Tableau 2: Beyond Basics
Download both Tableau 2 Excel workshop data files under the “Workshop Materials” tab: https://research.library.gsu.edu/tableau

- **Tableau 2 Workshop Data: Expanded Superstore** | Scatterplots, Histograms, Area Charts, and Combination Charts
- **Tableau 2 Workshop Data: CO2 Emissions** | Joining and Unioning, Calculations, and Filter Actions

**Advanced Visualization Types**

**Scatterplots**

Scatterplots compare two numerical variables, one along the x-axis and one along the y-axis. Trend lines are often applied to scatterplots to determine what kind of relationship the variables have.

- Scatterplots require 2 Measure (numerical/green) pills
- Example: Sales v. Profit
- Open a new worksheet and drag the “Sales” pill into Columns, and “Profit” pill into Rows
- Drag the “Category” dimension onto Color in the Marks card
- Drag the “Region” dimension onto Detail in the Marks card

Sales v. Profit, with Color by Category and Detail by Region
- Use the Analytics tab to add trend lines to scatter plot (Analytics tab > Model > Trend Line > Click and drag to select trend type)

**Area Charts**

Area charts are a variation on line charts, with the space underneath the line filled in. Like line charts, area charts are typically used to show changes over time, and may compare multiple categories. Area charts are better for determining overall relationships than reading individual values.

**Stacked Area Chart** – Categories are stacked, which shows how each category contributes to the whole area. Tableau defaults to a stacked chart.

- Stacked chart values are read line-to-line (rather than axis-to-line) because no area is obscured behind another area
- Open a new worksheet and drag “Order Date” to Columns and “Quantity” to Rows
- Hover over the “Order Date” pill and click on the small white arrow to show additional time options. Select the first listing for “Month” (we’re just going to look at aggregated data).
- Drag “Ship Mode” to Color on the Marks card
- On the Marks card, open the dropdown menu and select “Area”

![Area Chart Example](image)

**Time v. Order Quantity, with Color by Ship Mode (Stacked Area)**

**Overlapping Area Chart** – Categories overlap one another, which helps compare the magnitude of change over time. You must convert to this chart type from a stacked area chart.

- To convert a stacked area chart to an overlapping chart
  - Analysis tab (top bar) > Stack Marks > Off
  - Marks card > Color > Opacity (adjust slider to less than 100%)
Alternatively, sort the categories in the Marks card for better visibility (Marks card > Ship Mode pill dropdown > Sort > Manual)

- The overlapping chart can become confusing if there are more than 2-3 categories, especially if numerical values are similar

**Combination charts**

Combination charts can be almost anything – they use different chart or mark types in the same visualization, typically utilizing the “dual axis” feature.

- Open a new worksheet and drag “Order Date” to Columns. Select the dropdown on the new “Order Date” pill and choose the first “Month” option.
- Drag both a “Sales” pill and a “Profit” pill to Rows. They should still look like separate pills at this point.
- Select the dropdown arrow on the second pill in Rows. In our pictured example, this is “Profit”. Pick “Dual Axis” from the menu. Pills sharing a dual axis are shown flattened against each other:

  ![Combination Chart](image)

- Right click the y-axis on either side of the graph (Sales or Profit) and choose “Synchronize Axis”
- In the Marks card, choose the Profit tab and use the dropdown menu to convert the visualization type from “Automatic” to “Bar”
Combining Data Sets

There are two basic ways of combining data sets in Tableau: Joins and Unions.

**Join Your Data**

Joins combine a column of two data sets with a common variable.

To join two datasets from Tableau’s Data Source page:

1. Select one data table.
2. Drag another data table just to the right of the first one.
3. The columns of both datasets will show up in the preview pane below allowing you to work with both data sets.
4. Click on the join symbol to manually adjust how the data sets are joined
   - The inner join creates a new table that only includes fields common to both datasets.
   - Left join creates a new table that includes data from the left table and corresponding matches from the right table.
   - Right Join creates a new table that includes data from the right table and corresponding matches from the left table.
   - Full Outer join creates a table that includes all the data from both tables
5. From the join menu, you can also select which fields with which to match rows.

**Union Your Data**

**Unions** combine data from one or more data sets by stacking rows on top of each other.

To Union two data sets together from Tableau’s Data Source Page:

1. Select one data table.
2. Drag another data table on top of the first one until you see the orange box appear.

**Calculations**

If your data set does not include all the fields you want to use in a visualization, you can create a calculated field or a table calculation based on data already in your data set.

**Calculated Fields** – Create a new field in your data set based on calculations

- Right click on the data pane and select “Create Calculated Field” from the menu to open the Calculations Editor.
- Functions in Tableau fall into one of several categories (Number, String, Date, etc.).
- Calculated fields can be created by using simple mathematical operations or by using the built in functions.
- Calculated field pill will appear in your data pane with an equals sign to denote that it is a calculated field, and not part of your original data set.

**Table Calculations** – allow you to perform calculations on values in a table you have created

- You can create table calculations using the calculations editor and selecting the “Table Calculations” option.
- Alternatively, you can use the predefined set of “Quick Table Calculations” by right clicking on a pill in the Marks card or Columns/Rows shelf.
• A table calculation pill will have a delta symbol to indicate that it is a calculated and not from the original data set.

Dashboard Controls and Design

Filter Actions

• Add dashboard level filters to by clicking Dashboard > Actions > Add Action
• From the Add Action menu, choose “Filter”, then select the source and target sheets for your filter.
• Depending on the fields used in your dashboard, you may be able to create a dashboard level filter by clicking the “more options” button on one of the sheets in your dashboard and selecting the “use as filter” option.
Dashboard Design

- Put the most important content or key insights in the top left corner
- Limit the total number of worksheets/charts on a single dashboard to 2 or 3
- Use dashboard-level filters to tie visualizations together
- Standardize colors and typefaces across the charts on a single viz
- Consider reducing permanent text in favor of tooltips, so users can choose the level of info