Introduction to Tableau

Data Boot Camp

Lesson 18.1

Class Objectives

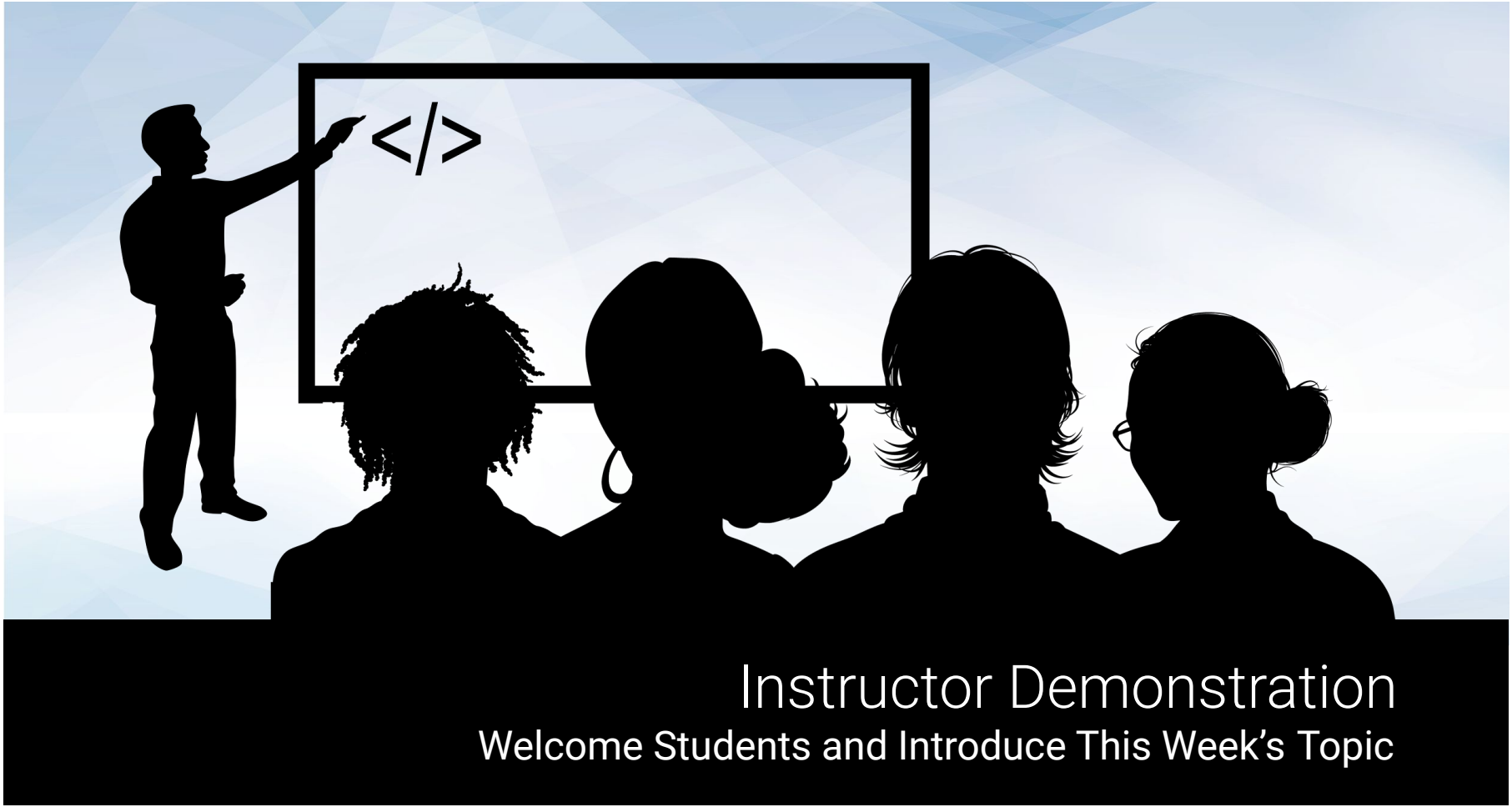
By the end of this lesson, you will be able to:

Import and join data within Tableau

Create and style worksheets and stories in Tableau

Use Tableau worksheets to display data in a professional manner

Communicate data insights using Tableau stories

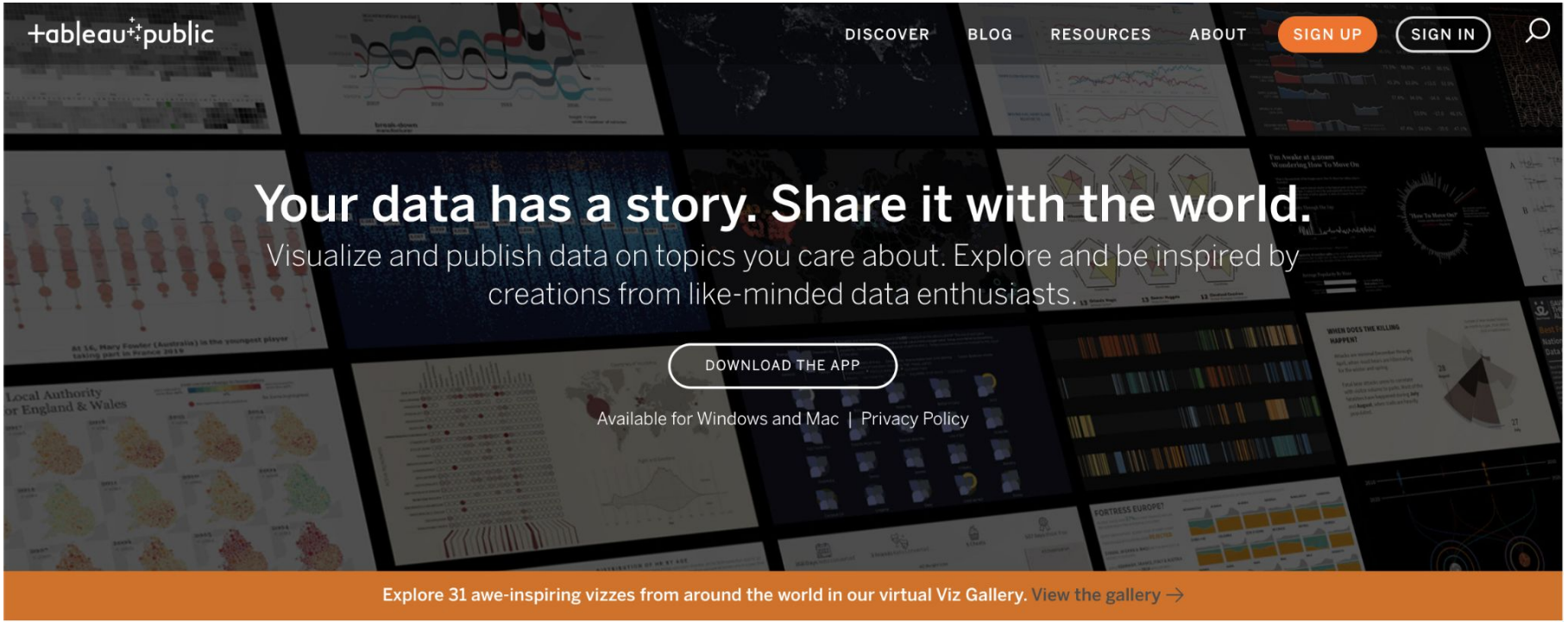


Instructor Demonstration

Welcome Students and Introduce This Week's Topic


WELCOME

Welcome to Tableau!

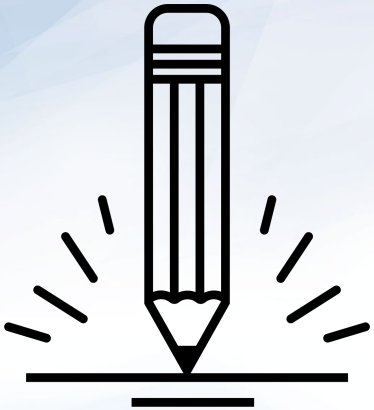


Instructor Do: Introduction to Tableau

Tableau is a powerful business intelligence application that allows users to quickly create in-depth visualizations.

- Like Microsoft Excel, Tableau enables users to manipulate tables of data and create visualizations without additional programming.
- Tableau also utilizes a drag-and-drop style interface so users can create tables and charts and perform analysis with ease.
- Tableau enables users to share projects and visualizations with their community.
    - Visualizations can be shared on the Tableau site as well as embedded on webpages.

Tableau is essentially the "easy mode" of data visualization, and you will be able to use it to recreate many of your previous visualizations much faster than before.

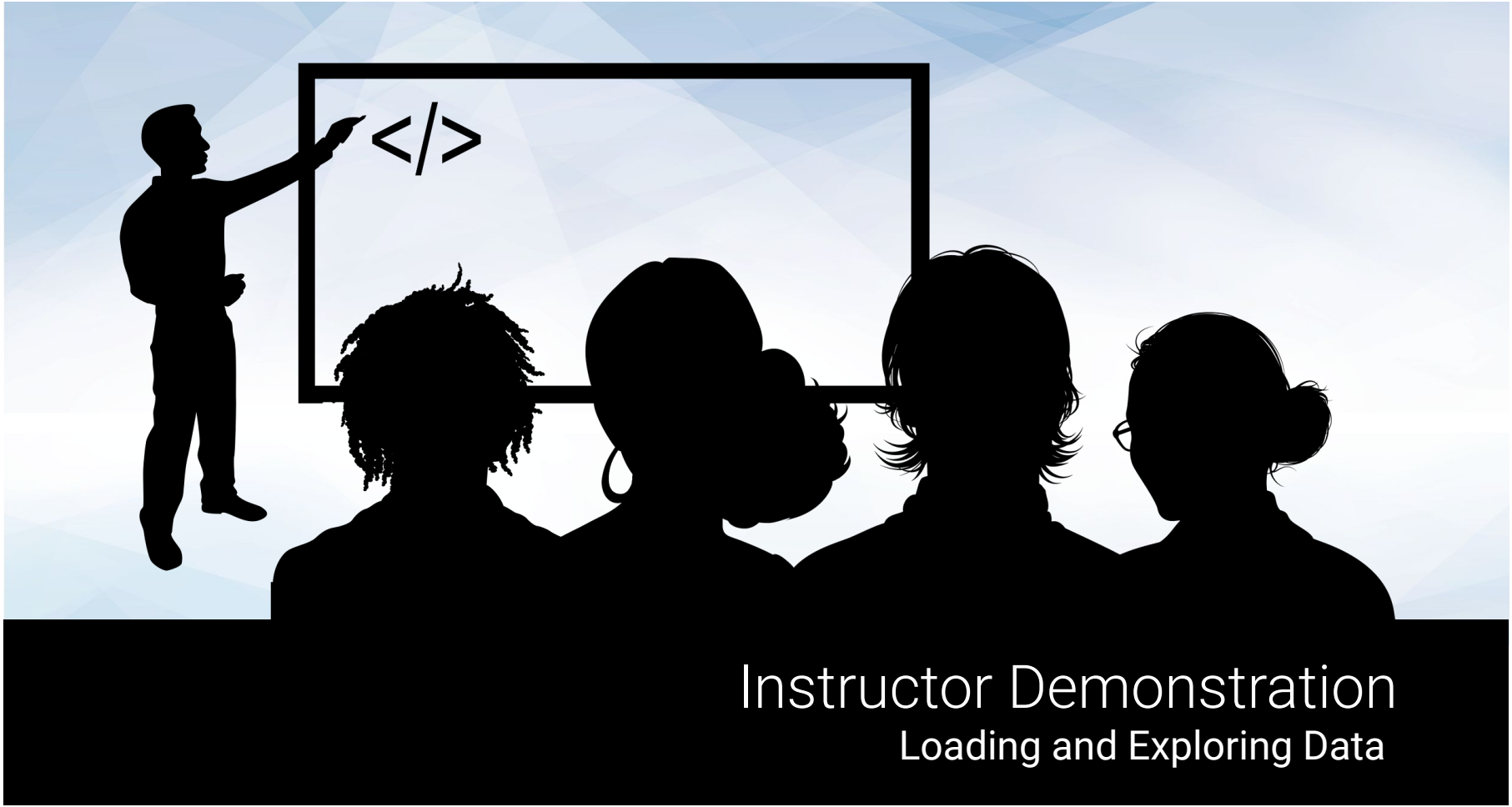


Everyone Do: Tableau Installation

In this activity, everyone will install Tableau Public.

Tableau Public is a free version of the Tableau software that includes most of the features available in Tableau Desktop.

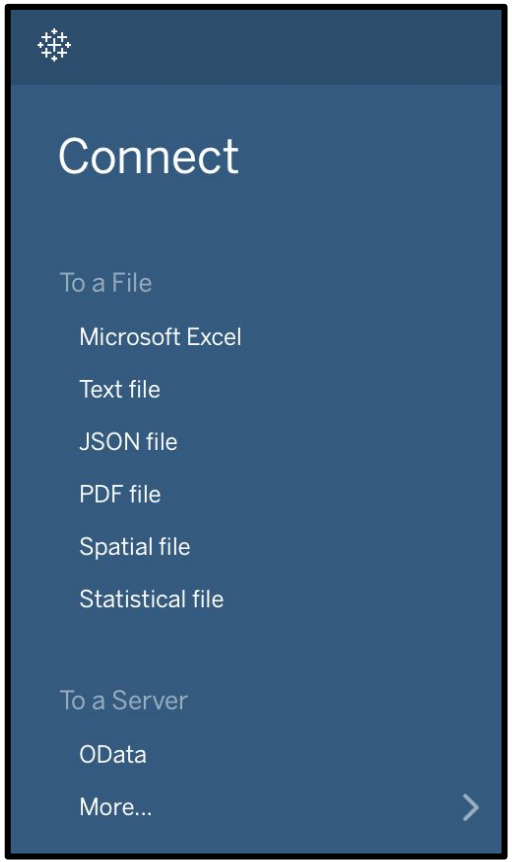
Suggested Time:
10 Minutes



Instructor Demonstration

Loading and Exploring Data

Instructor Do: Loading and Exploring Data

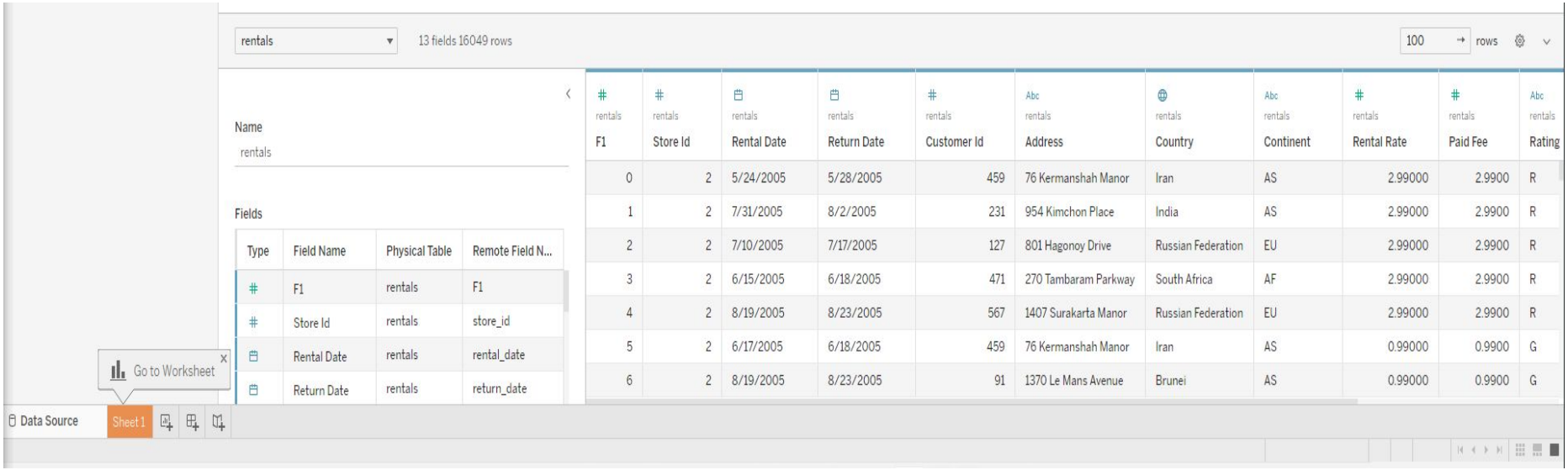


- Not only can Tableau connect to many types of data files, like **CSV, XLS, and JSON**, it can also connect to a multitude of servers, such as **MySQL, MongoDB, and Google Cloud**.

- Tableau allows users to mix and match data from vastly different sources **without the need to translate the data** into something like a Pandas DataFrame. The loading, exploration, and manipulation of data are all *built-in*.

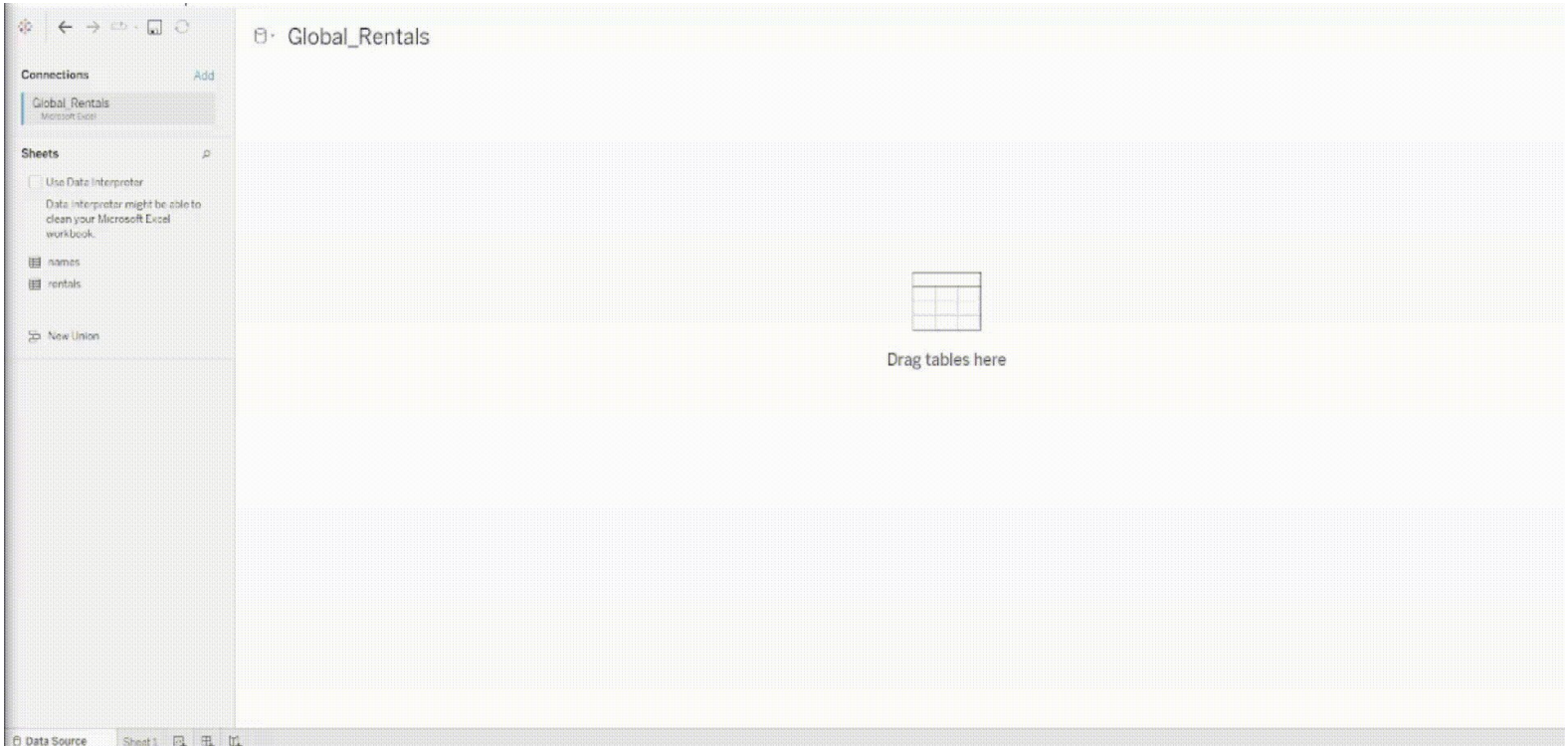
Instructor Do: Loading and Exploring Data

Select *"Microsoft Excel"* from the list of data sources available, and load *GlobalRentals.xlsx* within Tableau. After the data has been imported into Tableau, individual sheets from the original Excel workbook can be dragged from the navigator into the main application.

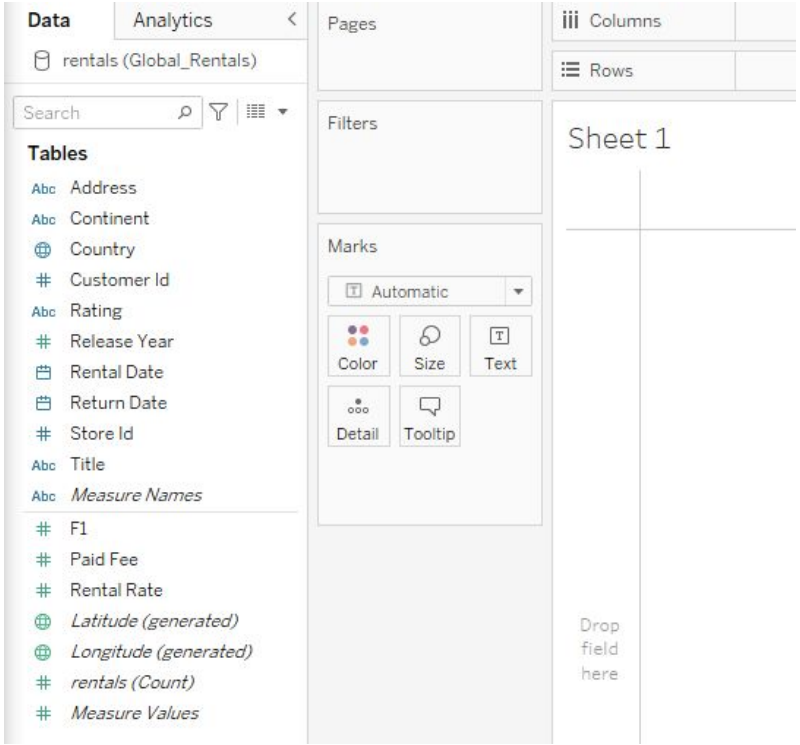


Instructor Do: Loading and Exploring Data

Once the data have been loaded, a preview is provided in the main area of the application



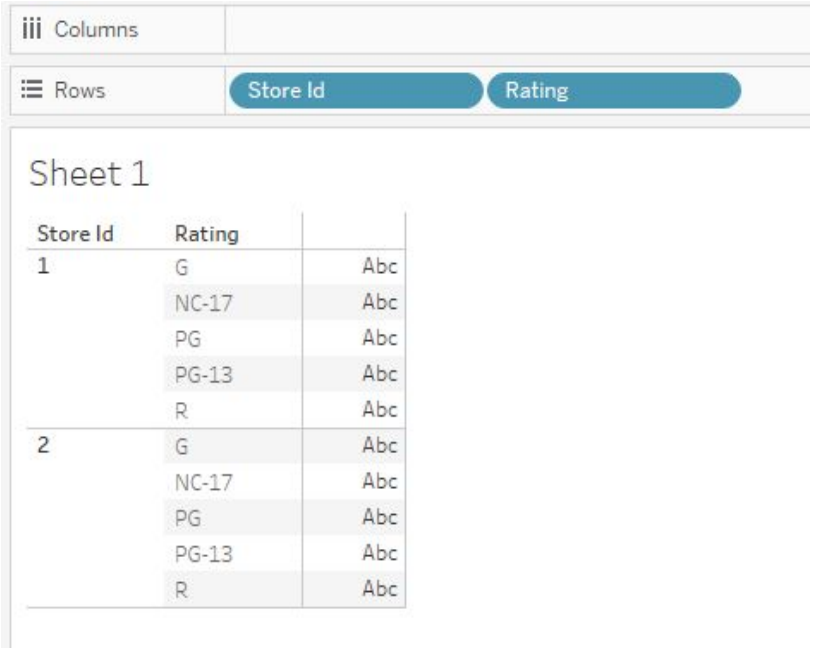
Instructor Do: Building Basic Visuals



- Creating visualizations in Tableau is nearly identical to creating pivot tables in Excel. Users **click and drag** the headers of their original dataset into specific fields—Columns, Rows, Filters, etc.—to create a chart

- **Vocabulary:** *Dimensions* are categorical fields that can be used to split up data. *Measures* are the metrics or numbers that users would like to analyze.

Instructor Do: Building Basic Visuals

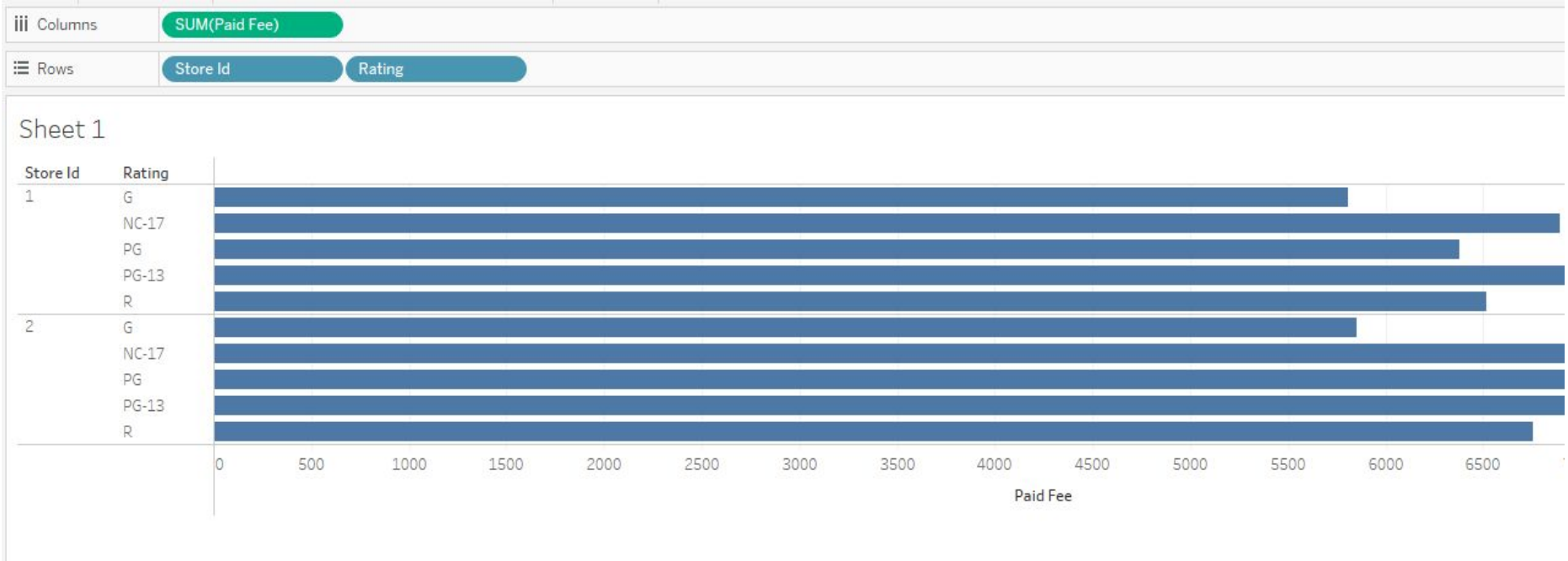


- Drag the Store Id pill from the Dimensions panel into Rows. This creates a small table with the two store ids from the dataset.

- By dragging Rating into Rows and placing it after the Store Id pill, the table is made slightly more complex. Now, each store id within the visualization has been split into five distinct parts

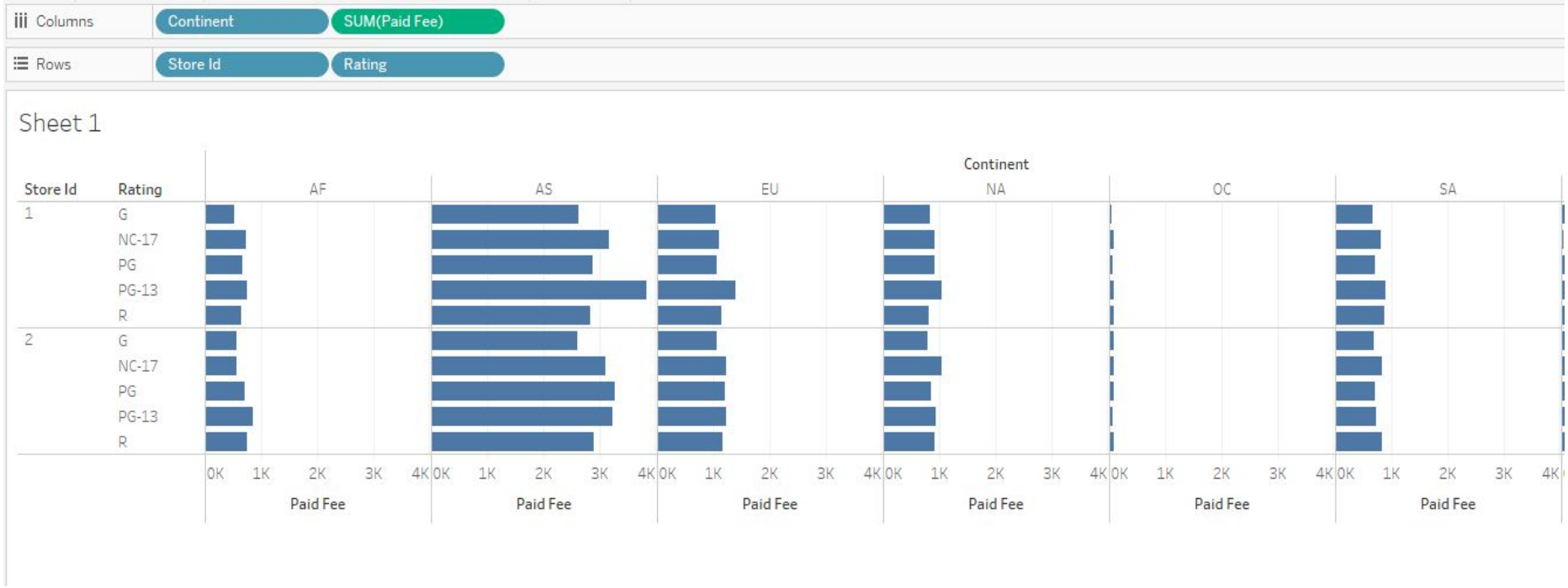
Instructor Do: Building Basic Visuals

Dragging "Paid Fee" from the Measurements panel and placing it within Columns, finally, creates a true visualization: a bar chart showing the total paid rental fees per rating for each store.

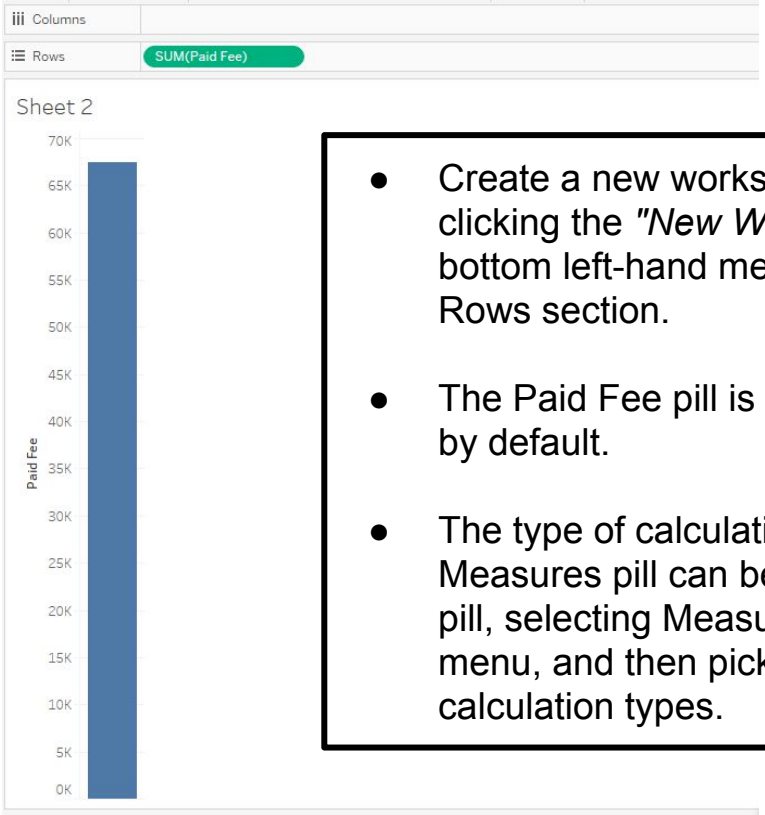


Instructor Do: Building Basic Visuals

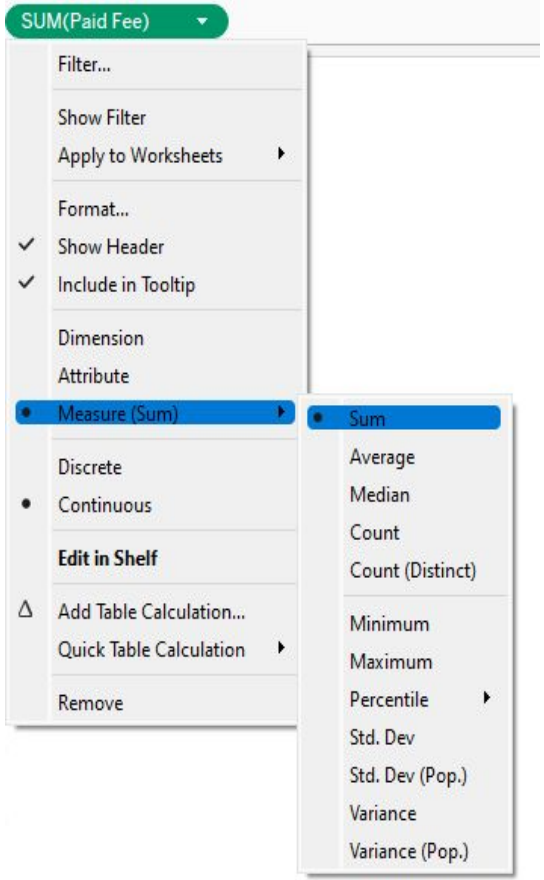
The chart can then be made more detailed by adding more elements. By adding Continent into Columns, for example, multiple charts are created to show the paid rental fees per rating by continent for each store.



Instructor Do: Building Basic Visuals

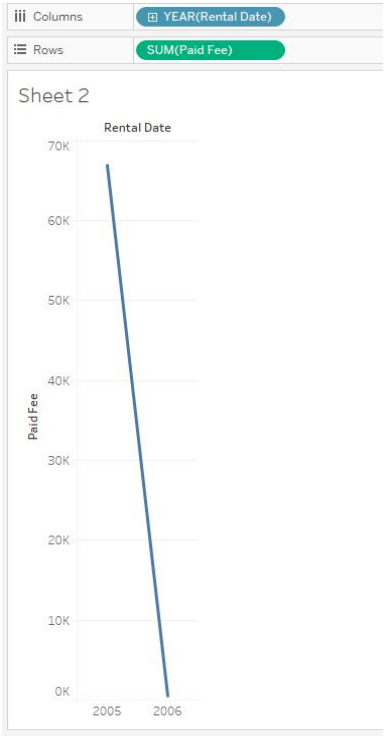


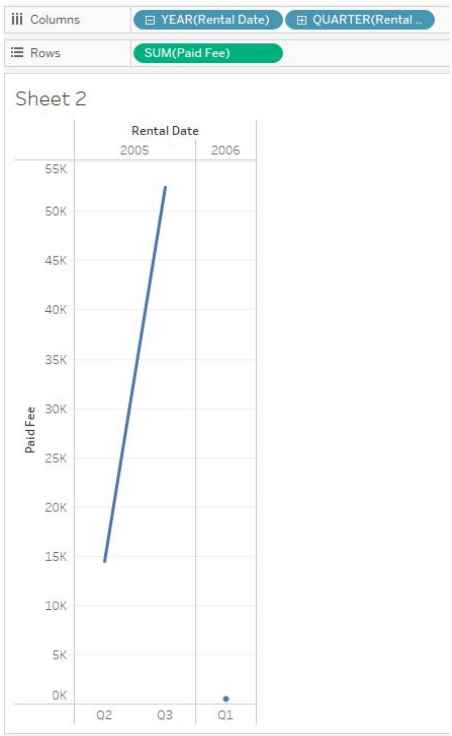
- Create a new worksheet within Tableau by clicking the *"New Worksheet"* button in the bottom left-hand menu. Drag Paid Fee into the Rows section.
- The Paid Fee pill is being measured by its sum by default.
- The type of calculation performed on a Measures pill can be changed by clicking on the pill, selecting Measure from the drop-down menu, and then picking one of the available calculation types.

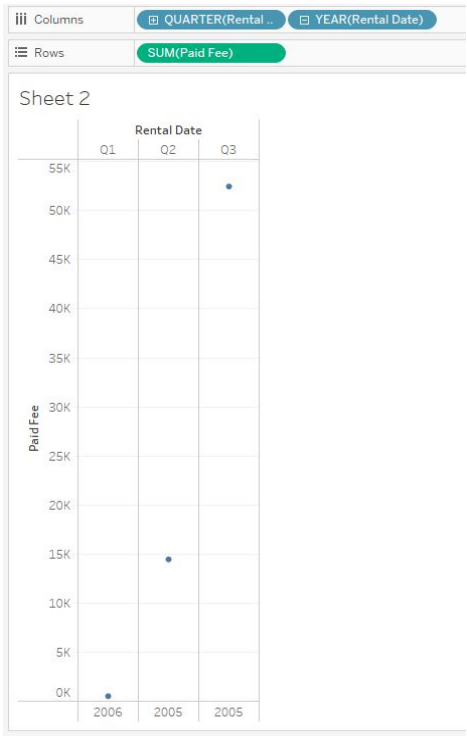


Instructor Do: Building Basic Visuals

Now, drag "*Rental Date"* into the Columns field to create a line chart. Tableau has aggregated the dates at the year level. To include quarters, simply click the plus symbol within the YEAR pill.

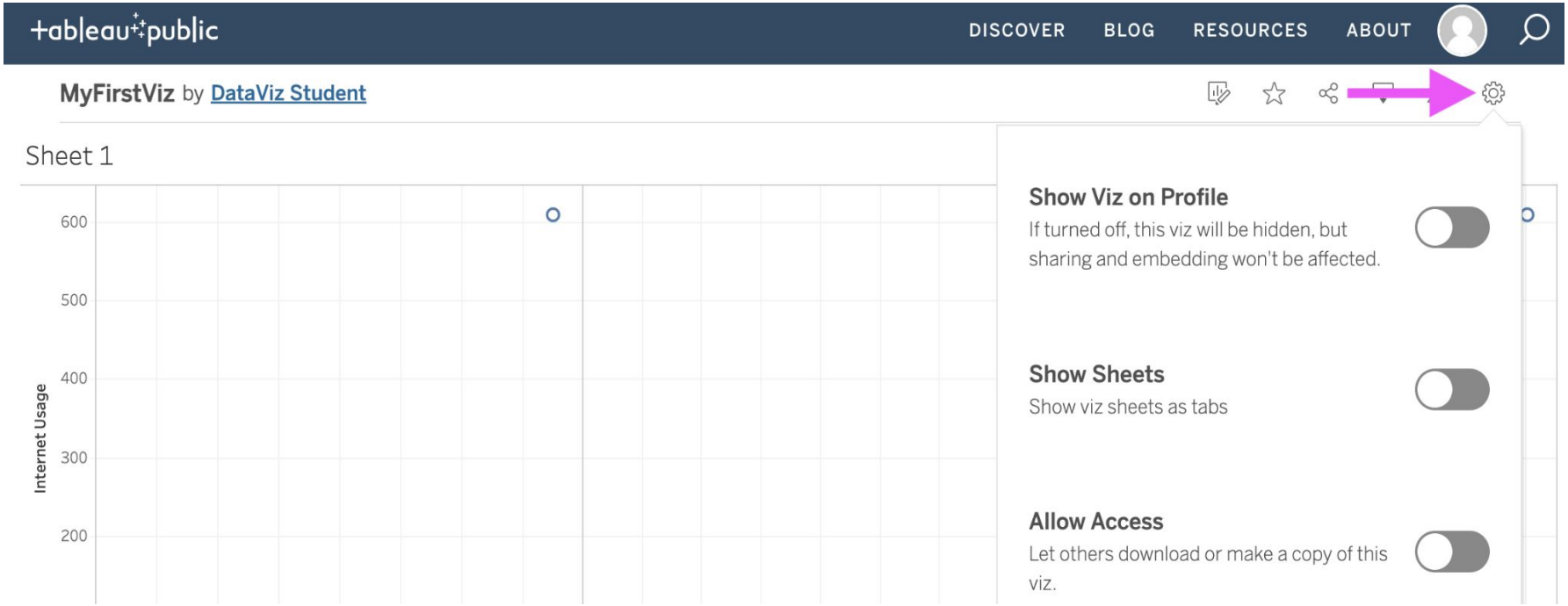




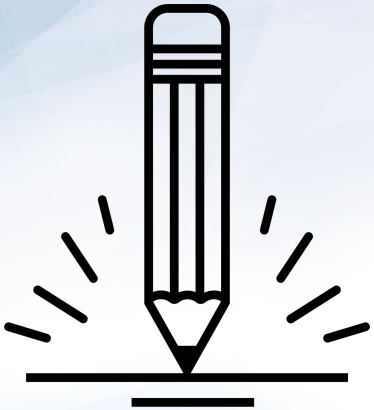


Instructor Do: Building Basic Visuals

Once your visualization is complete, save by clicking *"File"* then *"Save to Tableau Public"*. After saving, the visualization will be uploaded to your profile, which will open in a new browser window. Adjust the settings of your new visualization by clicking the gear on the toolbar and toggling where to show the visualization.



Questions?



Activity: Explore Data

In this activity, you will be given visualizations that you will attempt to recreate using Tableau.

Suggested Time:
15 Minutes

Instructions:

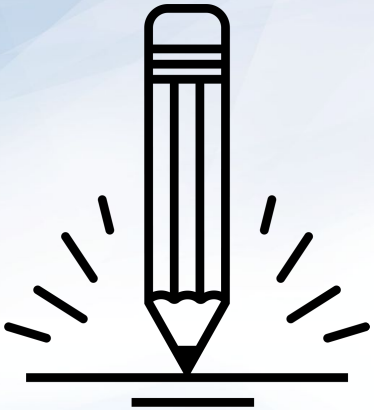
Activity: Explore Data

- Using GlobalRentals.xlsx, visualize the following data:
  - The customers with the highest amount of paid fees
  - The customers with more than 150 rental days
  - The European countries with the highest average days of rental
  - A monthly timeline of payments for rentals
  - The rental days by continent and rating

- **Bonus:**
  - If you finish early, try experimenting with other possible visualization!

- **Hint:**
  - Don’t forget to save to Tableau Public once finished.

Let's Review



Activity: Appointment No-Shows

In this activity, you will create visualizations which provide insights about who is more or less likely to show up to a doctor’s appointment

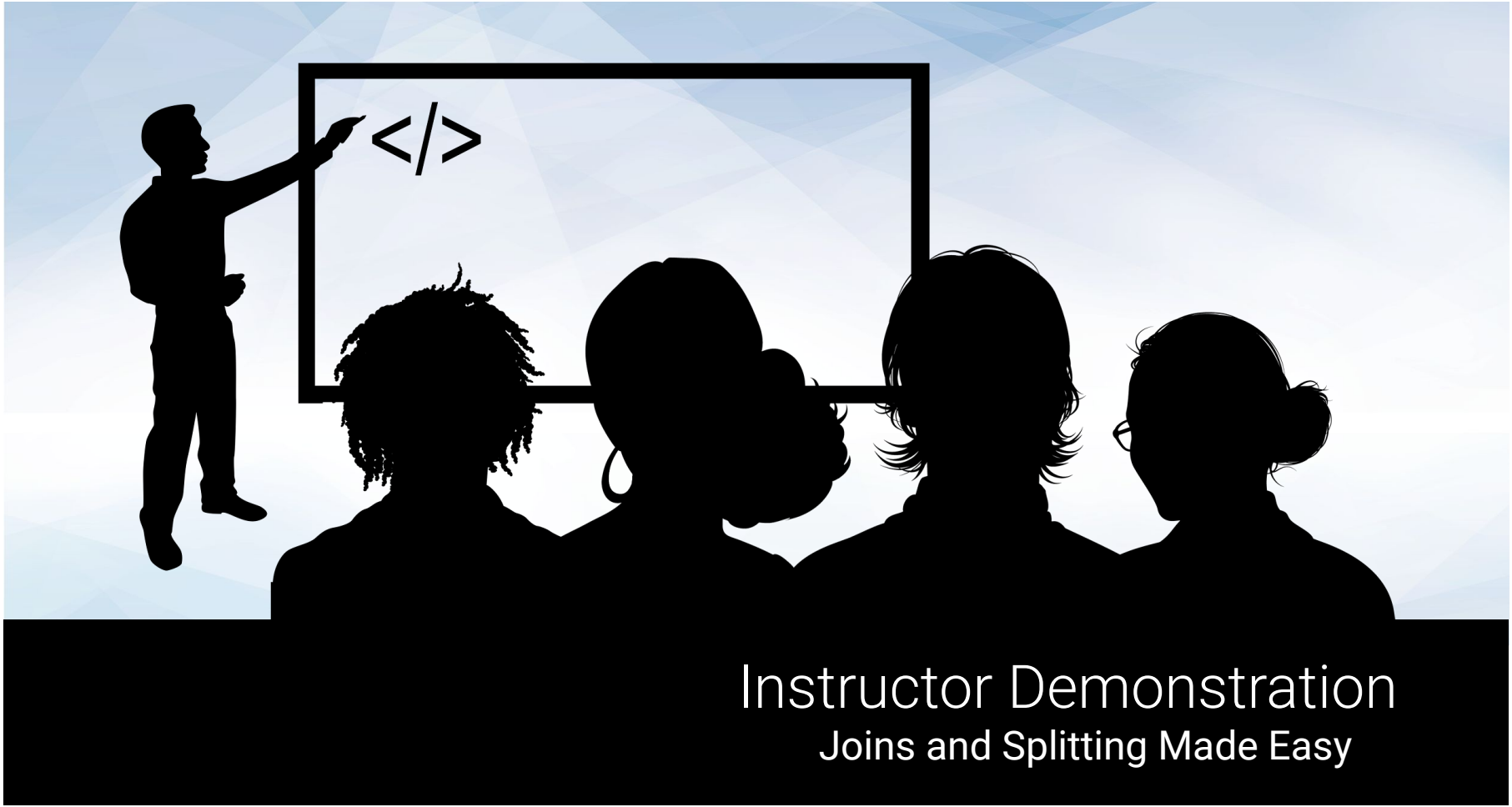
Suggested Time:
20 Minutes

Instructions:

Activity: Appointment No-Shows

- Create a line chart that compares the ages of patients against the total number of appointments. Then, split this graph based on gender and whether the patient showed up to their appointment.
    - For this first step, you'll need to convert Age from a Measure to a Dimension.
- Create a pair of bar charts that compare how many patients showed up to appointments versus how many were no-shows in different neighborhoods.
- Create a stacked bar chart that compares no-shows to those who made it to their appointment based on the day of the week.
- Create a pair of line graphs to compare age and diabetes in both men and women.
- Create a pair of line graphs to compare age and alcoholism in both men and women
- Don’t forget to save to Tableau Public!

Let's Review

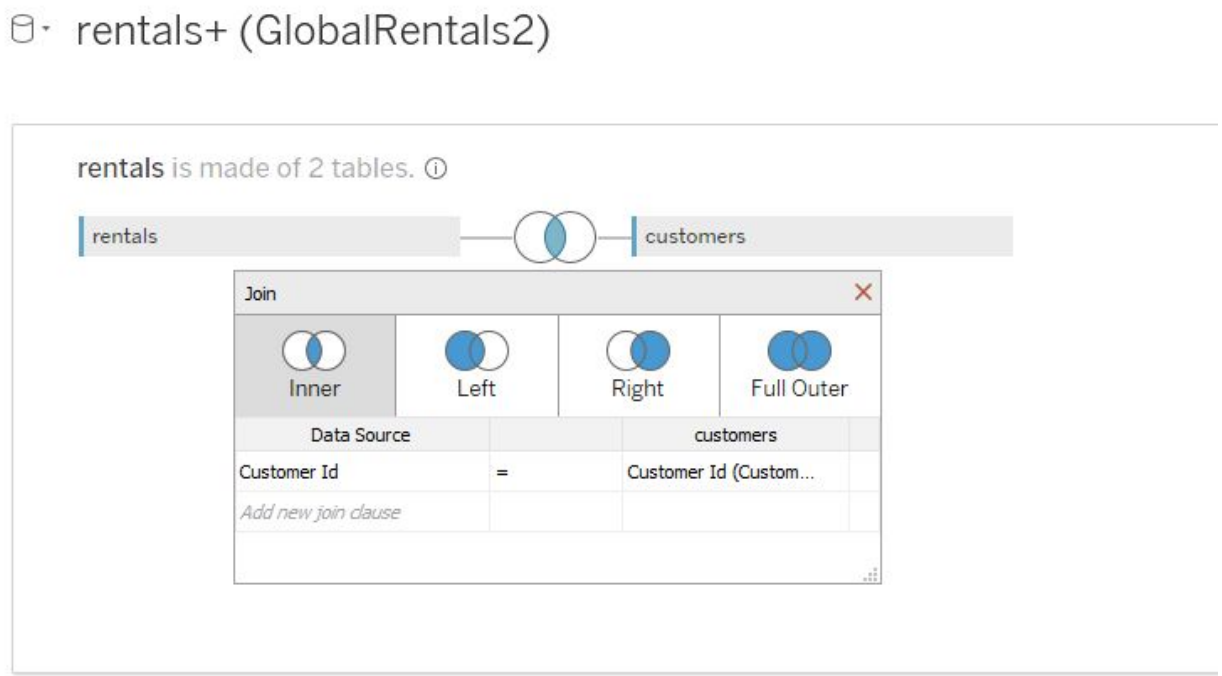


Instructor Demonstration

Joins and Splitting Made Easy

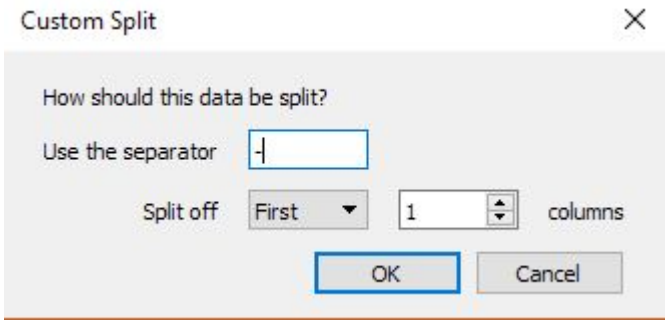
Instructor Do: Joins and Splitting Made Easy

Joins are a constant in data science, and they are often considered tedious and complex. Tableau, however, simplifies joins so much that even complex joins can be performed in just a few clicks.

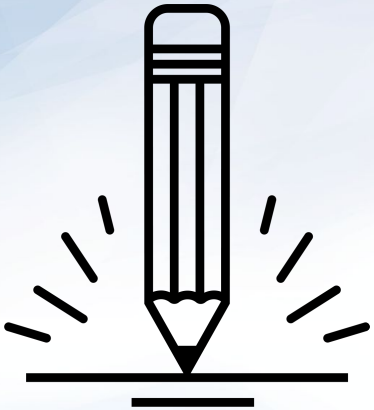


Instructor Do: Joins and Splitting Made Easy

Another interesting feature of Tableau is that columns containing text can be split to extract data



- To do so, navigate to the first sheet and scroll through the data to select the column header whose values should be split, then right-click, and select *"Transform"* then *"Custom Split"* from the drop-down menu.
- Select what character to split the text on, whether to split from the beginning or the end of the string, and then how many times the text should be split.
- Split the *"Rent Code"* column on the first hyphen one time; this will extract the store id in which a movie was rented from the initial string.



Activity: Major League Baseball Analysis

In this activity, you will create tables based on MLB All-Star Teams datasets.

Suggested Time:
20 Minutes

Instructions:

Activity: Major League Baseball Analysis

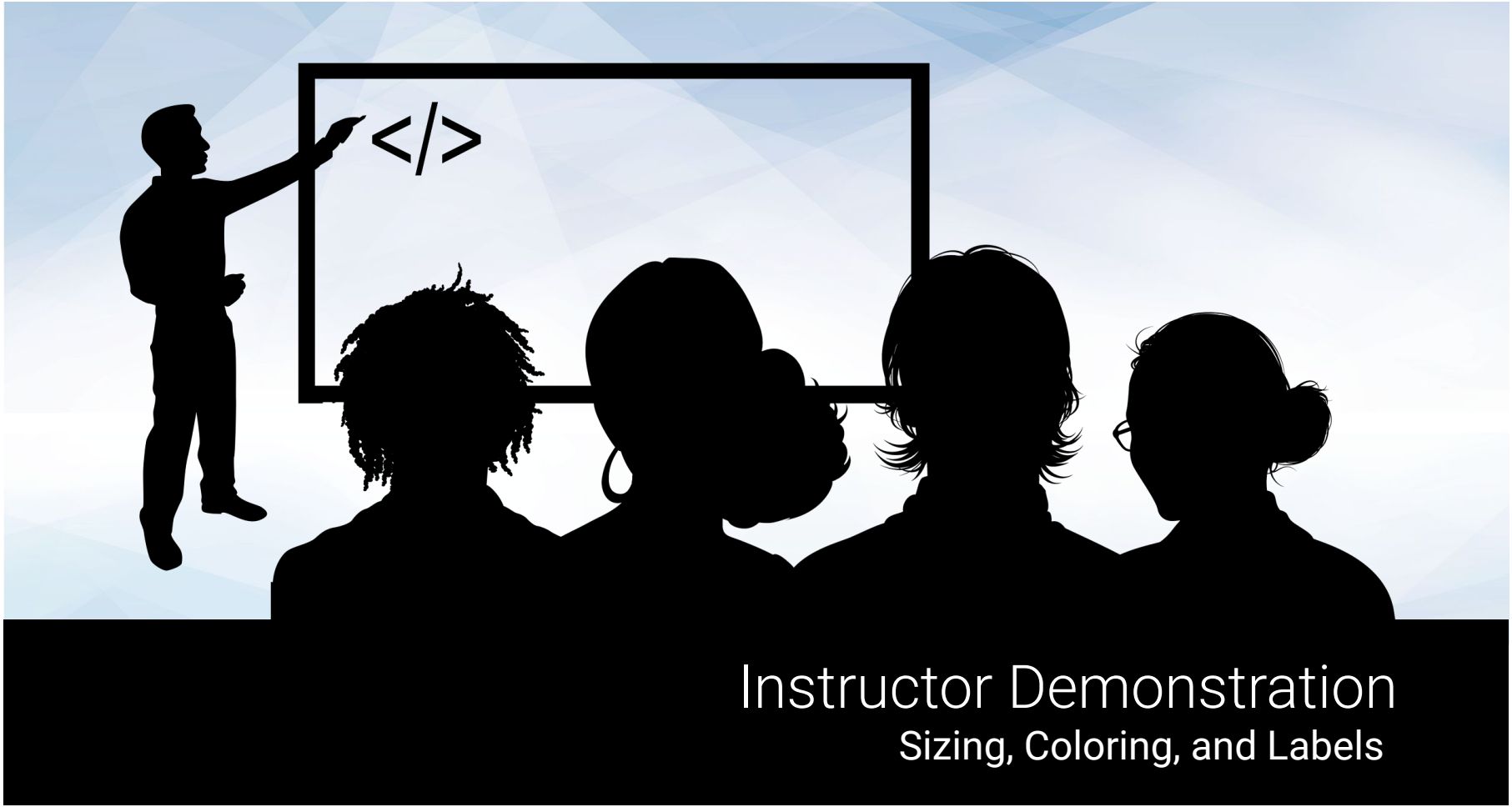
- Create a join between each of the charts so that each player's data is matched up correctly.
- Create a pair of charts that compare the offensive talent of a player (OFF600 column) to their fielding talent(DEF600 column). Then sort them from best to worst.
- Create a chart that determines which game (GameID column) has the highest offensive talent (OFF600 column).
- Create a chart that determines which position (startingPos column) has the greatest fielding talent (DEF600 column) on average. In a second chart, Be sure to note how many players are from each position in a second chart.
- Create a chart that determines which year has the greatest pitching power (PITCH200 column) on average.
- Create a chart that marks year versus the average offensive talent (OFF600 column).

Let's Review

Countdown timer

15:00

(with alarm)

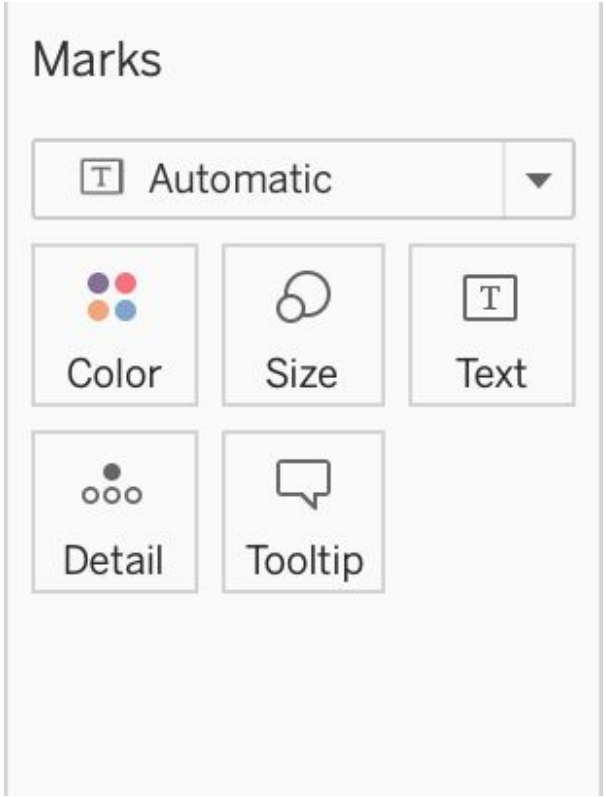


Instructor Demonstration

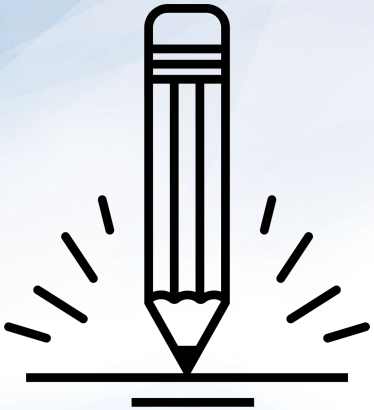
Sizing, Coloring, and Labels

Instructor Do: Sizing, Coloring, and Labels

Marks, on the left side of the workbook, can be used to differentiate or add details to a chart's visuals.



- Color lets users modify the color of chart elements.
- Size lets users modify the size of chart elements.
- Label lets users position text next to points on the chart.
- Detail and Tooltip act like labels but only appear when the cursor hovers over the associated point or element on a chart.
- Pills can be dragged to these marks to create visual effects.



Activity: The Ultimate Candy

In this activity, you will create charts to compare candy qualities and popularity.

Suggested Time:
10 Minutes

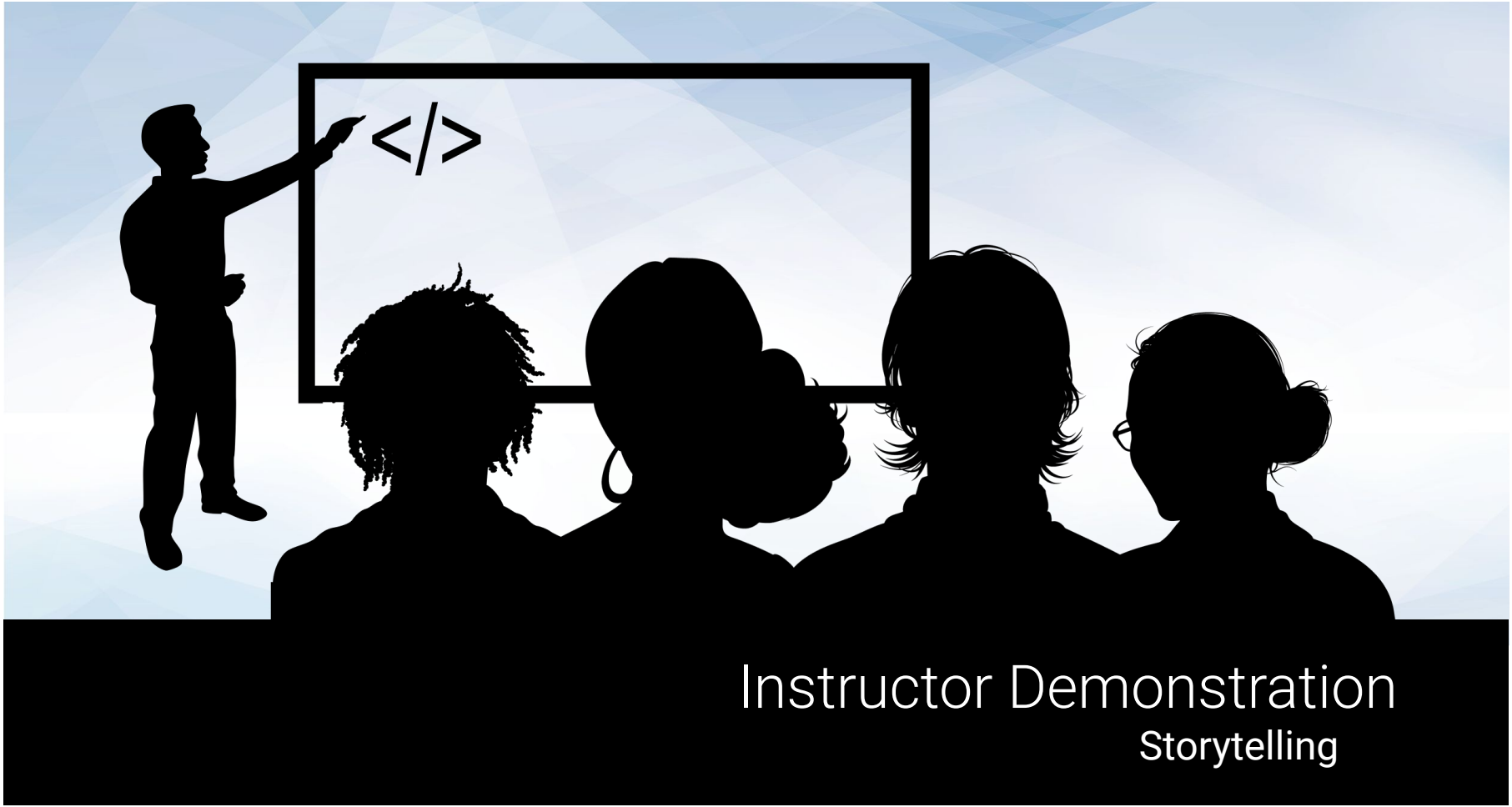
Instructions:

Activity: Major League Baseball Analysis

- Create a pair of bar graphs that chart the win percentage of each candy, then color the bars according to whether they are fruity and/or chocolatey.
- Create a scatter plot comparing the sugar percentage against the win percentage. Color the points based on whether they are chocolatey, and size them according to price.
- Create one more scatter plot comparing the sugar percentage against the win percentage. Color the points based on whether they are fruity, and size them according to price.

- **Hint:**
  - Don't forget to save to Tableau Public once finished.

Let's Review

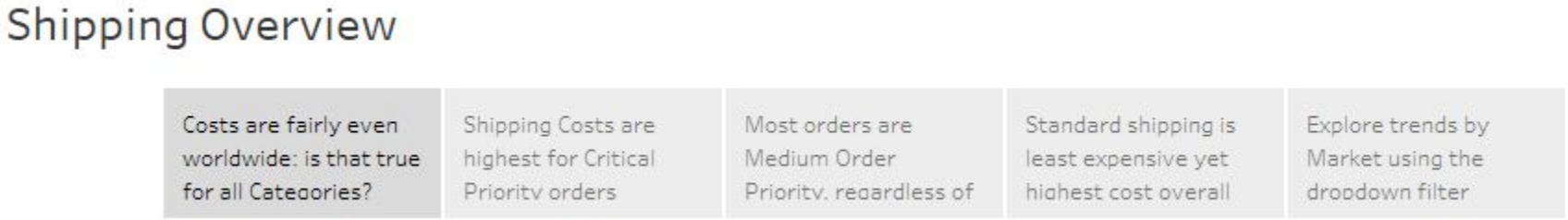


Instructor Demonstration

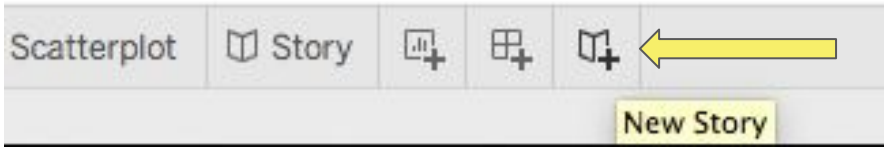
Storytelling

Instructor Do: Storytelling

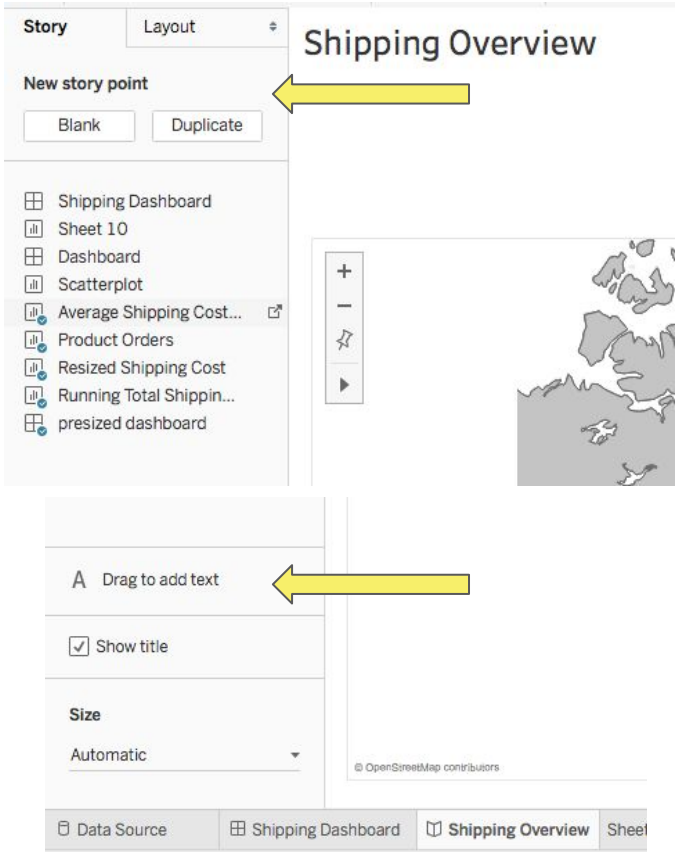
Sometimes, a single chart does not provide viewers with all of the information they might want. Stories are a Tableau feature that make it easier to bring together multiple charts in one place.



A new story can be created by selecting the *New Story* button from the tabs at the bottom of the workbook



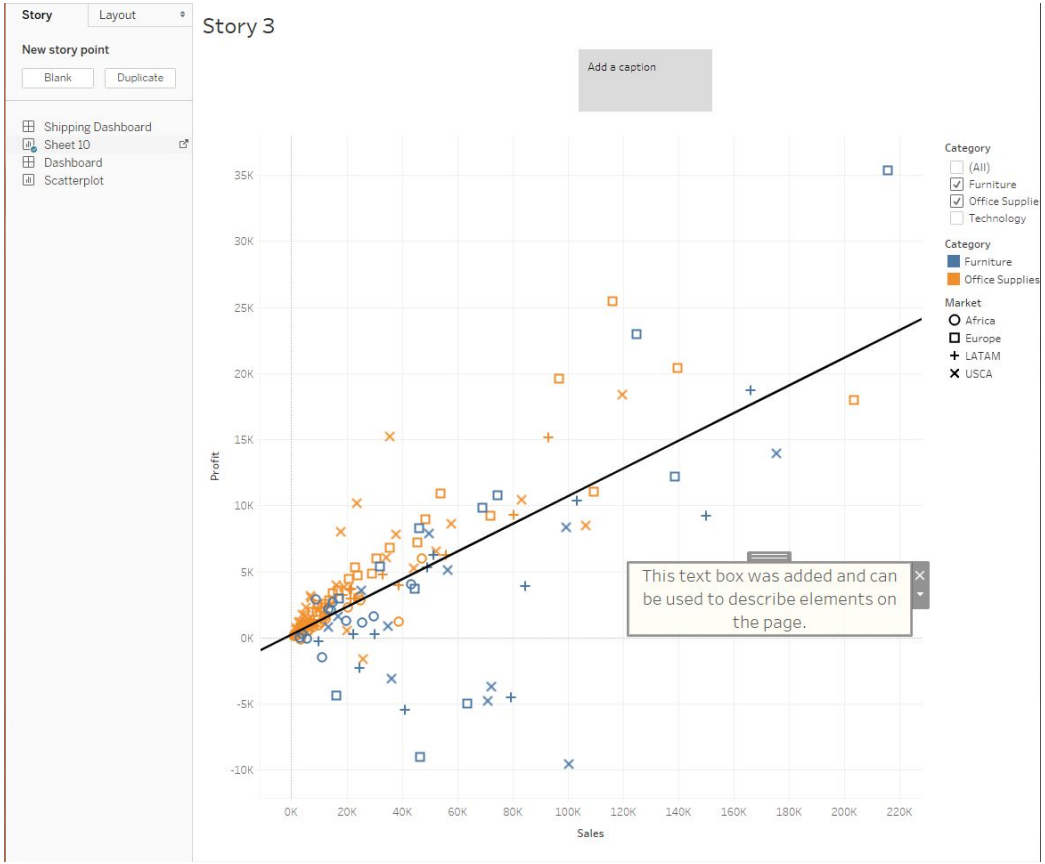
Instructor Do: Storytelling



- To add a new page to a story, navigate to the New Story Point, and select either Blank to create a blank page or Duplicate to create a page based on an already existing page

- Text boxes allowing for more detailed explanations can also be added by dragging the Drag to Add Text element onto the page

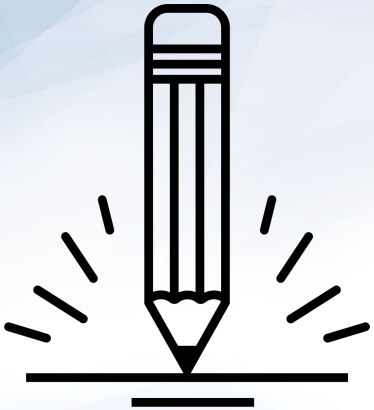
Instructor Do: Storytelling



- The left side of the page will contain all of the sheets within the current workbook, and they can be added into the story by dragging them into the main area.

- Captions for the story point can be added or edited by clicking the gray box at the top of the main view.

Questions?



Activity: Degrees That Pay

In this activity, you will use what you've learned today to create a Tableau story about degrees that pay.

Suggested Time:
15 Minutes

Instructions:

Activity: Degrees That Pay

Create a story using the datasets provided, and formulate graphs that might be used to explore the following hypotheses:

- "Ivy League school graduates generally start their careers with higher salaries."
- "Going to school in the West or Northeast generally results in higher starting salaries."
- "Higher starting salaries generally correlate to higher mid-career salaries."

- **Bonus:**
  - Create a chart that visualizes starting median salaries, by major, against mid-career median, 75th percentile, and 90th percentile salaries.

- **Hint:**
  - You do not have to join any of the data for this activity. The worksheets that you will be creating do not require you to join the datasets in Tableau..

Let's Review


The End