Intro to Data Visualization Using Tableau Public

November 21, 2020

Vandana Srivastava

Founder & CEO ViSER LLC

About ViSER

- Started in Jan 2019 :
  - to promote STEM and Finance learning among kids and adults; conducted bootcamps, after school classes, enrichment classes, online and in-person
  - In-person classes in USA and online sessions Worldwide
  - to provide AI backed, data-driven solutions to businesses; filed a patent in IoT chatbots
- website: https://www.go-viser.com/
- email: viserllc@gmail.com

- **Founder and CEO: Vandana Srivastava**
- About Vandana
  - MBA (Financial Management)
    Pace University, NY, USA
  - MS (Computational Mathematics)
    Arizona State University, AZ, USA
  - 12+ years of experience as:
    - Vice President, Investor Relation (Tantiv4), Incentive Analyst (IBM)
    - Assistant Professor at different Engineering Colleges in India including IIT Delhi
- https://bipvan.wixsite.com/vsrivastava
- https://www.linkedin.com/in/vandana-srivastava/

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Session Layout

- About Tableau Software
- Using Tableau
  - Upload data
  - Get Familiar with Interface
- Create Vizualizations
  - Basic Viz (line chart, pie chart, bar chart, etc)
  - Complex viz (map etc)
  - Dashboard
- Advanced Concepts
  - Filter, Set, Groupby, Calculation field, Parameter
- Some Sample Dashboards

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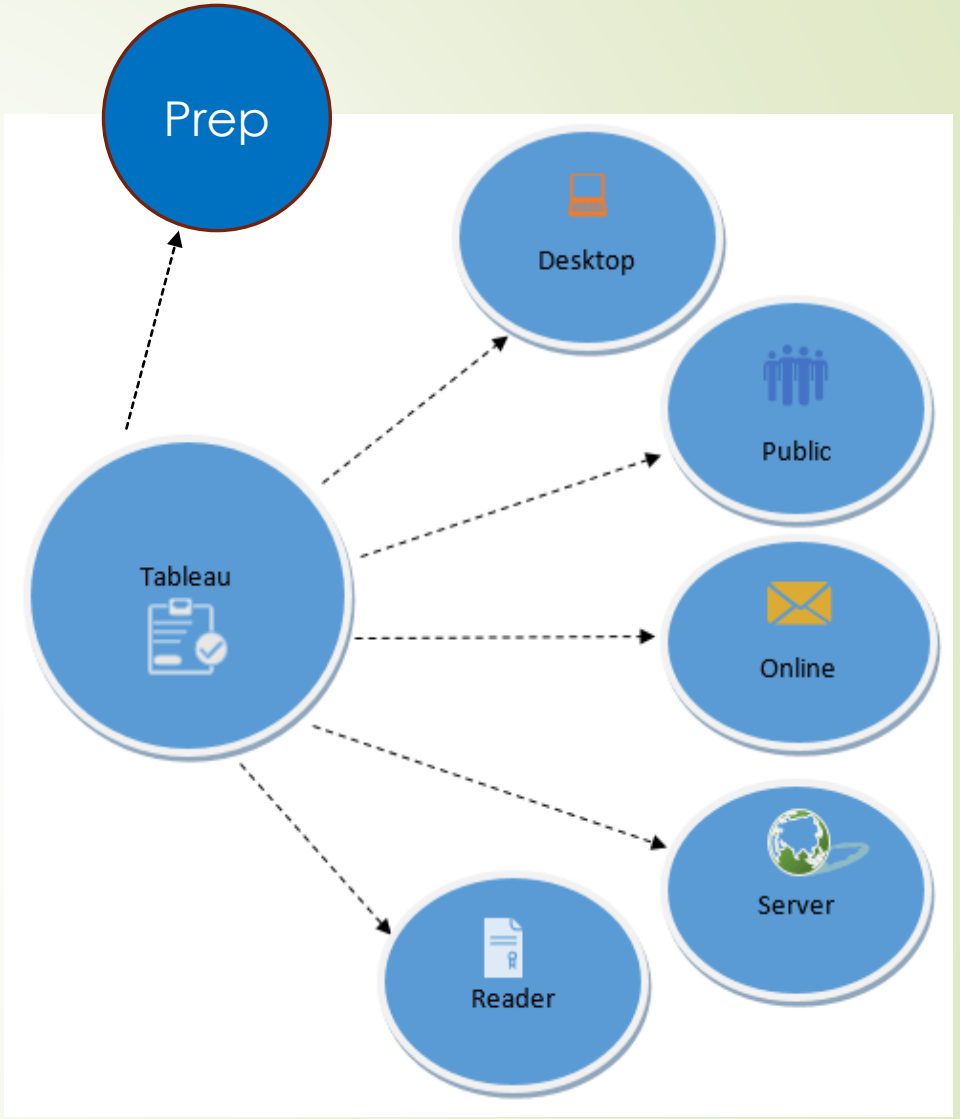
About Tableau Products

- Tableau Public (freely available)
  - Support for data sets of up to 10 million rows so that anyone can analyze nearly all publicly available datasets for free (tableau.com, 2015)
  - An increased storage limit of 10 GB for everyone, so authors can create and store more information in Tableau is forward compatible not backward (tableau.com, 2015)
  - Consists of a free downloadable authoring tool to explore and visualize data,
  - A cloud platform to host, share and embed interactive visualizations
  - A learning program that provides support and training
- Tableau Desktop (paid version)
  - Many more functionalities than Tableau public
  - Mostly used by companies



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Google Images

Dataset – Sample “Superstore.xls”

- Excel workbook

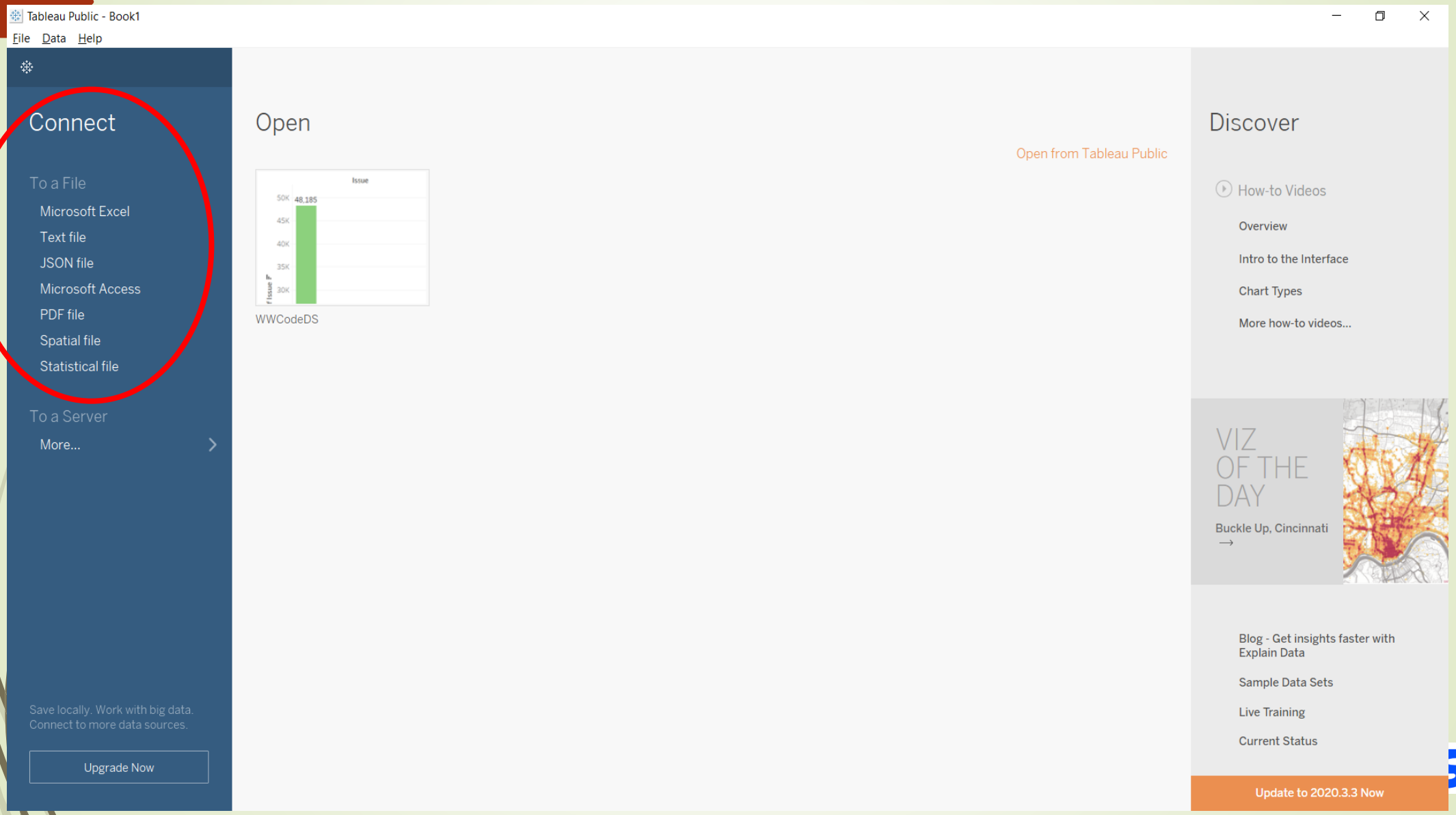
- 3 sheets
  - Order (Will work on this sheet)
  - Returns (returned, order_id)
  - People

https://data.world/mbark/sample-superstore

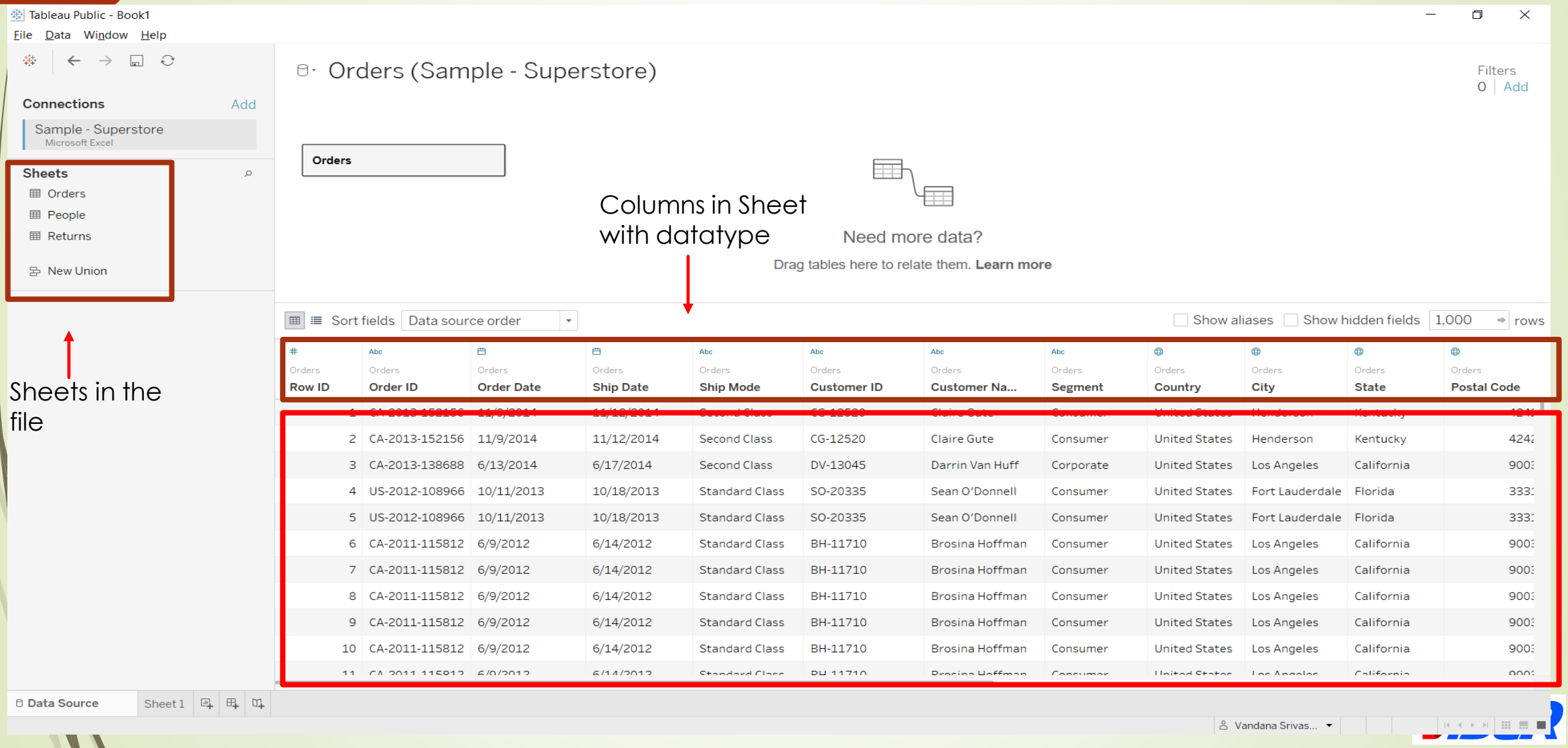
Step 0: Download Tableau Public

- https://public.tableau.com/en-us/s/ (public.tableau.com)
- Enter your email
- DOWNLOAD
- Follow instructions
- Open “Tableau App”

Step 1: Open Tableau Public App



Step 2: Connect to Data Source



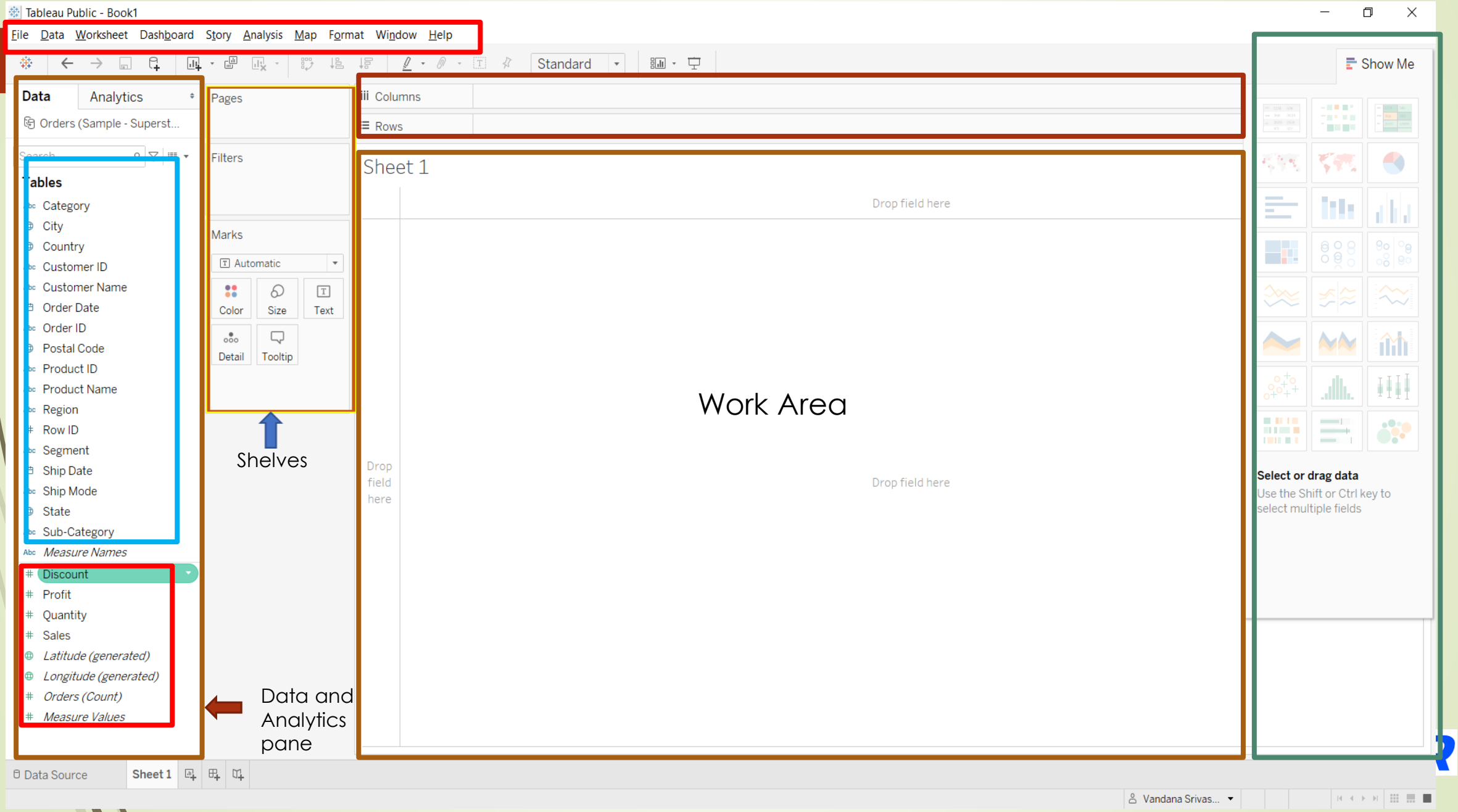
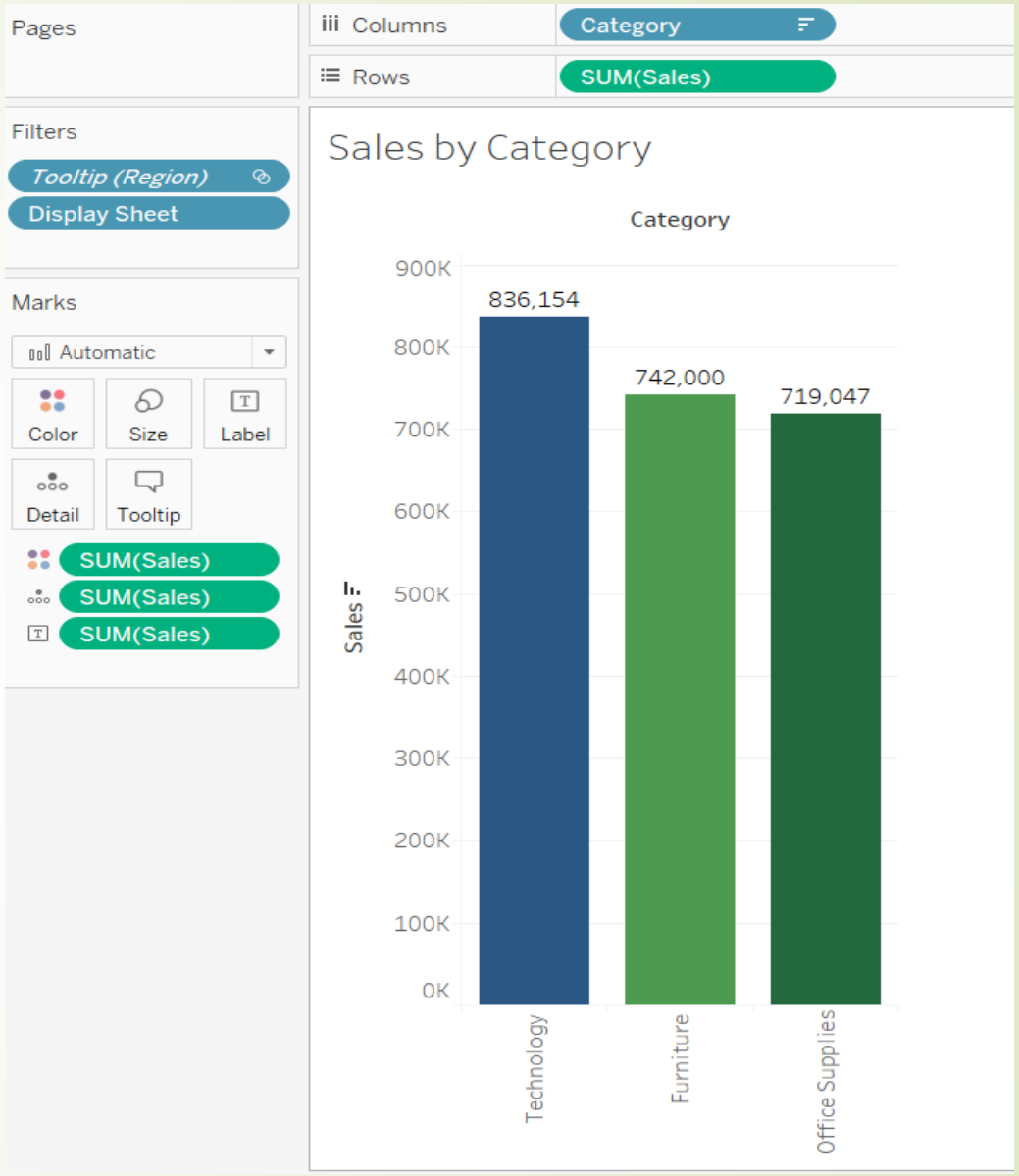


Tableau Public - Book1
File Data Worksheet Dashboard Story Analysis Map Format Window Help
Standard
Show Me
Data
Analytics
Orders (Sample - Superst...
Tables
Category
City
Country
Customer ID
Customer Name
Order Date
Order ID
Postal Code
Product ID
Product Name
Region
Row ID
Segment
Ship Date
Ship Mode
State
Sub-Category
Measure Names
Discount
Profit
Quantity
Sales
Latitude (generated)
Longitude (generated)
Orders (Count)
Measure Values
Pages
Filters
Marks
Automatic
Color
Size
Text
Detail
Tooltip
Columns
Rows
Sheet 1
Drop field here
Drop field here
Drop field here
Work Area
Select or drag data
Use the Shift or Ctrl key to select multiple fields
Shelves
Data and Analytics pane
Data Source
Sheet 1
Vandana Srivas...

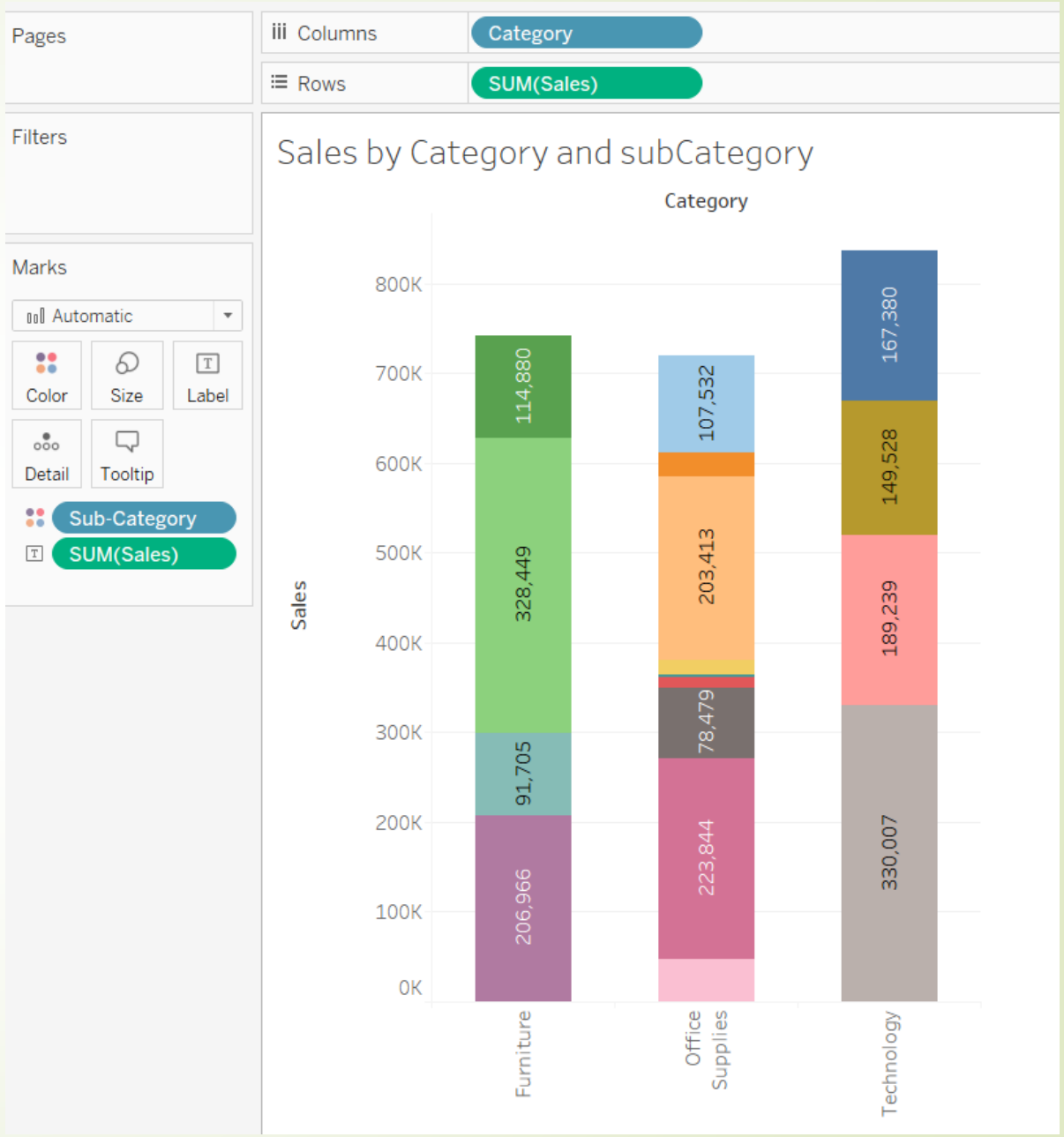
Start Vizualization1

- Which category has the highest amount of sales?
  - Draw bar chart and color it by sales (drag sales to ROWS and Category to COLUMNS)
  - Change colors (drag *sales* to COLOR on Marks card)
  - Show details (drag *sales* to LABEL on Marks card)
  - Rotate x-label(Click xlabel and choose *rotate label* option)
  - Sort the bars in ascending or descending order
  - Navigate other options for "Measure" values (like mx, min, avg, stdev etc)
  - Change "title" or sheet name

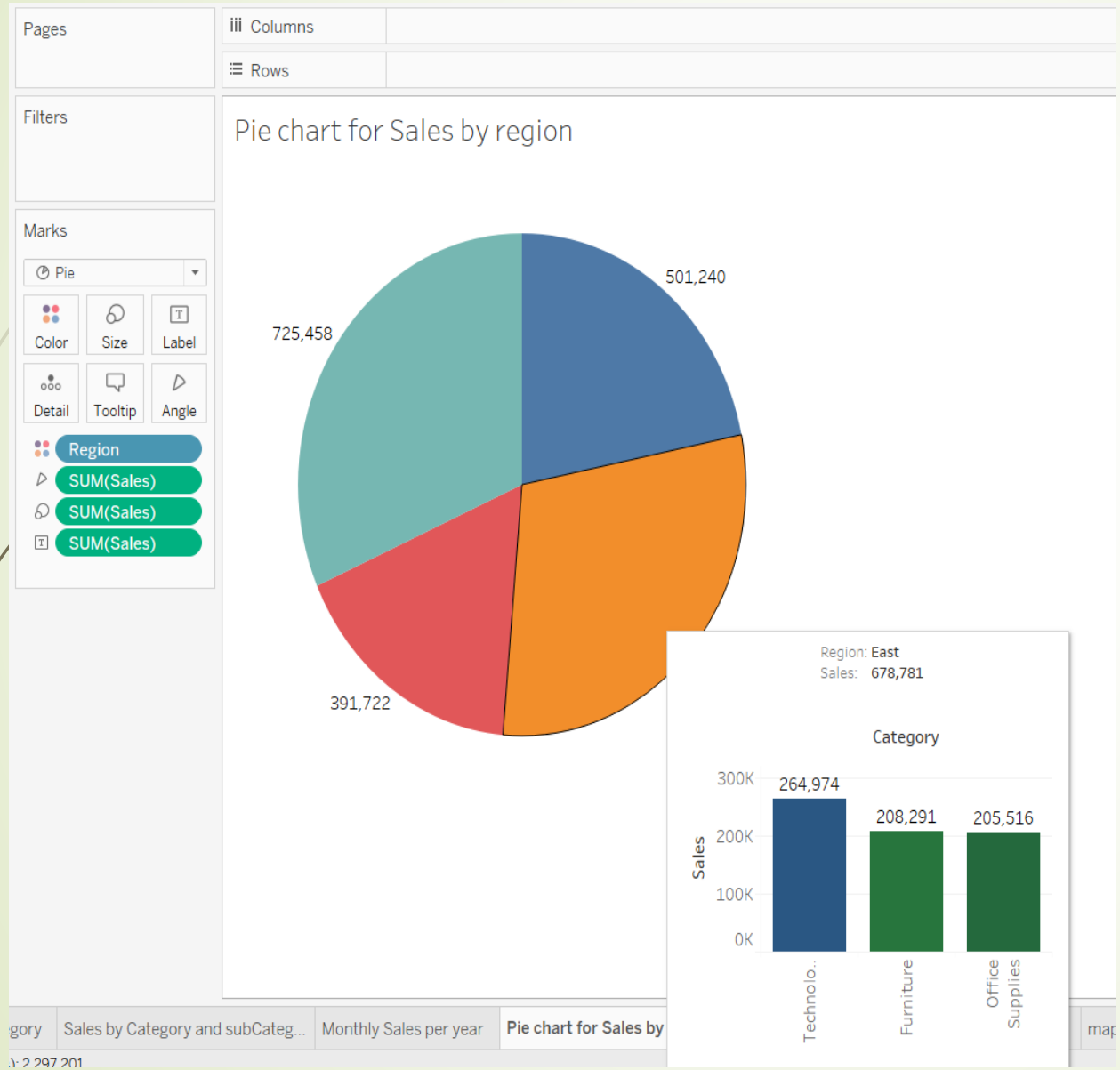


Start Vizualization – 2/3/4

- Which subcategory has the highest amount of sales? (sheet 2)
  - Draw bar chart and color it by sales (drag sales to ROWS and Category to COLUMNS)
  - Change colors (drag *subcategory* to COLOR on Marks card)
- Bubble Chart for **"Sales by Region"**



Pie Chart



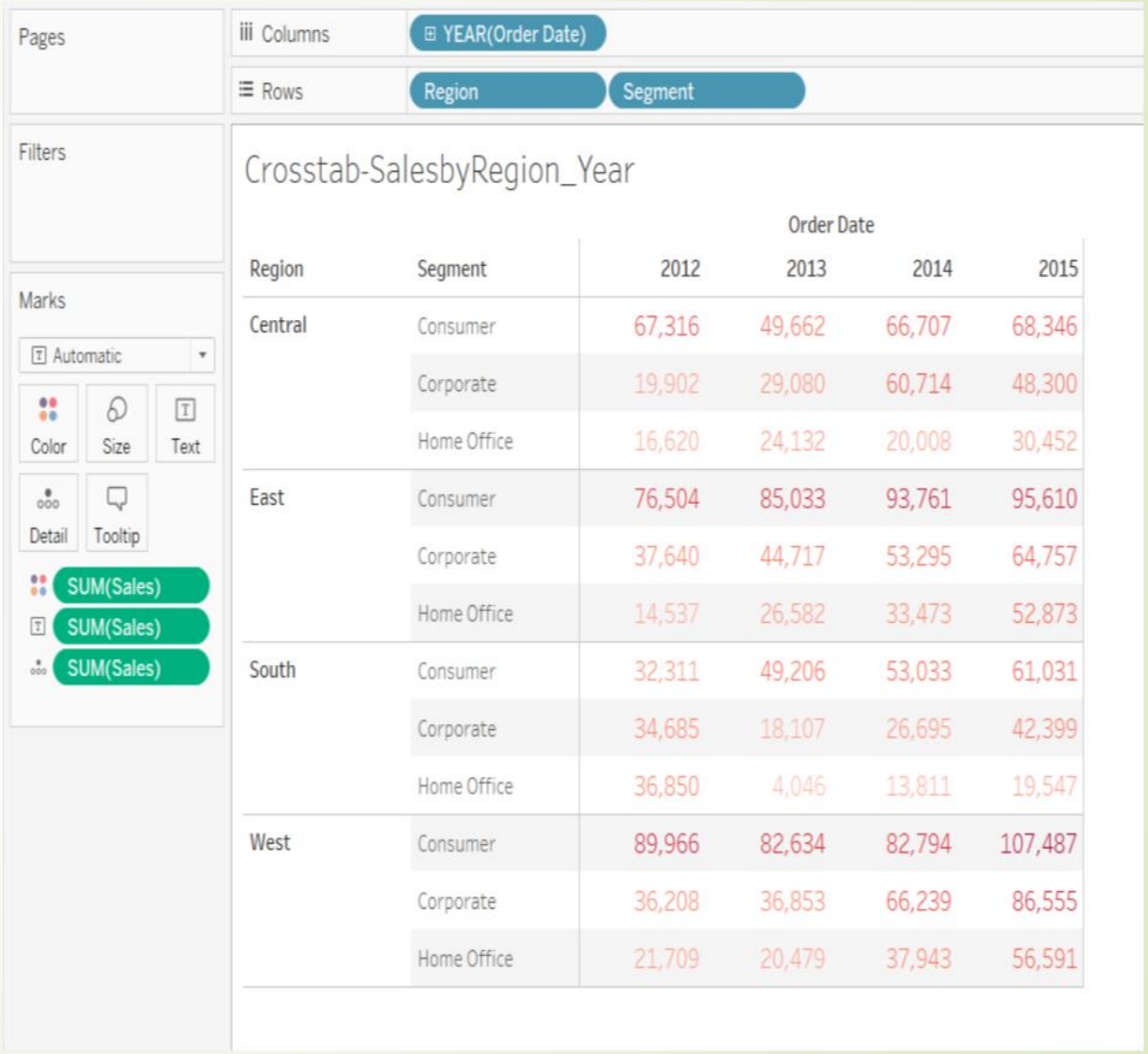
TIP: To increase the size of the pie chart, press Ctrl+Shift+b

TRICK: To insert another sheet in "Tooltip"
Example: Find total SALES for each CATEGORY in each REGION

Start Vizualization – 5

Simple Crosstab

- GOAL: to get the amount of sales for each segment for each year using the order dates available
- **Step 1** – Drag and drop the dimension order date to the columns shelf.
- **Step 2** – Drag and drop the dimensions region and segment to the rows shelf.
- **Step 3** – Pull the measure Sales to the labels Shelf under Marks.



Crosstab-SalesbyRegion_Year

		Order Date			
Region	Segment	2012	2013	2014	2015
Central	Consumer	67,316	49,662	66,707	68,346
	Corporate	19,902	29,080	60,714	48,300
	Home Office	16,620	24,132	20,008	30,452
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
South	Consumer	32,311	49,206	53,033	61,031
	Corporate	34,685	18,107	26,695	42,399
	Home Office	36,850	4,046	13,811	19,547
West	Consumer	89,966	82,634	82,794	107,487
	Corporate	36,208	36,853	66,239	86,555
	Home Office	21,709	20,479	37,943	56,591

Advanced Concepts – *Calculated field*

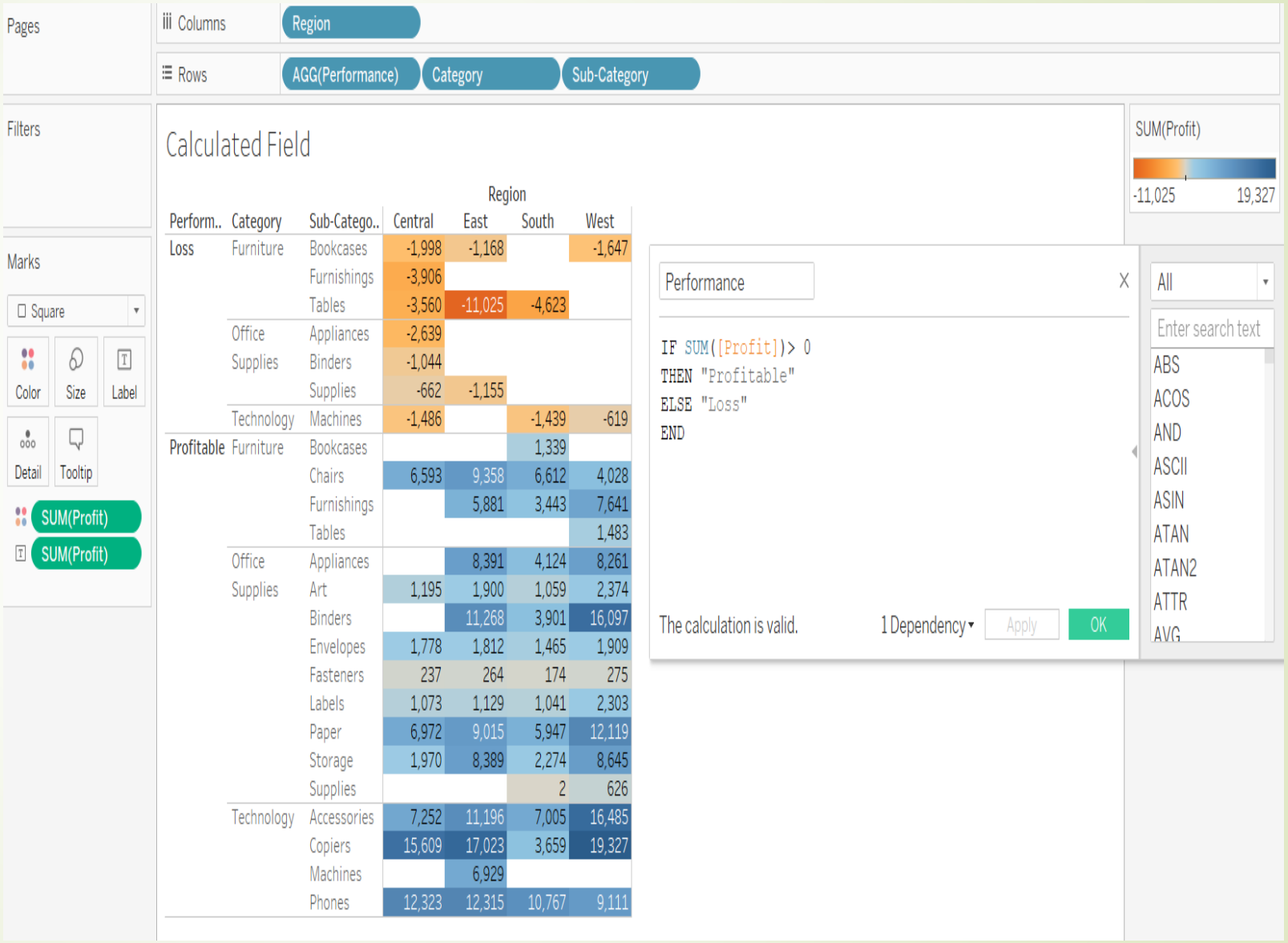
- Right Click at data pane "dimension"
- Create Calculated field
- Name "Performance"
- Enter formula:

  IF SUM([Profit])> 0

  THEN "Profitable"

  ELSE "Loss"

  END
- Rows: Performance, Category, Sub-Category
- Columns: Region
- Color/Label: Sum(Profit)
- Marks: Square



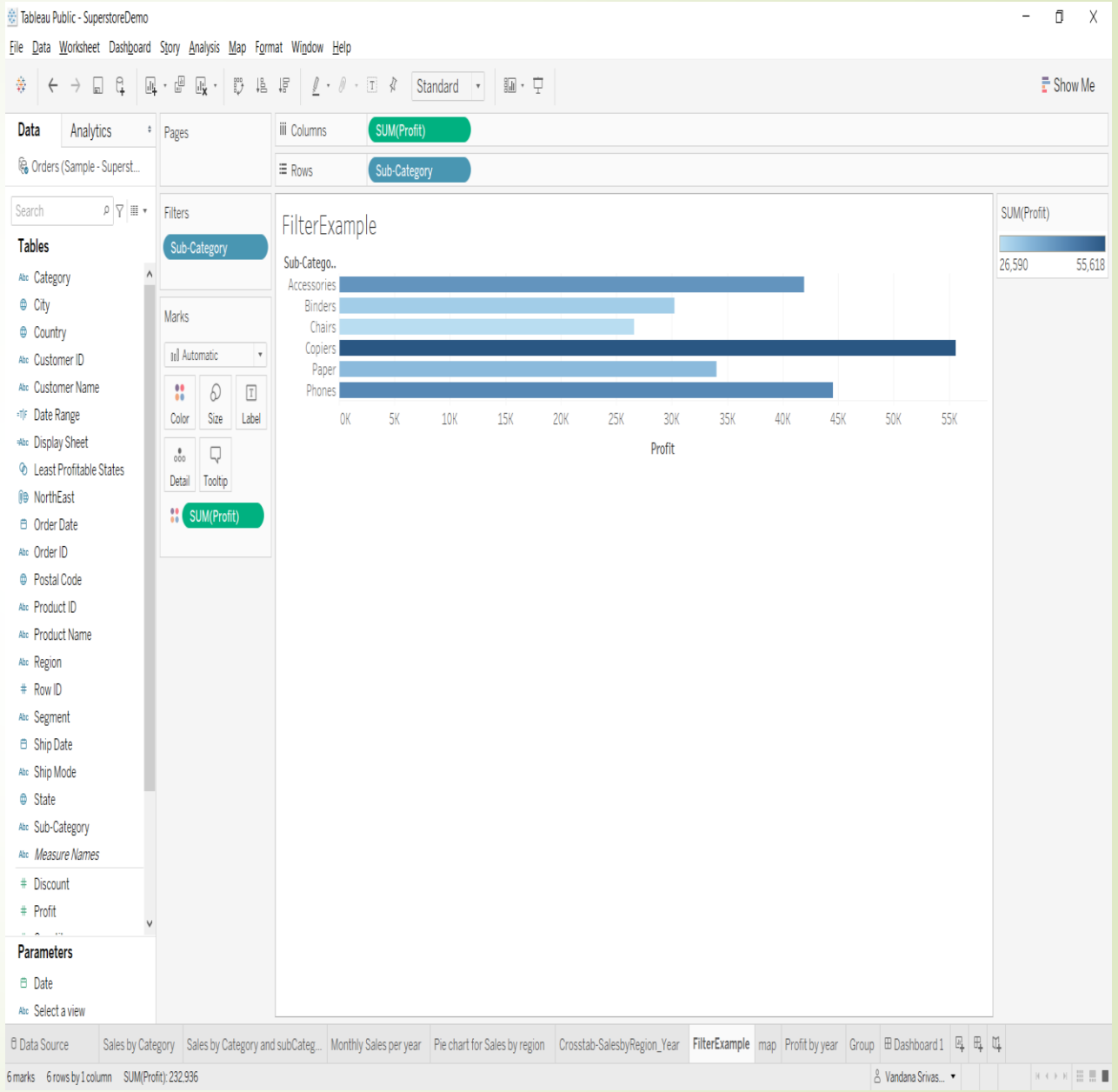
Advanced Concepts – Filter, Set, Group

- **Filter:** A dimension or measure that narrows the data shown in a view to focus on relevant information
- **Group:** Simplifies large numbers of dimension members by combining them into higher-level categories
- **Set:** A subset of the data that meets certain conditions based on existing dimensions

  - **filters** only apply to the current worksheet
  - **Sets** can be used again and again throughout the workbook
  - Using **sets** maintains consistency and saves time
  - They can also be combined to create an even more specific subset of the data

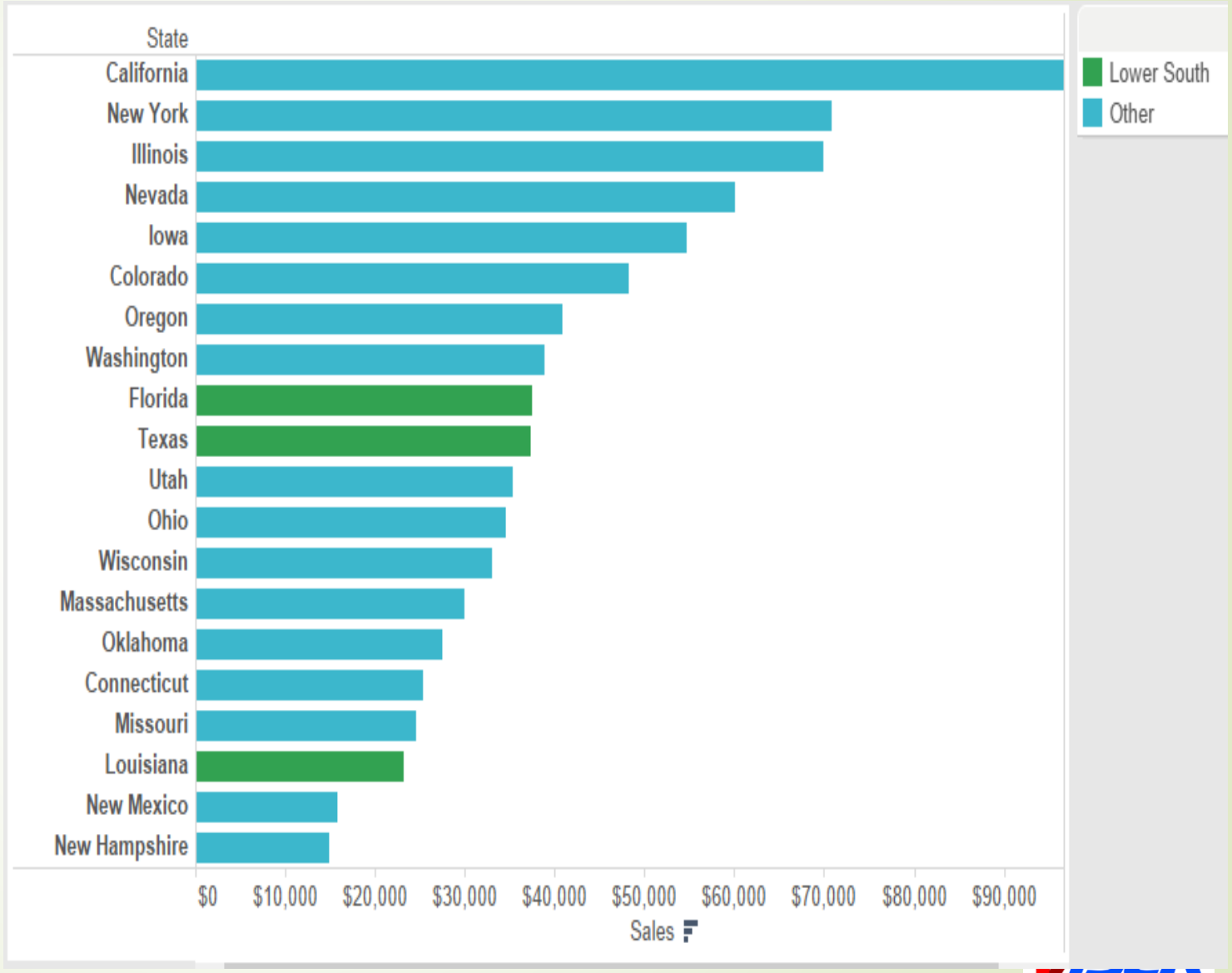
Filters

- GOAL: showing profit for each sub-category of products(using dimension and measure filter)
  - **Step 1**– Drag the dimension field "Sub-Category" to the Rows shelf and the measure field "profit" to the Columns shelf.
  - **Step 2**– drag the Sub-Category dimension to the Filters shelf to open the Filter dialog box
  - **Step 3** – Click the None button at the bottom of the list to deselect all segments
  - **Step 4** - Select the Exclude option in the lower right corner of the dialog box
  - **Step 5** - Select Labels and Storage and then click OK



Groups

- A regional manager and is only concerned with his territory's states. He'd like to see how NorthEast compare to the rest of the country. In this situation, a visual **group** provides a better representation.



Add Drop Down Menu to Dashboard

Step 1

- On an individual worksheet, right-click an empty area of the **Data** pane at left, and select **Create Parameter**.

- Step 2
  - In the Create Parameter dialog box, do the following:
  - Enter a name that will appear above the menu, like **Select a View**.
  - For **Data type**, select **String**.
  - For **Allowable values**, select **List**.
  - Under **List of values**, type **All** for the first value, and then add values with the name of each view in the dashboard.

3. Click **OK**.
4. On any sheet, right-click an empty area of the Data pane at left, and select **Create Calculated Field**.
5. Give the calculation a descriptive name like **Display sheet**. In the formula text box, enter the name of the parameter you created above. Then click **OK**.
6. Open a sheet you plan to add to your dashboard, and drag the new calculation to the Filters shelf. Then do the following in the Filter dialog box:
   - Select **Custom Value List**.
   - Type **All** in the text box, and click the **Add Item** button.
   - Type the current view's name (like “Map”) in the text box, and click the **Add Item** button.
   - When you're done, click **OK**.
7. Repeat step 6 for every sheet you plan to add to your dashboard.
8. Select **Dashboard** > **New Dashboard**.
9. From the **Objects** section at lower left, drag a **Vertical** or **Horizontal** layout container to the dashboard.
10. Now drag each sheet to the layout container, identified by the dark blue outline.
11. To display the sheet selector, from the drop-down menu at the top of a view, choose **Parameters** > [new parameter name].

- https://help.tableau.com/current/pro/desktop/en-us/dashboards_sheet_selector.htm

Where to Save Tableau Public Viz?

- Can not be saved locally, on your computer
- Will be saved on *public.tableau.com*
- *Can be shared, downloaded*
- *Embed on your website: Copy the Embed Code and paste it in your web page HTML*
- *Send a link: Copy the Link and send to your colleagues*
- *Send an email using your default email client*
- *Share on Twitter or Facebook*
- *Help Resources:*
  - *Tableau Community*
  - *Stack Overflow*

Some Sample Dashboards

- https://www.tableau.com/covid-19-coronavirus-data-resources (Corona Virus related)
- https://public.tableau.com/en-us/gallery/?tab=viz-of-the-day&type=viz-of-the-day
- https://www.tableau.com/learn/articles/business-intelligence-dashboards-examples

Thank You!

Send email to: viserllc@gmail.com

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