

Tableau I

Ishita Sharma, Data Scientist
isharma3@uh.edu

What do you understand by data visualization?

- Data Visualization helps tells stories by curating data into a form easier to understand, highlighting the trends and outliers - **Tableau**
- What further matters?
 - How well the data is visualized?
 - Is it conveying the perfect insight as being described by numbers?

[Article: Tableau Data Visualization.](#)

Learning Objectives

After today's session, you will:

- Understand different versions of Tableau
- Be able to create basic, interactive visualizations in Tableau

Tableau Software

Tableau Public

- Free program
- Data limits
 - 10,000,000 rows of data
 - Excel, Access, text files
- Publishing limits
 - Can only save work to the web
 - 10GB storage space per account
 - Can now disable data download
- [Download Tableau Public](#)
- [Create Account](#)
- [Tableau Public Gallery](#)

Tableau Desktop

- Allows you to save files privately
- Additional data connection options (databases, etc.)
- No data size limits
- [Tableau Desktop for Students](#) (free one-year license for full-time students)
- [Tableau for Teachers](#) (free short-term licenses for faculty and students using Tableau in a course)
- [Two-week trial](#)



Tips for preparing your data

Remove the following fields

- Text
- Pre-Calculated Field/ Aggregated/

A	B	C	D	E	F
Student Scores					
ID	Gender	School	Math	ELA	Science
1	F	UH	72	96	89
2	M	HCC	98	85	74
3	F	UHCL	100	74	88
Mean			90	85	83.6667

No cross tabs

A	B	C	D	E	F
ID	Gender	School	Math	ELA	Science
1	F	UH	72	96	89
2	M	HCC	98	85	74
3	F	UHCL	100	74	88

A	B	C	D	E
ID	Gender	School	Pivot Field Names	Pivot Field Values
1	F	UH	ELA	96
2	M	HCC	ELA	85
3	F	UHCL	ELA	74
1	F	UH	Math	72
2	M	HCC	Math	98
3	F	UHCL	Math	100
1	F	UH	Science	89
2	M	HCC	Science	74
3	F	UHCL	Science	88

No blank cells

A	B	C	D	E
ID	Gender	School	Pivot Field Names	Pivot Field Values
1	F	UH	ELA	96
2	M	HCC		85
3	F	UHCL		74
1	F	UH	Math	72
2	M	HCC		98
3	F	UHCL		100
1	F	UH	Science	89
2	M	HCC		74
3	F	UHCL		88

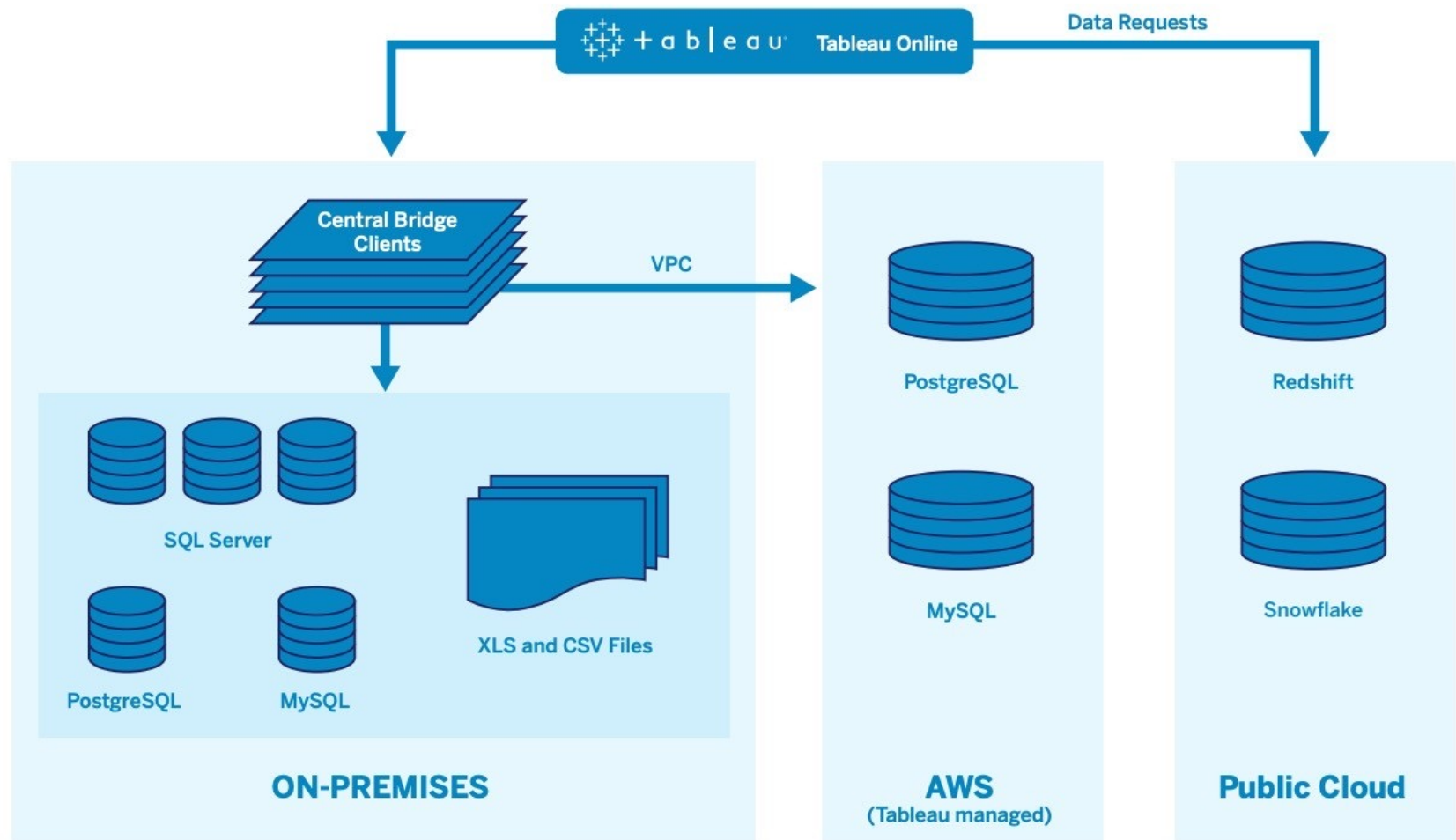
Remove blank rows

A	B	C	D	E
ID	Gender	School	Pivot Field Names	Pivot Field Values
1	F	UH	ELA	96
2	M	HCC	ELA	85
3	F	UHCL	ELA	74
1	F	UH	Math	72
2	M	HCC	Math	98
3	F	UHCL	Math	100
1	F	UH	Science	89
2	M	HCC	Science	74
3	F	UHCL	Science	88

Add missing headers

A	B	C	D	E
ID	Gender	School		
1	F	UH	ELA	96
2	M	HCC	ELA	85
3	F	UHCL	ELA	74
1	F	UH	Math	72
2	M	HCC	Math	98
3	F	UHCL	Math	100
1	F	UH	Science	89
2	M	HCC	Science	74
3	F	UHCL	Science	88

Tableau Architecture



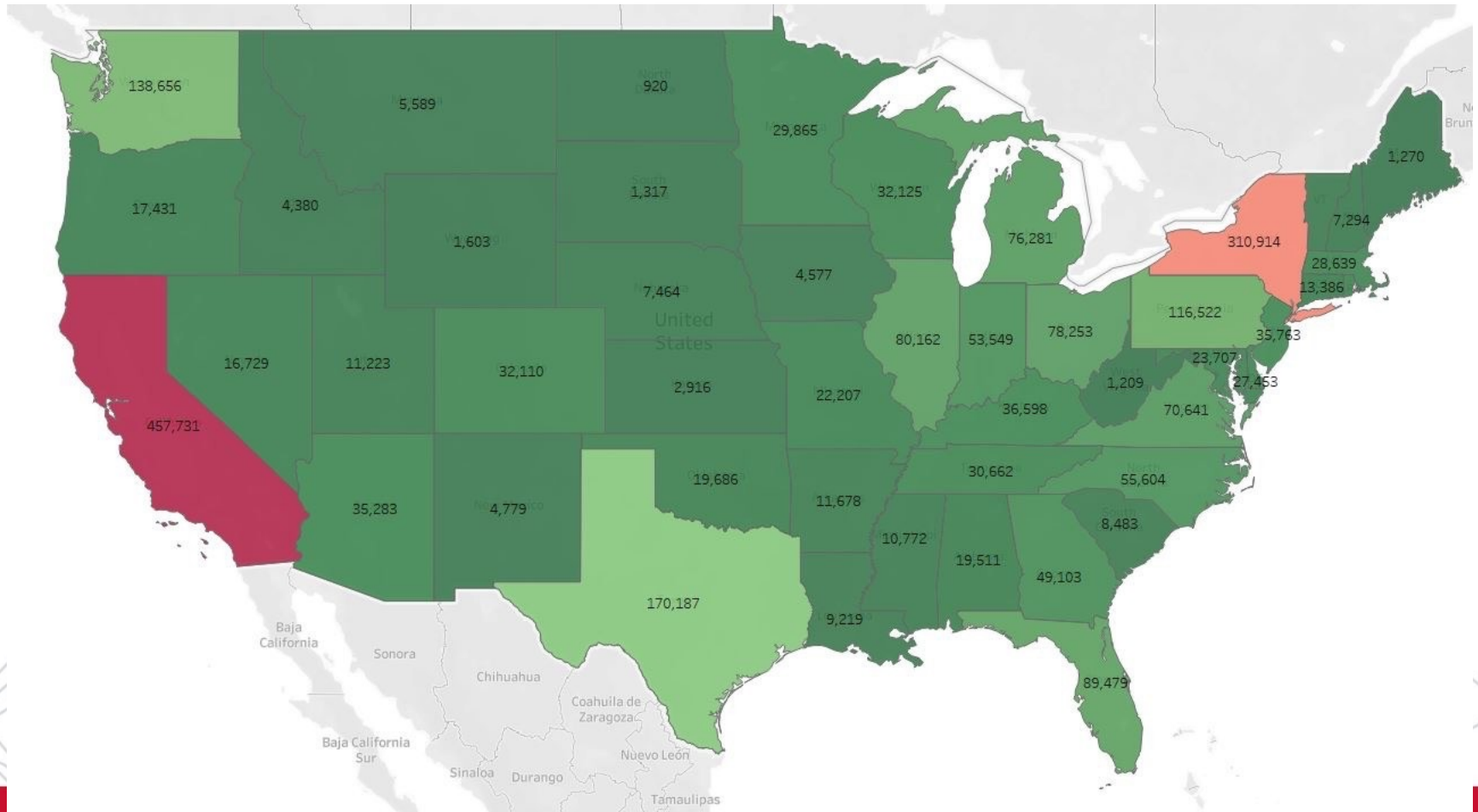
Loading
Data

Connect to different
types of files

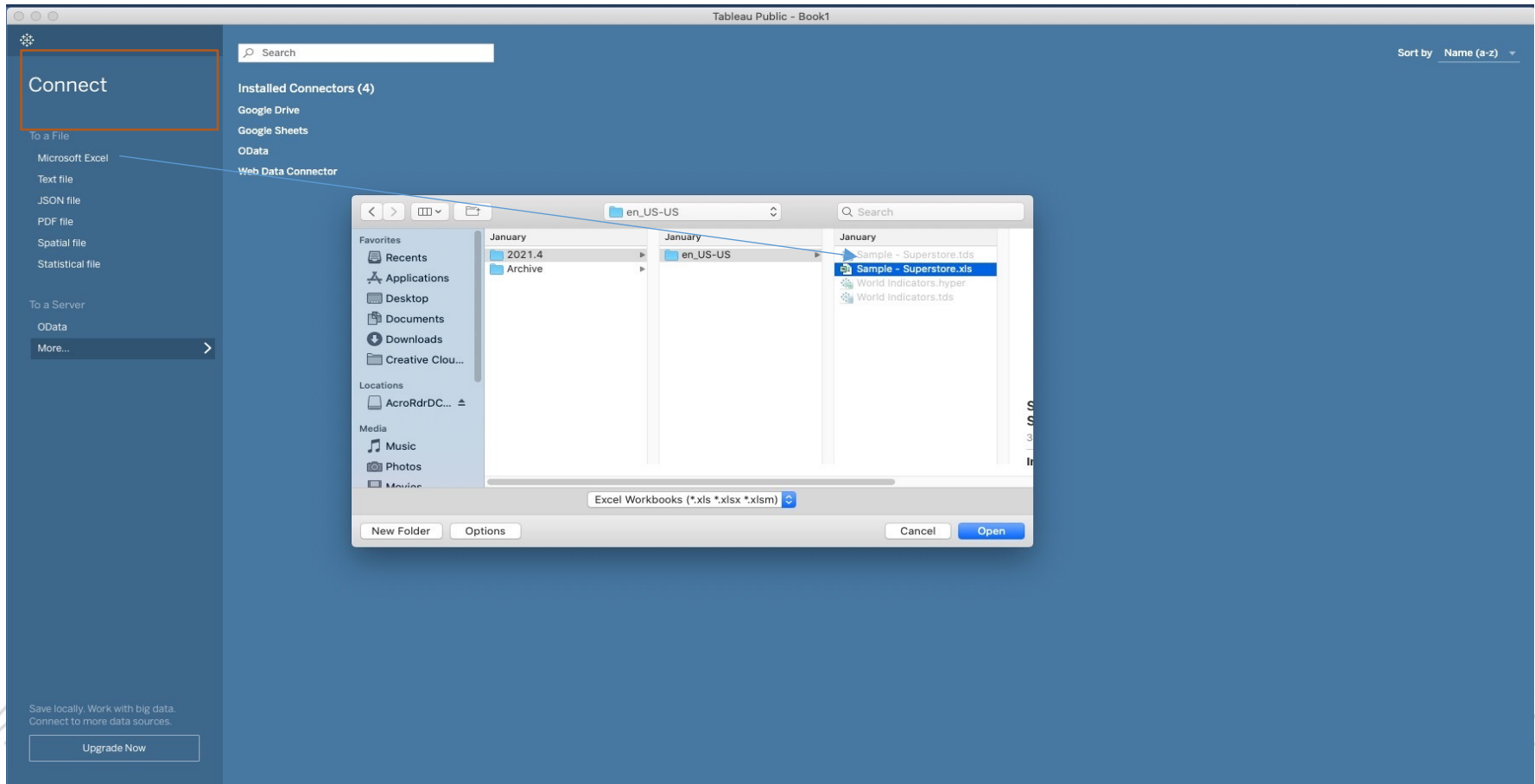


Change data type if
needed

Map: Sales by state



Connecting to the Microsoft Excel File



Canvas

Orders (Sample - Superstore)

Data you have connected.
BTW you can rename me!!

Orders



Need more data?

Drag tables here to relate them. [Learn more](#)

Data pre-view

Orders 21 fields 9994 rows

100 rows

Name
Orders

Fields

Type	Field Name	Physical Table	Remote Fie...
#	Row ID	Orders	Row ID
Abc	Order ID	Orders	Order ID
📅	Order Date	Orders	Order Date
📅	Ship Date	Orders	Ship Date
Abc	Ship Mode	Orders	Ship Mode
Abc	Customer ID	Orders	Customer ID

#	Abc	📅	📅	Abc	Abc	Abc	Abc	🌐
Orders	Orders	Orders	Orders	Orders	Orders	Orders	Orders	Orders
Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country/Region
1	CA-2020-152156	11/8/2020	11/11/2020	Second Class	CG-12520	Claire Gute	Consumer	United States
2	CA-2020-152156	11/8/2020	11/11/2020	Second Class	CG-12520	Claire Gute	Consumer	United States
3	CA-2020-138688	6/12/2020	6/16/2020	Second Class	DV-13045	Darrin Van Huff	Corporate	United States
4	US-2019-108966	10/11/2019	10/18/2019	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States
5	US-2019-108966	10/11/2019	10/18/2019	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States
6	CA-2018-115812	6/9/2018	6/14/2018	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States
7	CA-2018-115812	6/9/2018	6/14/2018	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States
8	CA-2018-115812	6/9/2018	6/14/2018	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States
9	CA-2018-115812	6/9/2018	6/14/2018	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States

Data Source

Sheet 1

Different Default Data Types

Data type icons in Tableau

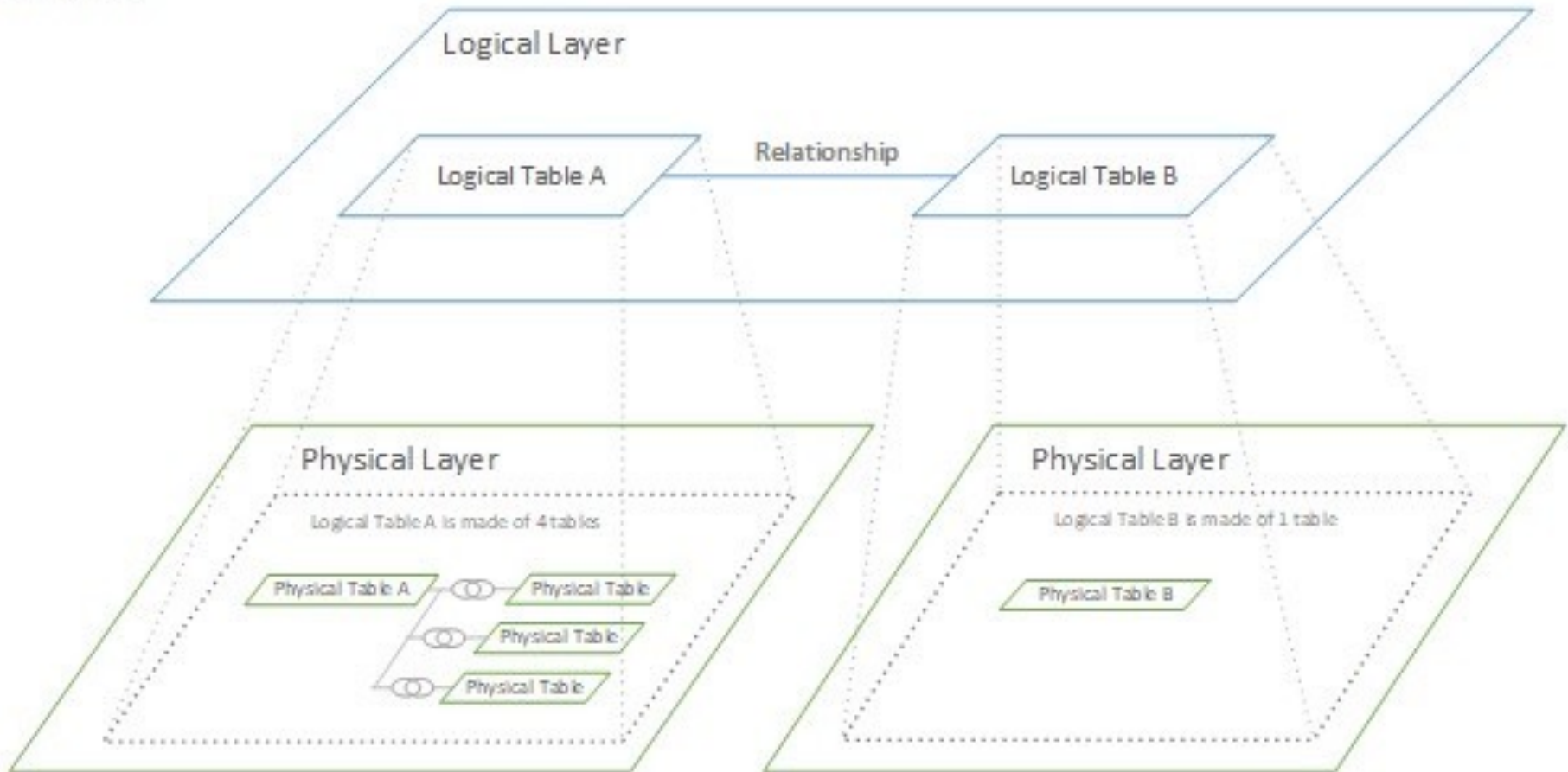
Icon	Data type
Abc	Text (string) values
📅	Date values
🕒	Date & Time values
#	Numerical values
T F	Boolean values (relational only)
🌐	Geographic values (used with maps)
👤	Cluster Group (used with Find Clusters in Data 🗒)

You can change the data type for a field either on the **Data Source** page or in the **Data** pane.

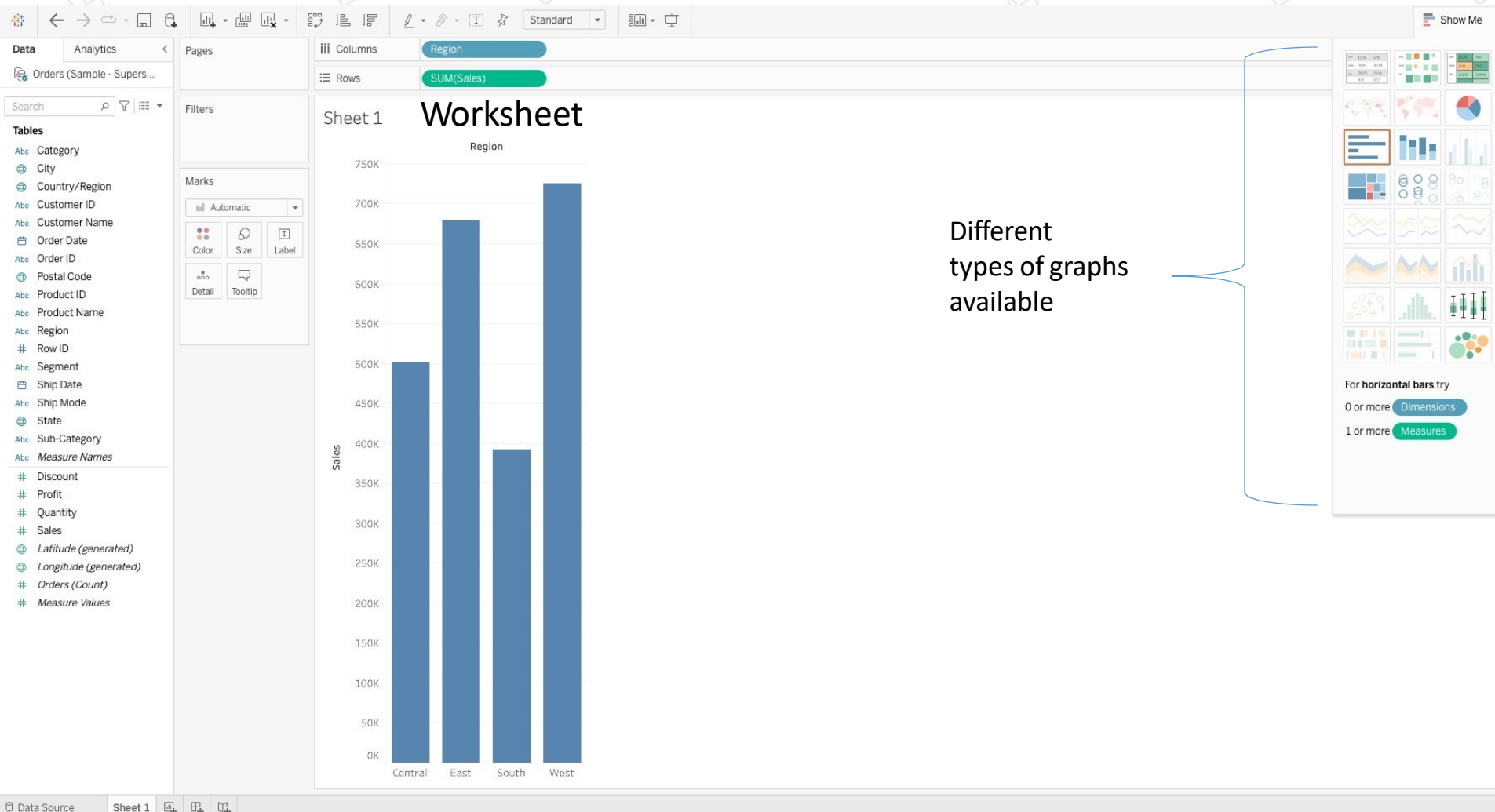
Dates/Text values are **DIMENSION** Numbers are **MEASURES**

Logical Layer vs Physical Layer

Data Model



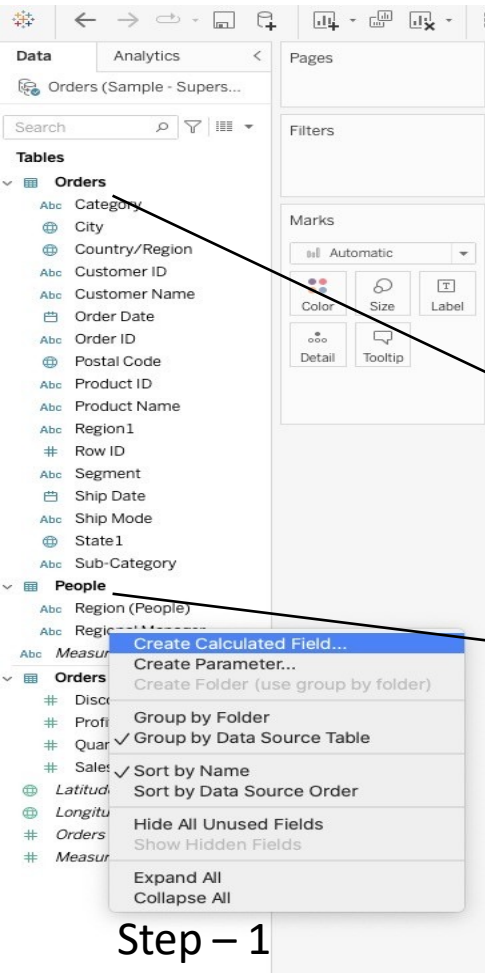
Quick Tableau Navigation



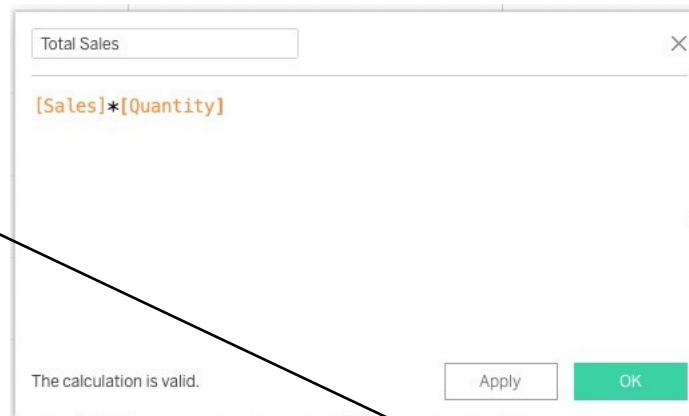
Creating a Calculated Fields

A new Metric/calculated field calculated field can be created by the user under Measure section

USAGE: It can be used later-on to create the different visualizations



Step – 1



Step - 2

Two Tables as a result of the JOIN

Total Sales

Result

Bar chart with filter

MEASURE: Dependent Variable

DIMENSION: Independent Variable



Scatter Plot



Dashboard

- Dashboard → New Dashboard
- Drag sheets into the window
- Apply filter to all sheets if desired
- Rearrange elements as needed
- Add external elements with the objects panel
- Use size controls to optimize for different screens

Customized dashboard

Logo

Edit Image Object

Image

Choose an image...

Choose

Options

☒ Fit Image
☐ Center Image

Target URL

Alt Text

Apply

OK

URL action

Add URL Action

Name:

Source Sheets

☐ Dashboard 1

☒ Sheet 1

☒ Sheet 2

Run action on:

URL

www.uh.edu

☐ URL Encode Data Values

☐ Allow Multiple Values

Item Delimiter:

Delimiter Escape:

URL Target

☐ New Browser Tab

☐ Web Page Object

☒ Browser Tab if No Web Page Object Exists

Save Visualizations

Publishing to the web

- Go to server → Tableau public → Save to Tableau public
- Log into your Tableau Public account (or create one)
- Choose a name for your workbook
- Disable data download if you need
- Click Save

Tableau Desktop export options

- Save as Tableau file (.twb, .twbx)
- Save as image
- Save as (Print to) PDF
- Save to Tableau Public (web)

Exercise

- Download census data from the American Community Survey 2016
- Create a map representing median household income
- Create a bar chart by state ordered by people with doctoral degrees

Resources to learn more

- Tableau Public How-to-videos
<https://public.tableau.com/en-us/s/resources>
- Get Started with Tableau Desktop
<http://onlinehelp.tableau.com/current/guides/get-started-tutorial/en-us/get-started-tutorial-home.html>
- Knowledge base
<https://www.tableau.com/support/knowledgebase>
- Tableau online help documentation
<http://onlinehelp.tableau.com/current/pro/desktop/en-us/help.html>