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# Bar Charts Galore: A Beginner’s Guide to Creating Variations of the Classic Bar Chart in Tableau

This tutorial walks through the process of creating different types of bar charts in Tableau. We’ll start with the classic bar chart, and then proceed to explore grouped bar charts, stacked bar charts, diverging bar charts, and more. Along the way, we’ll also explore some of Tableau’s core functionality and how we can use it to help us create effective plots. We’ll cover how to filter our data, create calculated fields, manipulate and format axis labels, and utilize various functions in the Marks card, among other topics.

## Part 1: Reading in the Data

First, we’ll need to read our data into Tableau. For the purposes of this tutorial, I’ll be using data on educational attainment rates by state from the Census Bureau’s Current Population Survey in 2018.[[1]](#footnote-1) If you’d like to follow along with the tutorial, you can download a copy of the dataset [here](https://github.com/andygreen-1/Tableau_Tutorial_Bar_Charts/blob/main/Education_2018.csv).

After downloading the dataset, we can read it into Tableau by selecting “Text file” on Tableau’s opening screen (since it’s a .csv file), and then navigating to the file’s location on our local drive.

Graphical user interface, application

Description automatically generated

From there, Tableau will take us to a preview of the dataset. You can see that the dataset contains data on educational attainment for all 50 states and the District of Columbia, and that the numbers are in thousands (i.e. the total population is 323,156,000).

After taking a few minutes to get a feel for the data, we can click on “Sheet 1” toward the lower left corner to get started.

Graphical user interface, application

Description automatically generated

## Part 2: Creating a Standard Bar Chart

To start, let’s create a basic bar chart showing the number of people who have a bachelor’s degree or more in each state. To do so, we can drag “Bachelor’s degree or higher” from the Measures section to the Rows shelf and drag “State” from the Dimensions section to the Columns shelf. As you can see, Tableau automatically defaults to creating a bar chart when we do so.

Graphical user interface, application, table, Excel

Description automatically generated

The first thing you may notice about the bar chart is that there is one bar that is far larger than all of the rest. If you look at the value label for that bar, you’ll notice that it says “Totals”. This bar exists because the first row of our dataset contains information on the total US population. Since the presence of this value completely distorts the axis for the rest of the values, we’ll take it out before proceeding any further.

To do so, we can drag “State” to the Filters card, and uncheck the box for “Totals” in the Filters pop-up screen that follows. This will remove that value from our bar chart.

Graphical user interface, application

Description automatically generated

After removing the US totals, we can see that the axis scale adjusted automatically to fit the new range of the data. We are now left with a more normal-looking bar chart showing the number of people with bachelor’s degrees or higher in each state.

Chart, bar chart

Description automatically generated

However, we may decide that given the wide range in population sizes between US states, it may make more sense to compare states based on the *percentage* of the state’s population with a bachelor’s degree or higher, as opposed to the raw counts.

We can accomplish this by creating a Calculated Field. To do so, we can right-click anywhere in the Measures pane and select “Create Calculated Field…”. We can give our new calculation a name (e.g. “Bachelor’s Degree + Rate”) and then enter the formula for calculating the rate, per below (i.e. the count of people with bachelor’s degrees or higher divided by the total state population).

Graphical user interface, text, application

Description automatically generated

Now, we can simply swap out the “Bachelor’s degree or higher” metric with the new “Bachelor’s Degree + Rate” metric on the Rows shelf, and we’ll get a bar chart showing the percentage of each state’s population that has obtained a bachelor’s degree or higher.

Chart, bar chart

Description automatically generated

## Part 3: Changing the Chart’s Orientation and Appearance

Before going on to different types of bar charts, let’s explore some of the functionality that Tableau offers for altering the orientation and appearance of the chart.

First, we may decide that we’d prefer to have horizontal bars as opposed to vertical bars in our chart. We can accomplish this quickly by clicking the “Swap Rows and Columns” button above the Columns shelf. Now, we have a bar chart with horizontal bars.

Chart

Description automatically generated

Next, we may decide that we’d like to see the bars sorted from largest to smallest as opposed to in alphabetical order by state. To do so, we can use the descending sort button above the Columns shelf.

Chart

Description automatically generated

Finally, we may decide that we’d like to see the values in a clean percentage format as opposed to the decimal format that they’re currently displayed in. To fix this, we can right-click on the x-axis labels and select “Format”. Then, in the formatting pane on the left, we can select “Percentage” in the Numbers field, and change the number of decimal places to 0 for a clean appearance.

Graphical user interface, application

Description automatically generated

## Part 4: Adding Another Metric – Multiple Bar Charts and Grouped Bar Charts

Now, let’s say that we want to add another metric to our bar chart. Doing so will allow us to compare each state on more than one measure. For example, in addition to comparing states based on the percentage of people with bachelor’s degrees or higher, we can also compare states based on the percentage of people without a high school diploma.

To start, we’ll need to create another calculated field so that our variables are comparable. We’ll follow the same steps as before, except we’ll use the “No high school diploma” variable instead of the “Bachelor’s degree or higher” variable this time.

Graphical user interface, text, application

Description automatically generated

Next, we can drag this newly created measure to the Columns shelf next to our “Bachelor’s Degree + Rate” variable. Tableau will then automatically generate a second bar chart next to our original one.

Chart

Description automatically generated

We may decide that it’s easier to process these charts if they’re stacked on top of each other, as opposed to next to one another. To accomplish this, we can use the same “Swap Rows and Columns” functionality that we used before.

Chart, bar chart

Description automatically generated

This format can be useful for comparing how the distributions of each variable may be similar or different to one another, but it’s difficult to directly compare values between the metrics. As a result, we may decide that we’d rather have a grouped bar chart where both metrics are contained in the same chart. We can accomplish this by selecting the “side-by-side bars” option in the “Show Me” menu of Tableau’s suggested plots.

Graphical user interface, application, PowerPoint

Description automatically generated

Now, Tableau will give us a grouped bar chart with both metrics included in the same chart. Tableau has automatically color-coded them and added a legend to help us distinguish between the two metrics.

Chart, bar chart

Description automatically generated

You may notice that Tableau has automatically generated rather repetitive text labels along the bottom of the x-axis. We can remove these text labels by clicking the arrow next to the “Measure Names” object in the Columns shelf and clicking on the “Show Header” option to de-select it.

Graphical user interface, text, application, chat or text message

Description automatically generated

## Part 5: Creating a Stacked Bar Chart

Next, we may decide that we want to include more than two metrics. One way to accomplish this is by adding more metrics into our grouped bar chart format, with a different color representing the bars for each metric. However, this can start to get pretty busy rather quickly, so we may choose to use a stacked bar chart instead. Stacked bar charts involve stacking the bars for multiple metrics on top of each other in the same chart (not to be confused with stacking multiple charts on top of each other, like we saw earlier).

To illustrate an example of a stacked bar chart, let’s make use of the other educational attainment categories in addition to the two we’ve been working with (i.e. “Children under 15”, “High school or equivalent”, and “Some college, less than 4-yr degree”). To do so, we’ll first need to create three more calculated fields, converting each of these to a rate as we did with the other two categories.

Once we have a rate for all five of the categories, we can proceed to making our stacked bar chart. To do so, we’ll first click the arrow next to “Measure Names” in the Filters card, and then select “Edit Filter…”. From there, we can select the check boxes for the five rates that we’re interested in.

Graphical user interface, text, application, chat or text message

Description automatically generated

Tableau will default to adding these new measures as additional metrics in a grouped bar chart format. To convert this into a stacked bar chart, we simply need to remove the “Measure Names” field from the Columns shelf.

Notice that all of the bars are now exactly the same height, as we’ve added in the full set of metrics that add up to 100% of a state’s population. In this way, a stacked bar chart allows us to see both the full breakdown of each state’s educational attainment (similar to what you might see in a pie chart, for example), and to compare these breakdowns between states.

Chart, bar chart

Description automatically generated

However, you may notice that Tableau has placed the five metrics in alphabetical order, which doesn’t necessarily make sense for our purposes. It would make more sense for us to place them in order of the level of educational attainment (i.e. Bachelor’s Degree +, Some College, High School, No High School Diploma, Children < 15). To do so, we can simply drag and drop the metrics into the order we want them in the Measure Values card, and the chart will update accordingly.

Graphical user interface, text, application, chat or text message

Description automatically generated

## Bonus: Creating a Diverging or Back-to-Back Bar Chart

Going back to the case where we’re comparing two different metrics, another option that may be more visually appealing than a grouped bar chart or stacking multiple bar charts on top of each other, is to use a diverging or “back-to-back” bar chart.

Before we jump into how to create this type of bar chart, let’s start off with a clean slate on a new sheet. On “Sheet 2”, we can add “State” to the Rows shelf, “Bachelor’s Degree + Rate” to the Columns shelf, “State” to the Filters card, and uncheck the “Totals” value in the Filters screen that pops up. You should then see a horizontal bar chart similar to what we were working with earlier.

Chart

Description automatically generated

In order to create a diverging bar chart, we’re essentially going to “trick” Tableau into making one of the metrics go in the opposite direction, by converting the values for that metric to negative numbers. To do so, we’ll create another calculated field where we simply add a negative value sign to the metric of interest. In this case, we’ll create a calculated field called “Negative No HSD Rate”, which is just comprised of a negative sign and our “No HSD Rate” metric.

Graphical user interface, text, application

Description automatically generated

Now, if we drag the newly created “Negative No HSD Rate” metric to the Columns shelf, and place it *before* the “Bachelor’s Degree + Rate” metric that’s already there, Tableau will automatically produce a diverging bar chart.

Chart

Description automatically generated

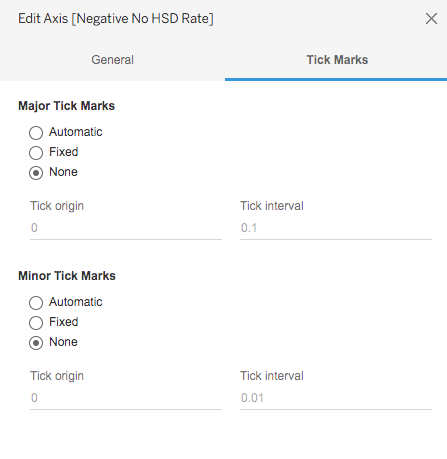
However, you may notice there are a few strange or misleading features of this bar chart. First, the scales of the two metrics are different, and it’s making it look like the bars on the left are bigger than those on the right (when the reverse is true in all cases). To fix this, we can adjust the scale of the left side to mirror that of the right. To do so, double-click on the axis values for the left side of the chart, select “Fixed” in the options under Range, and change the values to mirror those on the right (i.e. -0.5 to 0).

Graphical user interface, text, application

Description automatically generated

Of course, the second strange feature of this bar chart is that the values for the left side are now negative! Converting these to negative numbers was a helpful trick from a plotting standpoint, but it will likely be very confusing to anyone else looking at our chart. To fix this, we’ll need to remove the axis labels on the bottom altogether and use a different method to label the values of the bars.

To get rid of the numerical axis labels, we can double-click on the axis values again, navigate over to the Tick Marks section, and select “None” under both Major Tick Marks and Minor Tick Marks. Make sure to repeat this same process for the other metric in the chart as well.



Now that we’ve removed the funky negative axis labels, we’ll need to add in the correct/positive value labels. The easiest way to do so is by placing value labels next to the bars themselves, which we’ll need to do separately for each metric.

First, we can drag the “No HSD Rate” metric from the Measures pane to the Label section of the Marks card – specifically the portion of the Marks card labelled, “SUM(Negative No HSD Rate)”. By doing so, we’re adding the positive/correct “No HSD Rate” labels to the left side of the diverging bar chart.

Chart

Description automatically generated

Next, we can do the same thing for our other metric. Click on the “SUM(Bachelor’s Degree + Rate)” section of the Marks card to expand that section, and then drag the “Bachelor’s Degree + Rate” metric from the Measures pane to the Label section of that portion of the Marks card.

Chart

Description automatically generated

To format the percentages in a more user-friendly way, we can click the arrow next to the metric in the Marks card, select “Format…”, and then select “Percentage” and 0 decimal places in the Numbers dropdown under the Default header. Repeat this for each of the two metrics in the marks card to format each appropriately.

Graphical user interface, application

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Description automatically generated

Finally, we may want to change the color of one of the metrics to make it easier to distinguish between the two, similar to how they were formatted in the grouped bar chart example. To do so, click on the Color button within the section of the Marks card for either of the variables, and change the color accordingly.

Graphical user interface, chart, application

Description automatically generated

After doing so, we will have a nicely formatted diverging bar chart.

Chart, bar chart

Description automatically generated

Thank you for following along with this tutorial as we explored how to create a variety of different types of bar charts in Tableau. I hope this was a useful introduction to the various types of bar charts that are available and how to move between them as you’re crafting a visualization in Tableau. I also hope it served as a helpful primer on some of Tableau’s core functionality, which we can use to customize bar charts and many other types of plots. Now that you’ve finished this tutorial, I would highly recommend exploring how you can use Tableau to make effective bar charts using a dataset of your choice – there’s no better way to learn than by practicing on your own. Happy plotting!

1. U.S. Census Bureau. *Current Population Survey (CPS), CPS Table Creator*. U.S. Census Bureau. <https://www.census.gov/cps/data/cpstablecreator.html>. [↑](#footnote-ref-1)