Hi. This tutorial covers a specific type of graph called the bar graph. So let's take a look at some study data. So a Rasmussen Reports study from June 2012 randomly sampled 1,000 Americans and asked them if they thought that buying a home was the best investment a family could make. 540 answered yes, 245 answered no, and 215 were undecided.

OK, so this is a qualitative data set, because the answers yes, no, or undecided are all categories, so it's not quantitative data or numerical data. It is qualitative or categorical data. And a common way that qualitative data can be displayed is by using a bar graph.

So a bar graph is a chart that displays bars that are proportional in length to the frequency or relative frequency of a particular data value. So what I'm going to do now is show you how you can make a bar graph for that study data.

All right, so what we're going to do first is make a set of axes. So we need an x- and a y-axis. So we're going to do that. I'm going to use a ruler here. So we'll go down and like so. OK. And what this axis is going to be is this is going to represent our Question Responses. And the y-axis here is going to represent Frequency.

OK, so my question responses were either yes, no, or undecided. So what I'm going to do is space those evenly on my x-axis. And I'm going to put little tick marks for each of the responses. So again, this is going to represent yes. This will represent no. This will represent undecided.

Then what I need to do, to label my y-axis for frequency is I need to think about, well, what response had the highest frequency? And if you recall, that was the yes response, which had a frequency of 540. So we need to go up to at least 540.

We also need to think about what scale should we use on our axis. So I would say that we could count maybe by hundreds. So if we're going to count by 100, we would need to start at 0 and probably go up to 600, because that would be the next greatest so we could get 540 on there.

So what I'm going to do is, again, use my ruler to get equal spacing and draw in some tick marks. I'm making each of the tick marks about a half-inch apart. And if I count by-- I counted by 100, but what I'm going to do is just label every 200. So that's a pretty common way of doing that.

And now what I need to do is I need to draw bars for yes, no, and undecided. And I want my bars centered on the specific response. So my yes bar is going to go all the way up to 540. So 540 is going

to be in between 500 and 600, but closer to 500 than 600.

All right, so let's go ahead and-- so again, I want the bar centered on yes. So my bar is going to go like this, and it's going to go all the way up to 540. So I'm going to draw as straight as I can down, and the other side of the bar will go like that. And I will finish off the bar like that. And then sometimes it's common to write down what the frequency is above the bar.

So now for no, no was 245. So 245 is going to be pretty close to the middle of these two marks here. So again, I'm going to-- I want it centered on no, so I'm going to mark it here and here. And then I need to go up to 240. And 240 is going to be about here and about here, and mark it like that. All right, I'm sorry, this is 245, so that's about 245 there.

And then for undecided, again, center my bar. And this is going to be centered at-- it's centered there, and it's going to go up to 215. So it's going to be a little bit shy of the last one I drew there. And again, this will be 215.

All right, so this represents a bar graph of the home as an investment data set. A couple of things about a bar graph is that I just arbitrarily assigned these values here as yes, no, or undecided. I could've easily put undecided here, yes here, and no here. These can be mixed up. So the ordering of qualitative data is generally not important. So these bars, these categories, can be labeled any way you'd like.

Again, when you're making your bar graph, make sure that you have a consistent scale on your y-axis and that your bars are centered on the category type. All right, so that is an example of how to draw a bar graph.

Another graph that is common is what's called a multiple bar graph. A multiple bar graph is a type of bar graph that can be used to compare qualitative data sets from multiple populations. And I have one that's constructed already. And this represents religious affiliation in New Zealand from 1991 to 2006.

And if you can see that, we have four religions, or four different religion responses that were possible here. So we have Christian, no religion, object to answering-- so they didn't want to answer there-- or other. And we could see that now on the year, we have '91, '96, 2001, 2006. So these represent the different populations. So we have a population from '91, from '96, '01, and '06.

Now we can see that for each of these populations, our four different categories are represented as

such. This actually is going to be a relative frequency bar graph that's actually represented as a percentage. So instead of frequency here, they have percentage which they calculated using the relative frequencies. So you can see that in '91, about 70% were Christian, about 20% were none, and maybe it looks about 8% object to answering, and maybe about 2% were in the other category.

What this is nice is that you can see that from '91 to 2006, there appears to be a decline in people that expressed Christian as their religion. We can also see that no religion is consistently going up. The other thing that we can tell from this bar graph is within each year, it still does seem that the majority of people are still Christian. So what's nice about the multiple bar graph is that you can compare not only categories within each population, but you can compare one category amongst multiple populations. So this is one type of multiple bar graph that does display four different data sets within one graph.

So that's been the tutorial on bar graph. Thanks for watching.