

Exploring & Analyzing Data

Day 2

Overview

Create basic charts

- Bar chart
- Line chart
- Scatterplot
- Map using geographic data
- Combined axis chart
- Dual axis chart
- Stacked bar
- Chart to show specific values (crosstab, highlight table)

Organize data and apply filters

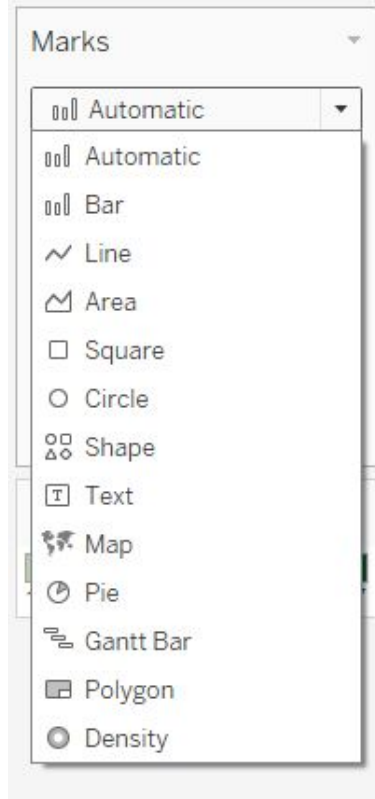
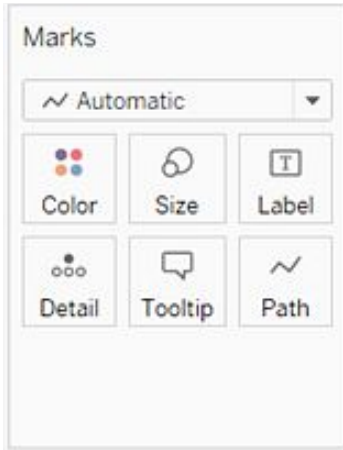
- Create a visual group
- Create a group using labels
- Create a set
- Organize dimensions into a hierarchy
- Filtering
- Add a filter to the view
- Add a context filter
- Add a date filter
- Additional:
- Using the Filter Shelf
- Sorting

Apply analytics to a worksheet

- Add a manual or a computed sort
- Add a reference line or trend line
- Use a table calculation
- Use bins and histograms
- Create a calculated field (e.g. string, date, simple arithmetic)
- Add a parameter

Creating Basic Charts

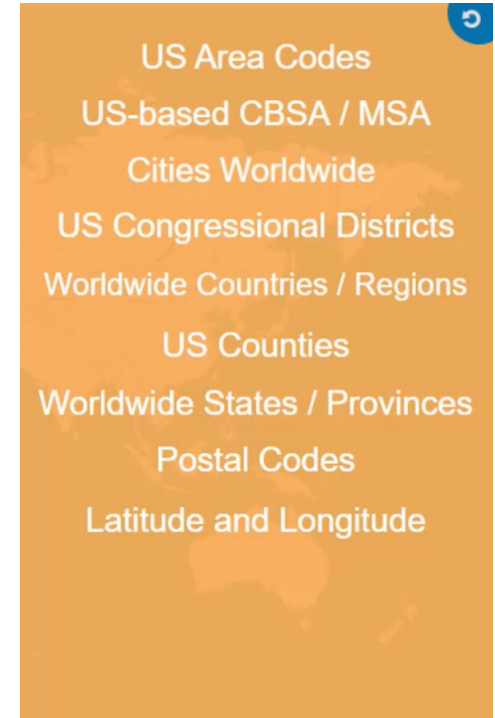
Basic Charts: Bar, Scatterplot, Line



- Drag out data, Tableau creates type of chart automatically
 - As long as “Automatic” is selected, it will select the type of chart automatically based off of the data pulled

Map using geographic data

If we don't have latitude and longitude, Tableau will use its database using the 8 fields to the left to assign coordinates (geocoding)



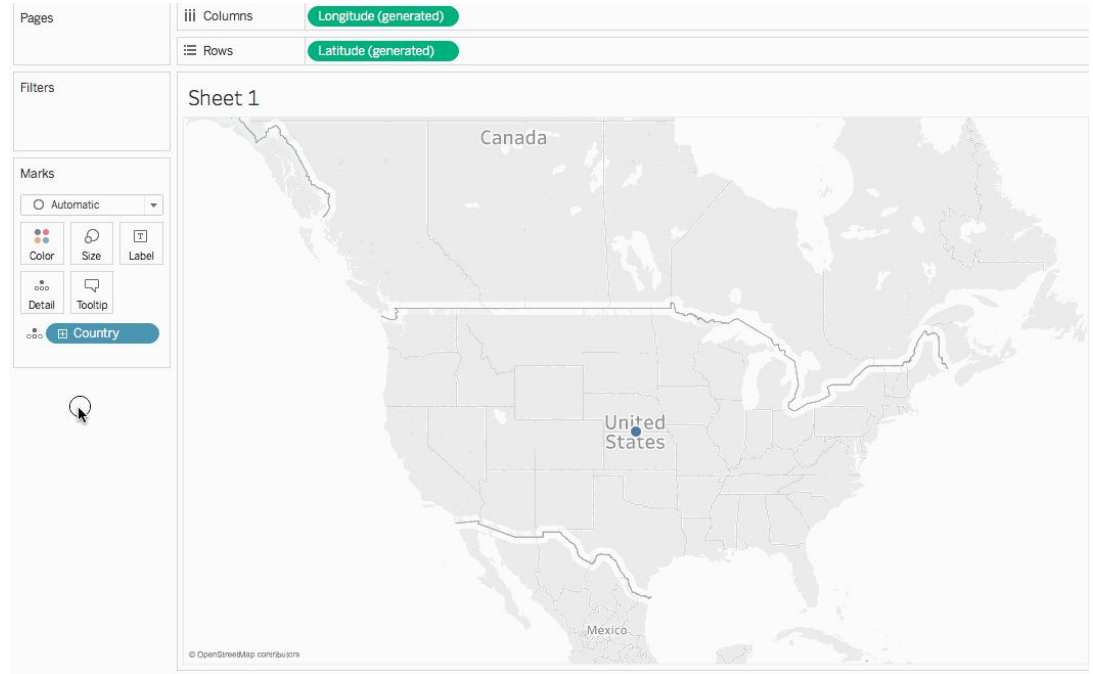
Create Hierarchy

- Country
- State
- City
- Postcode

The screenshot displays a data visualization tool interface. On the left, a sidebar contains two main sections: 'Dimensions' and 'Measures'. The 'Dimensions' section is expanded, showing a list of fields including 'Orders', 'Category', 'City', 'Country', 'Customer ID', 'Customer Name', 'Order Date', 'Order ID', 'Postal Code', 'Product ID', 'Product Name', 'Region', 'Segment', 'Ship Date', 'Ship Mode', 'State', and 'Sub-Category'. The 'Ship Mode' field is highlighted with a blue background and a mouse cursor. The 'Measures' section lists fields such as 'Discount', 'Profit', 'Quantity', 'Row ID', 'Sales', 'Latitude (generated)', 'Longitude (generated)', 'Number of Records', and 'Measure Values'. On the right, the main workspace is titled 'Sheet 1' and contains three 'Drop field here' prompts. Above the workspace, there are tabs for 'Data' and 'Analytics', and a 'Pages' section. Below the 'Dimensions' list, there are sections for 'Filters' and 'Marks'. The 'Marks' section includes a dropdown menu set to 'Automatic' and icons for 'Color', 'Size', 'Text', 'Detail', and 'Tooltip'.

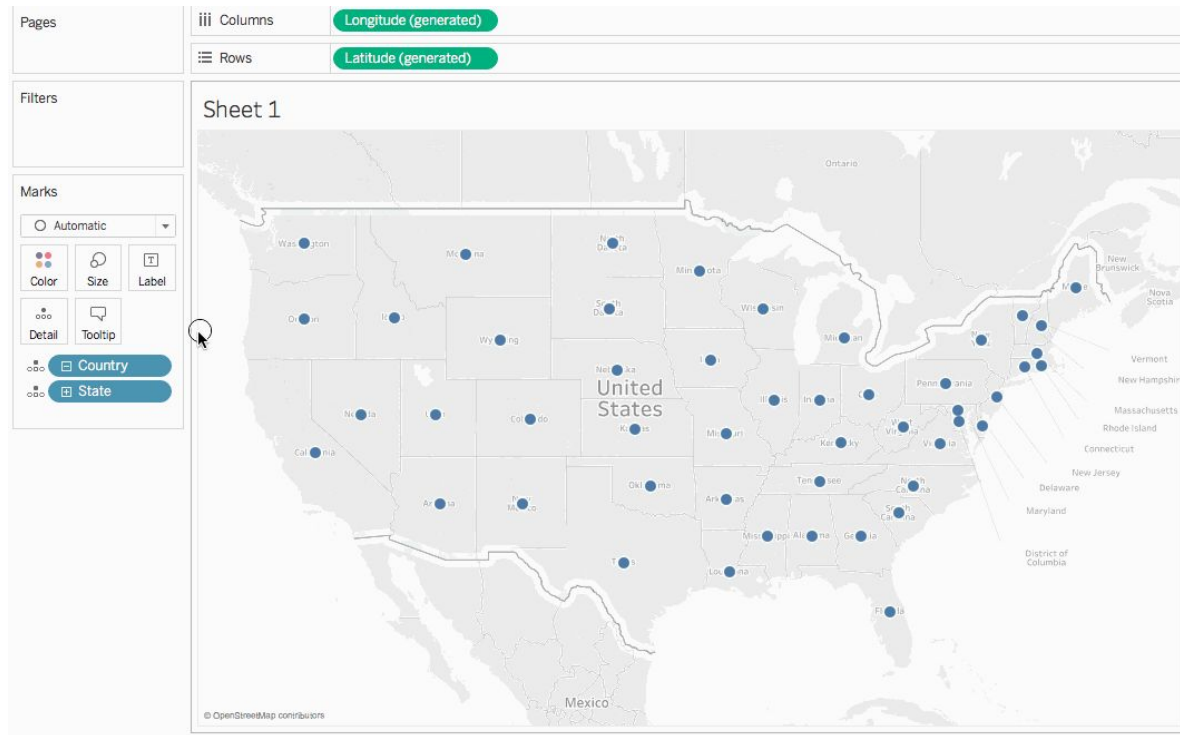
Create Map

- Drag geographic data to *Marks* box
- Tableau will generate a map automatically
- This is a **point or symbol map**



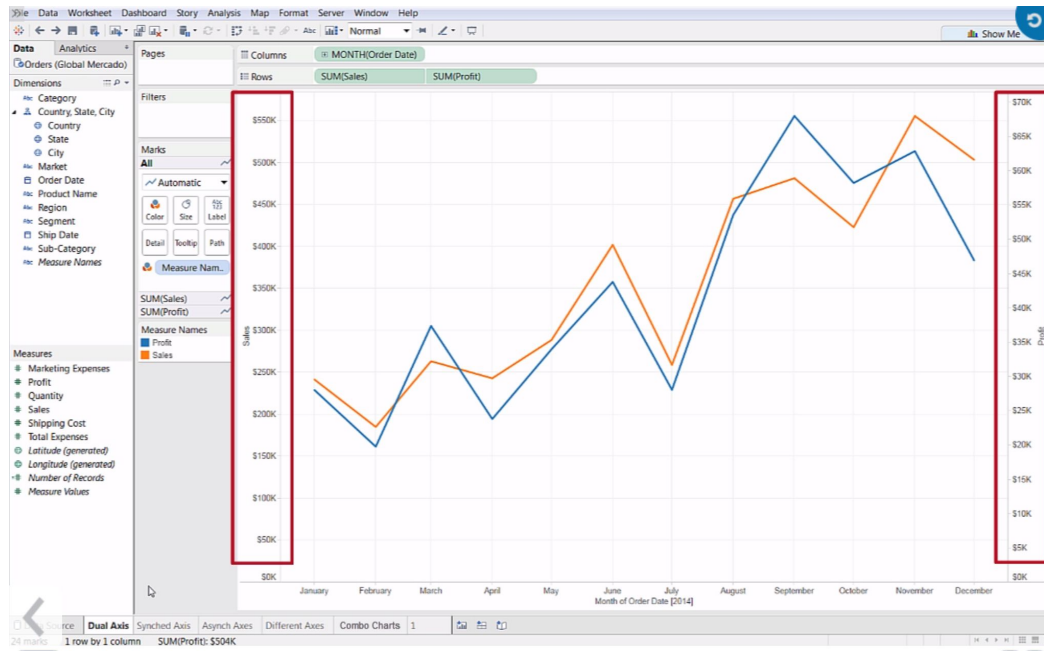
Change to **Filled Map**

- Tableau defaults to point map
- Go to the dropdown in the *Marks* menu
- Select *Filled Map*



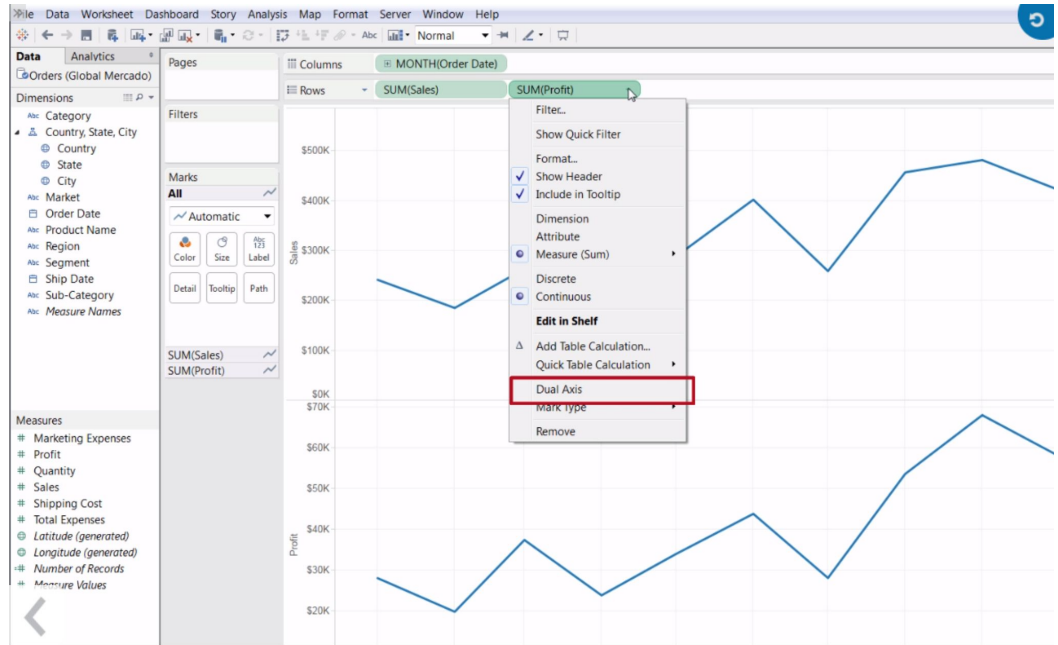
Dual Axis Charts

- Show how two different measures compare against each other
- Same or different mark types



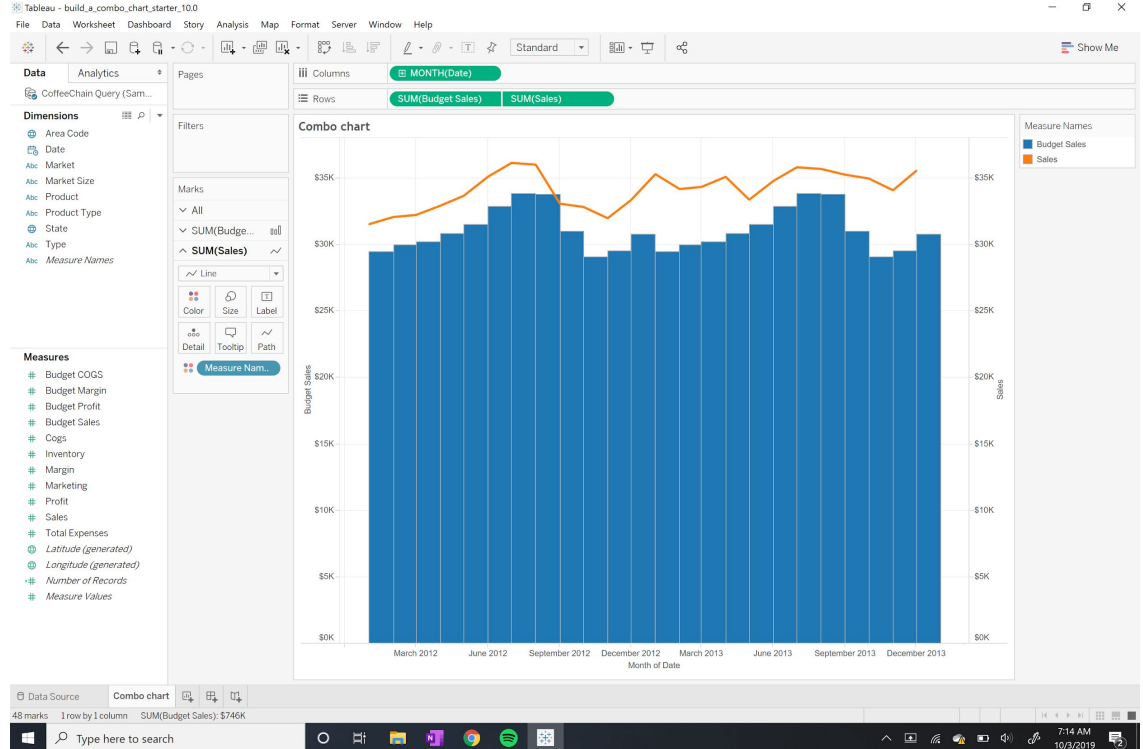
Creating Dual Axis Chart

- Select your two measures and drag onto rows
- Drop down > Dual Axis OR drag onto right pane until black dotted line appears
- Notice Marks card changes
 - Use this if we want to use different types of graphs



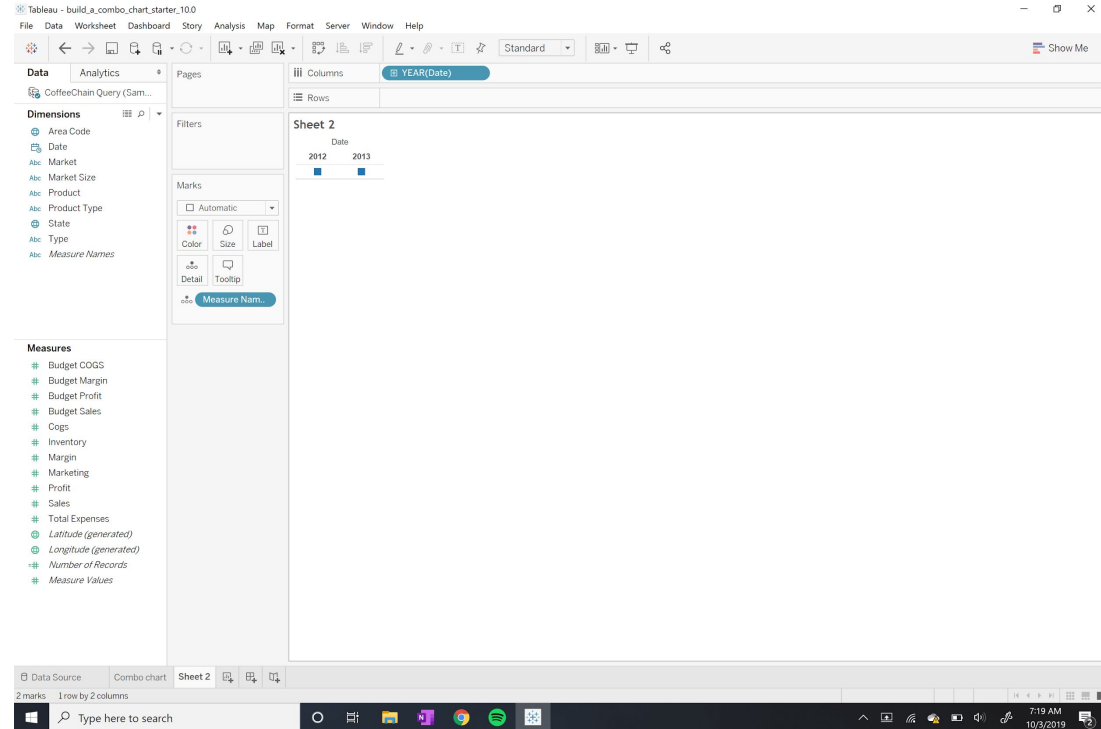
Combined Axis Chart

Combination charts are views that use multiple mark types in the same visualisation.



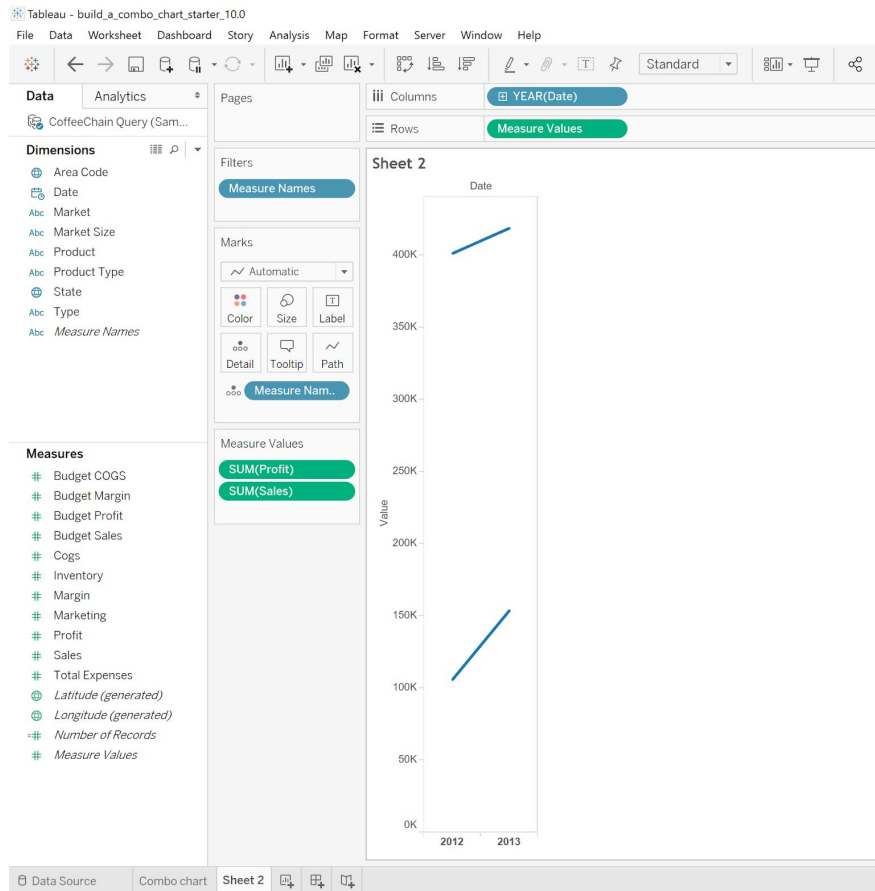
Stacked Bar Chart

- Bring out *Measure Names*
- Right click in *Marks*, select “Filter”
- Unclick all, select only the ones you want



Stacked Bar Chart

- Bring out *Measure Values* to rows
- Select Bar Chart



Crosstab

- Compares categories within categories
- Ex. Each region has its own segments that have sales

Pages		Columns	
		YEAR(Order Date)	
Filters		Rows	
		Region	Segment
Marks		Sheet 5	
Automatic			
Color			
Size			
Text			
Detail			
Tooltip			
SUM(Sales)			
SUM(Sales)			

		Order Date			
Region	Segment	2011	2012	2013	2014
Africa	Consumer	64,949	91,505	99,738	167,574
	Corporate	30,969	33,992	77,081	62,897
	Home Office	31,270	18,984	52,249	52,565
Canada	Consumer	4,686	10,603	9,812	10,618
	Corporate	2,497	3,405	4,501	8,910
	Home Office	1,326	2,089	4,847	3,633
Caribbean	Consumer	24,599	32,569	51,199	53,983
	Corporate	22,004	18,513	27,947	36,074
	Home Office	10,440	13,066	18,453	15,434
Central	Consumer	303,888	314,622	393,609	467,863
	Corporate	134,656	178,505	248,935	288,267
	Home Office	78,958	108,918	121,171	182,911
Central Asia	Consumer	48,609	97,648	94,241	128,557
	Corporate	54,958	49,252	65,912	65,419
	Home Office	19,671	27,233	36,162	65,165
East	Consumer	76,504	85,033	93,761	95,610
	Corporate	37,640	44,717	53,295	64,757
	Home Office	14,537	26,582	33,473	52,873
EMEA	Consumer	65,652	82,829	103,018	155,245
	Corporate	45,515	56,025	67,447	81,585
	Home Office	25,253	24,560	34,176	64,856

Highlight Table

- Create a highlight table by placing one or more dimensions on the **Columns** shelf and one or more dimensions on the **Rows** shelf.
- Select Square as the mark type and place a measure of interest on the Color shelf.

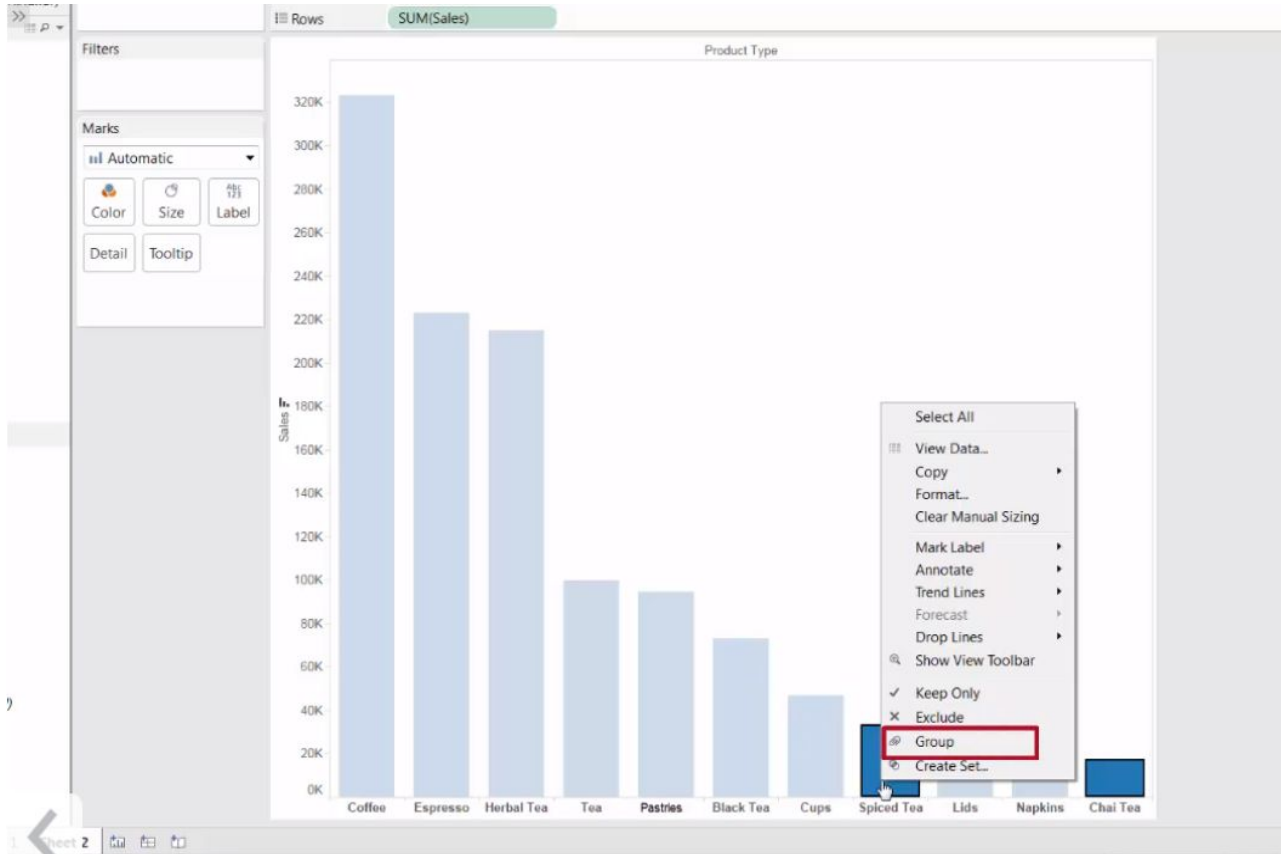


Organize Data and Apply Filters

Groups

- Lets you combine several measure of a single **dimension** into categories
- Creating a new dimension field
- Ways to create groups
 - View
 - Best for short lists
 - Dimensions Pane
 - Best for long lists

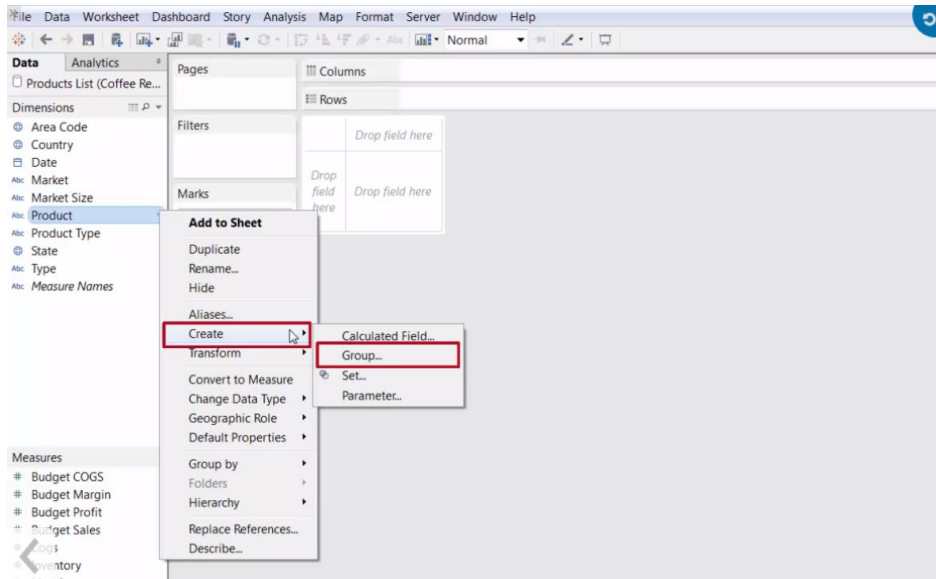
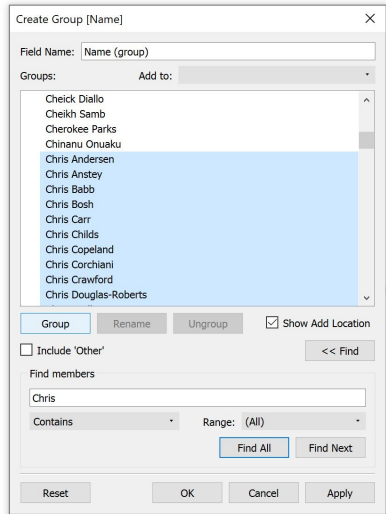
Creating a Visual Group



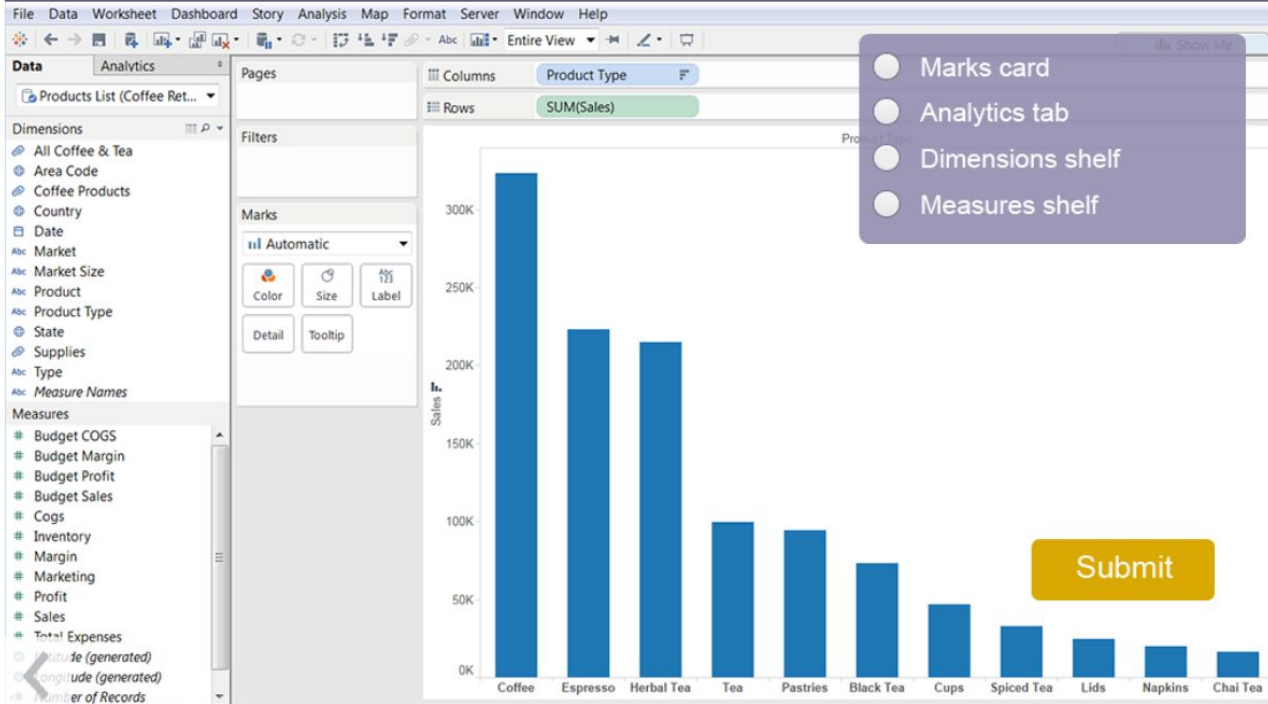
- Ctr + Click OR click and drag
- Right click > Group

Creating a Group in the Dimension Pane

- Right click on dimension > Create > Group
- If you have a long list, *Find*, type criteria, Group



Groups can be created directly from the view and the _____ ?

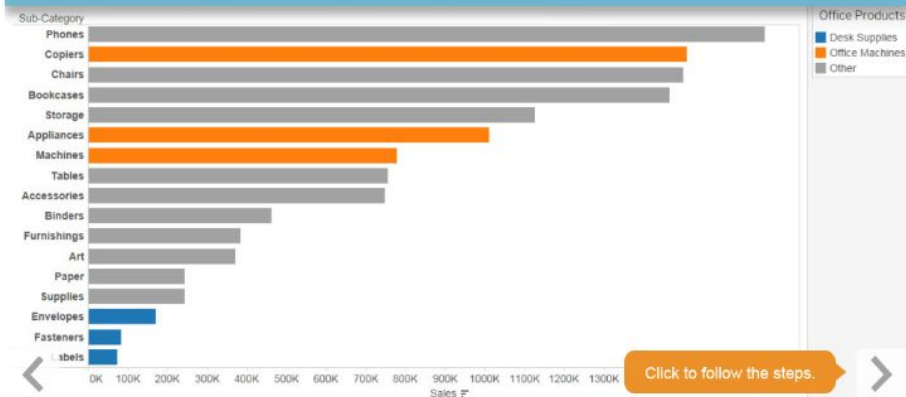







- ☐ Marks card
- ☐ Analytics tab
- ☐ Dimensions shelf
- ☐ Measures shelf

Grouping Activity

Open the activity workbook to complete this scenario:

You are presenting a sales report to your team. You would like to visually distinguish some products in the view. Create a view that will allow you to highlight several groups using different colors in the view. Good luck!

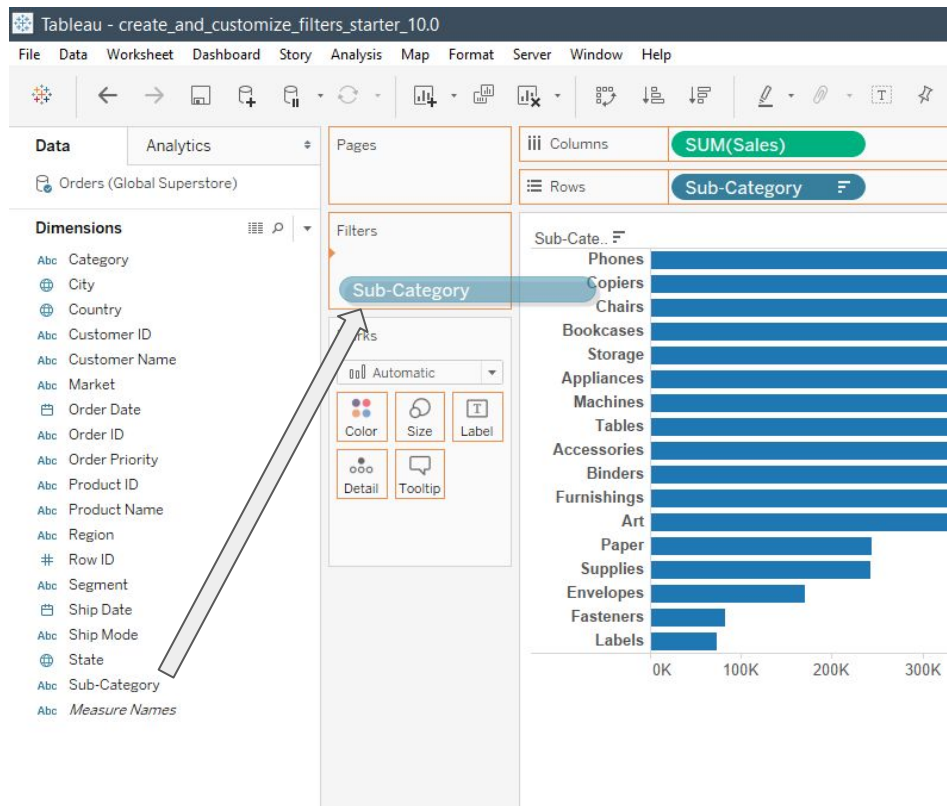


- 1 Select the bottom three bars in the view.  ✓
- 2 Group the bottom three bars.  ✓
- 3 Group copiers, appliances, and machines.  ✓
- 4 Rename Sub-Category (group) "Office Products".  ✓
- 5 Rename the grouped members of Office Products "Desk Supplies" and "Office Machines".  ✓

For help, click a step. Click the check mark when you've finished a step.

Filters

- Allow users to answer more detailed questions
- Are independent of one another



General: Select which categories you want to show or hide with the checkbox.

Wildcard: Show all values that include, start with, or end with an entered value.

Condition: Creates an IF statement to only include values in a range or $>$, $<$, $=$ an entered value.

Top: Shows only the top or bottom fields by sorting.

Filter [Sub-Category]

General Wildcard Condition Top

☒ Select from list ☐ Custom value list ☐ Use all

Enter search text

- ☒ Accessories
- ☒ Appliances
- ☒ Art
- ☒ Binders
- ☒ Bookcases
- ☒ Chairs
- ☒ Copiers
- ☒ Envelopes
- ☒ Fasteners
- ☒ Furnishings
- ☒ Labels
- ☒ Machines
- ☒ Paper
- ☒ Phones

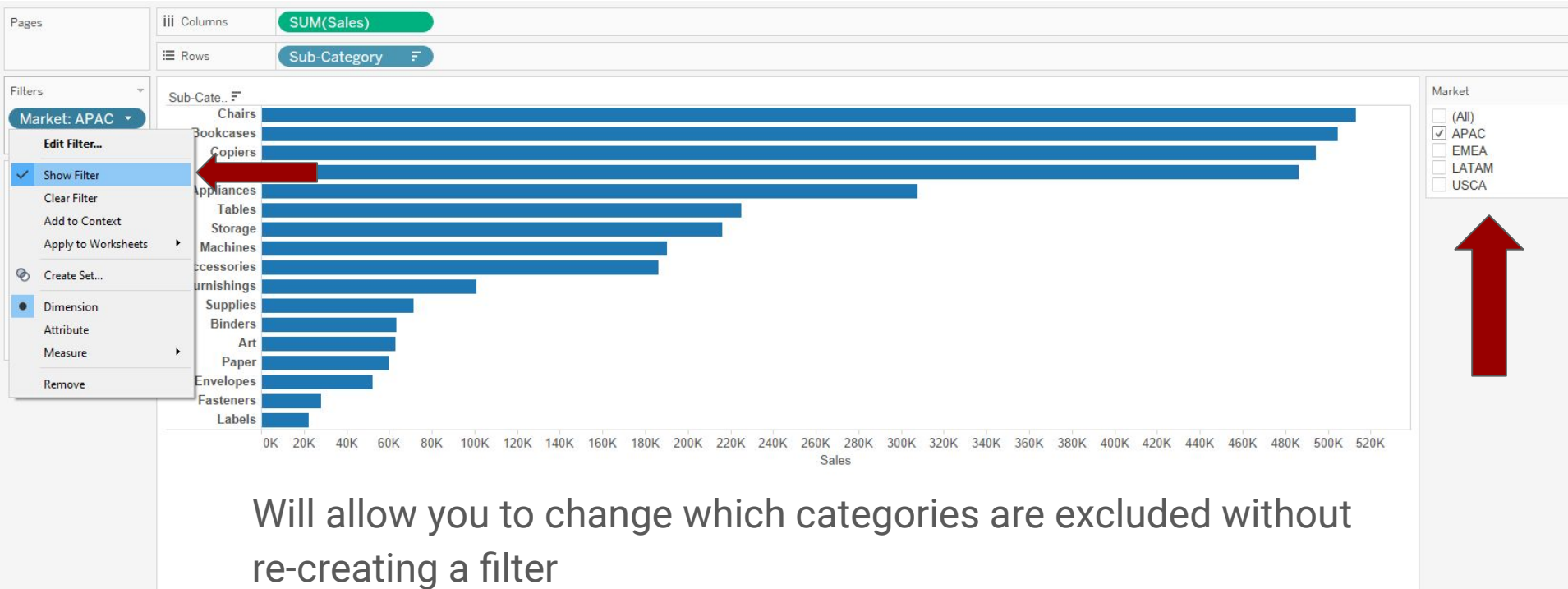
All None ☐ Exclude

Summary

Field: [Sub-Category]
Selection: Selected 17 of 17 values
Wildcard: All
Condition: None
Limit: None

Reset OK Cancel Apply

Showing Filters in the Filter Tab



Date Filters

- Add filter to a date field > Edit filter

Filter Field [Order Date]

How do you want to filter on [Order Date]?

☐ Relative Date

☒ **Range of Dates**

- # Years
- # Quarters
- # Months
- # Days
- # Week numbers
- # Weekdays
- # Month / Year
- # Month / Day / Year
- ☐ Individual Dates

Next > Cancel

Continuous

Order Date

1/1/2011 12/31/2014

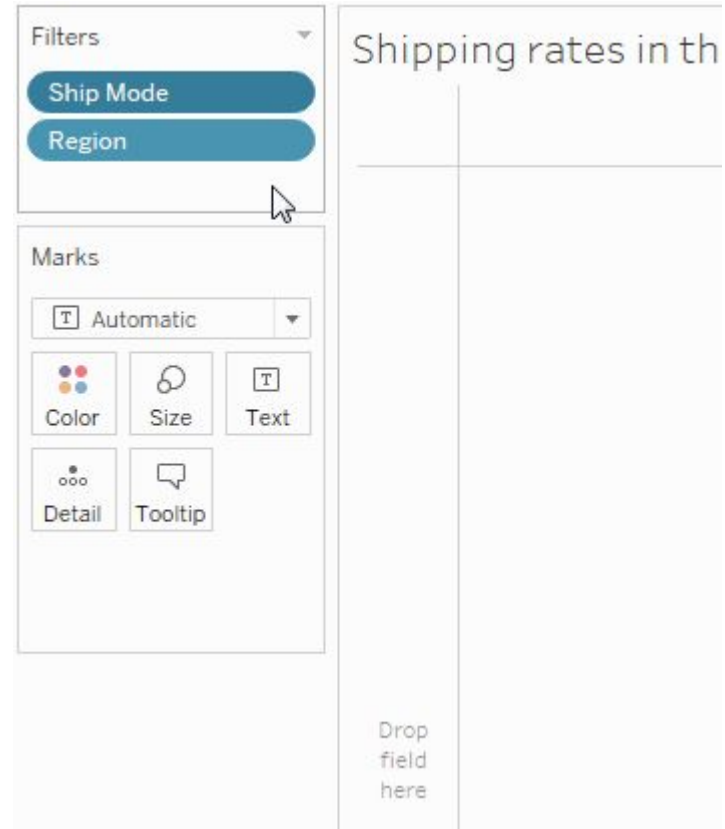
Discrete

YEAR(Ship Date)

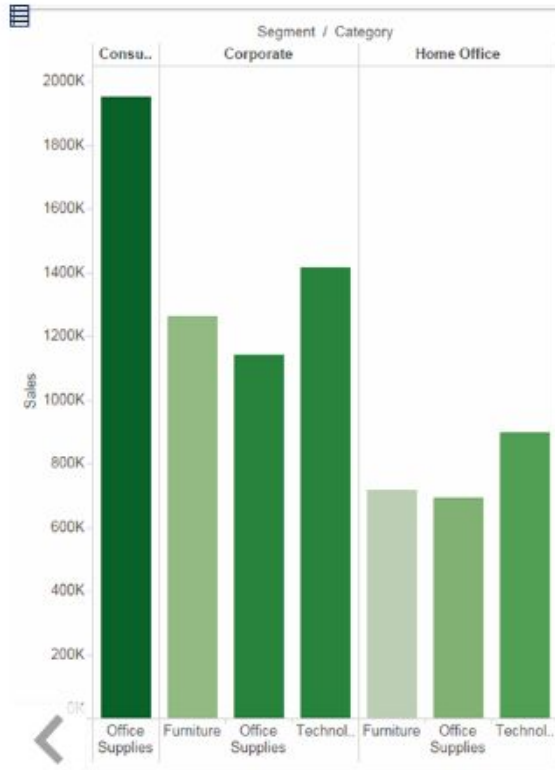
- ☒ (All)
- ☒ 2011
- ☒ 2012
- ☒ 2013
- ☒ 2014
- ☒ 2015

Context Filters

- Usually filters are independent of one another, but context filters restrict other filters
- Can improve performance with large datasets



Filtering Activity



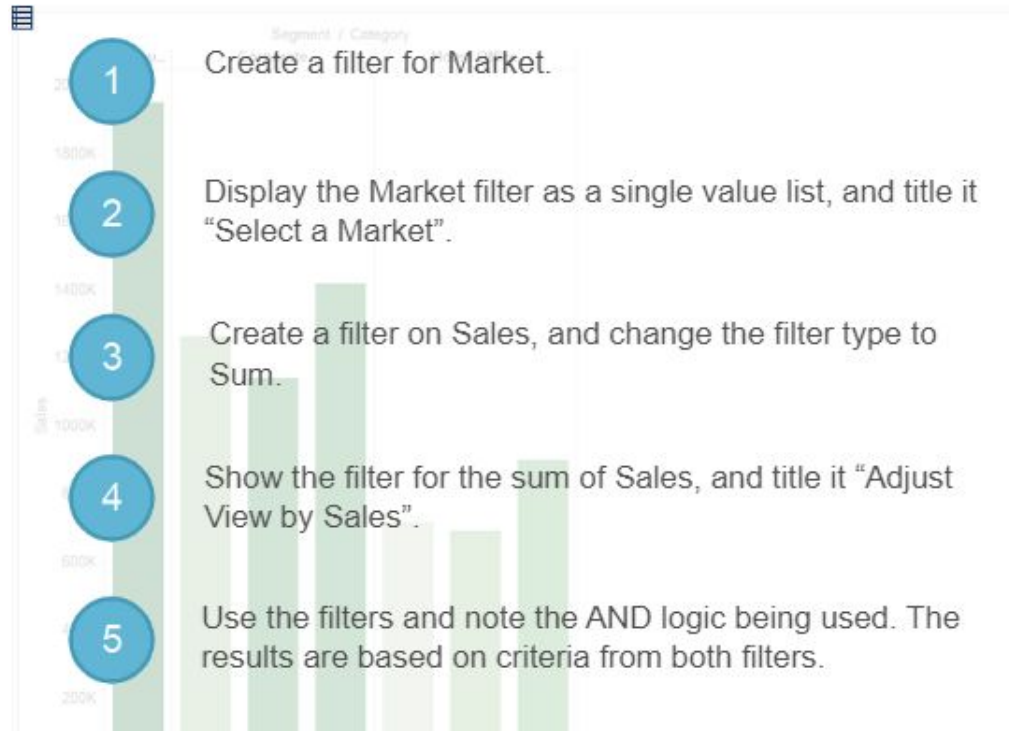
Open the activity
workbook to complete
this scenario:

You have a view that shows sales data
for all your inventory. Create a filter that
allows users to filter sales by individual
market, and create a second filter to
enable people to filter on the sum of
sales using a slider.

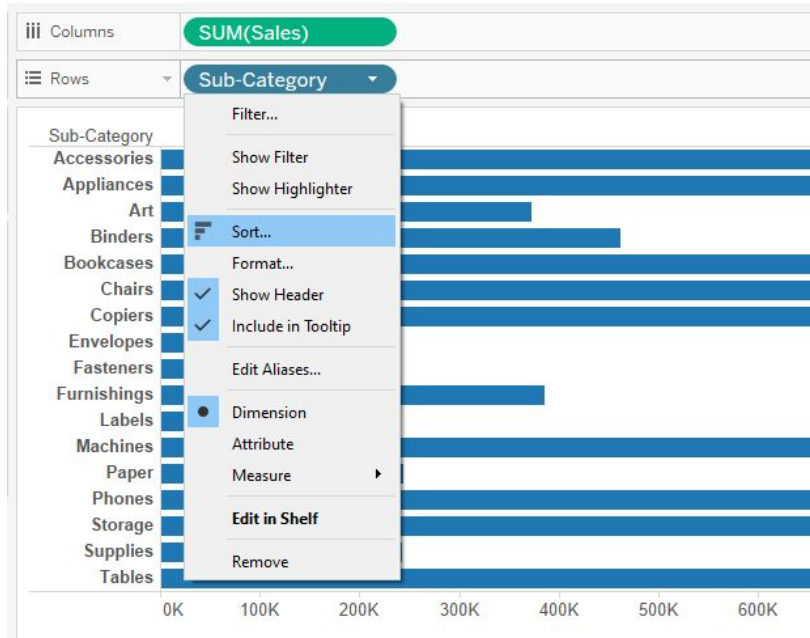
Good luck!

Click to follow the steps.

Filtering Activity



Sorting



Sort [Sub-Category] ×

Sort By
Field ▼

Sort Order
☐ Ascending
☒ Descending

Field Name
Sales ▼

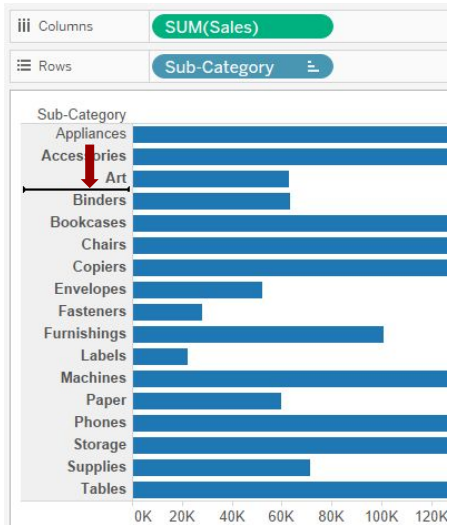
Aggregation
Sum ▼

Clear

Manual or Computed Sort

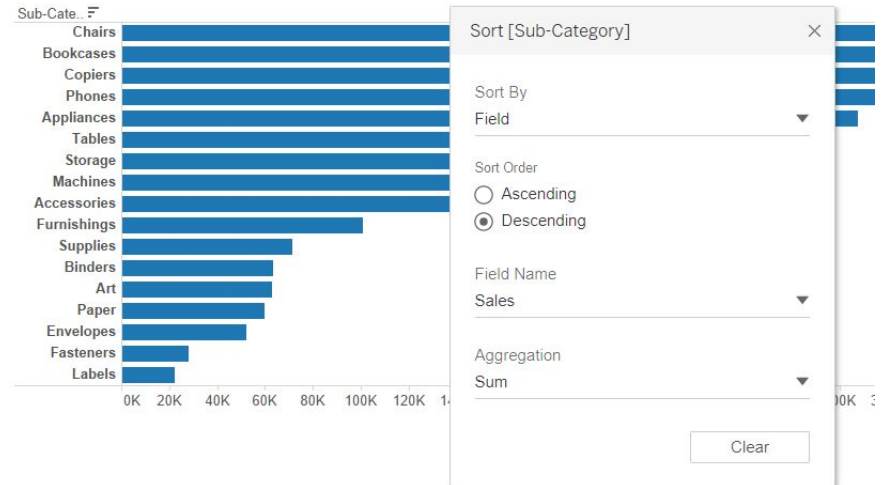
Manual

- Drag and drop columns or rows to where you want them



Computed

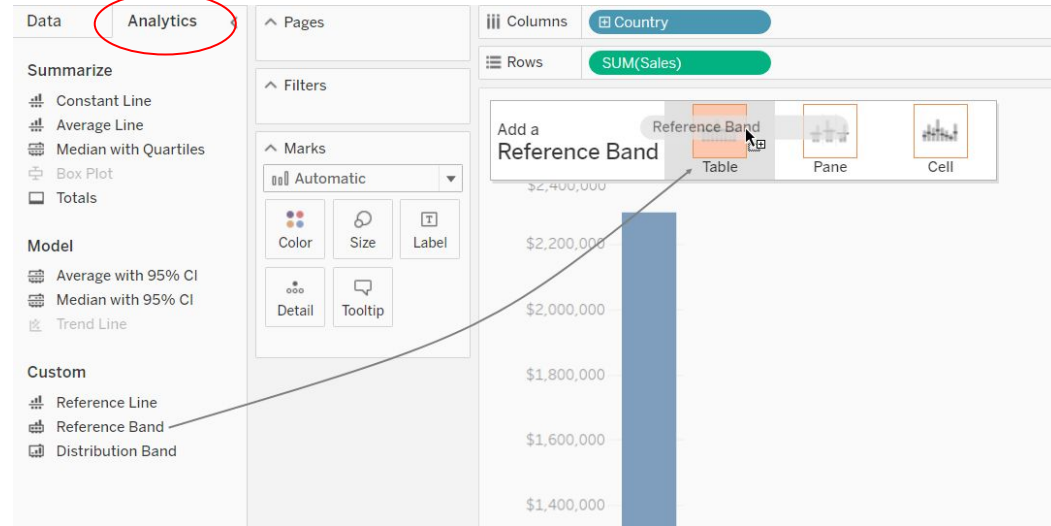
- Sorts by comparing values for each row and ordering them in ascending/descending order



Apply Analytics to A Worksheet

Add a reference line

Drag Reference Line from the Analytics pane into the view. Tableau shows the possible destinations. The range of choices varies depending on the type of item and the current view.



Edit Reference Line, Band or Box

Line

Band

Distribution

Box Plot

Scope

☒ Entire Table
☐ Per Pane
☐ Per Cell

Line

Value: SUM(Sales)
Average

Label: Computation

Tooltip: Automatic

Line only
95

Formatting

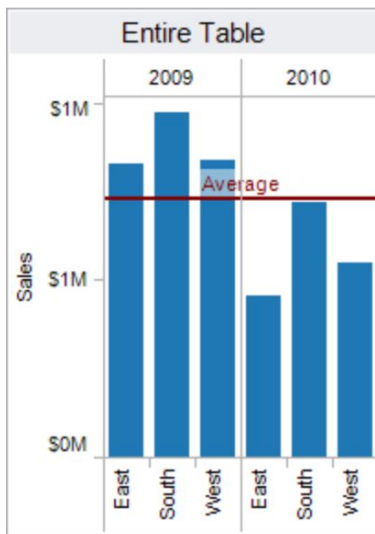
Line:

Fill Above: None

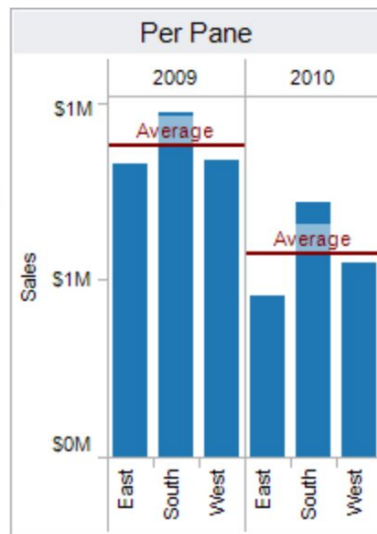
Fill Below: None

☒ Show recalculated line for highlighted or selected data points

OK



Adds a reference line to the entire table across all panes.



Adds a reference line on a per pane basis. Computed reference lines are recalculated for each pane in the view.

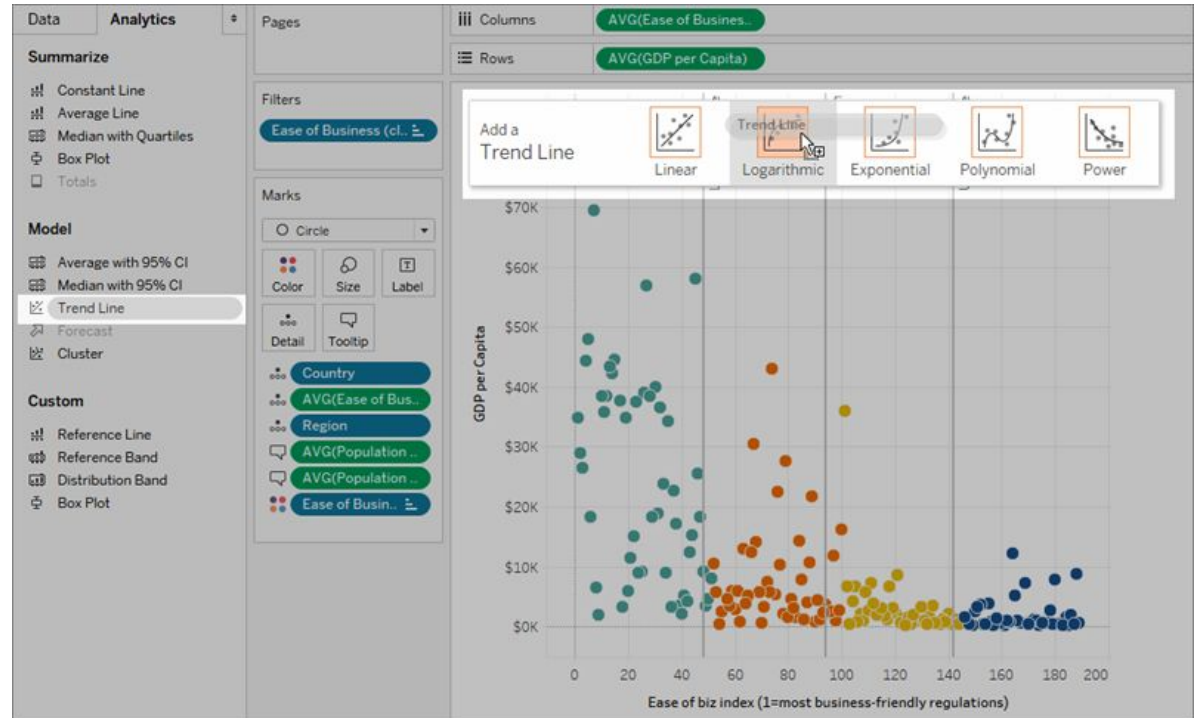


Adds a reference line within each cell. Computed reference lines are recalculated for each cell in the view.

Add a Trend Line

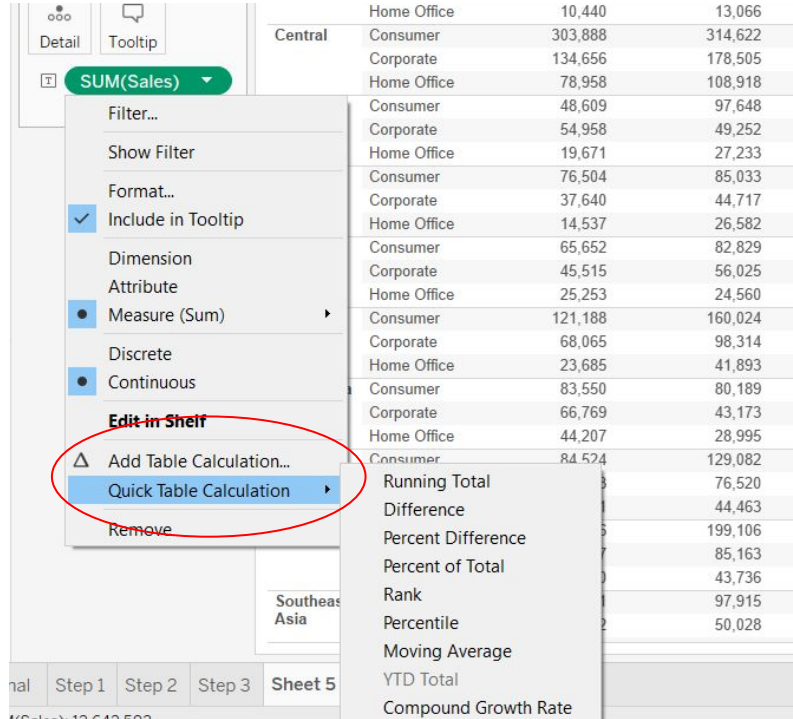
Easy when you have numerical values on both axes

Analytics pane > Drag Trendline



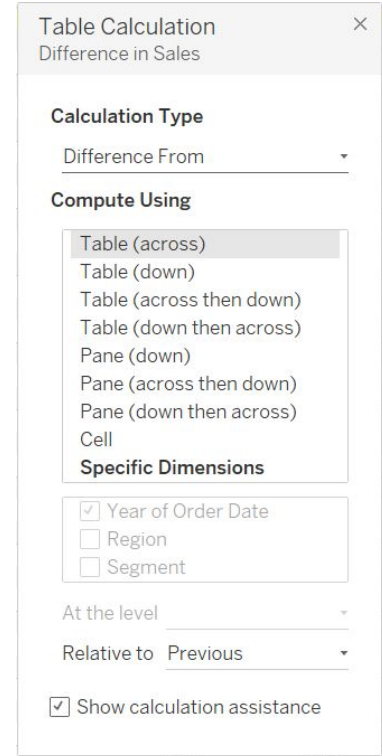
Use a table calculation

- Field > Quick Table Calculation **OR** Add Table Calculation
- Compute Using
- Add these to change values



The screenshot shows the Tableau interface with a table calculation menu open for the 'SUM(Sales)' field. The menu options are: Filter..., Show Filter, Format..., Include in Tooltip (checked), Dimension, Attribute, Measure (Sum) (selected), Discrete, Continuous, Edit in Shelf, Add Table Calculation... (circled in red), Quick Table Calculation (circled in red), and Remove. The background shows a data table with columns for Region, Segment, and Sales.

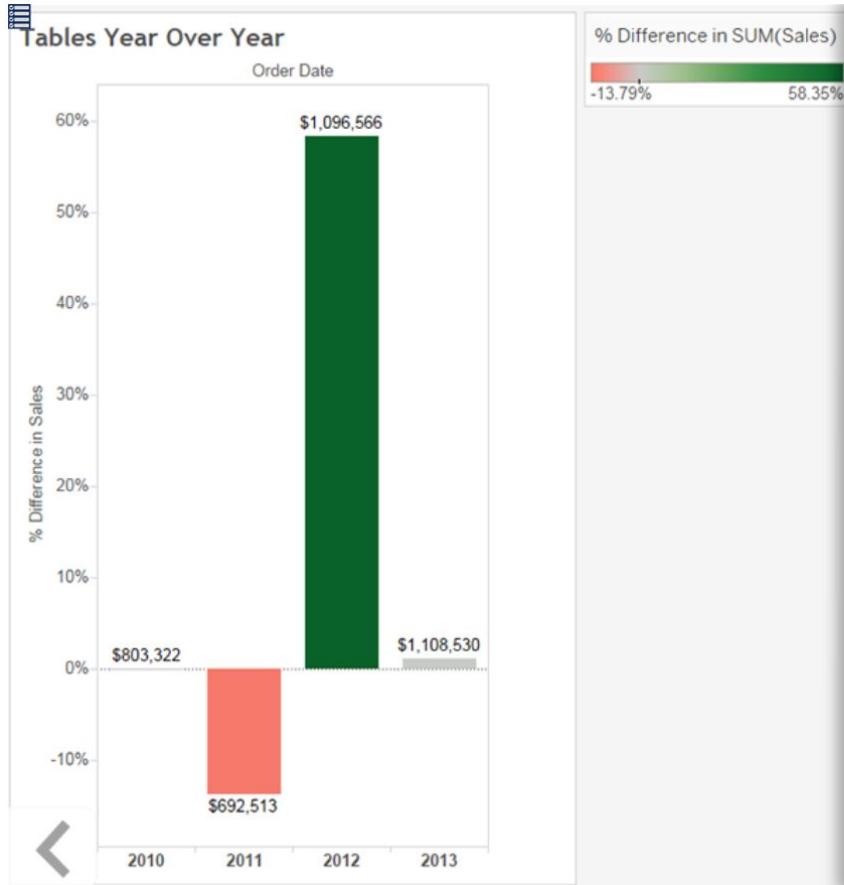
Region	Segment	Sales
Central	Home Office	10,440
Central	Consumer	303,888
Central	Corporate	134,656
Central	Home Office	78,958
Central	Consumer	48,609
Central	Corporate	54,958
Central	Home Office	19,671
Central	Consumer	76,504
Central	Corporate	37,640
Central	Home Office	14,537
Central	Consumer	65,652
Central	Corporate	45,515
Central	Home Office	25,253
Central	Consumer	121,188
Central	Corporate	68,065
Central	Home Office	23,685
Central	Consumer	83,550
Central	Corporate	66,769
Central	Home Office	44,207
Central	Consumer	84,524
Central	Running Total	76,520
Central	Difference	44,463
Central	Percent Difference	199,106
Central	Percent of Total	85,163
Central	Rank	43,736
Central	Percentile	97,915
Central	Moving Average	50,028
Central	YTD Total	
Central	Compound Growth Rate	



The screenshot shows the 'Table Calculation' dialog box with the following settings:

- Table Calculation**: Difference in Sales
- Calculation Type**: Difference From
- Compute Using**: Table (across)
- Specific Dimensions**:
 - ☒ Year of Order Date
 - ☐ Region
 - ☐ Segment
- At the level**: [Dropdown]
- Relative to**: Previous
- ☒ Show calculation assistance

Exercise



Open the activity
workbook to complete
this scenario:

Sales of table furniture have fluctuated over the years, so you would like to create a view that shows the annual change in sales of tables. You'll create a bar chart using a table calculation and label it with the Sales field.

Good luck!




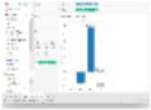


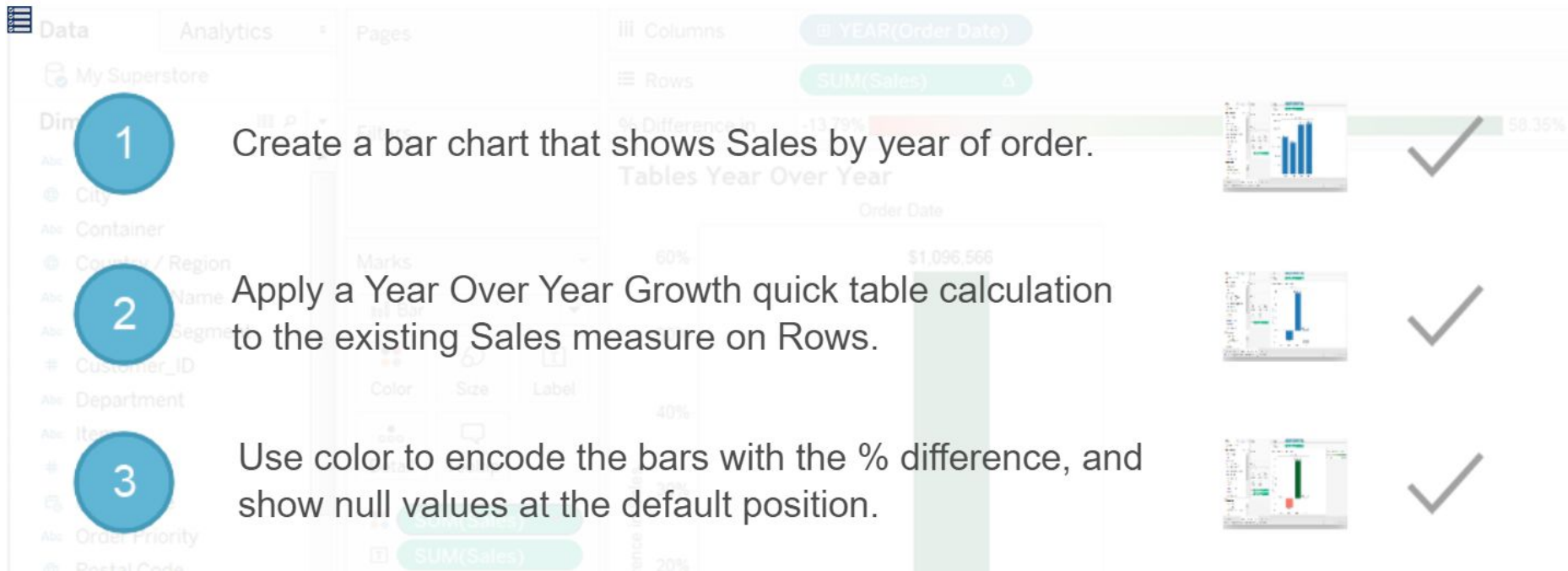
Click to follow the steps.



1 Create a bar chart that shows Sales by year of order.

2 Apply a Year Over Year Growth quick table calculation to the existing Sales measure on Rows.

3 Use color to encode the bars with the % difference, and show null values at the default position.

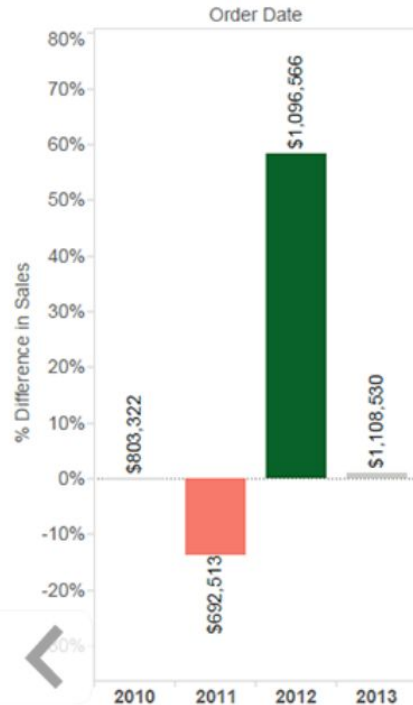


Great work! You've added a quick table calculation.



We have one more question for you. In 2011, what was the % difference in sales of tables compared with 2010?

Tables Year over Year



% Difference in SUM(Sa...

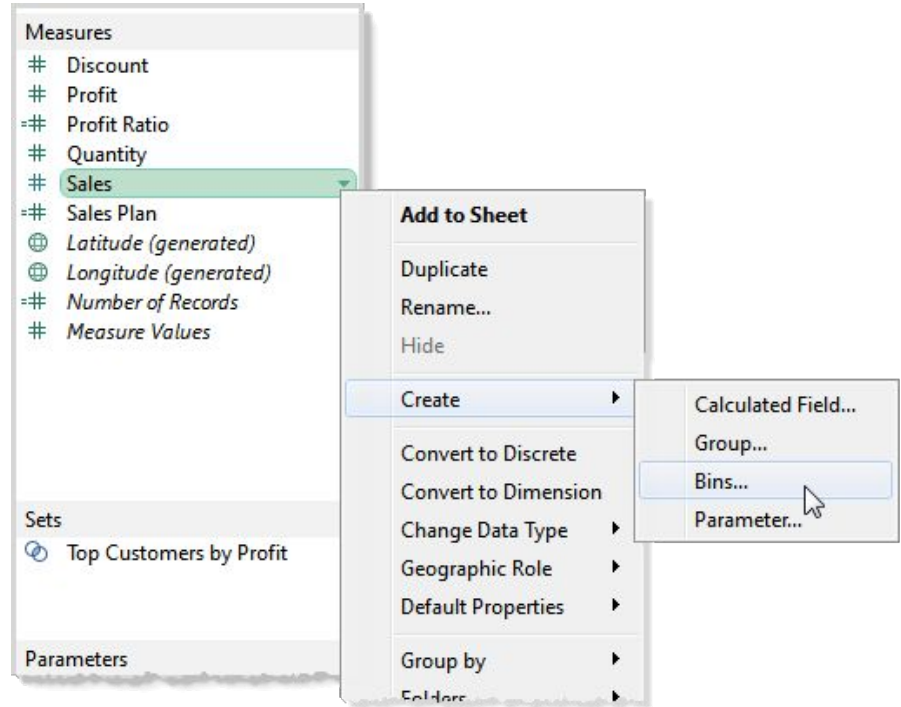
- ☐ -58.35%
- ☐ -13.79%
- ☐ -21.12%
- ☐ 0%

-13.79% 58.35%

Submit

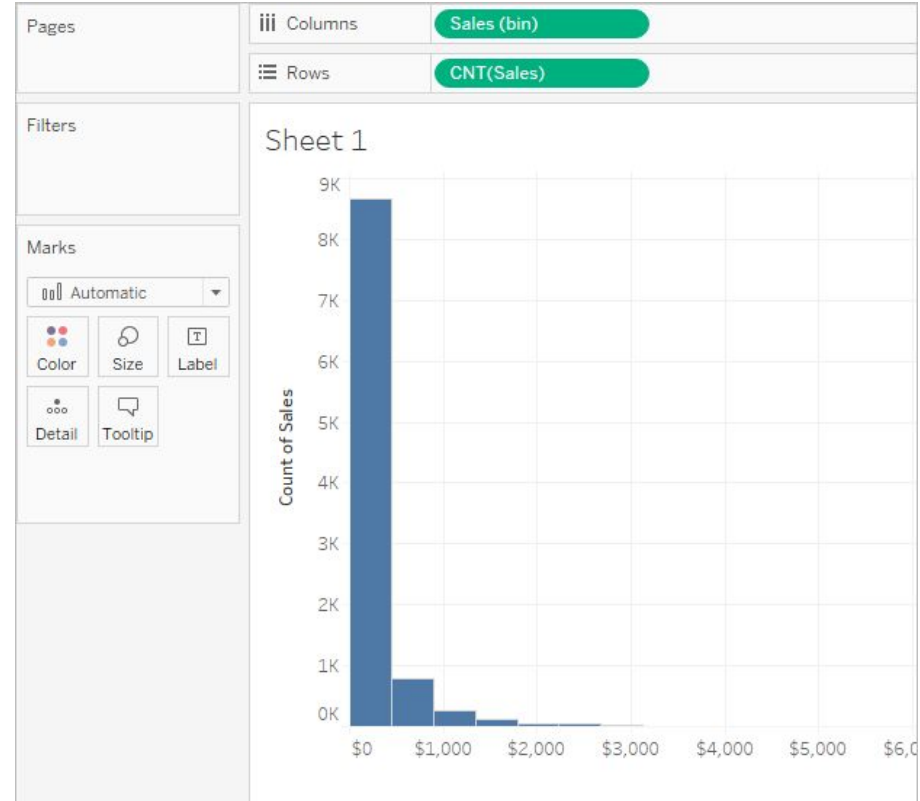
Use bins and histograms

1. Create bins
2. Use bins as a starting point for histogram



Create a Histogram from a Binned Dimension

1. Click the Sales (bin) dimension in the Data pane and choose Convert to continuous.
2. Drag the Sales (bin) dimension from the Data pane and drop it on the Columns shelf.
3. Drag the original Sales field from the Measures area of the Data pane and drop it on the Rows shelf.
4. Click SUM(Sales) on Rows and change the aggregation from Sum to Count.



Create a calculated field (e.g. string, date, simple arithmetic)

- Analysis Tab > Create calculated Field
- In the Calculation Editor, enter a formula

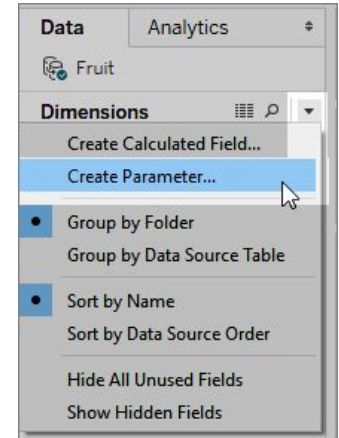
The screenshot displays the Tableau Desktop interface. The top menu bar includes File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Server, Window, and Help. The left sidebar shows the Data pane with 'Sample - Superstore' selected. The Dimensions pane lists fields like Ship Mode, Location, Country, State, City, Postal Code, Product, Category, Sub-Category, Manufacturer, Product Name, Profit (bin), Region, and Measure Names. The Measures pane shows Discount, Profit, and Quantity. The Sets pane shows 'Top Customers by Profit'. The Parameters pane shows 'Profit Bin Size' and 'Top Customers'. The main view shows the Calculation Editor with 'Automatic' selected. The Columns shelf contains 'Region' and the Rows shelf contains 'Category' and 'Sub-Category'. The main view displays a table titled 'Sheet 1' with columns for Category, Sub-Category, and Region (Central, East, South, West). The table contains data for Furniture, Office Supplies, and Technology categories.

Category	Sub-Category	Region			
		Central	East	South	West
Furniture	Bookcases	Abc	Abc	Abc	Abc
	Chairs	Abc	Abc	Abc	Abc
	Furnishings	Abc	Abc	Abc	Abc
	Tables	Abc	Abc	Abc	Abc
Office Supplies	Appliances	Abc	Abc	Abc	Abc
	Art	Abc	Abc	Abc	Abc
	Binders	Abc	Abc	Abc	Abc
	Envelopes	Abc	Abc	Abc	Abc
	Fasteners	Abc	Abc	Abc	Abc
	Labels	Abc	Abc	Abc	Abc
	Paper	Abc	Abc	Abc	Abc
	Storage	Abc	Abc	Abc	Abc
	Supplies	Abc	Abc	Abc	Abc
Technology	Accessories	Abc	Abc	Abc	Abc
	Copiers	Abc	Abc	Abc	Abc
	Machines	Abc	Abc	Abc	Abc
	Phones	Abc	Abc	Abc	Abc

Parameters

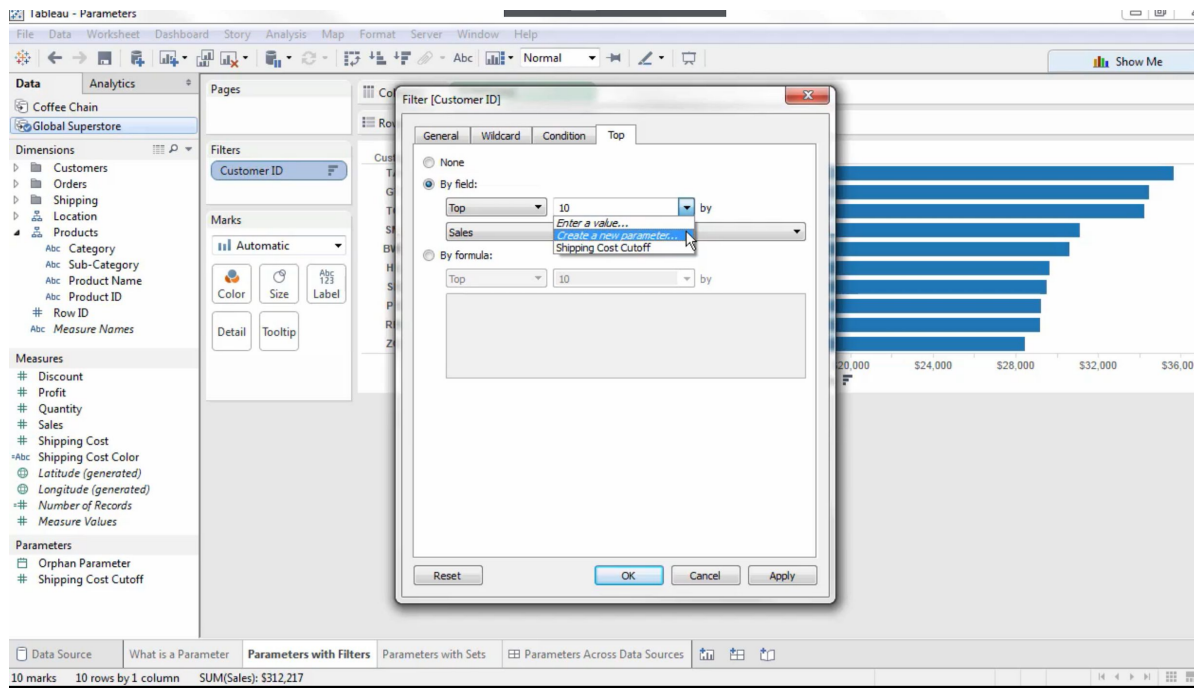
- Parameters are dynamic values that can replace constant values in calculations, filters, and reference lines.
- Add interactivity and flexibility to a workbook
- Variable in an equation whose value can be controlled by user

In the **Data** pane, click the drop-down arrow in the upper right corner and select **Create Parameter**.



Add A Parameter

Filters > Top > *Create a new parameter...*



Review

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- Line chart
- Scatterplot
- Map using geographic data
- Combined axis chart
- Dual axis chart
- Stacked bar
- Chart to show specific values (crosstab, highlight table)

Organize data and apply filters

- Create a visual group
- Create a group using labels
- Create a set
- Organize dimensions into a hierarchy
- Filtering
- Add a filter to the view
- Add a context filter
- Add a date filter
- Additional:
- Using the Filter Shelf
- Sorting

Apply analytics to a worksheet

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