



## Intermediate Data Visualization Techniques in Tableau

August 25 - September 3

Classes: T-W-R from 2:00-4:00 PM (EST)

Office Hours: T-W-R from 4:00-5:00 PM (EST)

A picture is worth a thousand words. Use data to state your case using easy-to-understand data visualization tools. Give your audience the freedom to adapt your data in new ways in interactive dashboards that answer immediate questions and uncovers new insights. Data visualization tools can help you communicate better both internally and with your partners.

Tableau can help you produce more intuitive data visualizations, and we can show you how. In this course, you will build your skills in making appropriate graphics, but you will also incorporate complex calculations in ways that improve insights, make charts more relevant, and create the most impactful dashboard graphics.

Learn how to clean, shape, aggregate, and merge frequently used public data in Tableau Prep. Then, organize your visualizations into sleek dashboards in Tableau Desktop. We will provide helpful tips on how to analyze, design, and communicate these data in ways that will wow your supervisor and organization's customers.

### Training Prerequisites:

**Skills:** Participants must have a basic understanding of how Tableau works before attending this class, including knowledge of Tableau terminology, uploading data, editing data sources, and creating basic charts. Attendees should be familiar with all materials presented in the **Pre-Session Videos: Overview of Charts and Calculated Fields**.

**Tools:** Laptop, wired mouse, Tableau Desktop (personal, professional, or public version), and Tableau Prep.

- Public version of the Tableau desktop is available at:  
<https://public.tableau.com/s/download>
- Tableau Prep Software can be downloaded here:  
<https://www.tableau.com/products/prep/download>

## New Virtual Data Visualization Training Format

- **Schedule:**
  - Classes meet T-W-R from 2:00 - 4:00 PM EST.
- **Homework:**
  - After each class, students will receive homework exercises from the trainers that challenge the student to apply techniques learned in that day's lesson.
- **Office Hours:**
  - The trainers will be available from 4:00 PM to 5:00 PM EST after class for live office hours to help students with homework and to answer any questions.
- **Materials:**
  - At 4:00 PM EST the day after class, the trainers will post Powerpoint slides and a pre-recorded video explaining how to do the homework.
- **Capstone:**
  - On the second-to-last day of training, students will begin their final dashboard project for homework.
  - Students will then have a majority of the final session to complete and publish their dashboards.
  - The class will spend the final portion of the session sharing their dashboards and students can volunteer to share their dashboards with the class.



## Basic Data Visualization Materials

### Pre-Session Videos: Overview of Charts and Calculated Fields

Attendees can view these materials prior to the August 24<sup>th</sup> class to review any Tableau fundamentals. These sessions are pre-recorded and will not be covered during the 6-class training.

#### ***Introduction Video – What is Tableau?***

- **Covering:** Tableau basics; the Tableau workspace; Connecting to a file; Connecting multiple files to a data source; Creating a text table; Duplicating a worksheet; and Sorting and filtering
- **Exercise:** Connecting State Certifications and Licenses Data and State data to filter our table
- **Key Takeaways:** Learn how to view data on Tableau and perform basic tasks.

#### ***Introduction to Charts (Pt. 1)***

**Covering:** Highlight Tables; Bar Charts; Adding reference lines; Line Charts; Stacked Bar Charts; and Saving to Tableau Public

- **Exercise:** Use State Certifications and Licenses data to create each of the covered charts.
- **Key Takeaways:** Learn how to create basic charts in Tableau.

#### ***Introduction to Charts (Pt. 2)***

- **Covering:** Individual Axes Chart; Blended Axes Chart; Side by Side Bar Chart; Duel Axes Chart; Combination Chart; Scatter Plot; and Funnel Charts
- **Exercise:** Use State Certifications and Licenses data to create each of the covered charts.
- **Key Takeaways:** Learn how to create basic charts in Tableau, continued.

#### ***Introduction to Calculated Fields***

- **Covering:** Calculation Syntax; Key numeric and aggregation functions; and logical functions – “if, then,” “if, then, else,” “case, when”
- **Exercise:** Use State Certifications and Licenses data to perform calculations and use logical functions
- **Key Takeaways:** Learn how to aggregate data and perform logical functions to analyze data.

## Intermediate Data Visualization Agenda

### Preparing your Data with Tableau, Table Calculations and Advanced Calculated Fields

August 25<sup>th</sup> 2:00 – 4:00 PM

- **Covering:** Introduction to Table Calculations; Preparing your Data – Database Properties, Pivoting, Join, Union; Table Calculations – Preparing your Data, Population by Year, Difference From, Quick Table Calculations, % Difference From, % Difference From Base Year, % Difference From Specific Dimension, Compound Growth Rate, % of Total, Rank; Window Calculations; Level of Detail Expressions
- **Homework:** Produce a chart that displays both a window and level of detail calculation using State Certification and License data. Solution posted August 25<sup>th</sup> at 4:00 PM EST.
- **Key Takeaways:** Learn how to perform Table Calculations, Window Calculations, and Level of Detail Expressions that allow users to analyze data regardless of the aggregation-level.

### Creating Groups, Sets and Parameters

August 26<sup>th</sup> 2:00 – 4:00 PM

- **Covering:** Creating Groups; Creating hierarchies; Creating Sets; Sets and Filters – What’s the Difference; Creating Sets – Exercise; What are Parameters; Use Cases for Parameters; Using Parameters in Filters; Changing Dimensions using Parameters - Challenge; Changing Measures using Parameters – Challenge; Using sets and parameters to create dynamic marks
- **Homework:** Complete the Dashboard Challenge – Occupational Employment Statistics, using parameters, sets, and filtering. Solution posted August 27<sup>th</sup> at 4:00 PM EST.
- **Key Takeaways:** Learn how to create Sets and Parameters that allow analysts to create data visualizations with a user interface.

### Introduction to Tableau Prep

August 27<sup>th</sup> 2:00 – 4:00 PM

- **Covering:** What is Tableau Prep; Tableau Prep Workspace; Data Analysis in Tableau Prep; Connect to Data Source; Explore and Clean Your Data; Removing Duplicate Records; Reshape Your Data; Pivoting and Scaffolding Data; Group and Replace; Preview Your Data; Run, Flow and Export Your Data; Create Output File; Combining Data with – Union, Join; Aggregation; Filtering; Level of Detail Expressions; Hands-On Exercise – Gas Price Index, Unemployment Rate
- **Homework:** Prepare data from an Eligible Training Provider List, including removing any duplicate records, and produce a count of credentials by award type and award code. Solution posted August 31<sup>st</sup> at 4:00 PM EST.
- **Key Takeaways:** Learn how to prepare your data in Tableau Prep.

### Dashboard Design and Storytelling with Data

September 1<sup>st</sup> 2:00 – 4:00 PM

- **Covering:** What is a Dashboard; Dashboard Design Elements; Statistical Design Elements; Formatting Charts – Tooltips, Graph Tooltips, Marks; Action Buttons; Dashboard Exercise – Cost of Living Index; Trainers assign Capstone
- **Homework:** Finish August 28<sup>th</sup> Homework and choose either instructor-provided or student-chosen data for final project. Apply Tableau Prep cleaning to final project data if necessary. Office hours will be used to review dashboard design elements and for any instructor-provided assistance with preparing data.
- **Key Takeaways:** Learn elements of dashboard design, and advanced user-interface tools for your data visualizations that make your dashboard more interactive.



### **Final Project: Dashboard Challenge**

**September 2<sup>nd</sup> 2:00 – 4:00 PM**

- **Covering:** Students will have class time to prepare their dashboard. Instructors will be available during this time to assist students in preparing their dashboards. Students should incorporate lessons from Tableau Prep and Tableau Desktop in completing the Capstone.
- **Homework:** Work on your Final Project. Office hours will be used to review dashboard design elements and instructor-provided assistance in preparing students' dashboards.
- **Key Takeaways:** Students will gain experience incorporating elements from all previous lessons in designing an interactive dashboard that allows users to customize their data visualization.

### **Final Project: Dashboard Challenge and Presentations**

**September 3<sup>rd</sup> 2:00 – 4:00 PM**

- **Covering:** Students will spend the first half of class finalizing their Capstone project. The trainers will present their own dashboards during the second half of the class, and students can volunteer to additionally present their dashboards to the class. The class will additionally share Tableau best-practices and lessons learned from the training.
- **Homework:** Use Tableau and your lessons learned from this training at your job. Give yourself a pat-on-the-back for all your hard work in completing this training.
- **Key Takeaways:** Students will gain experience in dashboard design and in presenting their data visualization and its associated quantitative information to decision makers.