**Clustered bar/line chart of means (w/error bars)**

In this video, I’m going to show you how to create a clustered bar chart of means and a clustered line chart of means. Both graphs are showing error bars and I’ve chosen 95% confidence intervals. Now to create these graphs, your x-axis variable must be categorical which means it should be defined as nominal or ordinal in SPSS. Now typically, if you’re in a science, maths or engineering subject, a line chart like this should only be used if your x-axis category is showing a progression over time or your categories are related to each other so that it makes sense to actually connect the dots. However, if you’re in a non-maths or science subject such as social science, psychology etc, it is typically acceptable to use a line chart of means with a variable like this smoking status. So if we go to SPSS, you can see I’ve got a variable for gender, a variable for smoking status and I have cholesterol and for my graphs I want to show the average cholesterol for each smoking status split by gender.

So we’ll make the bar graphs first, if you go to ‘graphs’ and ‘chart builder’, I want the second bar chart this time, which is a clustered bar chart. Go ahead and double click or drag it into your gallery. Now your categorical variable always goes along the x-axis, and for my bar chart, I want gender to be along the bottom, so I want males and females. My smoking status is also categorical and it’s going to go to the cluster and I want to show average cholesterol levels, so I’m going to drag that to my y-axis and this variable here must be scale, otherwise SPSS will not create the graph. Now anytime you’re showing means, whether in a bar chart or line chart, it’s usually a good idea to show error bars as well, so I’m going to take this option. And again you have three options, you’ve got a confidence interval for the mean, you’ve got a plus and minus number of standard errors, plus or minus a number of standard deviations. Have a look at your lecture notes and recommended textbooks, you could even look at journal articles to see what is most common in your field. I’m going to use a confidence interval for the mean and leave it at 95%. Go ahead and click ‘apply’ and you’ll see that the change is shown in your gallery. Now remember that this is just an image, this is not what your graph will look like so don’t worry if the figures don’t look correct. Click ‘okay’. So the height of the bar shows the mean, and the error bars are showing me a 95% confidence interval for that mean. I have smokers showing in blue, and non-smokers showing in the green, and I can easily compare male smoker vs non-smoker and female smoker vs non-smoker.

Now let’s go back and create our line chart. I’m going to go ahead and hit ‘reset’ and I’m going to change these categories around. This time I want line and I want the second line chart. Drag it in. This time I want smoking status to be my category along the x-axis, and gender is going to be my category that defines my lines. Again, cholesterol level is going to be my mean, and because I’m showing means I want to include error bars. I’m going to use confidence intervals again. Click ‘apply’ and ‘okay’. So I have a separate line. Blue for male, so smoker/non-smoker and I have a green line for female smoker/non-smoker, and my error bars are showing me a 95% confidence interval for the mean of each category.

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