

Tableau Essentials

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About Trainer

- ❖ KG to PG (Physics)
- ❖ Physics to Management (IIM Ahmedabad) specializing in Operations Research
- ❖ Management to Electrical Engineering (IIT Bombay)
- ❖ Cofounded Kie Square Consulting
- ❖ Founder Director of startup Business schools and Dean of first Liberal school in India
- ❖ Startups to Marketing Strategy
- ❖ Marketing Strategy to Artificial Intelligence & Deep Learning in Fintech, Telecom & Banking

Published in Public Health, Electricity Markets, Telecom, Advertising & Communication Strategies

Worked on assignments with International Monetary Fund, Royal Netherland Embassy etc.

Conducts training in

Python (Pandas, NumPy, SciPy, Matplotlib, Bokeh)

R (dplyr, rstanarm, knitr, ggplot2)

Data Visualization (Tableau, Qlik, MicroStrategy, D3.js)

Machine Learnng (Reinforced Learning, Scikit Learn)

Deep Learning (Tensorflow, Theano, CNN, RNN)

Agenda

D1 M1: Data Visualization Overview

- Data Visualization Overview
- Where Tableau fits in the data analysis ecosystem
- Tableau File Types
- Tableau Interface

D1 M2: Tableau Overview

- Worksheets, Dashboard, Stories
- Dimensions & Measures
- Continuous Vs Discrete Data
- Folders, Hierarchies

Agenda

D1 M3: Getting Data in Tableau

- Data Import Export
- Data Join
- Data Extracts
- Data Blending
- Data Source Filters

D1 M4: Processing Data for Visualization

- Data Transformation
- Data Interpreter
- Data field merge and split
- Data Pivot
- Groups & Sets

Exercise Files

Please download the
exercise and data files
from

<https://github.com/dear-bharat/tableauEssential>

D1 M1

Data

Visualization

Overview

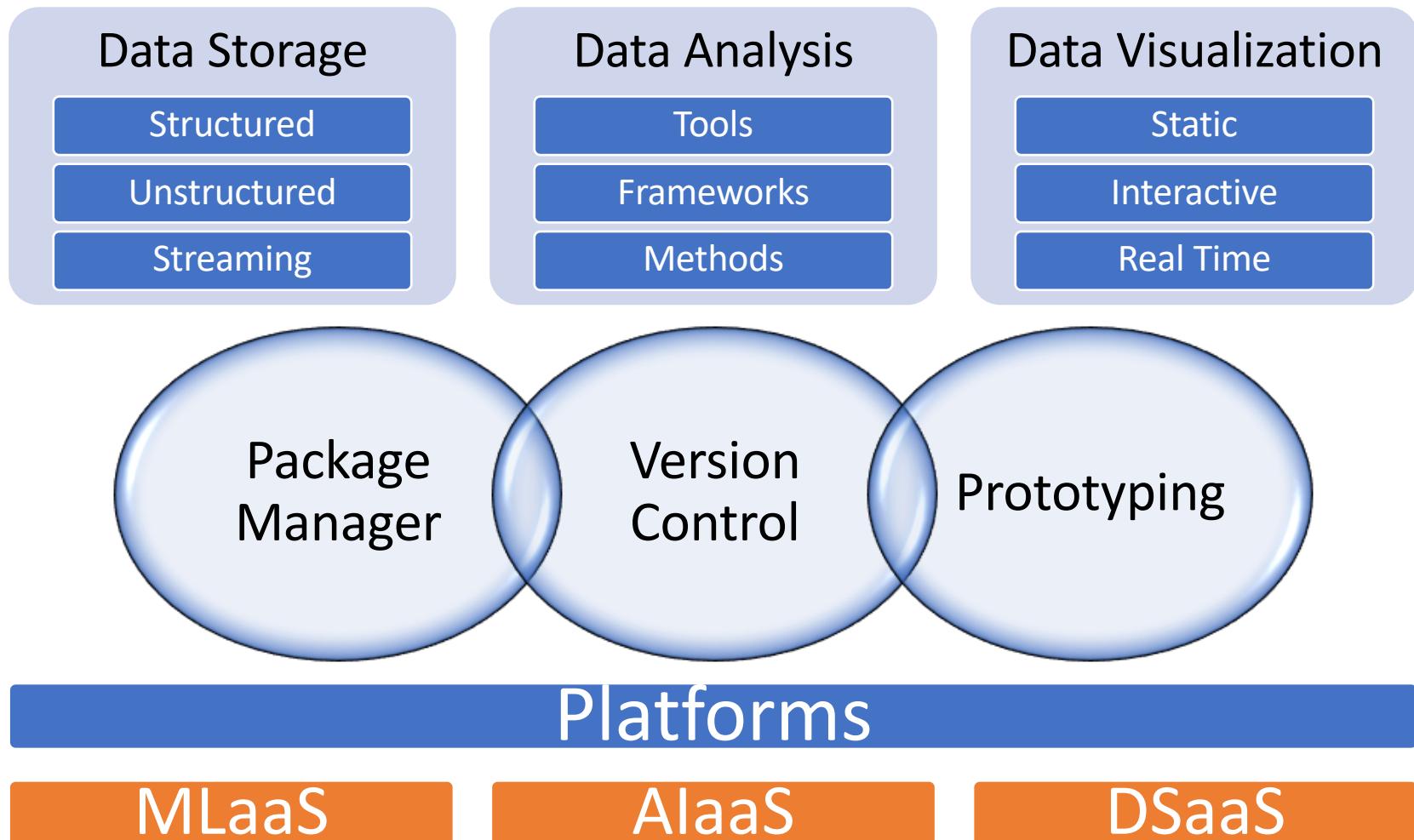
Data Visualization
Overview

Where Tableau fits in
the data analysis
ecosystem

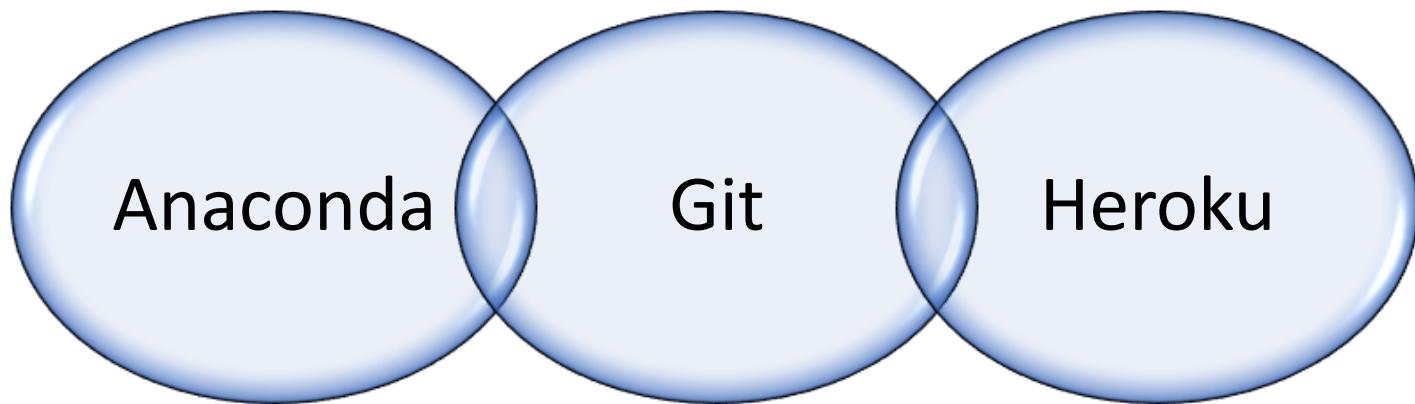
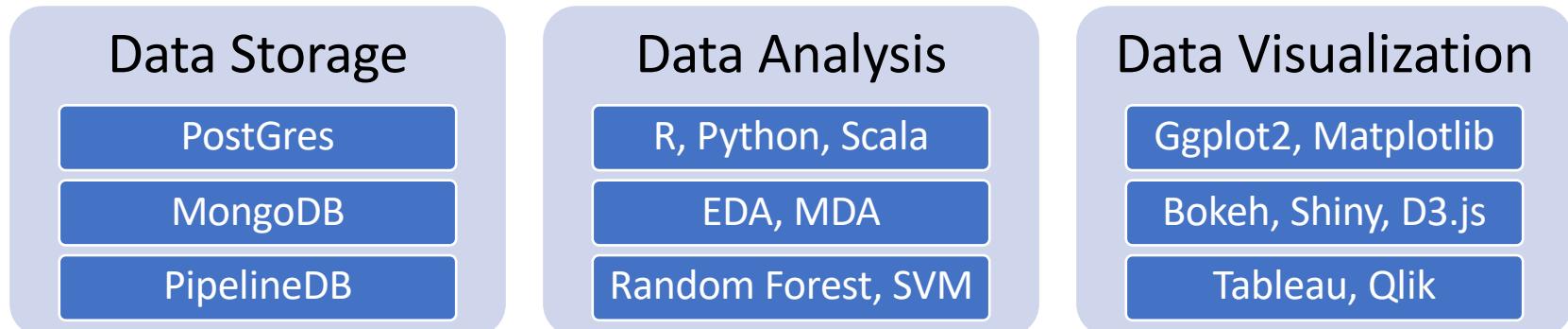
Tableau File Types

Tableau Interface

Data Analytics Ecosystem



Data Analytics Ecosystem



MS Azure, AWS, SAP Hana, IBM BlueMix

SciKit

TensorFlow

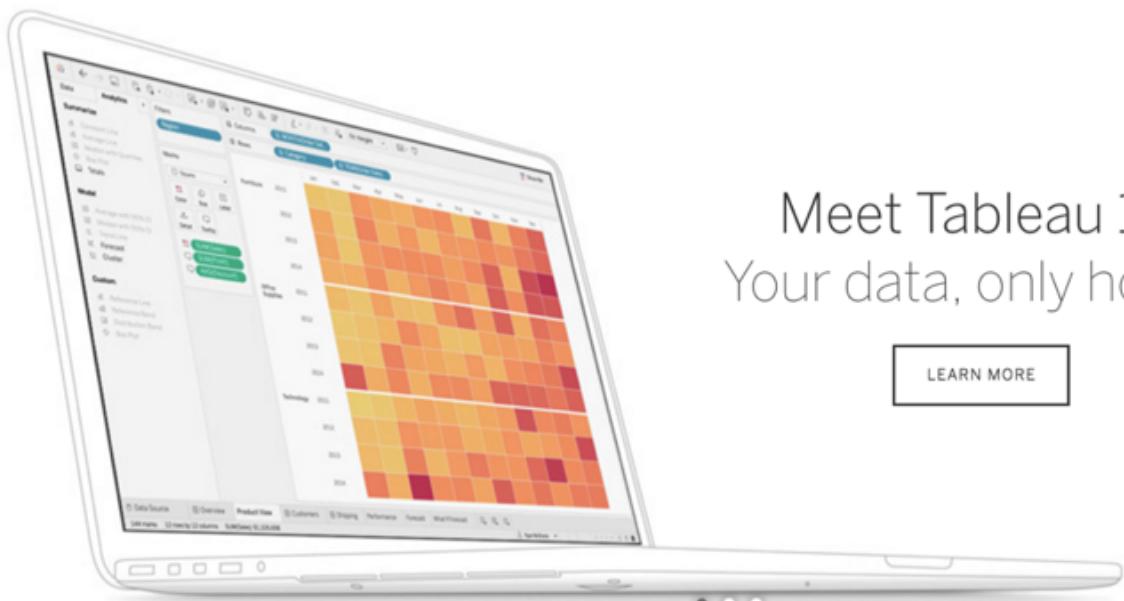
Rserve

What is Tableau?

- Tableau is a data visualization software created by Tableau Software.
- Tableau connects to nearly any data source, such as Excel, Oracle, Amazon...
- Tableau allows for instantaneous insight by transforming data into visually appealing, interactive visualizations called dashboards.

Tableau Website

- <http://www.tableau.com/>



The screenshot shows the official Tableau website. At the top left is the Tableau logo. The top navigation bar includes links for Products, Stories, Learning, Community, Support, and About. To the right of the navigation are buttons for BUY, SIGN IN, TRY NOW, and a search icon. The main content area features a large image of a laptop screen displaying a data visualization, specifically a heatmap with a color gradient from yellow to red. To the right of the laptop, the text "Meet Tableau 10" is displayed above the tagline "Your data, only hotter." Below this is a "LEARN MORE" button.

Products Stories Learning Community Support About

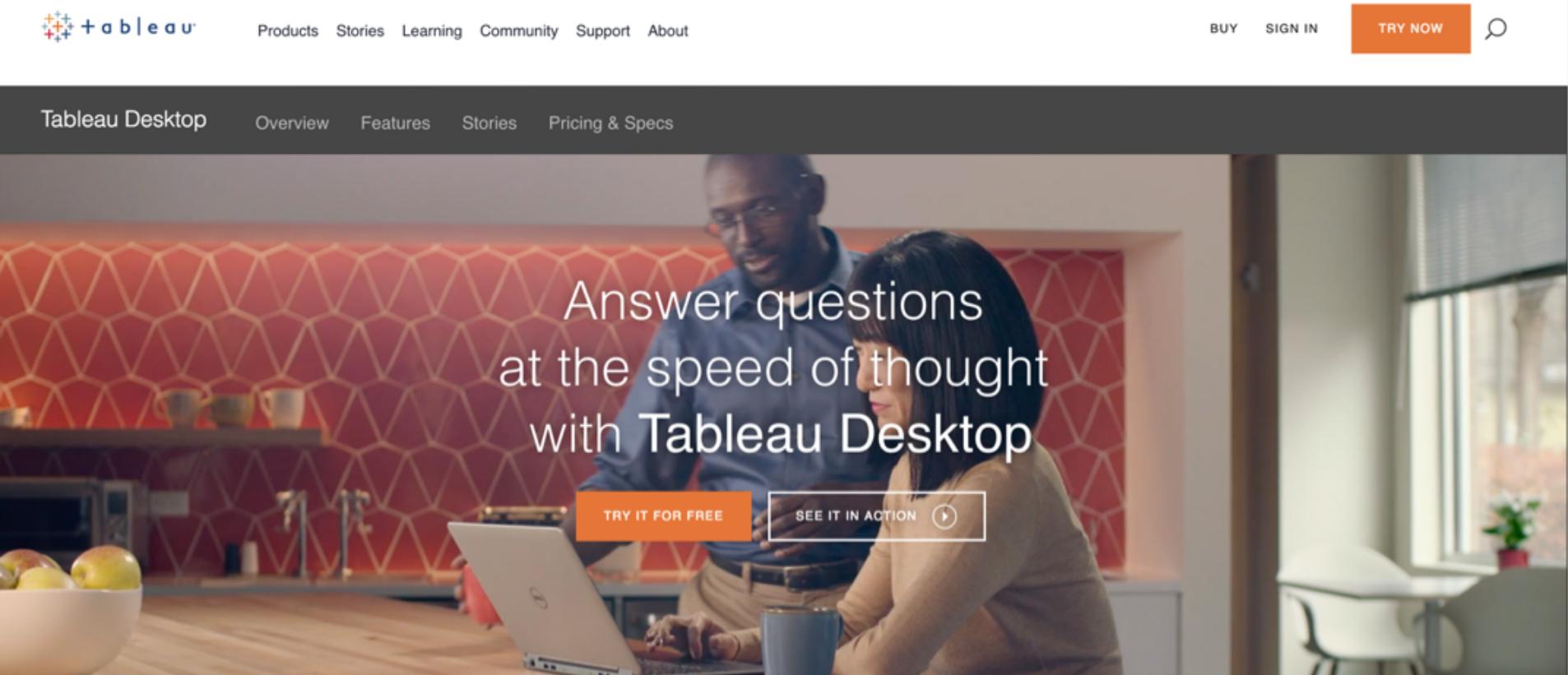
BUY SIGN IN TRY NOW

Meet Tableau 10
Your data, only hotter.

LEARN MORE

Tableau Desktop

- <http://www.tableau.com/products/desktop>



The screenshot shows the Tableau Desktop product page. At the top, there's a navigation bar with the Tableau logo, a search icon, and links for Products, Stories, Learning, Community, Support, and About. To the right are buttons for BUY, SIGN IN, and TRY NOW. Below the navigation is a secondary menu with links for Overview, Features, Stories, and Pricing & Specs. The main content area features a photograph of a man and a woman looking at a laptop screen together. Overlaid on the image is the text: "Answer questions at the speed of thought with Tableau Desktop". At the bottom of the image are two call-to-action buttons: "TRY IT FOR FREE" and "SEE IT IN ACTION" with a play icon.

Products Stories Learning Community Support About

BUY SIGN IN TRY NOW

Tableau Desktop Overview Features Stories Pricing & Specs

Answer questions at the speed of thought with Tableau Desktop

TRY IT FOR FREE SEE IT IN ACTION

Tableau Online

- <http://www.tableau.com/products/cloud-bi>

The screenshot shows the Tableau Online homepage. At the top, there is a navigation bar with the Tableau logo, a search icon, and links for Products, Stories, Learning, Community, Support, and About. To the right of the navigation bar are buttons for BUY, SIGN IN, and TRY NOW. Below the navigation bar, there is a secondary navigation bar with links for Tableau Online, Overview, Features, Stories, and Pricing & Specs. The main content area features a man with a beard sitting at a table, looking at a laptop screen. On the screen, the text "Take it to the cloud with Tableau Online" is displayed, along with three buttons: "TRY IT FOR FREE", "SEE IT IN ACTION", and "LOG IN TO TABLEAU ONLINE". The background of the main image shows a blurred view of a city street through a window.

Tableau Server

- <http://www.tableau.com/products/server>

The screenshot shows the Tableau Server homepage. At the top, there is a navigation bar with the Tableau logo, links for Products, Stories, Learning, Community, Support, and About, and buttons for BUY, SIGN IN, TRY NOW, and a search icon.

The main content area features a map of London with numerous circular markers representing Boris Bike stations. A prominent text overlay reads: "Boris Bikes by Station During the July 2015 Tube Strike in London". Below this, another text overlay says: "Access interactive insight from anywhere with Tableau Server". At the bottom of the map area are two call-to-action buttons: "TRY IT FOR FREE" and "SEE IT IN ACTION" with a play icon.

Tableau Server/Online Sign In

- To use Tableau Server, Sign in from
- Server -> Sign In



Tableau Public

- Free Tableau software. Same as Tableau desktop except less data sources and not able to save data locally, only publicly.
- <https://public.tableau.com/>

The screenshot shows the Tableau Public homepage. At the top, there's a navigation bar with tabs like Analysis, Map, Format, Server, Window, Help, and several icons. Below the header, a title reads "DATA IN. BRILLIANCE OUT." followed by "SF Real Estate Market". A subtitle says "Sort by Price". To the right, there's a list of addresses: 2555 Union St, 2900 Vallejo, 2555 Webster St, 3560 Baker St, 109 AVILA St, 2837 Greenwich St, 3553 Divisadero St, and 2134 Green St #2. In the center, there's a large play button icon over a map visualization. Below the map, the text "Visualize and Share Your Data in Minutes—For Free" is displayed. At the bottom, there's a white input field with the placeholder "Enter your email address" and an orange button labeled "Download the App".

Available for Windows and Mac | [Privacy Policy](#)

Tableau Public Account

- To use Tableau Public, need to create a Tableau Public account and profile
- <https://public.tableau.com/profile/dearbharat#/>

Tableau Reader

- To open Tableau Packaged Workbook (twbx file)
- <http://www.tableau.com/products/reader>

The image shows a screenshot of the Tableau Reader product page. At the top, there is a navigation bar with links for Products, Stories, Learning, Community, Support, and About. On the right side of the navigation bar are buttons for BUY, EDIT ACCOUNT, SIGN OUT, and TRY NOW. Below the navigation bar, there is a large promotional message: "Open visualizations built in Tableau Desktop for free with Tableau Reader." A "DOWNLOAD NOW" button with a download icon is located at the bottom of this message. In the background, a laptop screen displays a complex Tableau dashboard with various charts and data tables, illustrating the type of visualizations that can be opened with the software.

D1 M2

Tableau

Overview

Worksheets,
Dashboard, Stories
Dimensions &
Measures
Continuous Vs Discrete
Data
Folders, Hierarchies

Tableau File Types

Tableau Workbook (.twb)

- Stores a visualization without source data

Tableau Data Source (.tds)

- Stores the server address, password and other information required to access a data source

Tableau Bookmark (.tbm)

- 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 visualizations for viewing in Tableau or Tableau Reader

The screenshot shows the Tableau interface with the following details:

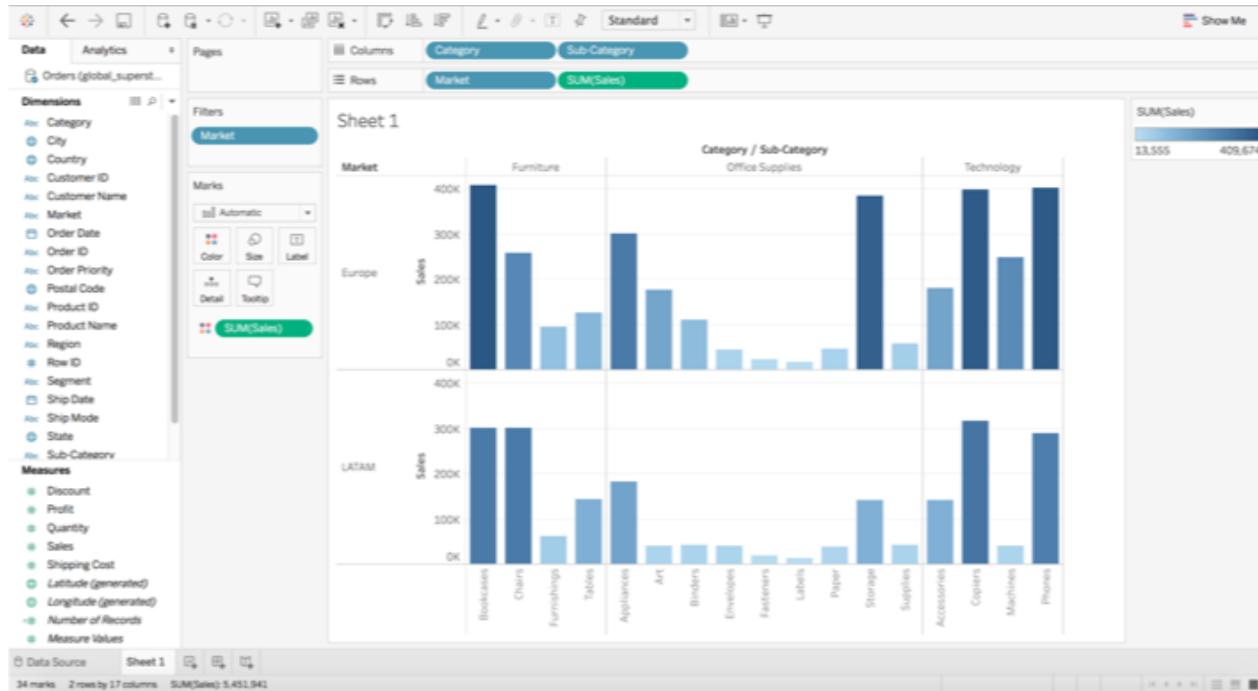
- Connections:** global_superstore_2016 (Excel)
- Sheets:** Orders
- Tools:** Use Data Interpreter (unchecked), New Union
- Filters:** 0 | Add
- Connection:** Live
- Extract:** (radio button)

The main view displays the "Orders" sheet with the following data:

Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Postal Code	City
40098	2014-01-11	2014-01-13	First Class	AB-100151402	Aaron Bergman	Consumer	73120	Ok
26341	2014-01-05	2014-01-07	Second Class	JR-162107	Justin Ritter	Corporate	null	Wk
25330	2014-01-17	2014-01-18	First Class	CR-127307	Craig Reiter	Consumer	null	Br
13524	2014-01-29	2014-01-30	First Class	KM-1637548	Katherine Murray	Home Office	null	Be
47221	2014-05-05	2014-05-06	Same Day	RH-9495111	Rick Hansen	Consumer	null	Da
22732	2014-06-28	2014-06-29	Second Class	JM-156557	Jim Mitchum	Corporate	null	Sy
30570	2012-06-06	2012-06-08	First Class	TS-2134092	Toby Swindell	Consumer	null	Po
31192	2013-08-14	2013-08-18	Standard Class	MB-1808592	Mick Brown	Consumer	null	Ha
40099	2014-01-11	2014-01-13	First Class	AB-100151402	Aaron Bergman	Consumer	73120	Ok
36258	2012-06-06	2012-06-07	First Class	AB-100151404	Aaron Bergman	Consumer	98103	Se

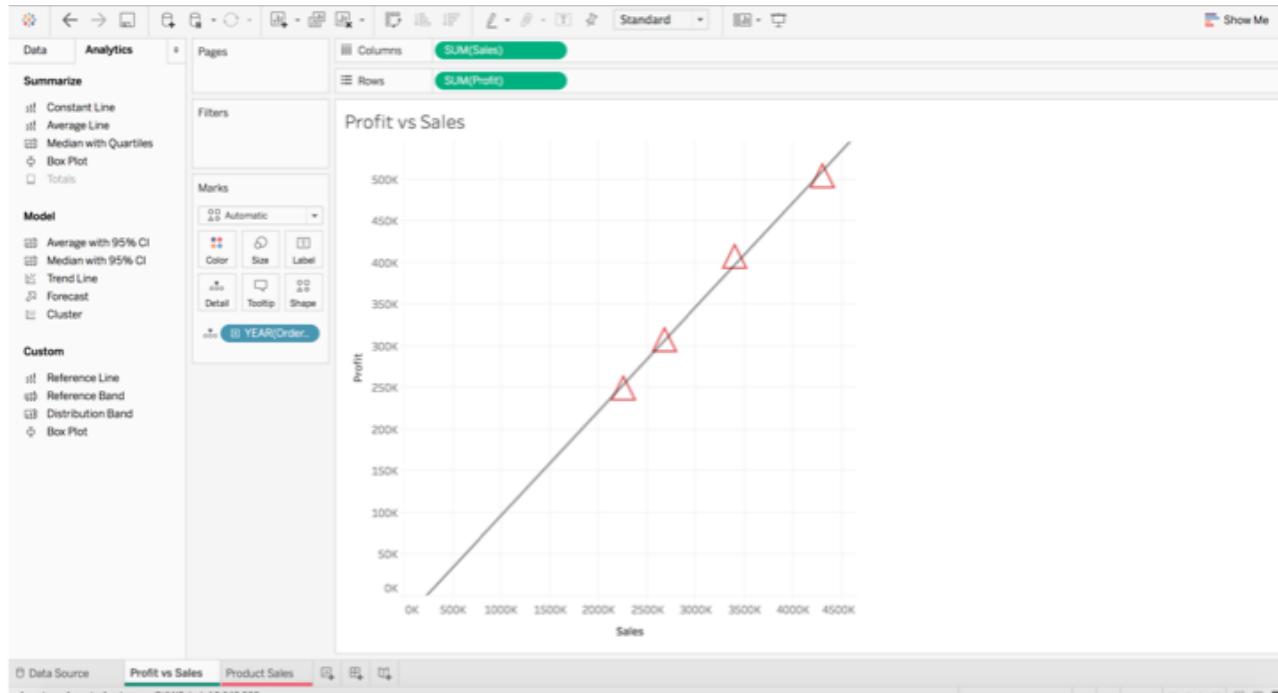
Explore Tableau Interface

Open `global_superstore_2016.twb`



Create Your First Viz

Q: How is the sales across categories and market?



Another Viz

Q: Is profit increasing with sales over the years?

Worksheet Basics

- Create new Worksheet (CTRL/CMD T)
- Rename Worksheet
- Duplicate Worksheet
- Delete Worksheet
- Reorder Worksheet
- Change Color
- CTRL Z to undo



Worksheet Basics

- Dimension and Measure fields
- Continuous and Discrete fields
- Hide/Show worksheet elements
- Hide/Show shelf elements
- Organize elements into folder
- Organize elements into hierarchy

Dimension and Measure

- If a field has values that are numbers that can be added, averaged, or otherwise aggregated, Tableau assigns that field to the **Measures** area of the Data pane when you first connect to a data source. Tableau is assuming that the values are **continuous**.
- If a field contains values that are names, dates, or geographical locations, Tableau assigns that field to the **Dimensions** area of the Data pane when you first connect to a data source. Tableau treats the values as **discrete**.

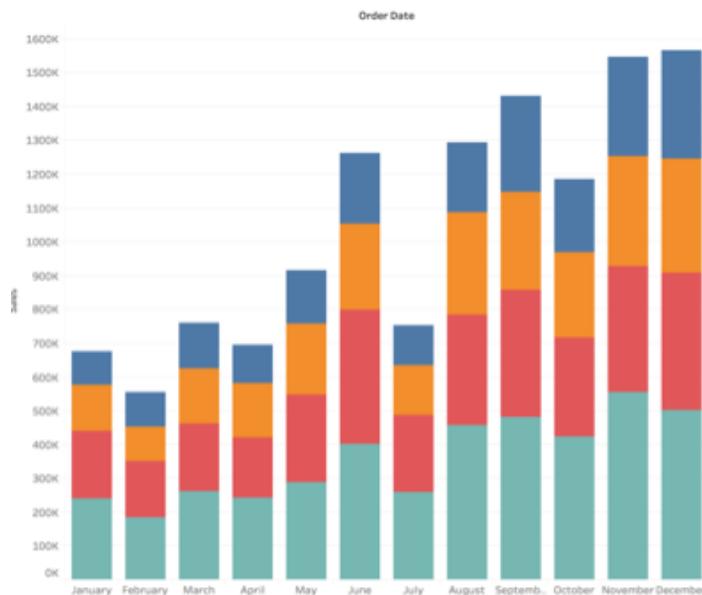
Continuous and Discrete Data

- When you drag a field from the Measures area to Columns or Rows, **the values are continuous by default** and Tableau creates an **axis**
- When you drag a field from the Dimensions area of the Data pane to Columns or Rows, **the values are discrete by default** and Tableau creates column or row **headers**.
- If a field is continuous, the background color is **green**.
- If it is discrete, the background color is **blue**.

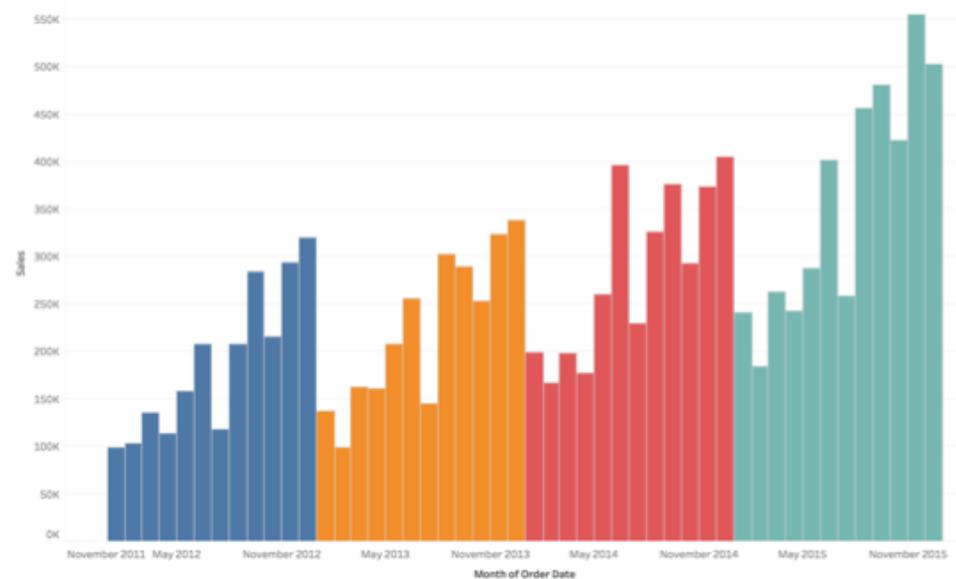
Discrete vs Continuous Data

- Open global_superstore_2016.twb
- Plot Sales vs Month (Order Date)
- Change Month from Discrete to Continuous Data from the dropdown

Discrete



Continuous



Create Folder

- To make data sources with many fields easier to work with, you can organize the Data pane items into folders
- The Group by Folder option can be accessed from the Data pane menu.
- In the Data pane, select Create Folder.
- When prompted, name the new folder.
- Drag a field on top of the folder name to add the field to the folder

Create Folder

The screenshot illustrates the 'Create Folder' feature in a data visualization tool, likely Tableau. It shows two panels: a left panel listing data sources and a right panel showing a visualization canvas.

Left Panel (Data Sources):

- Customer Name
- Segment (selected)
- Order
 - Order Date
 - Order ID
 - Ship Date
 - Ship Mode
- Location
 - Country
 - State
 - City
 - Postal Code
- Product
 - Category
 - Sub-Category
 - Manufacturer
 - Product Name
 - Profit (bin)

Right Panel (Canvas):

The visualization canvas displays a hierarchy of fields:

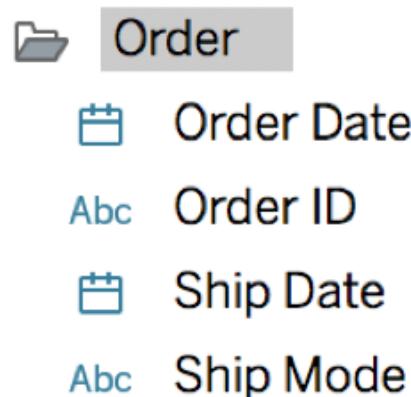
- Ship Mode
 - City
 - Country
 - Postal Code
- Product
 - Category
 - Sub-Category
 - Manufacturer
 - Product Name
 - Profit (bin)
- Region
 - State
- Measure Names

A context menu is open over the 'State' field, showing options like Duplicate, Hide, Create, Transform, etc. A sub-menu for 'Folders' is also open, showing 'Add to Folder' and 'Create Folder'.

A 'Create Folder' dialog box is visible at the bottom, prompting for a folder name: "Name: Location".

Ex: Create Folder

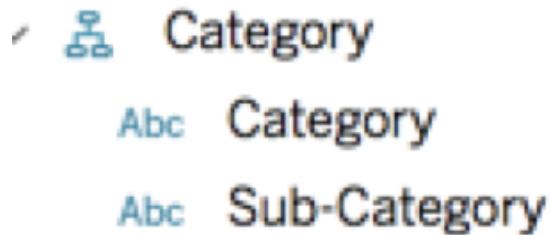
- Open global_superstore_2016.twb
- Create a folder Order
- Group Order Date, Order ID, Ship Date, Ship Mode under Order folder



Time : 5 mins

Create Hierarchy

- Drag and drop one dimension to another dimension
- Select Create Hierarchy
- When prompted, name the new hierarchy



Drilling Down and Up

- You can drill down or drill up by clicking on a dimension that is placed on any shelf

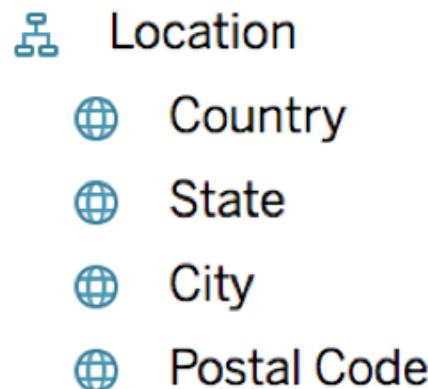
The screenshot illustrates a data visualization interface with two main sections. The top section shows a summary table with 'Region' on the rows and 'Colas', 'Root Beer', 'Cream Soda', 'Fruit Soda', and 'Diet Drinks' on the columns. The bottom section shows a detailed view where the 'Region' dimension has been expanded to show 'State' on the rows, with 'New York', 'Massachusetts', 'Florida', 'Connecticut', and 'New Hampshire' listed. A red circle highlights the '+' button next to 'Region' in the top section, indicating it was used to expand the dimension.

Region	Colas	Root Beer	Cream Soda	Fruit Soda	Diet Drinks
East	27,740	23,672	20,241	15,745	7,919
West	28,306	31,250	28,020	18,545	8,219
South	16,280	14,500	12,200	8,700	4,100
Central	33,808	28,700	25,000	16,500	7,800

Region	State	Colas	Root Beer	Cream Soda	Fruit Soda	Diet Drinks
East	New York	8,940	7,939	9,305	8,514	3,700
	Massachusetts	6,518	5,180	1,418	1,541	1,200
	Florida	5,867	5,283	4,704	2,487	1,100
	Connecticut	3,378	3,090	3,849	2,094	1,000
	New Hampshire	3,037	2,180	965	1,109	500
West	California	12,096	16,794	11,128	7,424	3,500
	Oregon	4,250	6,743	2,456	6,543	1,800
	Washington	4,937	4,704	4,621	4,774	1,500

Ex: Hierarchy

- Open global_superstore_2016.twb
- Create a hierarchy for Location - Country, State, City, Postal Code
- Plot Sales vs Country, further drill down to City



Time: 5 mins

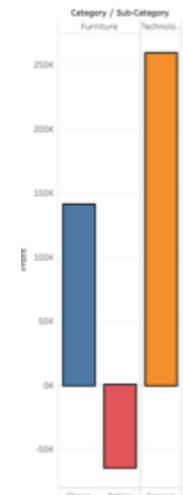
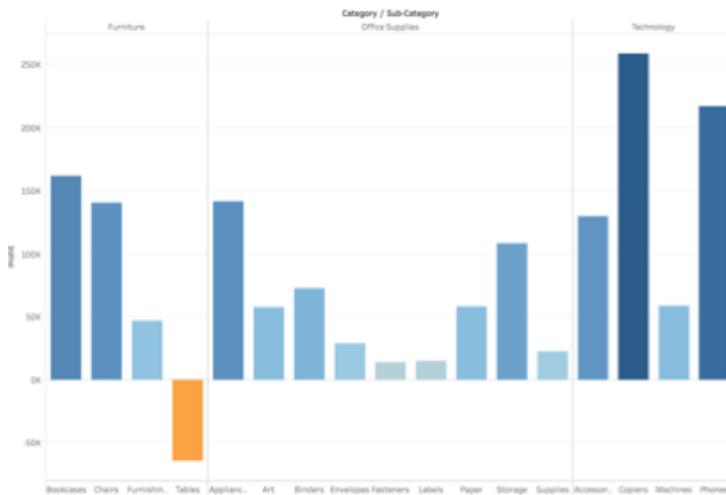
Data Visualization

Show Me:

- Bar Chart
- Table
- Map
- Box plot
- Line plot
- Pie chart
- Histogram
- Heat map
- Tree map

Bar Chart

- On the Dimensions pane, open Product and drag Category, then Sub-Category to the Columns shelf. From the Measures pane, drag Profit to the Rows shelf.
- Plot color and select columns to keep only
- To display each bar as a separate color, drag Sub-Category to the Color card. As a final touch, click the Color card to edit the color palette and choose Blue.



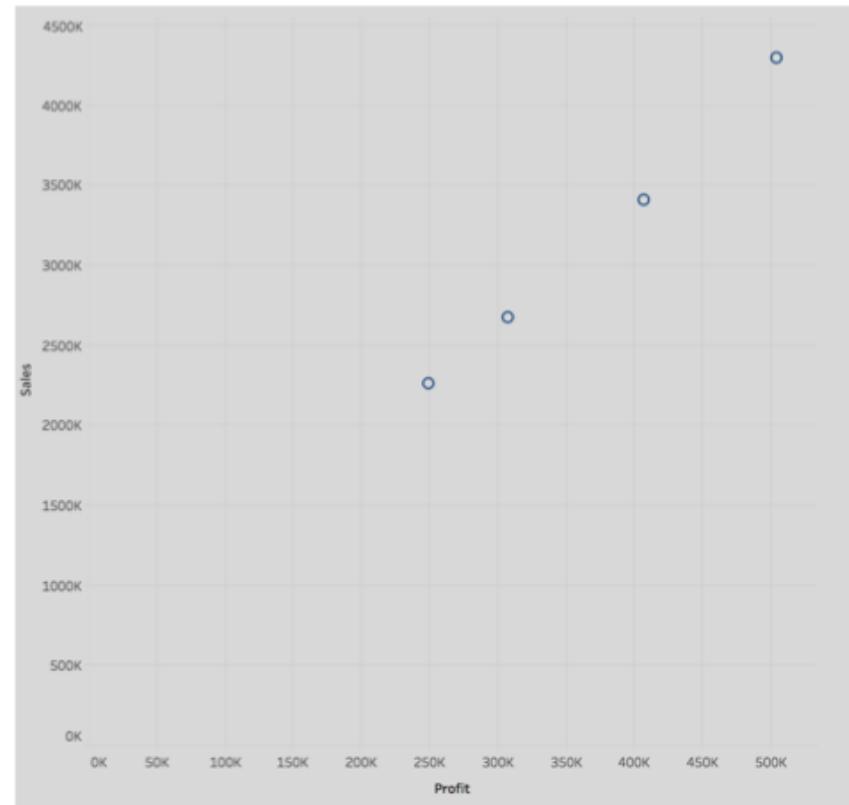
Table

- Drag Segment to the Columns and Category and Sub-Category to the Rows, then drag Profit to the Text card
- From Dimensions, drag Segment to the Columns shelf and Category and Sub-Category to the Rows shelf, then drag Profit to the Text card

Category	Sub-Catego..	Segment		
		Consumer	Corporate	Home Office
Furniture	Bookcases	79,222	54,677	28,025
	Chairs	72,672	45,370	22,354
	Furnishings	26,469	13,200	7,176
	Tables	-24,730	-29,520	-9,833
Office Supplies	Appliances	65,568	52,185	23,810
	Art	33,042	14,265	10,523
	Binders	40,220	18,572	13,641
	Envelopes	14,977	9,236	4,637
	Fasteners	6,821	4,586	2,437
	Labels	7,664	4,519	2,806
	Paper	27,624	17,180	13,308
	Storage	47,644	38,573	22,200
	Supplies	9,603	8,471	4,486
Technology	Accessories	60,273	45,534	23,820
	Copiers	124,216	83,622	50,730
	Machines	28,372	15,504	14,991
	Phones	129,585	45,235	41,897

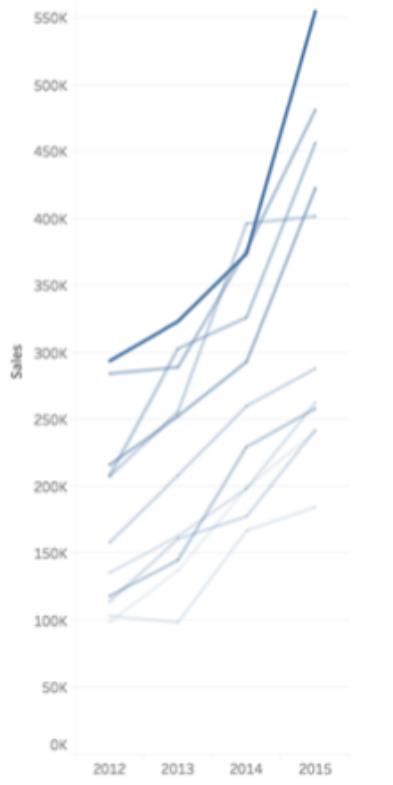
Scatter Plot

- Drag Sales to Columns and Profit to Rows
- Disable Aggregate Measures from Analysis menu
- Drag Order Date to Detail Shelf



Motion Chart

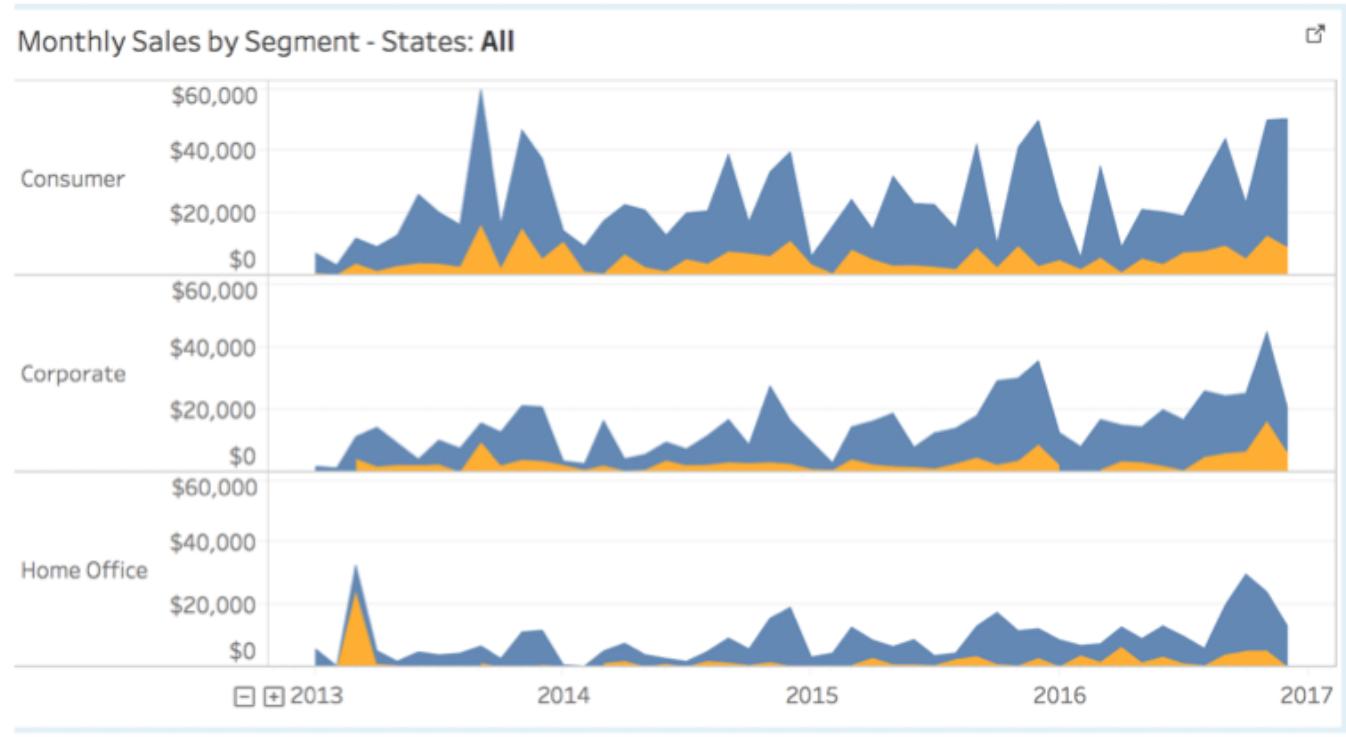
- Drag Order Date to Columns and Sales to Rows
- Drag Order Date to Page Shelf, Change to Month
- Check Show History and Select All



Ex: View

- Open `global_superstore_2016.twb`
- Plot Monthly Sales by Segment

Time: 5 mins



Saving Workbook

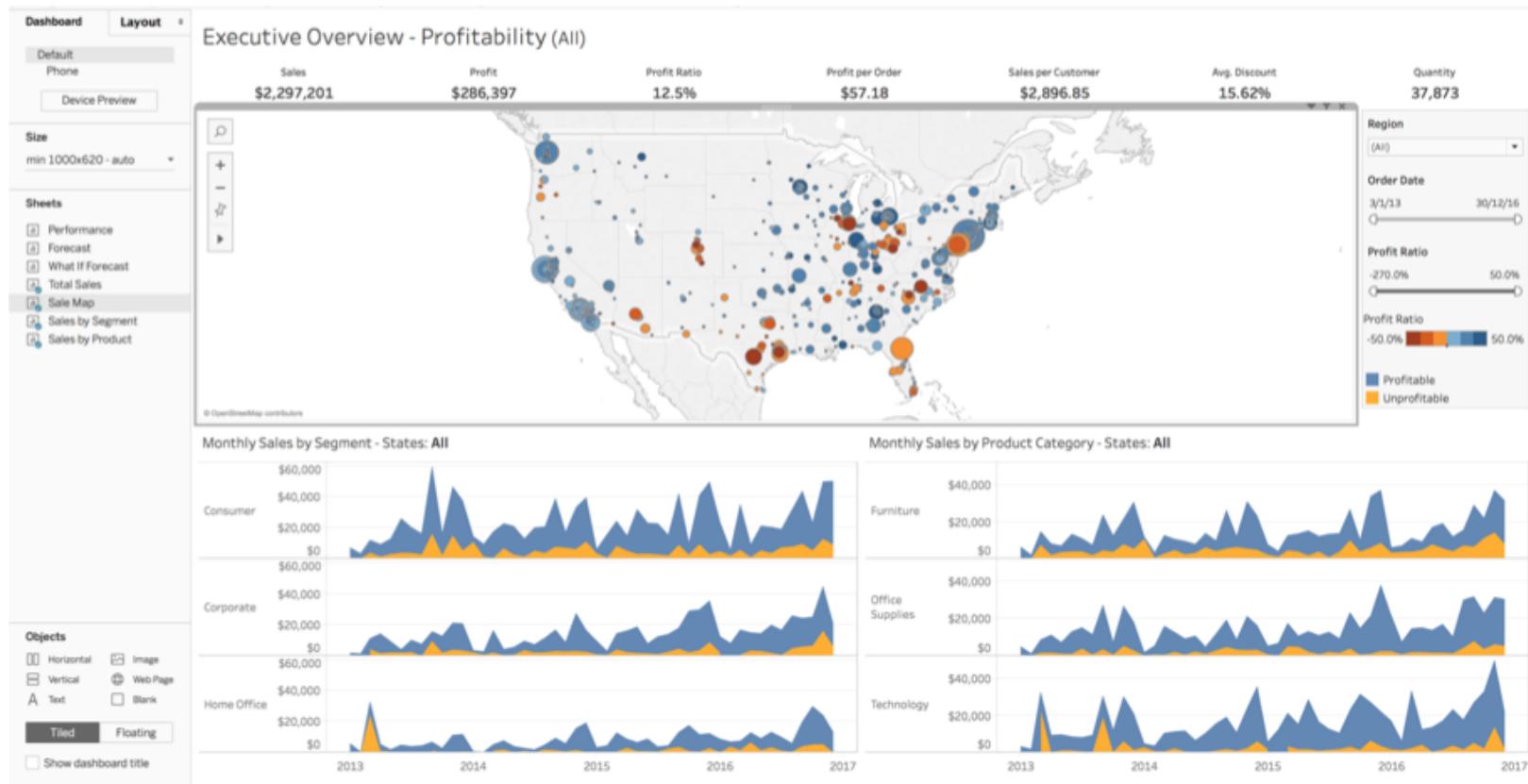
- File -> Save As -> Either twb and twbx.
- File -> Export Packaged Workbook

Dashboard

- A dashboard is a collection of several worksheets and supporting information shown in a single place so you can compare and monitor a variety of data simultaneously
- Each view you add to the dashboard is connected to its corresponding worksheet. That means when you modify the worksheet, the dashboard is updated and when you modify the view in the dashboard, the worksheet is updated.

Dashboard

- Dashboard is good for displaying all relevant data and info on one page



Dashboard Basics

- Drag and hold to drop sheet to desired location
- Add Objects - Layout Container, Image, Web page, Text
- Tiled vs Floating object
- Fit - Standard, Fit width, Fit height, Entire
- Filter - Apply to worksheet
- Device Designer Default/ Desktop/ Laptop/ Phone (Only can view on Tableau Online/Service)

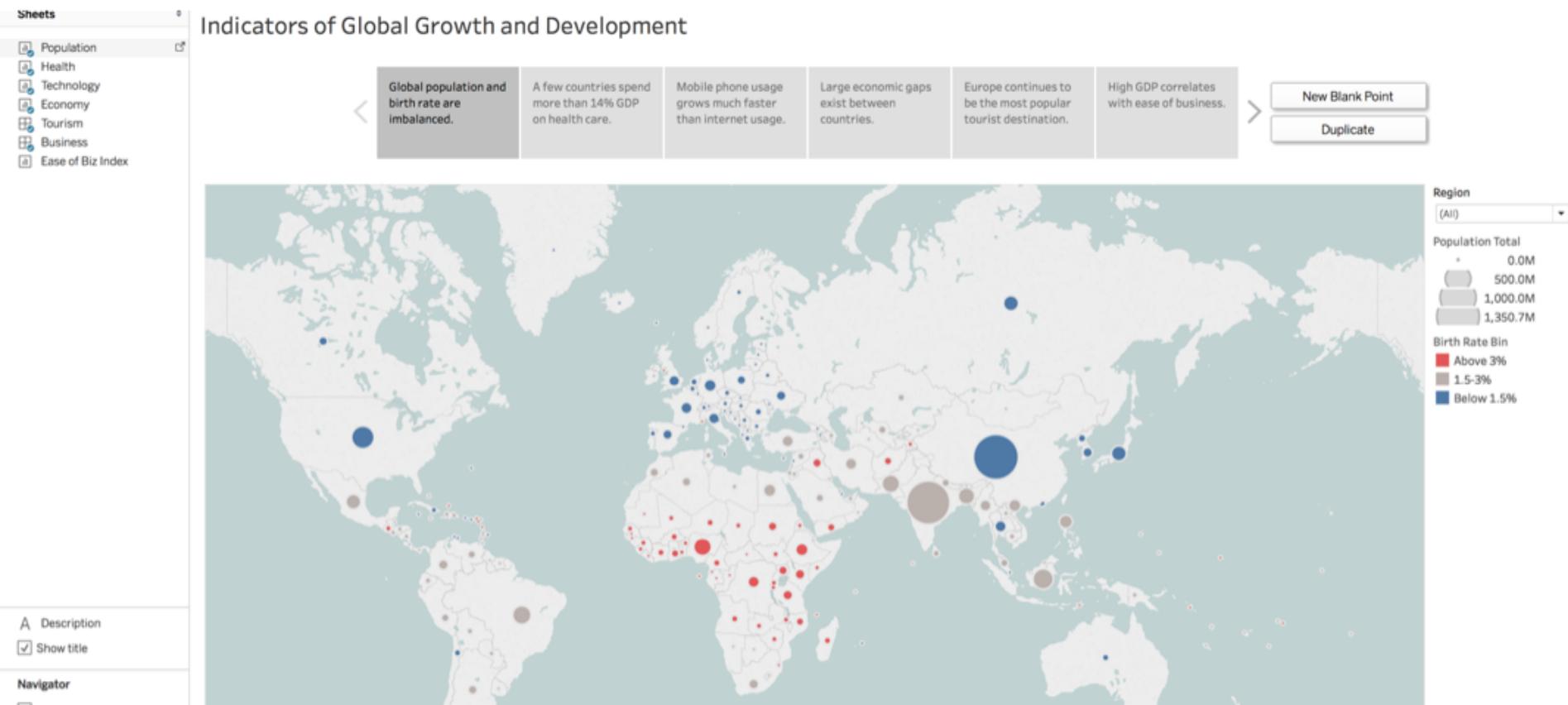
Ex: Dashboard

- Open `global_superstore_2016.twb`.
- Add a Table view, Bar Chart view and map view to the dashboard
- Add Filter action to create interaction among the worksheets

Time: 5 mins

Story

- A story is a sheet that contains a sequence of worksheets or dashboards that work together to convey information



Story Basics

- Add sheets to blank story point
- Rename the caption
- Resize captions
- Rearrange the story point
- Delete story point
- Add a filter and update
- Add a description
- Any changes to story will not affect the worksheet

Ex: Story

- Open global_superstore_2016.twb
- Present a story on how the company sales has expanded globally over the years

Time : 5 mins

D1 M3

Getting Data in Tableau

Data Import Export

Data Join

Data Extracts

Data Blending

Data Source Filters

Data Sources

- Tableau can connect to wide variety of data sources such as Excel, Google, Oracle...

The screenshot shows the 'Connect' interface in Tableau. On the left, there's a sidebar with navigation links like 'To a File', 'To a Server', and 'Saved Data Sources'. The main area lists various data sources in three columns. A search bar is at the top.

Column 1	Column 2	Column 3
Tableau Server	IBM PDA (Netezza)	SAP HANA
Actian Matrix	Kognitio	SAP NetWeaver Business Warehouse
Actian Vector	MapR Hadoop Hive	SAP Sybase ASE
Amazon Aurora	Marketo	SAP Sybase IQ
Amazon EMR	MarkLogic	Snowflake
Amazon Redshift	MemSQL	Spark SQL
Aster Database	Microsoft Analysis Services	Splunk
Cisco Information Server	Microsoft PowerPivot	Teradata
Cloudera Hadoop	Microsoft SQL Server	Teradata OLAP Connector
DataStax Enterprise	MonetDB	Web Data Connector
EXASolution	MySQL	Other Databases (ODBC)
Firebird	OData	
Google Analytics	Oracle	
Google BigQuery	Oracle Essbase	
Google Cloud SQL	Pivotal Greenplum Database	
Google Sheets	PostgreSQL	
Hortonworks Hadoop Hive	Presto	
HP Vertica	Progress OpenEdge	
IBM BigInsights	QuickBooks Online	
IBM DB2	Salesforce	

Connect to Excel

- Connect to global_superstore_2016.xls
- Various ways to connect to the data sources
 - Menu -> New Data Sources
 - Toolbar -> Click on New Data Sources icon
 - Shortcut key -> CTRL(CMD) D
- Edit the Sheet name, Field name, Filter the data



Installing Tableau Driver

- <https://www.tableau.com/support/drivers>

The screenshot shows the Tableau Support website with the following elements:

- Header:** Includes the Tableau logo, navigation links for Products, Stories, Learning, Community, Support, and About, and buttons for BUY, SIGN IN, TRY NOW, and a search icon.
- Section Header:** "SUPPORT" and "Driver Download".
- Text:** "Find the driver for your database so that you can connect Tableau to your data."
- Text:** "To get the right driver, you might need to know your Tableau product version. In Tableau Desktop, select **Help > About Tableau**. In Tableau Server, click the information icon ⓘ and select **About Tableau Server**.
- Filters:** "Data Source" dropdown set to "All", "Operating System" dropdown set to "Mac", and "Bit Version" dropdown set to "64-bit".
- List:** A list of drivers:
 - Actian Matrix (ParAccel)
 - Actian Vector
 - Amazon Aurora
 - ...

Connect to MySQL DB

- Install MySQL Driver

The screenshot shows the Tableau Data Source interface for connecting to a MySQL database. The connection is set to "Live" and the database is "mysql". The search bar shows "proc (mysql)". The results table lists various MySQL system procedures:

Db	Name	Type	Specific Name	Language	Sql Data Access	Is Deterministic	Security Type	Param List	Returns	Body	Di
sys	extract_schema_fro...	FUNCTION	extract_schema_fro...	SQL	NO_SQL	YES	INVOKER	path VARCHAR(512)	null	null	
sys	extract_table_from....	FUNCTION	extract_table_from....	SQL	NO_SQL	YES	INVOKER	path VARCHAR(512)	null	null	
sys	format_bytes	FUNCTION	format_bytes	SQL	NO_SQL	YES	INVOKER	bytes TEXT	null	null	
sys	format_path	FUNCTION	format_path	SQL	NO_SQL	YES	INVOKER	in_path VARCHAR(5...	null	null	
sys	format_statement	FUNCTION	format_statement	SQL	NO_SQL	YES	INVOKER	statement LONGTEXT	null	null	
sys	format_time	FUNCTION	format_time	SQL	NO_SQL	YES	INVOKER	picoseconds TEXT	null	null	
sys	list_add	FUNCTION	list_add	SQL	CONTAINS_SQL	YES	INVOKER	in_list TEXT, in_add...	null	null	
sys	list_drop	FUNCTION	list_drop	SQL	CONTAINS_SQL	YES	INVOKER	in_list TEXT, in_drop...	null	null	
sys	ps_is_account_enab...	FUNCTION	ps_is_account_enab...	SQL	READS_SQL_DATA	YES	INVOKER	in_host VARCHAR(6...	null	null	
sys	ps_is_consumer_en...	FUNCTION	ps_is_consumer_en...	SQL	READS_SQL_DATA	YES	INVOKER	in_consumer varcha...	null	null	
sys	ps_is_instrument_d...	FUNCTION	ps_is_instrument_d...	SQL	READS_SQL_DATA	YES	INVOKER	in_instrument VARC...	null	null	
sys	ps_is_instrument_d...	FUNCTION	ps_is_instrument_d...	SQL	READS_SQL_DATA	YES	INVOKER	in_instrument VARC...	null	null	
sys	ps_is_thread_instr...	FUNCTION	ps_is_thread_instr...	SQL	READS_SQL_DATA	NO	INVOKER	in_connection_id Bi...	null	null	
sys	ps_thread_id	FUNCTION	ps_thread_id	SQL	READS_SQL_DATA	NO	INVOKER	in_connection_id Bi...	null	null	

Connect to Google Sheet

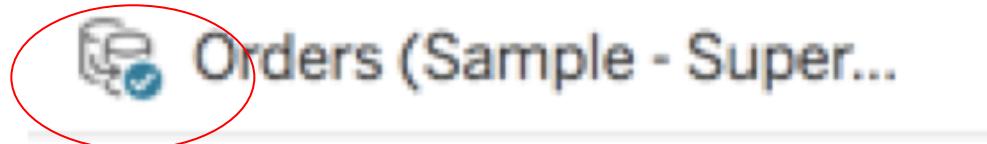
- Allow Tableau to access your Google Sheet

The screenshot shows the Tableau software interface with the following details:

- Title Bar:** Tableau - Book1
- Connections:** Hydroponics Bas...rticipants.xlsx (Google Sheets)
- Sheets:** 1 Jun 2013
- Connection Options:** Live (radio button selected), Extract
- Filters:** 0 | Add
- Data Preview:** A grid of data from the "1 Jun 2013" sheet. The columns are labeled with dates and IDs (e.g., F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, F13). The first few rows show participant information like Name, Email, Address, and Payment Method.
- Toolbar:** Includes icons for Home, Back, Forward, Refresh, and a search bar.
- Bottom Navigation:** New Union, Go to Worksheet, and a close button.

Extract

- External source can be slow
- Use Extract to create a local copy
- Save the extract to your Tableau Repository (**File -> Repository Location**)
- To reload the changes from original data source, Menu->Data->**Refresh All Extracts**
- Or in the Visualization dashboard, right click the data source -> **Refresh**



Data Source Filters

- Two ways to filter the extract
 - Click the **Filter button** on the Data Source
 - Right click the data source on Visualization dashboard -> Extract Data -> **Add Filters**

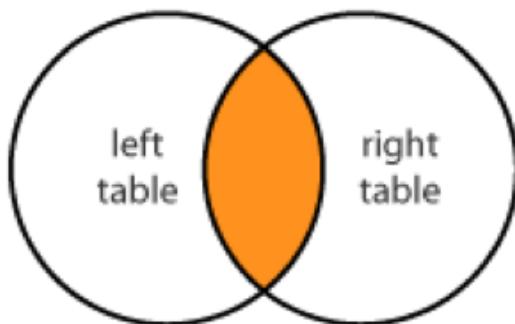
Ex: Extract

- Load Module 4 Sales 2016.xls
- Change Live data connection to Extract
- Filter a few product IDs
- Rename source name
- Refresh the extract

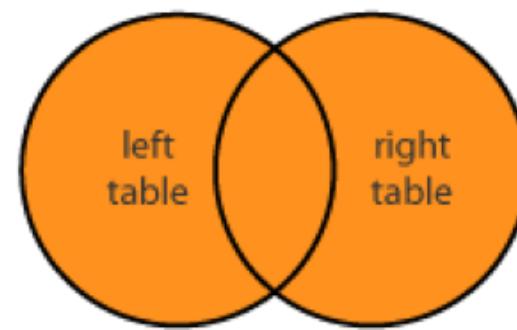
Time: 5 mins

Data Join Types

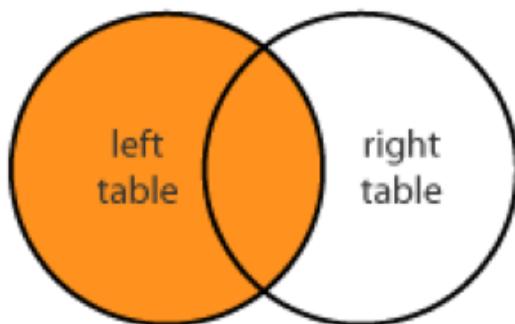
INNER JOIN



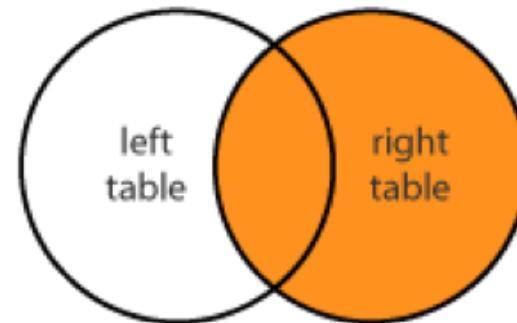
FULL JOIN



LEFT JOIN



RIGHT JOIN



Data Join Type Definitions

Inner Join: Returns all rows when there is at least one match in BOTH tables

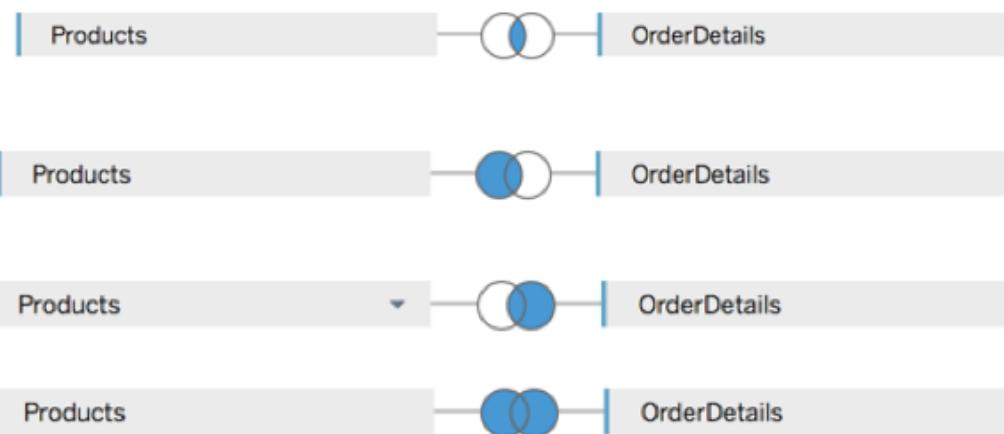
Left Join: Return all rows from the left table, and the matched rows from the right table

Right Join: Return all rows from the right table, and the matched rows from the left table

Full (Outer) Join: Return all rows when there is a match in ONE of the tables

Data Join Demo

- Connect global_superstore_2016.xls
- Create a Inner Join for Orders, People and Returns data sources
- Change to Left Join, Right Join and Full Join



Ex: Data Join

- Connect to Module 4 Sales 2016.xlsx and Product 2016.csv
- Do a Left Join
- Plot Sales vs Category and Sub-Category, breakdown by Years.

Time: 5 mins

Joining Related Fields with Different Names

- Connect Module 4 DifferentNames.xls
- Do a Inner Join for Product and OrderDetails
- Select Product ID (Left) and Prod ID (Right)

D1 M4

Data Processing

in Tableau

Data Transformation

Data Interpreter

Data field merge & split

Data Pivot

Groups & Sets

Excel Data Interpreter

- Connect to Module 5 MonthlyData.xlsx
- Data is not uploaded correctly
- Use Data Interpreter to clean up the data

Ex: Data Interpreter

- Connect to Module 5 GlobalVehicleSales.xls
- Open the excel file to see whether it match to excel file
- Clean up the data using data interpreter

Time: 2 mins

Split Fields

- Connect to Module 5 acrossthebay10k.xlsx
- Split the Name to First Name, Last Name
- Custom Split the Overall by "/" to Position and Total
- Split can be done on the Data Source or Visualization dashboard

Ex: Split Fields

- Connect Module 5 CombinedData.xls
- Custom split the Category Name to Category and Product
- Visualize the price for various category and product

Time: 2 mins

Merge Fields

- Connect to Module 5 Weather.xls
- Combine 4 sheets to one sheet with Union
- Merge mismatched fields to Rainfall and Month
- Plot Rainfall vs Month



Pivot Data

- Connect to Module 5 GlobalVehicleSales.xlsx
- Clean up using data interpreter
- Select all the years
- Select Pivot -> Generate 2 fields
- Rename the 2 pivot fields

Ex: Pivot Data

- Open GlobalVehicleSales.xlsx from Module 5 exercise folder
- In the Data Source, select 2005 to 2014, right click and select Pivot
- Rename the pivot fields to Year and Sales
- Goto Worksheet, drag Year to Column, Sales to Row
- Create a Pivot Table of Year (Col) and Region (Row)
- Analysis -> Totals -> Show Grand Totals

Time: 5 mins

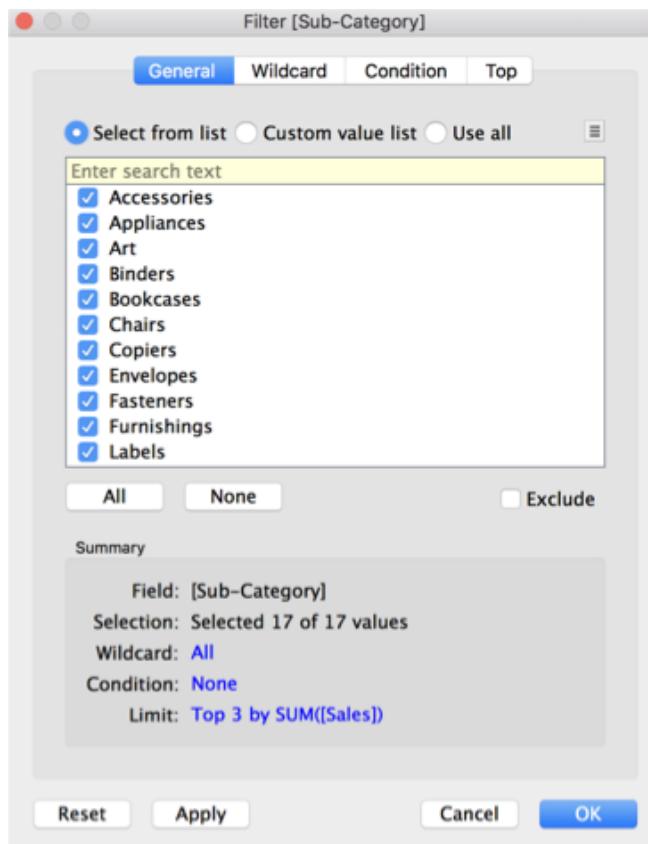
Filter Data

- Filtering is the process of removing certain values or range of values from a result set
- Tableau can do 3 types of filtering
 - Filter Dimensions
 - Filter Measures
 - Filter Date

Filter Dimension

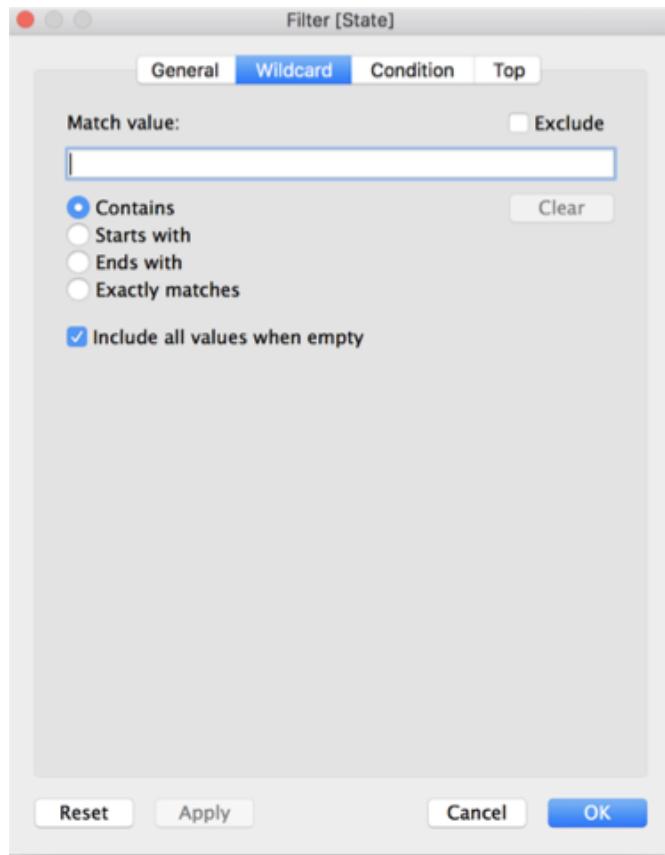
Tableau offers the following types of filters for dimensions.

- General Filter
- Wildcard Filter
- Condition Filter
- Top Filter



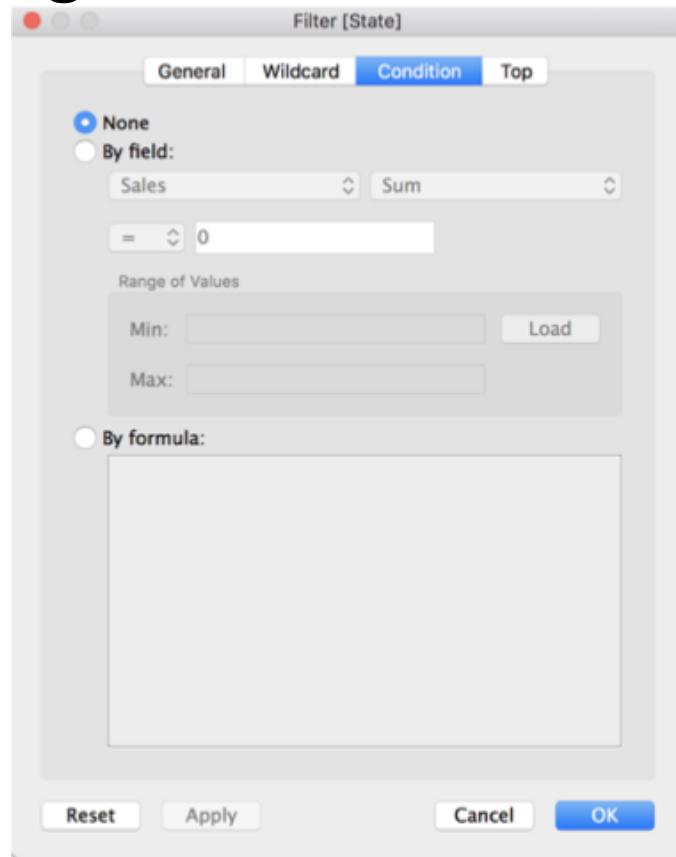
Wildcard Filter

- Use wildcard filter to select states



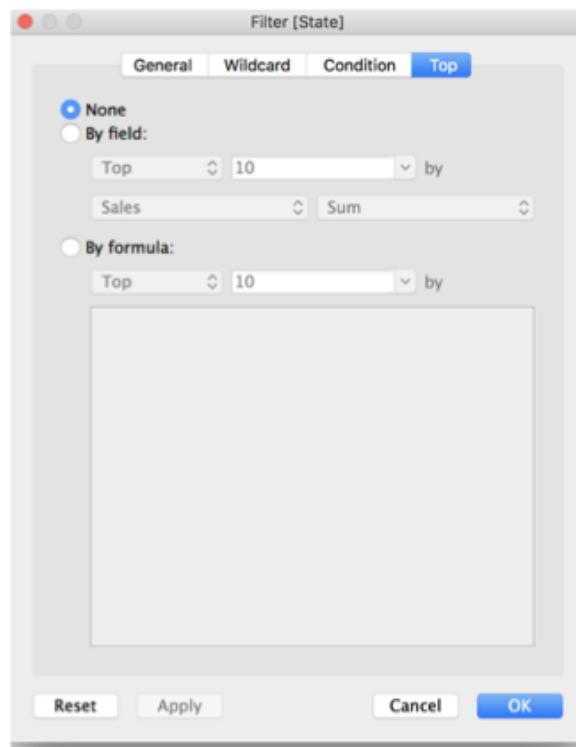
Condition Filter

- Use condition filter to apply some conditions to a filter eg Add a condition eg Quantity Sum < 100



Top Filter

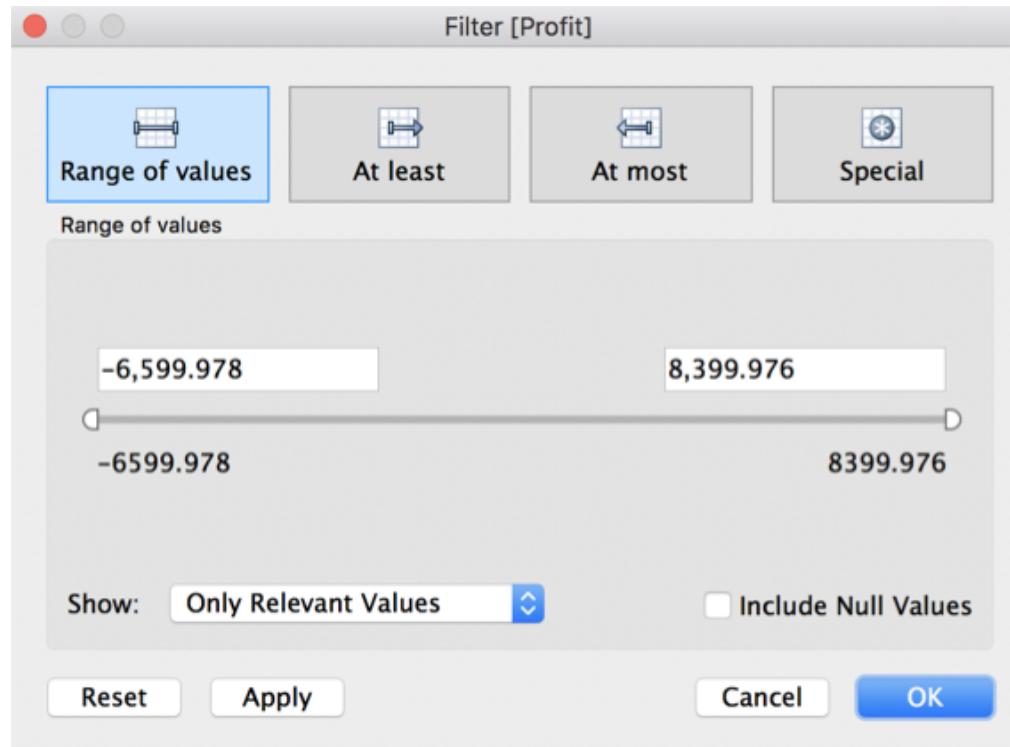
- Use top filter to limit the result set from a filter. For example, from a large set of records on sales we want only the top 10 values.



Filter Measure

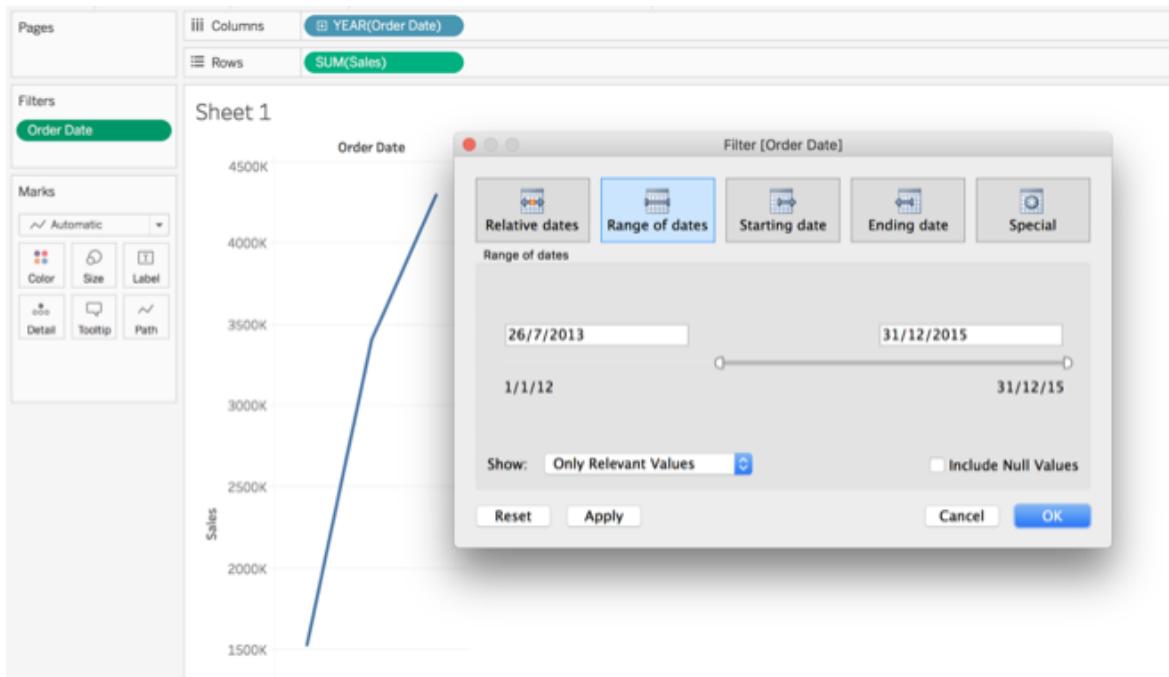
Tableau offers the following types of filters for measures:

- Range of Values
- At Least
- At Most
- Special



Filter Date

- Connect to global_superstore_2016.xls
- Show Sales vs Category
- Drag the "order date" field to the filter



Ex: Filter Data

- Connect to global_superstore_2016.xls
- Create a Filter for Sales vs region
 - Include only East and West regions
 - Sales above 100K
 - Show only 2014 to 2016

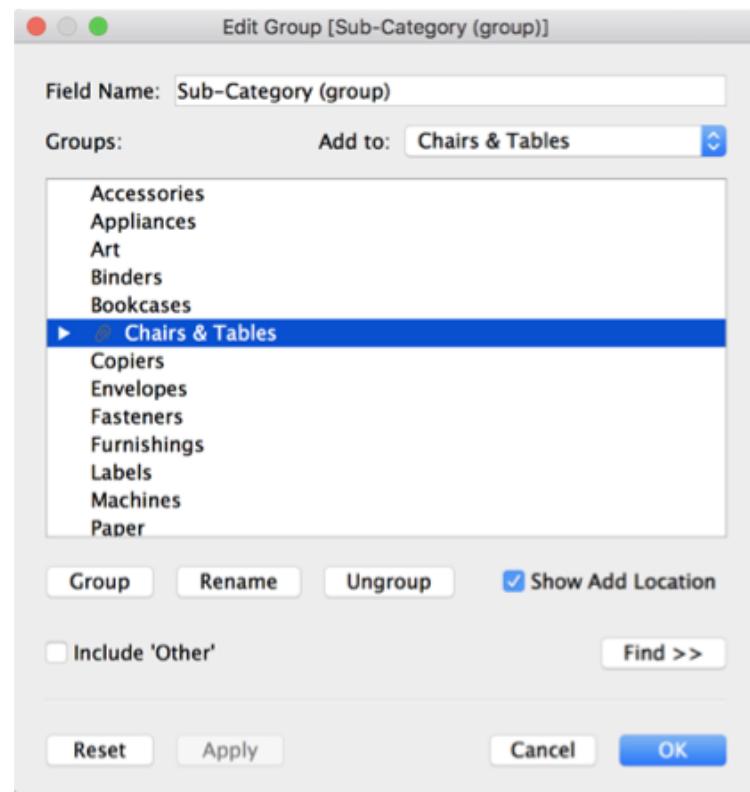
Time: 5 mins

Group

- Plot Sales vs Country
- Filter the ASEAN countries - Singapore, Malaysia, Indonesia, Philippines, Lao, Cambodian
- Right Click and Choose the Group Icon

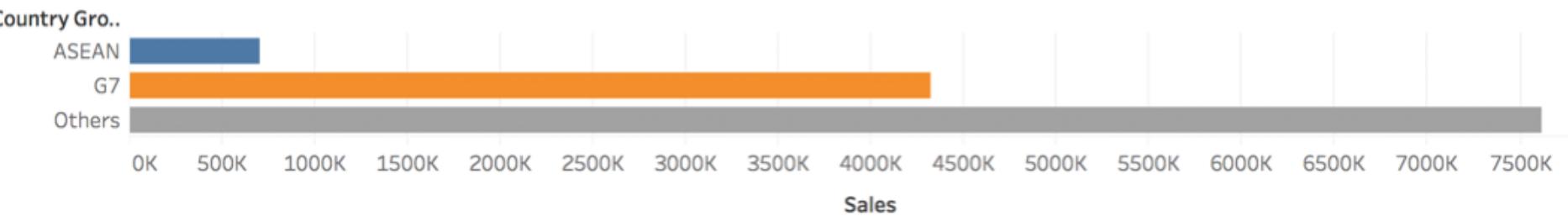
Edit Group

- Select the group on data pane
- Right Click and Edit Group
- Group, Rename & Ungroup
- Include 'Other'



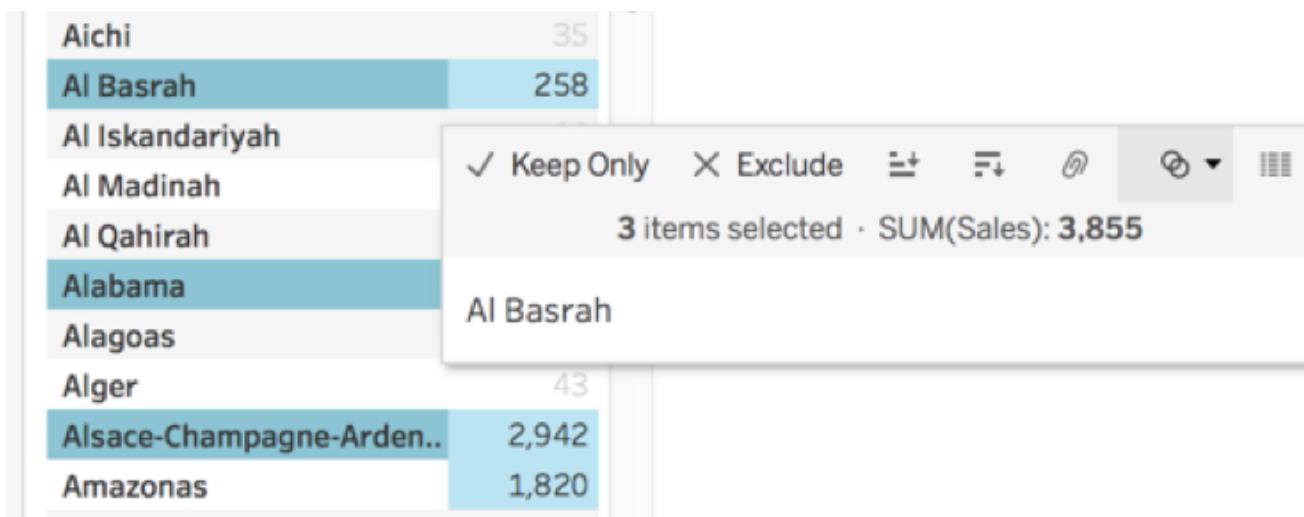
Ex: Group Data

- Connect to global_superstore_2016.xls
- Create a G7 Group of countries: US, Canada, France, Germany, Italy, Japan, Russia



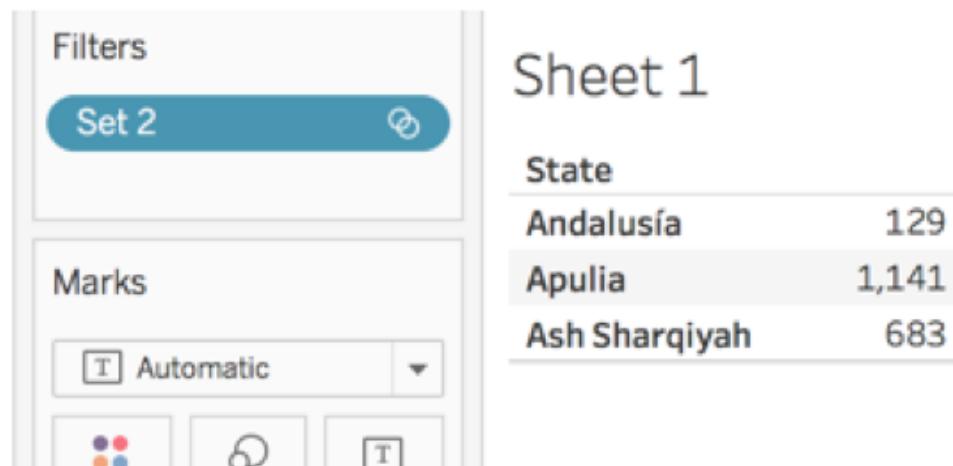
Set

- Select the elements
- Right Click and Choose the Set Icon



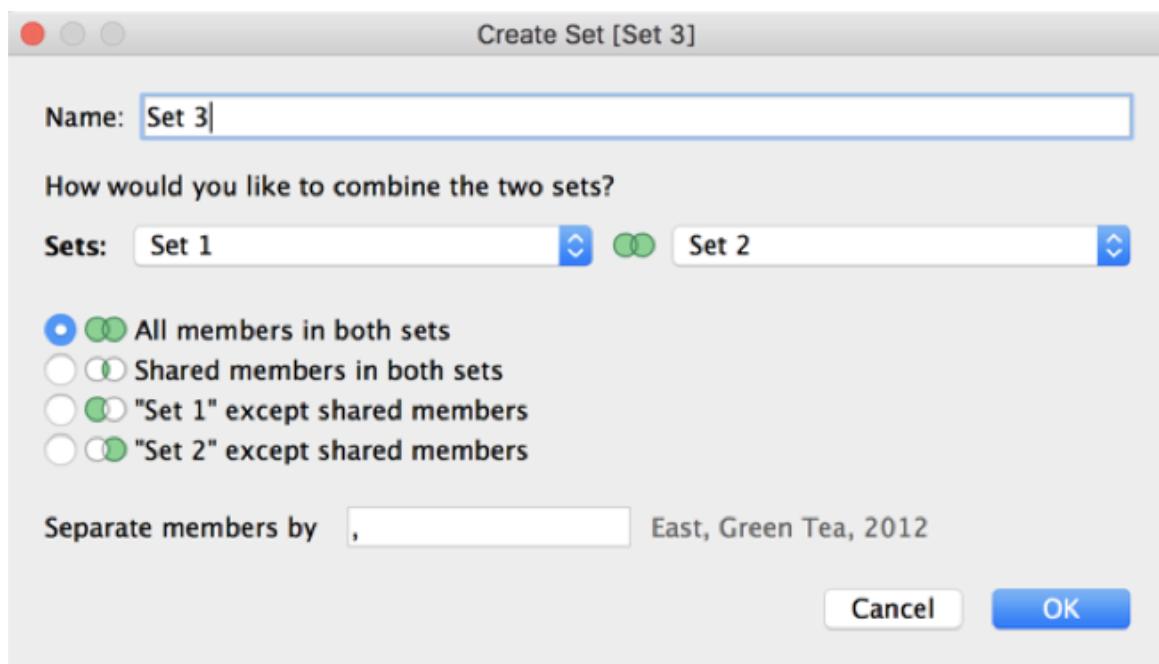
Filter by Set

- Drag the Set to the Filters



Combine Sets

- Select 2 sets
- Right Click to select Combine Sets
- Combine by Union, Intersection, Subtraction



Ex: Organize Data

- Connect to global_superstore_2016.xls
- Create a office items- Chairs, Tables, Binders, Papers
- Plot office items vs others
- Create a combined set office items - Chairs, Tables, Binders, Papers
- Filter the office items

Time: 5 mins

Q&A

Feedback

Thank You!

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