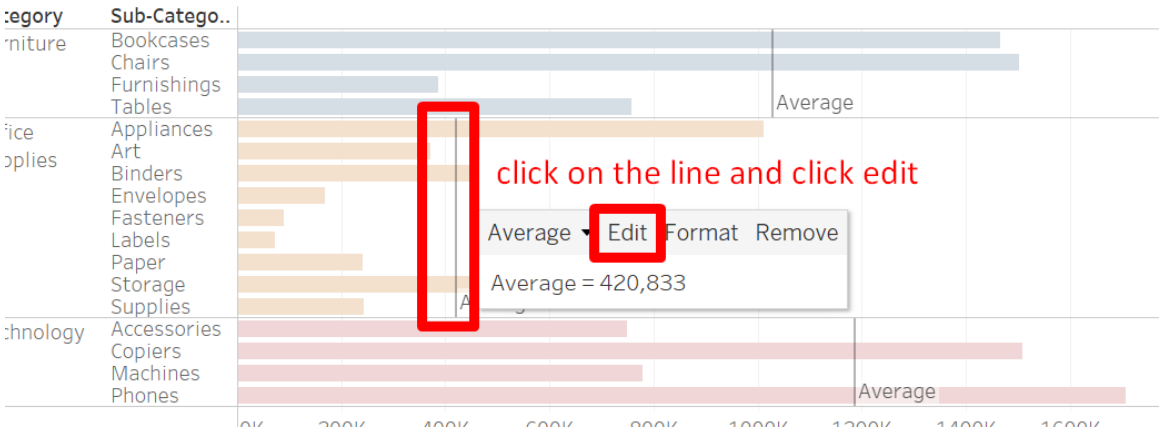

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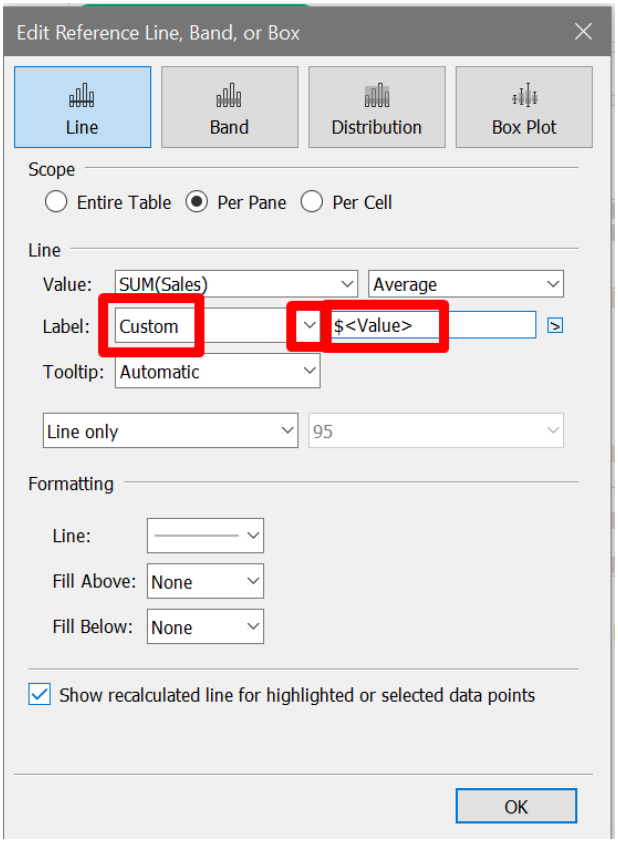

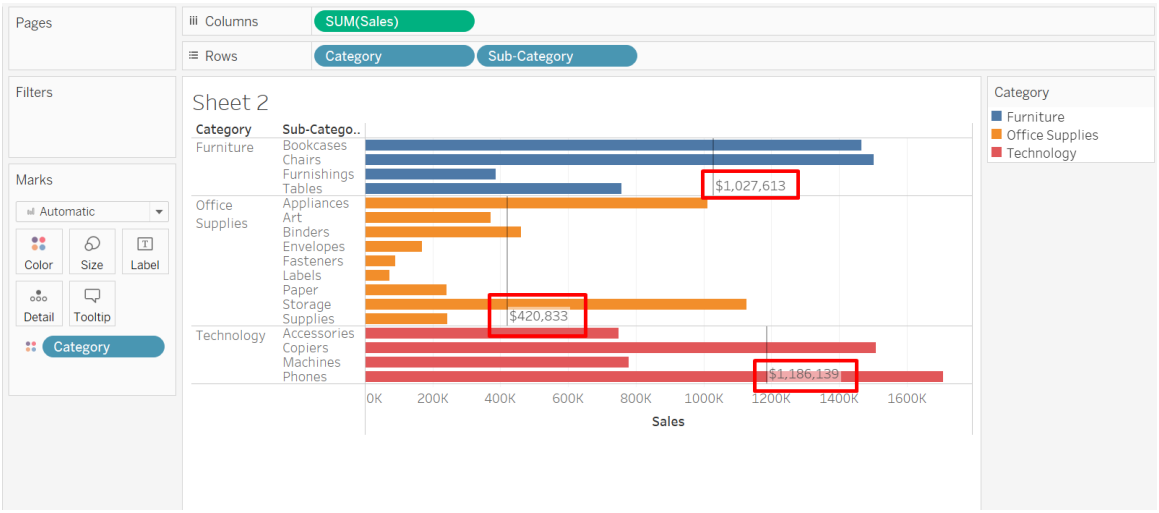

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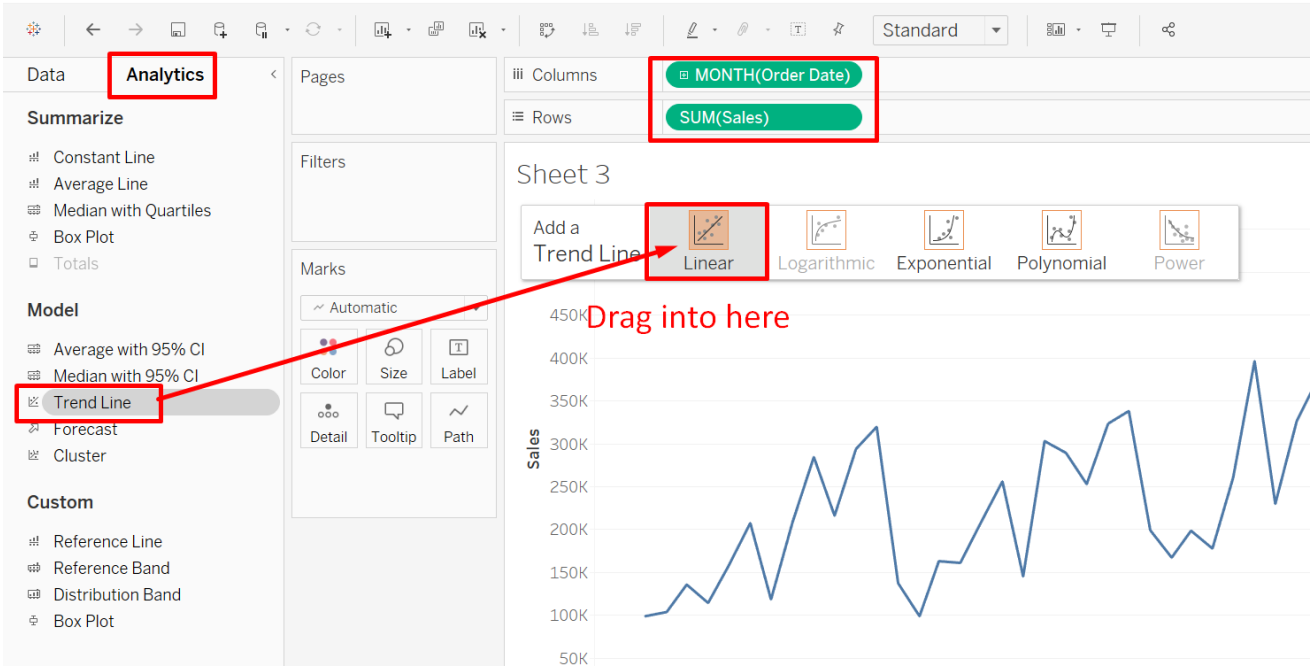
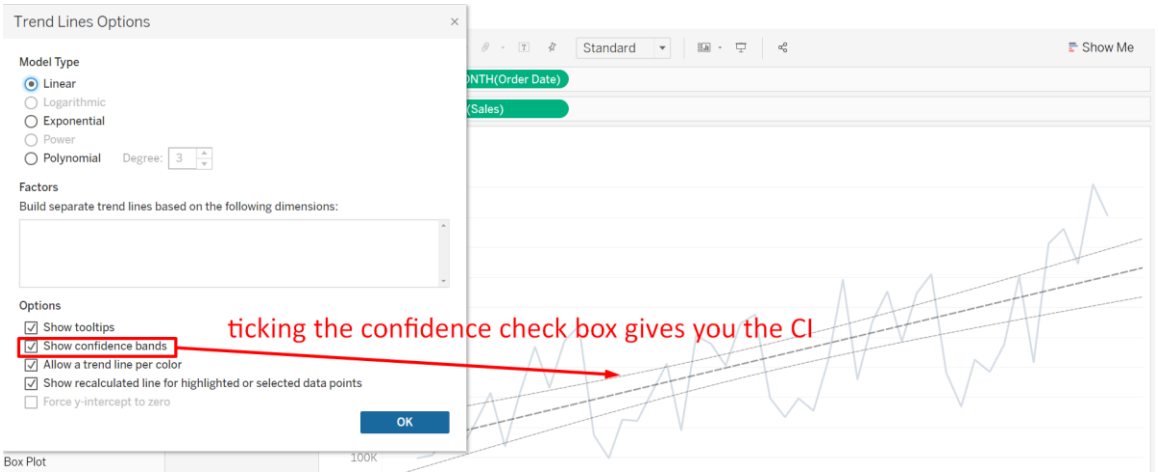
C. TREND LINE





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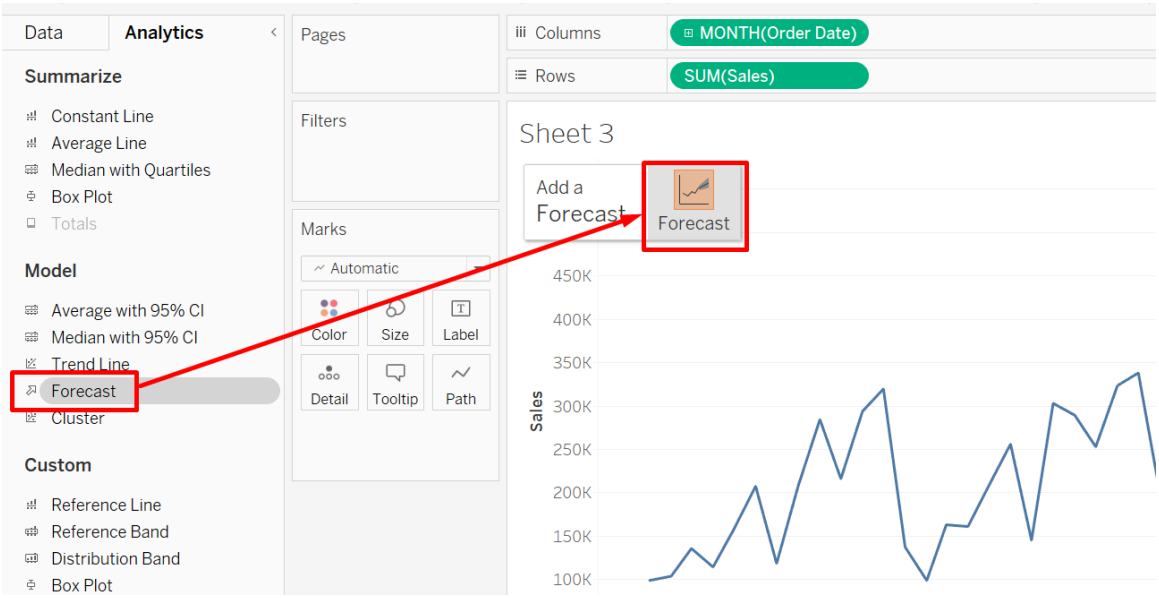

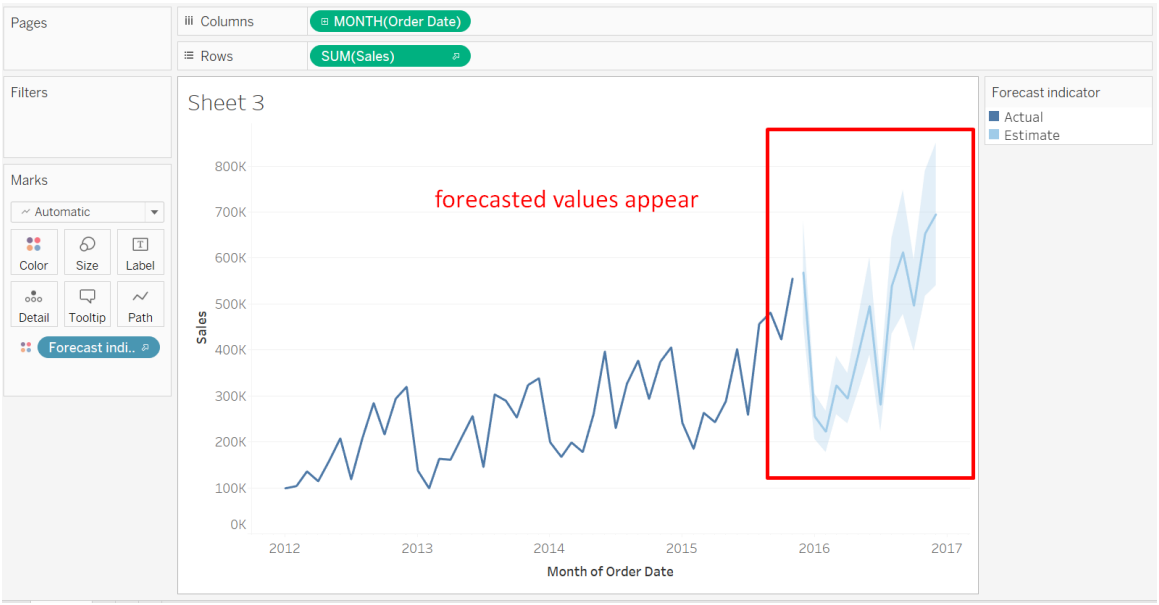

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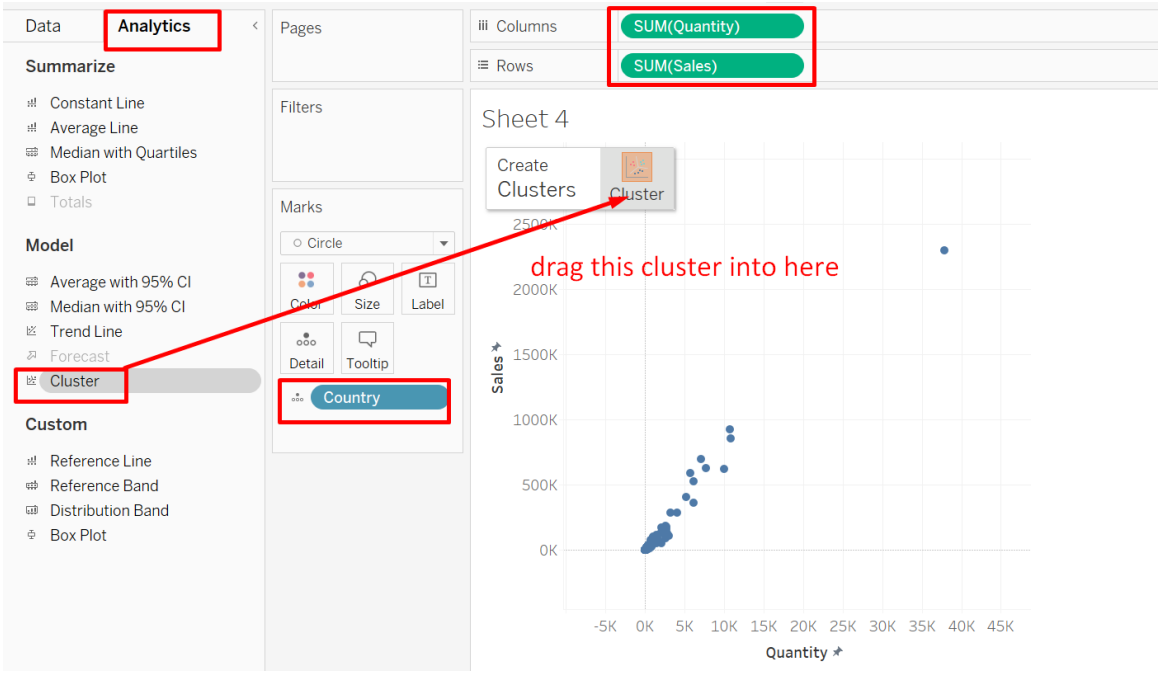
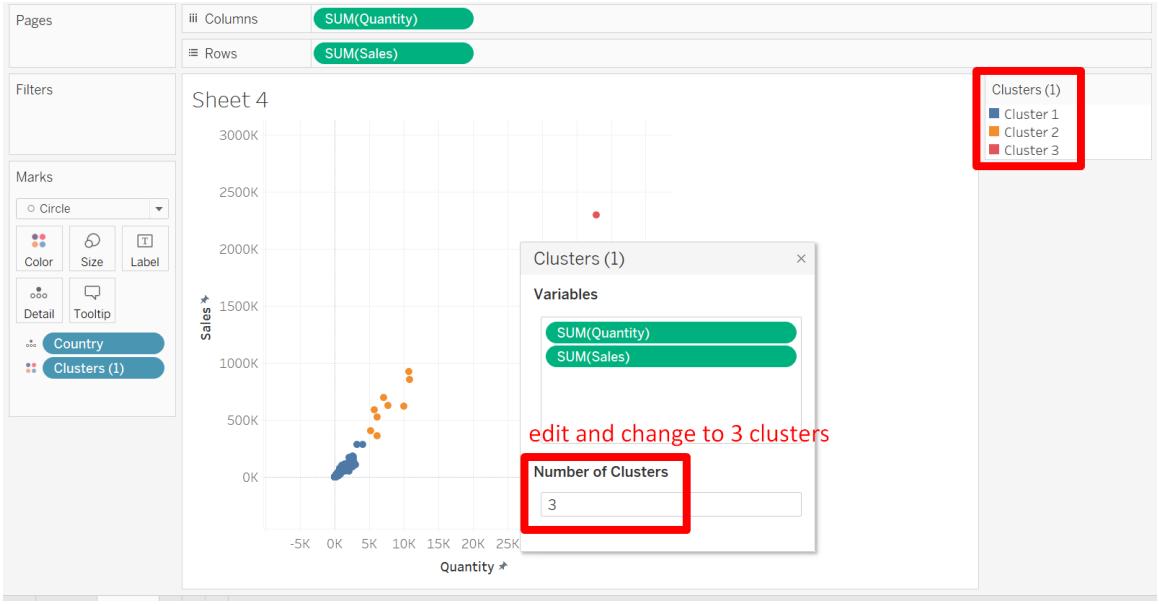
E. CLUSTERING





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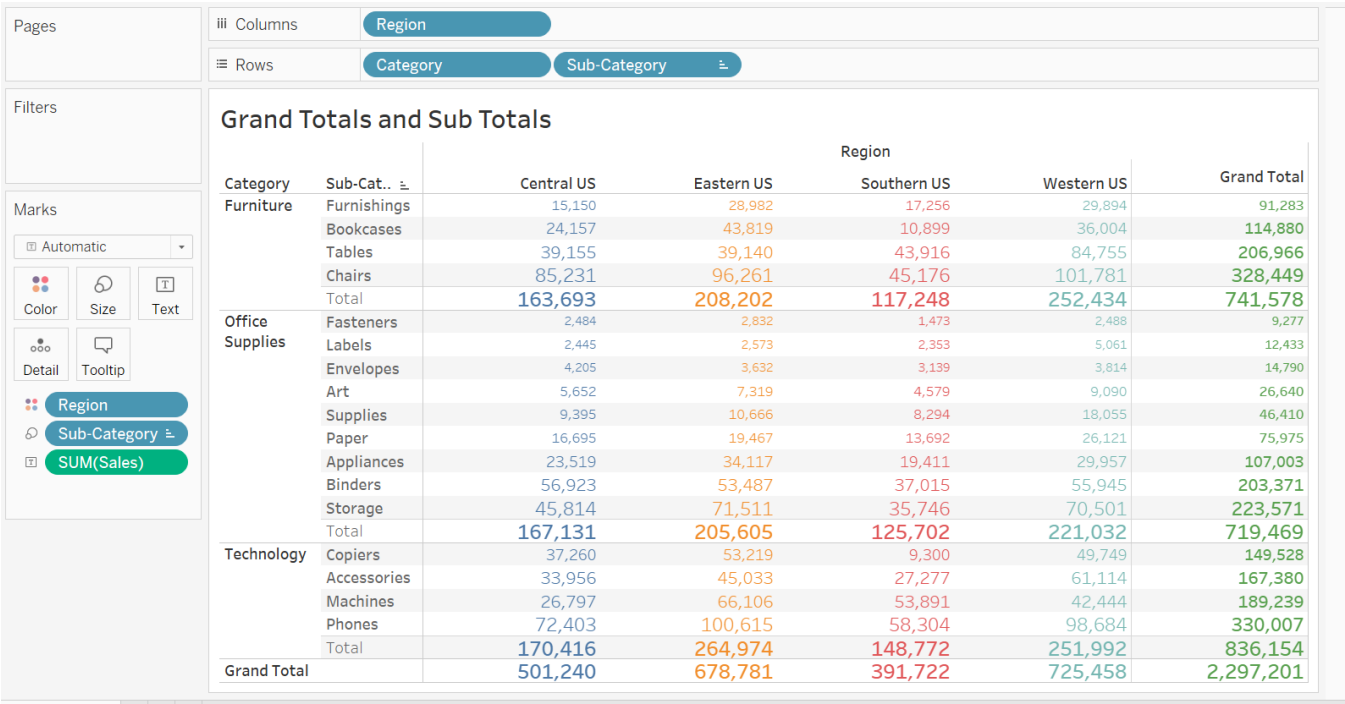
II. QUICK TABLE CALCULATIONS

A. ADD TOTALS

https://www.alvinang.sg/s/Sample-Superstore-USA.xls

We shall achieve this…



Grand Totals and Sub Totals

		Region				
Category	Sub-Cat..	Central US	Eastern US	Southern US	Western US	Grand Total
Furniture	Furnishings	15,150	28,982	17,256	29,894	91,283
	Bookcases	24,157	43,819	10,899	36,004	114,880
	Tables	39,155	39,140	43,916	84,755	206,966
	Chairs	85,231	96,261	45,176	101,781	328,449
	Total	163,693	208,202	117,248	252,434	741,578
Office Supplies	Fasteners	2,484	2,832	1,473	2,488	9,277
	Labels	2,445	2,573	2,353	5,061	12,433
	Envelopes	4,205	3,632	3,139	3,814	14,790
	Art	5,652	7,319	4,579	9,090	26,640
	Supplies	9,395	10,666	8,294	18,055	46,410
	Paper	16,695	19,467	13,692	26,121	75,975
	Appliances	23,519	34,117	19,411	29,957	107,003
	Binders	56,923	53,487	37,015	55,945	203,371
	Storage	45,814	71,511	35,746	70,501	223,571
	Total	167,131	205,605	125,702	221,032	719,469
Technology	Copiers	37,260	53,219	9,300	49,749	149,528
	Accessories	33,956	45,033	27,277	61,114	167,380
	Machines	26,797	66,106	53,891	42,444	189,239
	Phones	72,403	100,615	58,304	98,684	330,007
	Total	170,416	264,974	148,772	251,992	836,154
Grand Total		501,240	678,781	391,722	725,458	2,297,201

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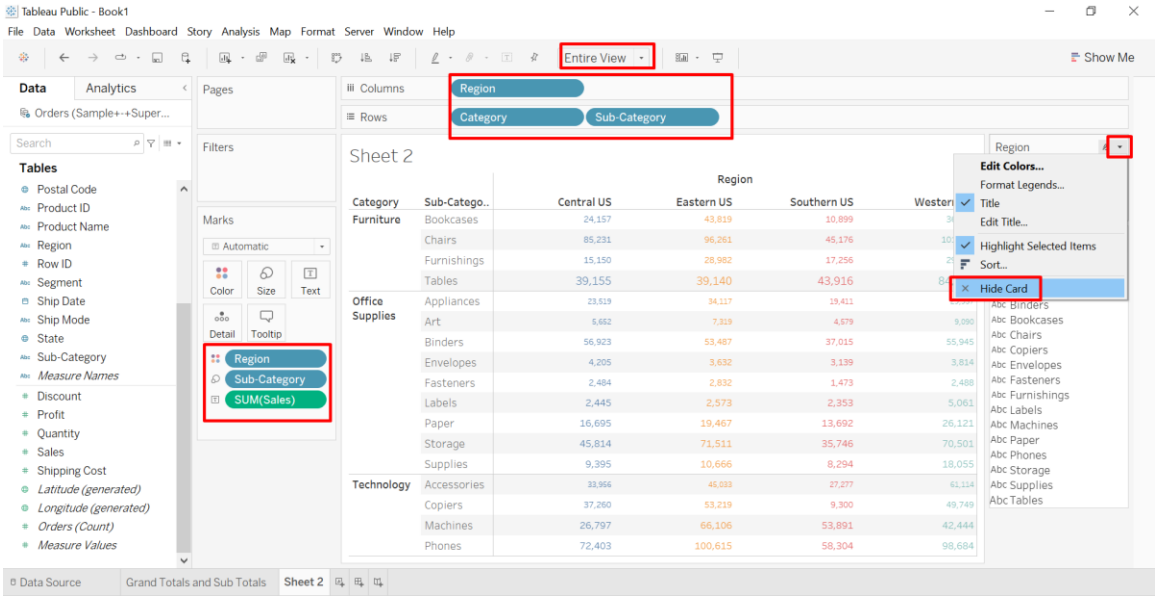

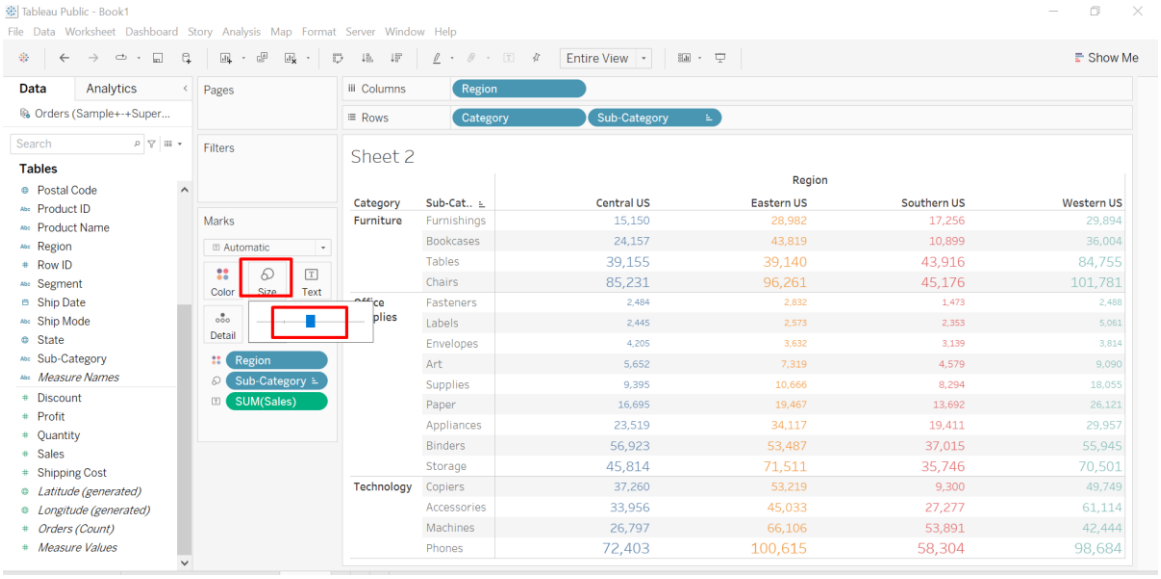

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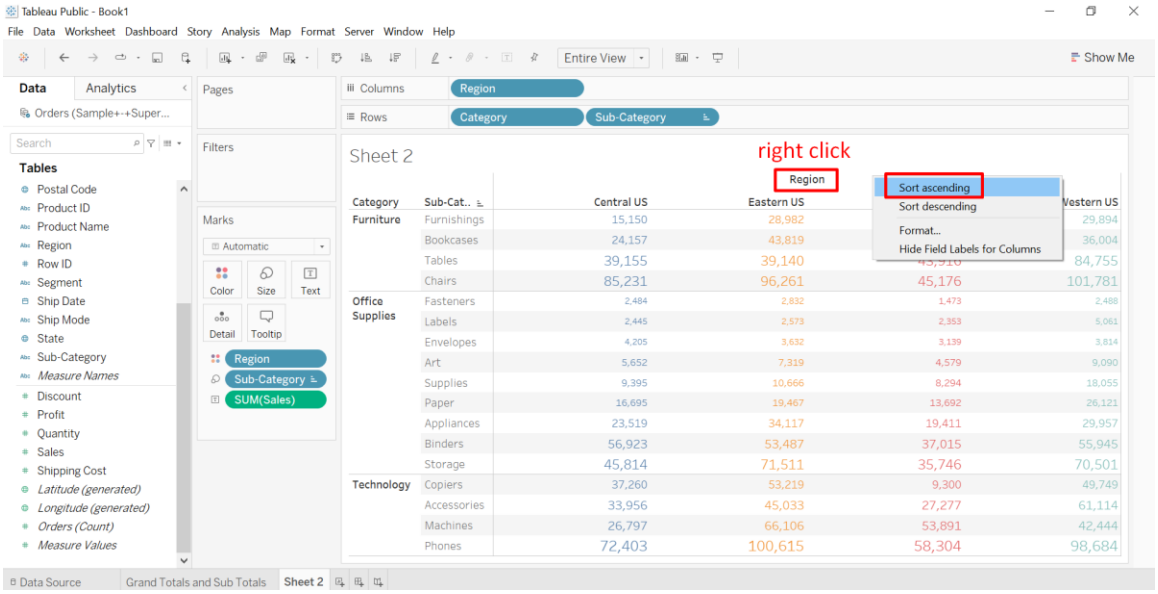

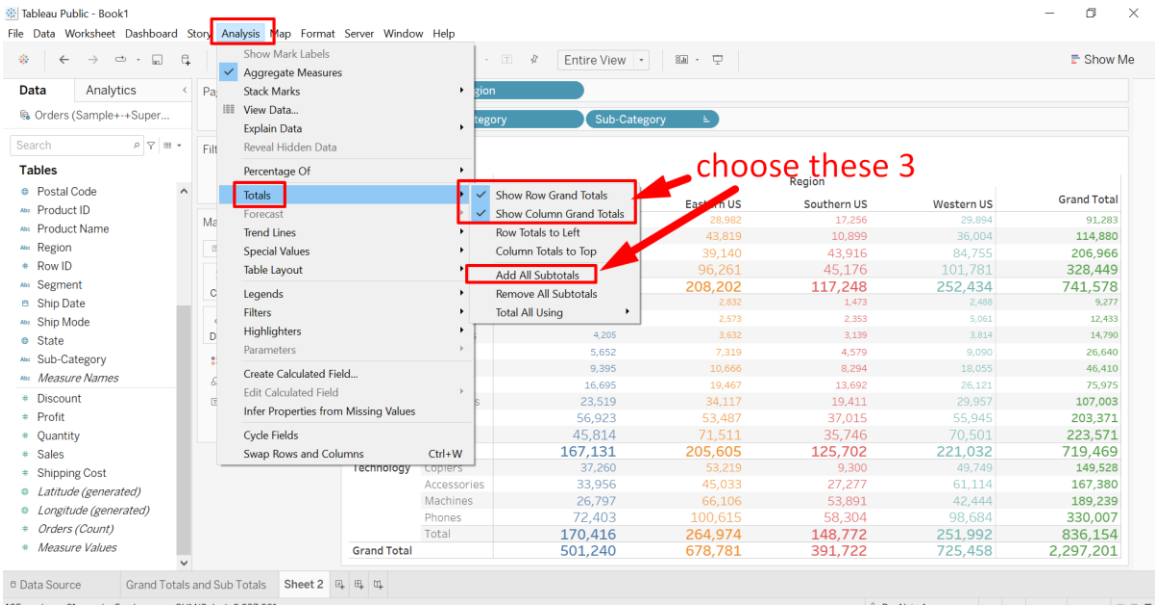

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B. RANKING

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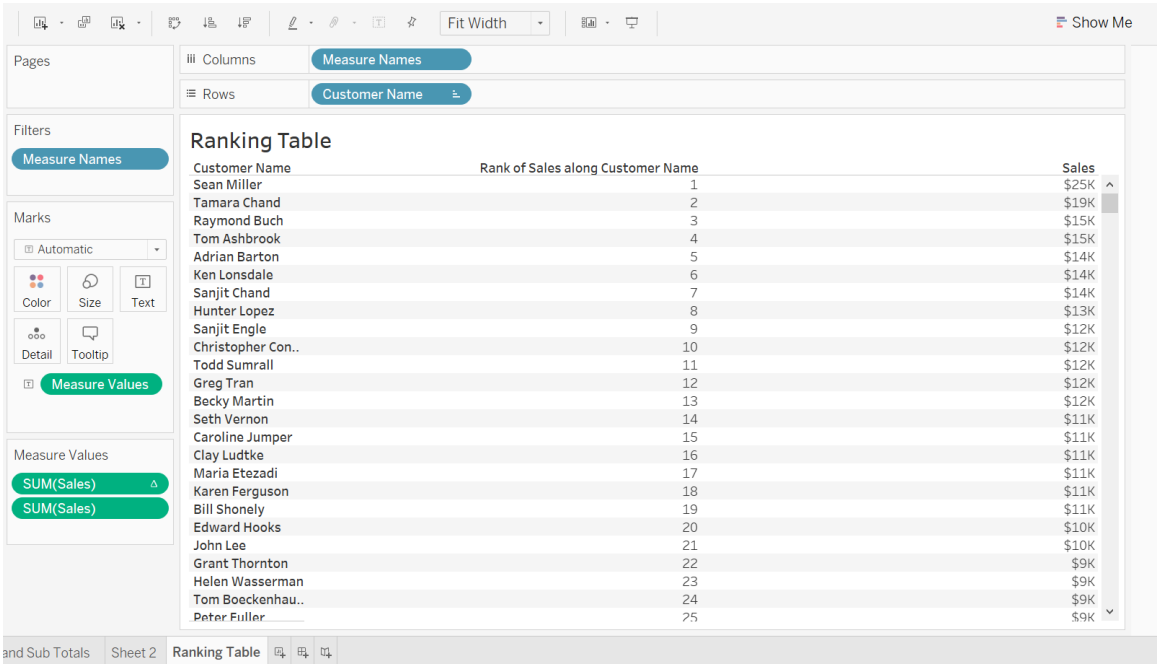

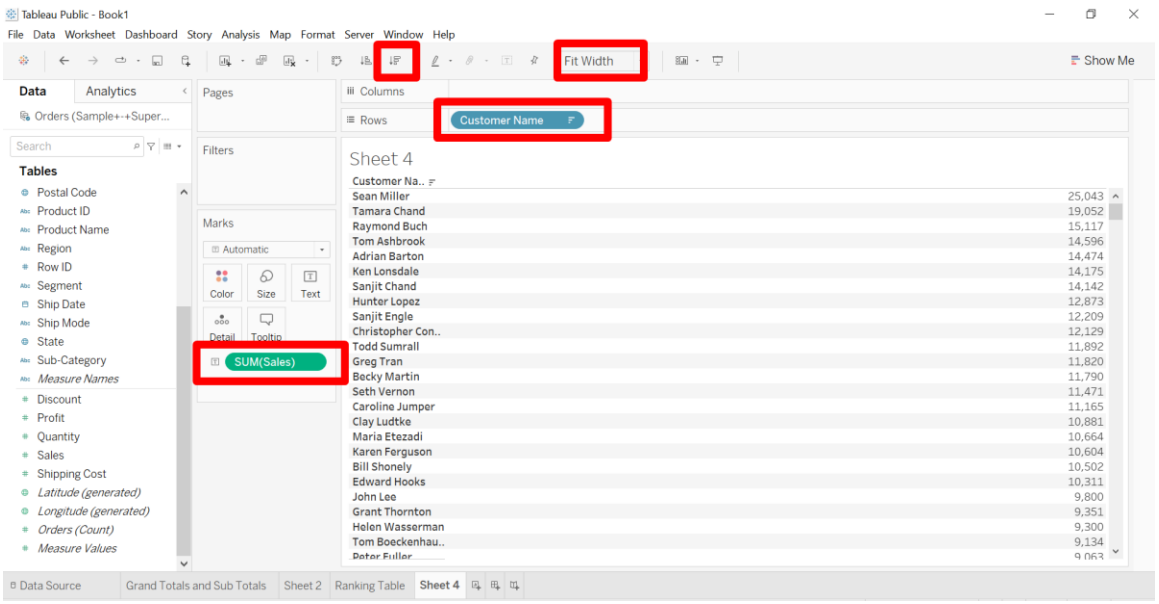

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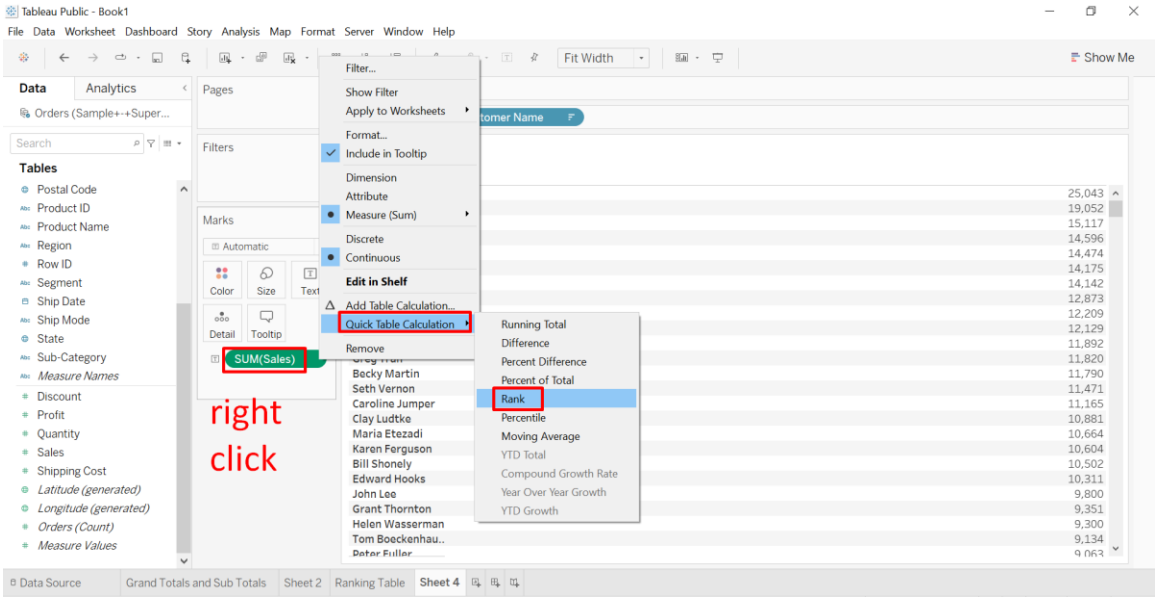

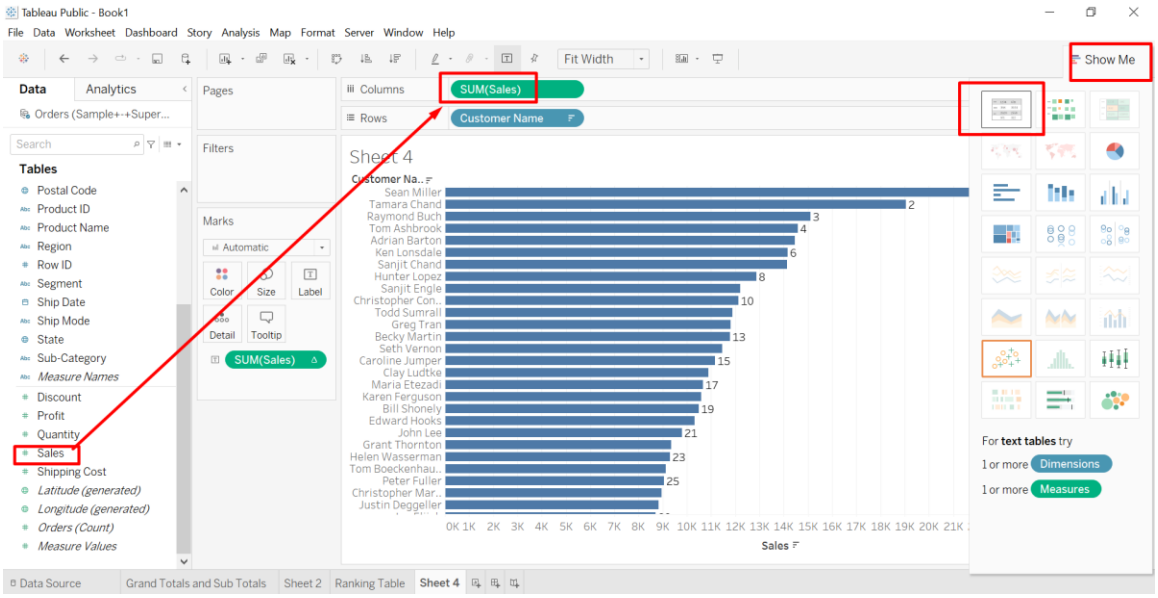

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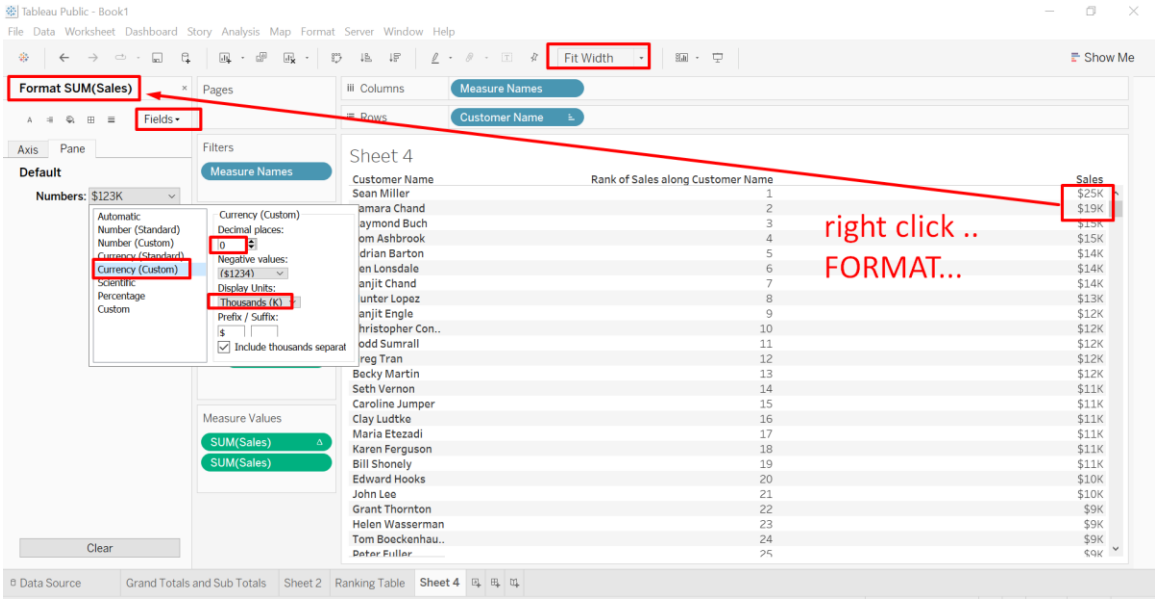

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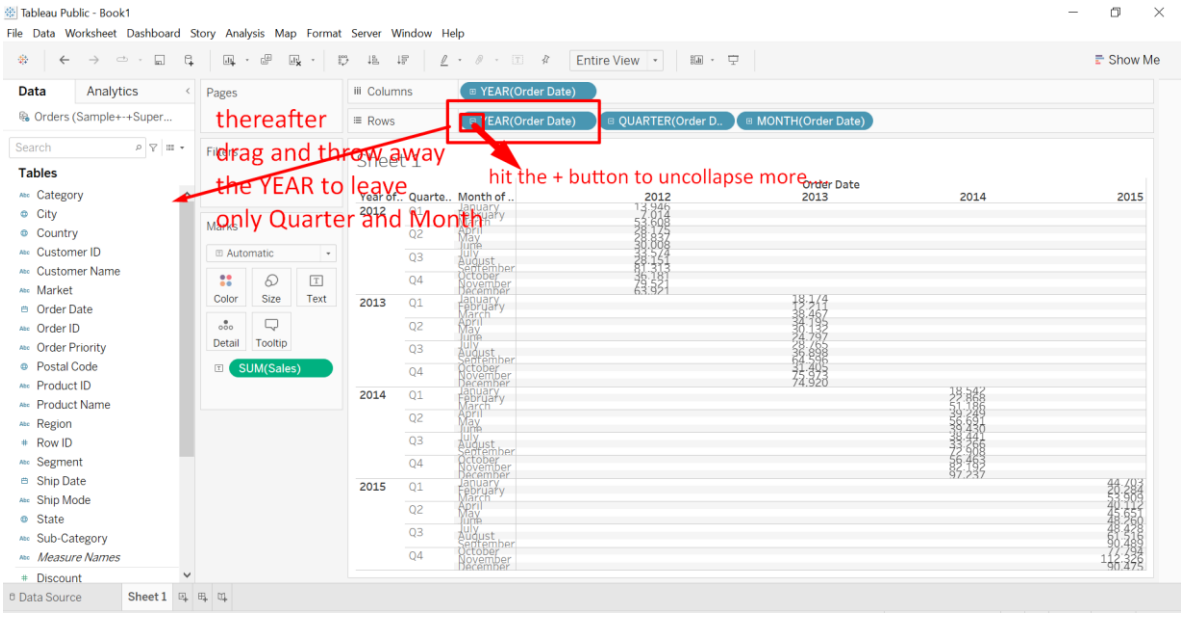
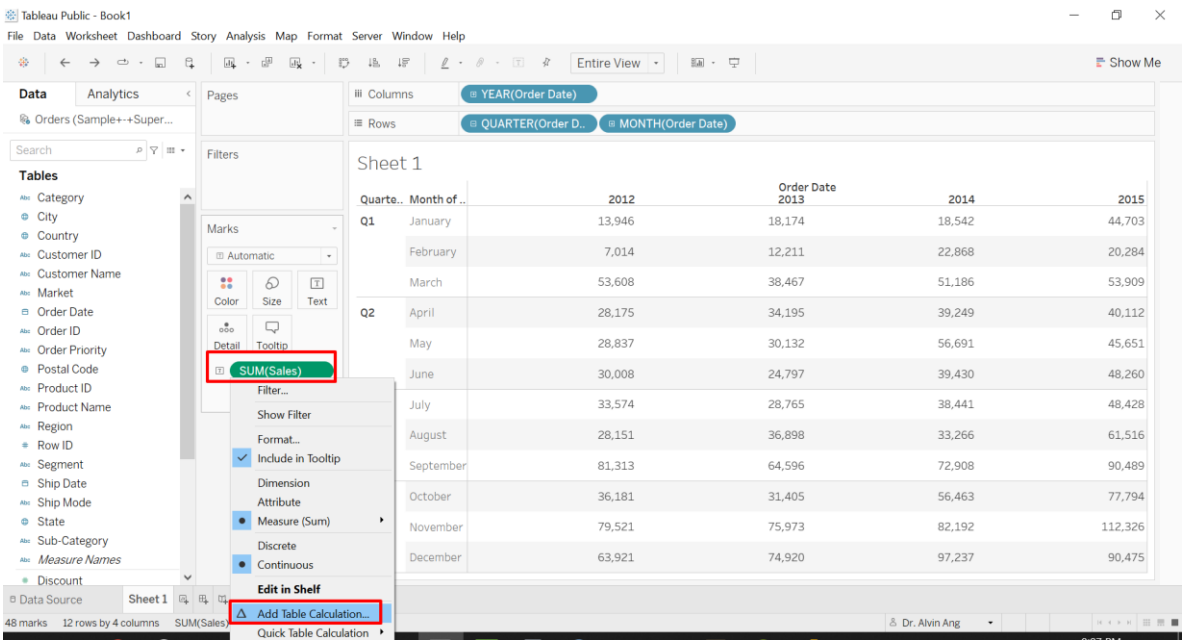
C. RUNNING TOTAL

1. YEARLY RUNNING TOTAL





Quarte..	Month of ..	Order Date 2012	2013	2014	2015
Q1	January	13,946	18,174	18,542	44,703
	February	7,014	12,211	22,868	20,284
	March	53,608	38,467	51,186	53,909
Q2	April	28,175	34,195	39,249	40,112
	May	28,837	30,132	56,691	45,651
	June	30,008	24,797	39,430	48,260
	July	33,574	28,765	38,441	48,428
	August	28,151	36,898	33,266	61,516
	September	81,313	64,596	72,908	90,489
	October	36,181	31,405	56,463	77,794
	November	79,521	75,973	82,192	112,326
	December	63,921	74,920	97,237	90,475

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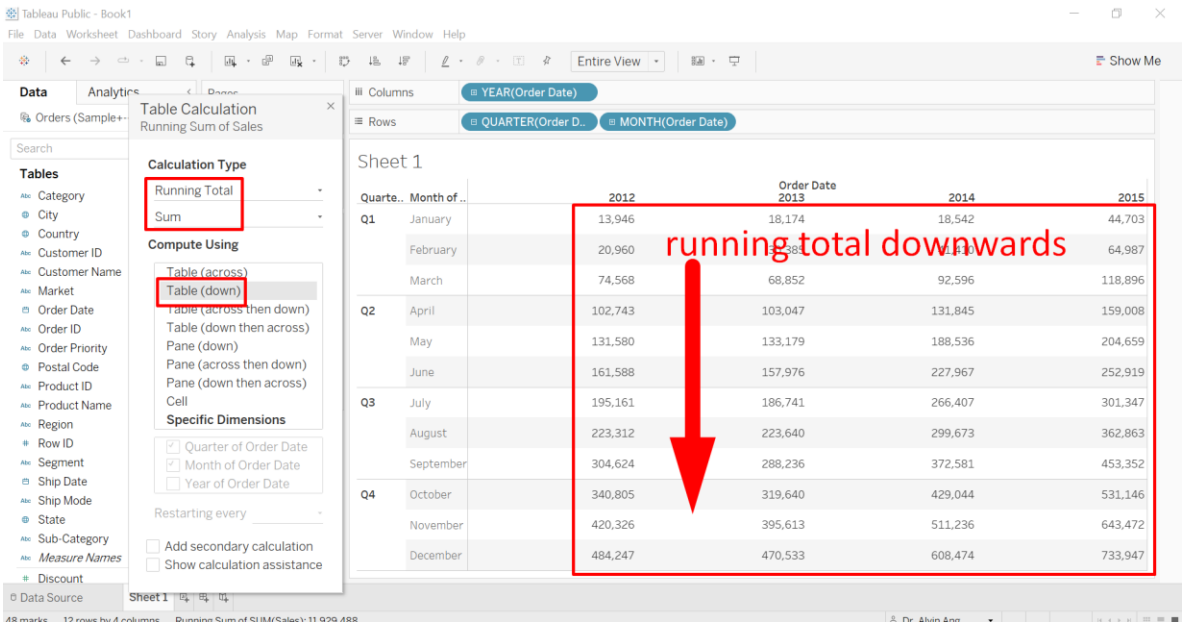

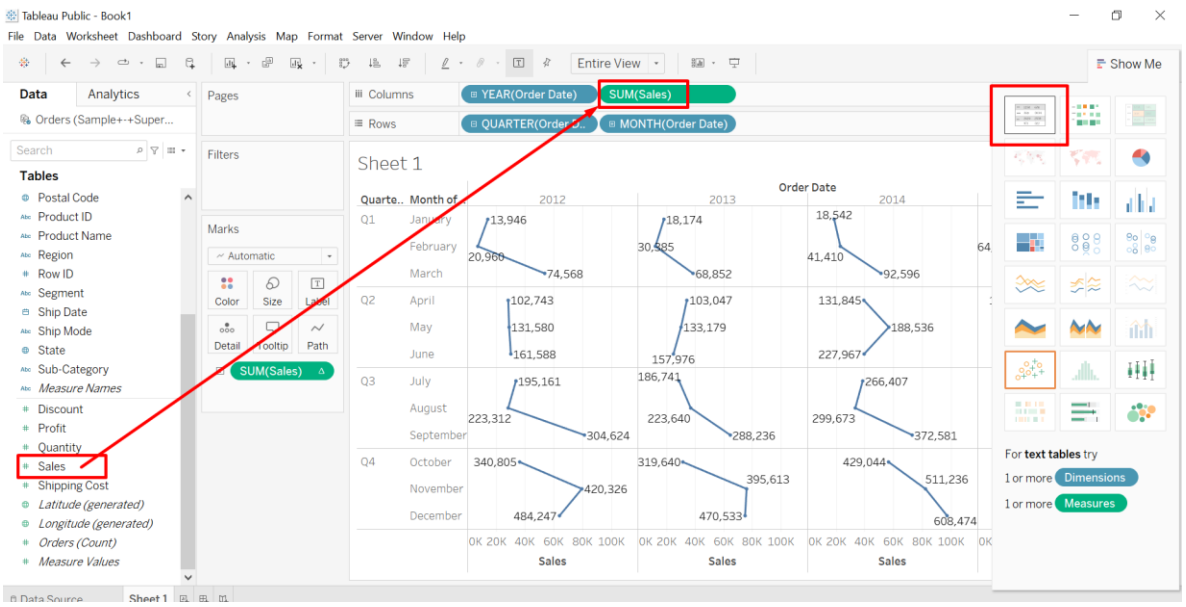

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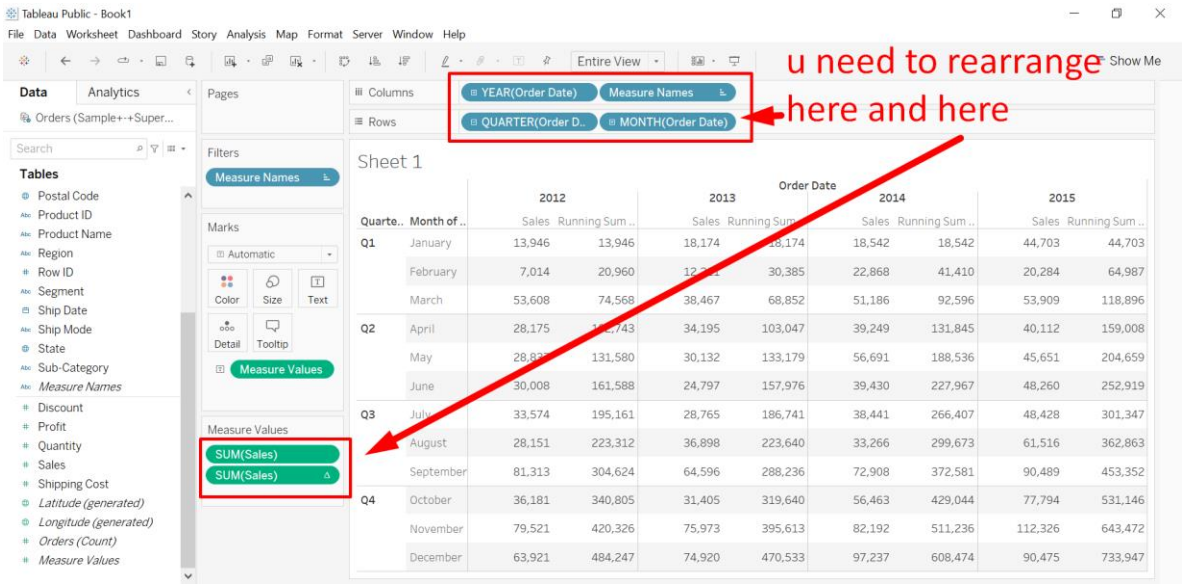

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2. QUARTERLY RUNNING TOTAL

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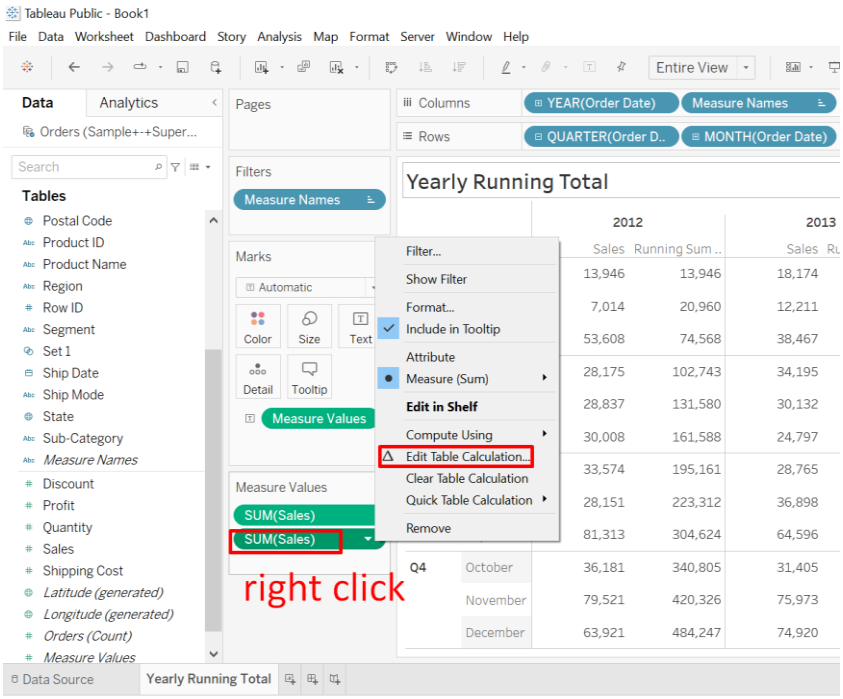

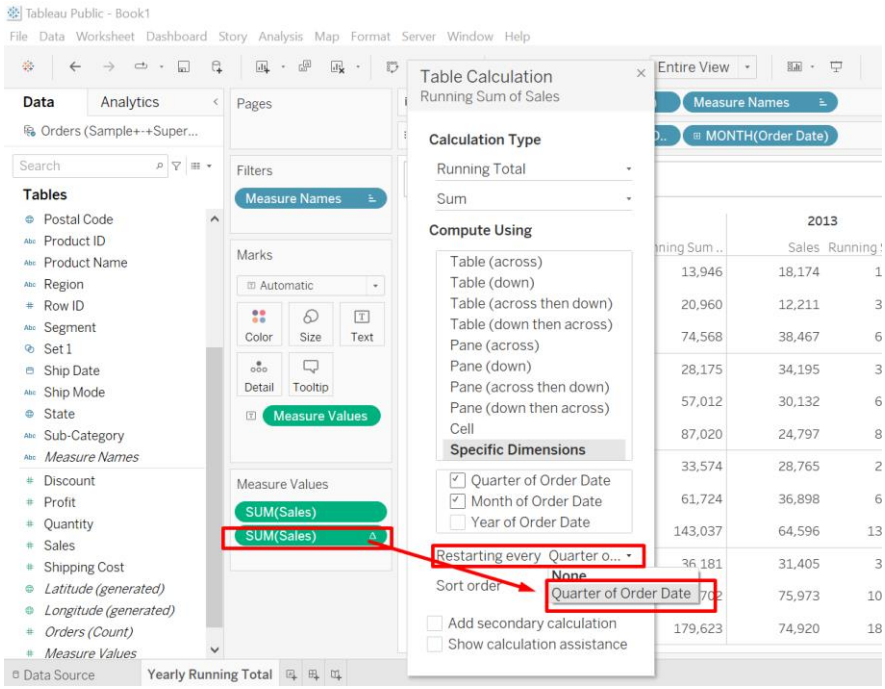

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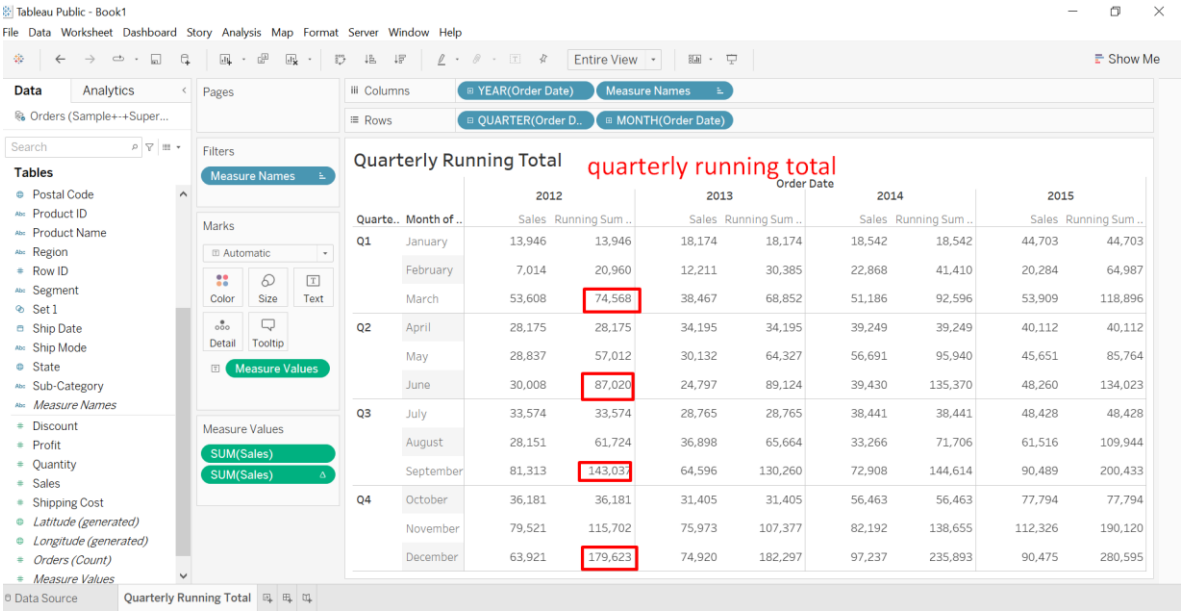

3. PERCENT DIFFERENCE FROM

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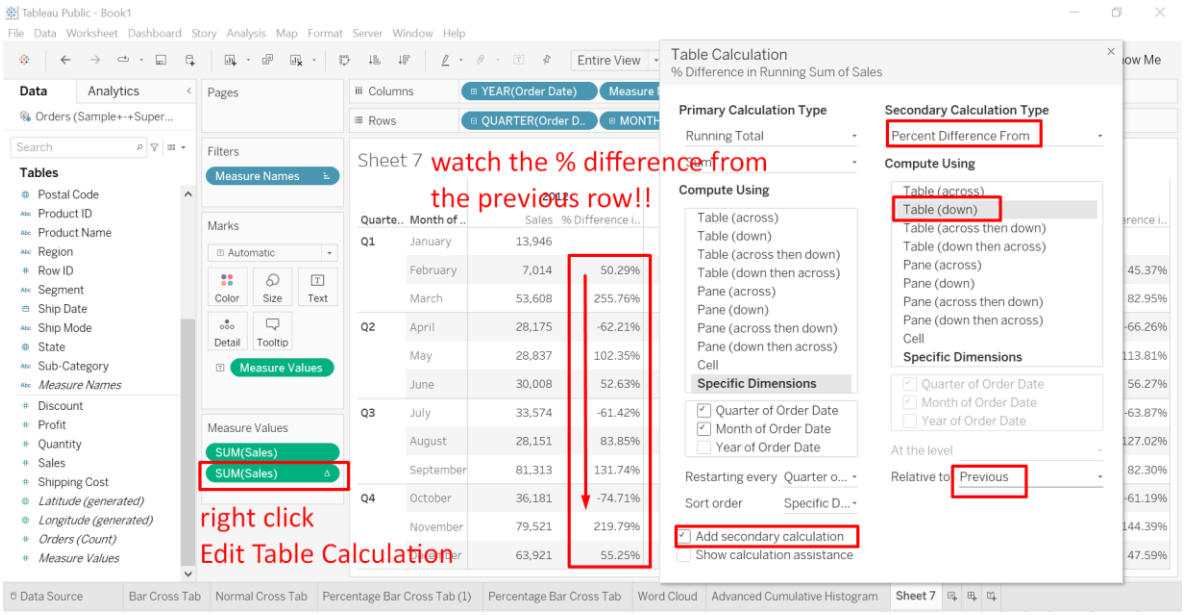

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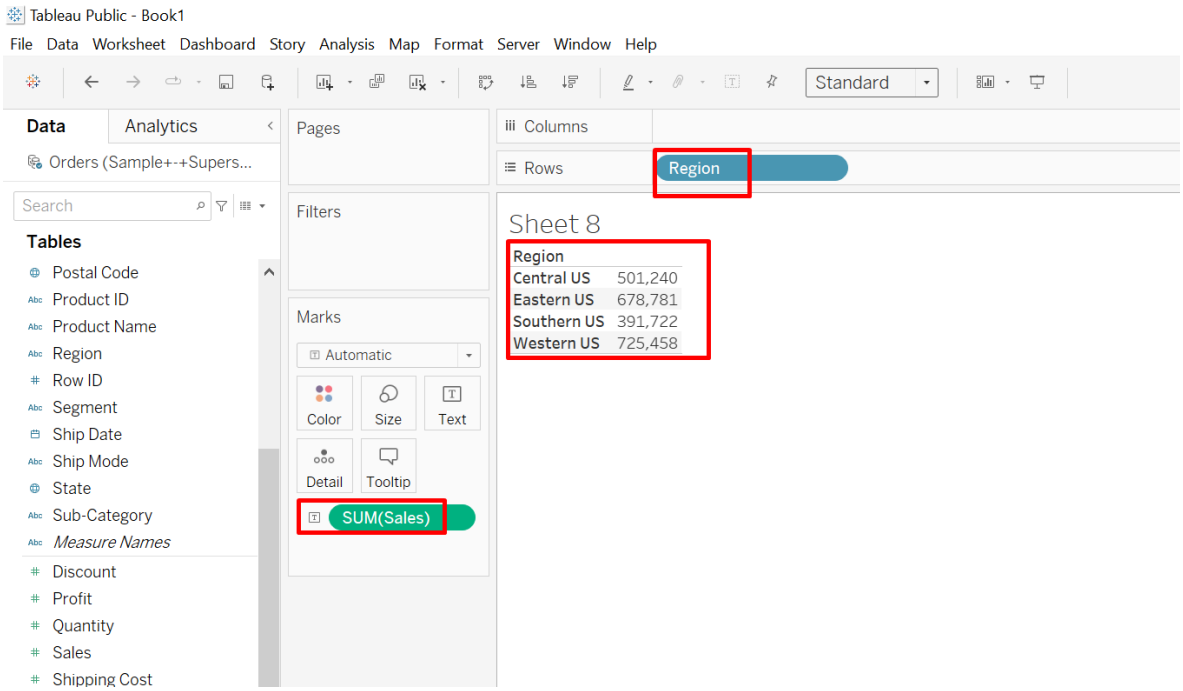
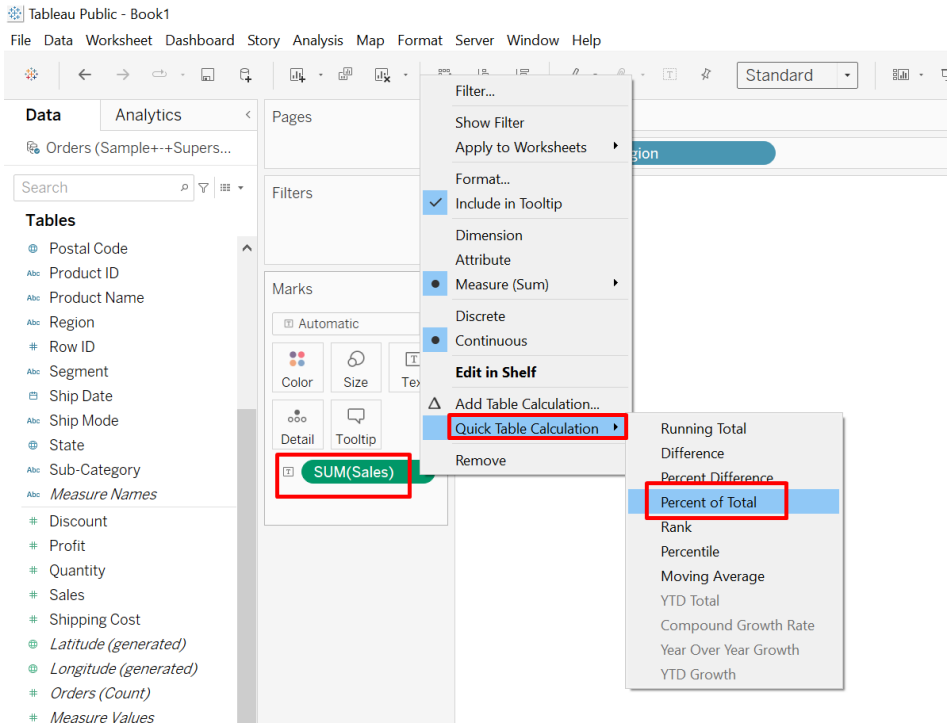
D. PERCENTAGE OF TOTAL

1. % OF TOTAL TABLE





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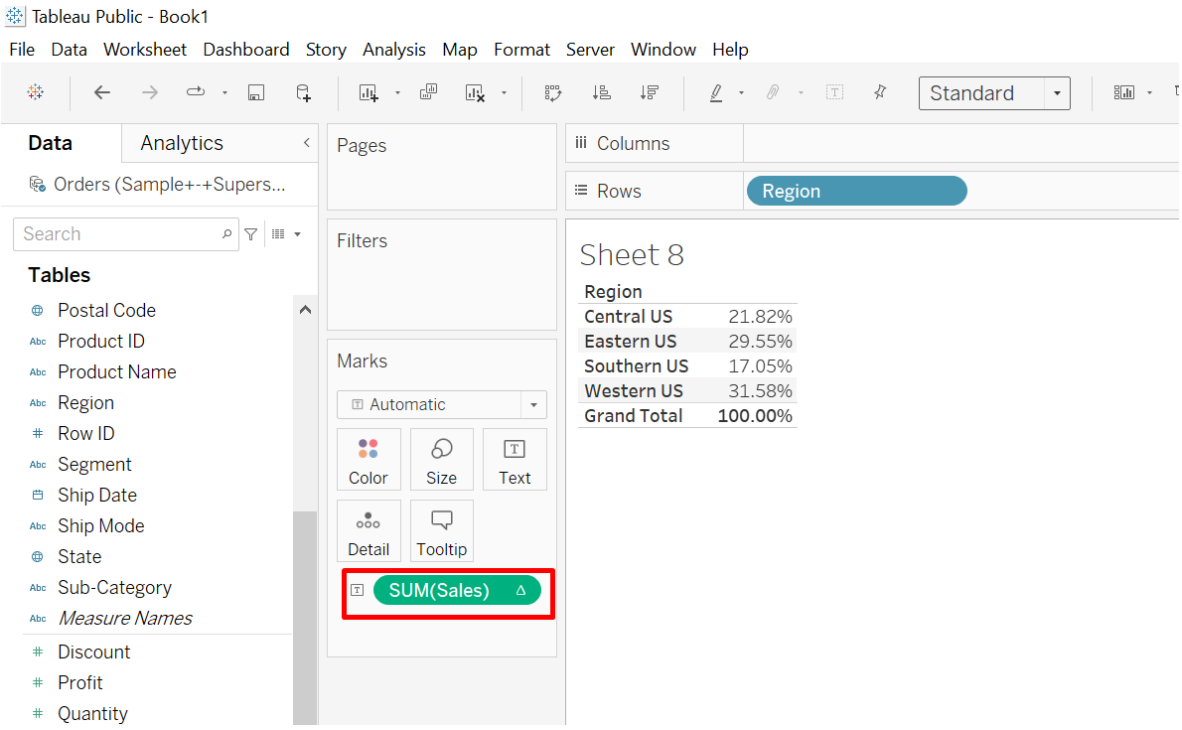

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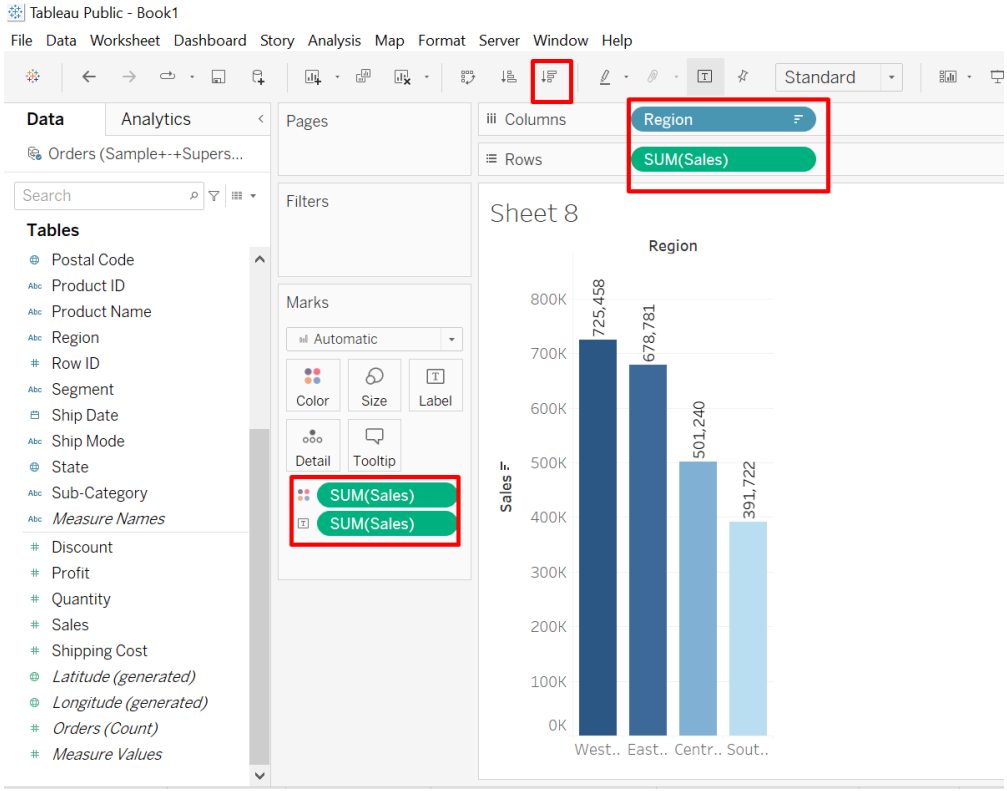
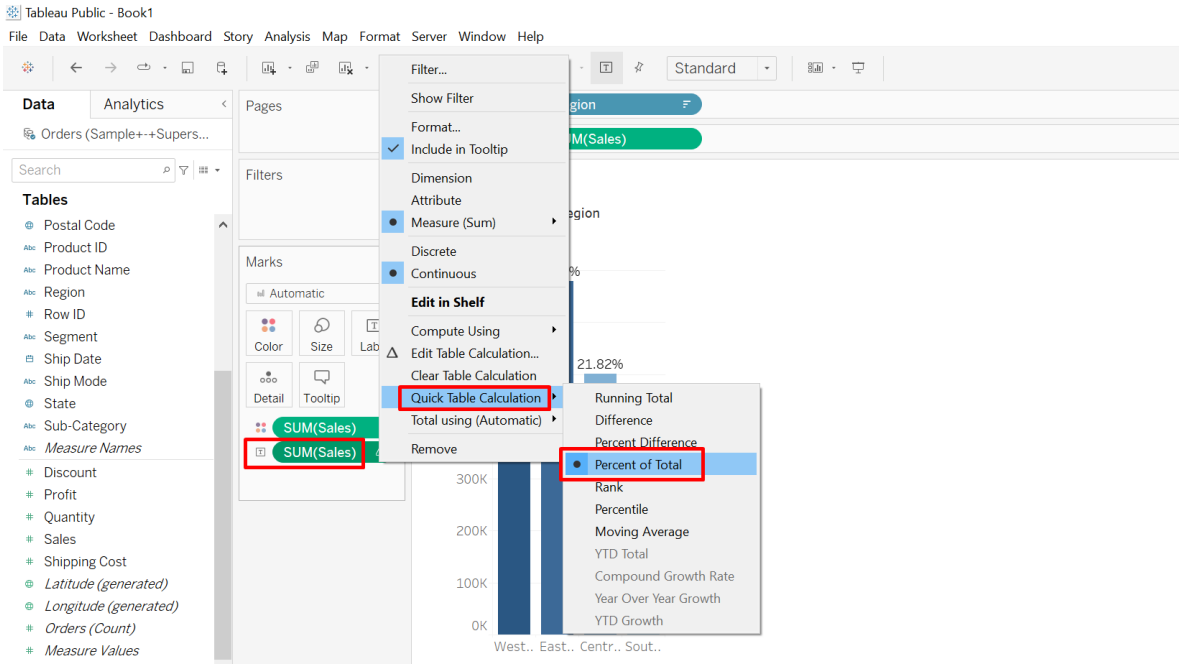
2. % OF TOTAL BAR CHART





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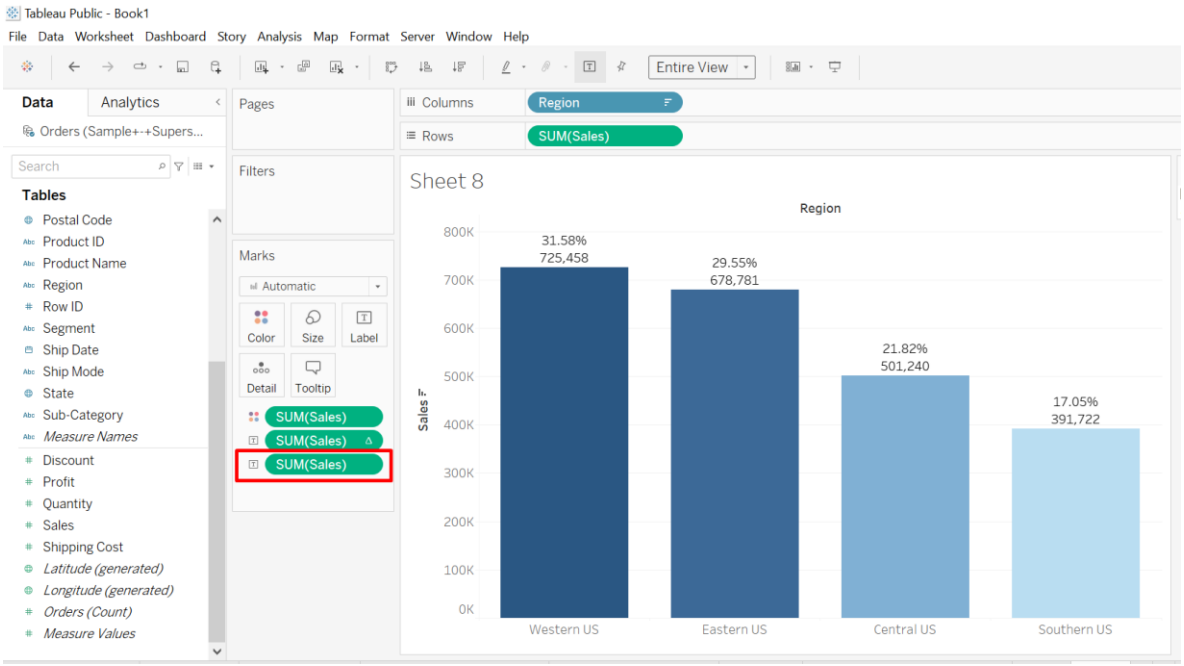
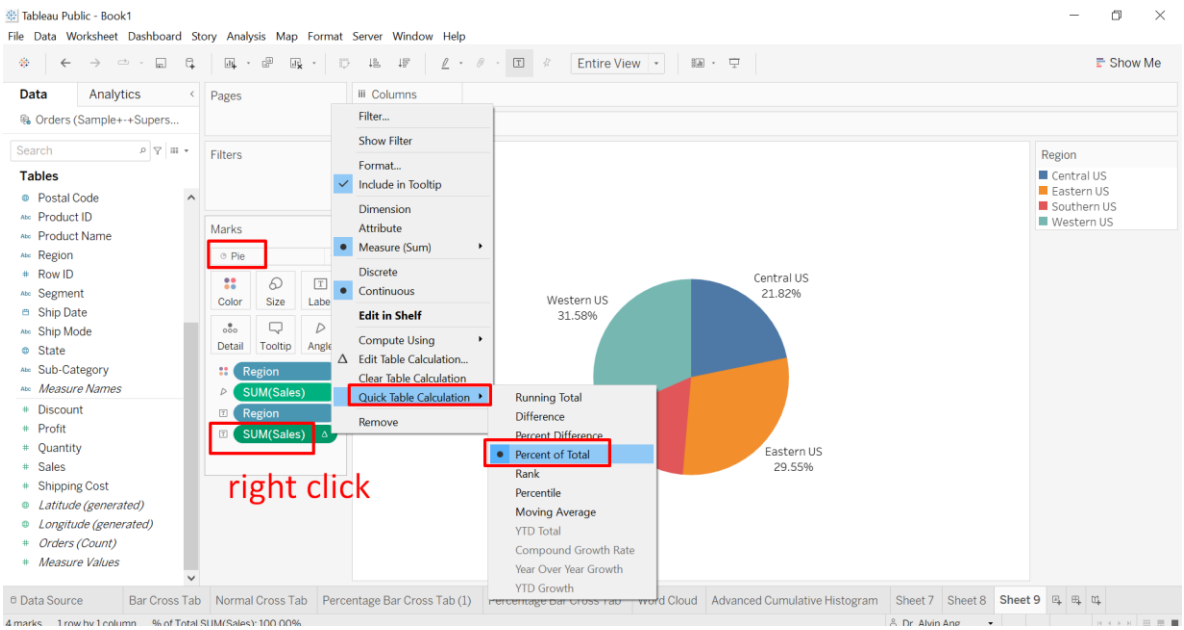


3. % OF TOTAL PIE CHART



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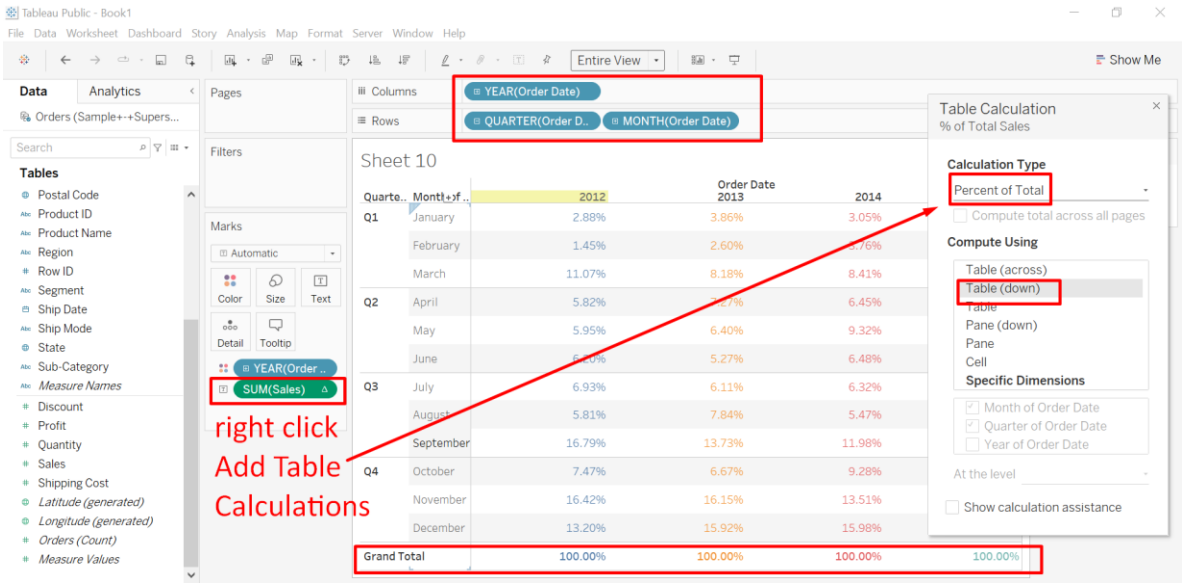
4. % OF TOTAL CROSSTAB



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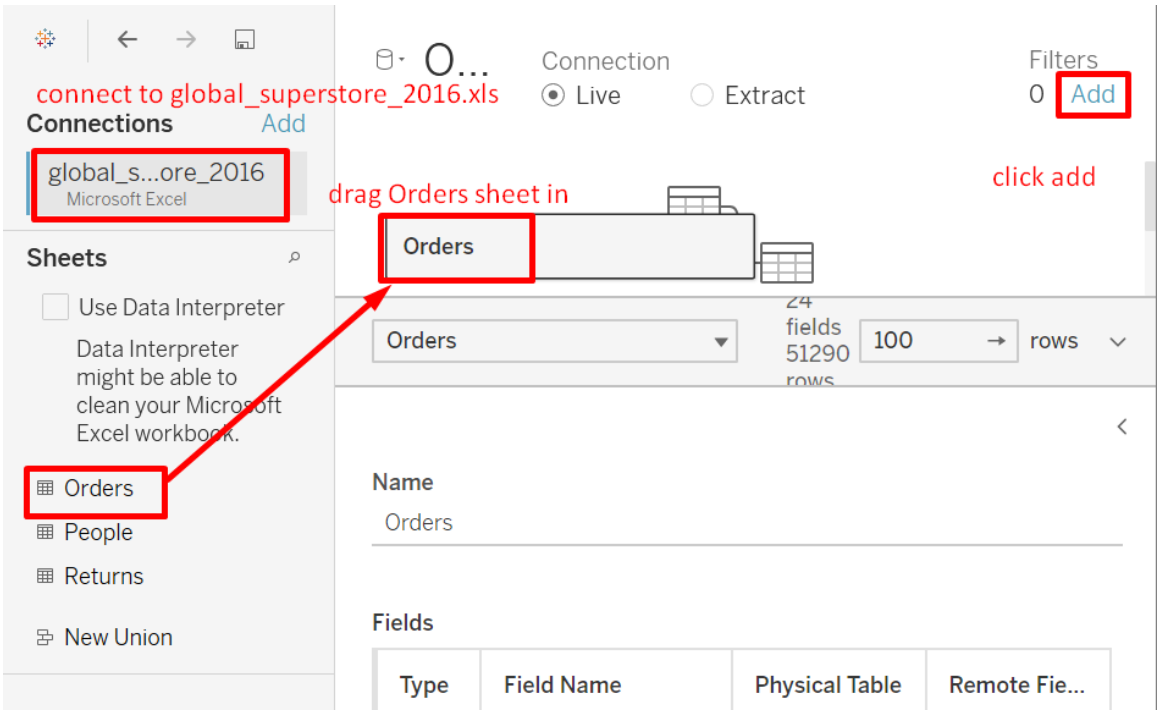
A. FILTERING COLUMNS

- The global_superstore_2016.xls has many columns in the Orders sheet.
- We don't want to use all columns and row. Specifically, we only want:
    - Category: Technology
    - Country: USA
- We can create a filter upon connecting to the data.



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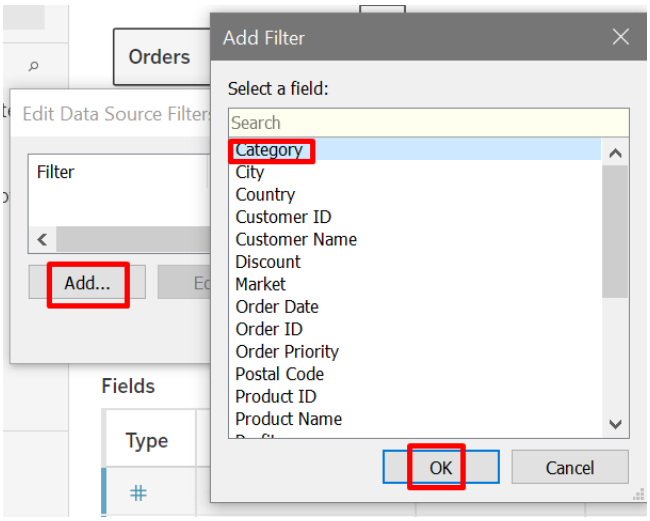

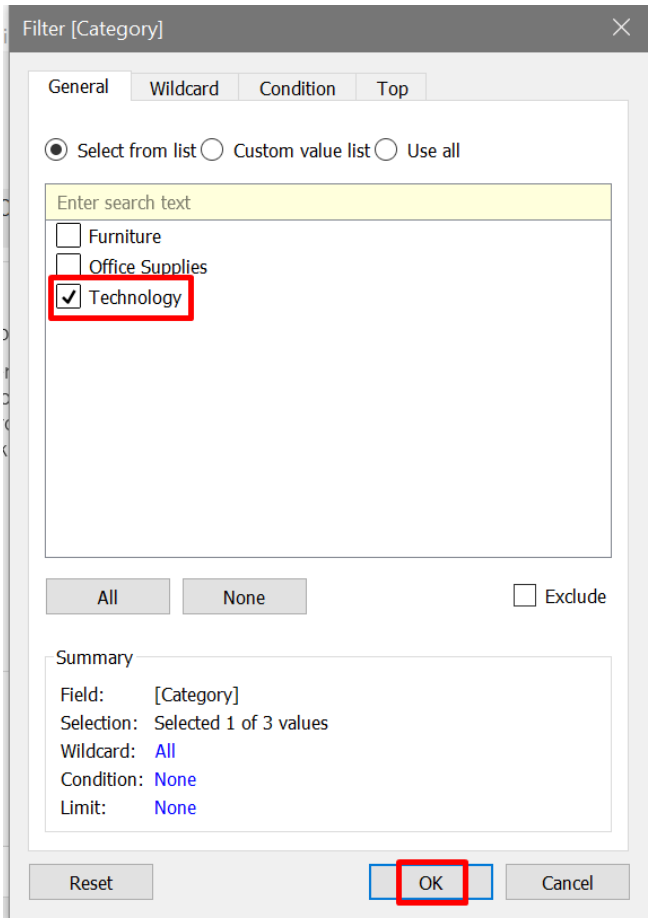

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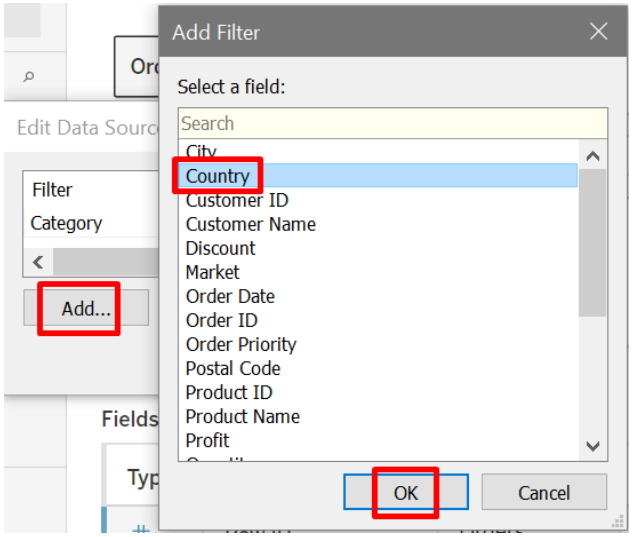

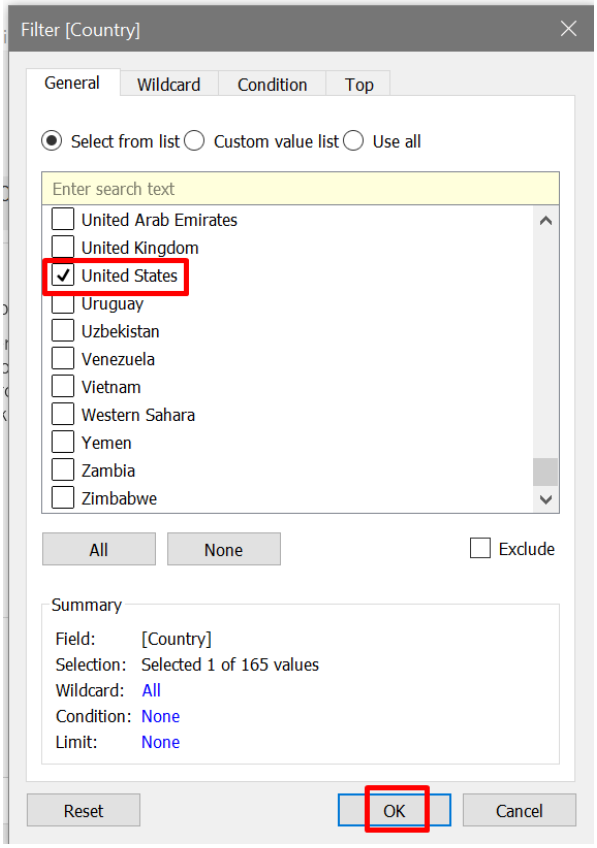

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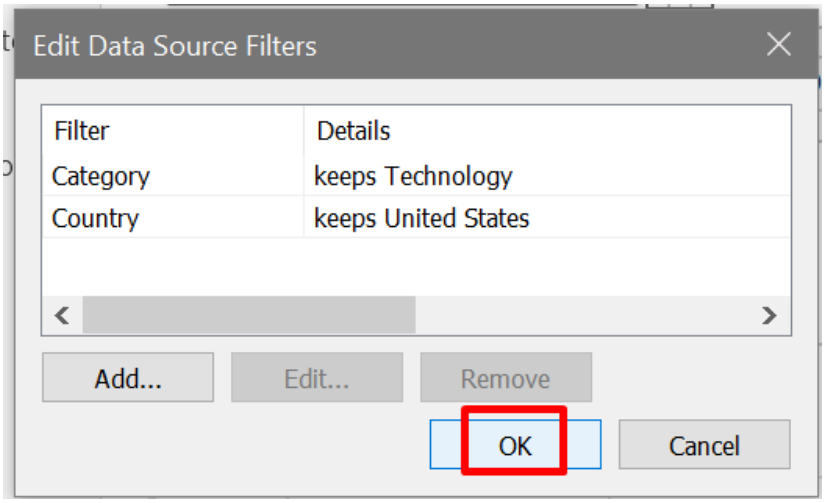

Observe that the data source has been filtered only to USA and Tech

Orders Country	Orders Region	Orders Market	Orders Product ID	Orders Category	Orders Sub-
United States	Central US	USCA	TEC-PH-5816	Technology	Phor
United States	Western US	USCA	TEC-PH-4389	Technology	Phor
United States	Eastern US	USCA	TEC-AC-6340	Technology	Acce
United States	Southern US	USCA	TEC-MA-3788	Technology	Mach
United States	Central US	USCA	TEC-MA-3329	Technology	Mach
United States	Western US	USCA	TEC-AC-5858	Technology	Acce
United States	Western US	USCA	TEC-AC-5109	Technology	Acce
United States	Eastern US	USCA	TEC-AC-5744	Technology	Acce

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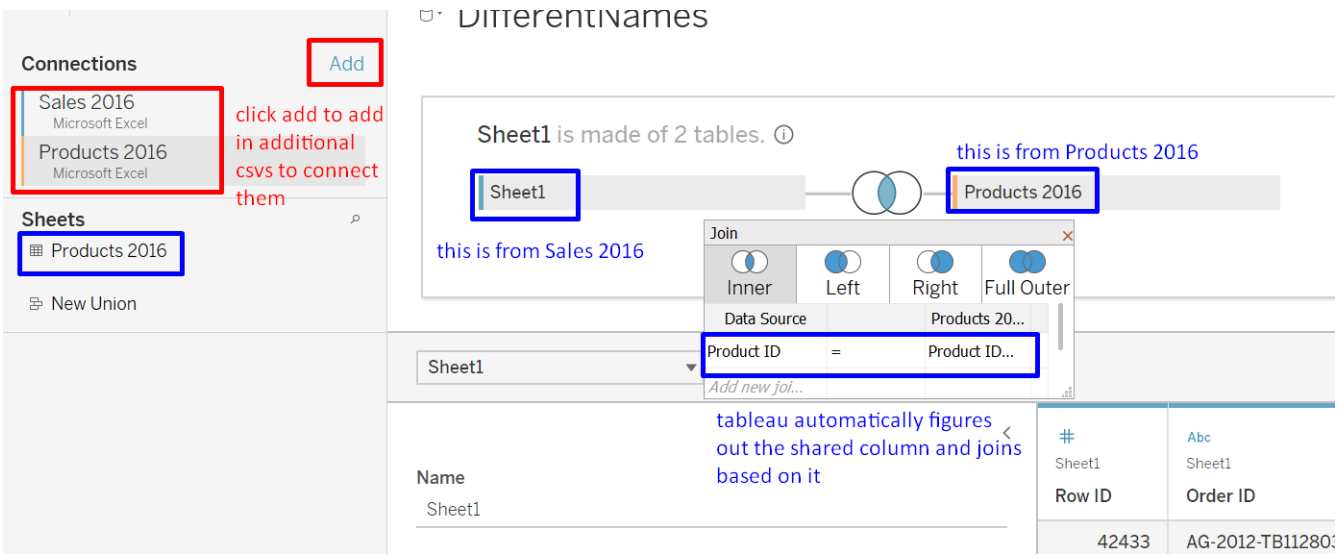
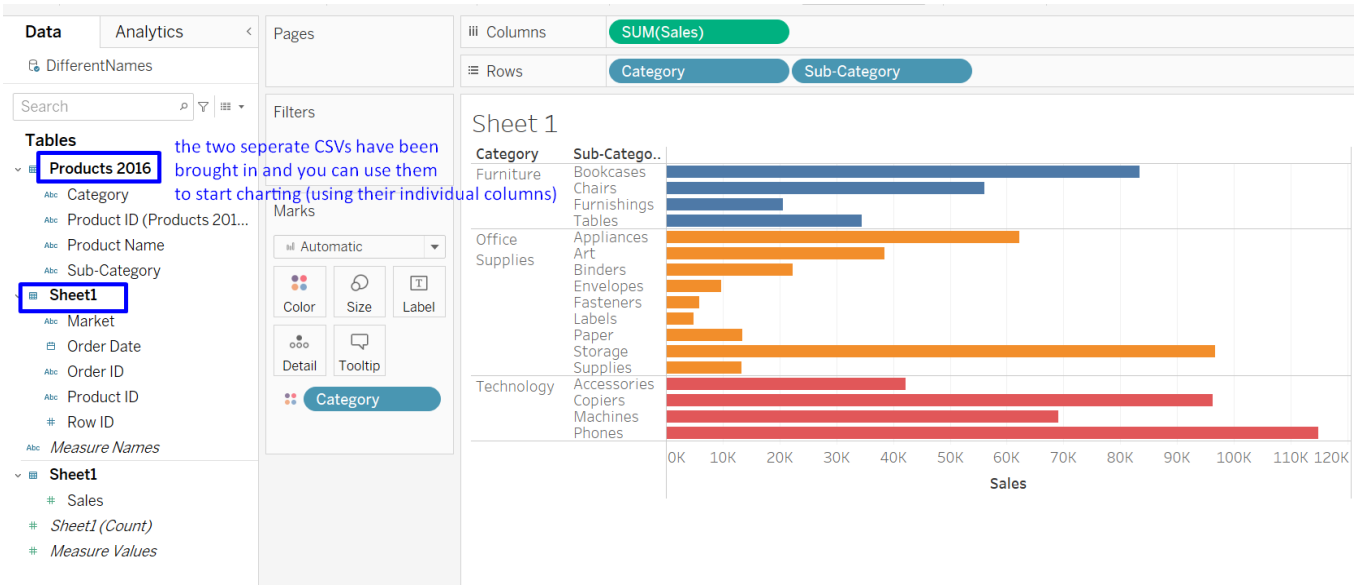
B. JOINING MULTIPLE XLS





C. BRINGING IN SEPARATE XLS

Refer here:

https://www.alvinang.sg/s/Learning-Tableau-Part-I-Fast-Track-by-Dr-Alvin-Ang.pdf (search under Brining In A Separate Data Source)

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D. UNION SEPARATE SHEETS WITHIN SAME XLS

May2016

DAY	CUSTOMER	PURCHASES	TYPE
4	Lane	5	Credit
10	Chris	6	Credit
28	Juan	1	Credit

June2016

DAY	CUSTOMER	PURCHASES	TYPE
1	Lisa	3	Credit
28	Isaac	4	Cash
28	Sam	2	Credit

July2016

DAY	CUSTOMER	PURCHASES	TYPE
2	Mario	2	Credit
15	Wei	1	Cash
21	Jim	7	Cash

A union of these tables creates the following single table that contains all rows from all tables.

Union

In short, this is what Union does to 3 seperate sheets / tables

DAY	CUSTOMER	PURCHASES	TYPE
4	Lane	5	Credit
10	Chris	6	Credit
28	Juan	1	Credit
1	Lisa	3	Credit
28	Isaac	4	Cash
28	Sam	2	Credit
2	Mario	2	Credit
15	Wei	1	Cash
21	Jim	7	Cash

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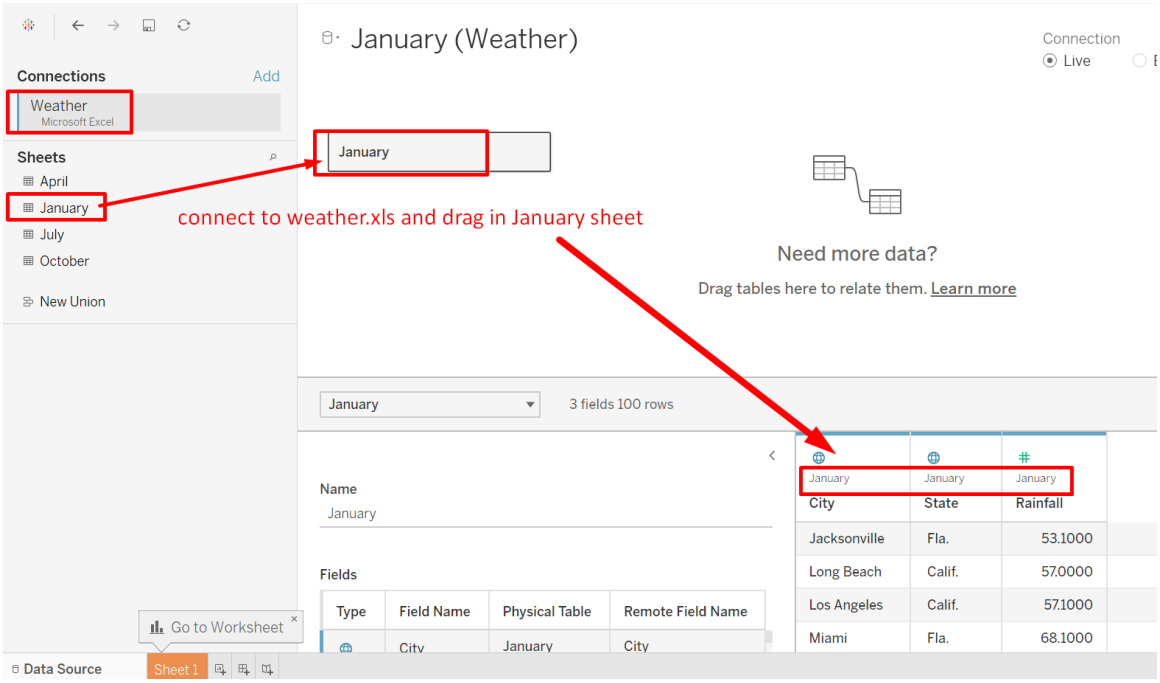
File is here: https://www.alvinang.sg/s/Weather.xlsx



102	Jacksonville	January	Fla.	January	53.1
103	Long Beach	January	Calif.	January	57
104	Los Angeles	January	Calif.	January	57.1
105	Miami	January	Fla.	January	68.1
106	Phoenix	January	Ariz.	January	54.2
107	Sacramento	January	Calif.	January	46.3
108	San Diego	January	Calif.	January	57.8
109	San Francisco	January	Calif.	January	49.4
110	Tampa	January	Fla.	January	61.3
111	Vero Beach	January	Fla.	January	63
112	Mt. Washington	January	N.H.	January	5.2

If you open up January sheet, you see that Jacksonville is 53.1

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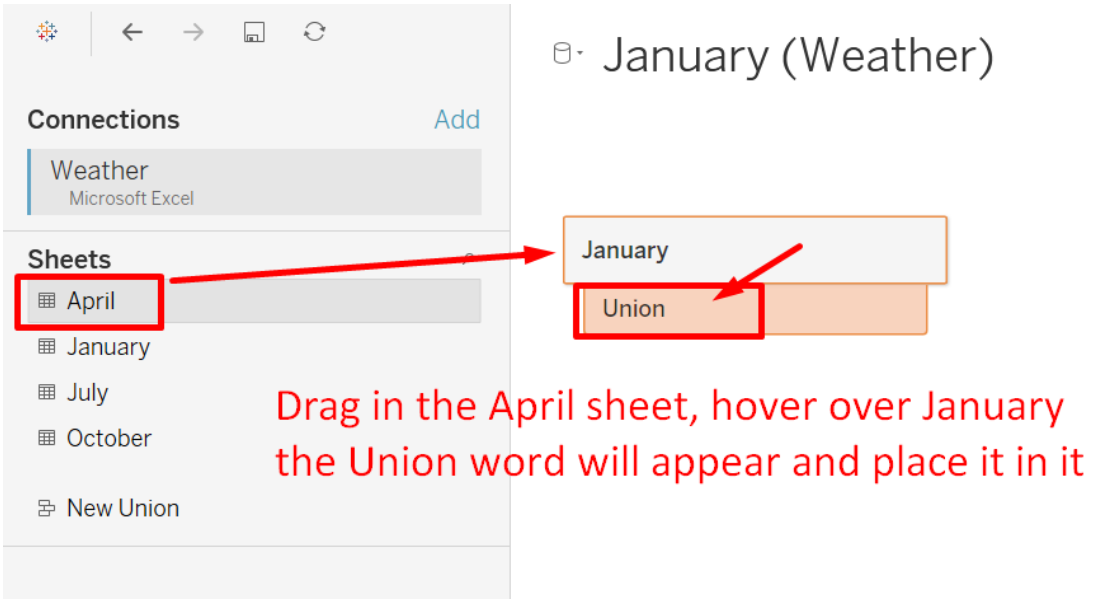

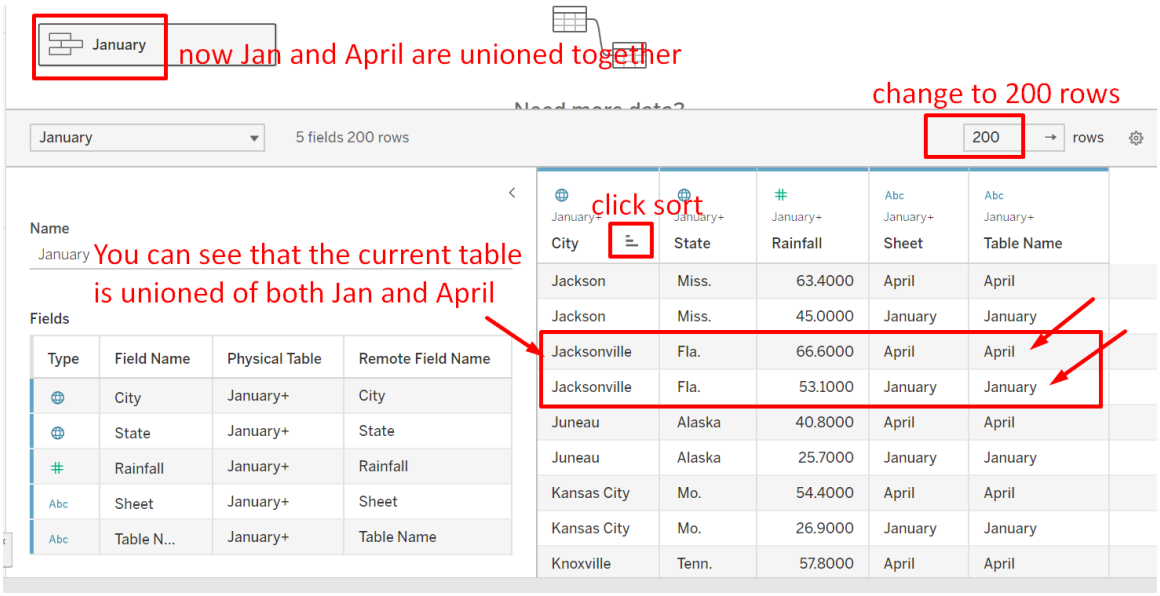

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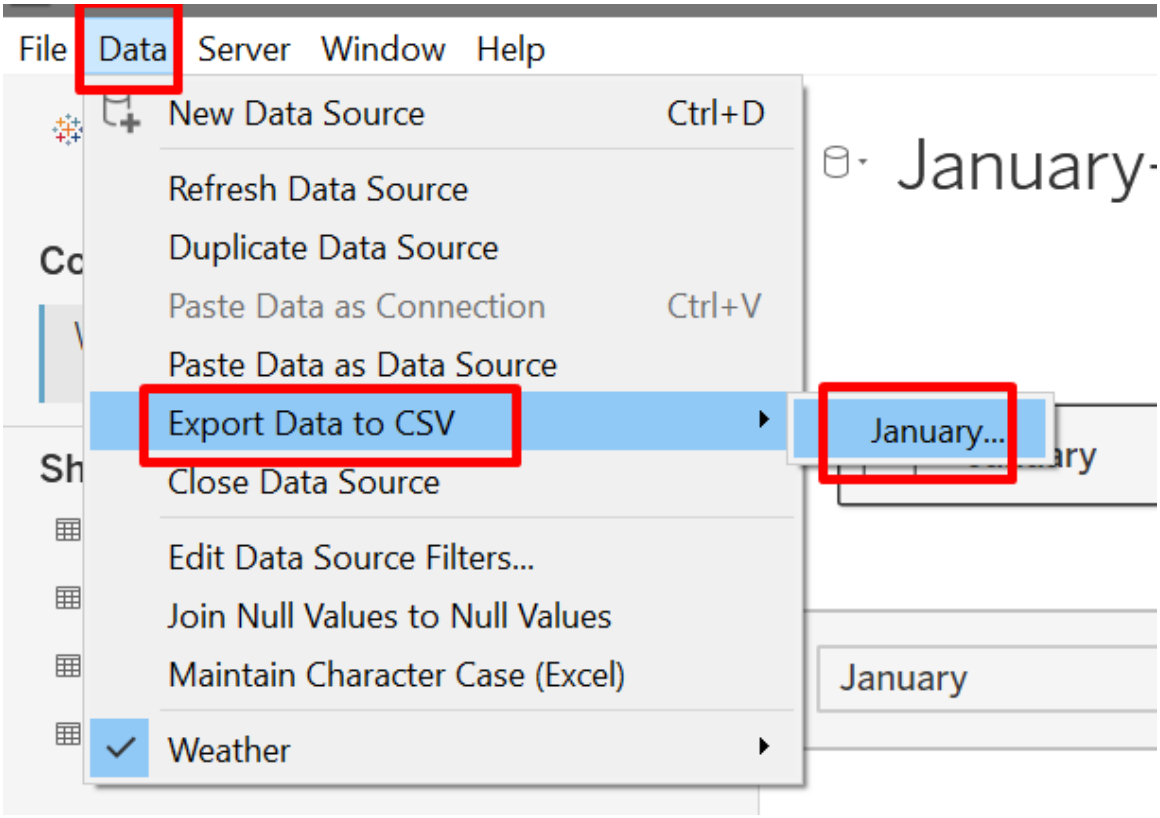
1. EXPORT OUT TO CSV THE UNIONED TABLE



91	Jackson	April	Miss.	April	63.4
92	Austin	April	Texas	April	68.3
93	Charleston	April	S.C.	April	64.2
94	San Antonio	April	Texas	April	68.6
95	Houston	April	Texas	April	68.5
96	Mobile	April	Ala.	April	66.1
97	Montgomery	April	Ala.	April	64.3
98	Savannah	April	Ga.	April	65.3
99	Baton Rouge	April	La.	April	66.6
100	New Orleans	April	La.	April	68.2
101	Honolulu	April	Hawaii	April	75.6
102	Jacksonville	January	Fla.	January	53.1
103	Long Beach	January	Calif.	January	57
104	Los Angeles	January	Calif.	January	57.1
105	Miami	January	Fla.	January	68.1
106	Phoenix	January	Ariz.	January	54.2
107	Sacramento	January	Calif.	January	46.3
108	San Diego	January	Calif.	January	57.8
109	San Francisco	January	Calif.	January	49.4
110	Tampa	January	Fla.	January	61.3

January+ (Weather)_January

You can see now that the April sheet has been placed on top of the Jan sheet

(in the exported .csv)

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E. MERGE FIELDS

File can be found here: https://www.alvinang.sg/s/Weather.xlsx

Follow the steps here first to union all sheets: search under Brining In A Separate Data Source)

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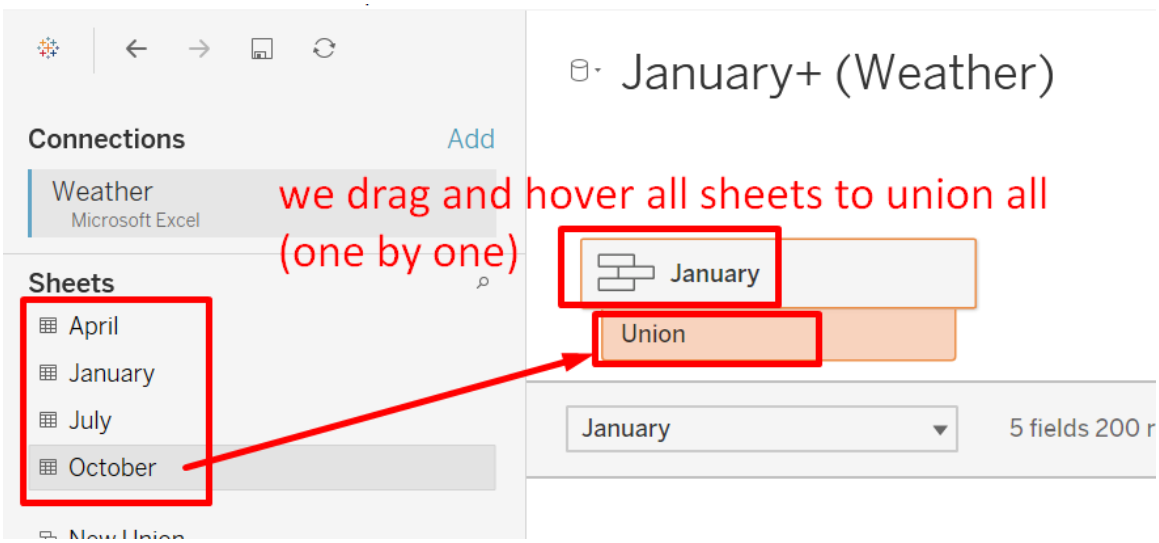
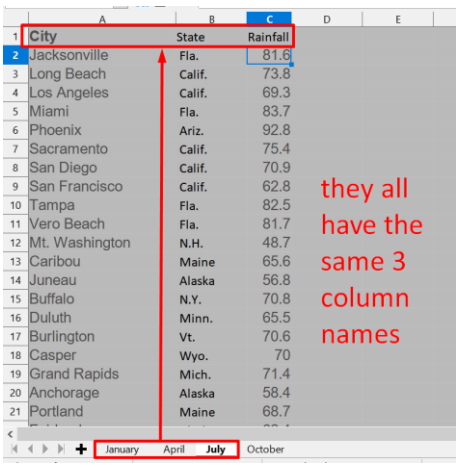
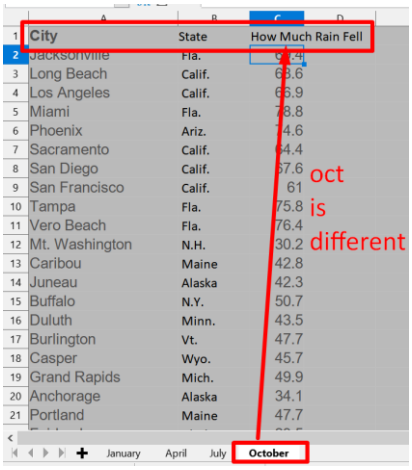
Union Separate Sheets Within Same XLS (ctrl click the link)



Note:

- For Jan + April + July to union, its fast and easy because their column names are all same.
- However, when you union October, Tableau hangs and you wait…. Because the last column name is different….its called "how much rain fell…"





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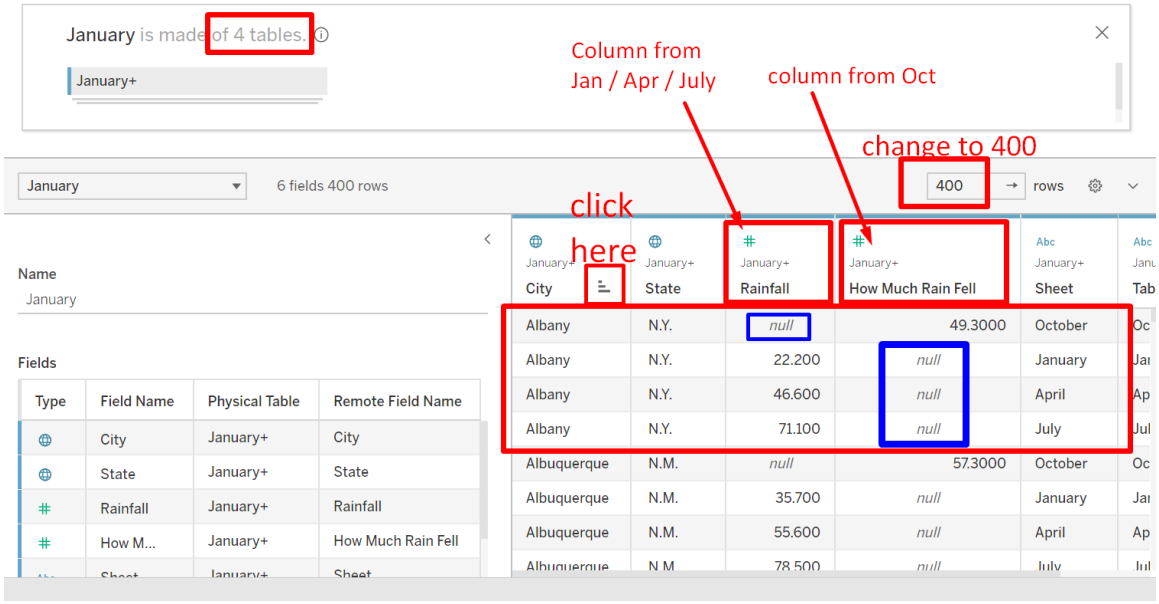

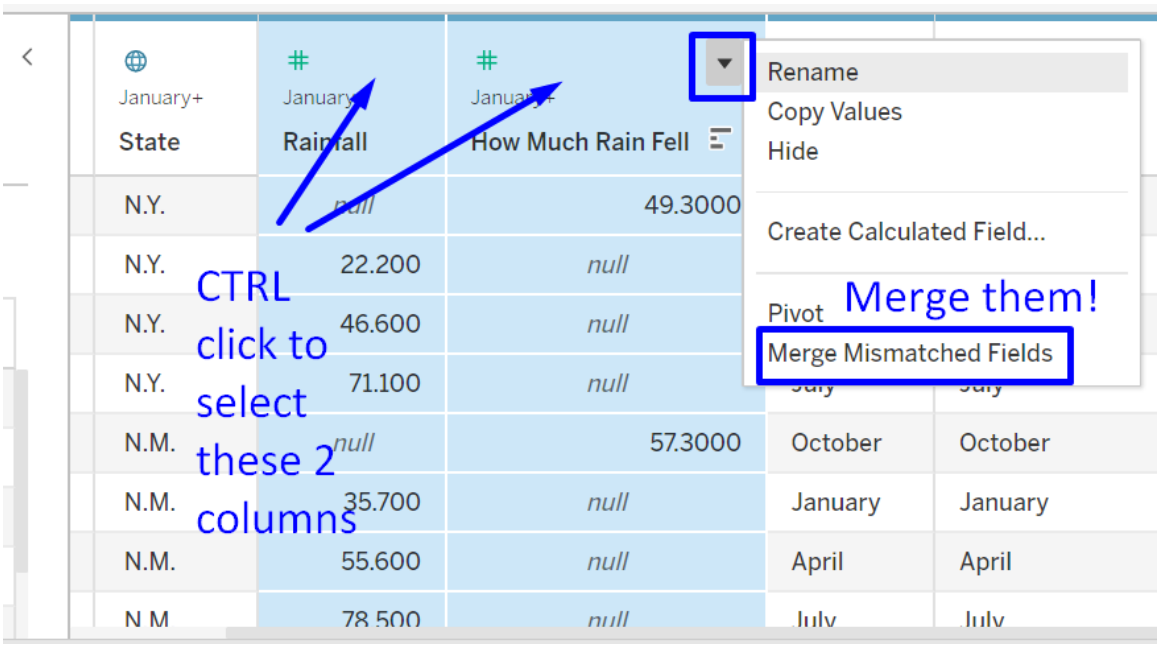

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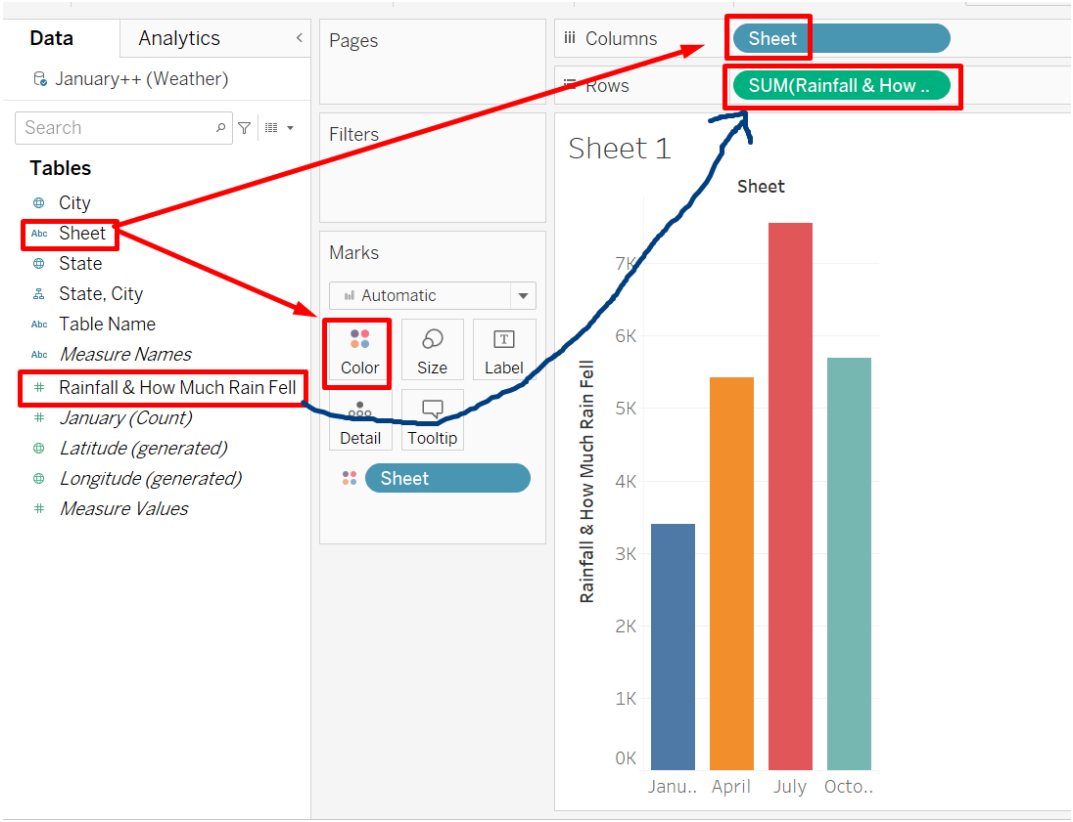
City	State	Rainfall & How Much Rain Fell	Sheet
Albany	N.Y.	46.600	April
Albany	N.Y.	22.200	January
Albany	N.Y.	71.100	July
Albany	N.Y.	49.300	October
Albuquerque	N.M.	55.600	April
Albuquerque	N.M.	35.700	January
Albuquerque	N.M.	78.500	July
Albuquerque	N.M.	57.300	October

the final merge!

Click on Sheet 1 and create the sheet below…



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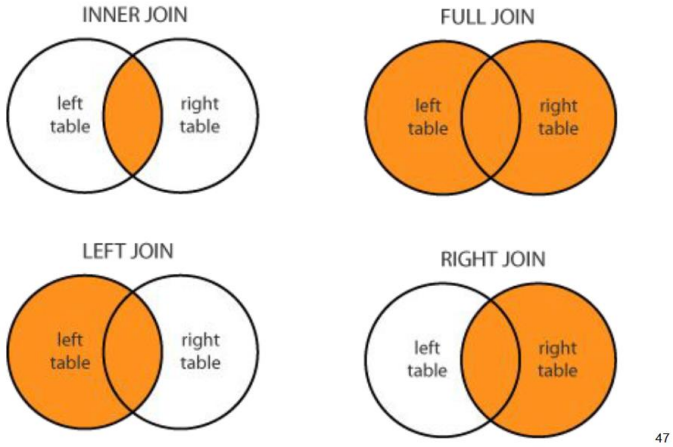
F. EXPLAINING DATA JOINS

1. DATA JOIN TYPES

In general, there are four types of joins that you can use to combine your data in Tableau: inner, left, right, and full outer.



47

Inner Join: When you use an inner join to combine tables, the result is a table that contains values that have matches in both tables.

Left Join: When you use a left join to combine tables, the result is a table that contains all values from the left table and corresponding matches from the right table. When a value in the left table doesn't have a corresponding match in the right table, you see a null value in the data grid.

Right Join: When you use a right join to combine tables, the result is a table that contains all values from the right table and corresponding matches from the left table. When a value in the right table doesn't have a corresponding match in the left table, you see a null value in the data grid.

Full (Outer) Join: When you use a full outer join to combine tables, the result is a table that contains all values from both tables. When a value from either table doesn't have a match with the other table, you see a null value in the data grid.

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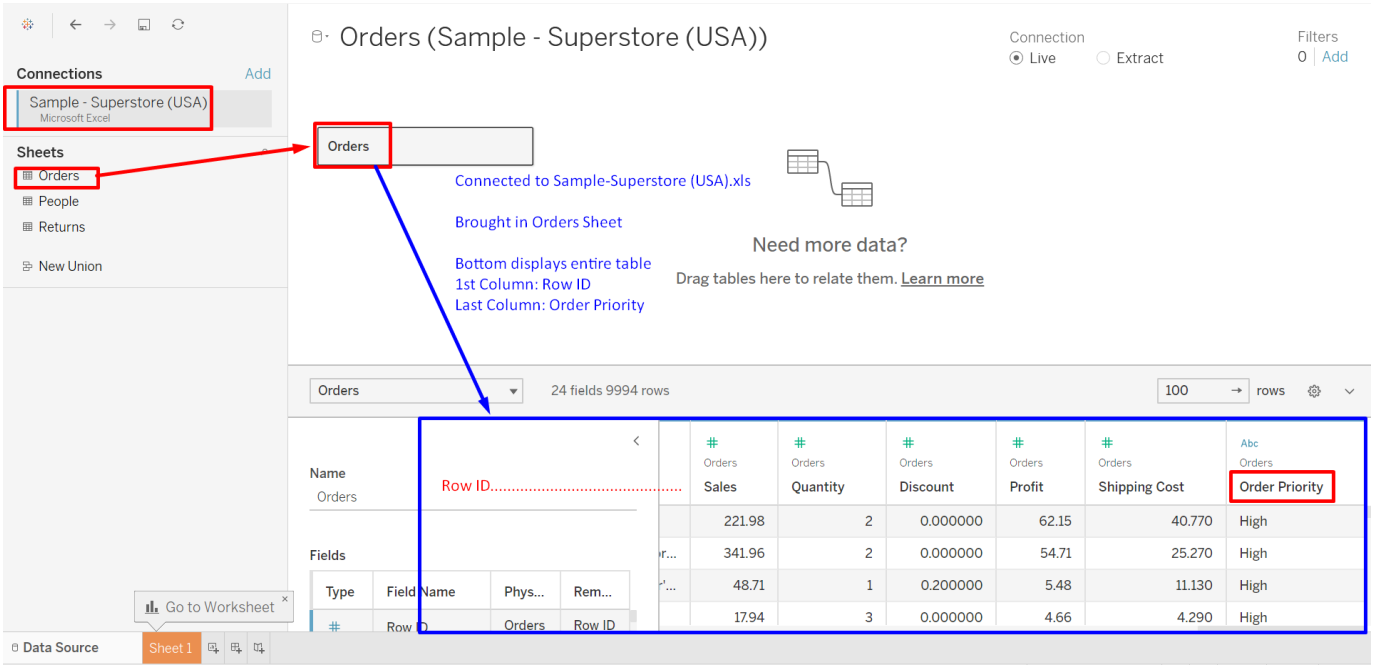
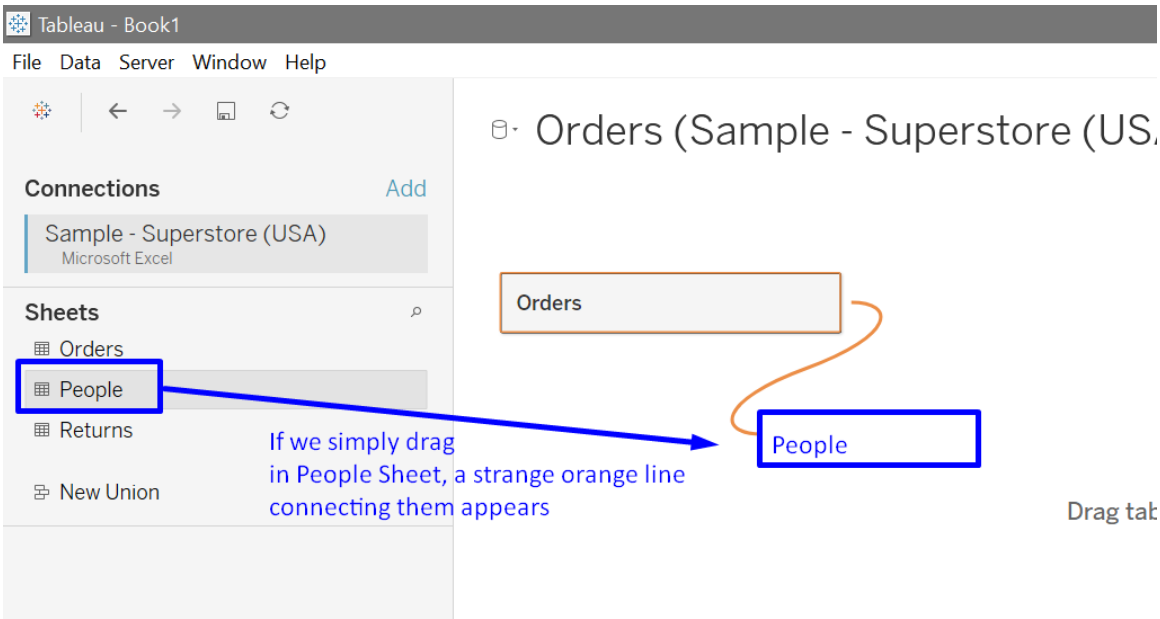
https://www.alvinang.sg/s/Sample-Superstore-USA.xls





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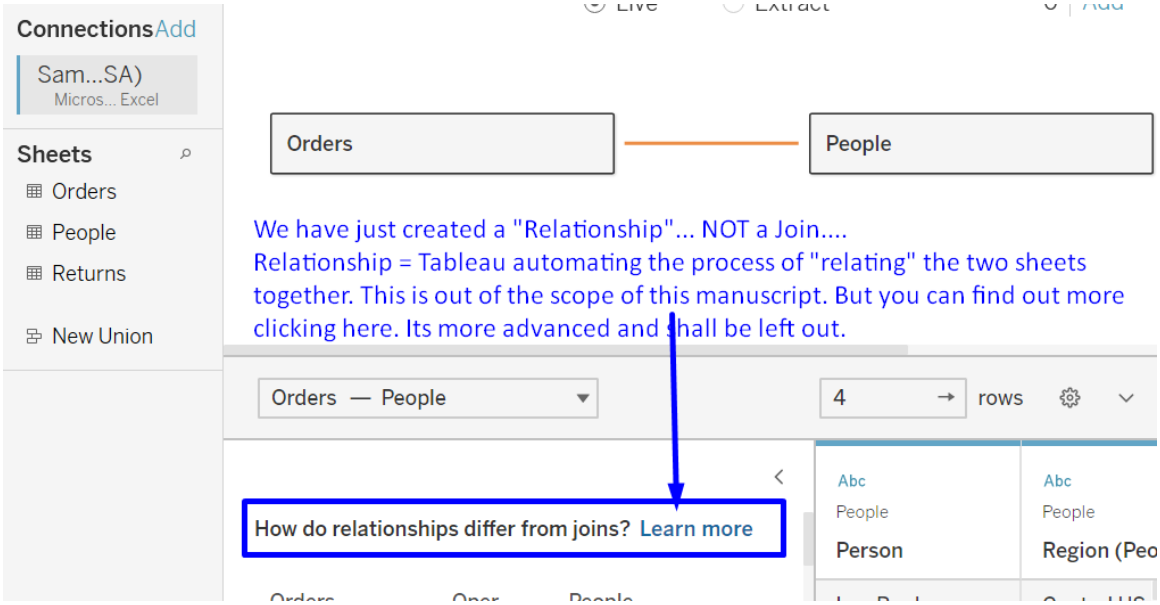
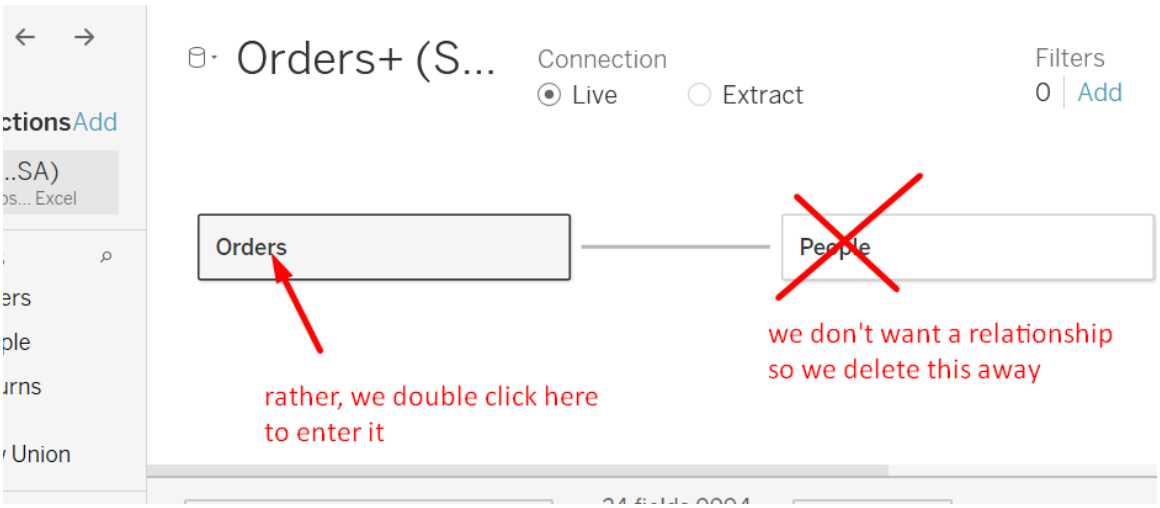


Learn More about Relationships here:

https://help.tableau.com/v2021.3/pro/desktop/en-us/datasource_relationships_learnmorepage.htm



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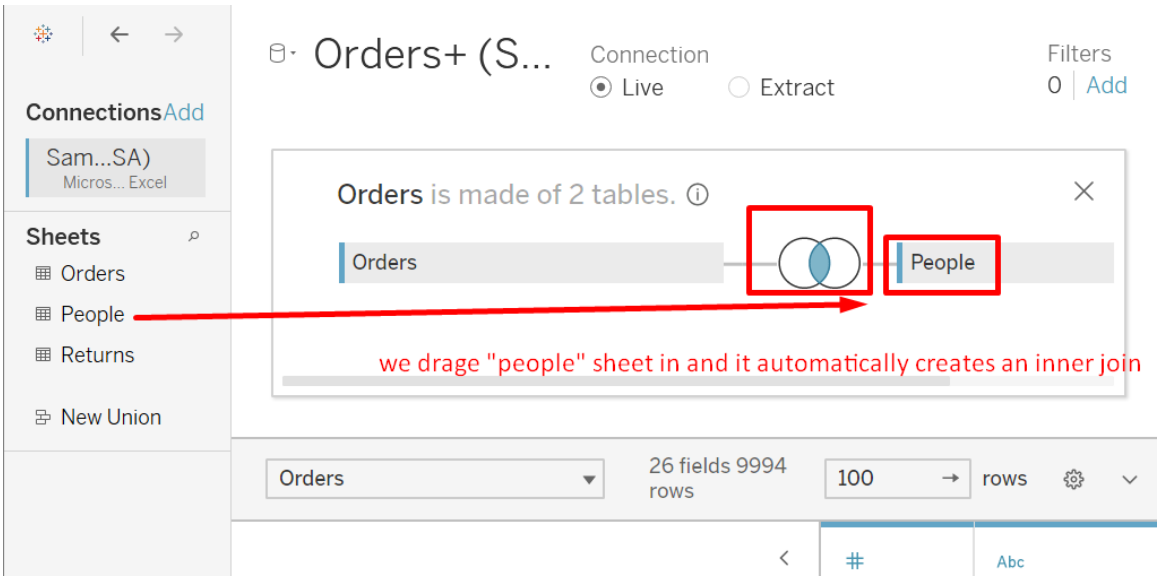

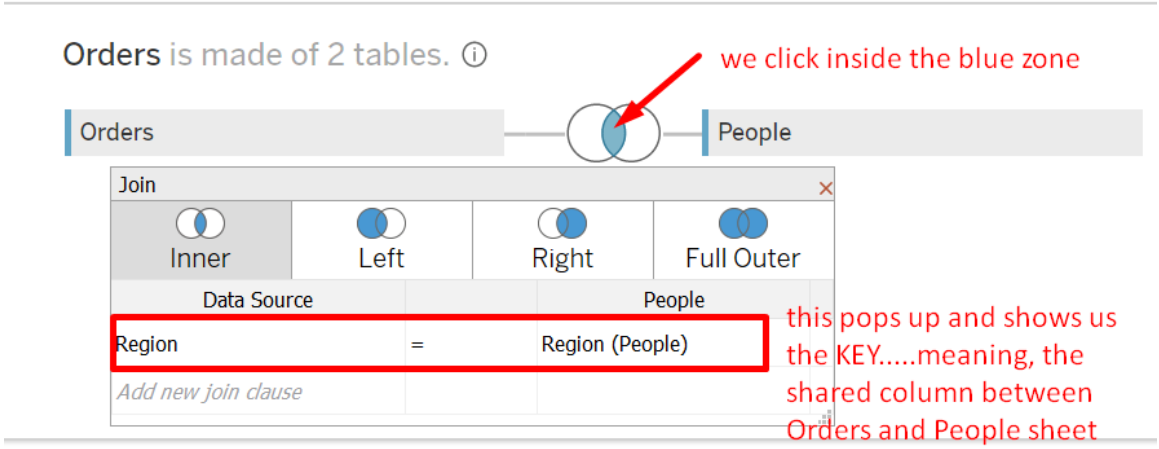

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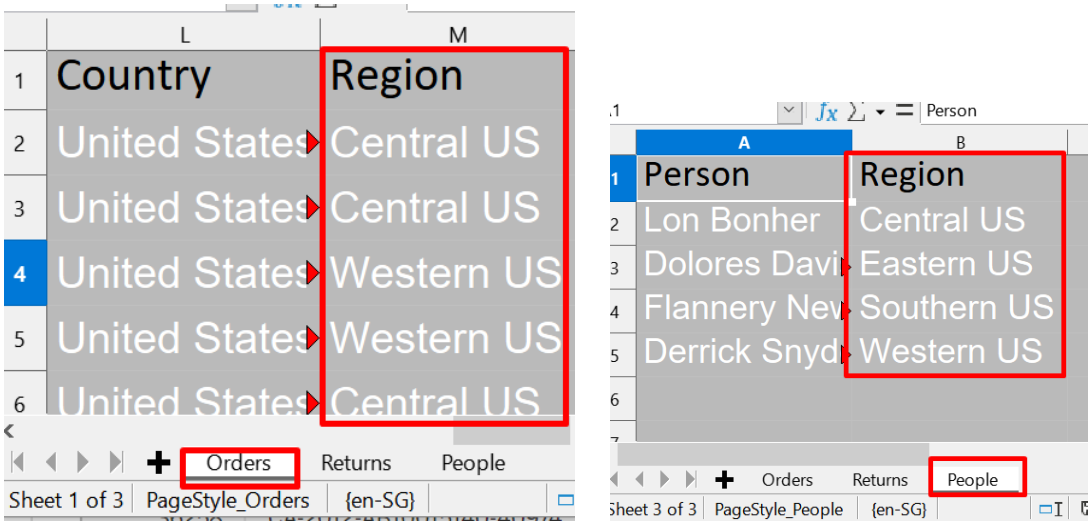
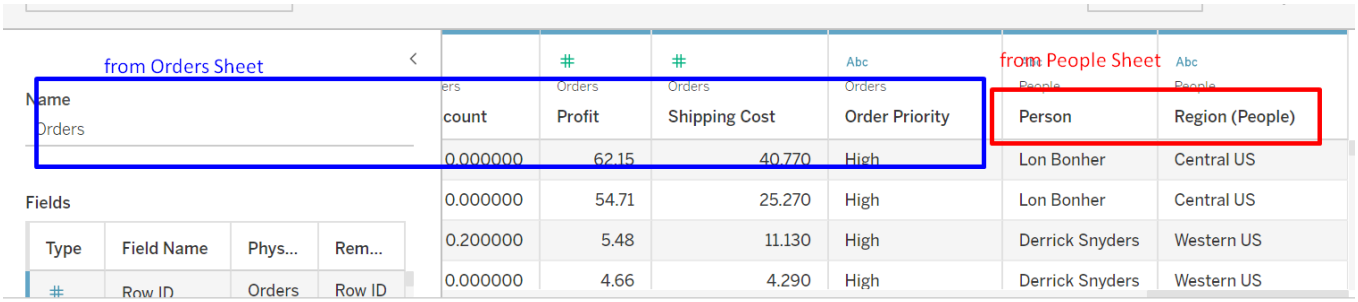


You can see that Tableau automatically knows the KEY (the shared column) between the two sheets and JOINS these two sheets together based on it.



Look below the Tableau screen. It shows all the columns. Tableau INNER Joins the two sheets based on REGION.

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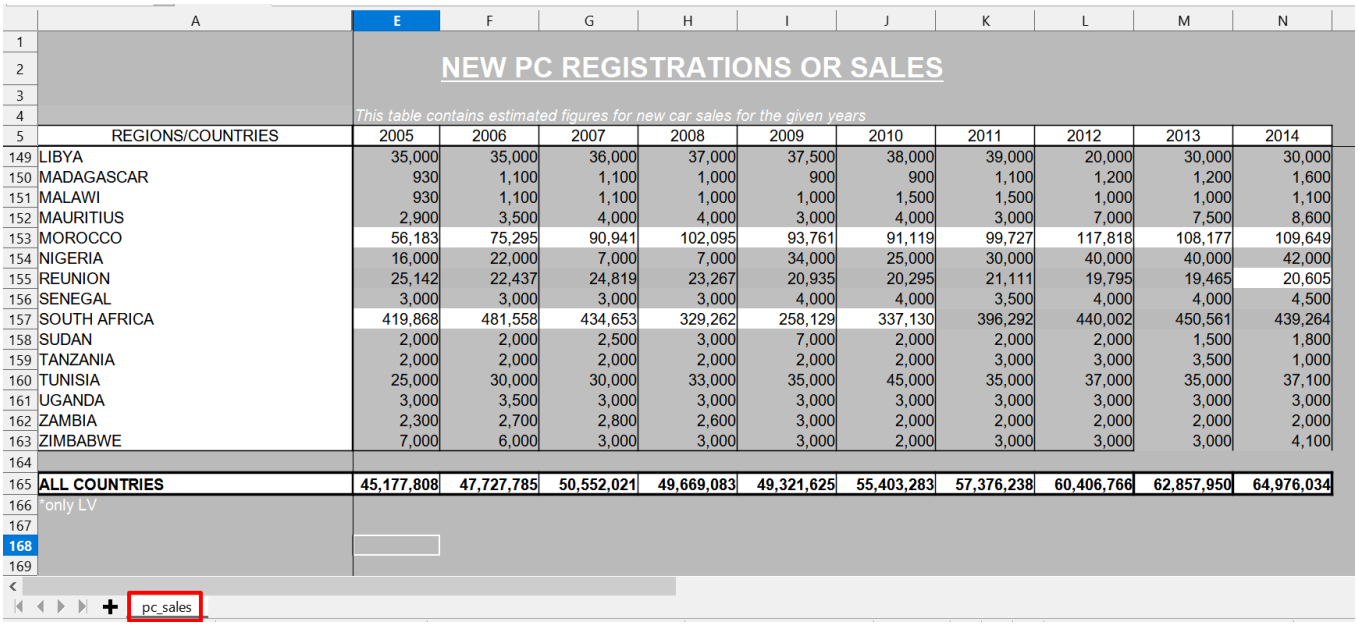
G. DATA INTERPRETER: AUTO DATA CLEANSING



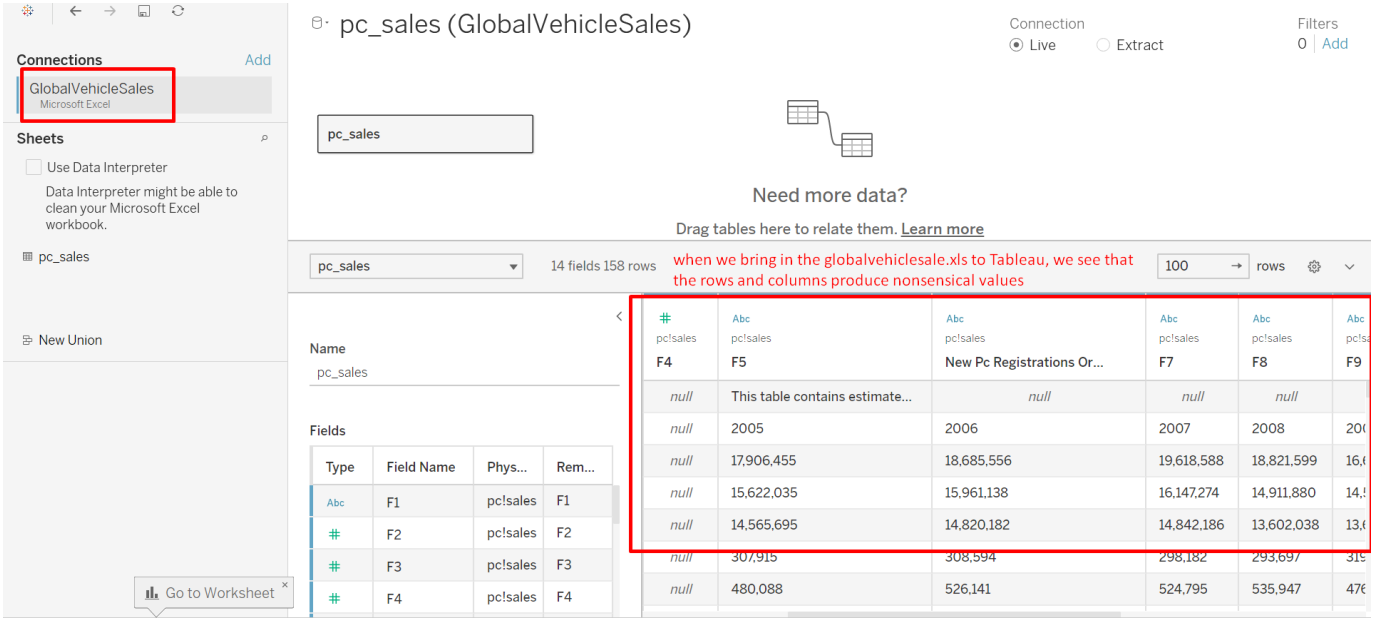
NEW PC REGISTRATIONS OR SALES

This table contains estimated figures for new car sales for the given years

	REGIONS/COUNTRIES	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
149	LIBYA	35,000	35,000	36,000	37,000	37,500	38,000	39,000	20,000	30,000	30,000
150	MADAGASCAR	930	1,100	1,100	1,000	900	900	1,100	1,200	1,200	1,600
151	MALAWI	930	1,100	1,100	1,000	1,000	1,500	1,500	1,000	1,000	1,100
152	MAURITIUS	2,900	3,500	4,000	4,000	3,000	4,000	3,000	7,000	7,500	8,600
153	MOROCCO	56,183	75,295	90,941	102,095	93,761	91,119	99,727	117,818	108,177	109,649
154	NIGERIA	16,000	22,000	7,000	7,000	34,000	25,000	30,000	40,000	40,000	42,000
155	REUNION	25,142	22,437	24,819	23,267	20,935	20,295	21,111	19,795	19,465	20,605
156	SENEGAL	3,000	3,000	3,000	3,000	4,000	4,000	3,500	4,000	4,000	4,500
157	SOUTH AFRICA	419,868	481,558	434,653	329,262	258,129	337,130	396,292	440,002	450,561	439,264
158	SUDAN	2,000	2,000	2,500	3,000	7,000	2,000	2,000	2,000	1,500	1,800
159	TANZANIA	2,000	2,000	2,000	2,000	2,000	2,000	3,000	3,000	3,500	1,000
160	TUNISIA	25,000	30,000	30,000	33,000	35,000	45,000	35,000	37,000	35,000	37,100
161	UGANDA	3,000	3,500	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
162	ZAMBIA	2,300	2,700	2,800	2,600	3,000	2,000	2,000	2,000	2,000	2,000
163	ZIMBABWE	7,000	6,000	3,000	3,000	3,000	2,000	3,000	3,000	3,000	4,100
164											
165	**ALL COUNTRIES**	**45,177,808**	**47,727,785**	**50,552,021**	**49,669,083**	**49,321,625**	**55,403,283**	**57,376,238**	**60,406,766**	**62,857,950**	**64,976,034**
166	*only LV										
167											
168											
169											

pc_sales

- The excel table above is opened from GlobalVehicleSales.xls.
- https://www.alvinang.sg/s/GlobalVehicleSales.xlsx
- Note that the user has drawn the table in his own way – which is unreadable by Tableau.



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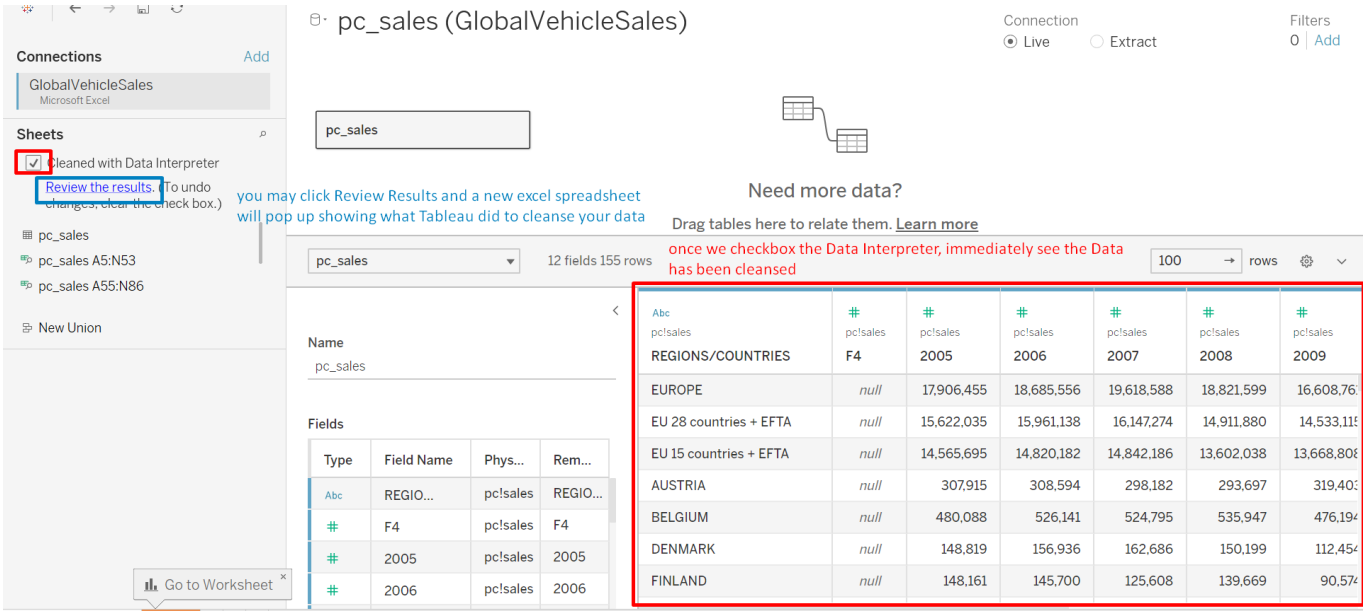

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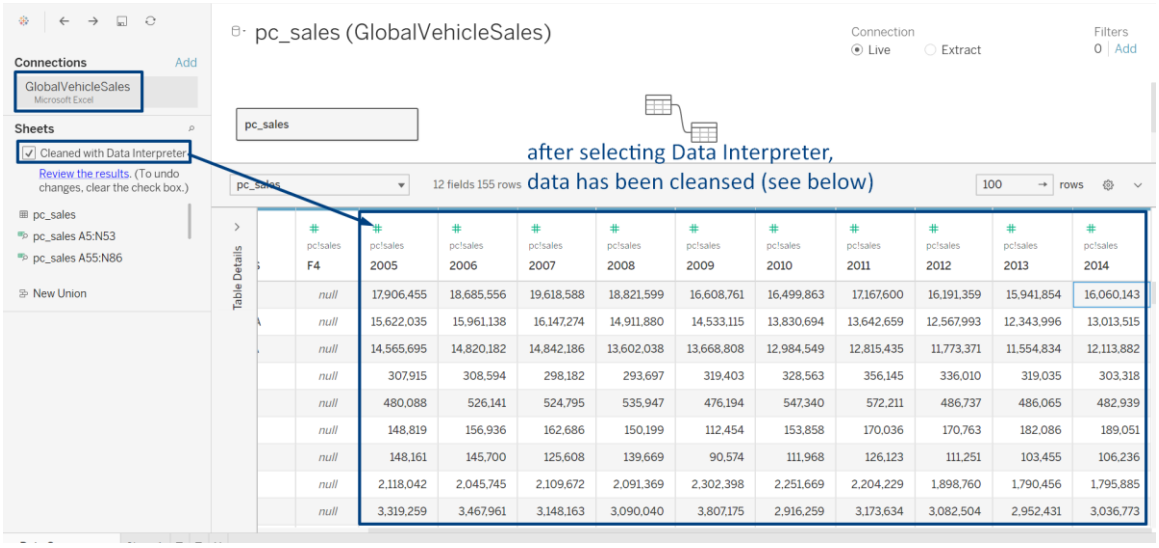
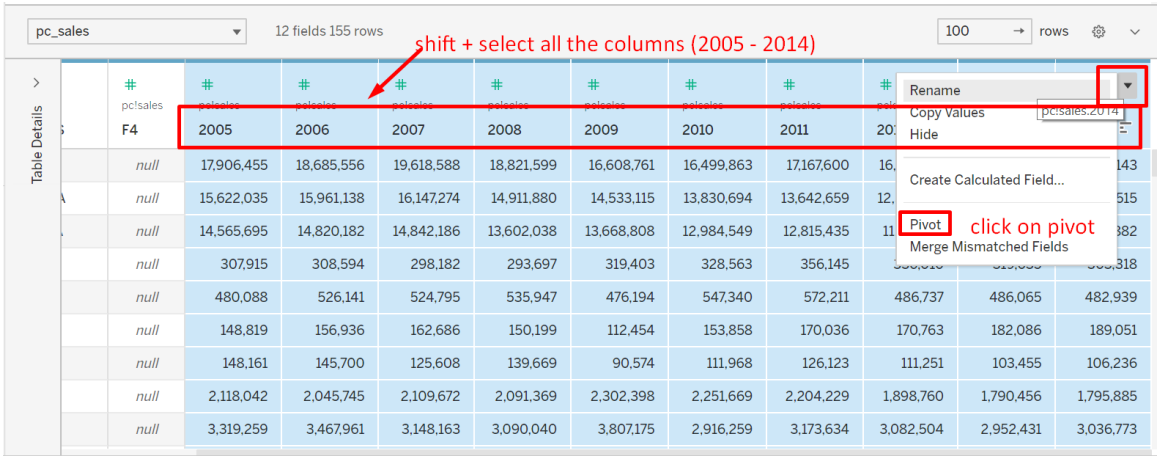
A. PIVOT DATA

Data source can be found here: https://www.alvinang.sg/s/GlobalVehicleSales-nlar.xlsx

Before starting, remember to use the Data Interpreter first here: Data Interpreter: Auto Data Cleansing (ctrl click the link)





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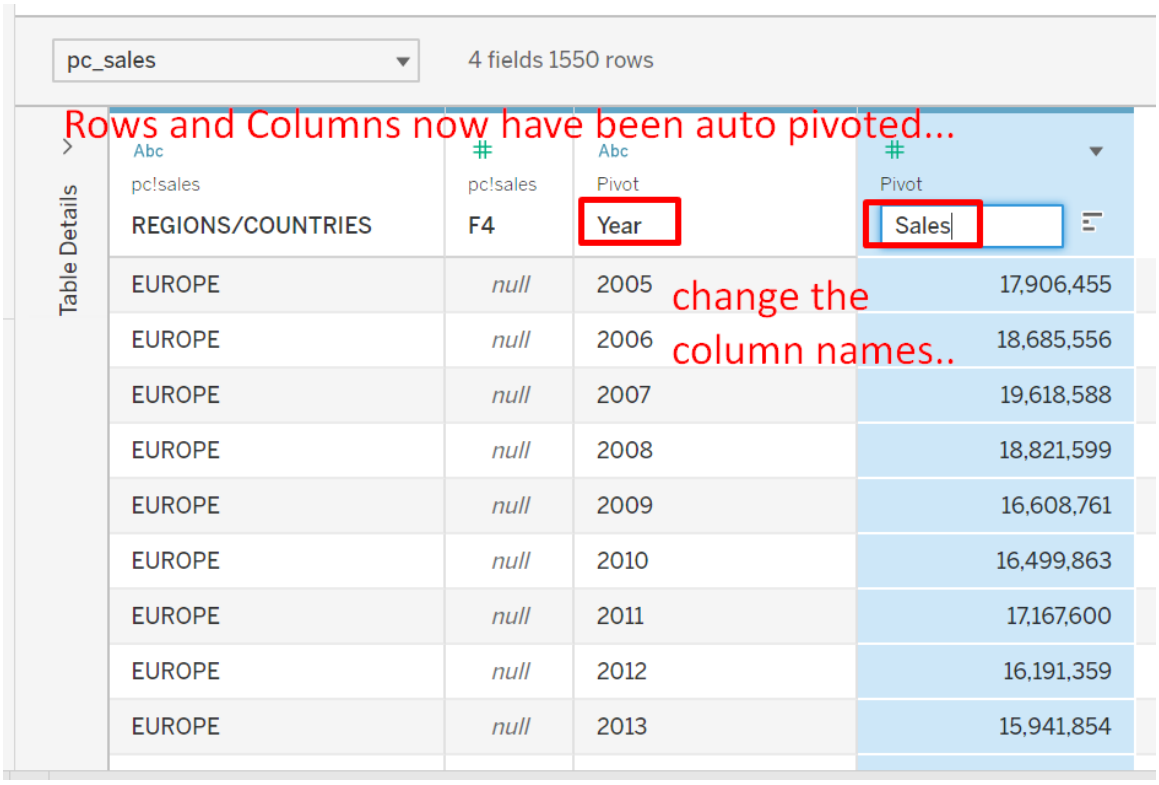

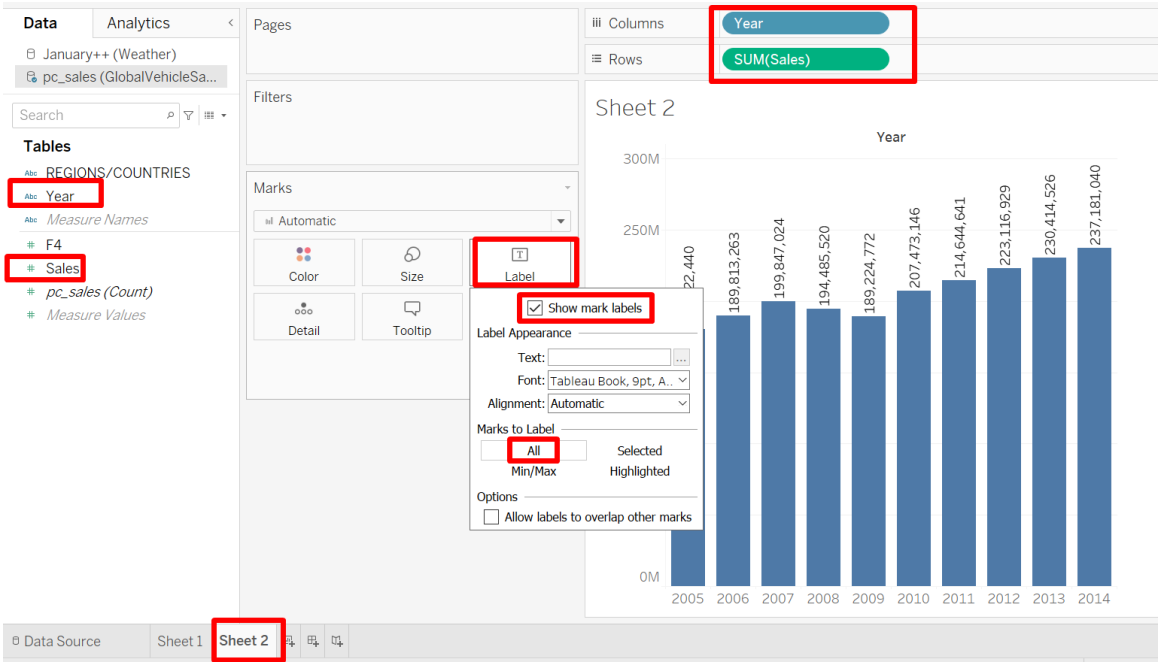

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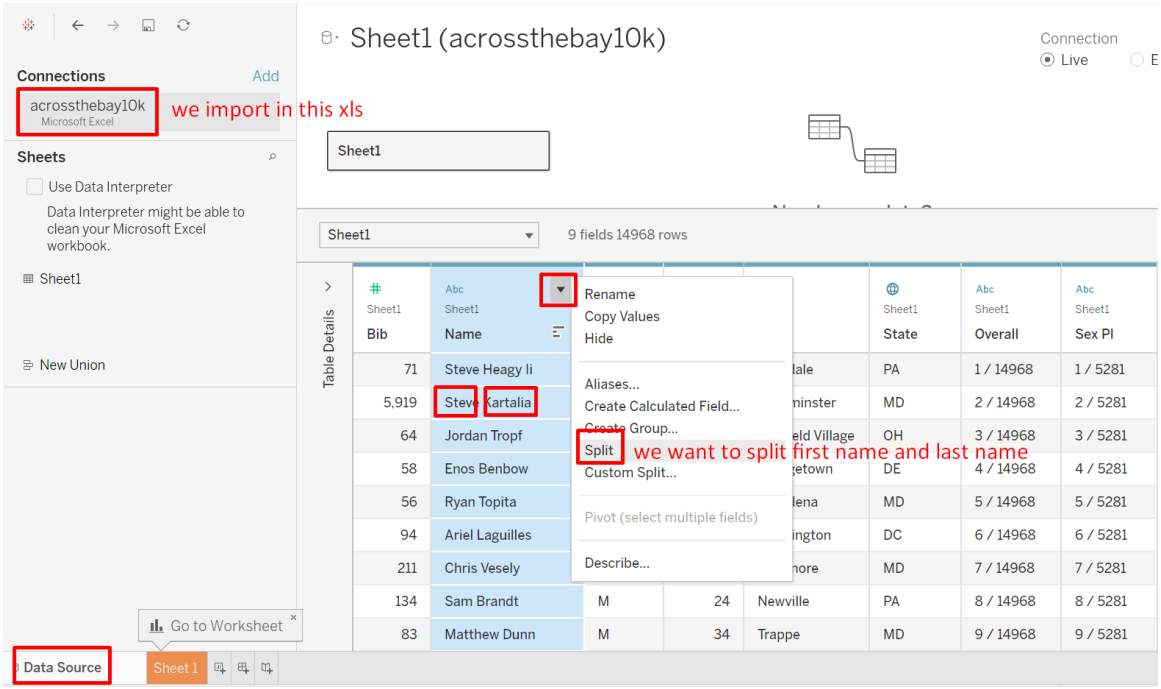
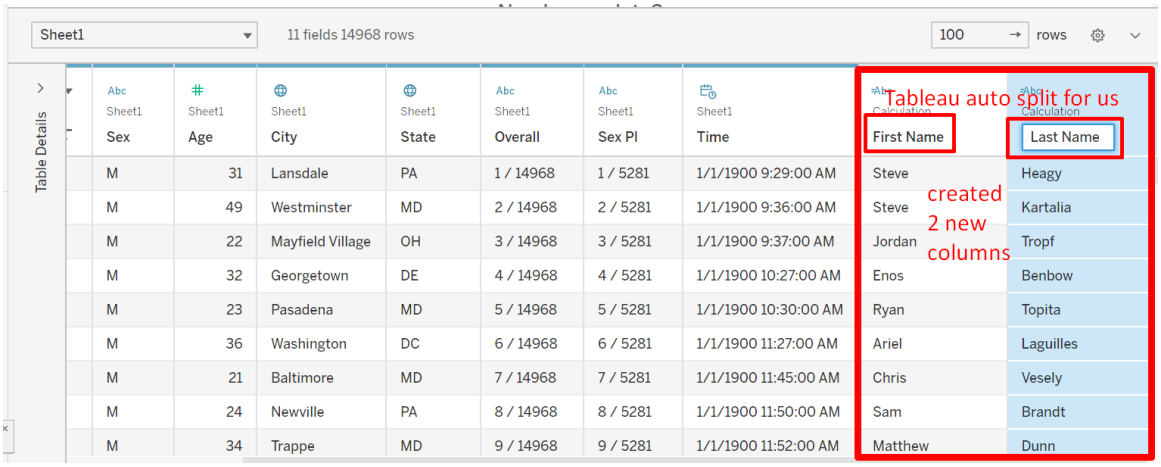
B. SPLIT FIELDS

Data Source can be found here: https://www.alvinang.sg/s/acrossthebay10k.xlsx

1. SPLIT FIRST NAME LAST NAME





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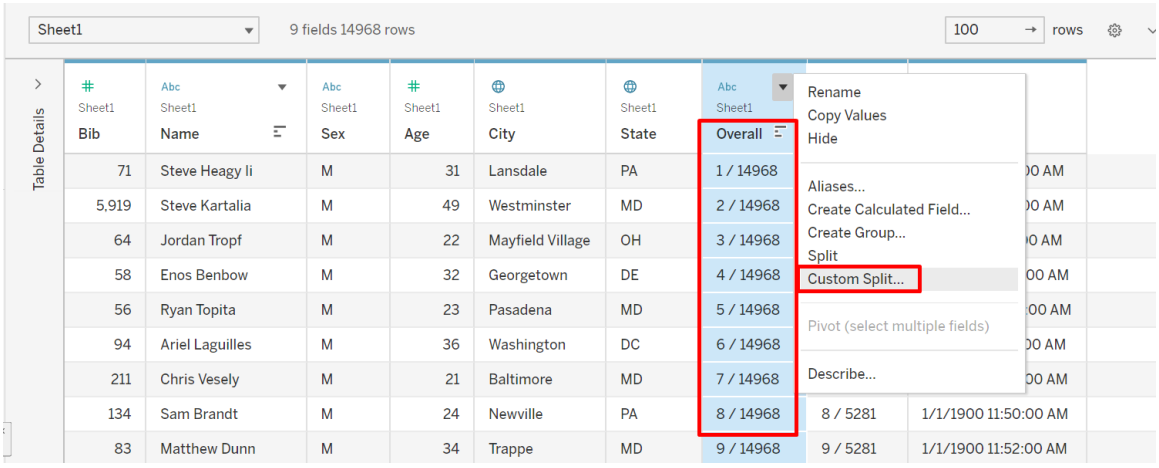
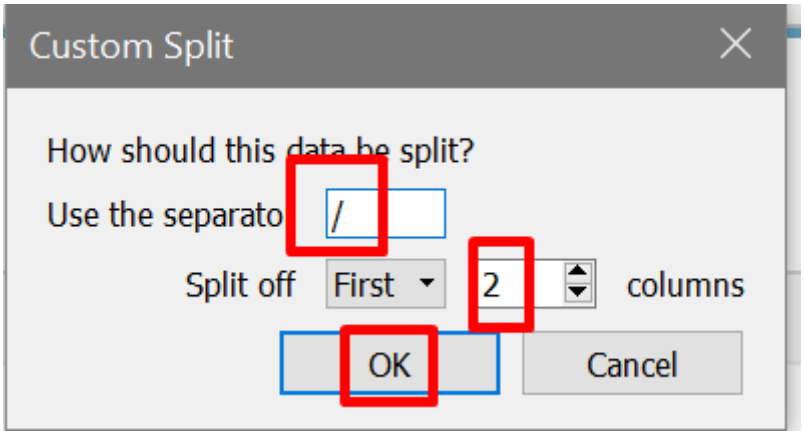
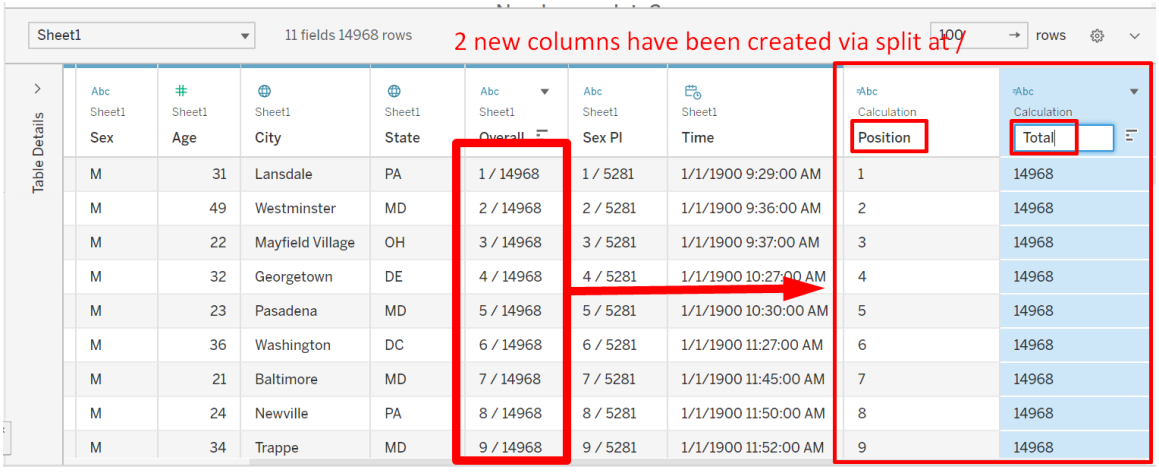
2. SPLIT 2 COLUMNS VIA /







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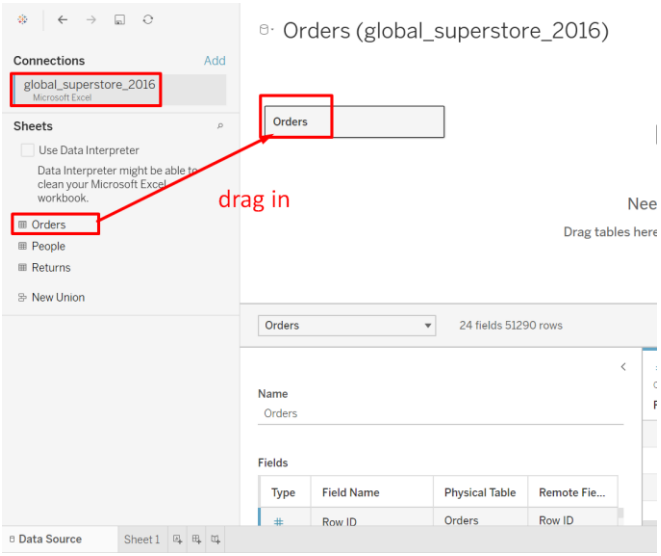
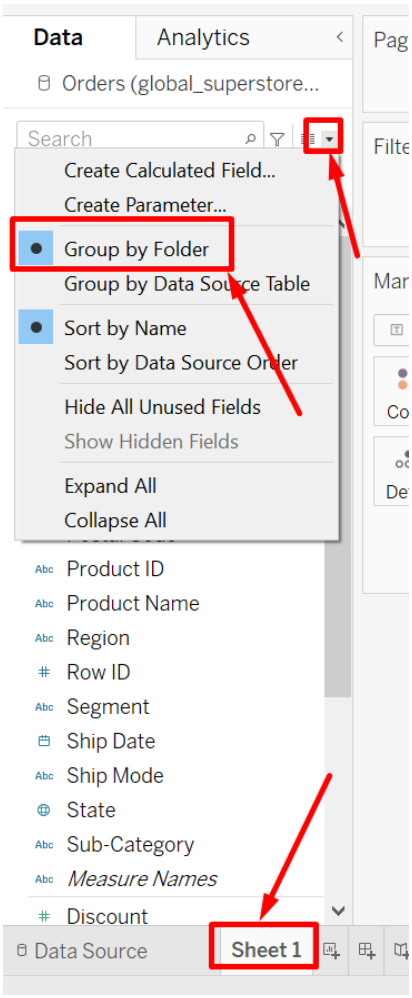
IV. CONFIGURING THE FIELDS

A. CREATING FOLDERS

File can be found here: https://www.alvinang.sg/s/global_superstore_2016.xlsx





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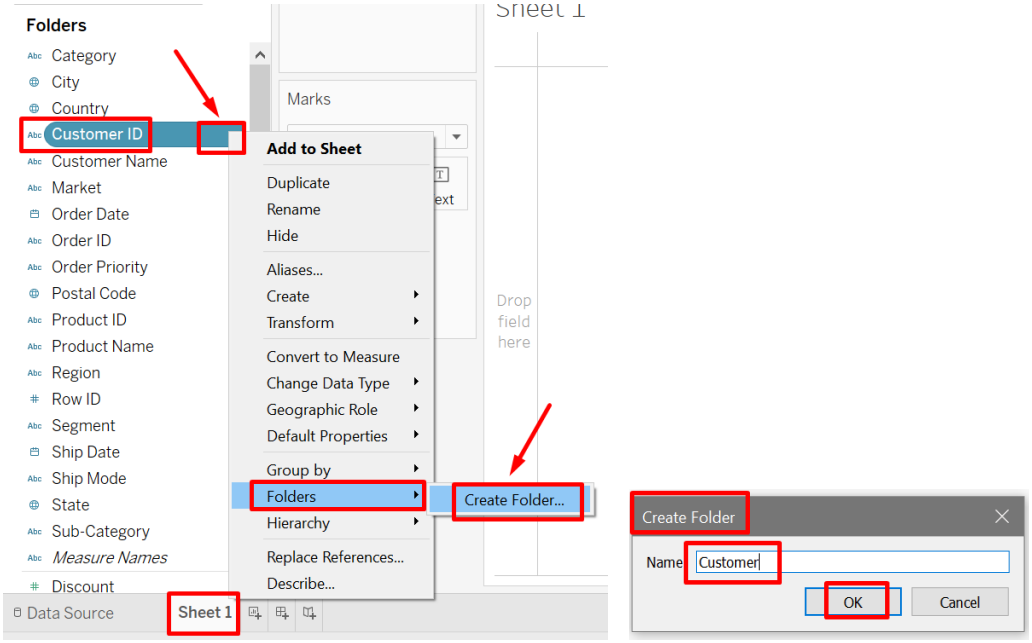

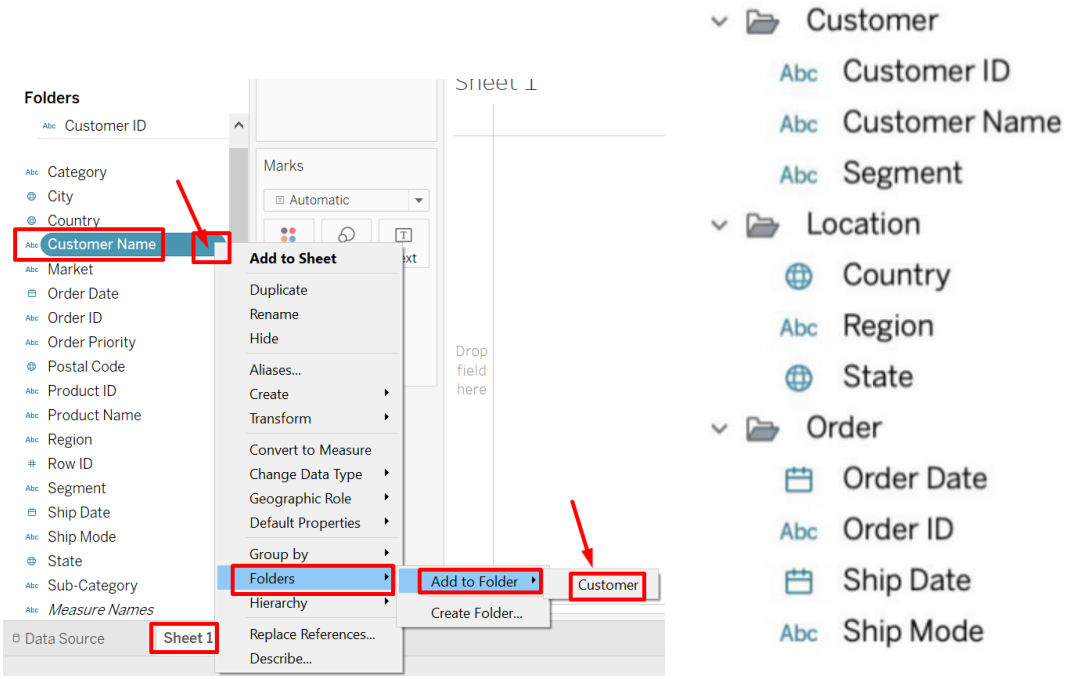

Keep going until you create all 3 folders as shown above….

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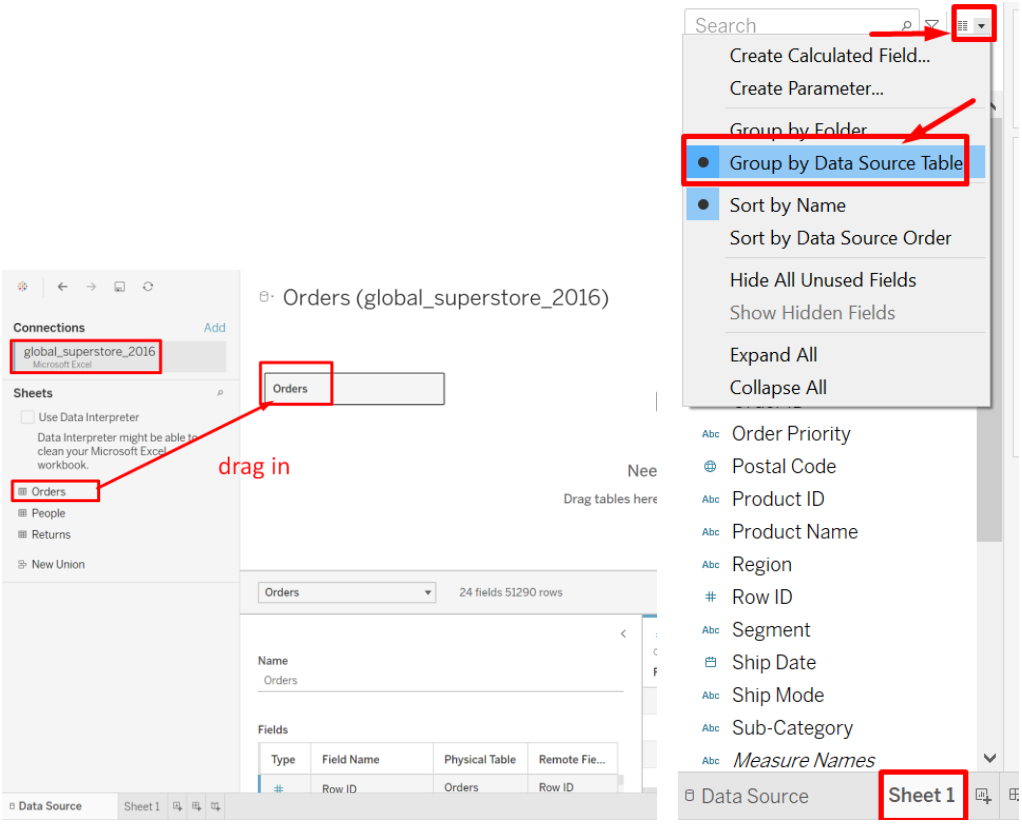
B. CREATING HIERARCHIES

File can be found here: https://www.alvinang.sg/s/global_superstore_2016.xlsx



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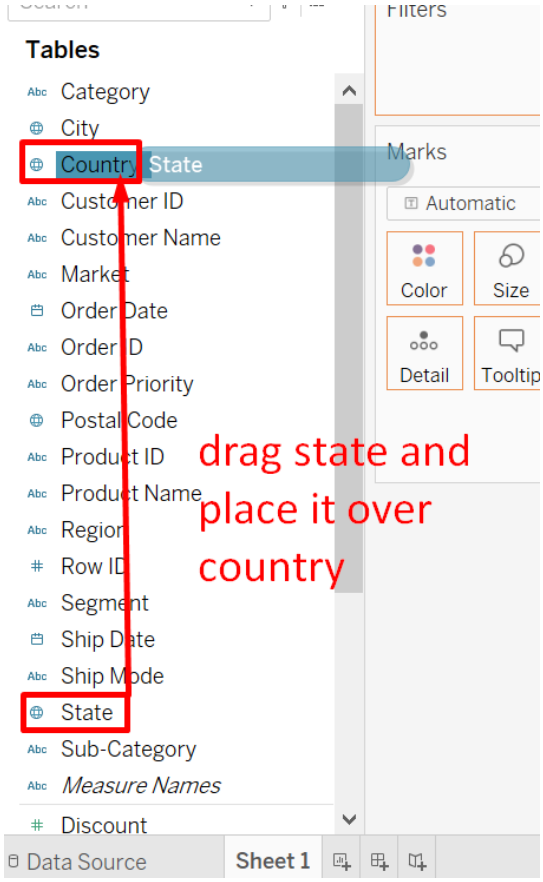

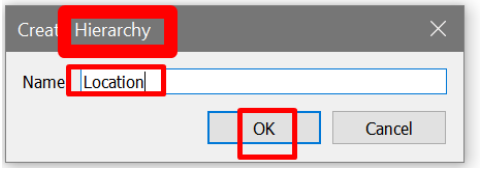

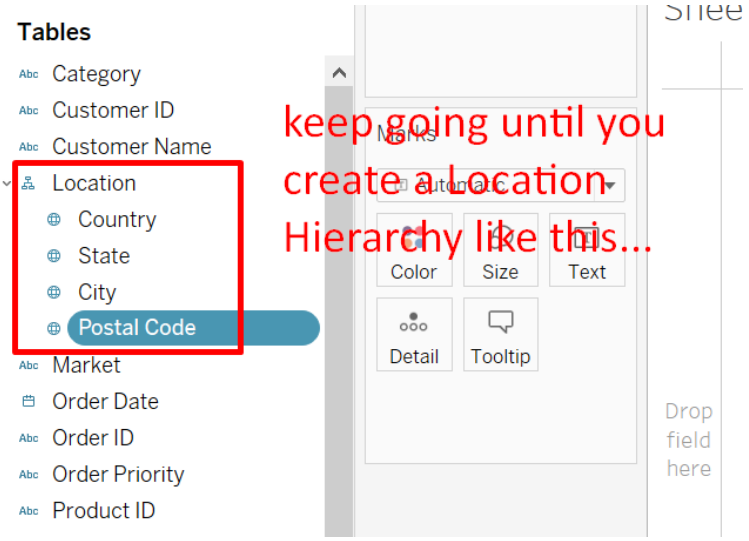

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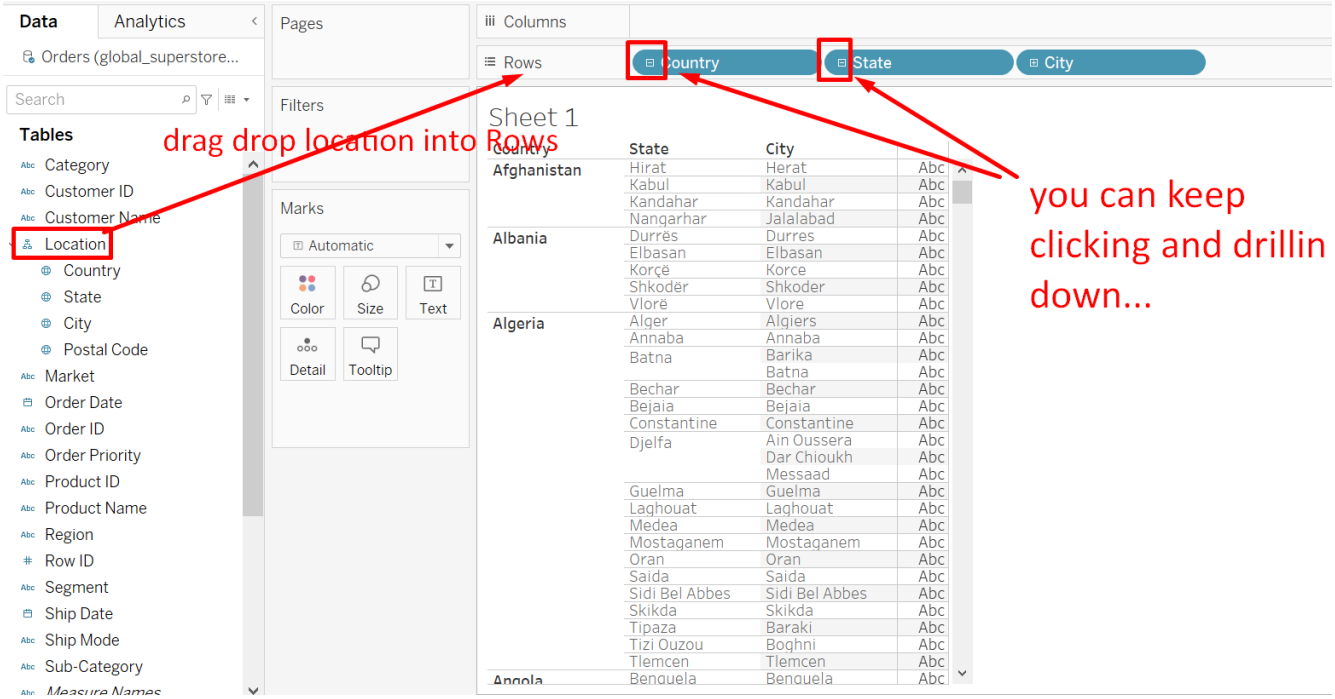

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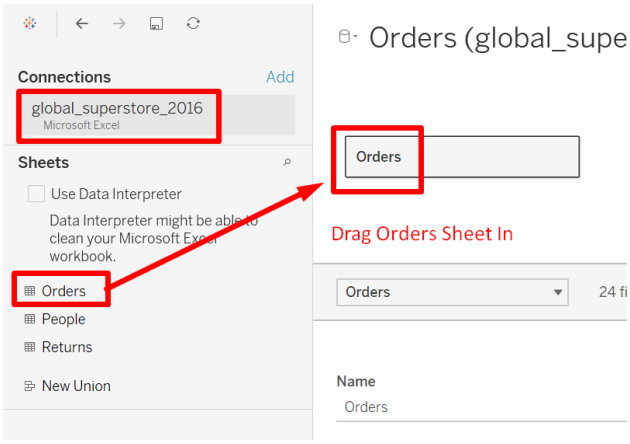
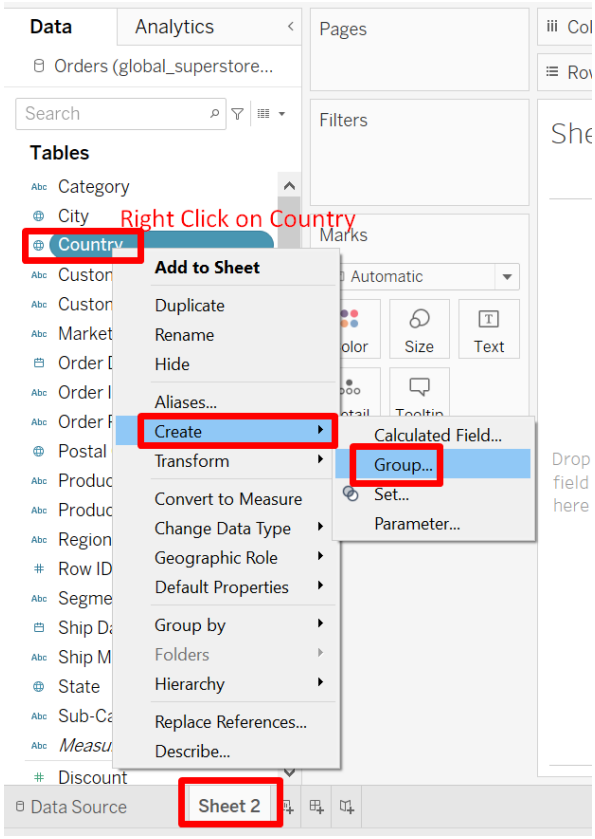
C. CREATING GROUPS

File is here: https://www.alvinang.sg/s/global_superstore_2016.xlsx





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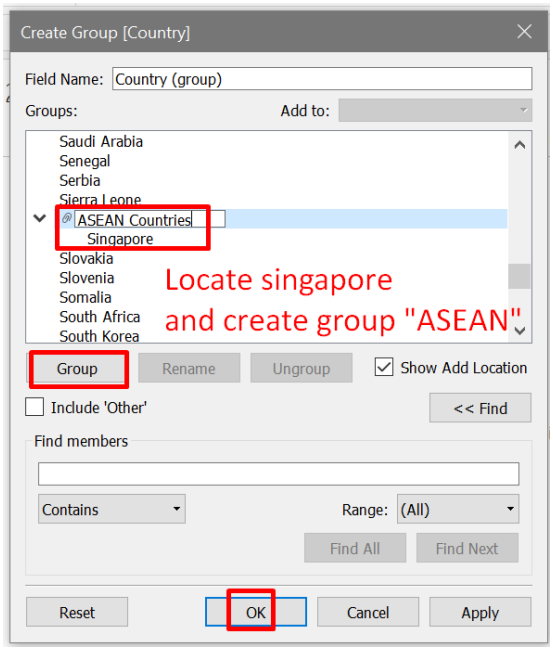
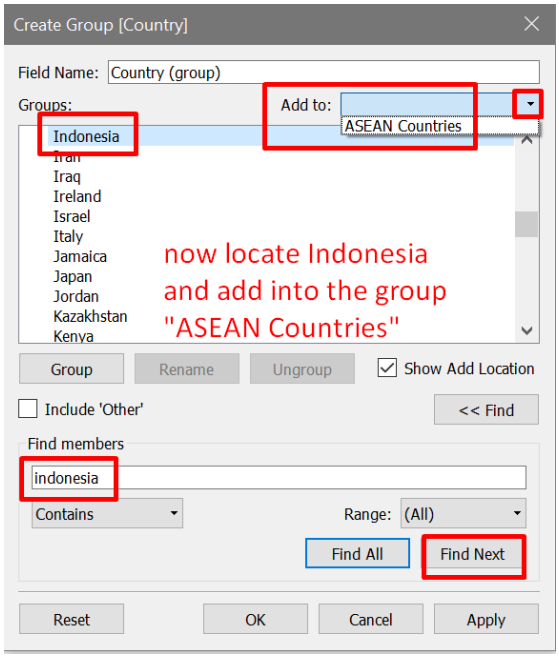
We shall group all ASEAN = Singapore / Malaysia / Indonesia / Philippines / Laos / Cambodia

All other countries are NON ASEAN





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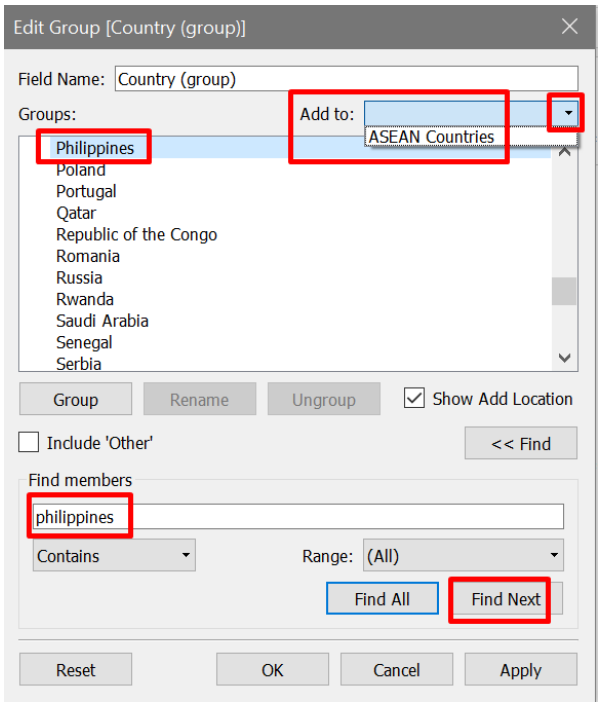
We repeat for the rest of the other ASEAN countries…



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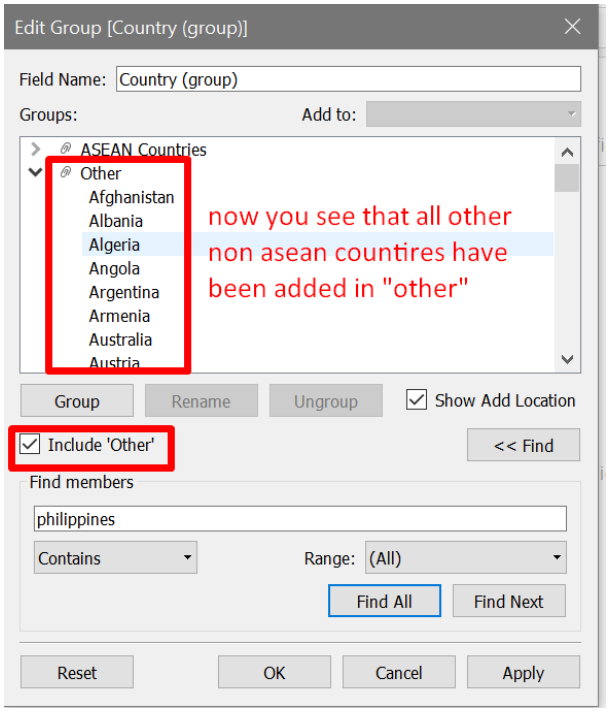

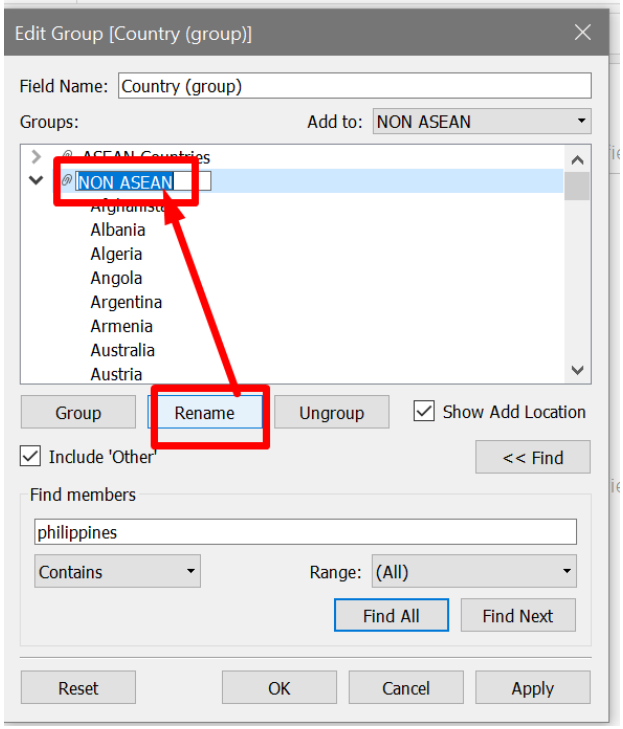

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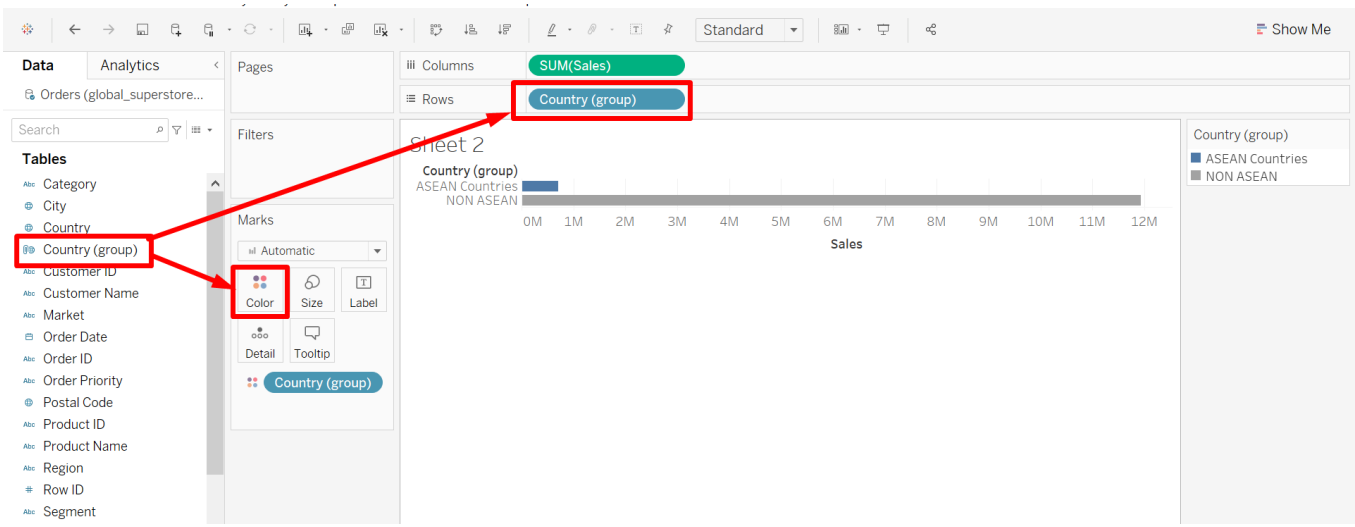

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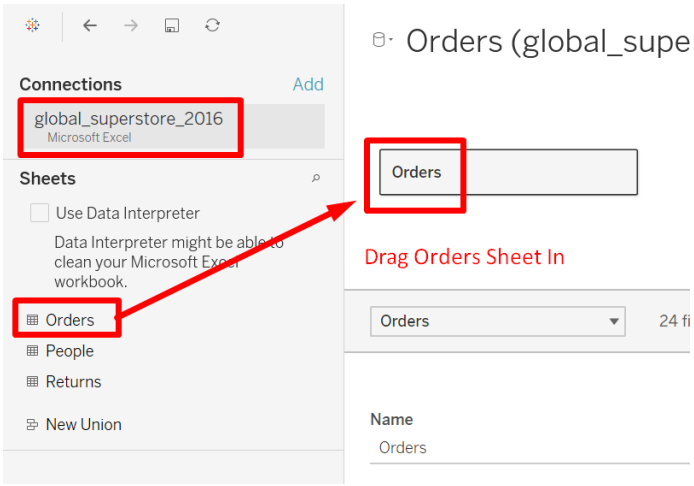
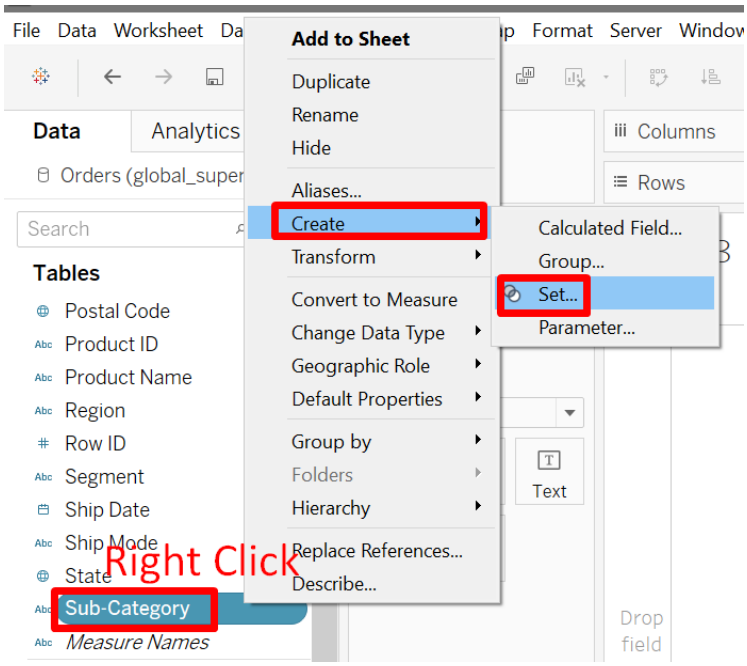
D. CREATING SETS

File is here: https://www.alvinang.sg/s/global_superstore_2016.xlsx





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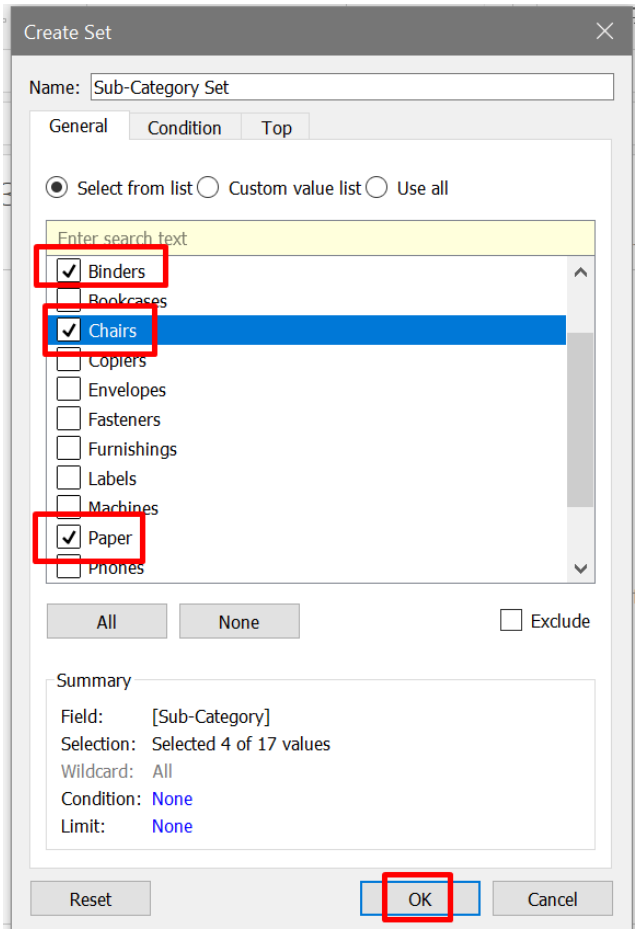
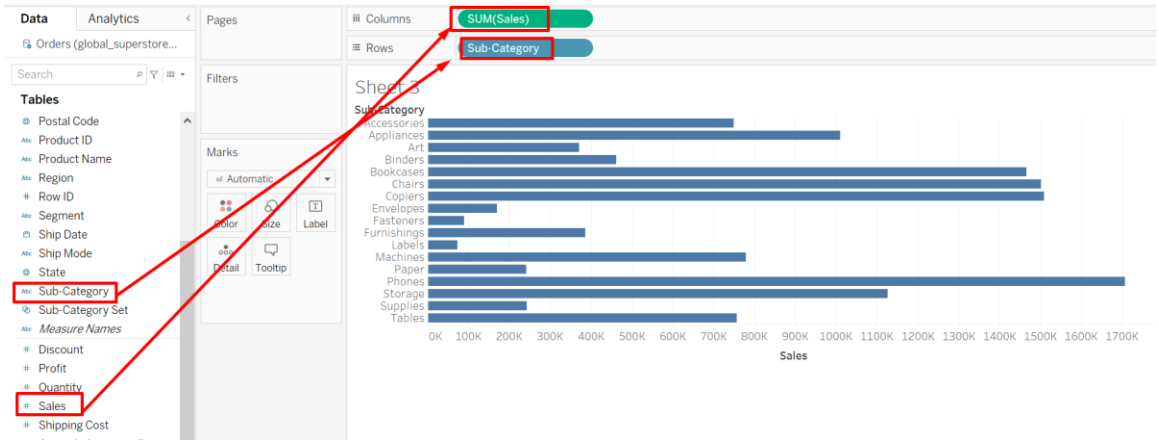
Let's create a set of : Set = Chairs + Tables + binders + Papers





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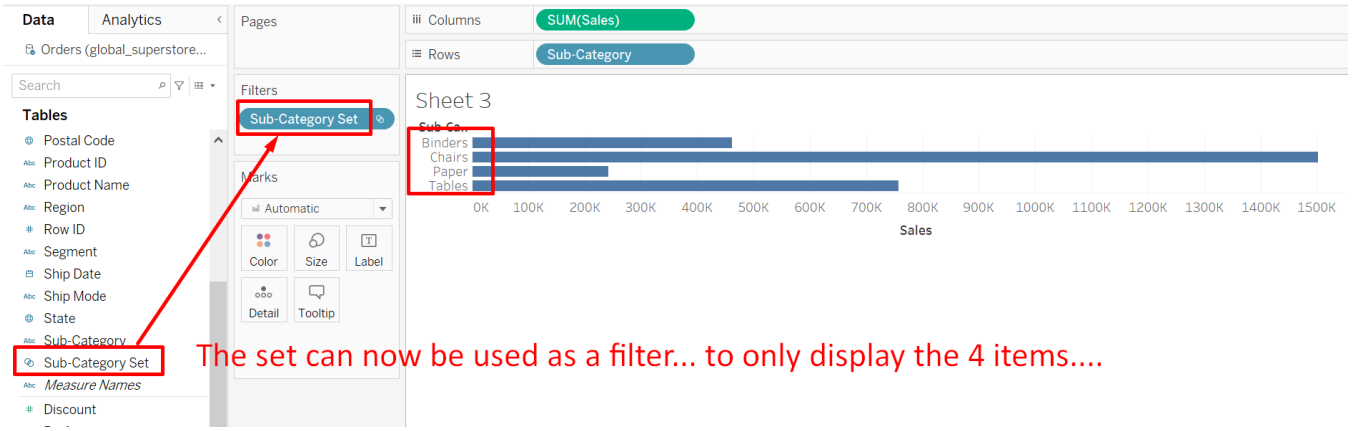

The set can now be used as a filter... to only display the 4 items....

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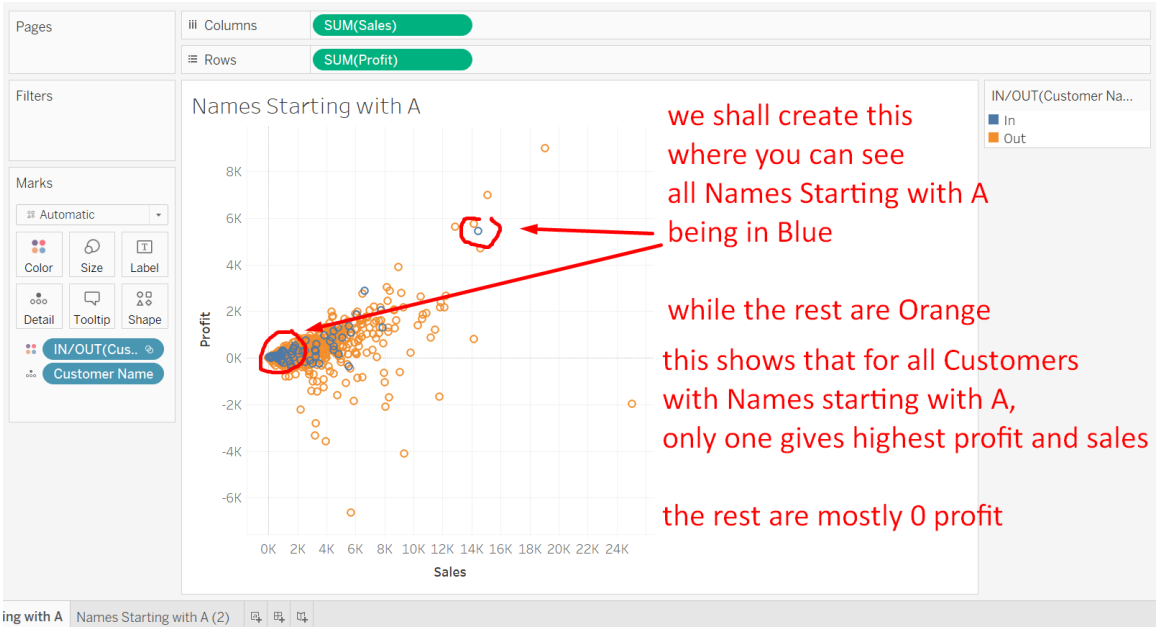
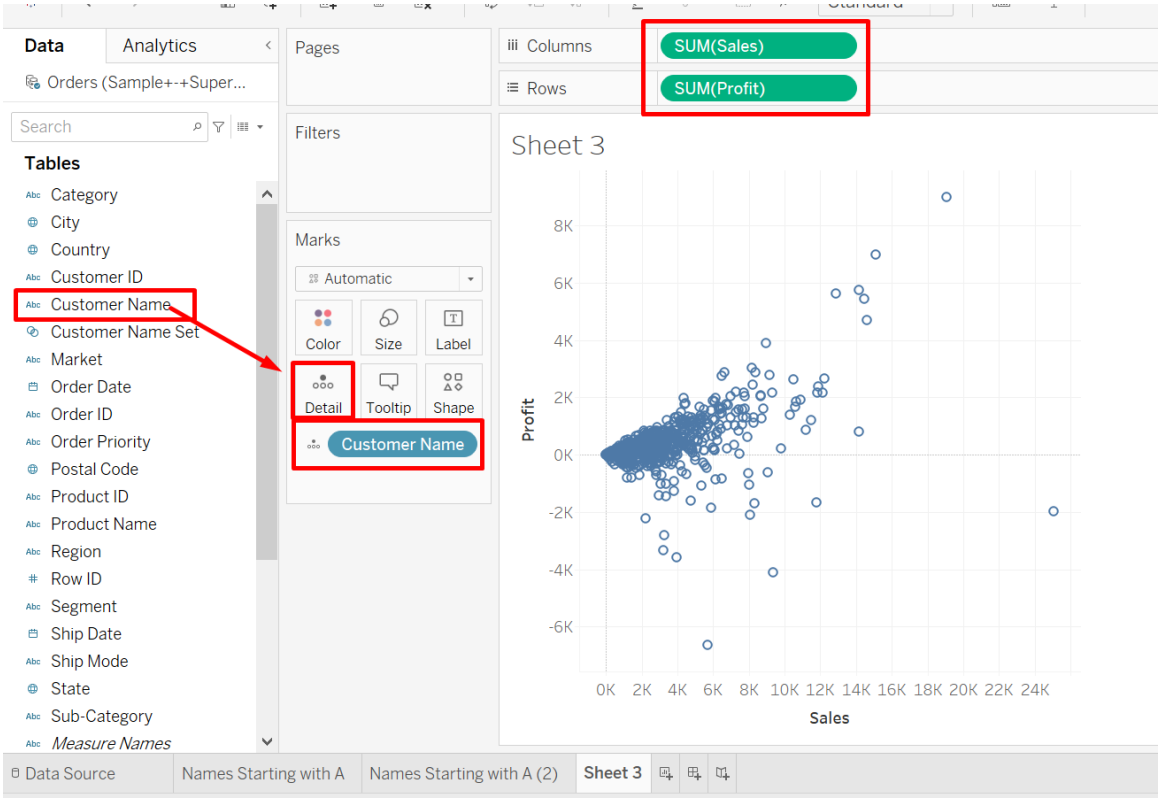
1. SETS: USE CASE I (SCATTERPLOT SEPERATING THE A NAMES)

https://www.alvinang.sg/s/Sample-Superstore-USA.xls





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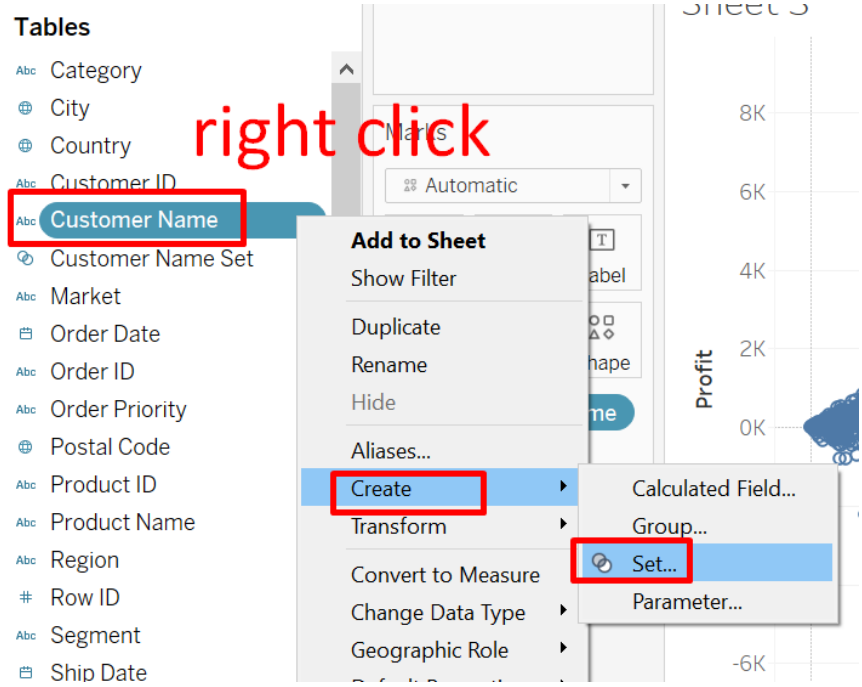

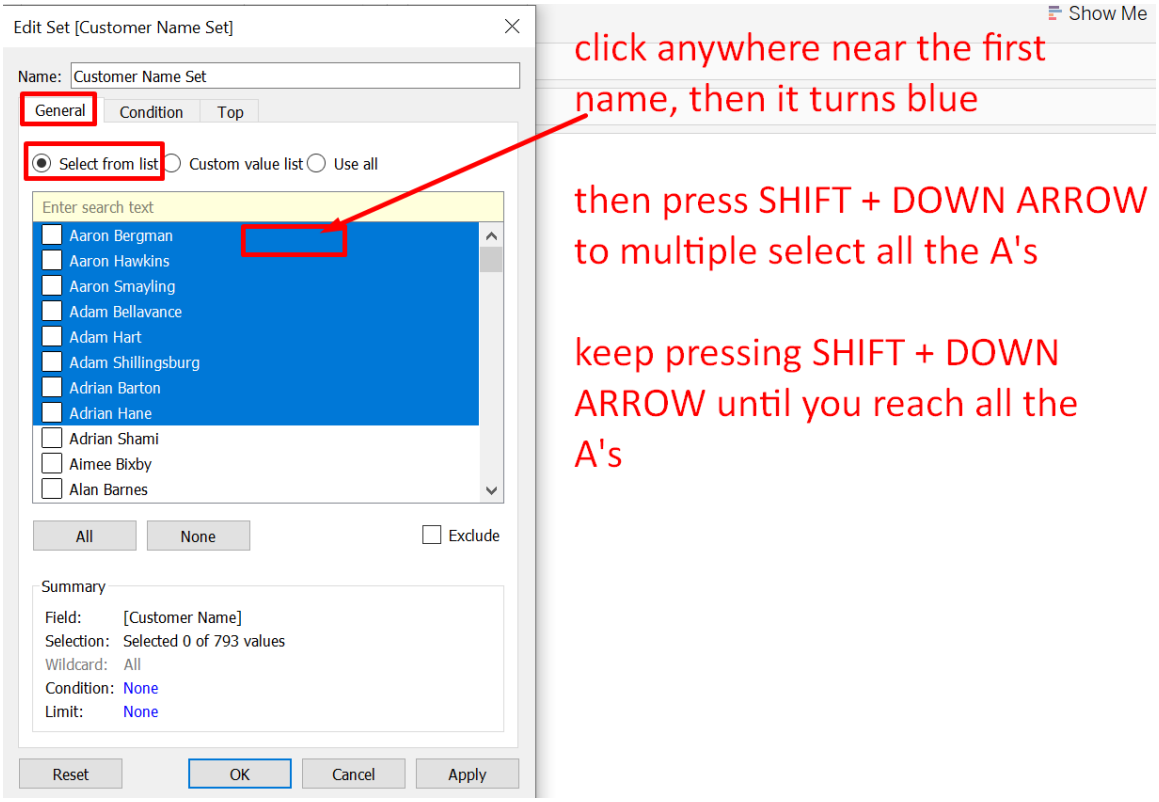

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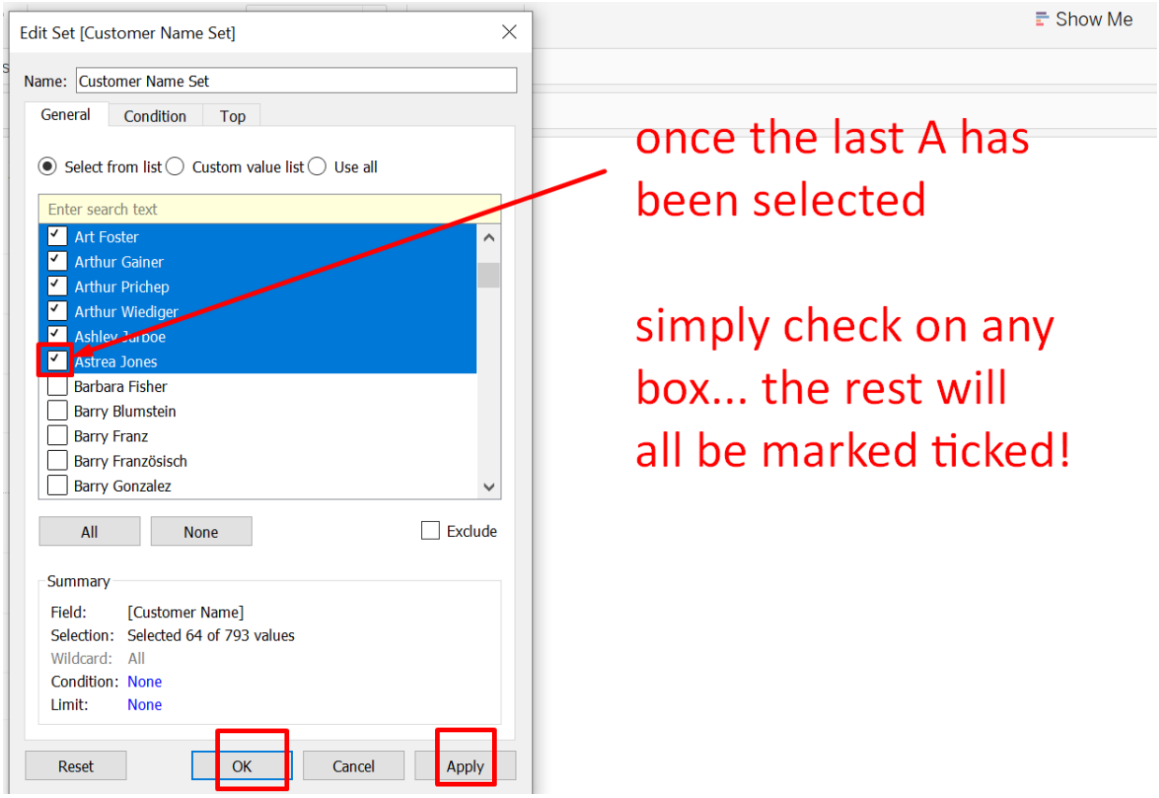

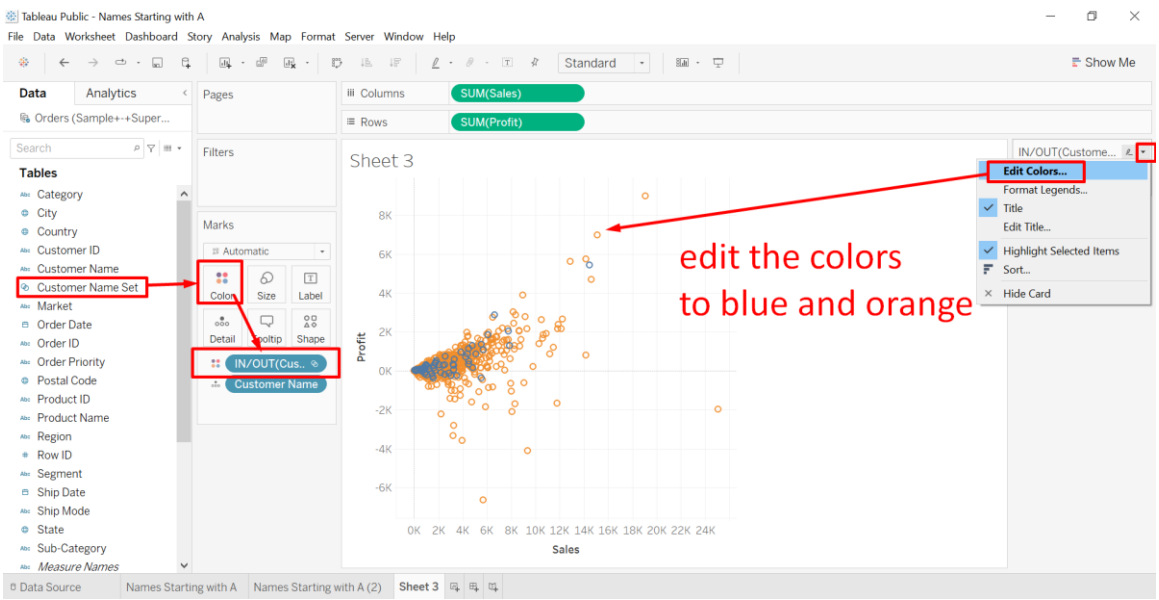

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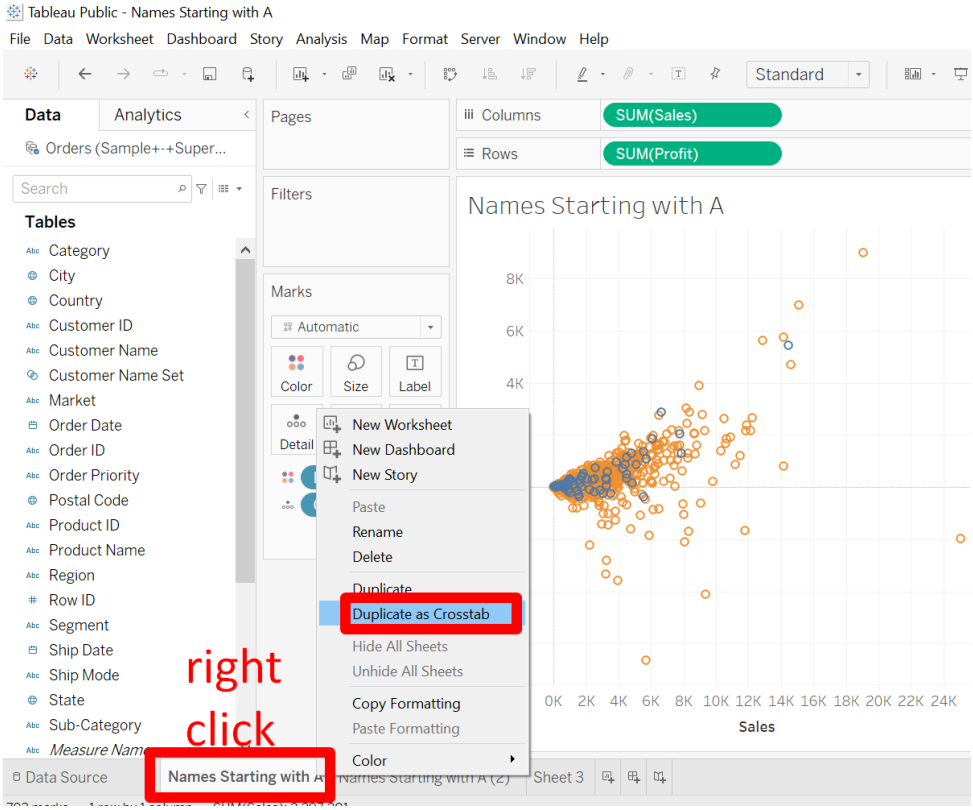
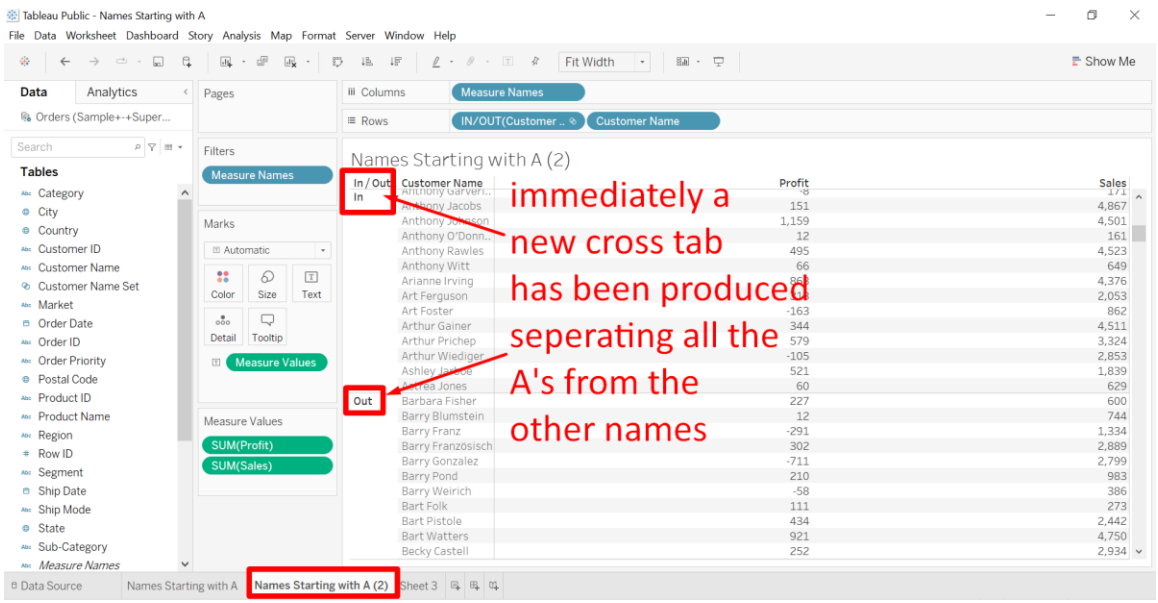
2. SETS: USE CASE II (CHANGING TO CROSS TAB)

Continue off from previous section…





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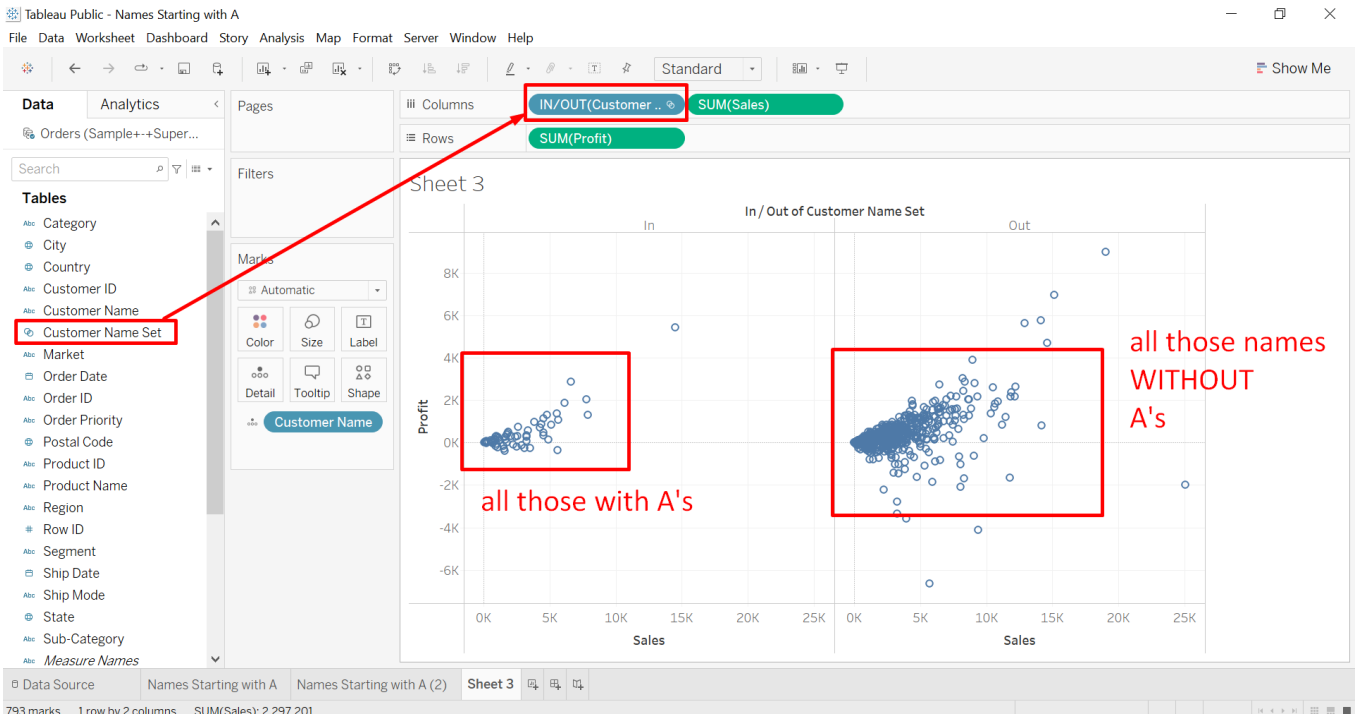
3. SETS: USE CASE III (SEPERATING THE A'S IN THE SCATTER PLOT)

Continue off from previous section…



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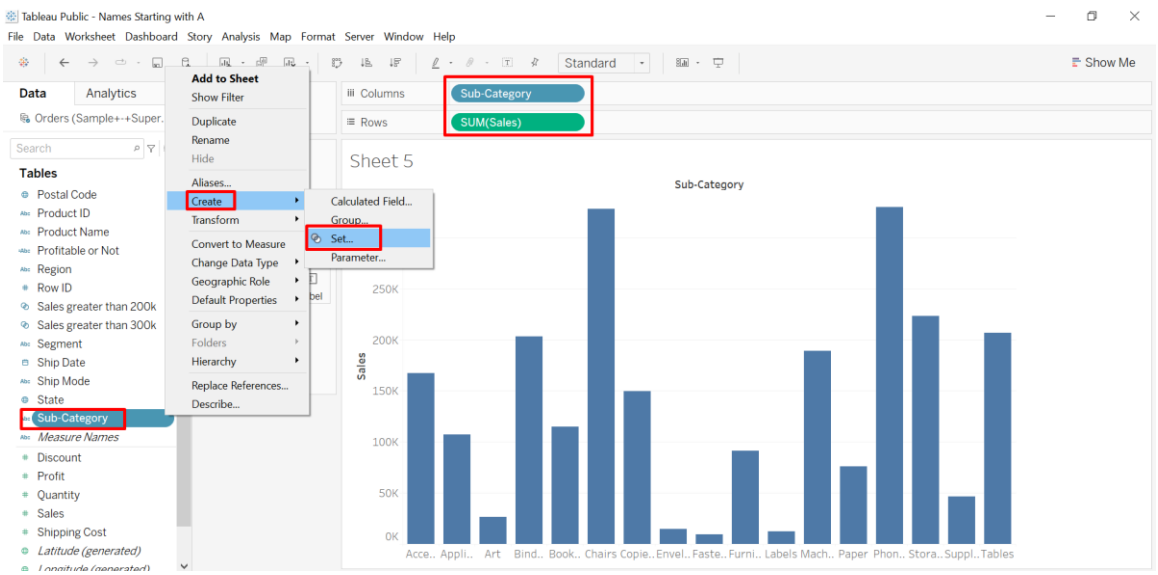
4. SETS: USE CASE IV (USING IT IN CALCULATED FIELDS)

https://www.alvinang.sg/s/Sample-Superstore-USA.xls



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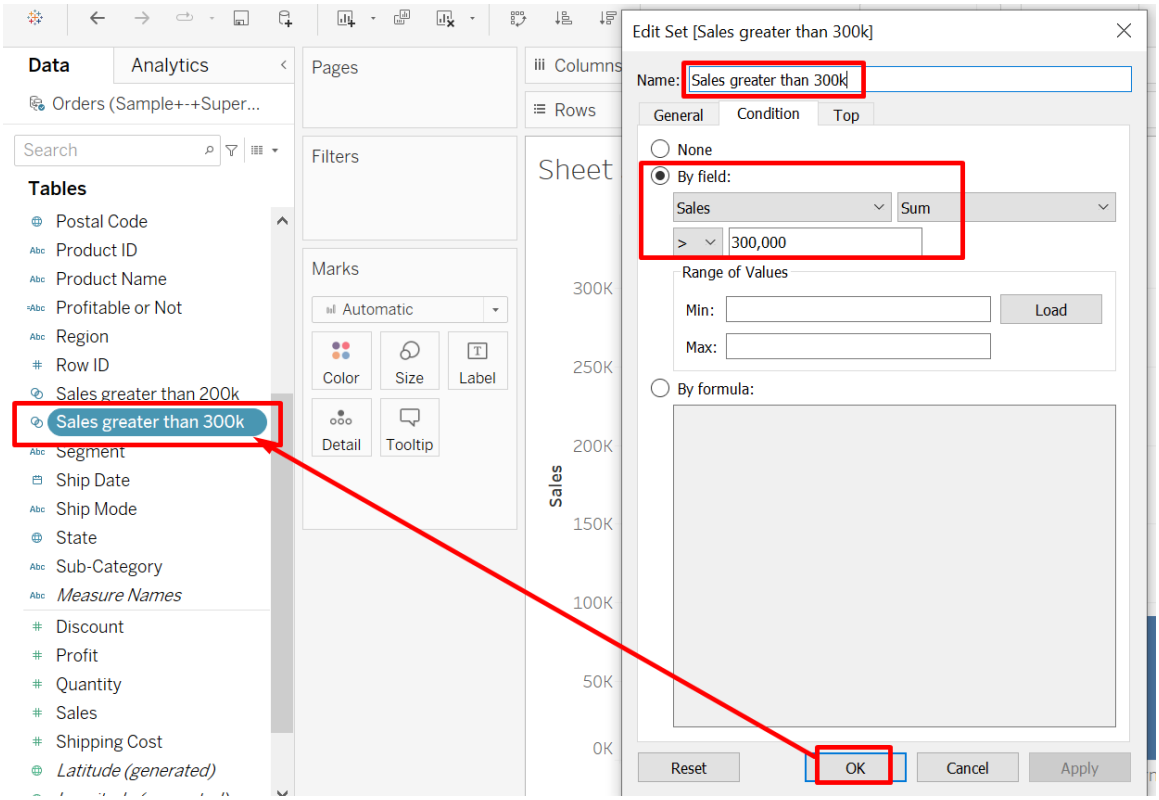

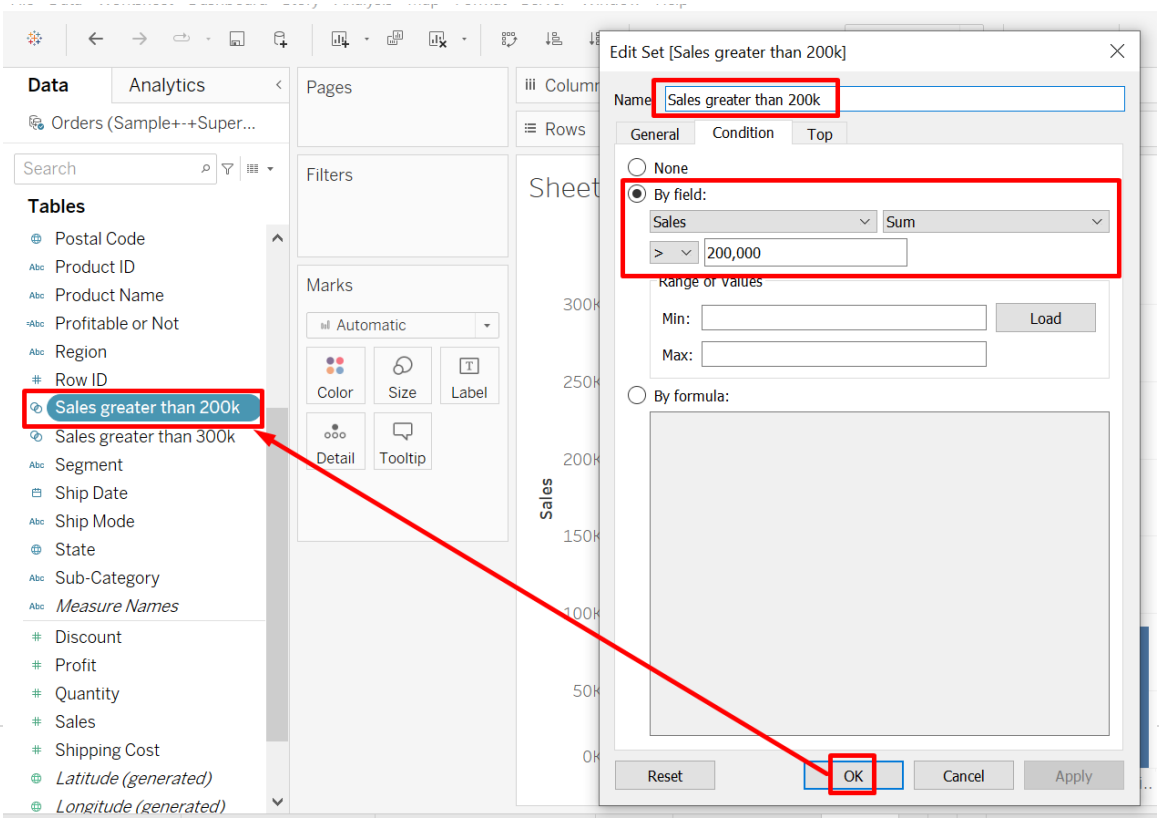

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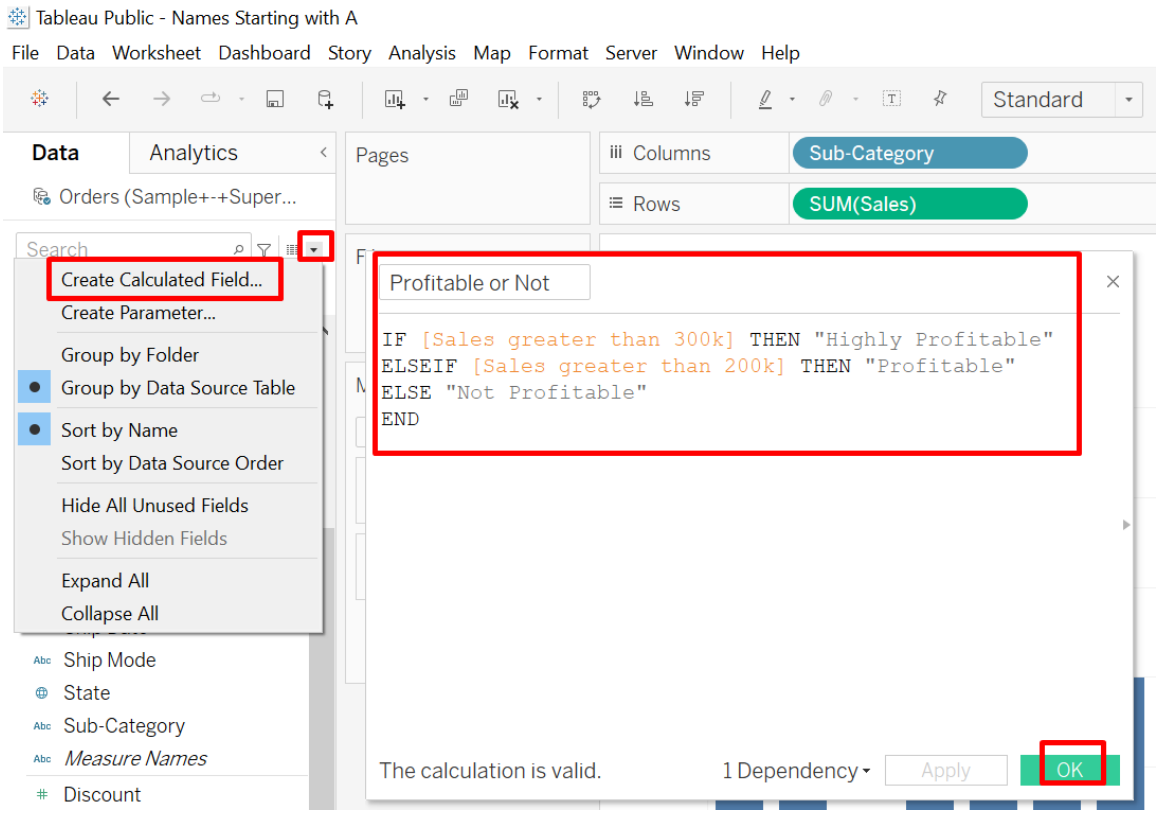

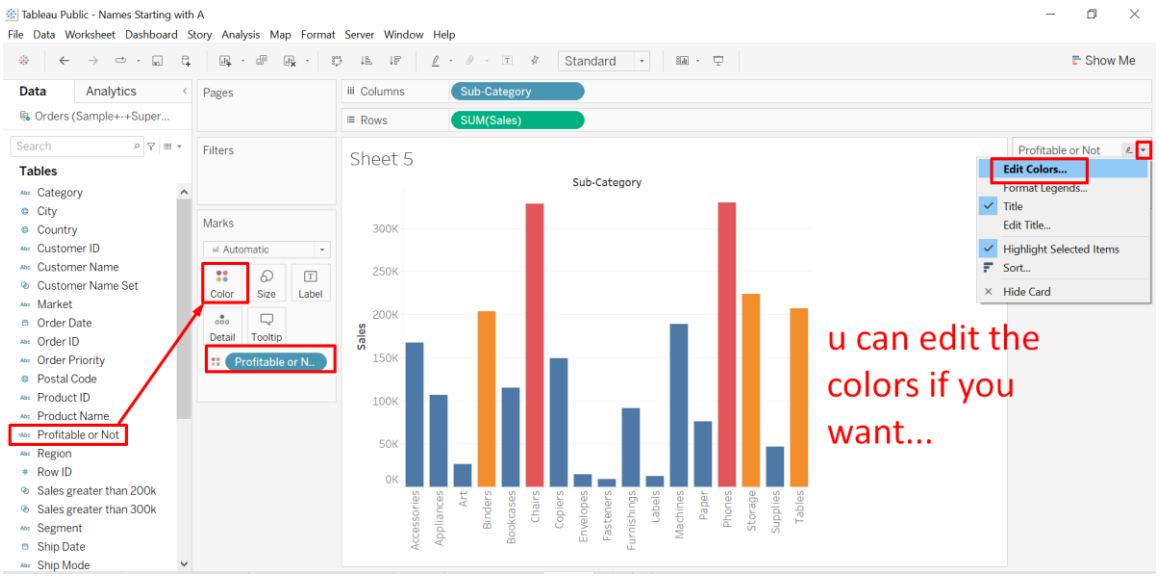

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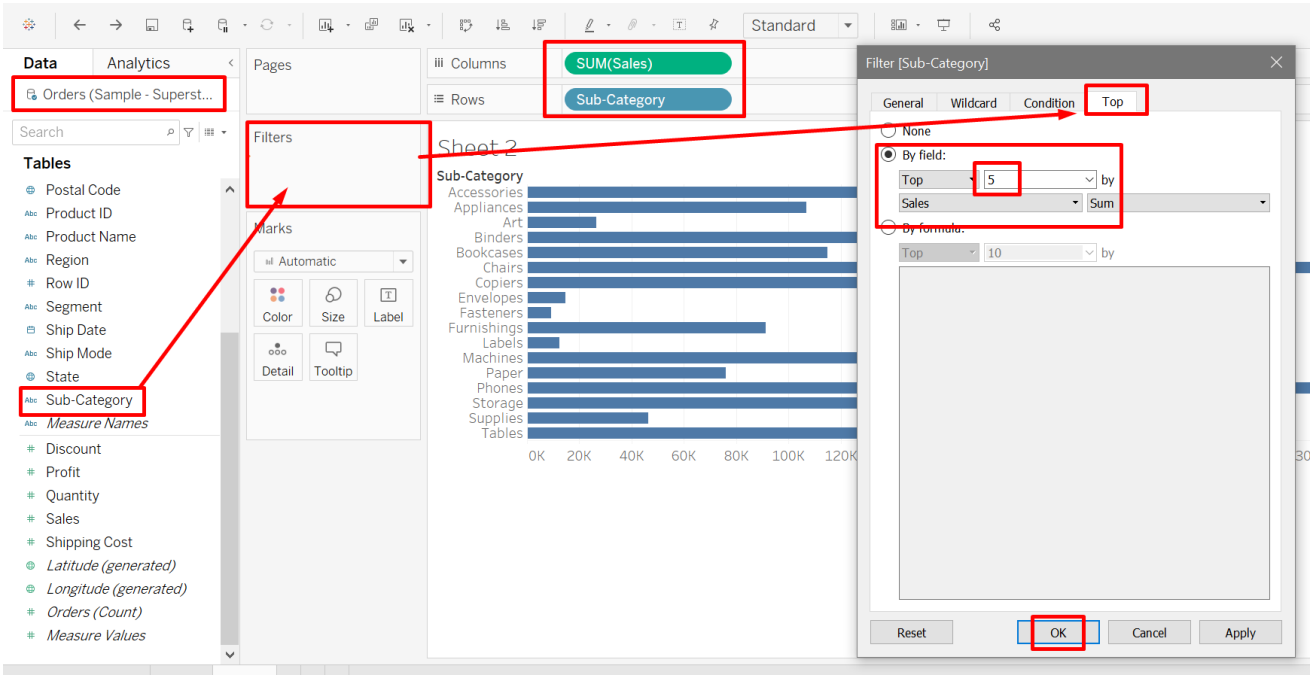
V. FILTERING

A. TOP FILTER

File can be found here: https://www.alvinang.sg/s/Sample-Superstore-USA.xls



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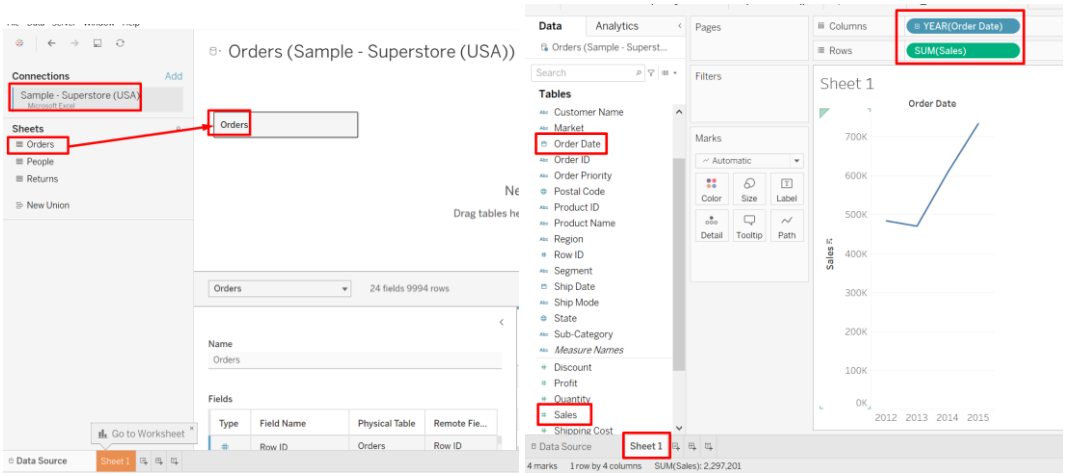
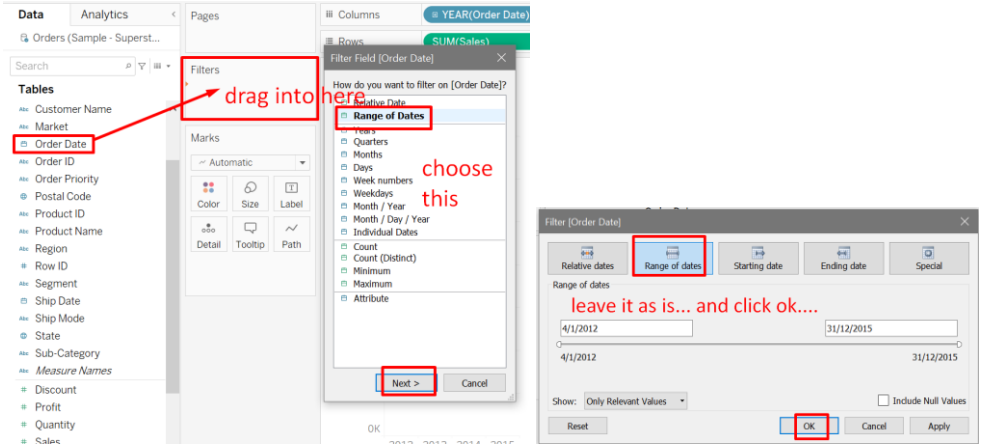
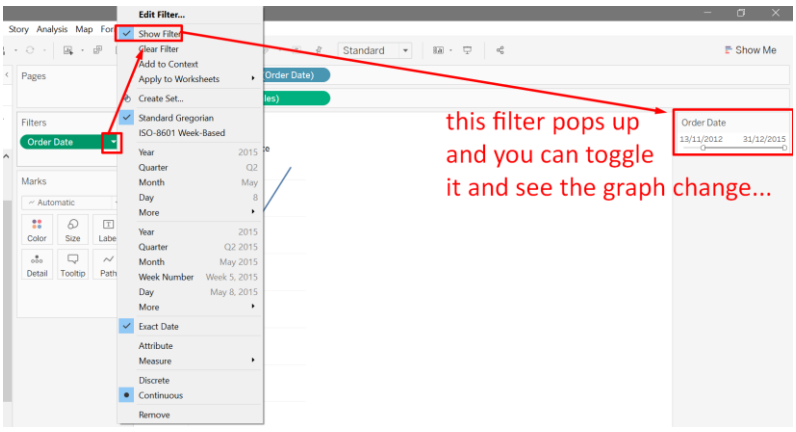
B. DATE FILTER

File can be found here: https://www.alvinang.sg/s/Sample-Superstore-USA.xls







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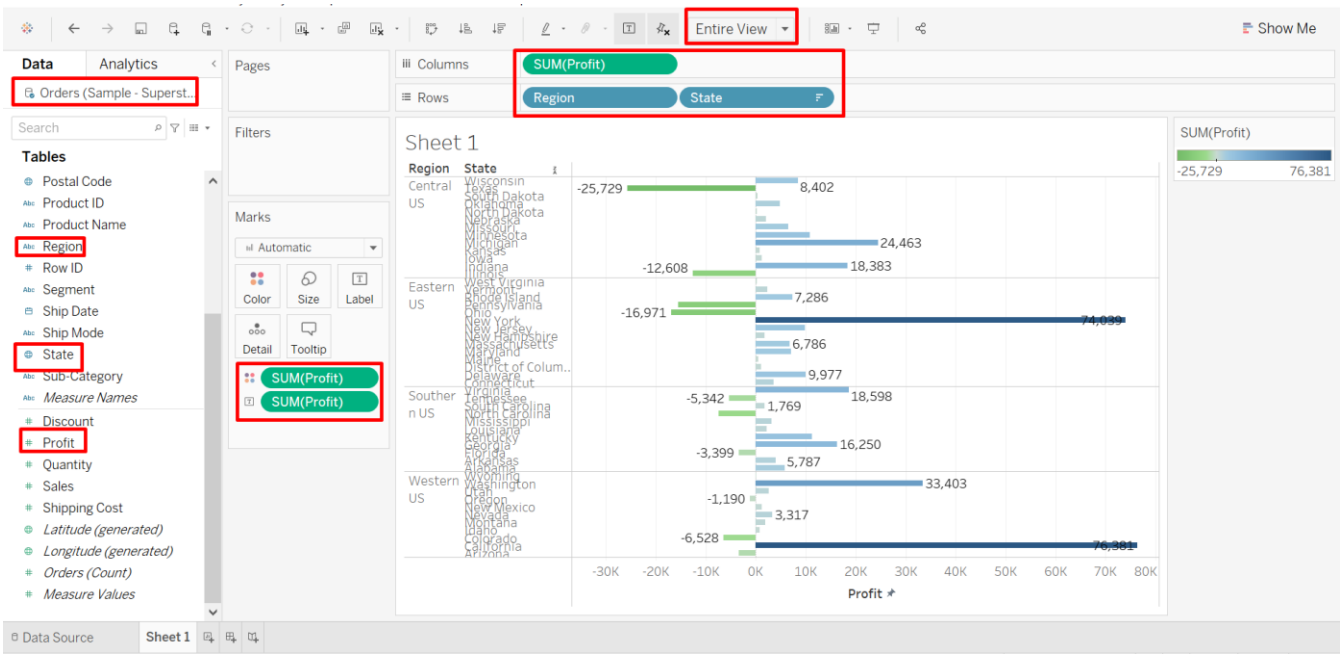
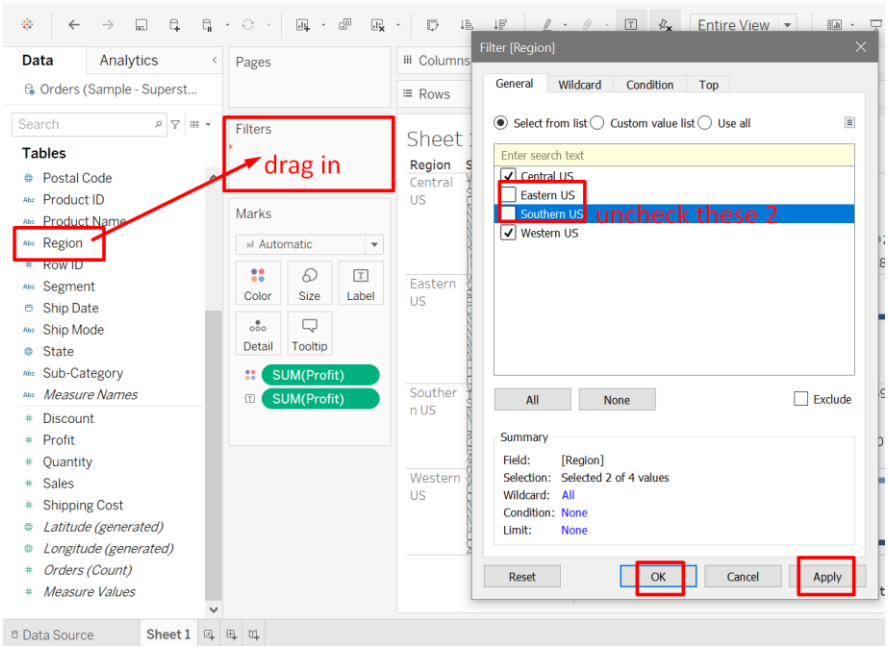
C. CONTEXT FILTER





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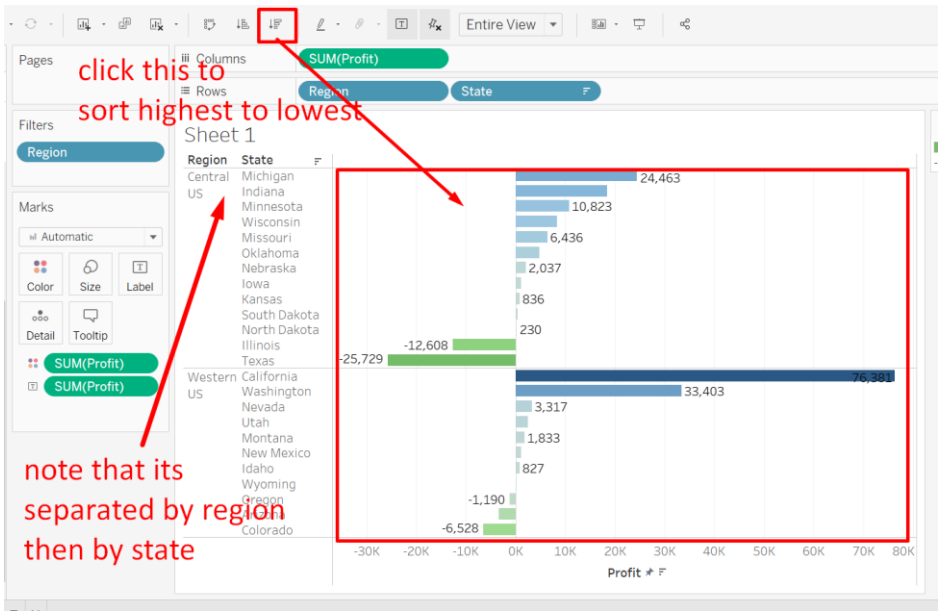

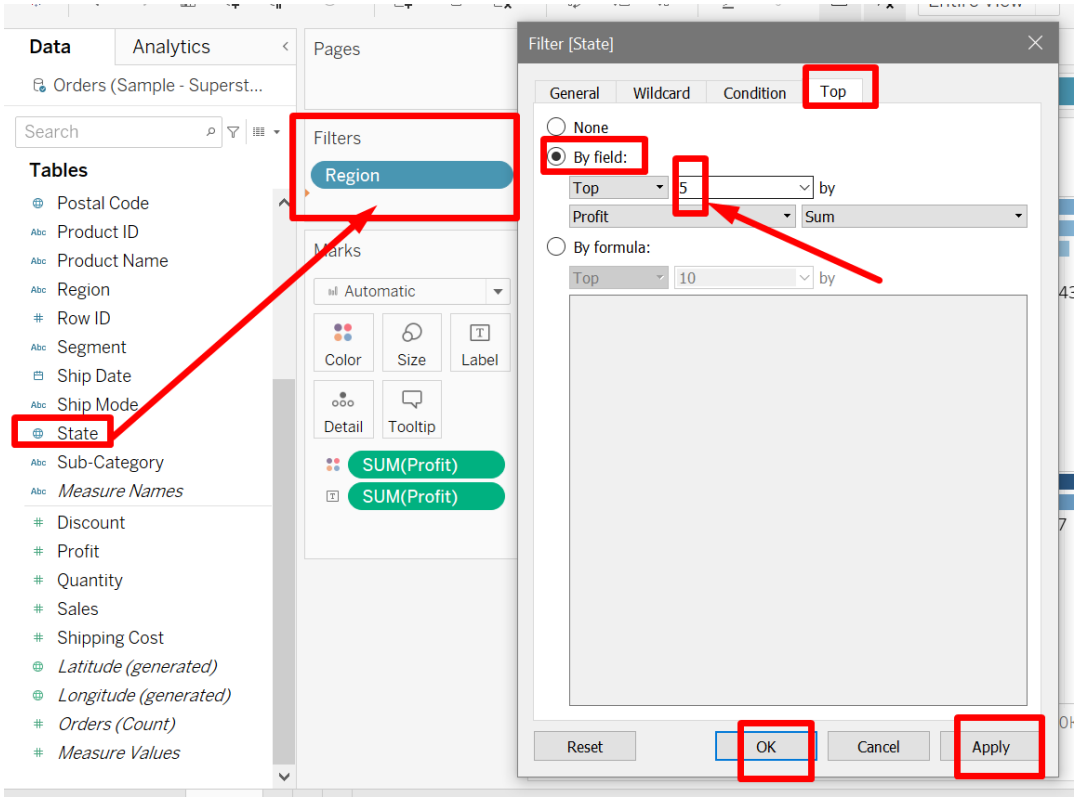

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In other words, even though we did the filtering in the right order, Tableau reverses the order, and does it his way, in the following order:

1. top 5 states filter
2. only 2 regions filter

Thus, out of the top 5 states, only 3 came from Central and West region – that is why we result with only 3 states.

To fix this, we use the Context Filter.

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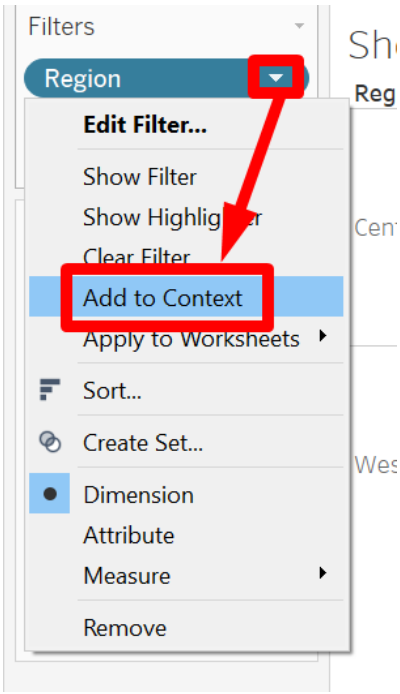

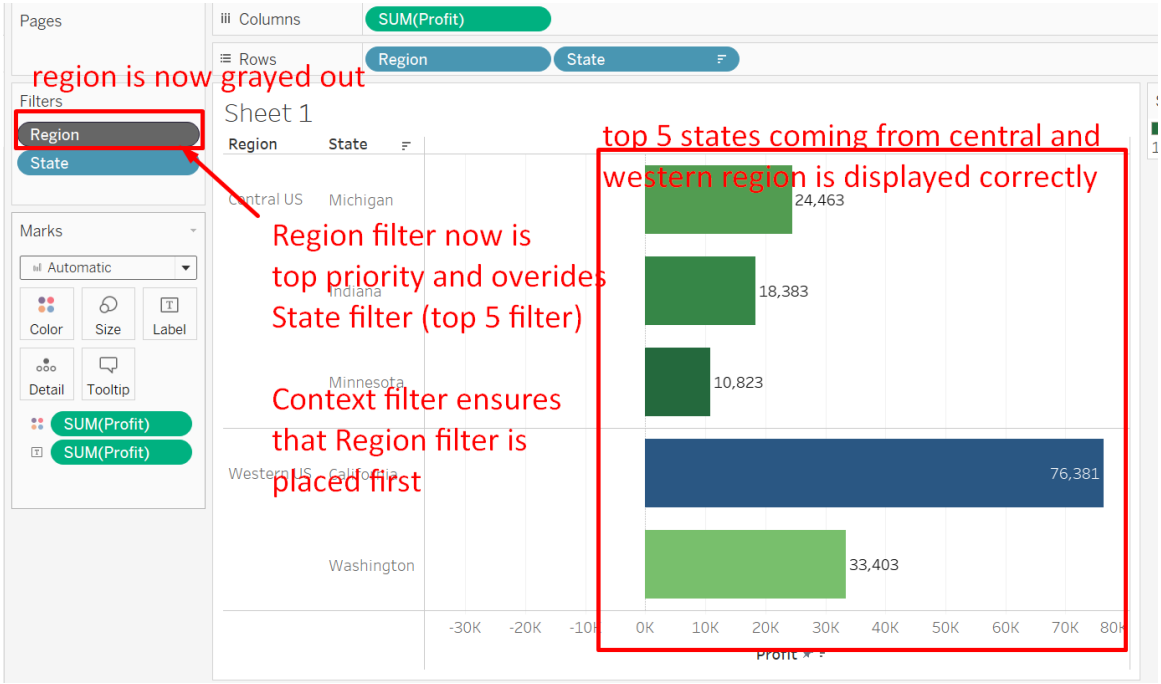

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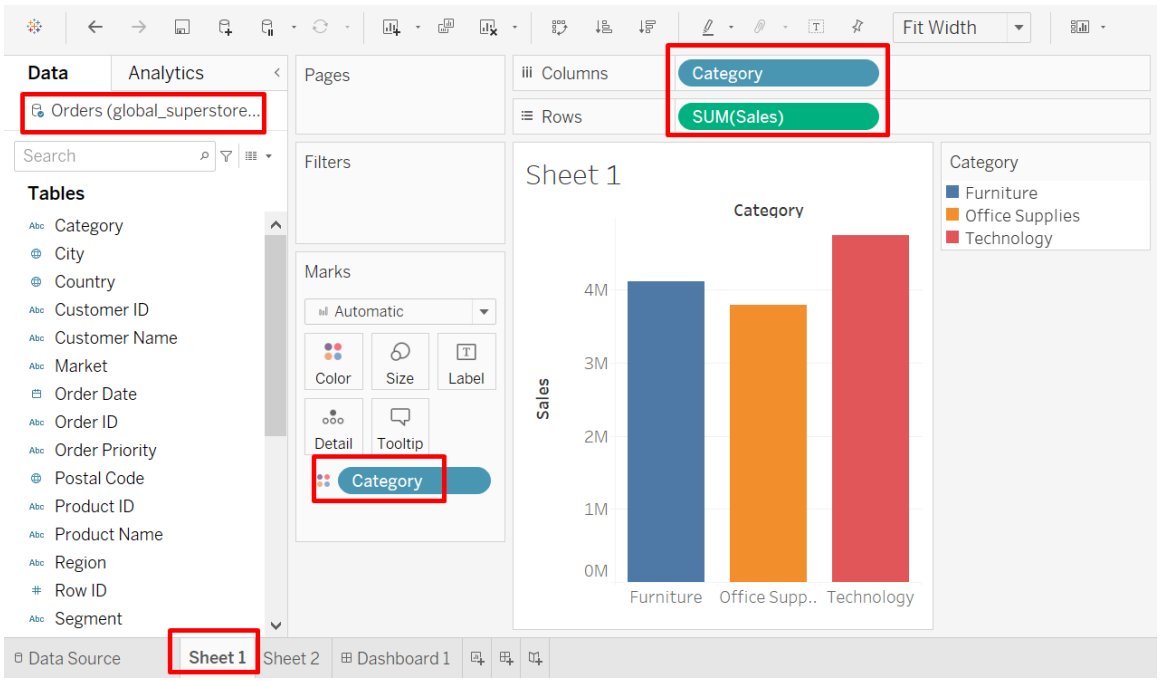
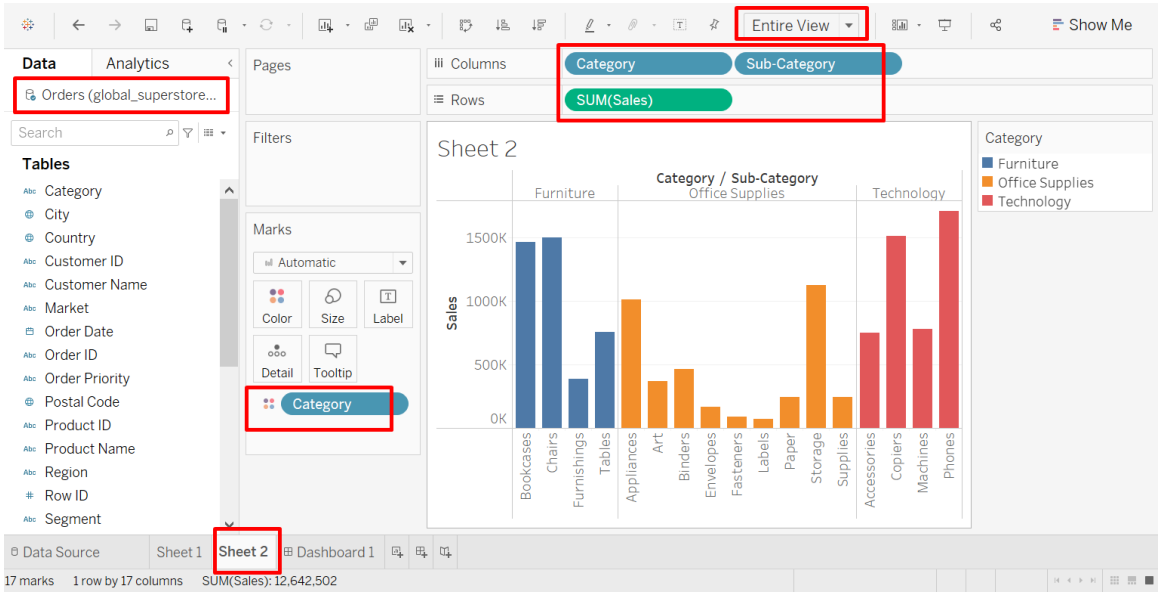
D. ACTION FILTER

1. EXAMPLE 1: WORKSHEET TO WORKSHEET

File can be found here: https://www.alvinang.sg/s/global_superstore_2016.xlsx





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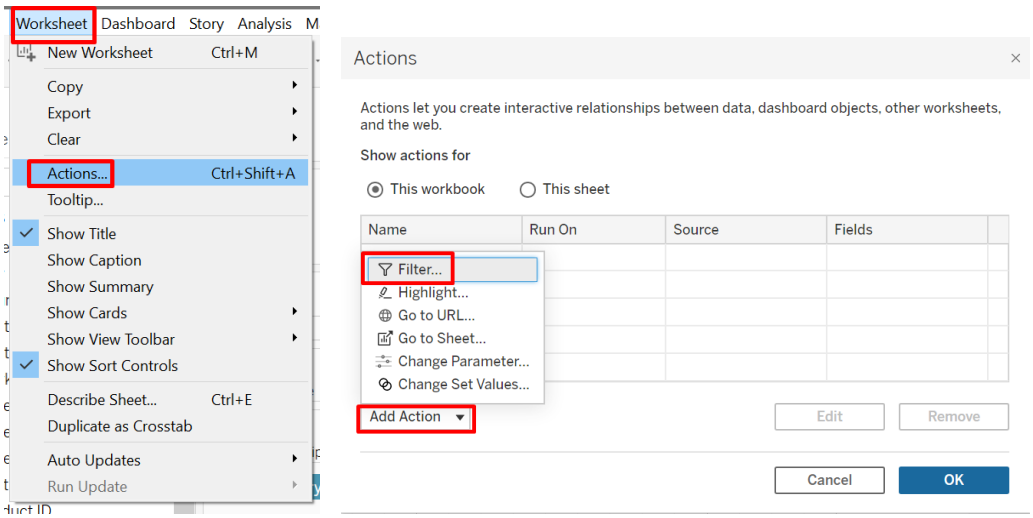

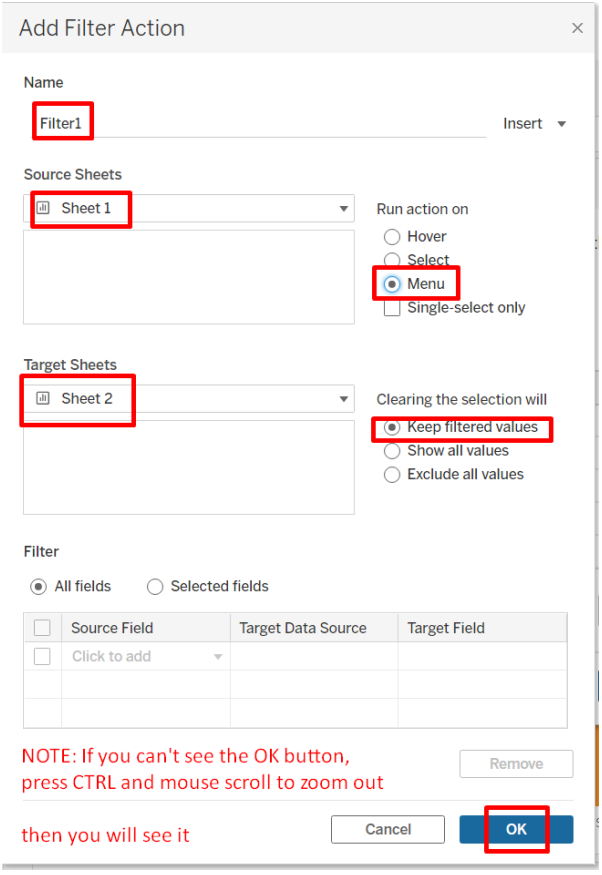

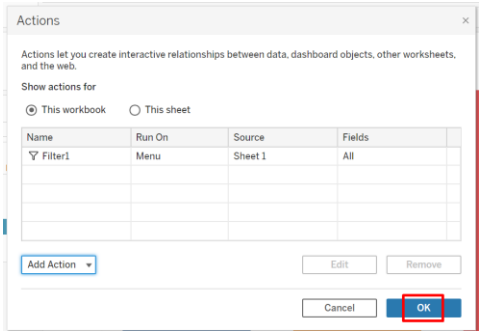

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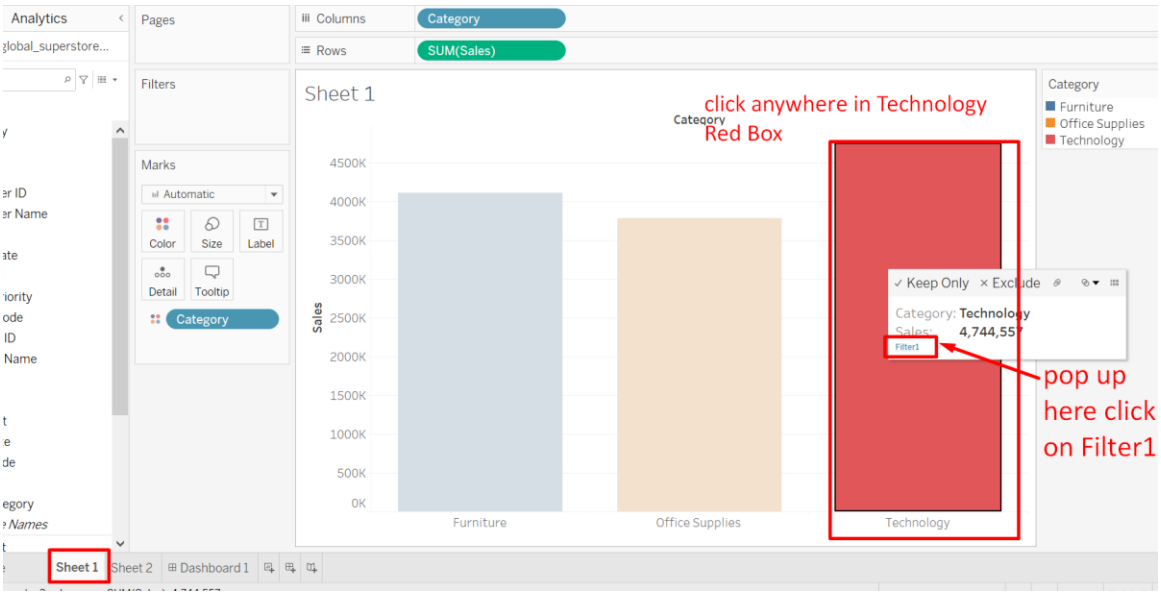

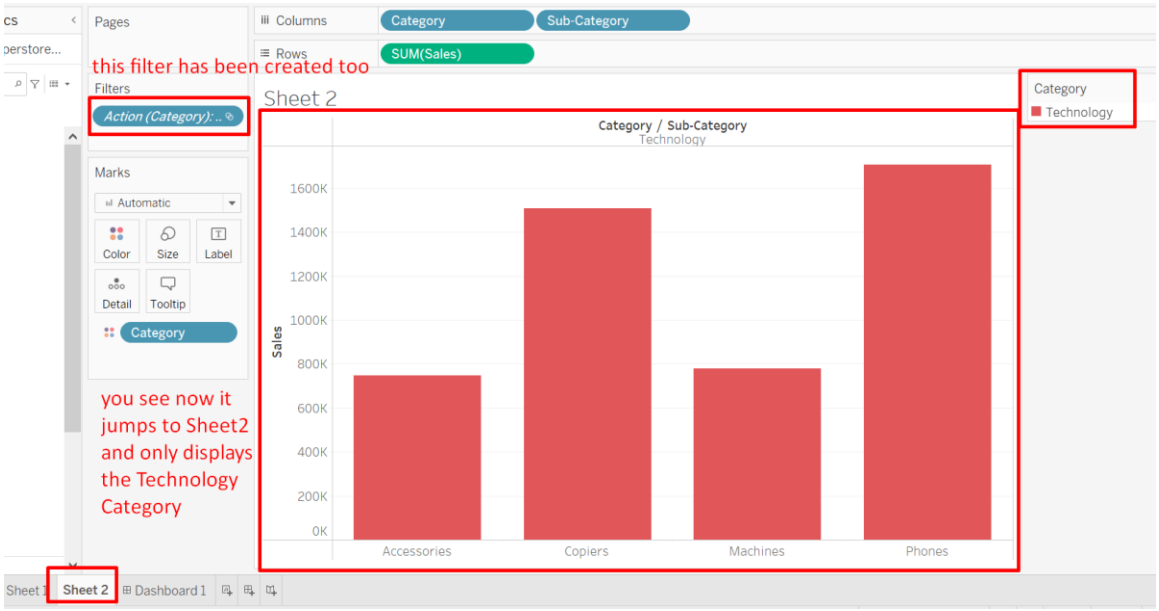

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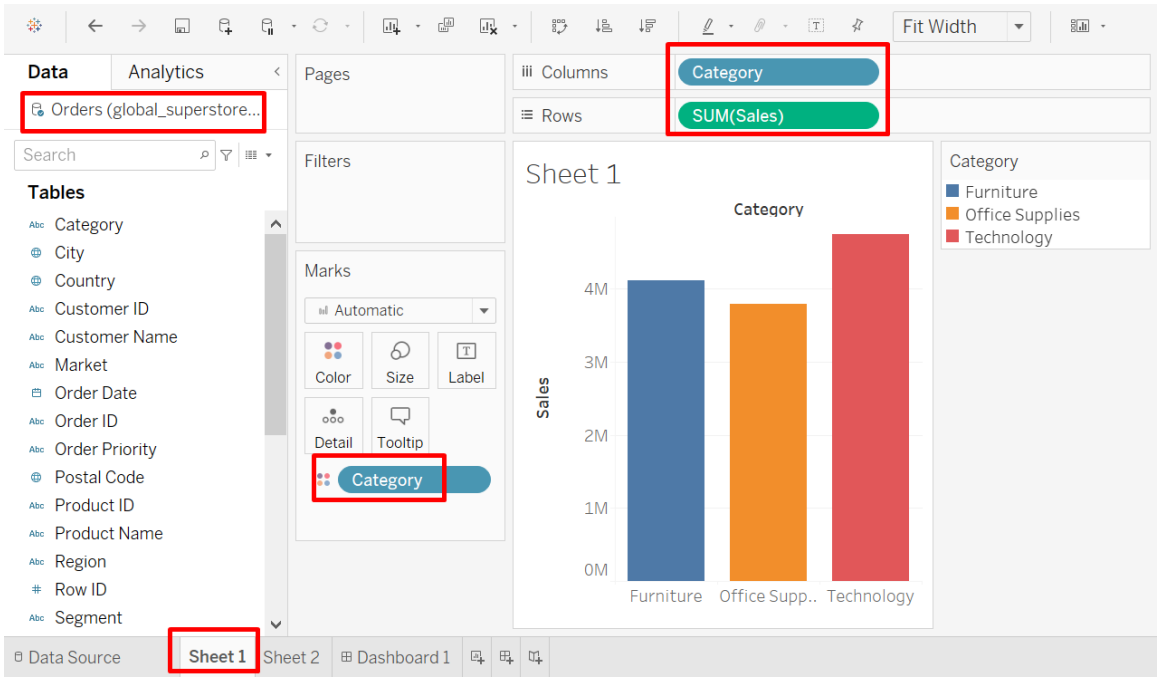
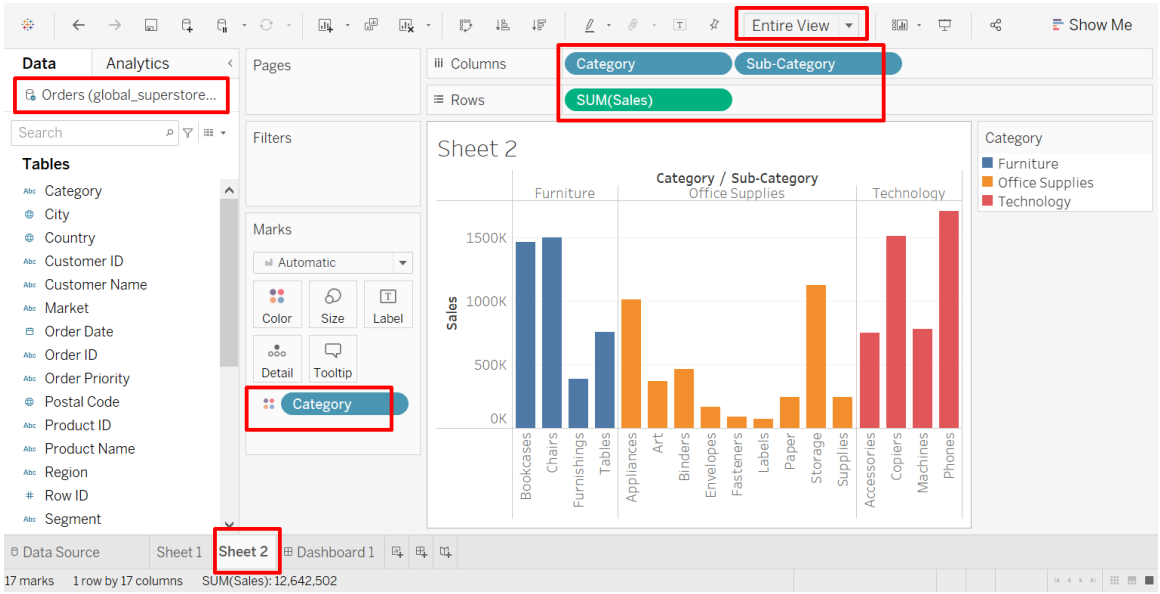
2. EXAMPLE 2: WITHIN DASHBOARD

File can be found here: https://www.alvinang.sg/s/global_superstore_2016.xlsx





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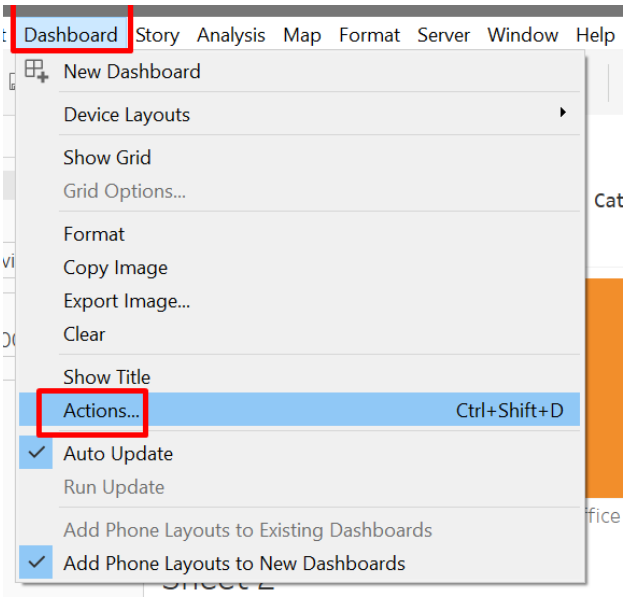

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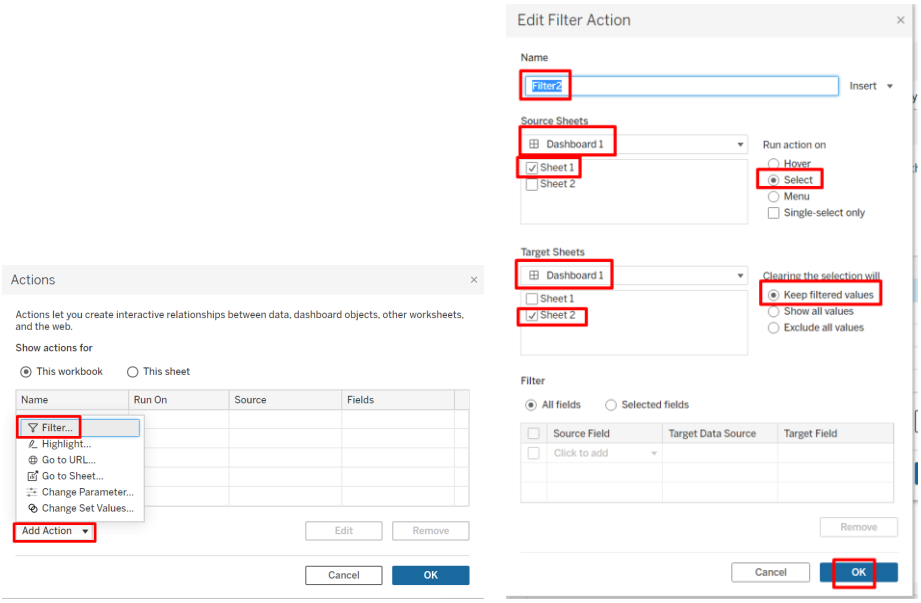

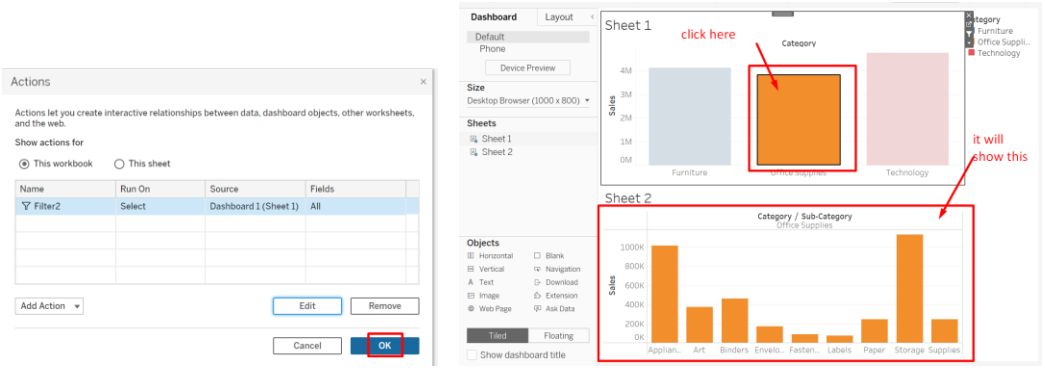

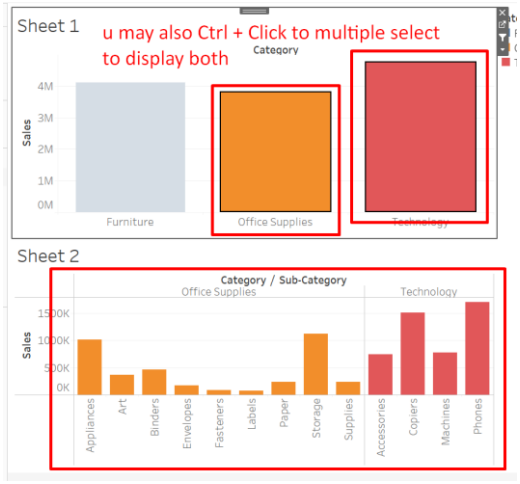

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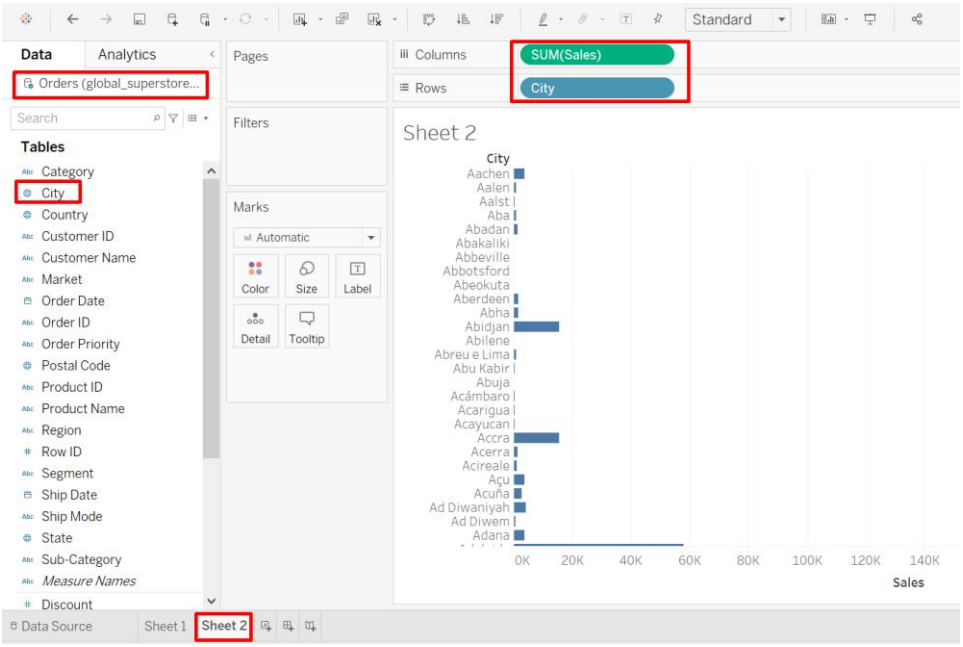
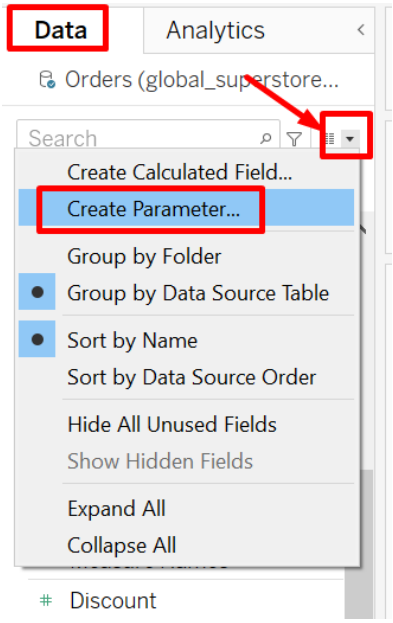
E. FILTERING VIA CREATING PARAMETERS

1. EXAMPLE 1: TOP CITY SALES

File can be found here: https://www.alvinang.sg/s/global_superstore_2016.xlsx





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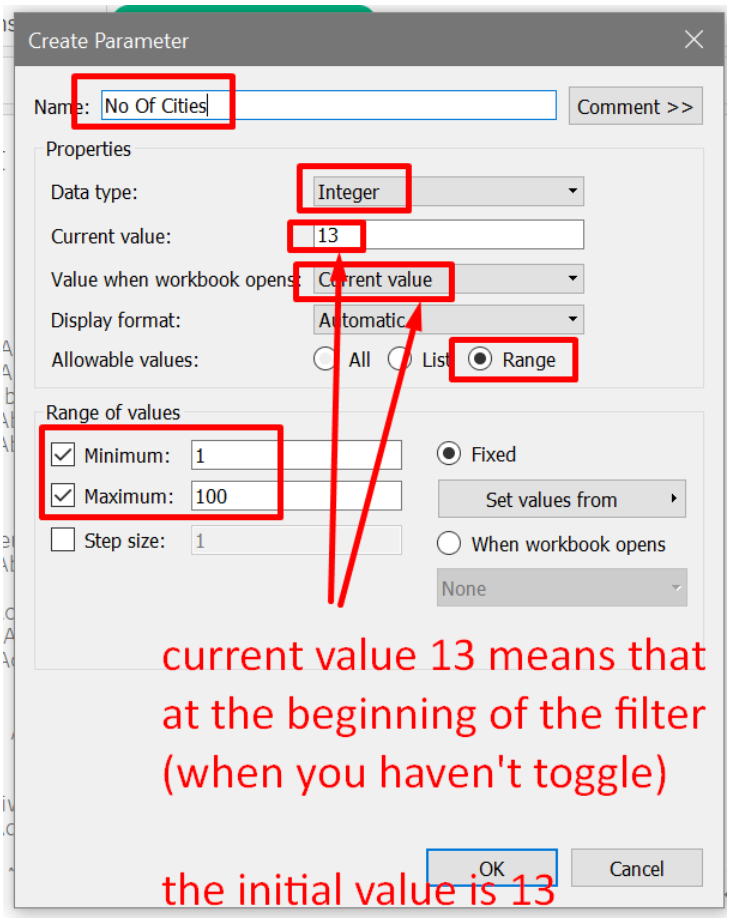

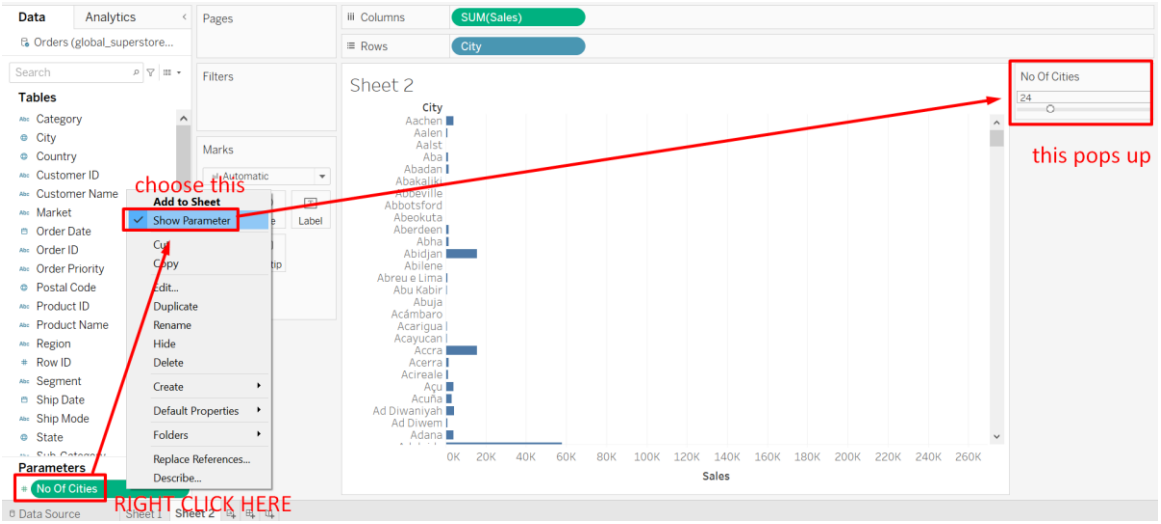

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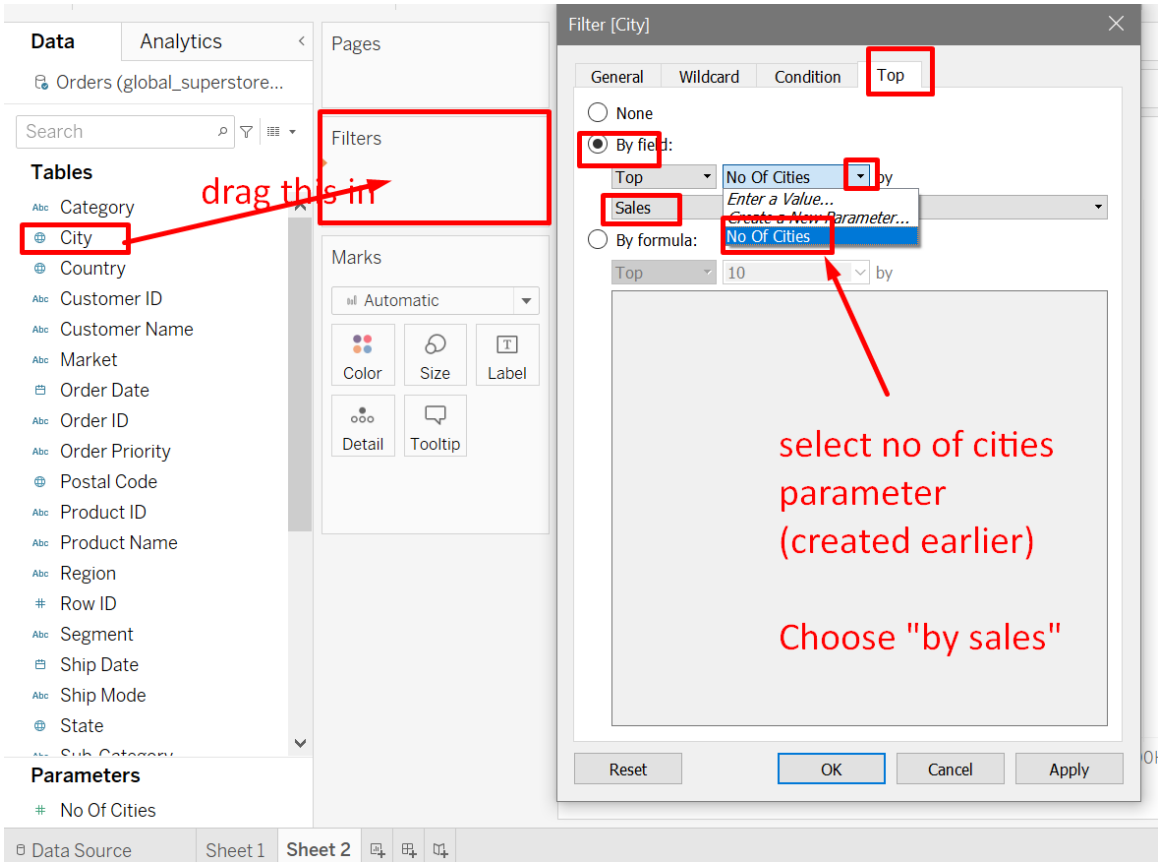

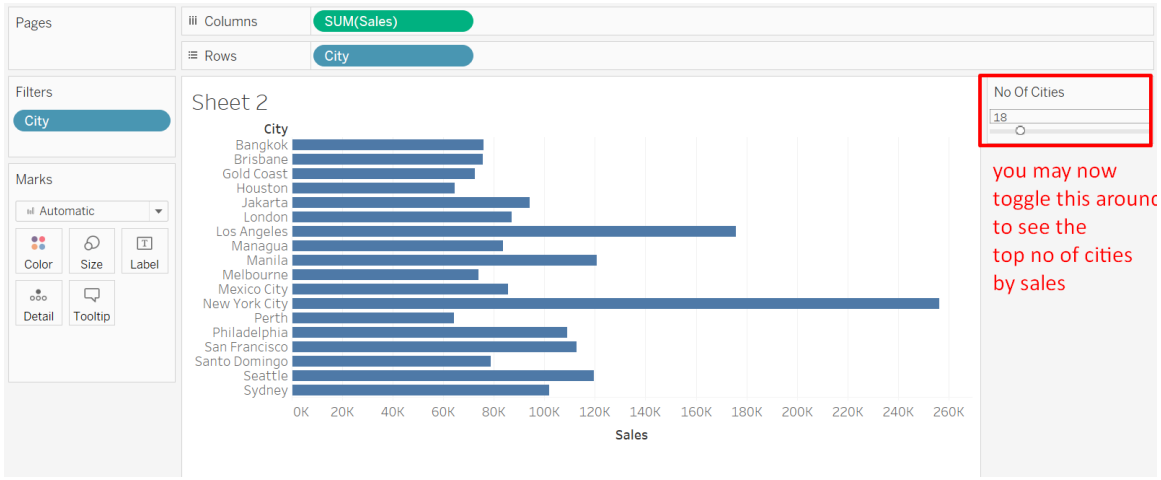

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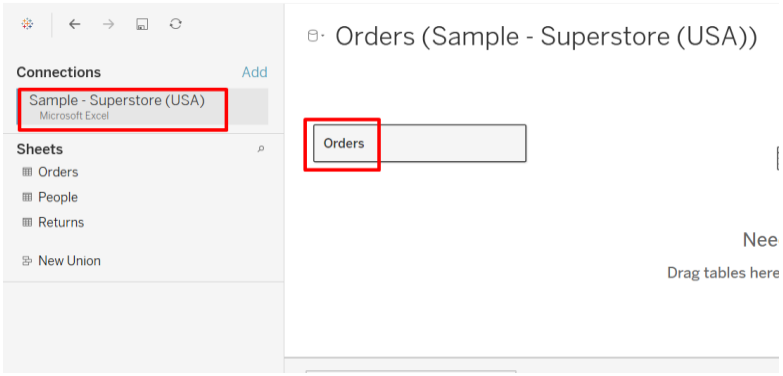
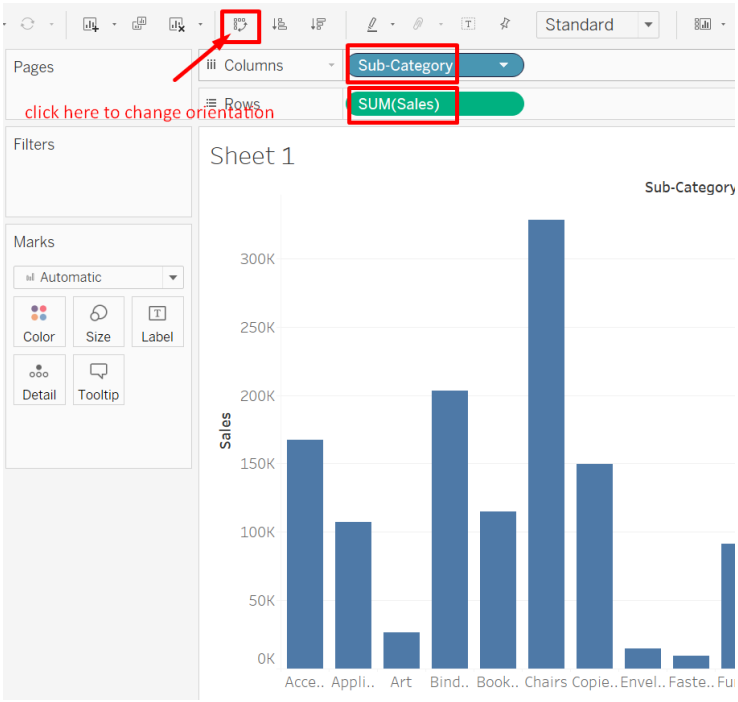
2. EXAMPLE 2: TOP SUB CATEGORY SALES

- We want to create a Parameter that can adjust based on Top 5 / 10 / 15 Sales
- Just bring in the Orders sheet from the Sample Superstore (USA).xls
- https://www.alvinang.sg/s/Sample-Superstore-USA.xls





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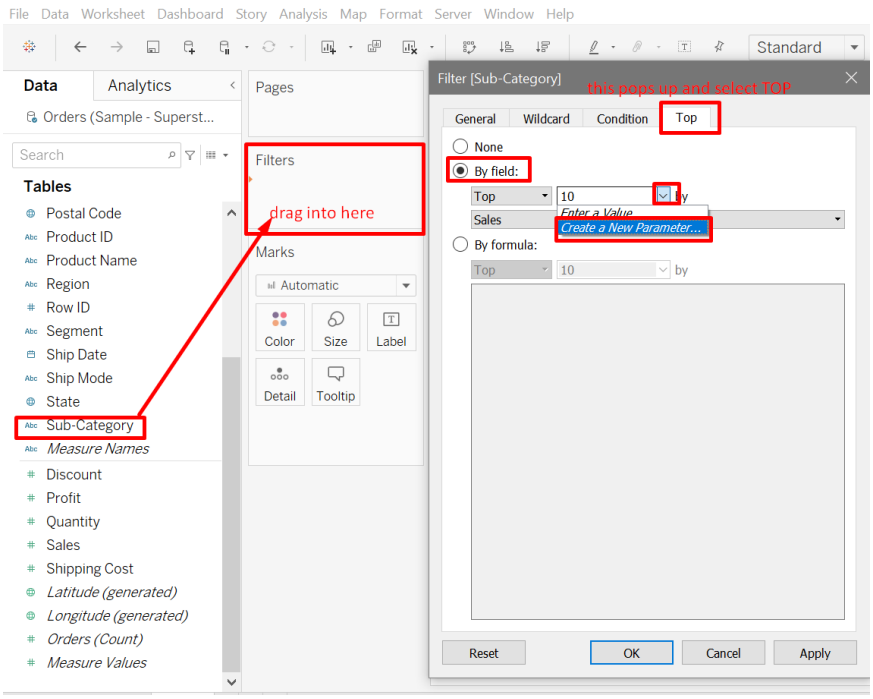

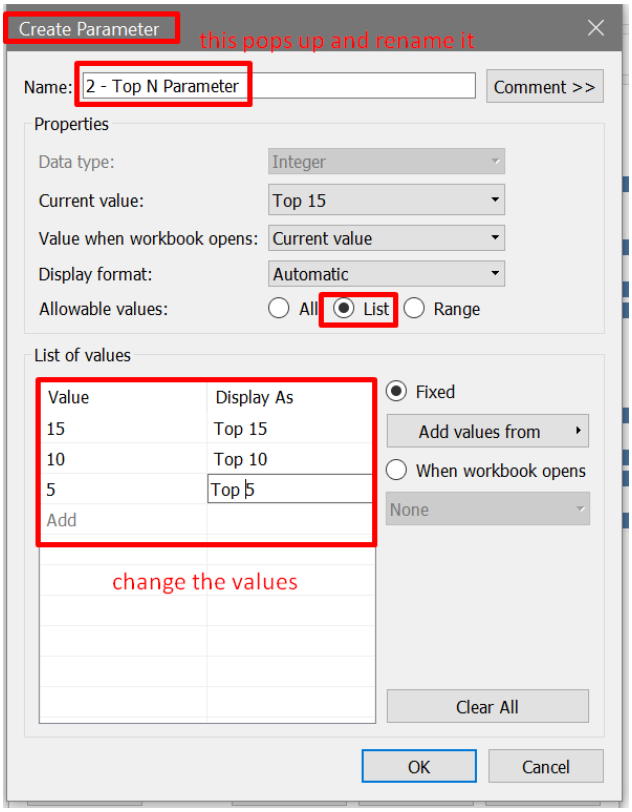

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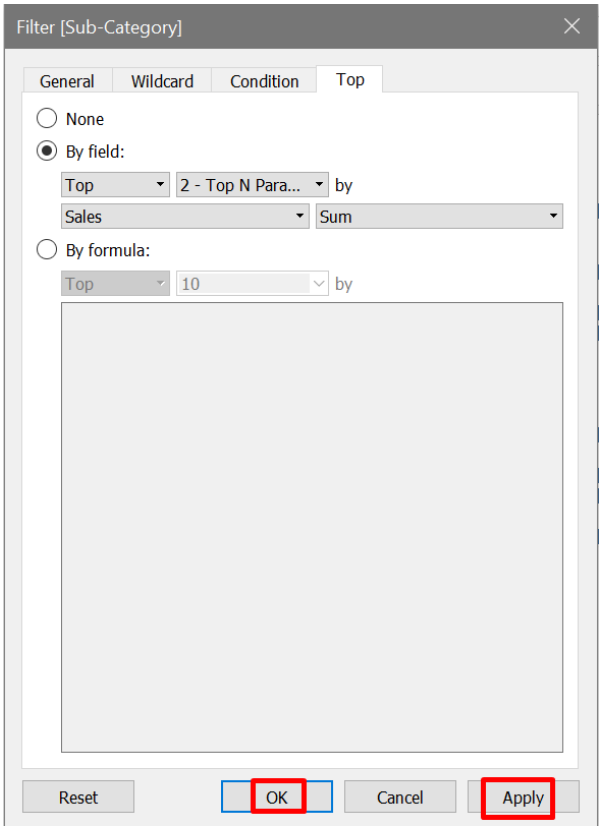

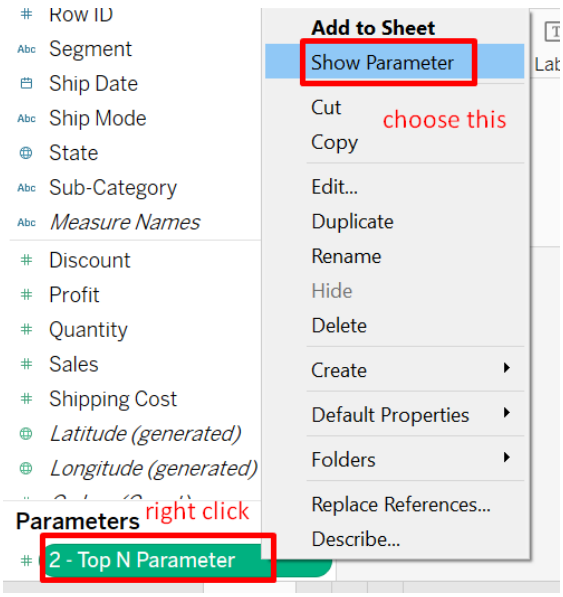

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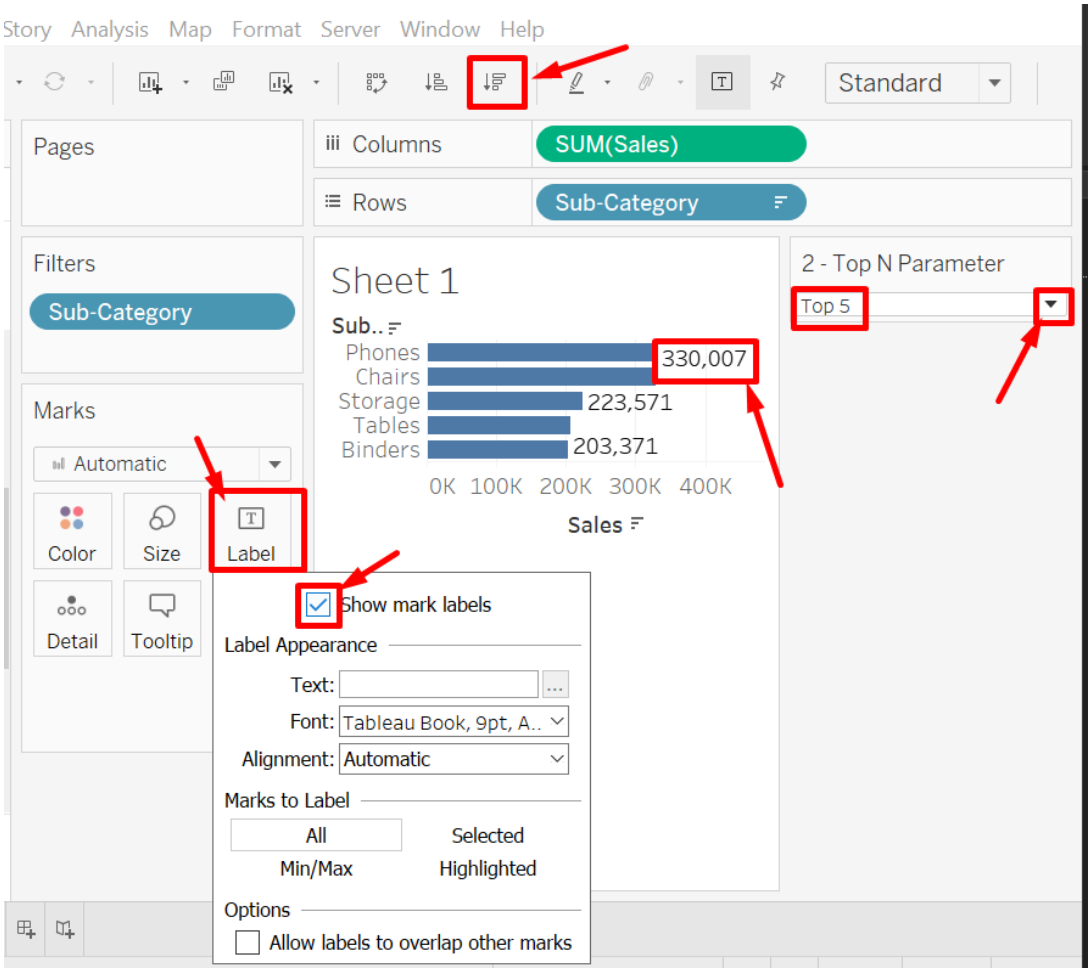

- We have created a Parameter that we can filter thru top 5 / 10 / 15 sales.

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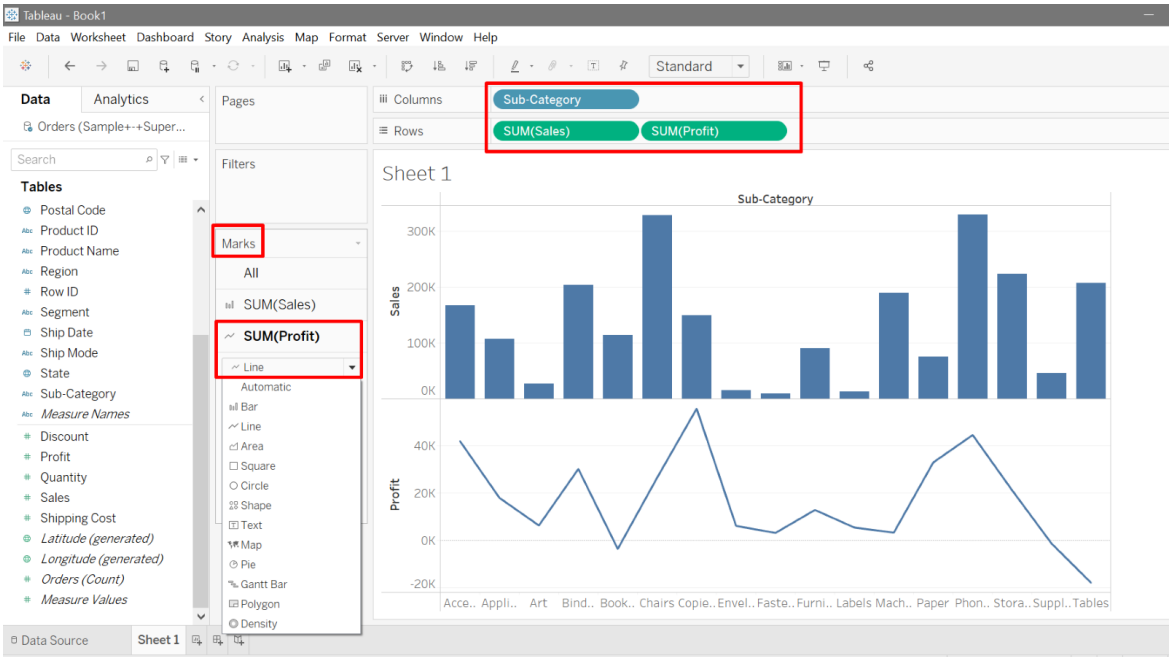
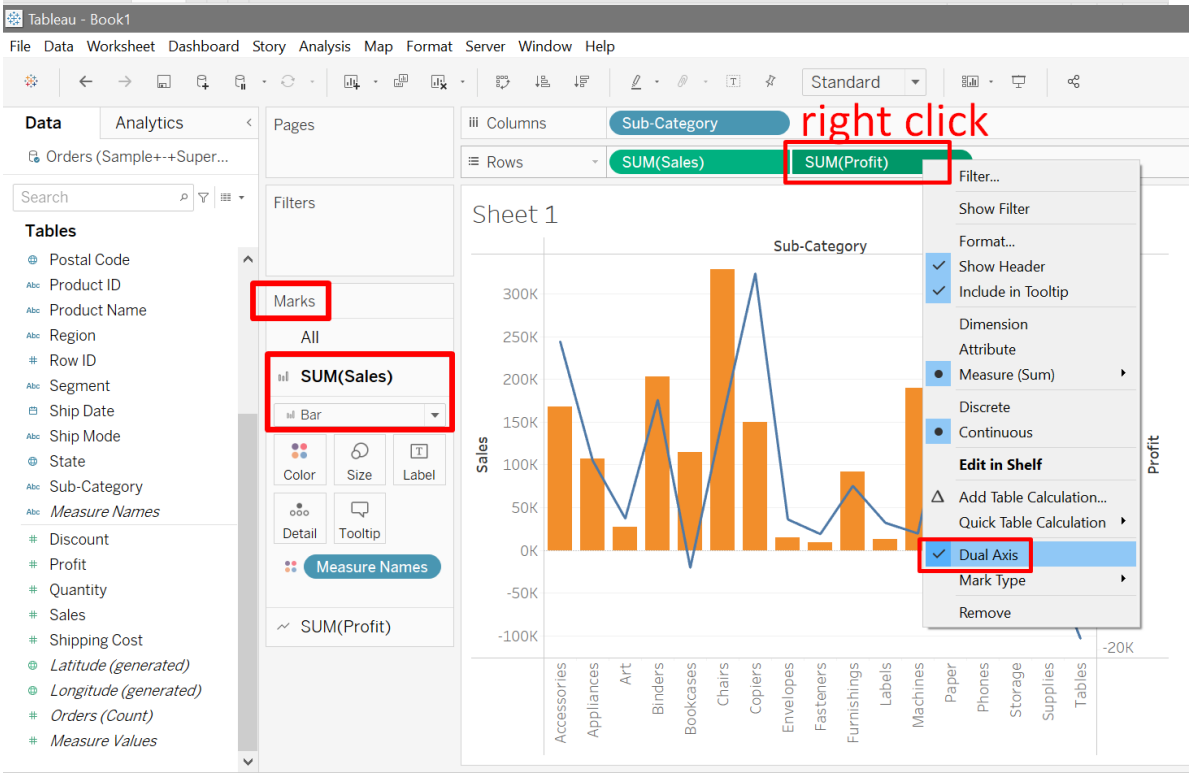
https://www.alvinang.sg/s/Sample-Superstore-USA.xls





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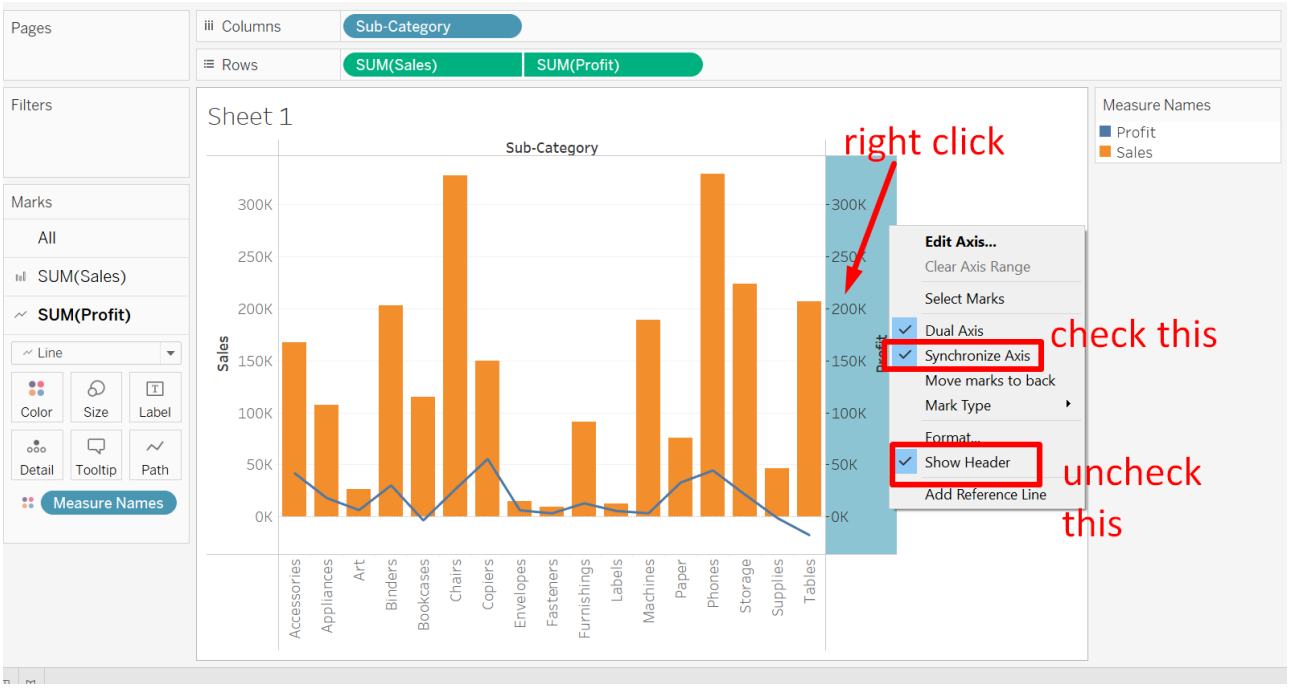

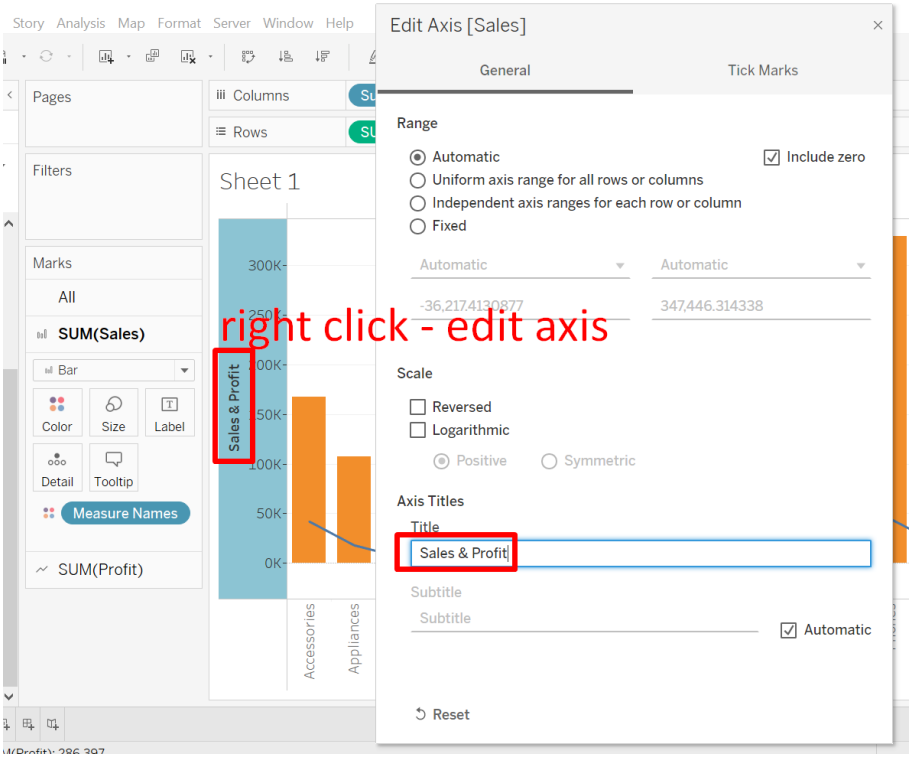

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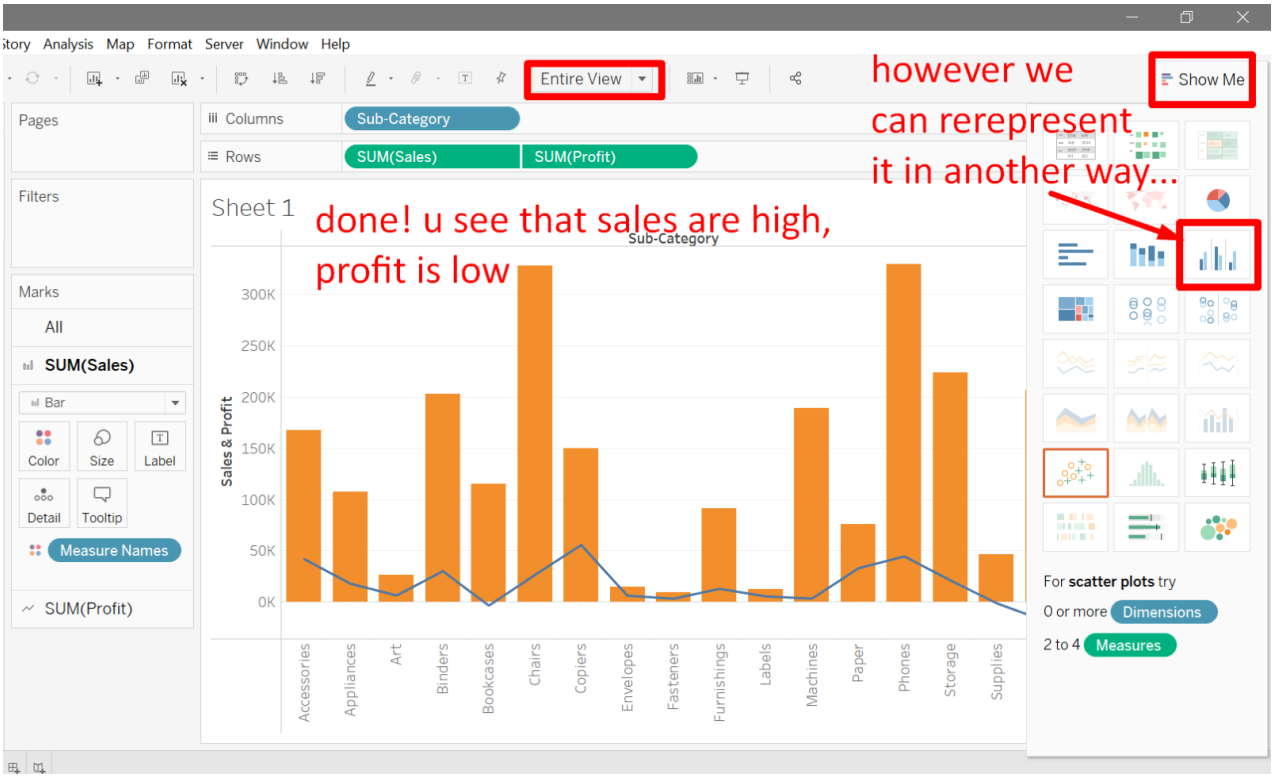

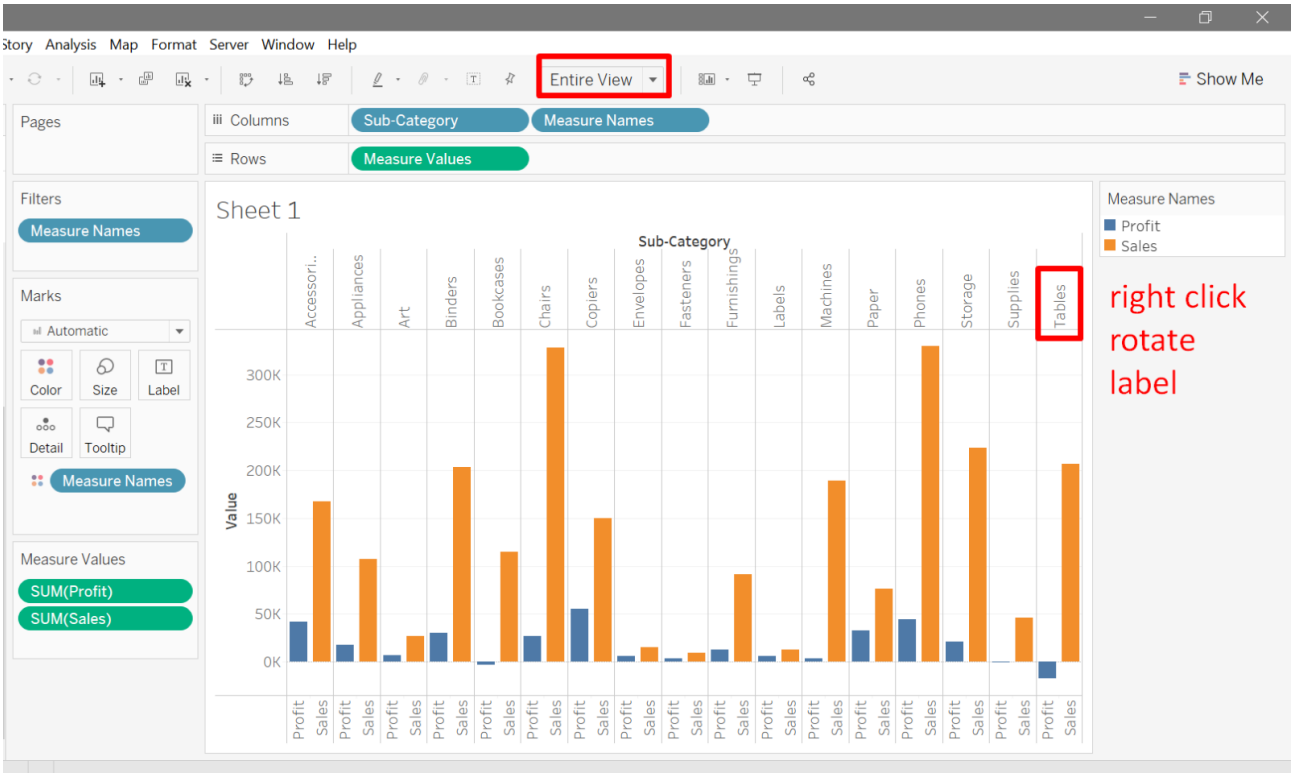

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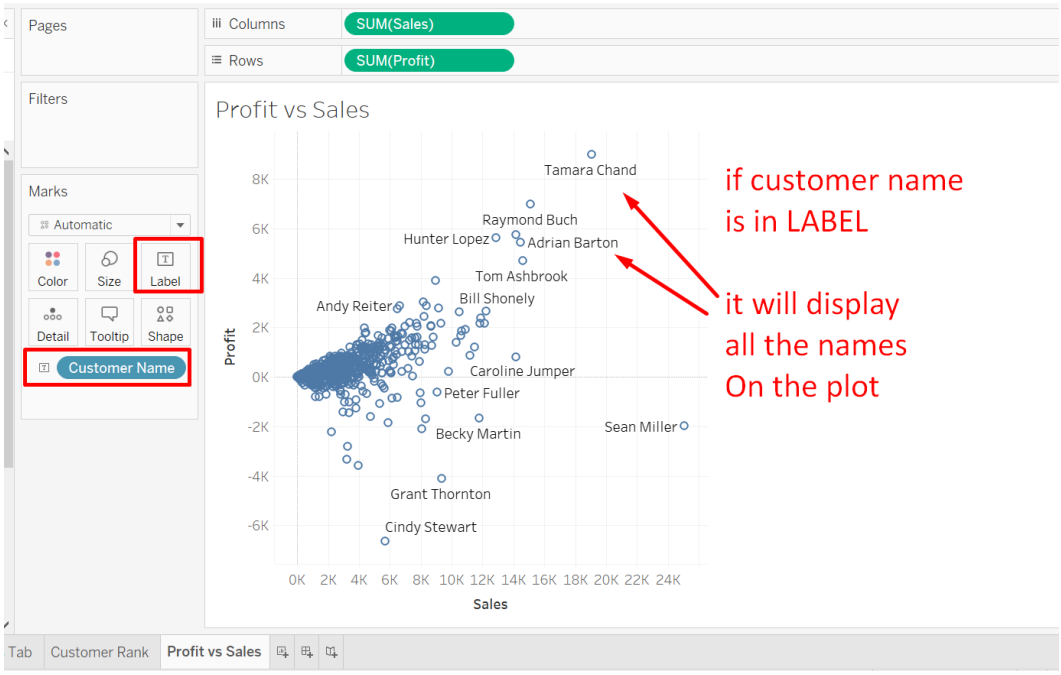
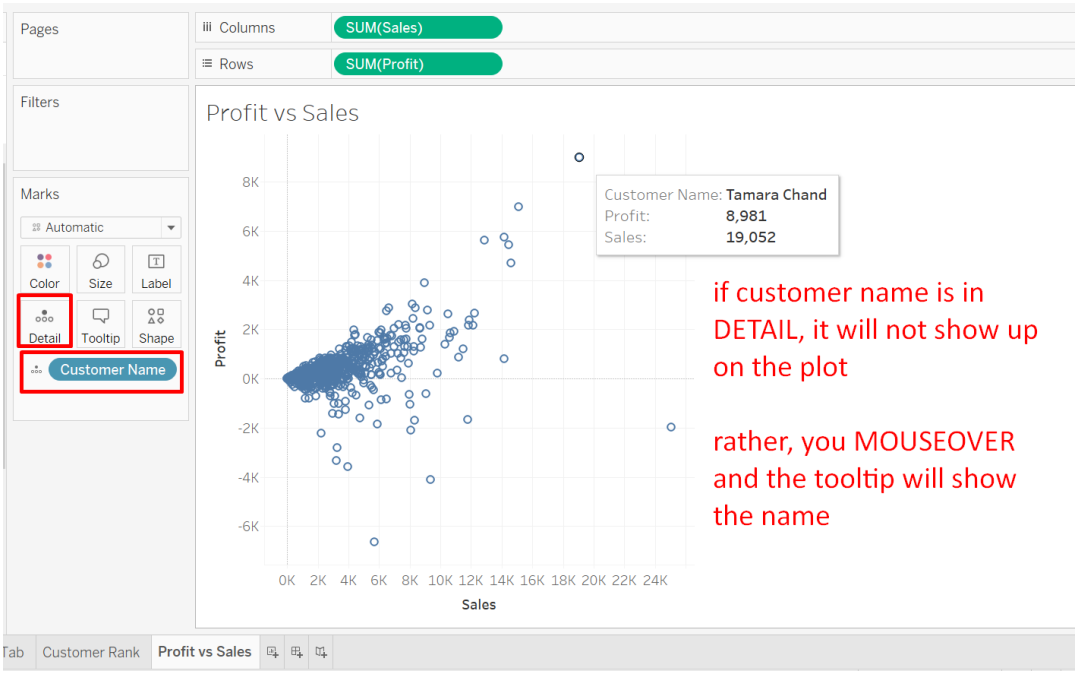
VII. DIFFERENCE BETWEEN LABEL AND DETAIL

File can be found here: https://www.alvinang.sg/s/Sample-Superstore-USA.xls





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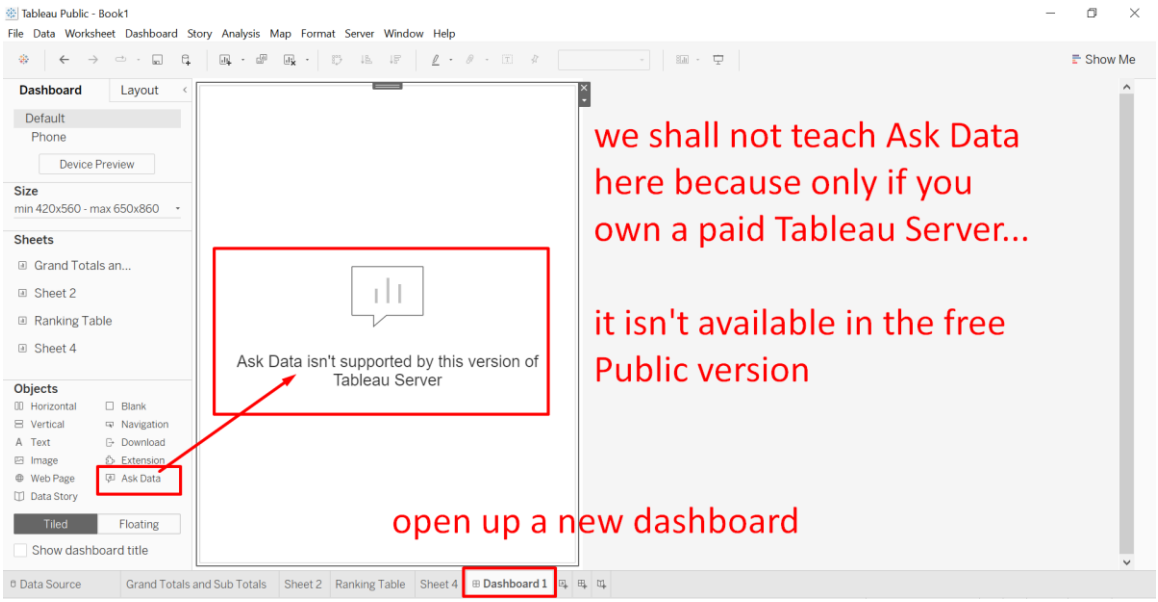

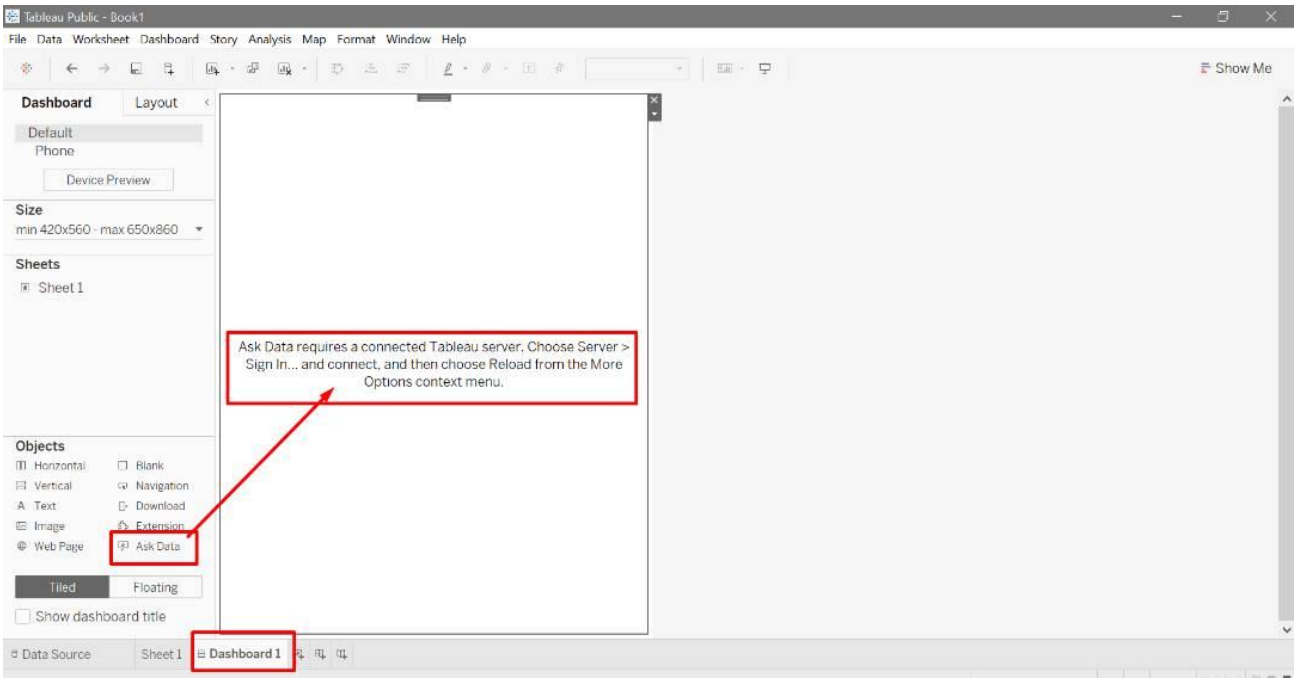

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Dr. Alvin Ang earned his Ph.D., Masters and Bachelor degrees from NTU, Singapore. He was a Professor, Scientist and Financial Consultant. Currently, he owns a self-started business and is a Personal/Business Advisor.

More about him at www.AlvinAng.sg

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