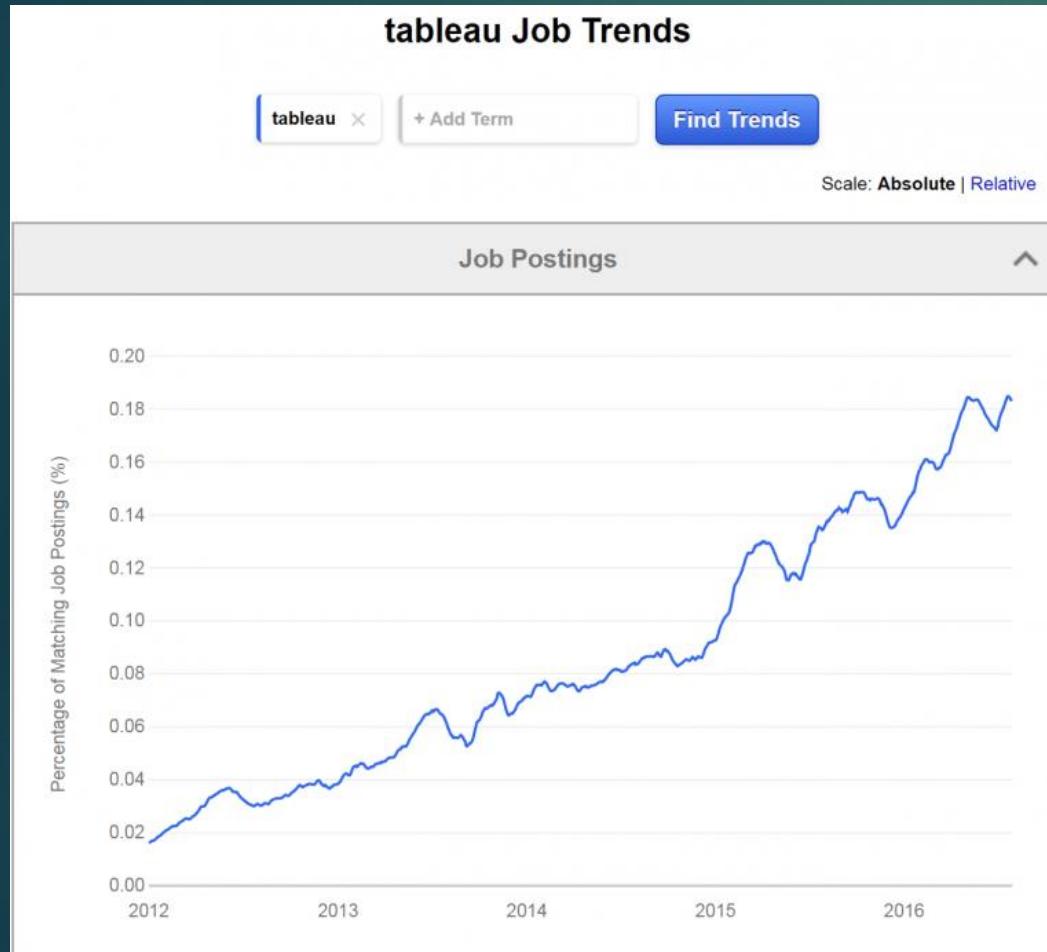


Why Tableau?



Other Reasons

1 Zettabyte (ZB) = 1 Trillion Gigabytes (GB)

We face an overwhelming amount of data in every industry

>2.5 PB
of customer data
stored by Walmart
every hour.

292 exabytes
of mobile traffic by
2019, **up from 30**
exabytes in 2014.

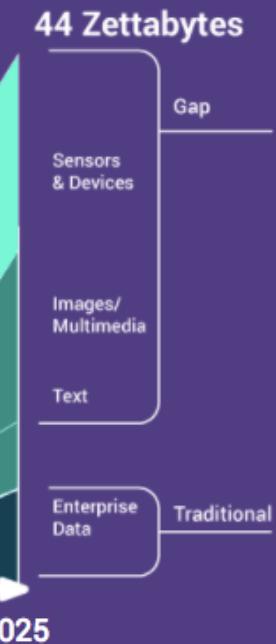
1 TB
of data produced
by a cancer patient
every day.

2010

Today

2018

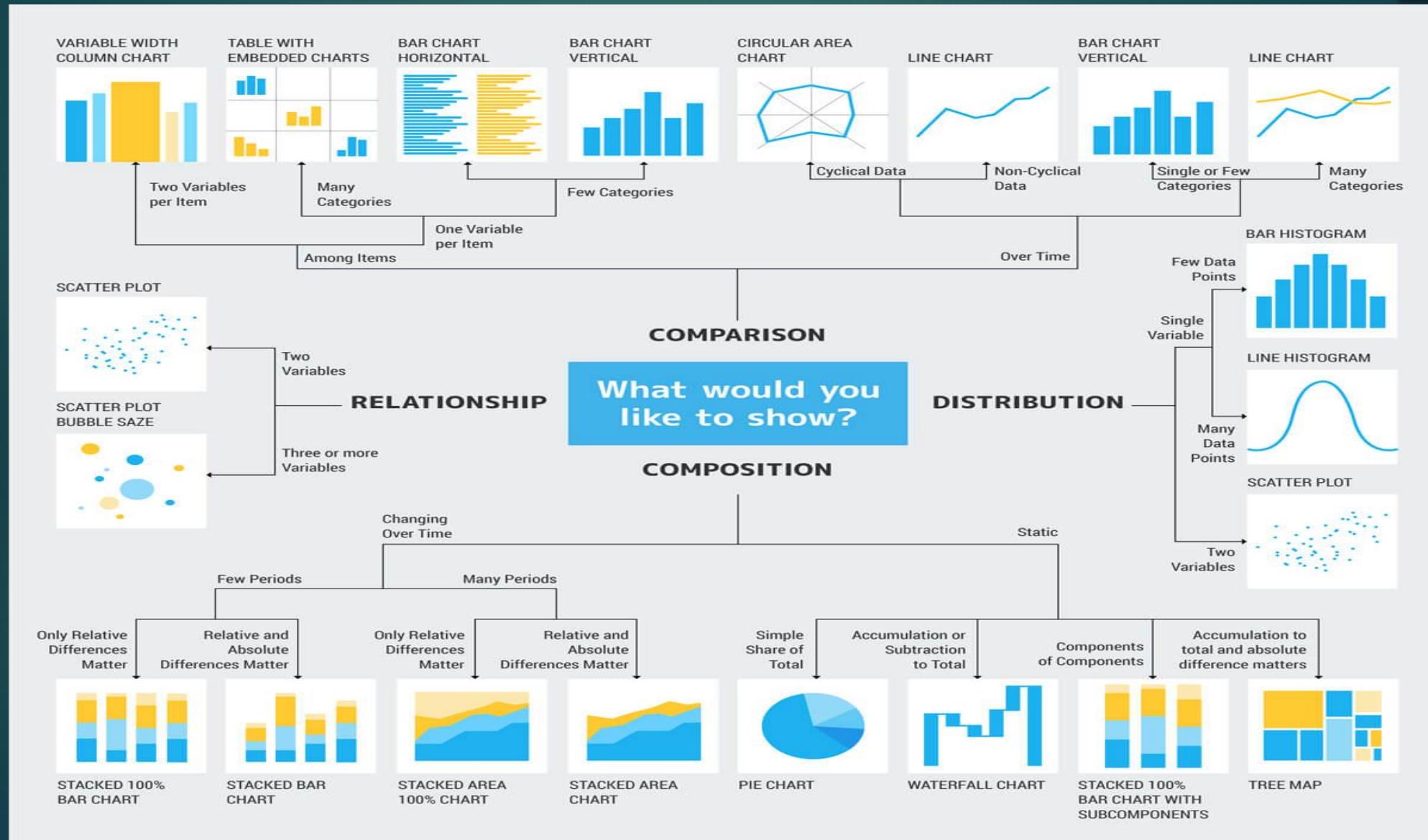
2025



Source

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Abela's Chart Type Hierarchy



Before going into Tableau some basics ...

- ▶ Connection to Various Data Sources
- ▶ Tableau File types
 - ▶ Tableau workbook (.twb) – Does not store data source
 - ▶ Tableau data source (.tds) – Stores server address, password and other information
 - ▶ Tableau bookmark (.tmb) – Stores a connection to a worksheet in another Tableau workbook
 - ▶ Tableau data extract (.tde) – Stores Tableau data as a filtered and aggregated extract
 - ▶ Tableau packaged workbook (.twbx) – Stores extracted data and visualization for viewing in Tableau or Tableau Reader

Lets get started!

- ▶ Format of Today's session
 - ▶ Questions to solve -> followed by What we learned
- ▶ Concepts by Abela's Chart Type Hierarchy
 - ▶ Comparisons
 - ▶ Distribution
 - ▶ Relationship
 - ▶ Composition
 - ▶ Geo Plots
- ▶ Concepts covered within each of the above
 - ▶ Various techniques will be discussed within the examples

Data: Superstore

CONNECT AND EXTRACT & GREEN AND BLUE PILLS

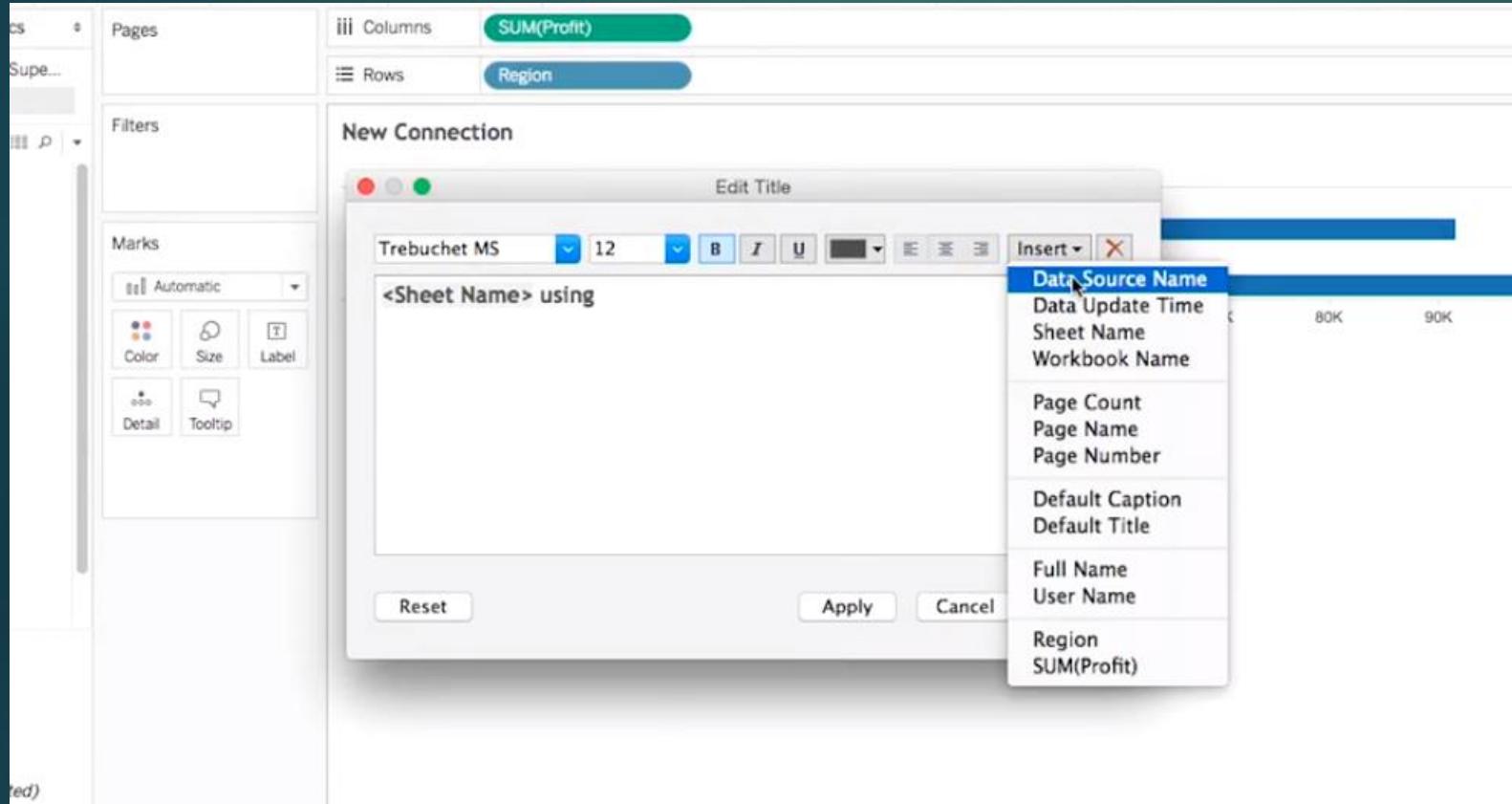
Challenge : Import Orders

The screenshot shows the Tableau Data Source interface. On the left, the 'Data Sources' pane is open, showing 'Orders (Sample - Superstore)' as the selected connection. Below it, the 'Connections' pane shows 'Sample - Superstore' as an Excel file. The main area displays the 'Orders' sheet from the Superstore sample data. At the top right, there are two buttons: 'Live' (which is selected and highlighted with a yellow circle) and 'Extract'. The 'Extract' button has a tooltip 'Extracts data from the source and stores it locally for faster performance.' Below the buttons are 'Filters' and 'Add...' buttons. The data table has columns: Row ID, Order ID, Order Date, Ship Date, Ship Mode, Customer ID, Customer Name, Segment, and Country. The data shows 9 rows of order information.

#	Abc Orders Order ID	Abc Orders Order Date	Abc Orders Ship Date	Abc Orders Ship Mode	Abc Orders Customer ID	Abc Orders Customer Name	Abc Orders Segment	Abc Orders Country
Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country
1	CA-2013-1521...	11/9/14	11/12/14	Second Class	CG-12520	Claire Gute	Consumer	United States
2	CA-2013-1521...	11/9/14	11/12/14	Second Class	CG-12520	Claire Gute	Consumer	United States
3	CA-2013-1386...	6/13/14	6/17/14	Second Class	DV-13045	Darrin Van Huff	Corporate	United States
4	US-2012-1089...	10/11/13	10/18/13	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States
5	US-2012-1089...	10/11/13	10/18/13	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States
6	CA-2011-1158...	6/9/12	6/14/12	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States
7	CA-2011-1158...	6/9/12	6/14/12	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States
8	CA-2011-1158...	6/9/12	6/14/12	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States
9	CA-2011-1158...	6/9/12	6/14/12	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States

- ▶ Choose between live or Extract
- ▶ Any changes made to in live mode will update in Tableau
- ▶ Extract is local files with data for faster usage
- ▶ Filter Data instead of entire data by using Extract
- ▶ Can you extract only South and West regions?

You could modify the title

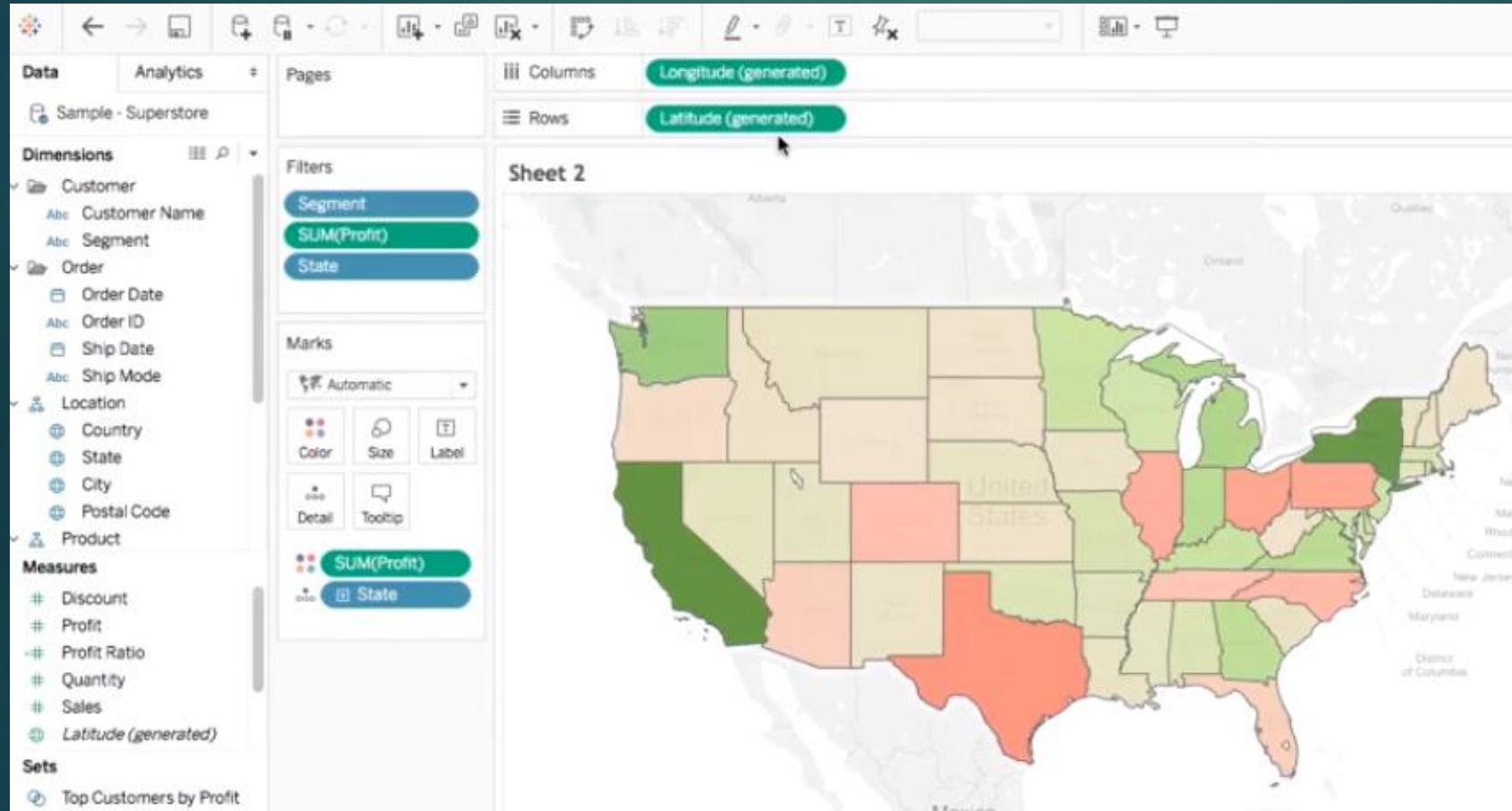


- ▶ <Sheet Name> using <Data Source Name> last updated by <Data Update Time>
- ▶ Why is it important? – It gives user an idea about the recency of the information

Challenge: Green and Blue Pills

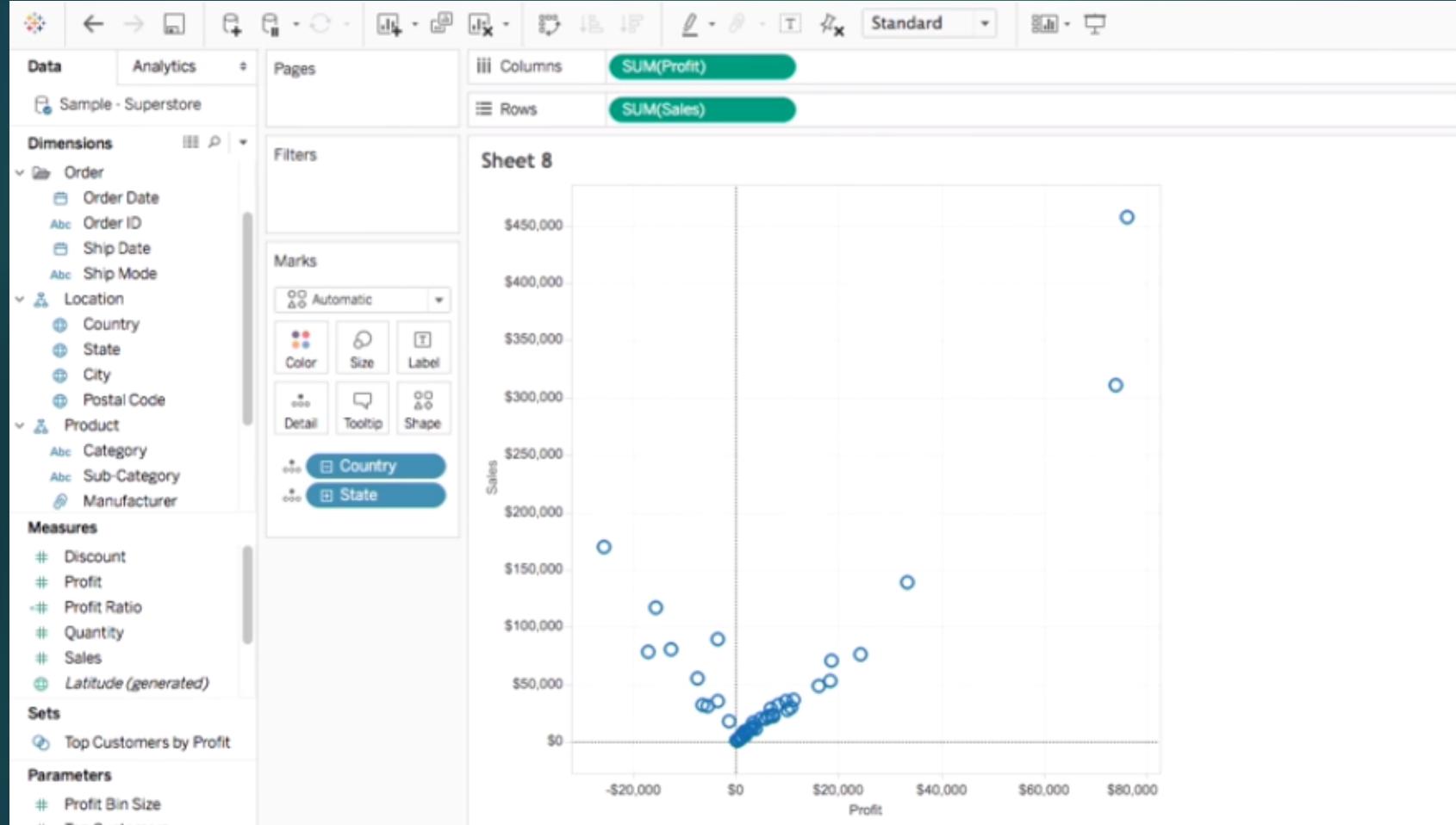
- ▶ Show profit by Region and State
- ▶ Colour by sum of profit and change the palette to colour-blind safe
- ▶ Which category does best(Sales) in each region?

Green and Blue Pills



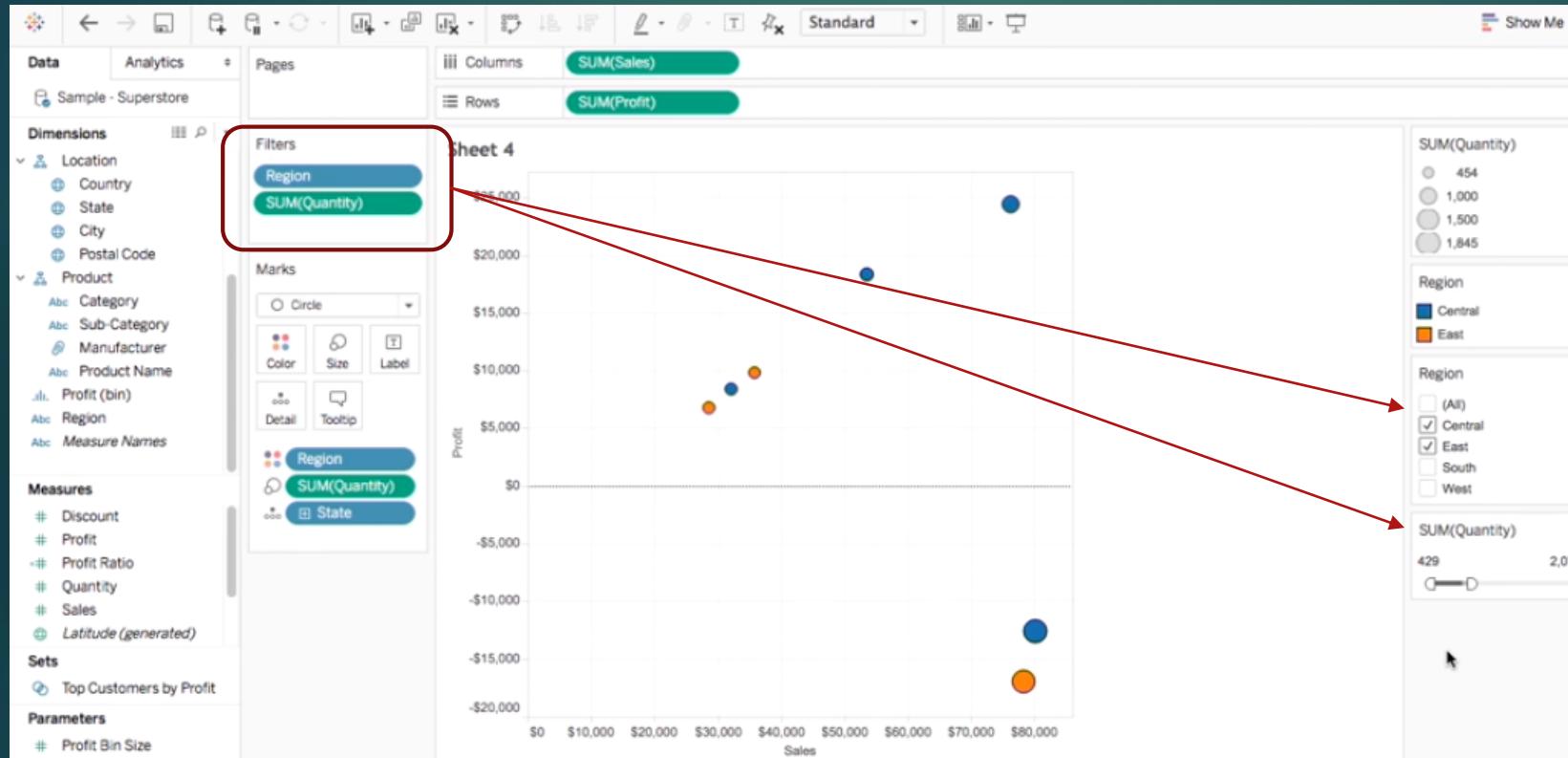
- ▶ Green = Continuous
- ▶ Blue = Discrete

Rows and Columns – Scatter



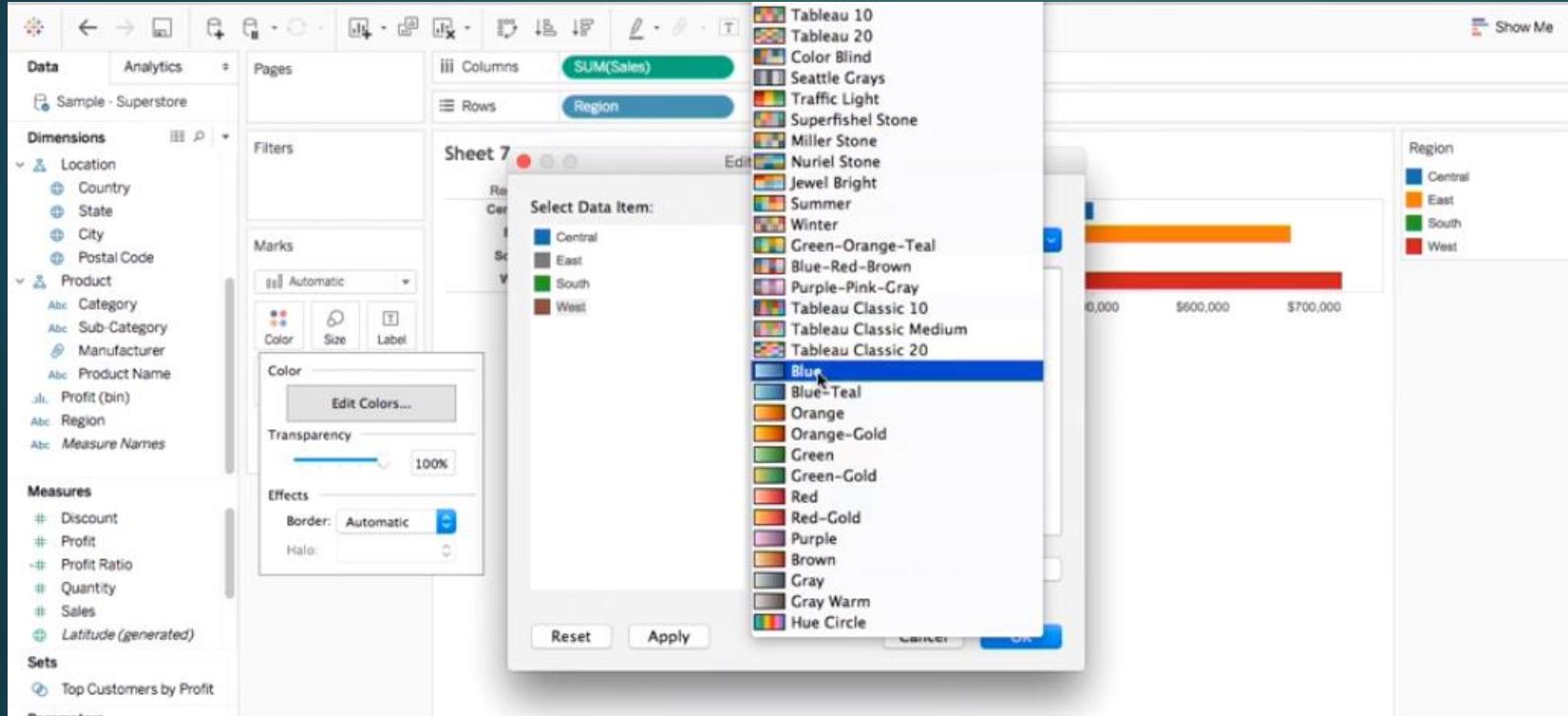
- ▶ Adding both the numerical variables and divide it by colour using Country/State

Filters



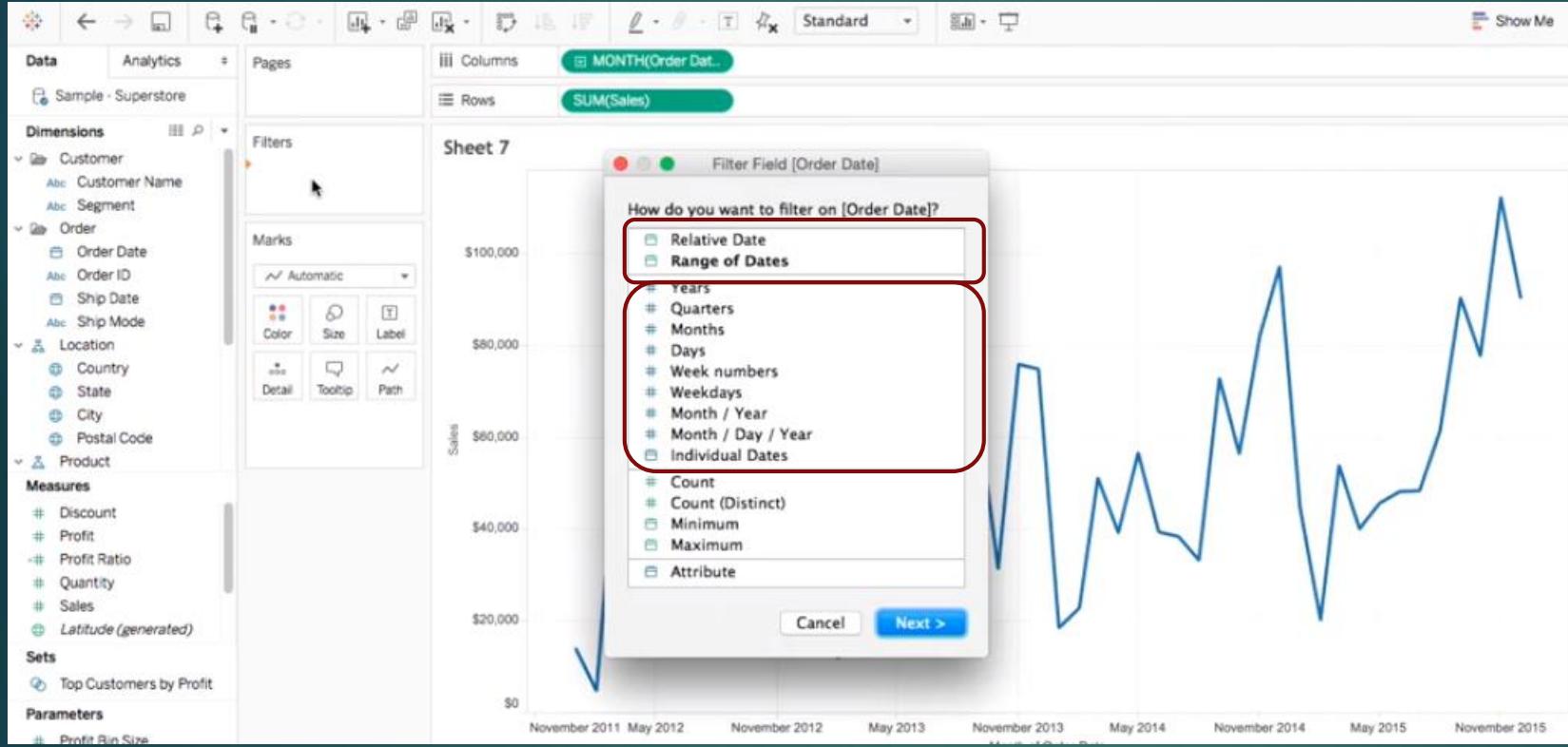
- ▶ Click on the filter to show it on the left side

Colours



- ▶ Any column added to the colour area can will reflect on the right and can be changed
- ▶ Prefer Single colour vs multi colour
- ▶ Adding discrete will have sperate colours while discrete will have single colour with intensity varying

Dates



- ▶ Adding dates to filter gives us this menu
- ▶ We could choose continuous
- ▶ Or discrete

Transform Data



Challenge: Clean Data

- ▶ Clean and Prep your data – Make Region/Countries Upper Case
- ▶ Pivot Data – Use Years, Show Yearly Sales Trend, Show by Country Colour
- ▶ Split Fields – Split Names into First and Last Name, Overall Custom Split
- ▶ Merge data using union – Merge Monthly data, Mismatched file Rainfall
- ▶ Cross database joins – Create Sales Per Capita
- ▶ Join transformations – Show orders returned back to the store

Data: GlobalVehicleSales

CLEAN AND EXTRACT DATA

Clean and Prep Data

Connections

GlobalVehicleSales Excel

Sheets

- Clean with Data Interpreter
- We found some ways to clean your Excel workbook.
- pc_sales
- New Union

Sort fields Data Source Order

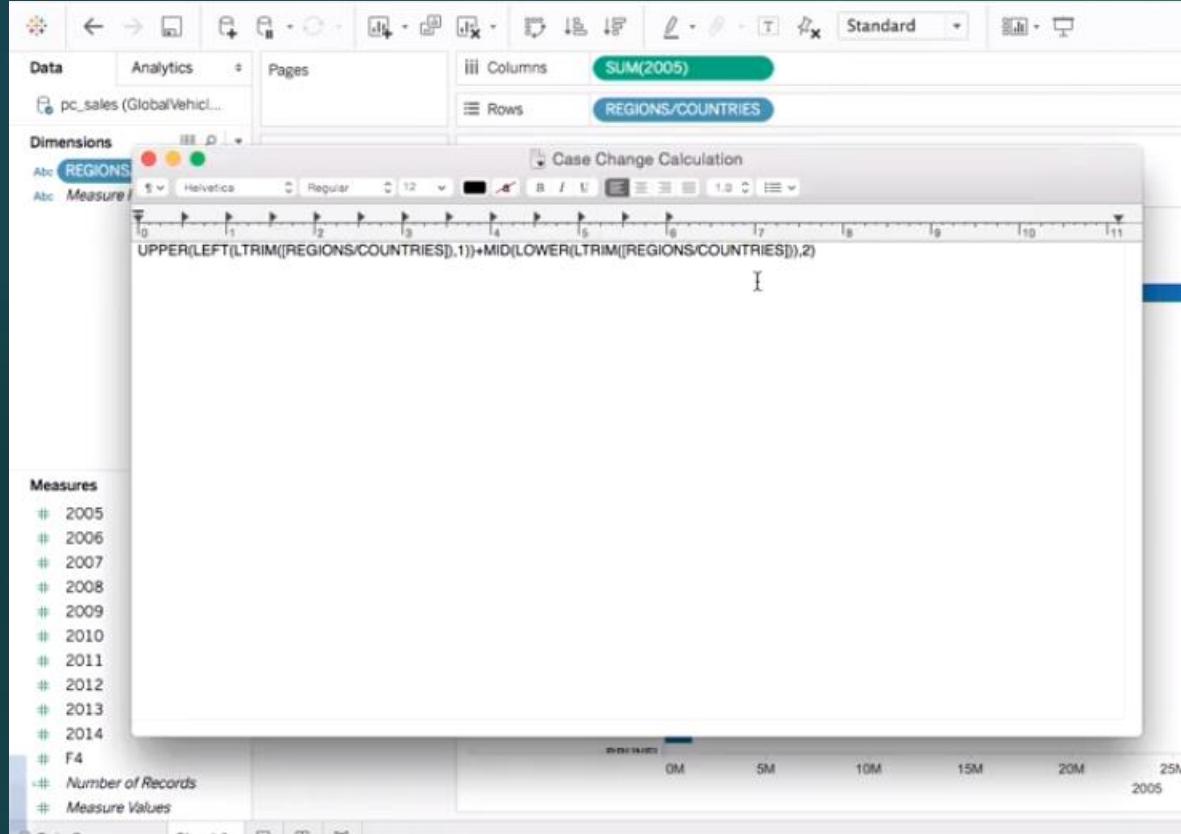
REGIONS/COUNTRIES	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EUROPE	17,906,455	18,685,5...	19,618,5...	18,821,5...	16,608,7...					
EU 28 countries + EFTA	15,622,035	15,961,1...	16,147,2...	14,911,8...	14,533,1...					
EU 15 countries + EFTA	14,565,695	14,820,1...	14,842,1...	13,602,0...	13,668,8...					

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
NEW PC REGISTRATIONS OR SALES														
1	2	3	4	REGIONS/COUNTRIES	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
5	EUROPE	17906455	18685556	19618588	18821599	16608761	16499863	17167600	16191359	11773371	11773371	11773371	11773371	11773371
6	EU 28 countries + EFTA	15620393	15961138	1612774	14911889	14533115	13830694	13642659	13567993	11773371	11773371	11773371	11773371	11773371
7	AUSTRIA	307915	308594	298182	293697	319403	328563	356145	336010	319035	303318	303318	303318	303318
8	BELGIUM	480085	526141	524795	535947	476194	547340	572211	486737	486065	482339	482339	482339	482339
9	DENMARK	148819	156936	162686	150199	112454	153858	170036	170763	182086	189051	189051	189051	189051
10	FINLAND	148161	145700	125608	139669	90574	111968	126123	111251	103455	106236	106236	106236	106236
11	FRANCE	2118042	2045745	2109672	2091369	2302396	2251669	2204229	1898760	1790456	1795485	1795485	1795485	1795485
12	GERMANY	3319259	3467961	3148163	3090483	3807175	2916259	3173634	3082505	2,952,431	3,036,773	3,036,773	3,036,773	3,036,773
13	GREECE	269728	267669	279745	267295	219730	141501	97680	50848	58,694	71,218	71,218	71,218	71,218
14	ICELAND	18060	17129	15942	9033	2113	3106	5038	7902	7,274	9,536	9,536	9,536	9,536
15	IRELAND	171742	178484	186325	151607	57453	88446	89911	79498	74,367	96,344	96,344	96,344	96,344
16	ITALY	2244108	2335462	2494115	2161359	2159465	1961580	1749740	1403010	1,304,648	1,360,293	1,360,293	1,360,293	1,360,293
17	LUXEMBOURG	48517	50837	51332	52359	47265	49726	49881	50399	46,624	49,793	49,793	49,793	49,793
18	NETHERLANDS	465196	483999	504320	499980	387699	482531	555812	502544	416,717	387,835	387,835	387,835	387,835
19	NORWAY	109907	109164	129195	110617	98675	127754	138345	137967	142,151	144,202	144,202	144,202	144,202
20	PORTUGAL	206488	194702	201816	213389	161013	223464	153404	95309	105,921	142,826	142,826	142,826	142,826
21	SPAIN	1528877	1634608	1614835	1161176	952772	982015	808051	699589	722,689	855,308	855,308	855,308	855,308
22	SWEDEN	274301	282766	306794	235982	213408	289684	304984	279899	269,599	303,948	303,948	303,948	303,948
23	SWITZERLAND (+FL)	266770	269421	284674	288525	266018	294239	318958	328139	307,885	301,942	301,942	301,942	301,942
24	UNITED KINGDOM	2439717	2344864	2404007	2131795	1994999	2030846	1941253	2044609	2,264,737	2,476,435	2,476,435	2,476,435	2,476,435
25	EUROPE NEW MEMBERS	1056349	1140956	1305088	1309842	864307	846145	827224	794622	789,162	899,633	899,633	899,633	899,633
26	BULGARIA*	25956	36459	43521	45143	22869	16237	19250	19419	19,352	20,359	20,359	20,359	20,359
27	CROATIA	70541	78775	82664	88265	44918	38587	41561	31360	27,802	33,997	33,997	33,997	33,997
28	CYPRUS	17687	18639	22878	22241	14981	14088	13480	10123	7,000	7,794	7,794	7,794	7,794
29	CZECH REPUBLIC	151699	156686	174456	182554	167708	169580	173595	174009	164,736	192,314	192,314	192,314	192,314
30	ESTONIA	19640	25363	30912	24579	9946	10295	17070	19424	19,694	20,861	20,861	20,861	20,861
31	HUNGARY	198982	187676	171661	153278	60189	43476	45094	53059	56,139	67,476	67,476	67,476	67,476
32	LATVIA	10467	14234	21606	22217	7515	7970	13234	10665	10,636	12,452	12,452	12,452	12,452

REGIONS/COUNT...	2005	2006	2007	2008	2009
EUROPE	null	17,906,455....	18,685,5...	19,618,5...	18,821,5...
EU 28 countries + EF...	null	15,622,035....	15,961,1...	16,147,2...	14,911,8...
EU 15 countries + EF...	null	14,565,695....	14,820,1...	14,842,1...	13,602,0...
AUSTRIA	null	307,915.00	308,594	298,182	293,697
BELGIUM	null	480,088.00	526,141	524,795	535,947
DENMARK	null	148,819.00	156,936	162,686	150,199

- ▶ Clean Data
- ▶ Review – Green are columns

Clean Region/Countries



- ▶ Create a calculated field on Region/Countries and call it Countries
- ▶ `UPPER(LEFT(LTRIM([REGIONS/COUNTIES]),1))+MID(LOWER(LTRIM([REGIONS/COUNTRIES])),2)`

Pivot Data

146 rows Show aliases

REGIONS/COUNTRIES	2005	2006	2007	2008	2009	2010
AUSTRIA	307,915.00	308,594	298,182	293,697	319,403	328,56
BELGIUM	480,088.00	526,141	524,795	535,947	476,194	547,34
DENMARK	148,819.00	156,936	162,686	150,199	112,454	153,85
FINLAND	148,161.00	145,700	125,608	139,669	90,574	111,96
FRANCE	2,118,042.00	2,045,745	2,109,672	2,091,369	2,302,398	2,251,66
GERMANY	3,319,259.00	3,467,961	3,148,163	3,090,040	3,807,175	2,916,25
GREECE	269,728.00	267,669	279,745	267,295	219,730	141,50
ICELAND	18,060.00	17,129	15,942	9,033	2,113	3,10
IRELAND	171,742.00	178,484	186,325	151,607	57,453	88,44
ITALY	2,244,108.00	2,335,462	2,494,115	2,161,359	2,159,465	1,961,58
LUXEMBOURG	48,517.00	50,837	51,332	52,359	47,265	49,72
NETHERLANDS	465,196.00	483,999	504,300	499,980	387,699	482,51
NORWAY	109,907.00	109,164	129,195	110,617	98,675	127,75
PORTUGAL	206,488.00	194,702	201,816	213,389	161,013	223,46
SPAIN	1,528,877.00	1,634,608	1,614,835	1,161,176	952,772	982,01
SWEDEN	274,301.00	282,766	306,794	253,982	213,408	289,66
SWITZERLAND (+FL)	266,770.00	269,421	284,674	288,525	266,018	294,23

Sort fields Data Source Order

ABC Purchases	ABC Purchases	Pivot Field Names	Pivot Field Values	2005	①	2006	①
AUSTRIA				307,915.00	Undefined	Undefined	
BELGIUM				480,088.00	Undefined	Undefined	
DENMARK				148,819.00	Undefined	Undefined	
FINLAND				148,161.00	Undefined	Undefined	
FRANCE				2,118,042.00	Undefined	Undefined	
GERMANY				3,319,259.00	Undefined	Undefined	
GREECE				269,728.00	Undefined	Undefined	

Connections GlobalVehicleSales Excel

Sheets

Cleaned with Data Interpreter Review the results. (To undo changes, clear the check box.)

| ABC
Purchases |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| REGIONS/COUNT... | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| AUSTRIA | 307,915.00 | 308,594 | 298,182 | 293,697 | 319,403 | 328,563 | 356,145 | 336,010 | |
| BELGIUM | 480,088.00 | 526,141 | 524,795 | 535,947 | 476,194 | 547,340 | 572,211 | 486,737 | |
| DENMARK | 148,819.00 | 156,936 | 162,686 | 150,199 | 112,454 | 153,858 | 170,036 | 170,763 | |
| FINLAND | 148,161.00 | 145,700 | 125,608 | 139,669 | 90,574 | 111,968 | 126,123 | 111,251 | |

- ▶ Data can be pivoted to change from Crosstab format
- ▶ Use Shift+Select and then click on Pivot
- ▶ Delete any extra columns
- ▶ Rename fields to Year and Sales



Data: acrossthebay10k

SPLIT FIELDS

Split fields

The screenshot shows the Tableau Data Editor interface. On the left, the Data pane lists dimensions like Age, Bib, and Name, and measures like Latitude, Longitude, Number of Records, and Measure Values. A context menu is open over the 'Name' dimension, with 'Transform' selected, and 'Split' is highlighted. The main workspace shows a table with columns 'Surname', 'Forename', and 'Overall'. The 'Name' field is being split into 'Surname' and 'Forename' using the formula `TRIM(SPLIT([Name], " ", 1))`. A 'Splitting Fields' dialog is open, showing the mapping from 'Name' to 'Surname' and 'Forename'. Below it, a 'Custom Split' dialog is open, asking how the data should be split, with 'Use the separator' set to a space character and 'Split off' set to 'First' with a value of 1.

- ▶ Use Transform to Split the Name
- ▶ You can later edit the Spilt columns to name it or change it
- ▶ You also use custom split on Overall (Results/Total Runners)

Data: Weather

MERGE DATA USING UNION

Merge data using Unions

The screenshot shows the Power BI Data Source view with two separate Union operations.

Top Union: A connection named "January+ (Weather)" is being used to merge three Excel sheets: "January", "July", and "October". The "October" sheet is currently selected. The resulting schema is:

January+ City	January+ State	January+ Rainfall	January+ Sheet	January+ Table Name
Jacksonville	Fla.	66.600	April	April
Long Beach	Calif.	63.000	April	April
Los Angeles	Calif.	60.800	April	April

Bottom Union: A connection named "January+" is being used to merge four Excel sheets: "April", "January", "July", and "October". The "October" sheet is currently selected. The resulting schema is:

January+ City	January+ State	January+ Rainfall	January+ How Much Rain Fell
Jacksonville	Fla.	66.600	null
Long Beach	Calif.	63.000	null
Los Angeles	Calif.	60.800	null
Miami	Fla.	75.700	null

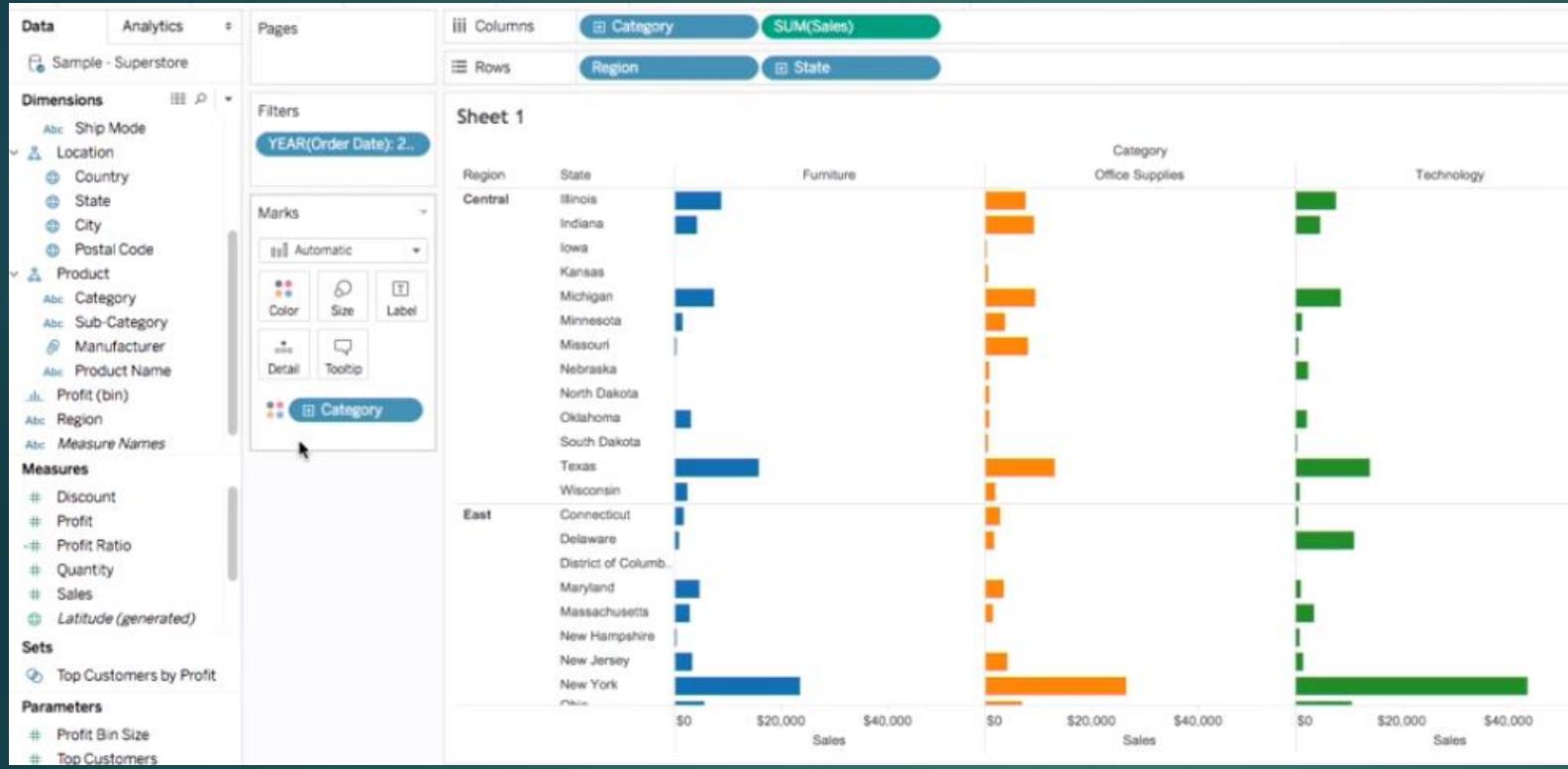
A context menu is open over the last row of the bottom table, with the option "Merge Mismatched Fields" highlighted.

- ▶ Add all Months on top of each other
- ▶ Merge mismatched fields

Data: Superstore

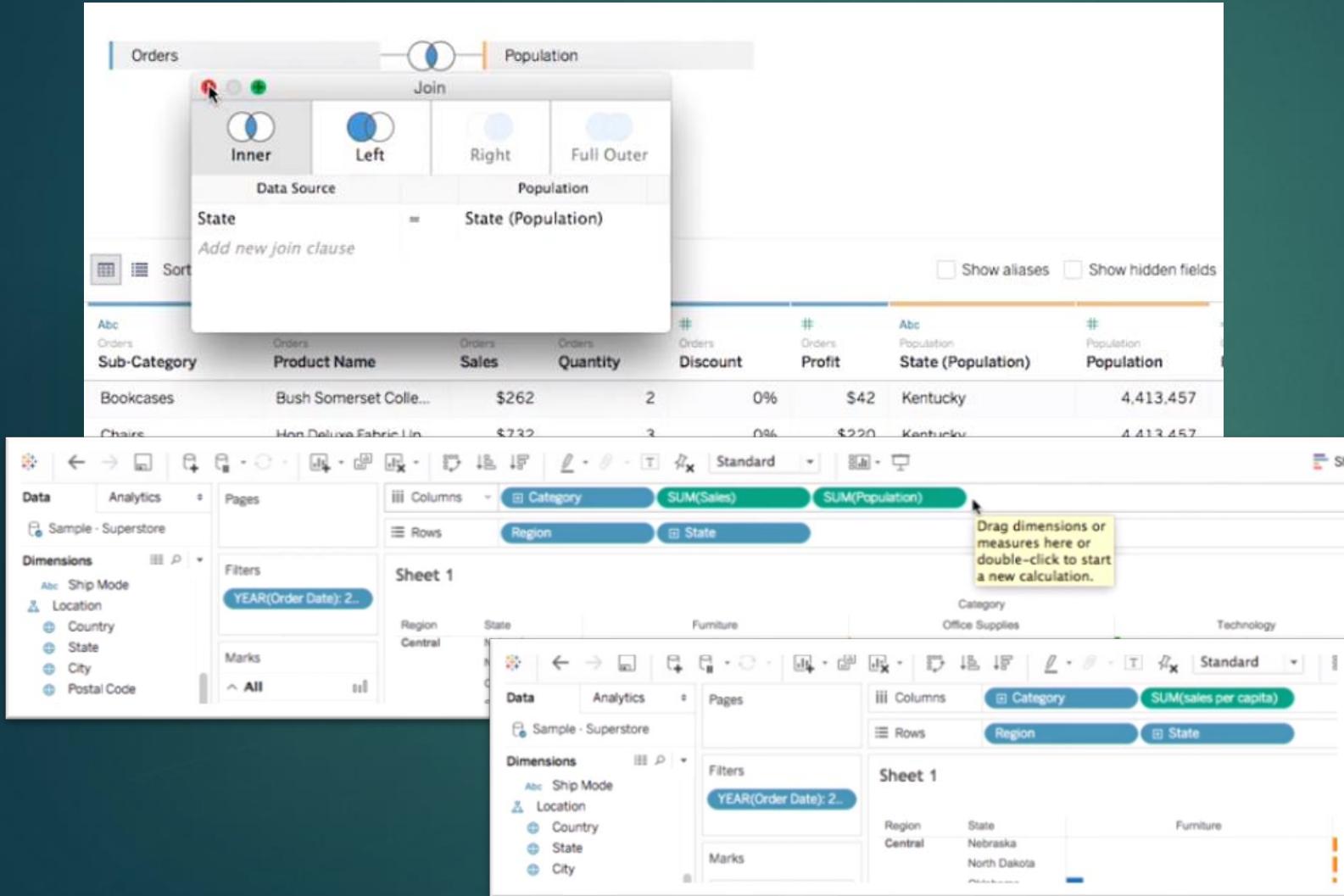
CROSS DATABASE JOINS & JOIN TRANSFORMATIONS

Cross database joins



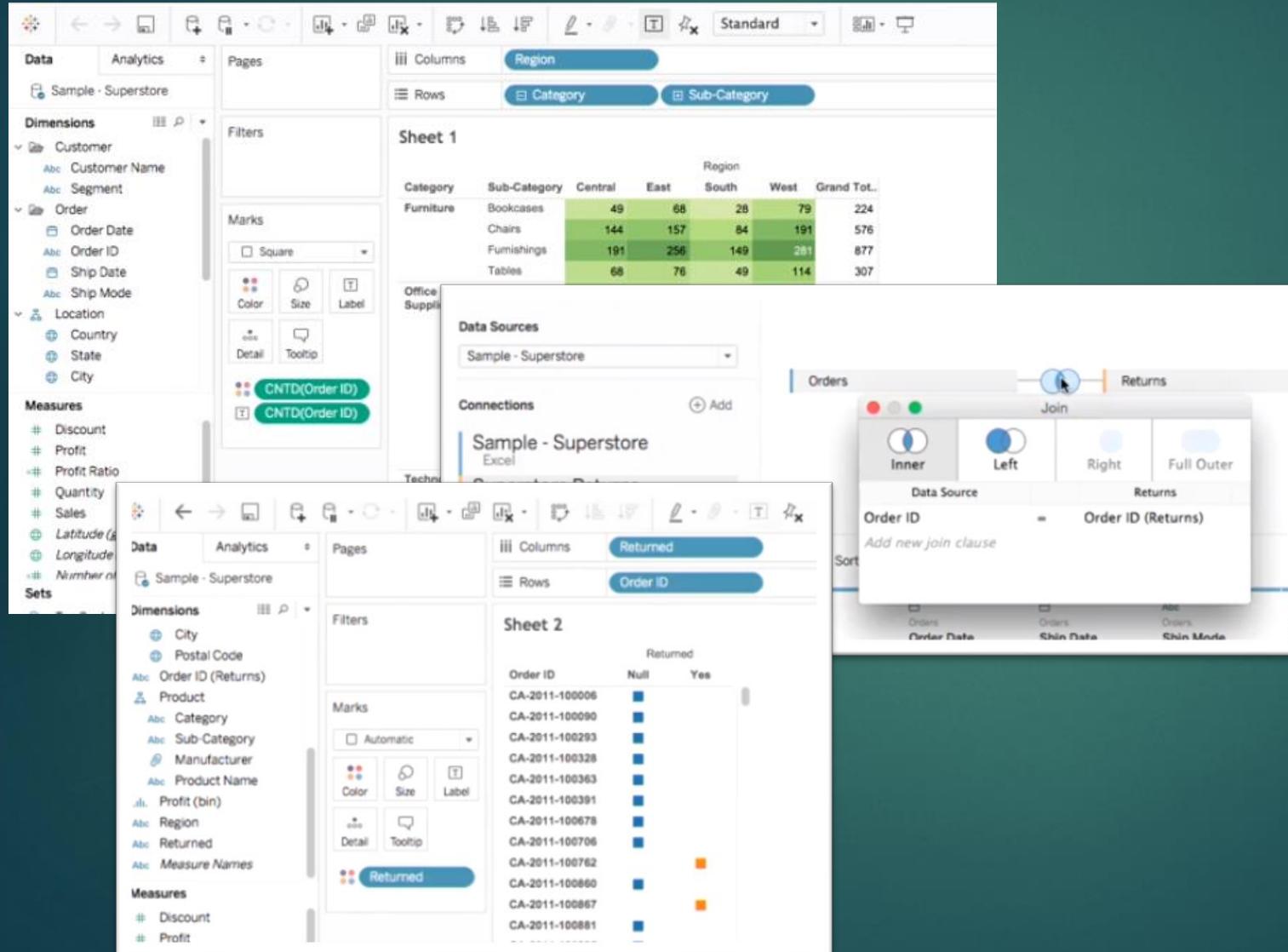
- ▶ Overall Sales for 2015
- ▶ Very high sales for New York but does not account – Bring in US Census information

Cross database joins



- ▶ Edit Data Source and Add New Data Source
- ▶ Add Population to the chart and then
- ▶ Create Sales per capita by create Sales/Population and then show it

Join transformations



- ▶ Analyses the Returned orders using the returned data
- ▶ You can use the left join and show a list of orders which returned and which did not

Analytics



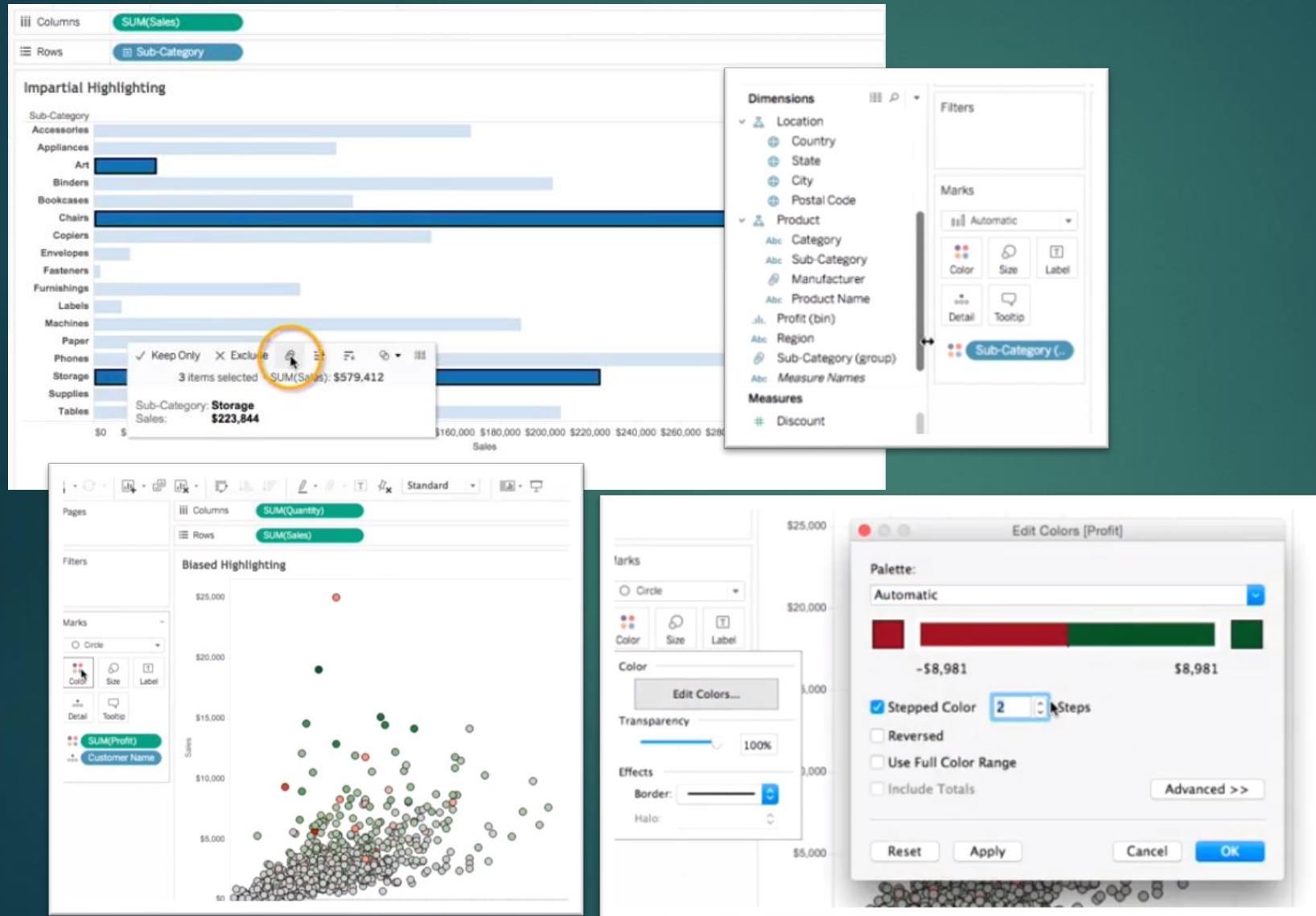


Data: Superstore

Challenge: Find Insights

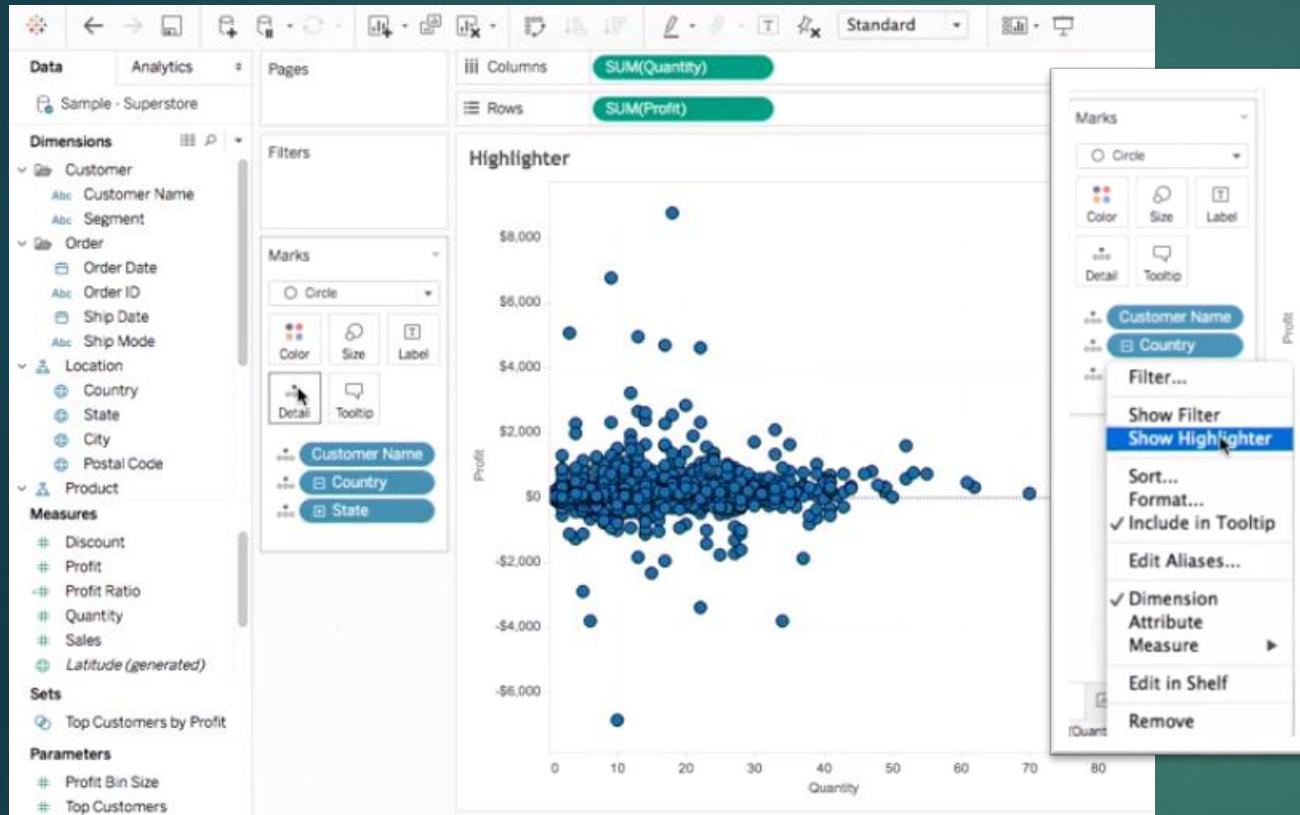
- ▶ Highlight Storage, Chairs, Phones | Highlight Profitable customers
- ▶ Visual Highlighter

Colour to Highlight data



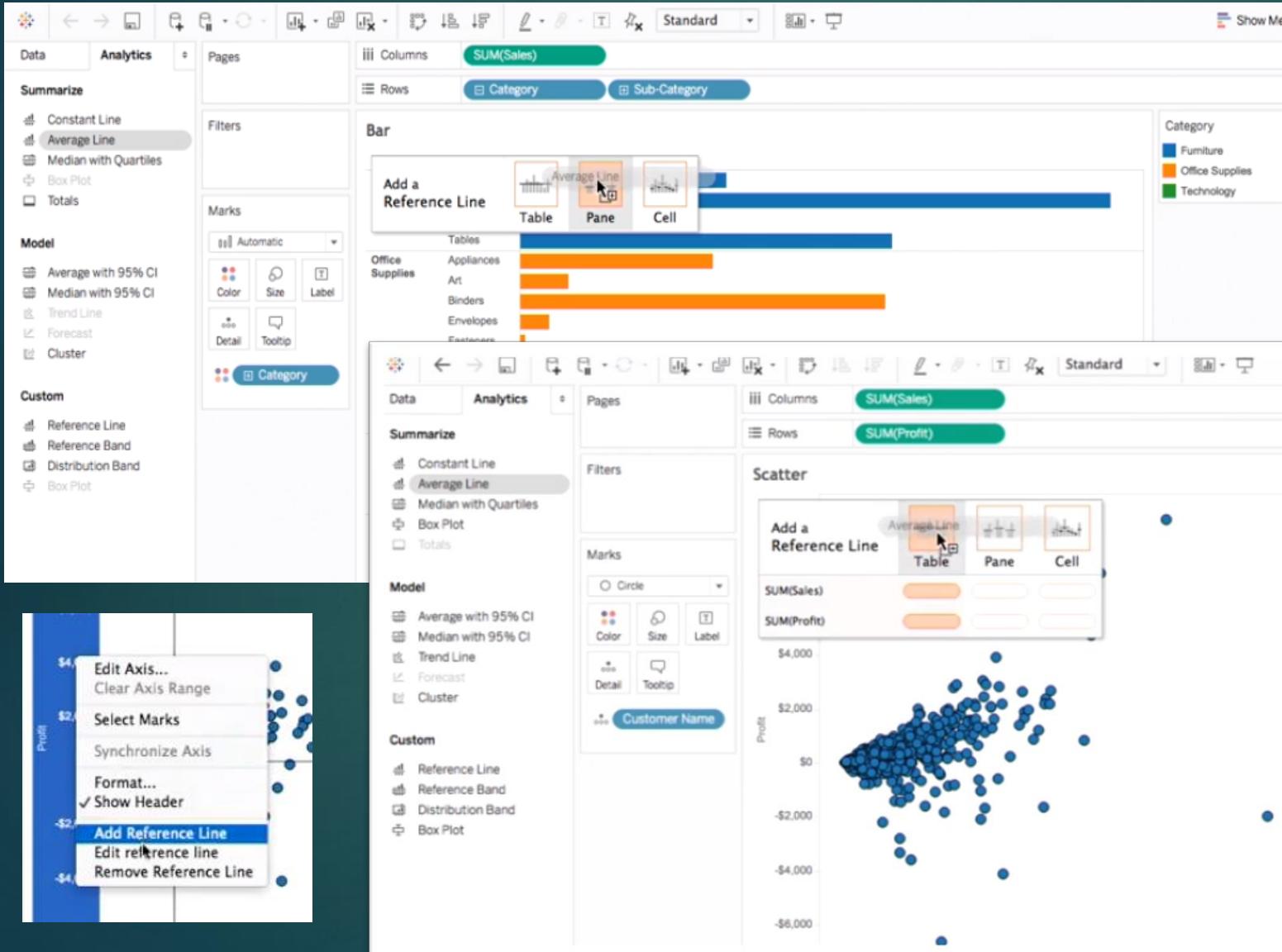
- ▶ Create Sub Categories for focused information
- ▶ Show Profit and loss by 2 colours

Visual Highlighter



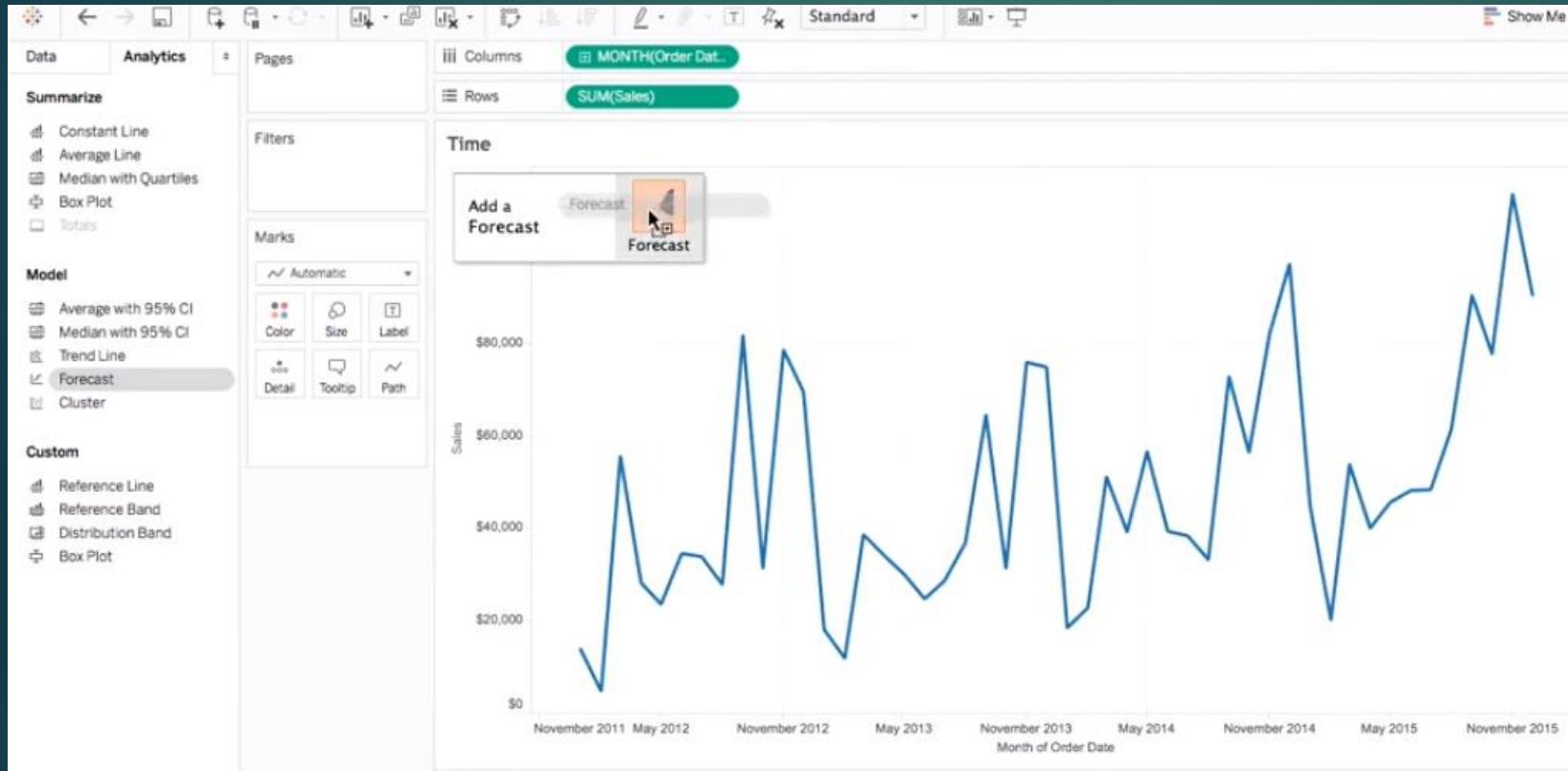
- ▶ Use State in the Details section
- ▶ Show State Highlighter

Analytics Pane



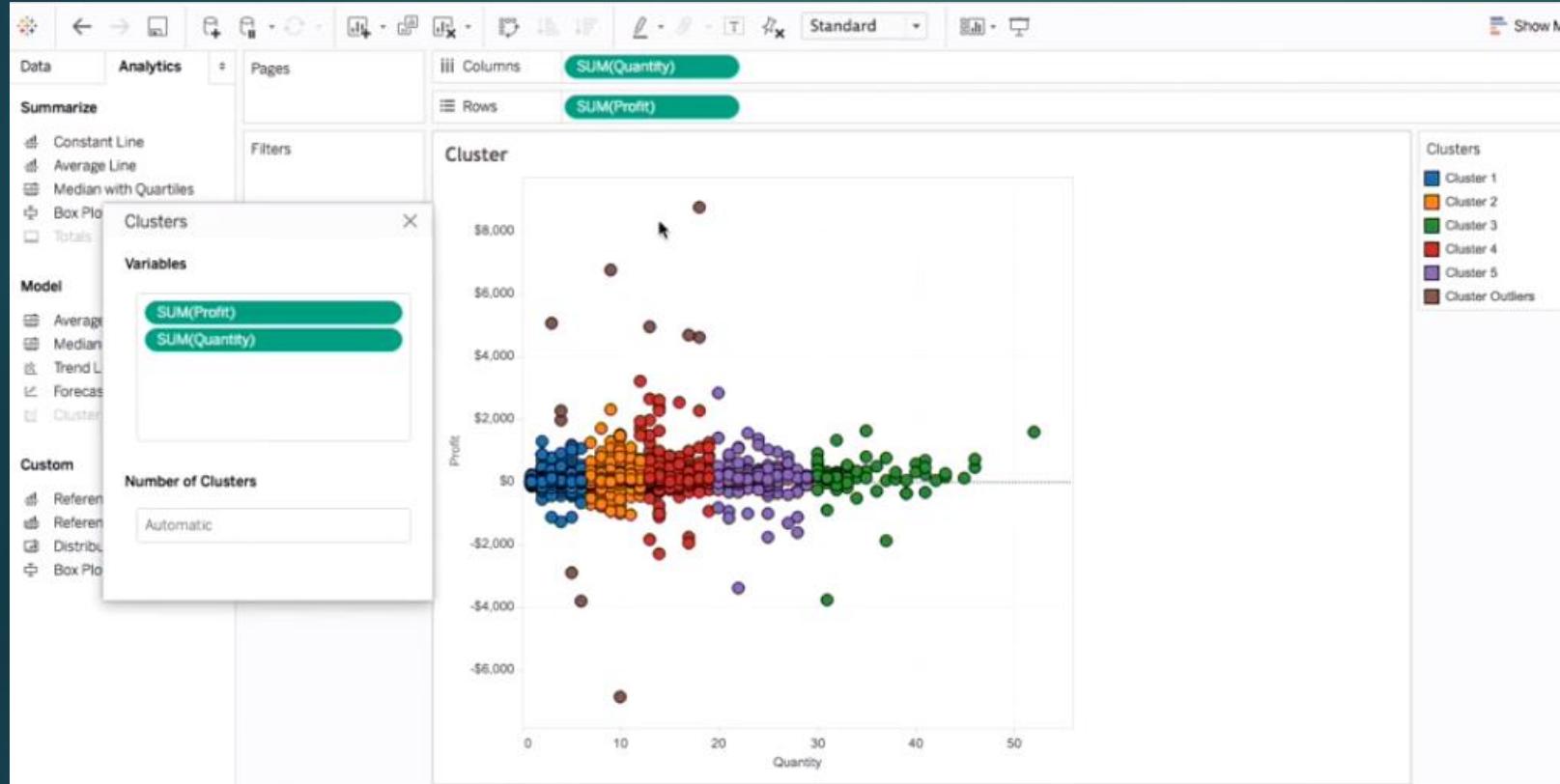
- ▶ Use the Average line in each pane to indicate average
- ▶ Change label to value to see the actual value
- ▶ You can also add average on the Scatter plot

Forecast Model



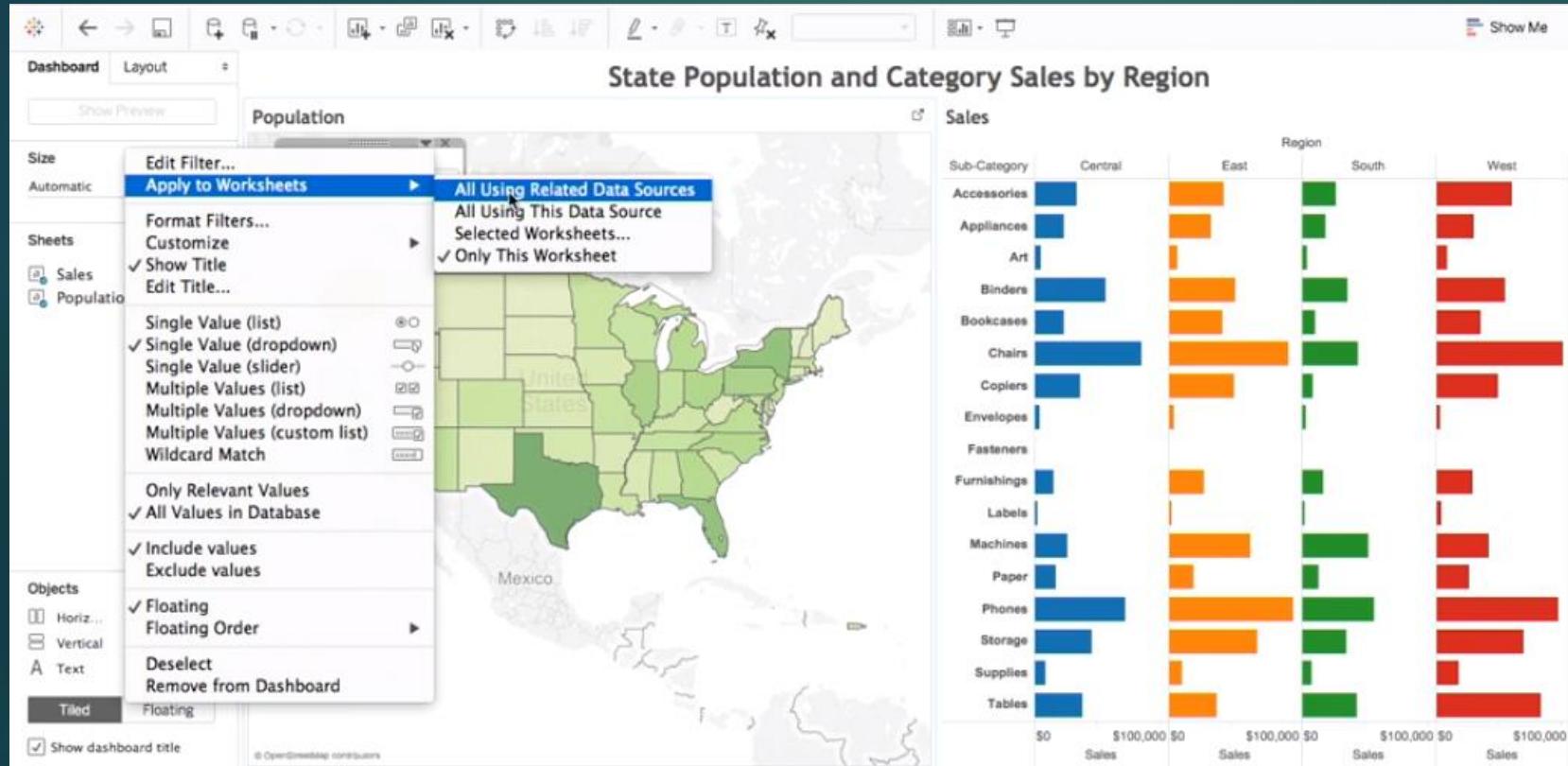
- ▶ Use Model Forecast
- ▶ Then we can modify its details

Cluster



- ▶ Use Model Cluster to from clusters
- ▶ Also use only one variable to see a different clustering information

Cross-database filter

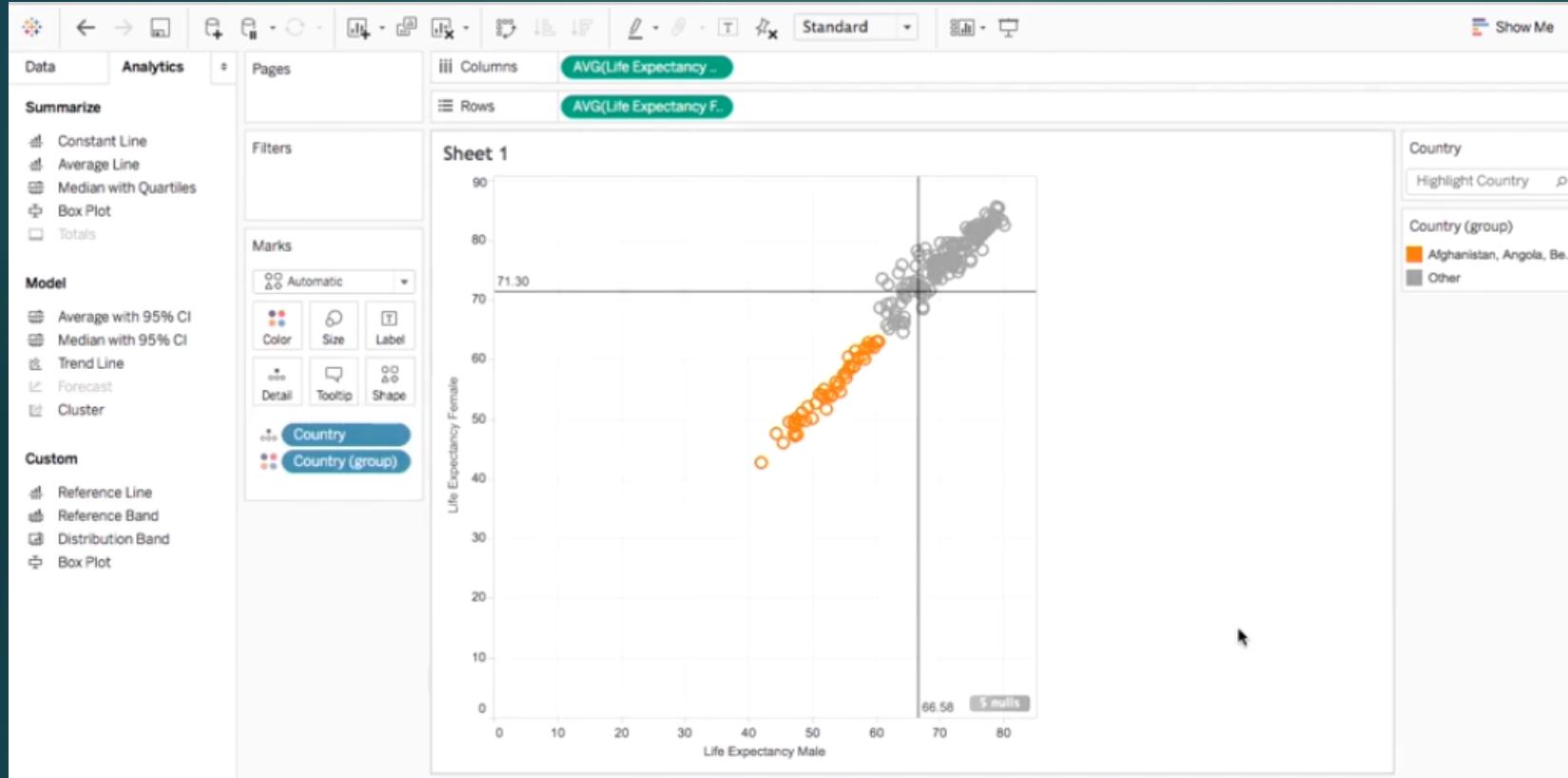


- We can filters across sheets to reflect data change upon changing one filter

Challenge: World Bank Data

- ▶ Using World Bank Data, create a scatter plot using any 2 measures and Country as Detail
- ▶ Add an Average reference line to each axis and change label to average value
- ▶ Create a highlighter for a country in the scatter plot

Challenge: World Bank Data



- ▶ Group together to highlight
- ▶ Also, do not forget to add Highlighter for Countries

Its Mapping Time!

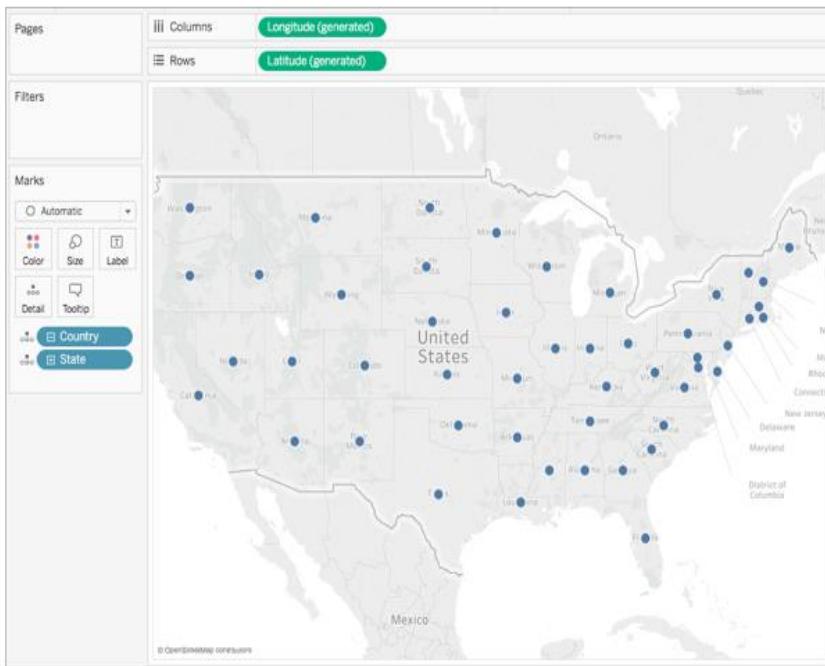
USING SUPERSTORE DATA

Data: Superstore

1. Navigate to a worksheet.

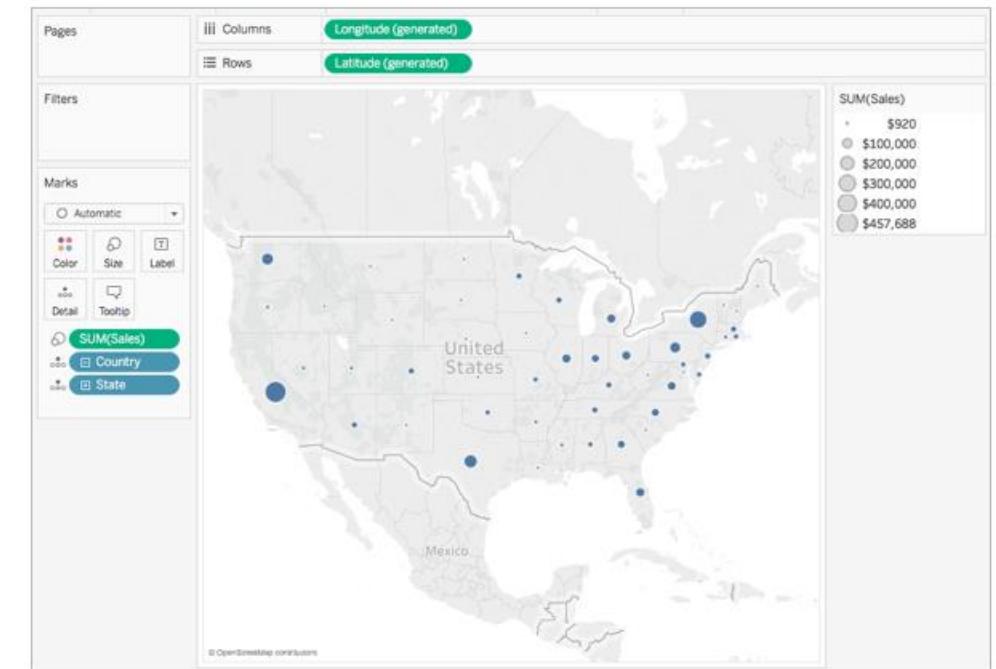
2. In the **Data** pane, under Dimensions, double-click **State**.

A map view is automatically created because the State field is a geographic field. To learn more about geographic fields and how to create them, see [Assign a geographic role to a field](#).



3. From Measures, drag **Sales** to **Size** on the Marks card.

The data points on the map update to show the amount of sales proportionally.



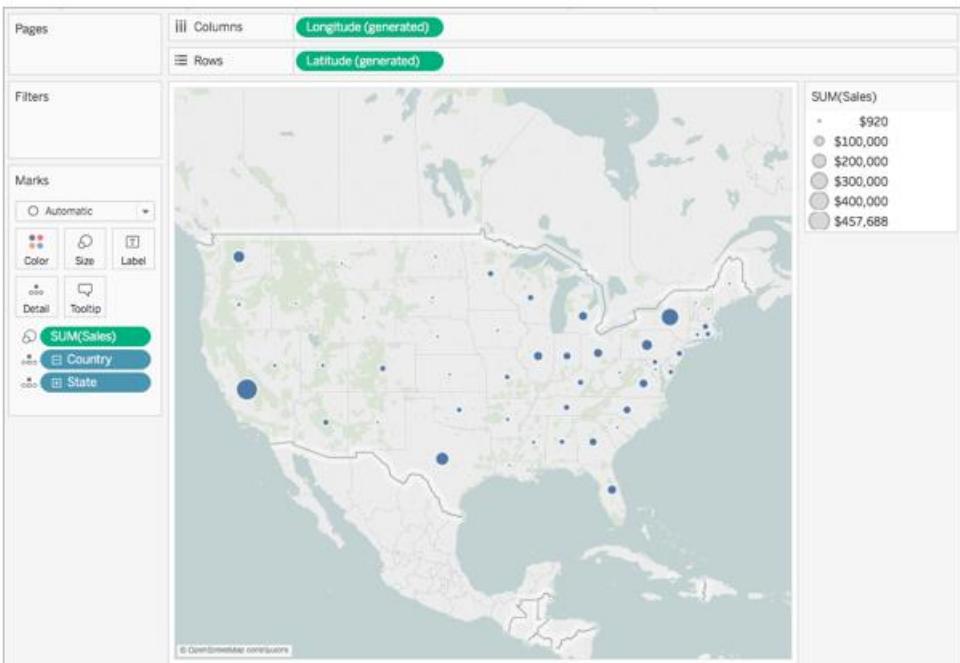
4. Select **Maps > Map Layers**.

Data: Superstore

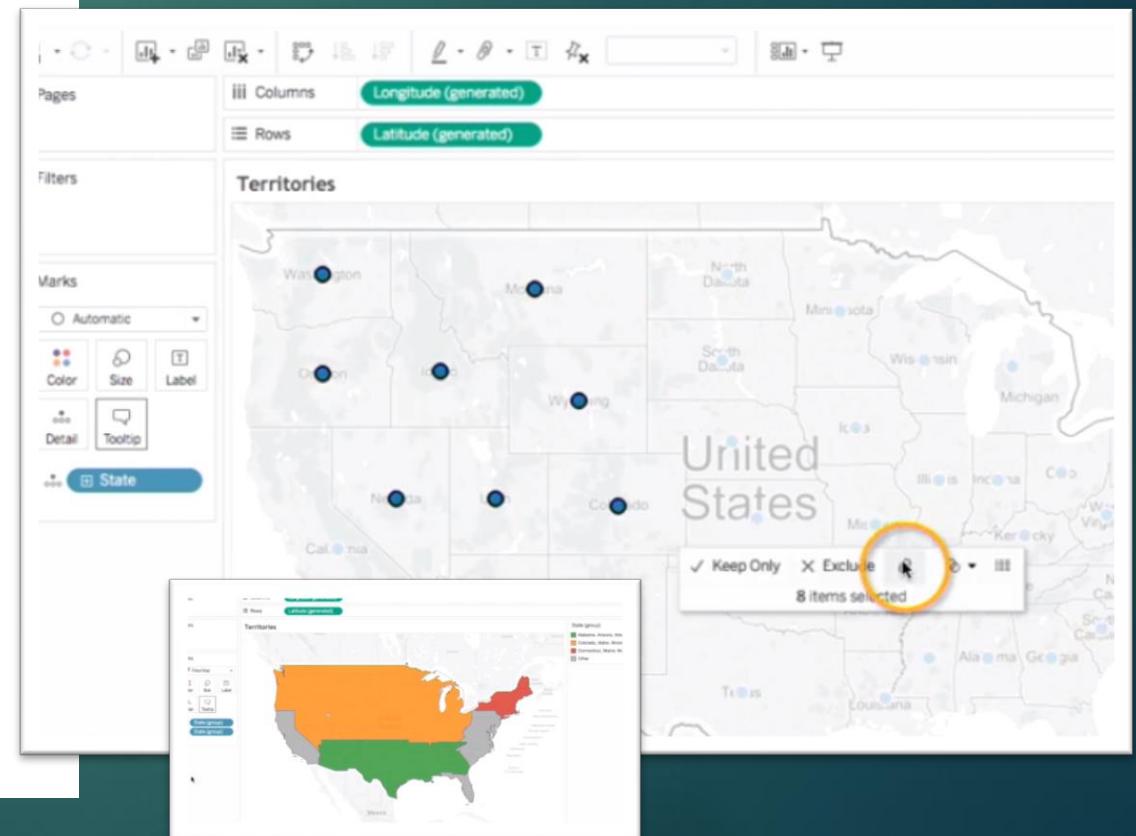
5. In the Map Layers pane, do the following:

- Click the Style drop-down and select **Normal**.
- Under Map Layers, clear **Country/Region Names**.

The background map updates with the new settings.



- ▶ Group together to areas to create custom territories
- ▶ Add State Group to colour to see them on the map

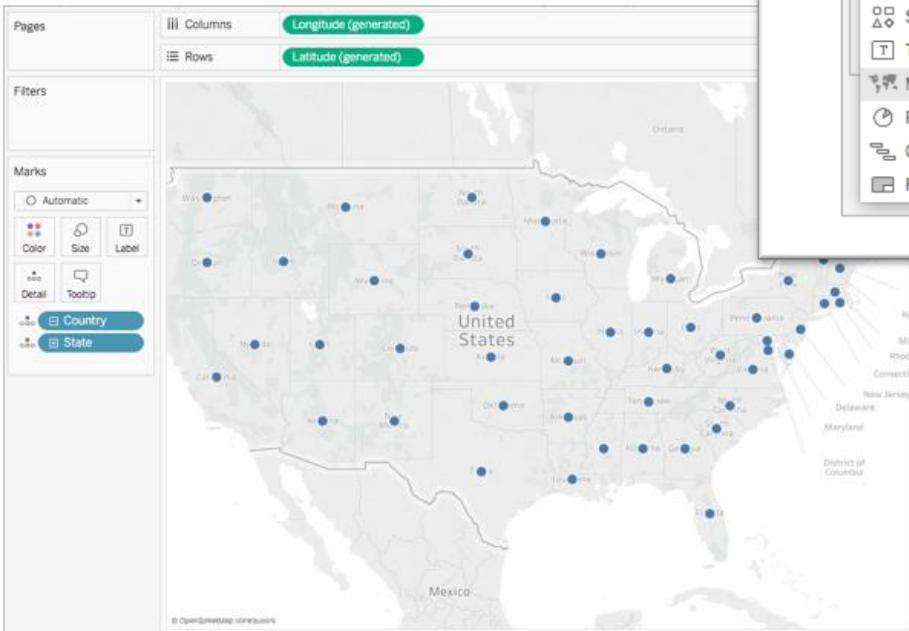


Build Polygon Map

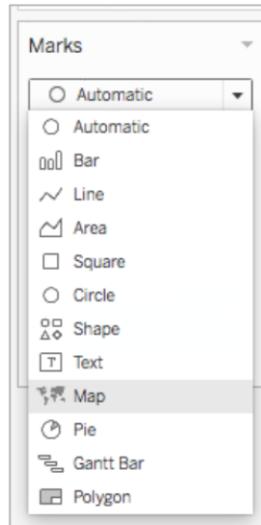
Build a simple filled (polygon) map

1. Navigate to a new worksheet.
2. In the **Data** pane, under Dimensions, double-click **State**.

A map view is automatically created.

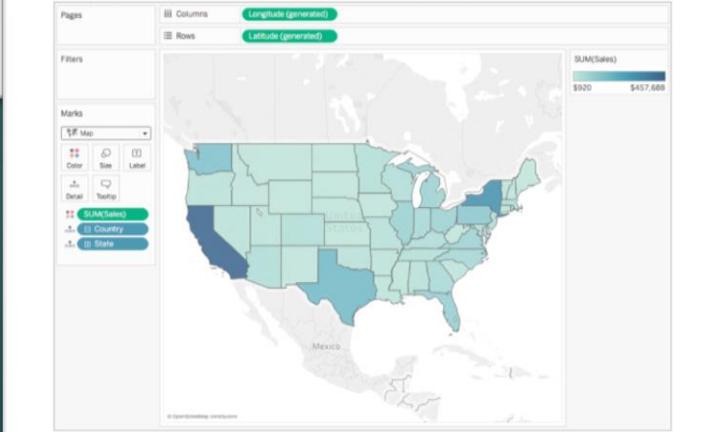


3. On the Marks card, click the Mark Type drop-down and select **Map**.

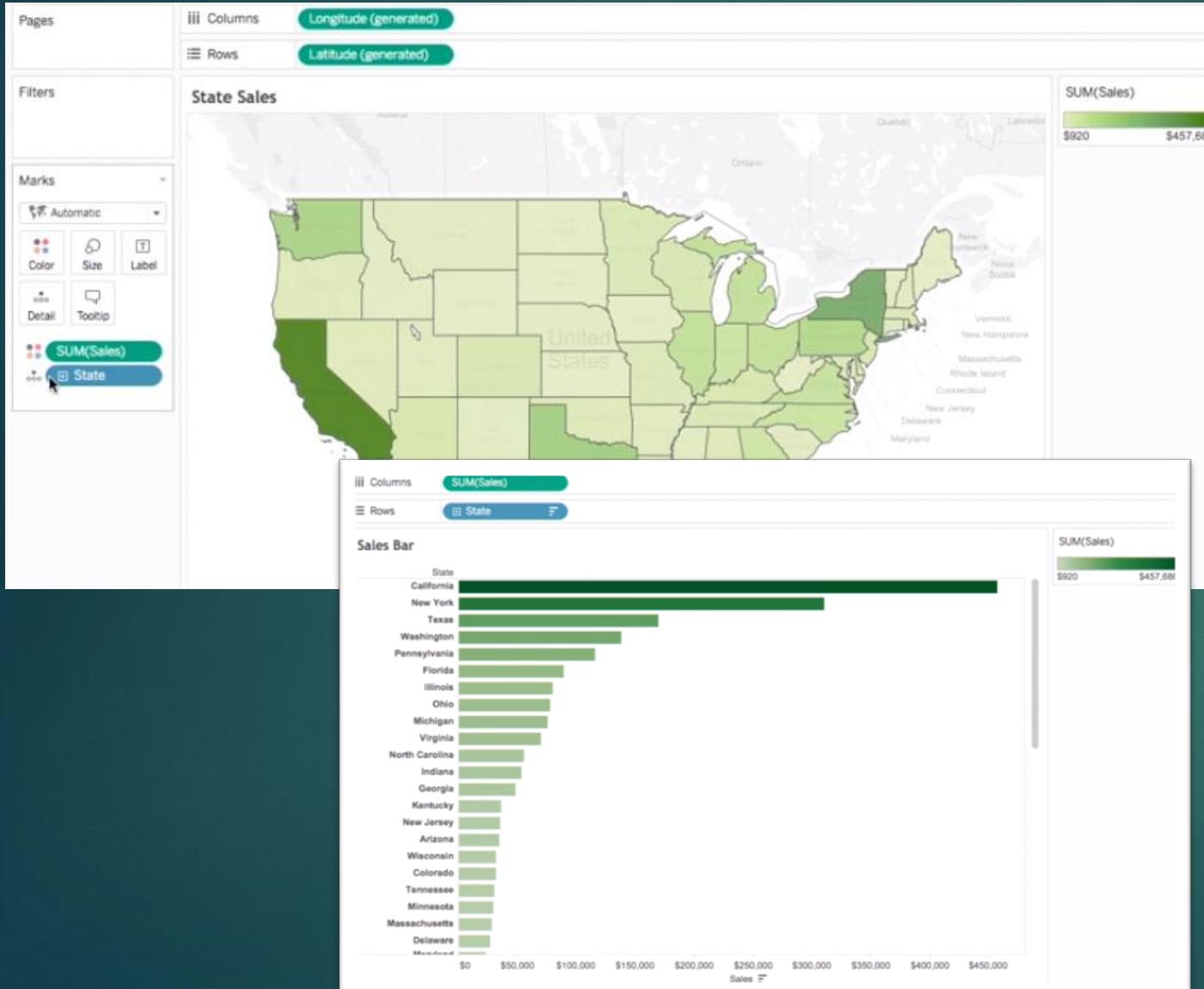


4. From Dimensions, drag **Sales** to Color on the Marks card.

The polygons on the map update to show the amount of sales using color.

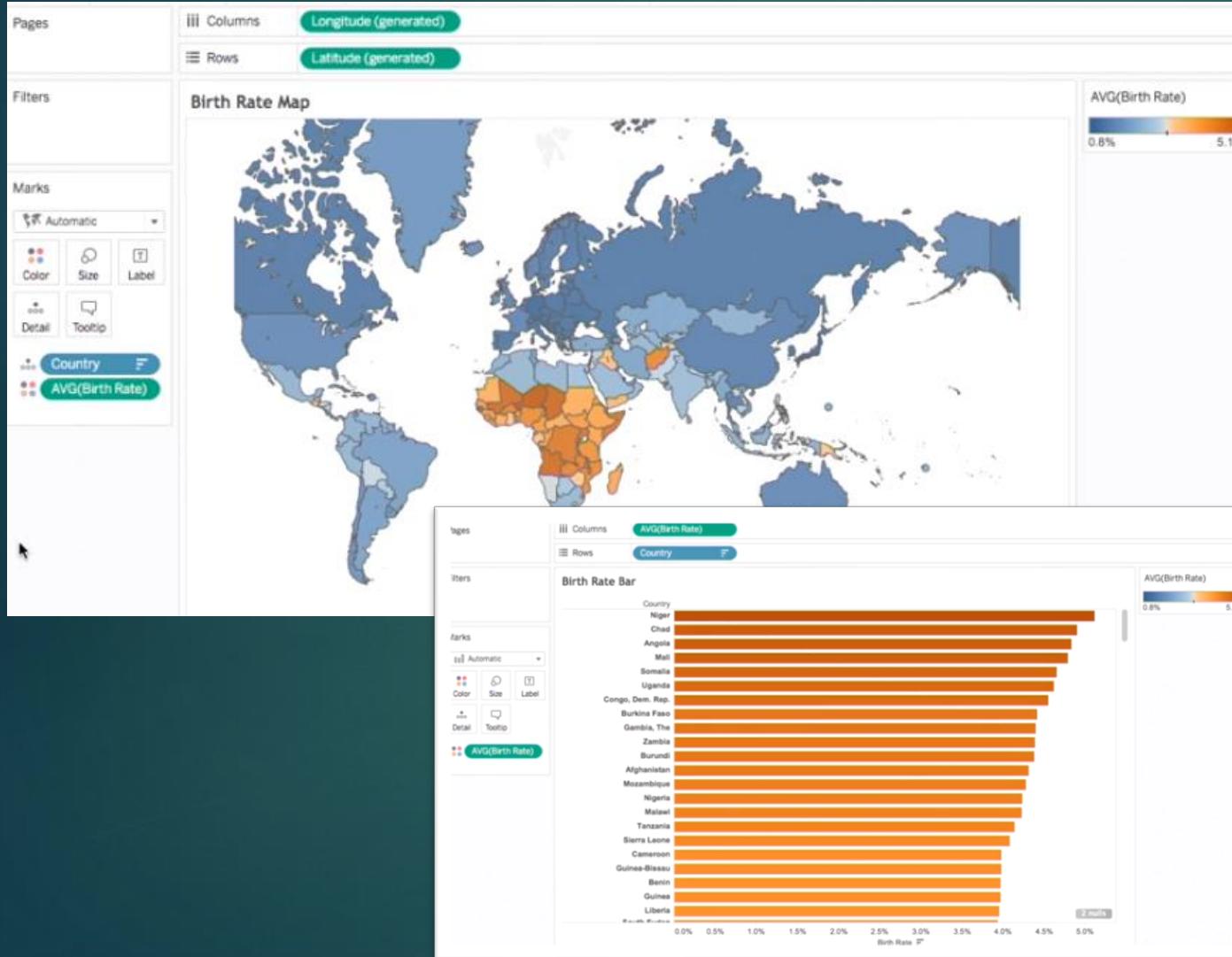


When to use it?



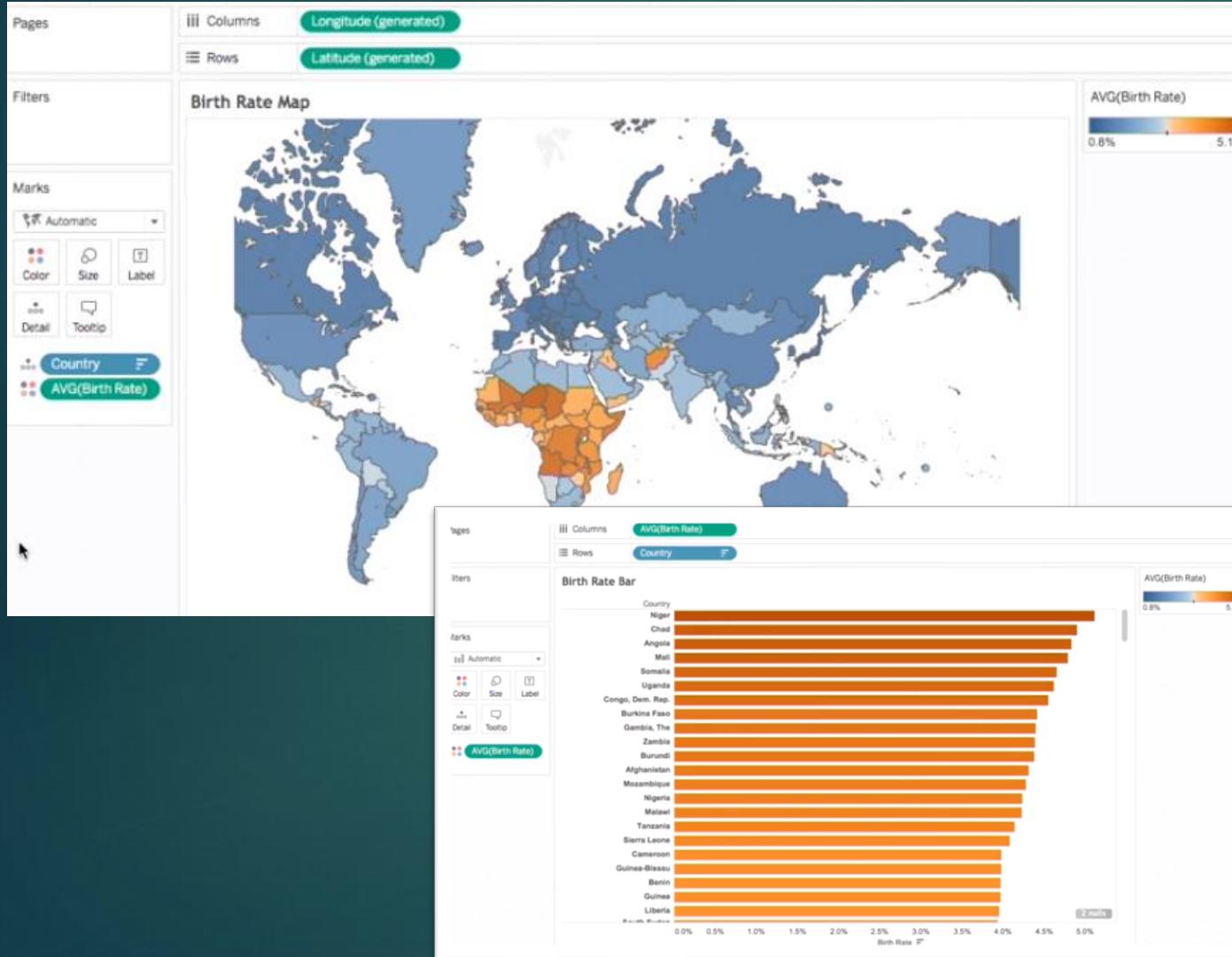
- ▶ First map colours are flat; relative size is not visible
- ▶ Second one, relative size is possible and we now know by ranks such as first, second, etc ...

Which is better?



- ▶ Plotted the Avg. Birth Rate by Country
- ▶ First or Second?

Which is better?



- ▶ Plotted the Avg. Birth Rate by Country
- ▶ First or Second?

Parameters

USING SUPERSTORE DATA

Creating calculations based on parameter

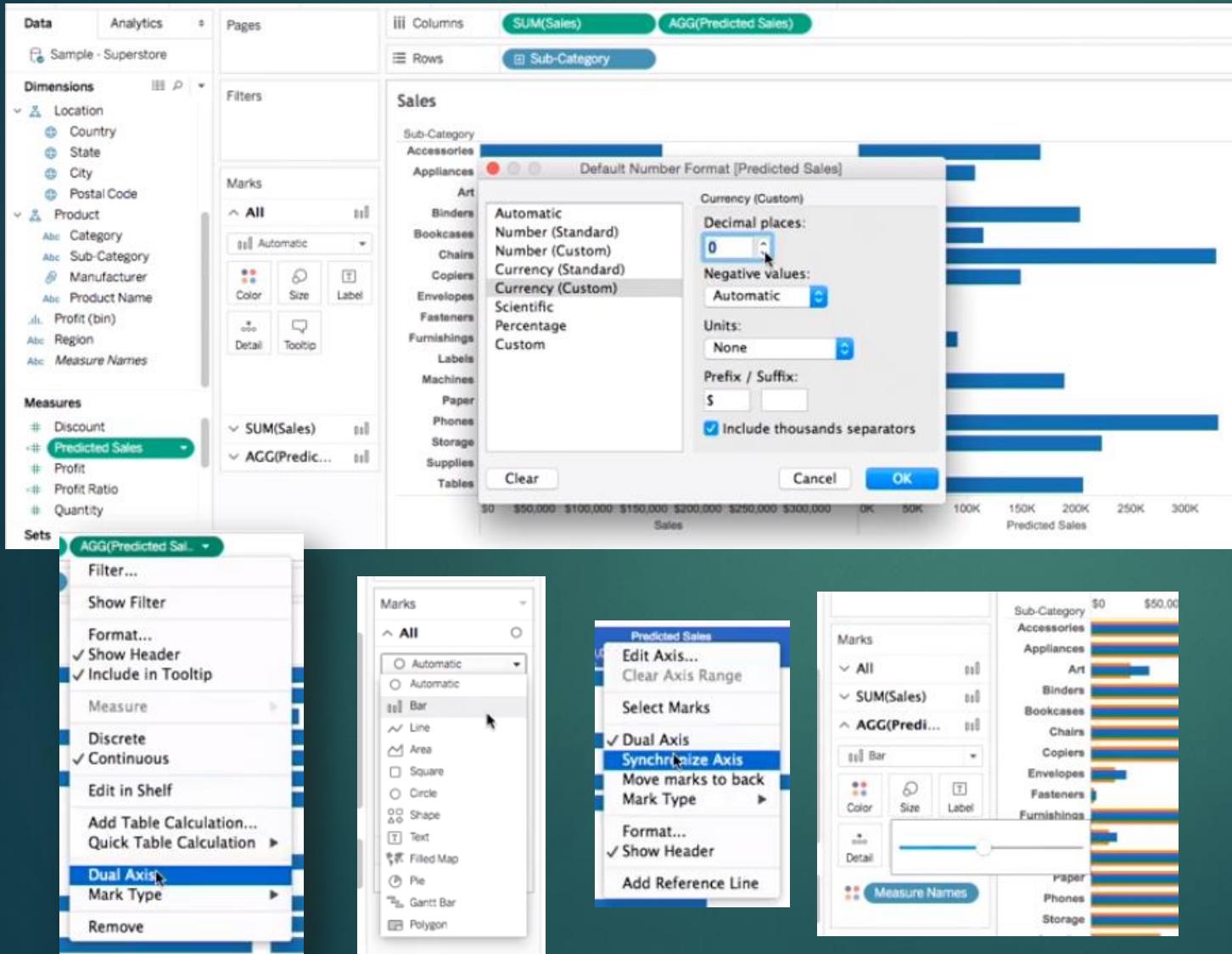
The screenshot shows the Tableau interface with a bar chart titled 'Sales' showing sales by Sub-Category. The chart has 'SUM(Sales)' in the Columns shelf and 'Sub-Category' in the Rows shelf. On the left, the 'Dimensions' shelf includes 'Sample - Superstore', 'Create Calculated Field...', 'Create Parameter...', 'Group by Folder', 'Group by Data Source Table', 'Sort by Name', 'Sort by Data Source Order', 'Hide All Unused Fields', 'Show Hidden Fields', 'Profit (bin)', 'Region', 'Measure Names', and a 'Create Parameter...' button. A context menu is open over the 'Sales' pill in the Rows shelf, with 'Create' selected, followed by 'Calculated Field...'. A 'Create Calculated Field' dialog box is open, showing:

- Name: % Change
- Data type: Float
- Current value: 1
- Display format: 100%
- Allowable values: Range (selected)
- Range of values:
 - Minimum: -1
 - Maximum: 1 (highlighted)
 - Step size: 0.05

The 'OK' button is highlighted.

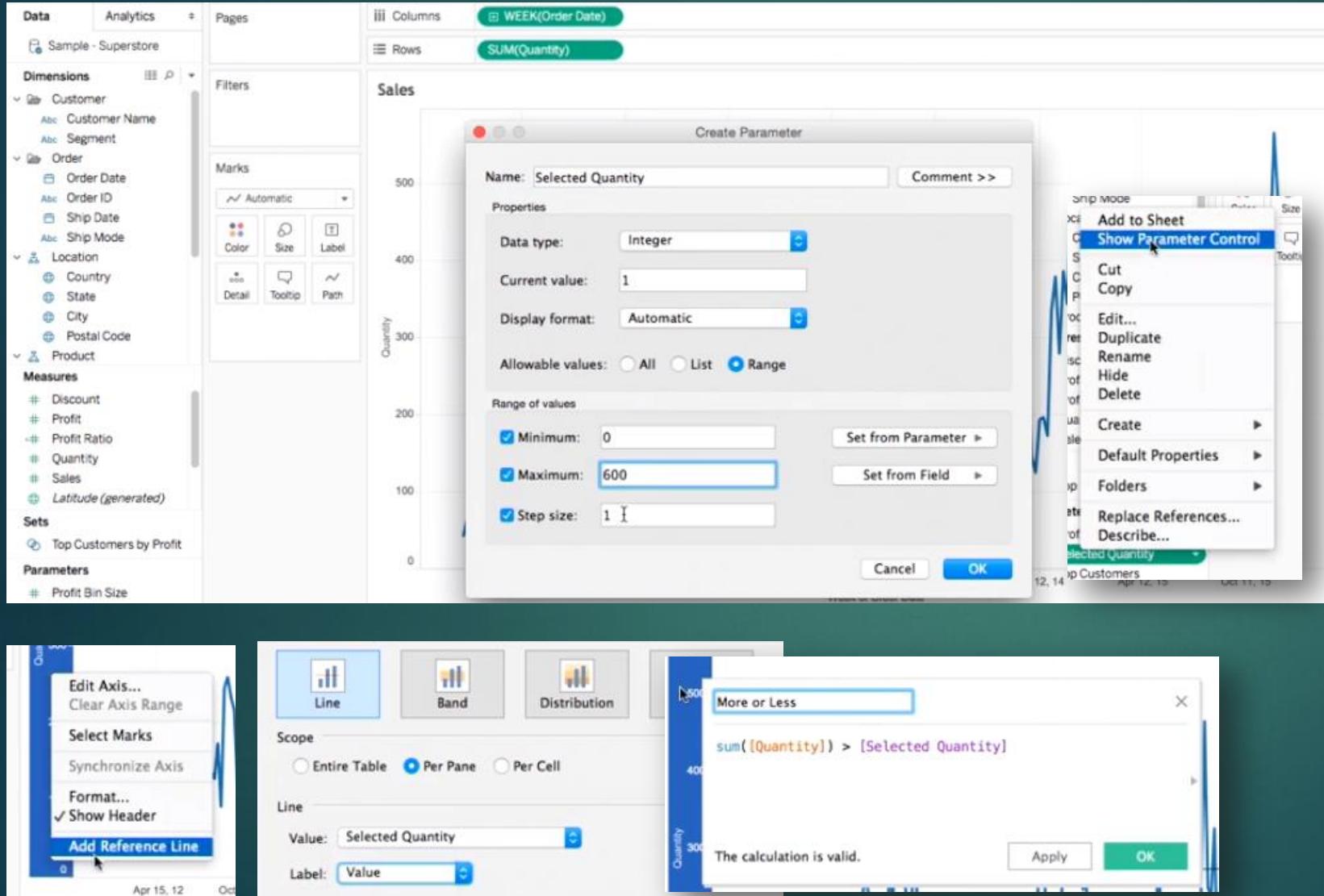
- ▶ Click on Add Parameter
- ▶ Create % Change
- ▶ On top of the Parameter create a Calculated Field(Call it Predicted Sales)
- ▶ Add it beside Sum(Sales)

Creating calculations based on parameter



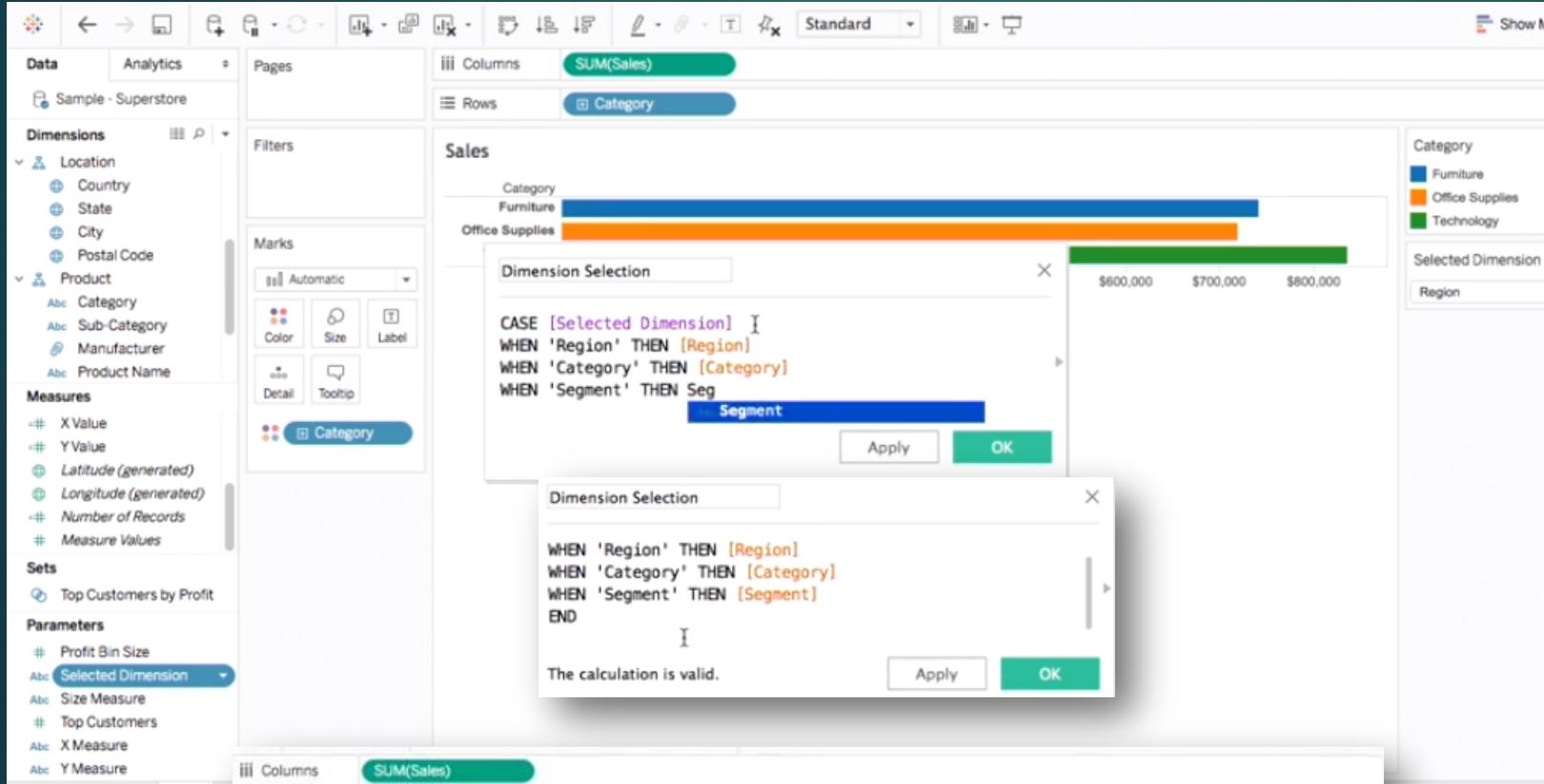
- ▶ Change number format since they are different
- ▶ Make it Dual Axis to see a change on the chart
- ▶ Change to Bar
- ▶ Synchronise the axis
- ▶ Make Predicted bars smaller

Creating dynamic reference line



- ▶ Add Parameter
- ▶ Add it to our view
- ▶ Add a refence line from the axis
- ▶ Select the parameter and choose the label as value
- ▶ Create a calculated field on top of the parameter
- ▶ Add “More or Less” to colour

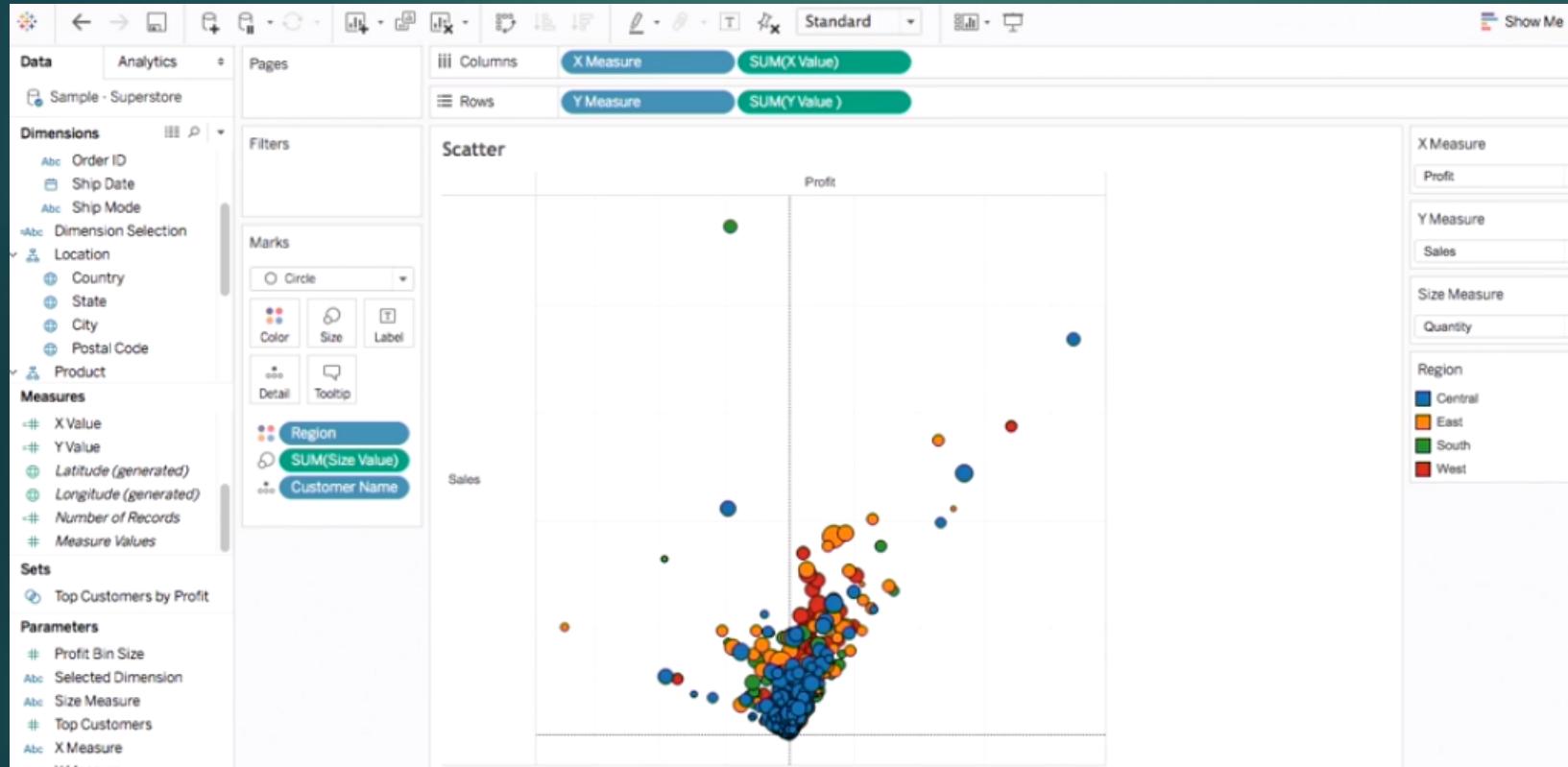
Add Dynamic dimension and measure



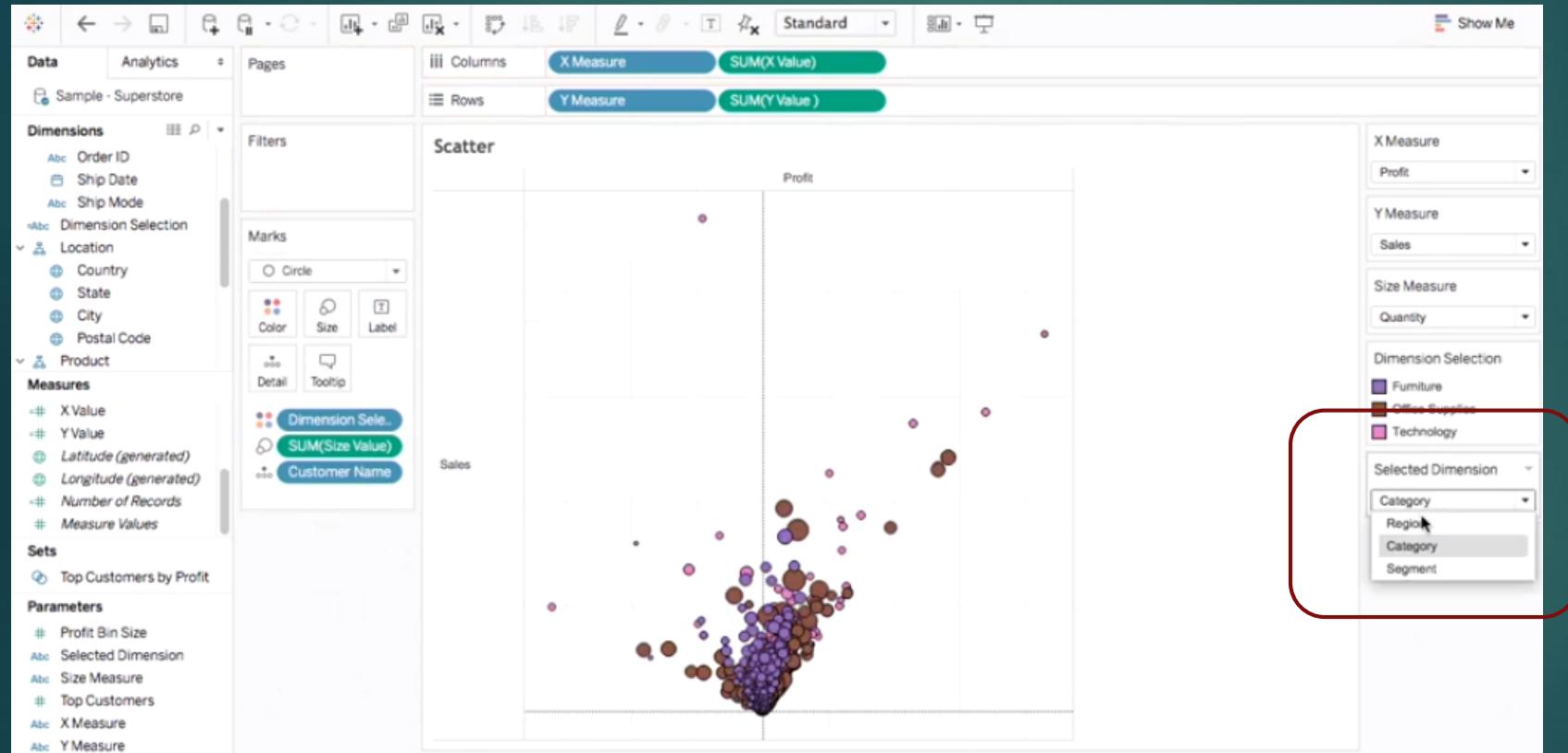
- ▶ Add string parameter with List(Region, Category and Segment)
- ▶ Show Parameter
- ▶ Add calculated field – ensure to use CASE and then END
- ▶ Add the Dimension Selection to Row and Colour
- ▶ Now you can change parameter



Make a Scatter plot and Dimension Selector



It should look like this



Can you make a Dynamic Sheet selection

The screenshot shows a dashboard interface with two floating windows for sheet selection.

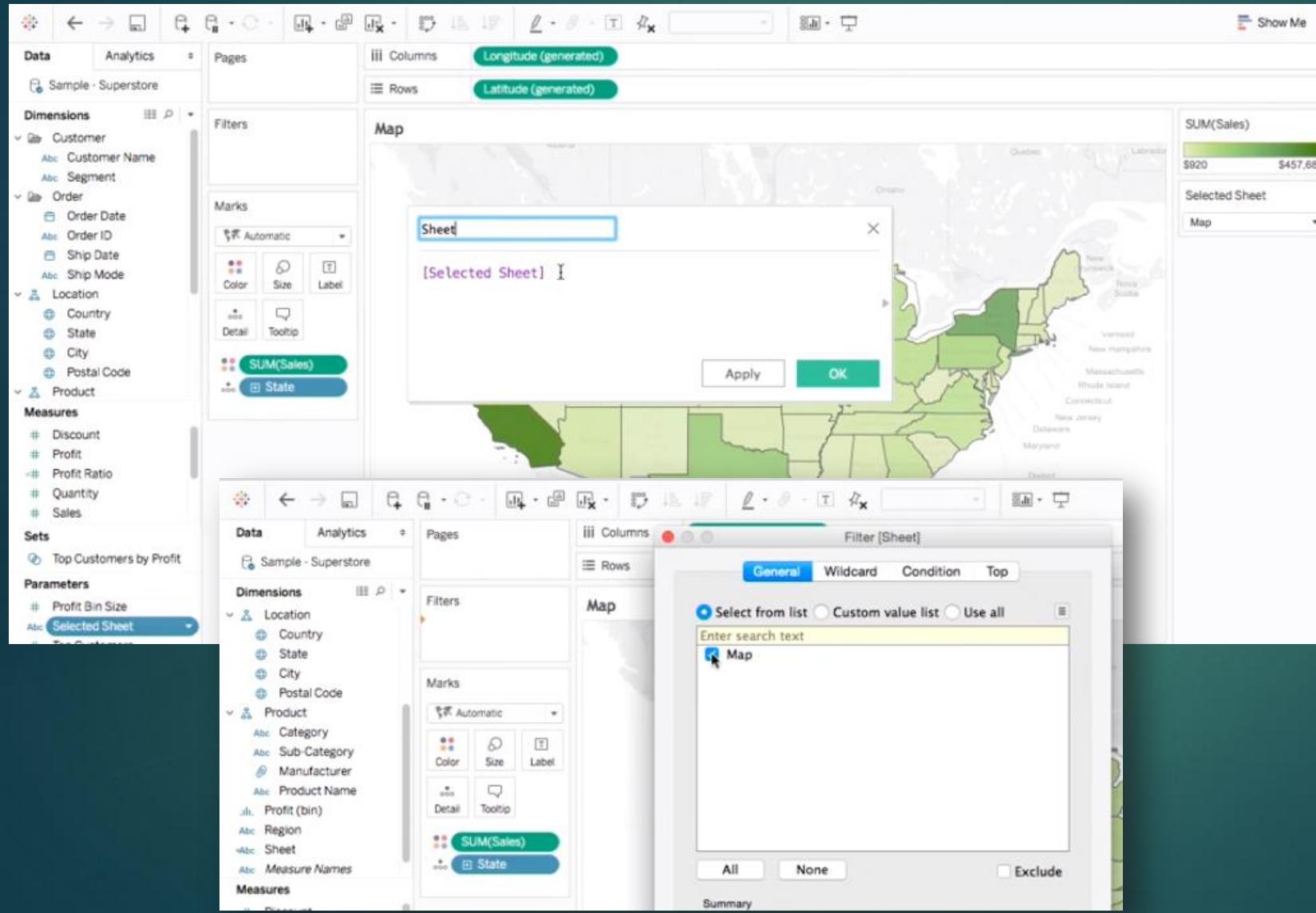
Top Window: A map of the United States where states are colored according to their category. A context menu titled "Selected Sheet" is open, showing options: Map, Heat, and Line. The "Heat" option is highlighted with a mouse cursor.

Sub-Category	Consumer	Corporate	Home Offic...
Accessories	\$20,736	\$12,707	\$8,493
Appliances	\$6,982	\$7,430	\$3,726
Art	\$3,454	\$2,005	\$1,069
Binders	\$17,996	\$6,377	\$5,849
Bookcases	-\$4,436	\$638	\$325
Chairs	\$13,235	\$8,345	\$5,010
Copiers	\$24,084	\$16,990	\$12,544
Envelopes	\$3,264	\$2,571	\$1,129
Fasteners	\$577	\$252	\$121
Furnishings	\$7,919	\$3,508	\$1,632
Labels	\$3,076	\$1,761	\$709
Machines	\$2,141	\$703	\$541
Paper	\$15,535	\$10,362	\$8,157
Phones	\$23,837	\$11,766	\$8,912
Storage	\$7,104	\$9,131	\$5,044
Supplies	-\$1,658	\$339	\$130
Tables	-\$9,728	-\$4,906	-\$3,091

Bottom Window: A table titled "Segment" showing sales data across different categories for Consumer, Corporate, and Home Office segments. A context menu titled "Selected Sheet" is open, showing the option "Heat".

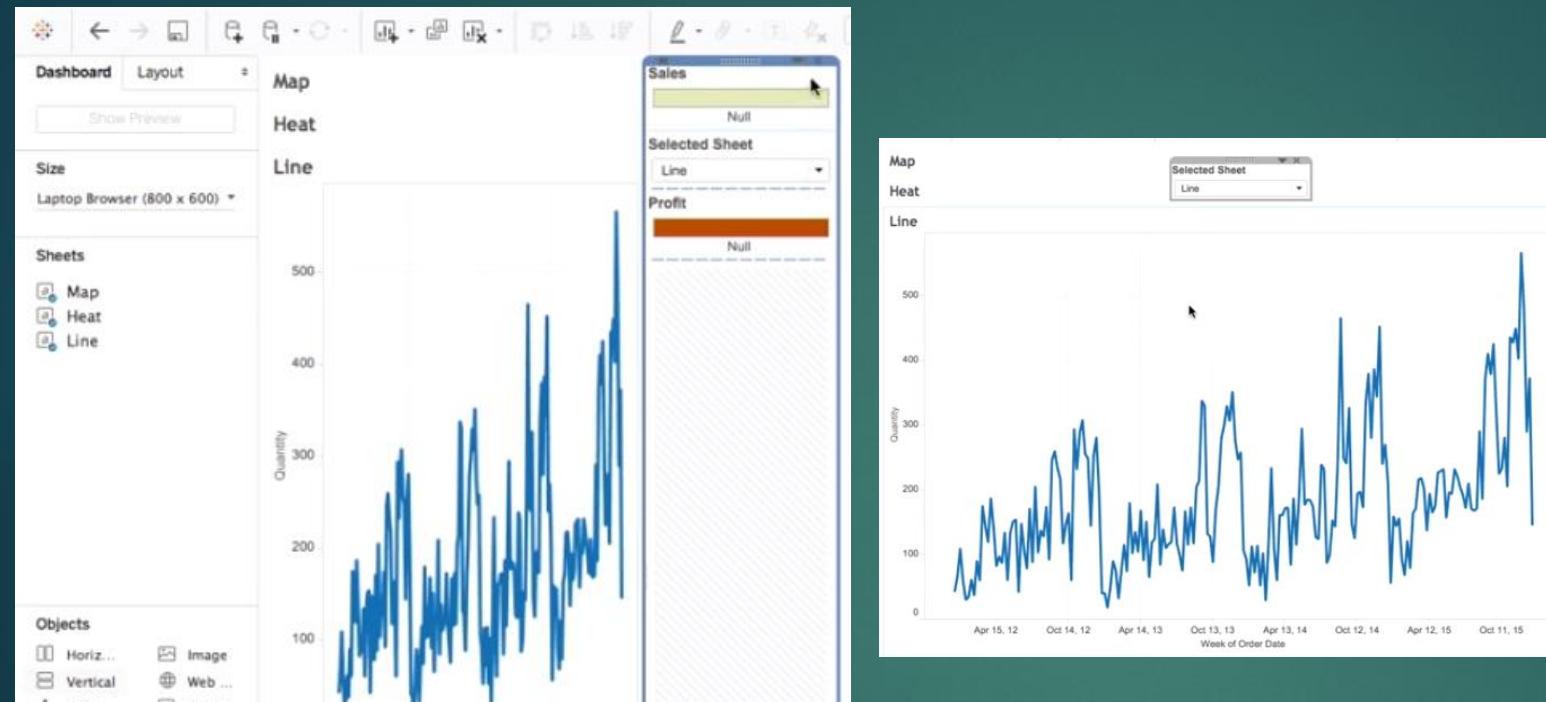
Sub-Category	Consumer	Corporate	Home Offic...
Accessories	\$20,736	\$12,707	\$8,493
Appliances	\$6,982	\$7,430	\$3,726
Art	\$3,454	\$2,005	\$1,069
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Storage	\$7,104	\$9,131	\$5,044
Supplies	-\$1,658	\$339	\$130
Tables	-\$9,728	-\$4,906	-\$3,091

Trick is to create a parameter

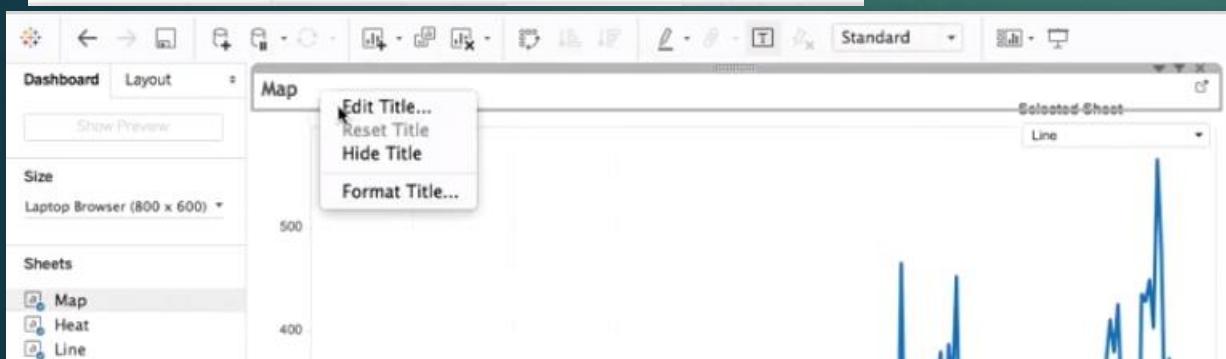


- ▶ Add a Calculated field
- ▶ Add to the Filter
- ▶ Choose Map
- ▶ Change to Heat filter
- ▶ And then add the Sheet field to Filter again
- ▶ Choose Heat
- ▶ Repeat for last sheet

Put it on a Dashboard using Vertical Frame



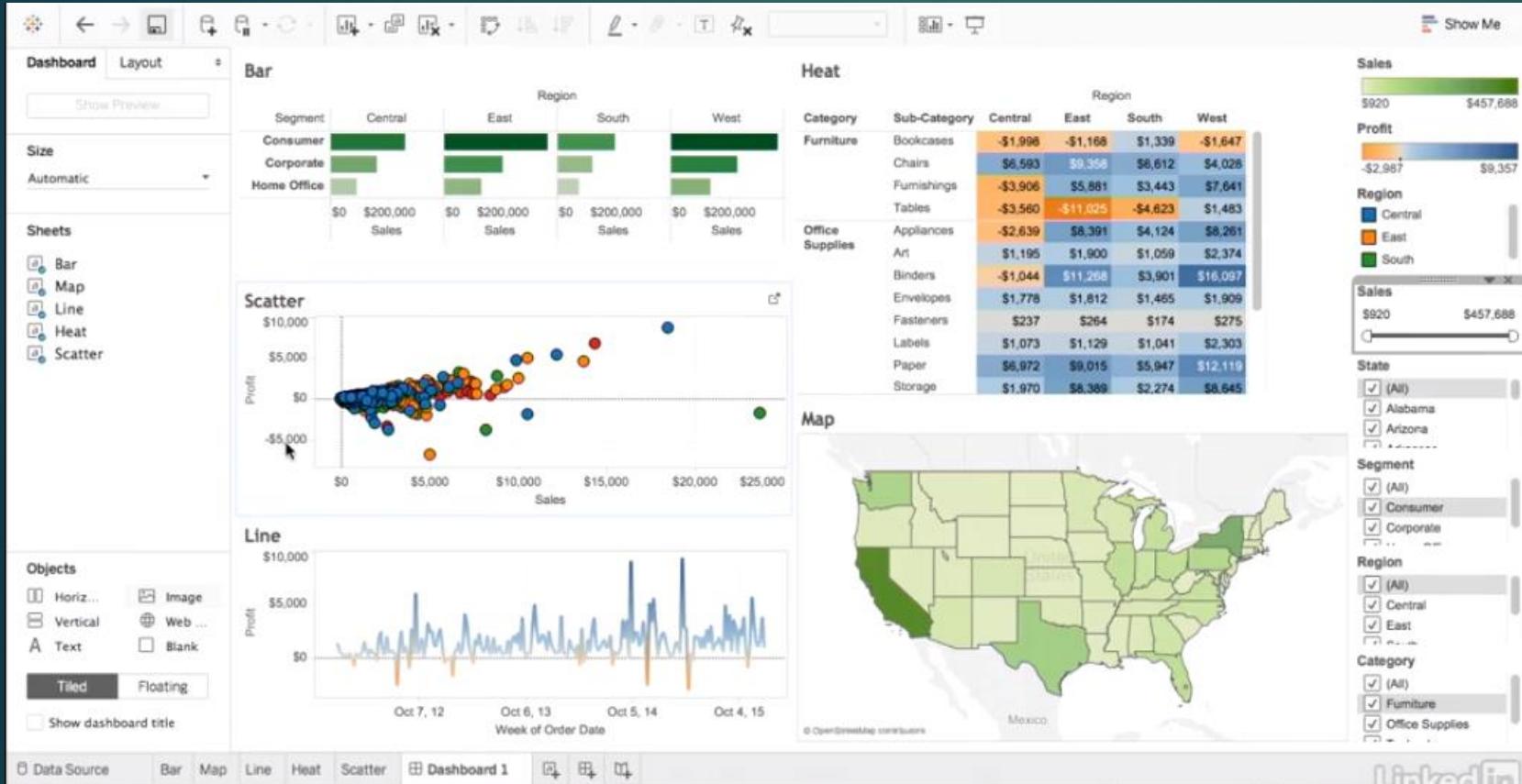
- ▶ Add all 3 sheets
- ▶ Remove the 2 Legends except the Selected Sheet
- ▶ Make Selected Sheet Floating
- ▶ Hide Titles
- ▶ Change to see the Sheet Change



Dashboards

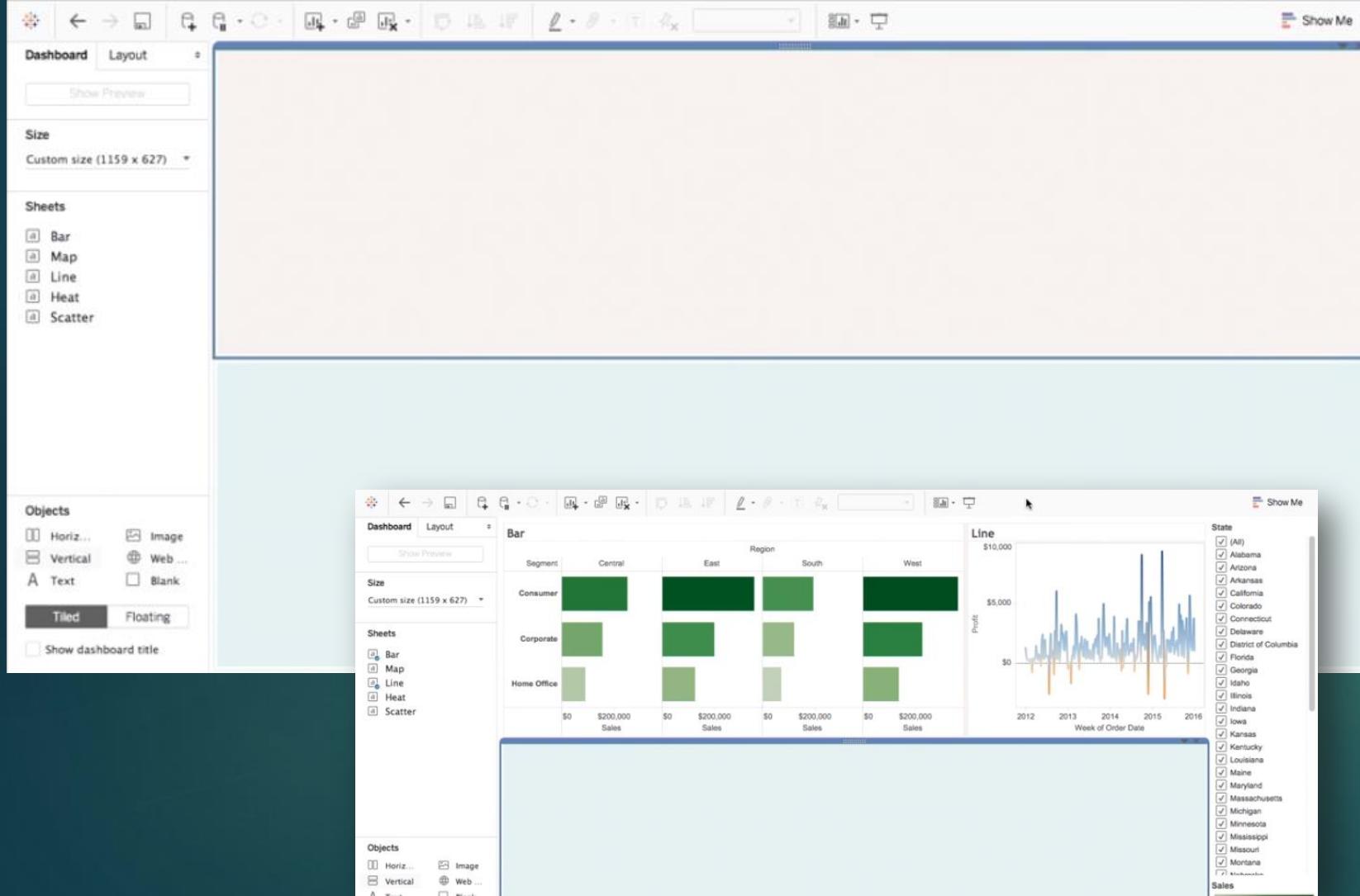
USING SUPERSTORE DATA

Create Individual Elements and put them together



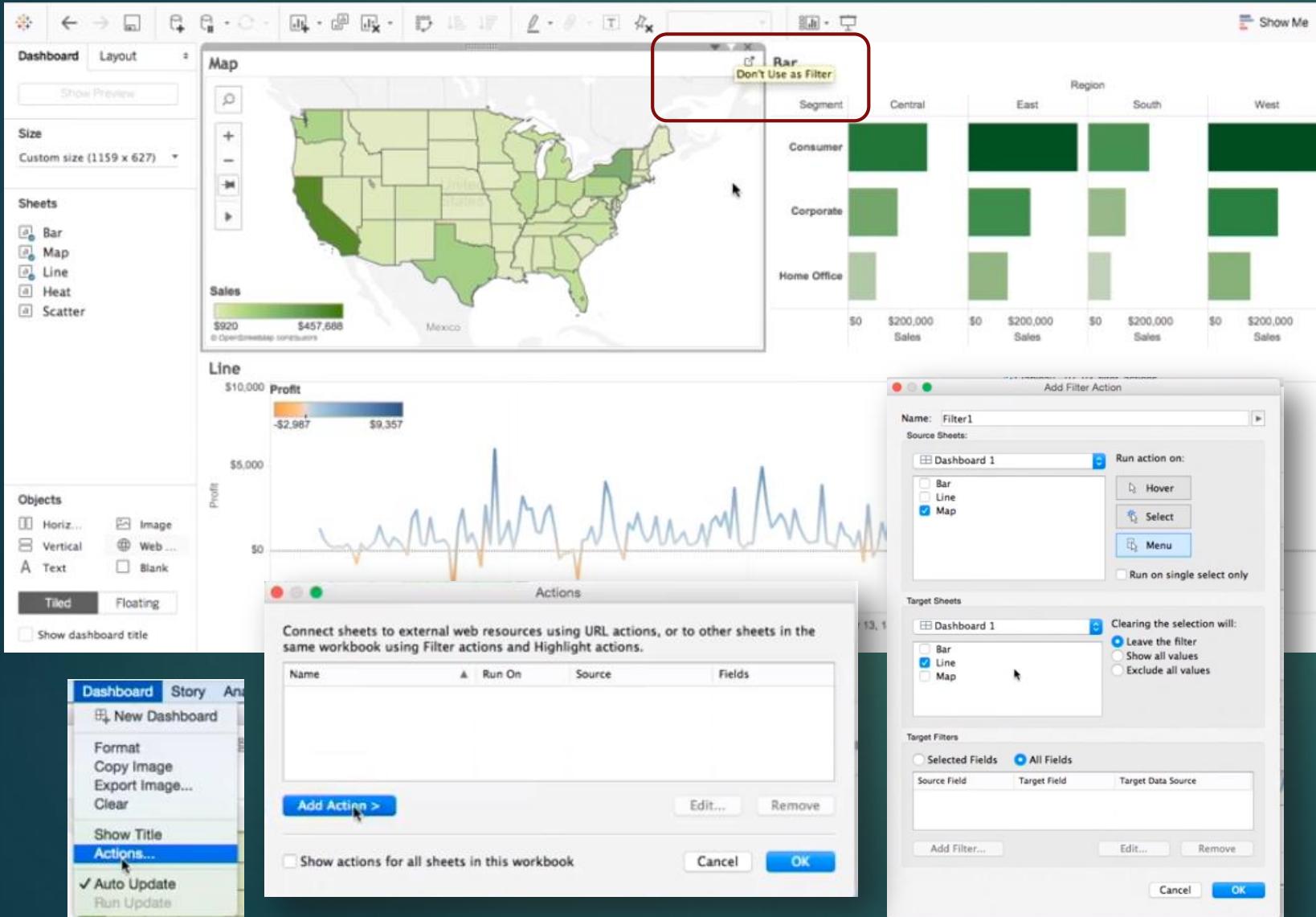
- ▶ Create Bar, Map, Line, Heat, Scatter
- ▶ Choose Size of Dashboard
- ▶ Change chart labels
- ▶ Float the legends and put it on relevant charts
- ▶ Use containers
- ▶ Make selection multiple values dropdown to save space

Containers



- ▶ Used to organise your charts
- ▶ Fits based on the information shown

Filter Actions



- ▶ Can be directly done on the each chart by clicking on filter icon of the chart
- ▶ Or by adding actions(Filter)
- ▶ It has more control than doing it directly from the chart
- ▶ Choose “Run action on” such as Hover, Select, Menu

Filter Actions

The screenshot shows a Tableau desktop interface with a dashboard containing three main visualizations:

- Map:** A map of the United States where states are colored based on profit, with a legend showing ranges from -\$25,729 to \$76,381.
- Scatter:** A scatter plot showing Profit on the Y-axis versus Sales on the X-axis. The data points are colored by region.
- Heat:** A heatmap showing profit values across different regions (Central, East, South, West) and categories (try, Phone, Computer, etc.).

An "Add URL Action" dialog is open over the dashboard. The dialog has the following fields:

- Name:** Go to Wikipedia
- Source Sheets:** Dashboard 1 (with Heat, Map, and Scatter selected)
- Run action on:** Hover
- URL:** <https://en.wikipedia.org/wiki/>
- URL Options:** URL Encode Data Values (unchecked), Allow Multiple Values (unchecked), Item Delimiter: , Delimiter Escape: \

A context menu is open, listing various data items and functions:

- Geometry
- Latitude (generated)
- Longitude (generated)
- SUM(Profit)** (selected)
- Region
- FILTERVALUES(Region)
- SUM(Sales)
- FILTERMIN(SUM(Sales))
- FILTERMAX(SUM(Sales))
- State
- Top Customers
- Profit Bin Size

► Other Actions are Highlight and URL Link

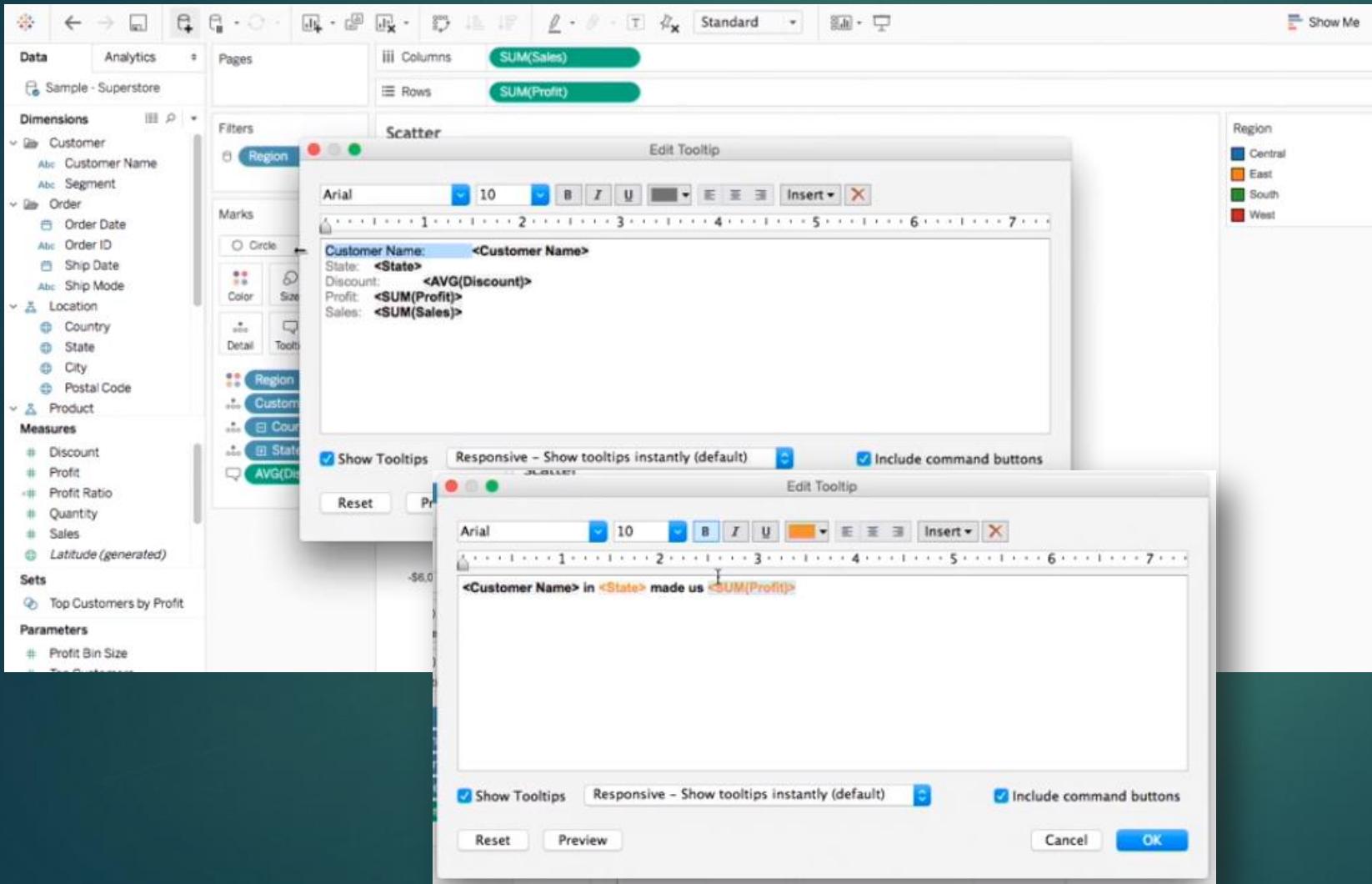
Format Dashboards

The screenshot shows the 'Format Dashboard' dialog box in Tableau. On the left, there are sections for 'Dashboard Shading', 'Worksheet Titles', and 'Text Objects'. The main area contains three visualizations: a 'Map' of the United States with a color scale for 'Profit' ranging from -\$25,729 to \$76,381; a 'Scatter' plot of 'Sales' vs 'Profit'; and a 'Line' chart of 'Profit' over time from 2012 to 2016. To the right is a 'Heat' table with data for various categories across four regions: Central, East, South, and West.

Category	Sub-Category	Region			
		Central	East	South	West
Furniture	Bookcases	-\$1,998	-\$1,168	\$1,339	-\$1,647
	Chairs	\$6,593	\$9,358	\$6,612	\$4,028
	Furnishings	-\$3,906	\$5,881	\$3,443	\$7,641
	Tables	-\$3,580	-\$11,025	-\$4,623	\$1,483
Office Supplies	Appliances	-\$2,639	\$8,391	\$4,124	\$8,261
	Art	\$1,195	\$1,900	\$1,059	\$2,374
	Binders	-\$1,044	\$11,268	\$3,901	\$16,097
	Envelopes	\$1,778	\$1,812	\$1,465	\$1,909
Technology	Fasteners	\$237	\$284	\$174	\$275
	Labels	\$1,073	\$1,129	\$1,041	\$2,303
	Paper	\$6,972	\$9,015	\$5,947	\$12,119
	Storage	\$1,970	\$8,389	\$2,274	\$8,645
Supplies	Accessories	-\$662	-\$1,155	\$2	\$626
	Copiers	\$7,252	\$11,196	\$7,005	\$16,485
	Machines	\$15,609	\$17,023	\$3,659	\$19,327
	Phones	-\$1,486	\$6,929	-\$1,439	-\$619
		\$12,323	\$12,315	\$10,787	\$9,111

- ▶ Choose Dashboard from the Menu
- ▶ Then select Format
- ▶ Change each section to suite the Branding

Change Tooltips

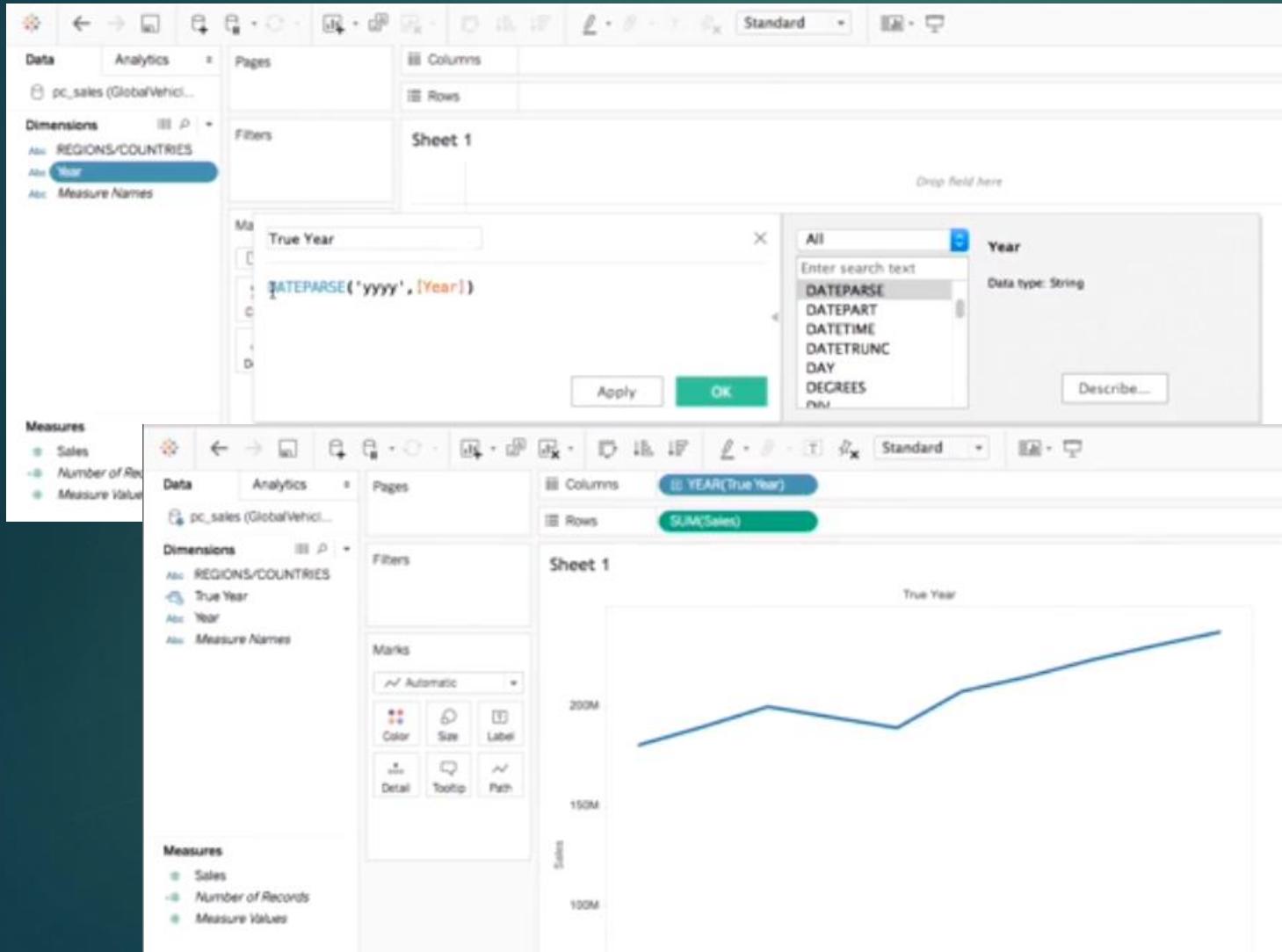


- ▶ By Adding a Field to Details it shows up on the Tooltip but it clutters
- ▶ So just add it to the Tooltip
- ▶ More changes can be made from the Worksheet Menu by selecting Tooltip
- ▶ Make is as sentence

Other Useful tips

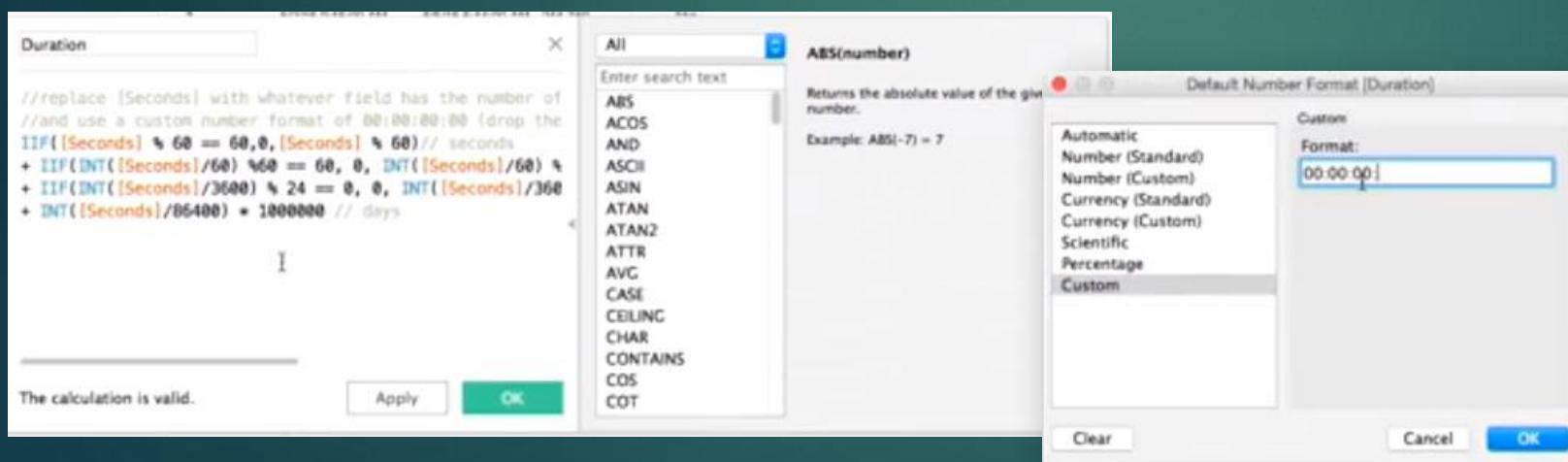
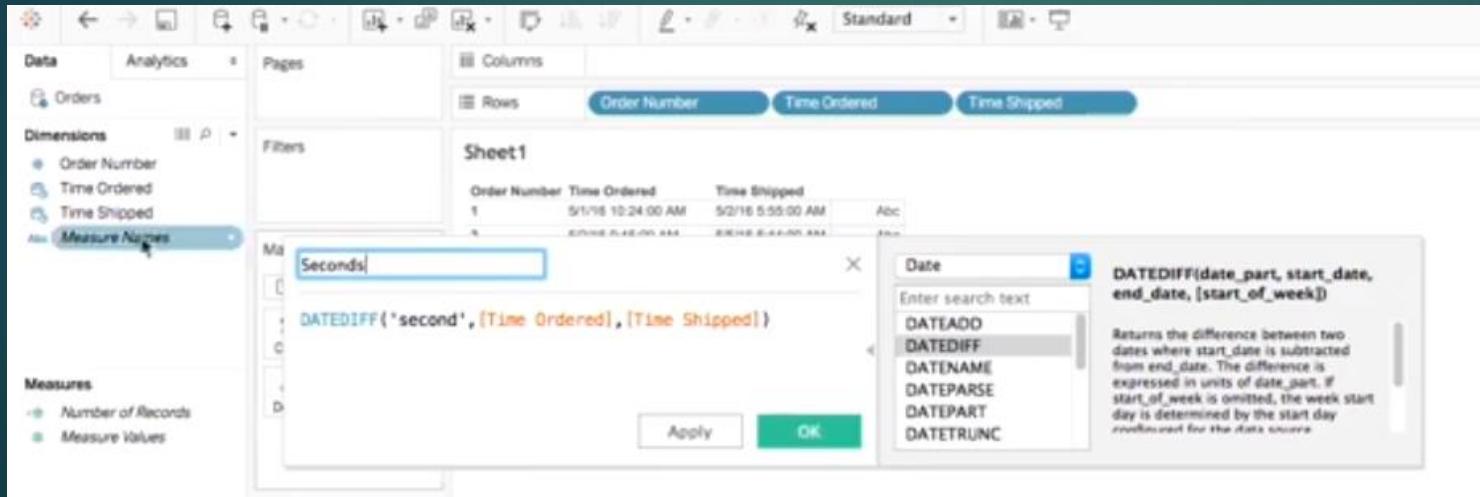
USING GLOBALVEHICLESALES

Converting String to Dates using Calculated Field



- ▶ Create a Calculate Field on Year
- ▶ Use the DATEPARSE function using the formula as shown
- ▶ Use to create Charts as Date

Calculate time durations



- ▶ Convert the Different to Seconds
- ▶ Use DateDiff function to find second difference
- ▶ Add it to the chart and convert to discrete
- ▶ Now use the second difference to calculate minutes/hours
- ▶ Use the formula shown to calculate the duration
- ▶ Format and add to get the duration(make it discrete)



Kunaal Naik

Analytics Practitioner, Lifeaholic Evangelist, Learner, YouTuber and Apprentice
Philosopher

Brillio • Institute of Aeronautical Engineering

Bengaluru, Karnataka, India • 500+

Lifeaholic channel



@Lifeaholism



fxexcel@gmail.com
FunXExcel.com
Youtube.com/fxexcel
Lifeaholic.in

Stay in touch!