

# Data Visualization with Tableau

## Session 1



Did you complete the pre-class activity?



Pear Deck  
Interactive Slide  
Do not remove this bar

Students, drag the icon! ●



No Draggable™ Response  
You didn't answer this question



**Find a word that begins with P as quickly as**

**RDUPZRZLBFIawezyrgk**



# RDUPZRZLBFIawezyrgk

# RDUPZRZLBFIawezyrgk



**RDUPZRZLBFIawezyrgk**

**RDUPZRZLBFIawezyrgk**

**RDUPZRZLBFIawezyrgk**

# Some visual cues that pop out at us without conscious effort



COLOR HUE



ORIENTATION



TEXTURE



POSITION & ALIGNMENT



COLOR BRIGHTNESS



COLOR SATURATION



SIZE



SHAPE





# Table of Contents

- ▶ Course Info
- ▶ Getting Started with Tableau Desktop
- ▶ Basics of Tableau
- ▶ Connect to Data with Tableau
- ▶ Areas of the Workspace
- ▶ Data Pane



1

# Course Info



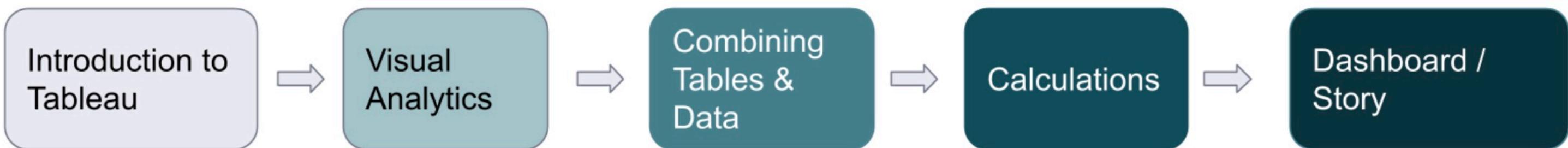


# Course Info

## Course Duration

13 Sessions 39 Hours in Total In-Class  
4-5 Sessions 4-5 Hours in Total Lab

## Course Flow & Level of Course



## Course Projects

2 Projects, 3 Assignments



# Course Info

## Course Objective

- The students will learn how to implement Tableau Desktop from the very beginning and how to use it to leverage data visualization to make decision making very easy.
- At the end of the course, you will be able to
  - Connect relational databases (MSSQL Server etc), spreadsheets & flat files (excel, txt, csv, google sheets), geofiles, pdf files and create interactive, functional and visually appealing dashboards and reports.
  - Easily adapt other BI tools such as  Power BI  Data Studio  Looker
  - Start to apply data analysis and BI related jobs with %95 self- confidence level.

# Objective

- Define what Tableau and Business Intelligence
- Install Tableau Desktop and Tableau Public
- Describe the areas of the start page
- Describe the areas of the data source page
- Connect to an Excel file

# BUSINESS INTELLIGENCE



# How to follow the class?

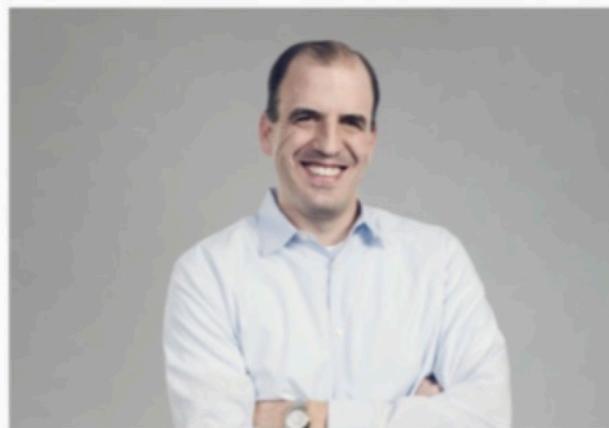
- Don't try to do at the same time with me!!!
- Just listen and pay attention to the details.
- I will give you time to practice.



# Table of Contents

- ▶ Course Info
- ▶ Getting Started with Tableau Desktop
- ▶ Basics of Tableau
- ▶ Connect to Tableau
- ▶ Areas of the Workspace
- ▶ Data Pane

# Story of Tableau



Chris Stolte

CO-FOUNDER AND TECHNICAL ADVISOR

## The Catalyst?

A Department of Defense (DOD) project aimed at increasing people's ability to analyze information. Brought to the Stanford University Computer Science department, the project took flight with Chris Stolte. Stolte, then a PhD candidate, was researching visualization techniques for exploring and analyzing relational databases and data cubes. His early career as a database programmer helped him see the problems with existing data analysis tools. Hungering for a project to change the world, he knew this was it.



Pat Hanrahan

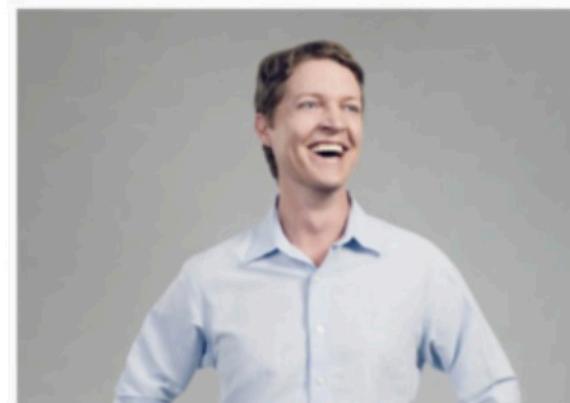
TABLEAU'S CHIEF SCIENTIST AND CO-FOUNDER

## The mind behind Pixar

The mind behind Pixar, and Stolte's PhD advisor, Professor Pat Hanrahan realized too it was a project that could change the world. A founding member of Pixar and chief architect for RenderMan, Pat had already transformed the world of animated film.

"We create pictures that answer questions, but we do it for businesses that want to know things about their data."

Chris, Pat, and a team of Stanford PhDs realized that computer graphics could deliver huge gains in people's ability to understand data. The breakthrough arose when they brought together two computer science disciplines for the first time: computer graphics and databases. Their invention VizQL™ let people analyze data just by building drag & drop pictures of what they wanted to see.



Christian Chabot

CO-FOUNDER AND CHAIRMAN

## "I see the future"

"I see the future" was Christian Chabot's reaction when he saw what they invented. Chabot had spent years analyzing data before studying entrepreneurship at Stanford Business School. Together, Christian, Chris, and Pat formed a company and spun out of Stanford in 2003. With Christian on board as CEO, Tableau rapidly hit one success after another: first, customers, multiple awards, international expansion, the first million in revenue, and multiple new inventions. Tableau is revolutionizing business analytics. And this is only the beginning.

"We've become a democratizing force in one of the world's greatest areas of need."



## Tableau Products



Tableau Desktop



Tableau Prep



Tableau Online



Tableau Server

Course: Data Analysis 12/22 EU X Course: Data Visualization with X Reflect & Review - Pear Deck X +

app.peardeck.com/review/student/txotwgnc/-NEBiNJB4lqntHezFD-k

Uygulamalar DIC IT DUTCH EN NL PY-SQ FORUM U OTHER MAPS SM TR HTML-CSS DEVOPS STATISTIC In Zicht thema 3 v... 30X+

## Tableau Products

Tableau Desktop

Tableau Prep

Tableau Online

Tableau Server

CLARUSWAY® WAY TO REINVENT YOURSELF

18



Slide 18 of 49



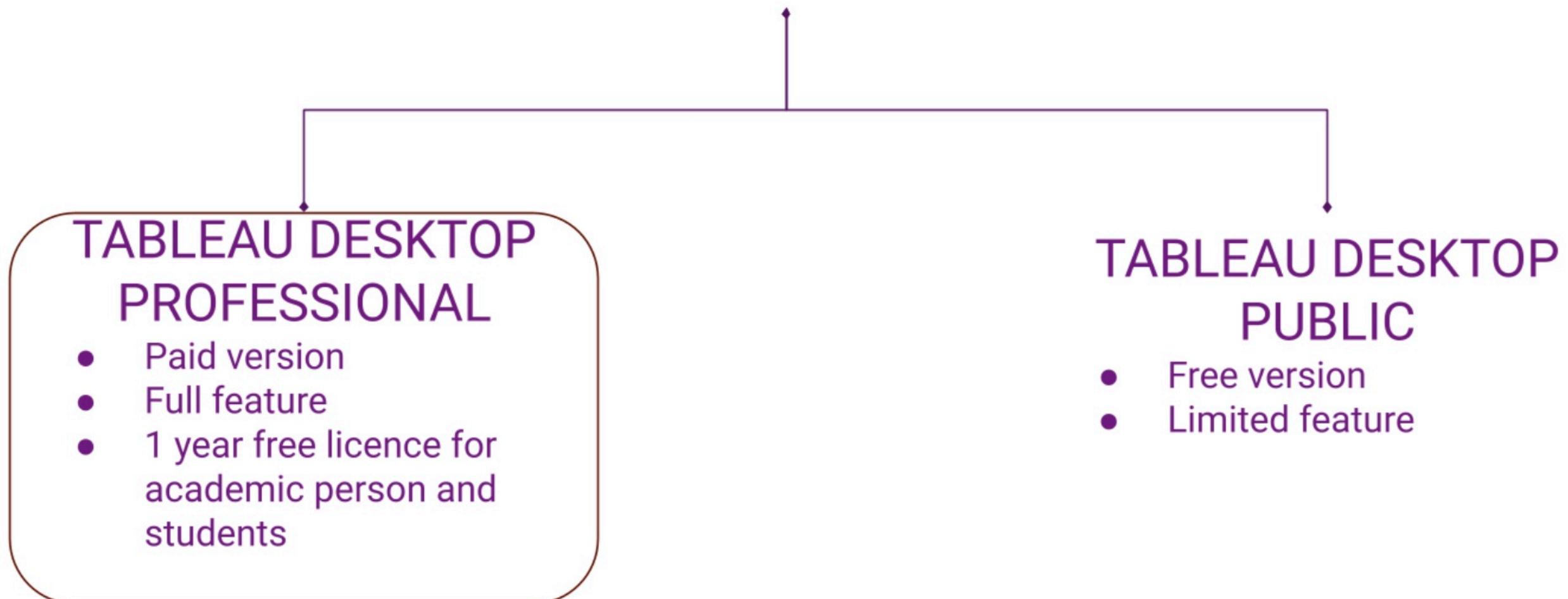
Date: 12.10.2022  
Hunter's Reflect & Review

Session: TABLEAU\_EU\_DS12...





# TABLEAU DESKTOP



# Why Tableau?



Gold Standard in Visual Analysis



Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms



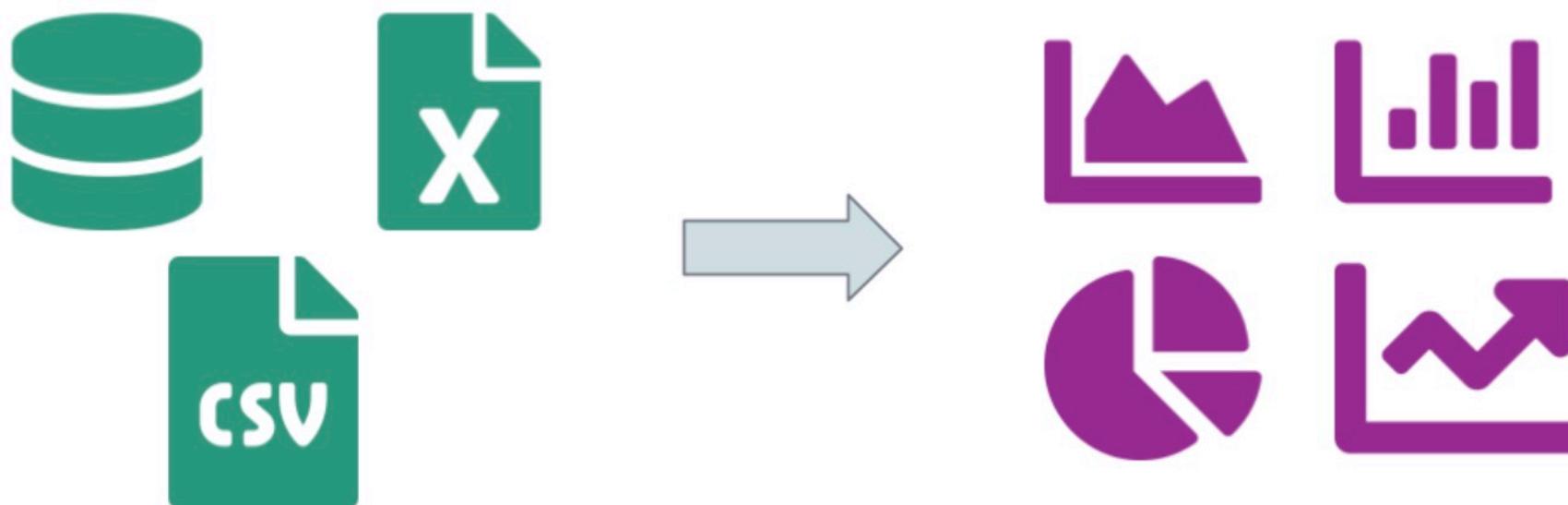
# Table of Contents



- ▶ Course Info
- ▶ Getting Started with Tableau Desktop
- ▶ Basics of Tableau**
- ▶ Connect to Tableau
- ▶ Areas of the Workspace
- ▶ Data Pane

# What is a dataset?

In the context of Tableau, a data set (sometimes called as a data source, or database) contains the data used to build visualizations. Every chart such as line chart, bar chart you see in Tableau has a connected database or spreadsheet that feeds the data.



# Type of Data Sources

There are four different data source type in Tableau you connect to:

01	Spreadsheets, Flat Files	<ul style="list-style-type: none"><li>Microsoft Excel</li><li>Google Sheets</li><li>csv, text file</li></ul>
02	Relational Databases	<ul style="list-style-type: none"><li>MySQL, MSSQL Server, PostgreSQL</li></ul>
03	Cloud Data	<ul style="list-style-type: none"><li>AWS</li><li>Microsoft Azure</li><li>Google Cloud</li></ul>
04	Other	<ul style="list-style-type: none"><li>Spatial Files</li><li>Statistical Files</li><li>PDF files</li></ul>

# What is a field?

A field (aka, column or attribute) is a part of a record (or row) and contains a single piece of data for the subject of the record. In Tableau, we don't use term *column*, instead, we use **field**.

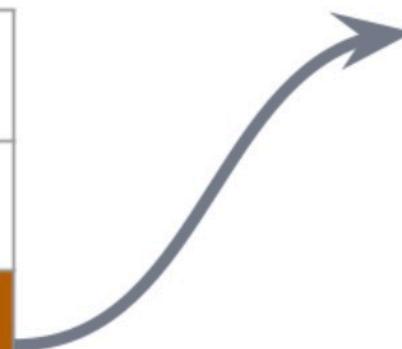
*employees table*

<i>emp_id</i>	<i>first_name</i>	<i>last_name</i>	<i>salary</i>	<i>job_title</i>	<i>gender</i>	<i>hire_date</i>
17679	Robert	Gilmore	110000	Operations Director	Male	2018-09-04
26650	Elvis	Ritter	86000	Sales Manager	Male	2017-11-14
30840	David	Barrow	85000	Data Scientist	Male	2019-12-12

# Row-level Record



Row-level record is a very important concept in Tableau. Because it's very important to understand what info a row of data contains. In this way, you'll have more power to ask complex questions to your data.

What does it represent?

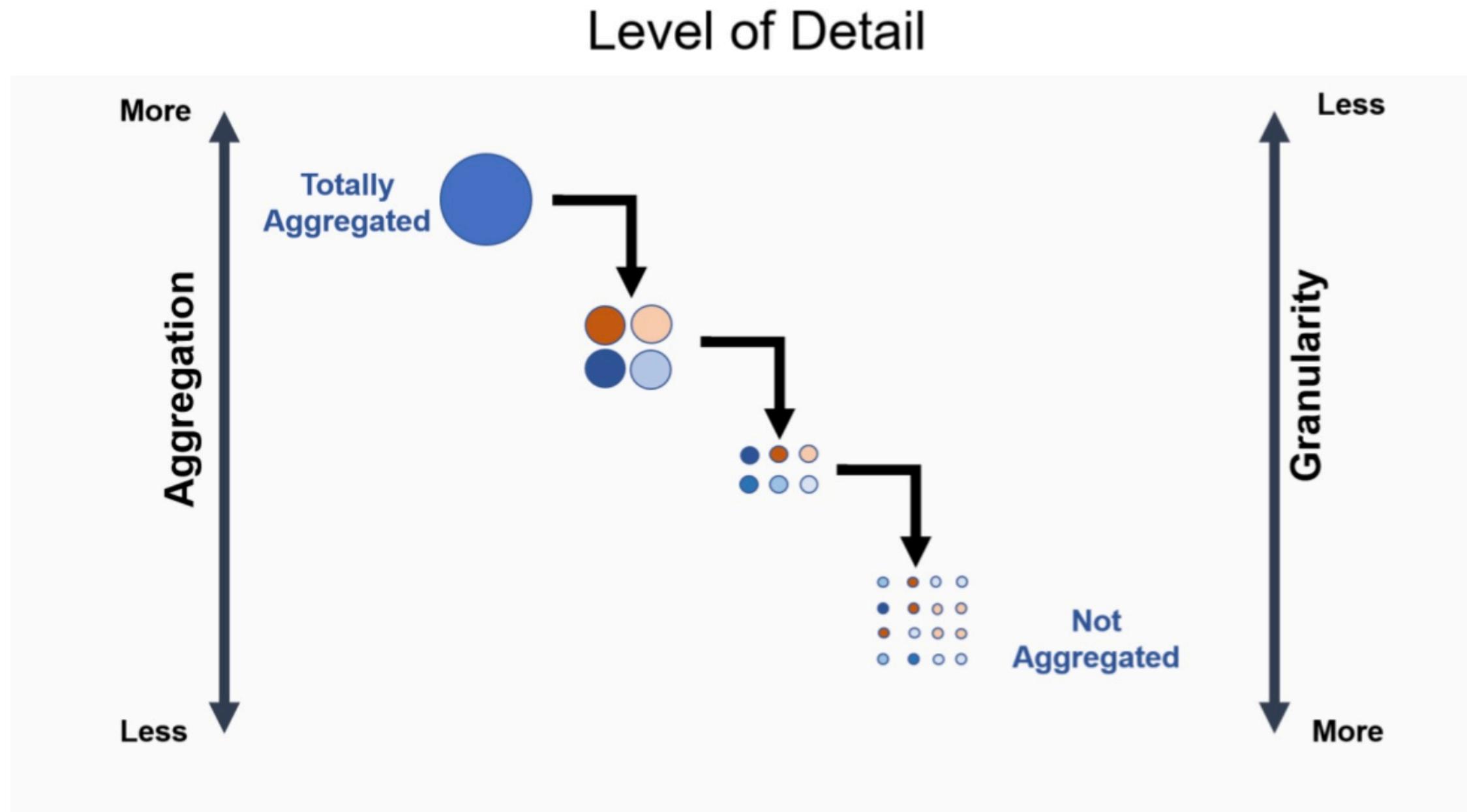
# Row-level Record



Name	Mode_of_Transportation	Days_Per_Week
Brandon	Bus	2
Brandon	Bicycle	3
Arthur	Car	2
Arthur	Bicycle	1
Arthur	Walk	2
Isaac	Car	3
Isaac	Bicycle	2

Each row displays the number of days per week a commuter uses a specific mode of transportation to go to work or go back home.

# Granularity, Level of Detail, Aggregation





# Table of Contents

- ▶ Course Info
- ▶ Getting Started with Tableau Desktop
- ▶ Basics of Tableau
- ▶ Connect to Tableau
- ▶ Areas of the Workspace
- ▶ Data Pane

# Connect to Tableau



## Basic Workflow of Tableau



# Connect to Tableau



## Basic Workflow of Tableau





# Start Page

Tableau - Book1

File Data Server Help

## Connect

Search for Data

Tableau Server

To a File

Microsoft Excel

Text file

JSON file

Microsoft Access

PDF file

Spatial file

Statistical file

More...

To a Server

Oracle

Amazon Redshift

Google Sheets

Other Databases (ODB...)

More... >

## Open

UK-Bank-Custo... StartupExpansio... 1000StartUp AdvanceBlendin... D Analytics Start...

crime-analysis AmazingMart AmazingMartEU2 Significant Volca... Coal Terminal

Unemployment Airlines C2 Organizing & ... AmazingMArtNe... VehiclesSales

## Discover

Training

View all 87 training videos

Resources

Get Tableau Prep

Blog - Now available in Tableau: Write to database in Tableau Prep, grant license on s...

The NEW Community Forums

Sample data for Relationships

## Sample Workbooks

More Samples

Update to 2020.3 Now



# Time to Connect

Tableau - Book1

File Data Server Help

## Connect

Search for Data

Tableau Server

To a File

- Microsoft Excel** (highlighted with a yellow arrow)
- Text file
- JSON file
- Microsoft Access
- PDF file
- Spatial file
- Statistical file
- More...

To a Server

- Oracle
- Amazon Redshift
- Google Sheets
- Other Databases (ODBC)
- More...

Saved Data Sources

- Sample - EU Superstore
- Sample - Superstore
- World Indicators

## Open

Click Microsoft Excel under To a File part.

UK-Bank-Customers

AmazingMart

AmazingMartEU

Significant Volcano Eruptions

AdvanceBlendingTimeSeries

D Analytics Starter

crime-analysis

Coal Terminal

Unemployment

Airlines

C2 Organizing & Simplifying Da...

AmazingMArtNewDataModeling

VehiclesSales

Blending

Tourist Cou...

California 1.0C

Texas 2.0C

Virginia 7.0C

Network Graph with Dual Axis S...

Quarterly Census

## Discover

Training

- Getting Started
- Connecting to Data
- Visual Analytics
- Understanding Tableau
- More training videos...

Resources

- Get Tableau Prep
- Blog - Now available in Tableau: Write to database in Tableau Prep, grant license on s...
- The NEW Community Forums
- Sample data for Relationships

More Samples

Check out the Forums

Make connections and get inspired with the Tableau Community →

Update to 2020.3 Now

# Data Source Page



1 left pane

Orders (Sample - Superstore (4))

Connections Add

Sample - Superstore (4) Microsoft Excel

Sheets

Use Data Interpreter  
Data Interpreter might be able to clean your Microsoft Excel workbook.

Orders People Returns Orders People Returns New Union

Orders

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

2 canvas

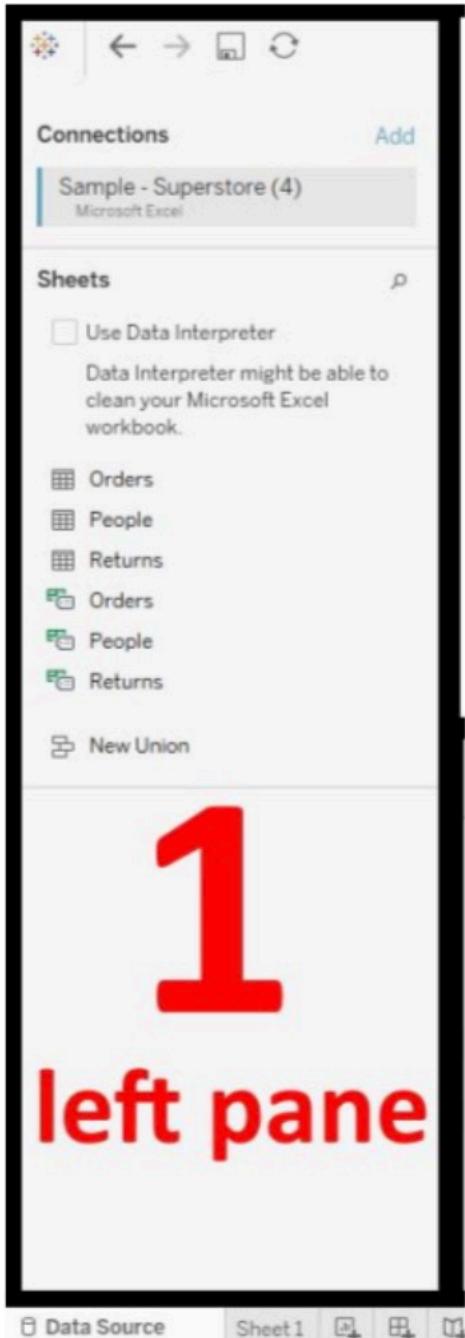
3 data grid

Name	Type	Field Name	Physical Table	Remote Fie...	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment
Orders	#	Row ID	Orders	Row ID	1	CA-2020-152156	8.11.2020	11.11.2020	Second Class	CG-12520	Claire Gute	Consumer
	Abc	Order ID	Orders	Order ID	2	CA-2020-152156	8.11.2020	11.11.2020	Second Class	CG-12520	Claire Gute	Consumer
	Abc	Order Date	Orders	Order Date	3	CA-2020-138688	12.06.2020	16.06.2020	Second Class	DV-13045	Darrin Van Huff	Corporate
	Abc				4	US-2019-108966	11.10.2019	18.10.2019	Standard Class	SO-20335	Sean O'Donnell	Consumer
	Abc				5	US-2019-108966	11.10.2019	18.10.2019	Standard Class	SO-20335	Sean O'Donnell	Consumer
	Abc				6	CA-2018-115812	9.06.2018	14.06.2018	Standard Class	BH-11710	Brosina Hoffman	Consumer
	Abc				7	CA-2018-115812	9.06.2018	14.06.2018	Standard Class	BH-11710	Brosina Hoffman	Consumer

100 → rows

Data Source Sheet 1

# Data Source Page



**This pane shows the connected data source and its details (sheet names, table names), Data Interpreter, Union (this is the same of SQL Union ALL) feature.**

# Data Source Page



The screenshot shows the Data Source Page interface. At the top left, it displays 'Orders (Sample - Superstore (4))'. On the top right, there are 'Connection' and 'Filters' options. The 'Connection' section has 'Live' selected. The 'Filters' section shows '0 | Add'. In the center, there's a table named 'Orders' with a single row. Below the table, there's a message: 'Need more data? Drag tables here to relate them. [Learn more](#)'. A large red watermark '2 canvas' is overlaid on the bottom right of the page.

Canvas has two layers: logical layer, physical layer. We simply drag and drop the sheet/table names from the left pane to the canvas. The canvas opens with the logical. layer. We can create relationships between logical tables. To enter the physical layer, we double-click a table in the logical layer. We can then add joins and unions between tables in the physical layer.

# Data Source Page

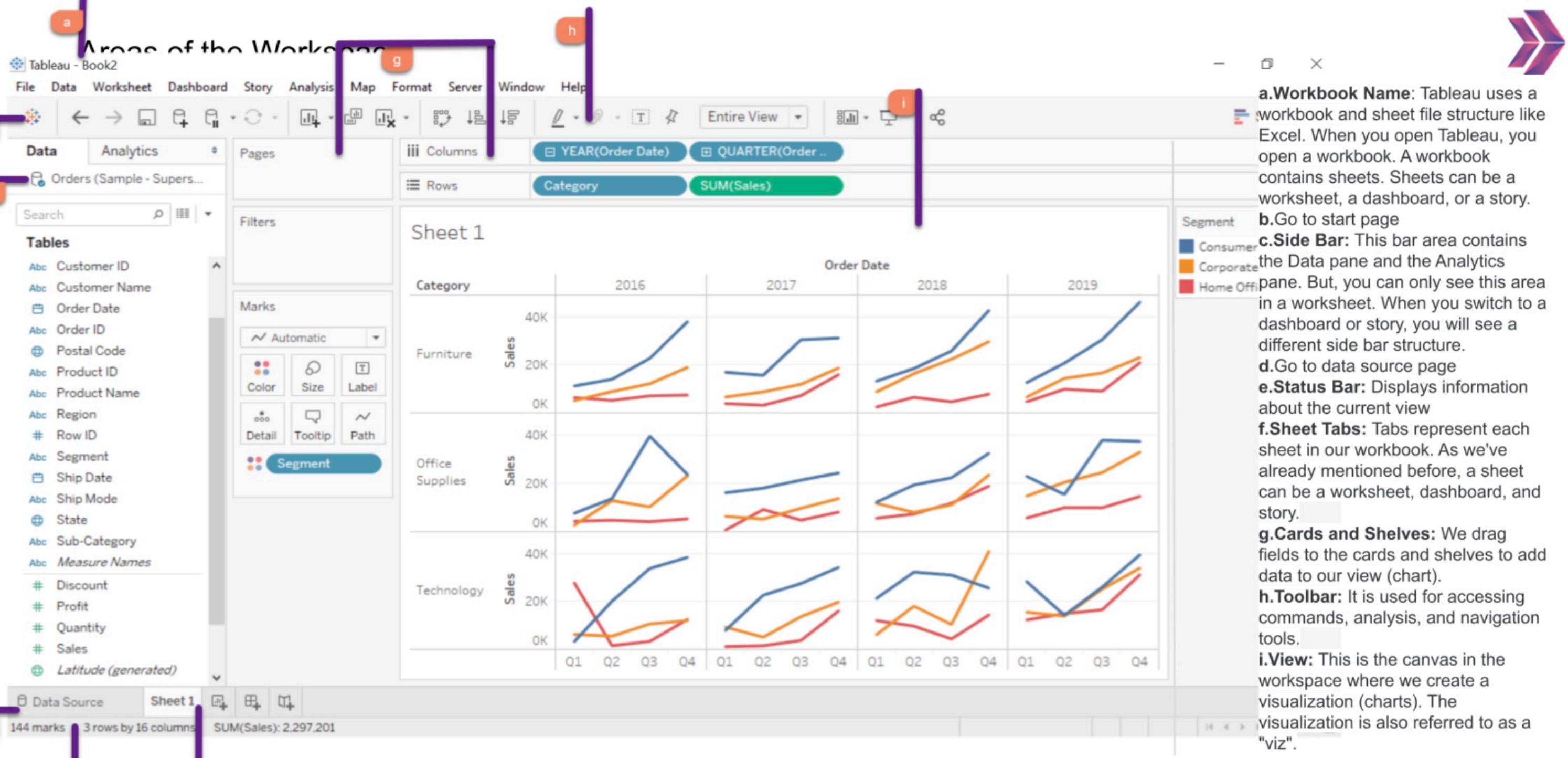


Orders		21 fields 9994 rows				100 rows			
Name	Orders	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment
		1	CA-2020-152156	8.11.2020	11.11.2020	Second Class	CG-12520	Claire Gute	Consumer
		2	CA-2020-152156	8.11.2020	11.11.2020	Second Class	CG-12520	Claire Gute	Consumer
		3	CA-2020-138688	12.06.2020	16.06.2020	Second Class	DV-13045	Darrin Van Huff	Corporate
		4	US-2019-108966	11.10.2019	18.10.2019	Standard Class	SO-20335	Sean O'Donnell	Consumer
		5	US-2019-108966	11.10.2019	18.10.2019	Standard Class	SO-20335	Sean O'Donnell	Consumer
		6	CA-2018-115812	9.06.2018	14.06.2018	Standard Class	BH-11710	Brosina Hoffman	Consumer
		7	CA-2018-115812	9.06.2018	14.06.2018	Standard Class	BH-11710	Brosina Hoffman	Consumer

Data grid displays the first 100 rows of our data source.  
Table Details displays the fields in your data source

# Table of Contents

- ▶ Course Info
- ▶ Getting Started with Tableau Desktop
- ▶ Basics of Tableau
- ▶ Connect to Tableau
- ▶ Areas of the Workspace
- ▶ Data Pane





# Table of Contents

- ▶ Course Info
- ▶ Getting Started with Tableau Desktop
- ▶ Basics of Tableau
- ▶ Connect to Tableau
- ▶ Areas of the Workspace
- ▶ Data Pane



# Data Pane

The screenshot shows the Power BI Data pane interface. At the top, there are tabs for 'Data' (selected) and 'Analytics'. Below that is a dropdown menu showing 'Sample - Superstore'. A search bar and a refresh icon are also present. The main area is titled 'Tables' and lists various columns from the Superstore dataset. To the right of the table list is a vertical grey bar with two sections: 'Dimensions' at the top and 'Measures' at the bottom. A horizontal dashed line separates these two sections. A callout bubble points to this line with the text 'Line that separates Dimensions and Measures'.

Table	Column
Profit (bin)	Profit
Region	Region
Segment	Segment
Ship Date	Ship Date
Ship Mode	Ship Mode
Top Customers by Profit	Top Customers by Profit
Measure Names	Measure Names
Discount	Discount
Profit	Profit
Profit Ratio	Profit Ratio
Quantity	Quantity
Sales	Sales
Latitude (generated)	Latitude (generated)
Longitude (generated)	Longitude (generated)
Migrated Data (Count)	Migrated Data (Count)
Number of Records	Number of Records
Measure Values	Measure Values

We use **Dimensions** to categorize, segment, break down and reveal the details in our data.

We can apply **Measures** calculations to them and aggregate them



# Data Pane

Data Analytics  
Orders (Sample - Supers...  
Search Tables  
Abc Category  
Abc City  
Abc Country/Region  
Abc Customer ID  
Abc Customer Name  
Abc Order Date  
Abc Order ID  
Abc Postal Code  
Abc Product ID  
Abc Product Name  
Abc Region  
# Row ID  
Abc Segment  
Abc Ship Date  
Abc Ship Mode  
Abc State  
Abc Sub-Category  
Abc Measure Names  
# Discount  
# Profit  
# Quantity  
# Sales  
# Latitude (generated)  
# Longitude (generated)  
# Orders (Count)  
# Measure Values

Fields that Tableau automatically creates

**Measure Names** field contains the names of all measures in our data.

**Measure Values** field contains all the measures in our data. They are aggregated into a single field.

**NameofTable(Count)** field returns the number of records (or the number of rows) for the table.

**Latitude (generated) and Longitude (generated)** fields are generated if your data set has geographical fields.



# Data Types

- All fields in a data source have a data type.
- The data type reflects the kind of information stored in that field, for example integers (410), dates (1/23/2015) and strings ("Wisconsin").
- The data type of a field is identified in the Data pane by one of the icons shown below.

String <b>Abc</b>	Date 	Datetime 	Numeric - Whole - Decimal 	Boolean 	Geographic - Role: Country/Region State/Province City .. 
----------------------	----------	--------------	-------------------------------------	-------------	--



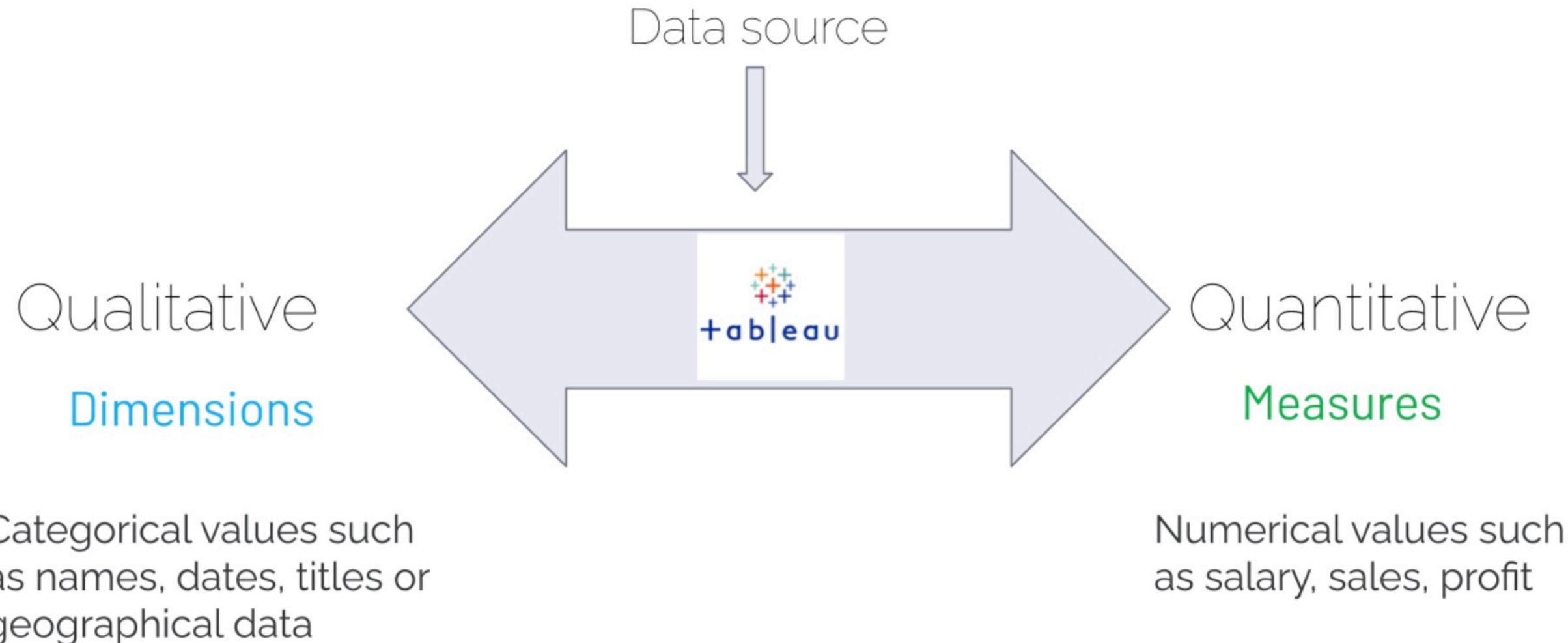
# Data Types

## Data type icons and descriptions

Icon	Data type
Abc	Text (string) values
日	Date values
🕒	Date & Time values
#	Numerical values
T F	Boolean values (relational only)
🌐	Geographic values (used with maps)
⌚	Cluster Group



# Dimensions & Measures





# Dimensions & Measures

Data      Analytics

Sample - Superstore

Search

Tables

- .iii. Profit (bin)
- Abc Region
- Abc Segment
- Abc Ship Date
- Abc Ship Mode
- Q Top Customers by Profit
- Abc Measure Names

# Discount

# Profit

# Profit Ratio

# Quantity

# Sales

🌐 Latitude (generated)

🌐 Longitude (generated)

# Migrated Data (Count)

# Number of Records

# Measure Values

A vertical dotted line separates the list of dimensions from the list of measures. A bracket on the right side of the line spans both lists, with the text "Line that separates Dimensions and Measures" written below it. The word "Dimensions" is written above the line, and "Measures" is written below the line.



ID Number field is dimension.



USWAY<sup>©</sup>  
Students choose an option

Pear Deck Interactive Slide  
Do not remove this bar

4

6



No Multiple Choice Response  
You didn't answer this question



# Wrap-up

- What is Tableau?
- Basics of Tableau
- Start Page
- Data Source Page
- Areas of Workspace
- Data Types
- Dimensions and Measures
- Assignment-1



Have you understood the Session?



Students, drag the icon!

Pear Deck  
Do not remove this bar



No Draggable™ Response  
You didn't answer this question