Dr. Patrick Dunn: Well, good morning, everybody, and welcome to our Skill-Builder on graphs. My name is Pat Dunn, and I'm joined here by Kim Palermo-Kielb. Good morning, Kim.

Kim Palermo-Kielb: Good morning, Pat.

Dr. Patrick Dunn: And we have a nice group here, so I'm going to get right to it because our history with us is these things go very fast. But just to orient you to this, most of you have found the chat and question area. Use that for communications. But the way we do these Skill-Builders now is I'm going to do a short presentation followed by a short demo, but then we really want to open up the Q and A lines. So the Q and A pod right below our pictures, that's where we want you to ask questions. So feel free to begin loading up those questions, and we'll -- when I'm done with the presentation and the demo, we'll start going through those questions. Kim will also give you more information -- we're obviously not going to be able to get to all the questions. Some of the questions may be beyond the scope of the presentation or beyond my knowledge base. Either way, we have other options. We have our tutoring services. We also have our email roll accounts. So those are the other options if we don't completely get your questions answered today. So -- and actually, I didn't introduce -- Kim and I are kind of -- we've been on most of these, so I'm just assuming that you all know us.

But many of you may not. So good morning, Kim.

Kim really runs our -- the Tutoring Services within
Kim, do you want to say a little bit more about you and what you do?

>> Kim Palermo-Kielb: Sure.
   Oh, yeah, sure.
I'll definitely give a brief introduction.
So hello, everybody.
I work with Academic Skills Center like Pat, and I'm the Coordinator of Instructional Support.
So basically, I help run the Tutoring Services Program, and I also work as a Webinar Coordinator for the center.
I started out as a peer mentor when we were in the Peer Mentor Program back in 2012, and I mentored students in the courses, research -- I'm sorry -- quantitative reasoning and analysis, which is the Research 8200 and 6200 level course, and I did that about a year and-a-half.
And my master's from Walden is in program psychology specializing in research and program evaluation, and I also have a master's in school psychology that I received at Fordham University here in New York, and I am currently actually enrolled as a dissertation student in the research psychology program.
And I help the tutors with their scheduling and assisting them with their students.
I help them with the research development and just kind of oversee the process of the program.
   So welcome, everybody.
   Thank you, Pat.
   >> Dr. Patrick Dunn: Yeah.
And I am an instructional support specialist.
And I graduated from Walden last summer with my Ph.D. in public health, but I continue to work at Walden doing tutoring and doing these webinars.
   So okay.
   Now I'm going to jump into it.
So our agenda today, we're going to talk about graphs, and we're going to talk about it -- I'm going to give you a couple of, you know, kind of quick examples...
using both SPSS and Excel.
And then we'll open up for questions.
And I see we already have a bunch of questions.
So again, we'll get to those in a moment.
But again, why is it important?
Well, a graph is a visual representation of your data.
And to, you know, use a term from, you know, that's
been used widely, a picture is worth a thousand words.
So really, sometimes you can see in a graph something
that you can't really just see in the data itself.
But it's not separate from your data.
It's a representation of your data.
And what do you need to know?
You need to know, you know, which graph basically to
use, you know, based on the different types, you know,
what you're trying to do.
It kind of -- it depends on the variables and the type
of variables that you're using.
So some common ones, bar graphs.
And I have two examples here.
The bar graph on the left is actually a bar graph of a
continuous variable systolic blood pressure, and it's
looking at the mean systolic blood pressures across
different regions of the country.
And this is kind of dummy data.
So don't go, oh, my gosh, what's going on, you know,
in this particular region.
And then on the right is frequency data.
So it's counts.
So you can use a bar graph in both ways.
And they're kind of units in time basically.
You can use pie charts, and pie charts, obviously, are
slices, so, again, you can look at, you know, budget
factors, you can look at, you know, different -- but
what you're doing is you're looking at categorical
variables here.
Okay.
So you're typically looking at the counts of a
categorical variable.
You wouldn't use a pie chart to express descriptive
statistics like means and standard deviations. It's just not a good way to use that chart.

Line graphs are common, especially when you have multiple data points. So in public health, that might be blood pressures or weights or cholesterol over time. In economics, it might be different -- you know, it might be interest rates, or, you know, in business it might be, you know, your income or different things. So in education, it could be grades over time. So line graphs are used typically for one variable but expressed over different time units.

A box plot or a box and whisker plot can be very useful. I want to spend a little bit of time here on this graph to explain this.

So you have the middle box, and you have a line through that middle box. The middle line is the median. Okay?

The upper line of the box is the 75th percentile. The lower is the 25th percentile. So basically, what you see in the box are the middle two quartiles. Okay?

And then the whisker represents the, you know, basically your outliers, your minimum and maximum values above and below that.

And then, finally, we have histogram. Histograms are used for continuous variables. You know, this is an example with age. And it's really designed to see whether you have a bell-shaped curve or not.

So with that, I'm going to go in and do just a quick -- before I do that, and I actually put it in the Web Links for you, is the APA guide for tables and figures. So what I'm going to do now, Kim, is I'm going to go to my desktop. Hold on a minute while I get to my -- up here.
Oh, there we go.
Okay.
All right.
Kim, are you able to see my screen now?
>> Kim Palermo-Kielb: Yes.
And also, I guess, if students need to make it full screen, yeah, let them know about that, the arrows on the top, if they need to see it full screen, they can do that.
>> Dr. Patrick Dunn: Yeah.
>> Kim Palermo-Kielb: But yeah, I can see it fine.
>> Dr. Patrick Dunn: And again, I won't get -- okay.
Good.
So what I want to show you here, this is actually from the academic guides in the Writing Center. So if you go to the Walden -- on your MyWalden portal, on the bottom you can click on Writing Center, and one of the tabs going across is the APA style.
And if you click on that, there's a section for tables and figures.
I only want to point this out to you because we do use APA style at Walden.
And especially for figures, I know this can be very confusing.
So this is an example here of a figure.
So a graph would be an example of a figure using APA. So you're going to have the -- you know, you're going to label the figure on the bottom and explain what it is here, so, and it's actually slightly different than how you do a table.
Okay?
So again, I just want to point that out and give you that as a resource.
All right.
So now we're going to go to SPSS.
And again, this may look very tiny.
The purpose of this is not to, you know, explain the actual numbers.
It's really just to help you understand the process of creating a chart using SPSS.
So the way you create a chart is you go to graphs.
And there's really two ways to do it.
I actually prefer to use the legacy dialogues.

But you can use the chart builder.
And then the way this would work is then you basically select, you know, what type of chart do you want.  So if you want a bar graph, and then you just put in the variables.
So I'm putting in here a continuous variable of mean systolic, and I have region of the country, and it's going to give you actually a preview here.
But then you do have options over on the right for different, you know, chart types.
On the bottom, too, again, there's more options here to really get it, you know, looking exactly the way you want it to look.
I tend not to use this because I find this a little bit more complicated than necessary.
So I'm going to cancel out of and show you how I do these.
I typically go to the legacy dialogues, and then I select here.
So if I want to do a bar chart, I'll select bar.
I'm going to show you just a simple here.
Okay?
And then I have just -- you know, I have it preloaded, so I have here region of the country.
This is just a fictitious data set I have here of blood pressures.
So what you do is you put it in the category axis.
You put it in the number of cases here and click okay.
And here's my bar chart.
Now, if you want this chart to look a little bit different, you can double click on it, and now you have a chart builder, and you can start tweaking how some of these things are going to look.
Here's a bunch of things you can add to this.
And basically, the best way to learn this is just simply playing around with your data.
Okay.
But that's a bar chart.
Pretty simple, basic.
I don't have a good data set for a line chart, but a line would be, you know, virtually the same as a bar. The only difference is, instead of the categorical variables, you just have your different points of time.
A pie chart, again, it's used for categorical data. So to make a simple pie chart, you just simply click the define slices by, select your category. With all of these, you can -- you can go in here and you can put in titles, subtitles, footnotes, again, to give more information. And then you click okay, and now we have our pie chart.
And again, you can, if you want to call that out, you know, there's a -- you can add, show data labels. So once you do that, then another dialogue box appears, and again, you can tweak, you can change the colors, change the size, all those good things.
Next one is the box plot.
So we're going to do a simple box. And here I have age as a variable and region of the country.
And so you can see I have a table here, and so, you know, your -- you know, the table, you know, can help you with the data.
We're looking at counts here again. But with the box or the box and whisker, it's also looking at, like I said, the median and the middle two quartiles. And the way you interpret this, basically, is you just visually look across, and, you know, in this case, you know, all of these are pretty -- if you look horizontally going across the chart, you know, there's one right in the middle that's a little bit lower than the others.
But for the most part, they're pretty much superimposed.
If you combine them all into one box, they would look very similar.
If you have a significant difference, you're going to
see, you know, the entire box, you know, above or below the other boxes. So this actually would be a visual way to represent, for example, an analysis of variants looking at, you know, more than two groups. The scatterplot, okay, so there's a couple different ways you can this. I just have -- I have my two blood pressures, baseline and last, and it's going to give you a scatter here. If you have a, you know, a strong correlation, it's going to look more like a line. If the correlation is lower, it's going to look more like a circle. So you can kind of view a regression analysis and a scatterplot in a kind of a similar way. And then finally, last but not least, is the histogram. So again, I have my systolic blood pressure loaded into the variable. I click okay, and here's my histogram. And I can see that this isn't exactly a bell-shaped curve. There's a -- you know, there's a -- it's maybe skewed a little bit to the left. And I can tweak some things in here if I want to show like the distribution curve here to see how it looks. You know, no actual data is going to look exactly like the bell-shaped curves you see in the textbooks, but it's good information to have, especially if you're trying to demonstrate whether you have a normal distribution or not. Okay. So now I'm going to jump to Excel. I have basically the same data set in Excel that I had in SPSS. And there's -- you know, there's a couple of different ways to do graphs. One of the easiest ways, I just have a -- you know, the average here. I have just a small sample, and then you can insert
and go to charts and make that a line, and now I have my bar chart, pretty crude, but what you can do up here then is look at -- you can change the format.

You can change the design.

If you need to, you can change the chart type.

You know, okay, I wanted that to be, you know, a bar or I wanted it to be a different type of chart.

But what you want to do with Excel, one thing that Excel is nice about -- it obviously depends on the version that you have.

But you have these legends up here, so you can add elements, you can do quick layouts. It gives you some nice options.

There's a lot of these that are pre-loaded in.

Again, they will give you a good look without having to do a lot of design or redesign.

You always want to make sure you have the correct data selected.

So you can select -- I always select my data first.

I just find that easier.

Sometimes I get lost.

You can select insert chart and then go to your data, but I always want to make sure I have the right data as well.

Now, to get a little bit more robust on your charts, what I like to do is I like to use -- if I had a data set like this, and this is actually a sample of a larger data set here that I have.

There's about 5,000 records in this data set.

So it would be pretty hard to do this manually.

It would be -- what I like to do is I like to do a pivot chart.

So here I go.

Insert -- you can create a pivot table.

You can also create a pivot chart here, and then what you would do is you would just go over here, and you just manipulate the variables here.

So again, if I want to find that region, and I want to do it by -- and I have here count, if it's a continuous variable, I'm going to go back up here to
my blood pressure readings.
Okay.
So I have a count.
But if I want to change that, click on value settings,
and maybe I want to make that the average.
I still don't have this filtered by -- I need to
filter this by something, so anyway, that's how you do
a pivot chart.
And again, you've got a lot of options here.
You've got your analysis.
You've got your design elements.
And you have your formatting.
So like I say, Excel, again, you just have to kind of
play around with it to get it right.
I'm going to go back to off the screen share.
We'll start looking at the questions.
And we'll go from there.
So --

We do have -- we have a bunch of questions that came
in.

>> Dr. Patrick Dunn: Okay.

>> Kim Palermo-Kielb: So, yeah, take a look.
We have about ten minutes.

>> Dr. Patrick Dunn: Yeah.

>> Kim Palermo-Kielb: And you know what, Pat?
Since there's a lot of questions, I won't do the
tutoring thing, but if you have that one screen with
the ASC tutoring roll account information and the --

>> Dr. Patrick Dunn: Yes.

>> Kim Palermo-Kielb: Stat support account, and I
just want to let students know that if we can't get to
your question, you can feel free to email
Statsupport@waldenu.edu.
It's up there on your screen.
Our statistics tutors monitor that email account.
It's a specialized email account for statistics and
Excel, and they will get back to you typically within
24 hours during the week, 48 hours over the weekend.
And if you have any questions about the webinar or
future webinars or resources that we have, you can

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For additional help, contact the
Academic Skills Center Tutoring Services:

ASCTutoring@Waldenu.edu
To schedule a tutoring session, go to:
https://waldenu.mywconline.com/
email myself at ASCtutoring@waldenu.edu.

And then, Pat, I'll let you take care of the questions.
And then if we have more time, I'll go into the tutoring.

>> Dr. Patrick Dunn: Yeah.
So we're going to start with Lisa.
And, Lisa, you have a series of questions here.
And ultimately, the question comes down to SPSS.
It's -- Kim, correct me if I'm wrong, but SPSS is available to all Walden students.

>> Kim Palermo-Kielb: Yes.

>> Dr. Patrick Dunn: So you don't have to buy it.

>> Kim Palermo-Kielb: Yes, it's true.
And I put that link earlier in the chat when you started the presentation.
I had put the link, and I let students know that they go to the Center for Research Quality website, and if you go to the top and you just search for those SPSS, it will prompt them to a page, and I put the link in there for them just to go directly right to that page, and that's where they can learn to get the license to obtain SPSS.

And also, if you have SPSS in your courses, typically, in the learning resources section in Blackboard the instructor will post the information on how to obtain SPSS.

>> Dr. Patrick Dunn: Yeah.
All right.
I'm going to kind of march through these.
Daniel had a question about the what drives the size of the graph.
Daniel, I would highly recommend you use the indescript -- or summary statistics in your graphs.
So you may have 10,000 data points, but, you know, take a look at your -- you know, you may be looking at counts or averages.
You know, probably the only one is the scatterplot.
You know, you may actually, you know, represent all of your data points.
And again, with 10,000, your scatterplot is going to look very heavy, kind of like mine did. I had probably too many points. It's kind of hard to see. Okay. Okay.
The different -- the difference between a bar graph and a frequency graph, okay, so they're both bar graphs. It really represents the type of variables that you use.

So I can't go back to the screen share. It will be too herky-jerky. But if you recall the bar on the left were summary statistics of mean and blood pressures by region. The graph on the right was a frequency table just looking at the counts of blood pressures. So you can use the bar graph in both ways for that.

Will the slides be available? Yes, the slides will be available after the presentation.

>> Kim Palermo-Kielb: Yes. And I also want to add to that, students, if you look at the Web Links for your pod that's above the chat, you will see where it says Skill-Builders Recording Archive. That is where all our webinars are recorded and placed with the presentations. So if you click on that, you will get to that place. And I'll also put it in the chat as well.

>> Dr. Patrick Dunn: I believe SPSS stands for the Statistical Program for the Social Sciences. So it's a stats package designed for the type of research that most Walden students do. There are other statistics programs like SAS, but that's what it stands for. The box and whisker, again, I can't really go -- it might be easier for me to go back to my slide here on the box and whisker. So again, you have a box in the middle.
The middle line of the box is the median. The box itself is representing the middle two quartiles. And then, of course, if you have multiple boxes, so if you have like four groups, then those boxes are going to be, you know, next to one another, and basically, what you're doing is you're looking to see, you know, how much are those boxes superimposed. Are they -- is one box significantly taller or shorter than the other box.

What about the APA manual. You know, I would suggest all of you, whether you're doctoral or master's, you know, have your APA manual at the ready at all times. Even when you're in a stats course, you should start to learn how to configure these in APA. And Writing Center, as I showed, also has some really good resources.

How do you differentiate a categorical from a continuous variable? Solomon, that's an awesome question.

So continuous variable is a scaled variable. So think about like in my example, blood pressures. So blood pressures ranged, you know, in my data set from maybe -- you know, systolic maybe as low as 80 as high as about 190 and all points in between. So it could be 138; it could be 145, 124. That kind of defines a categorical -- or a continuous variable. Okay?

You know, it's a ratio or an integer. A categorical variable may also be represented by numbers. So don't be tricked because it's, you know, in a number format, then it's truly a continuous variable. But a categorical would be, for example, the region or the ethnicity or the gender. Those may be coded, you know, one for male, two for female. But those don't -- the one and two don't have a value
component to them.
It's just simply a way to differentiate groups.
So the categorical are just group differentiators.
Question about if you have raw data, how do you input.
Yeah, that's a -- we have some resources actually on
our website on entering data.
But basically, SPSS and Excel work very similar.
You can go to the -- in SPSS, you have a variable view
and a data view.
You should define your variable in the variable view.
But if you -- even if you don't, you can go to the
data view and just simply start entering data just
like you would in an Excel data set.

And, you know, Pat, also, I would like to add SPSS has
a really nice tutorial, and it's broken down in, you
know, categories, so if someone wants to get in there
and learn how to enter data, there's a tutorial that
can give you the steps.

>> Dr. Patrick Dunn: Yeah.

>> Kim Palermo-Kielb: And I also believe when you go
into each like cell, there's an area that you can
click on -- there's like a little help area also that
will let them know like this is what you're doing in
this area and how to do it.
So you want to code variables or whatnot, it will kind
of lead you there.
I'm trying to find -- okay.
Okay.
The question about the not seeing the demo, that was
fine.

I took care of that.
She was able to see it.

>> Dr. Patrick Dunn: Okay.

>> Kim Palermo-Kielb: And the question here what
program was Pat working in the demonstration.

>> Dr. Patrick Dunn: So I --

>> Kim Palermo-Kielb: Using SPSS.

>> Dr. Patrick Dunn: I started in SPSS.
I was using version 21.
And then I went to Excel.
And I think I have -- I'm on, what, Office 2013 for that.
So the question, Lisa, about the downloading SPSS, you can download SPSS as a Walden student.
You know, I don't know the relationship your partners have to you.
But, you know, I guess you have to decide that yourself.
But you can certainly download SPSS.
I think I answered all of them on a very high level, so, obviously, if you didn't get the -- you know, the attention to detail on some of these questions, that's where you would either send us an email to the roll account or set up a tutoring session with one of us.

>> Kim Palermo-Kielb: Yeah, we had a few students that wrote in the chat that they haven't heard of SPSS before.
So they must not have gotten into those courses yet that require SPSS.

>> Dr. Patrick Dunn: Right.

>> Kim Palermo-Kielb: So again, once you get into those courses, your instructor will provide you the information in your learning resources about how to obtain it.
But if you want to read up on it and see if you can get it beforehand, if you go to that Center for Research Quality link that I had posted in the chat earlier, that will explain how to -- basically, you have to get a license key through Walden.
Walden partnered with IBM, who is the owner of SPSS, the software system now.
So that's where you would get your license key.
And then there are PDFs and there are video tutorials to walk you through the process of downloading it onto your laptop.
And if you have any questions about SPSS, you can always email our stat tutors.
If it's a technical issue with SPSS and you're having a problem downloading, that would go through
Support, which you would get them through your Walden student portal.
But, you know, we can certainly help with you any quick questions.

>> Dr. Patrick Dunn: All right.
>> Kim Palermo-Kielb: And then, you know, Pat, I'm sorry, one last thing.
I'm going to stick there.
Someone wrote post a link for the SPSS tutor section.
So let me just quick put a link to our tutoring website for students so they can read more about what we do.
And that's to go -- I just put in the chat, so that's where you can learn more about tutoring and you can meet the tutors, you can look at our resources.
We do have a YouTube channel.
You can look at the prior Skill-Builder sessions.
And our next session is, I believe, July 30.
Am I correct?
>> Dr. Patrick Dunn: Uh-huh.
>> Kim Palermo-Kielb: That's correct, right, Pat?
>> Dr. Patrick Dunn: Next Saturday, yeah.
>> Kim Palermo-Kielb: Next Saturday.
And it's a StatsChat Live! to it's an open forum.
It's a little bit different. There's not a presentation per se.
You will have a chance to put in your questions and Pat will discuss statistical data management and Microsoft Excel.
So we hope --
>> Dr. Patrick Dunn: Yeah, it will be a good complement to the stuff we did in Excel today.
Yes.
Absolutely.
Okay.
So somebody just asked, the time -- the thirtieth, oh, boy.
Let me look that up.
Hold on one second. 
That is scheduled for 9:30 -- 9:00 to 9:30 a.m. 
Central Time; 10:00 to 10:30 a.m. Eastern Time. 
If you go to our registration page -- I'm going to stick that link in there. 
You guys can see. 
That's for the registration.

>> Dr. Patrick Dunn: I see a question about NVivo. 
>> Kim Palermo-Kielb: I know. 
I saw that.

We're working on that, yeah.

>> Dr. Patrick Dunn: Yeah, NVivo is a qualitative software program. 
The difference -- the reason we don't do a lot with NVivo is SPSS -- as Kim mentioned, Walden has selected SPSS as our statistics program of choice. And it's in -- and it's available to students. That isn't the case with NVivo. There are other qualitative software programs out there. We tend to -- we in the Academic Skills Center focus on quantitative.

You may want to reach out to the Center for Research Quality to see if they have any resources. And as Kim, you know, implied, we may at some point start doing more with qualitative. But as of this point, we're doing -- we focus on quantitative.

>> Kim Palermo-Kielb: Yeah, but, you know, if you're interested in qualitative, the Center for Research Quality has drop-in sessions--

>> Dr. Patrick Dunn: Yeah.

>> Kim Palermo-Kielb: -- available that they have qualitative -- they have individuals that work there that are skilled in qualitative research, and you can drop in those sessions. If you go to the Center for Research Quality website, you can search for when those are available, and they're wonderful.

>> Dr. Patrick Dunn: And the difference between
qualitative and quantitative -- so SPSS is doing a lot of the heavy lifting.
You have to know how to work with it, but it's doing some incredible mathematics behind the scenes.
In qualitative research, the most important tool is the researcher.
So the actual data set is really more of a content management system than it is an analytic platform.
So that's another thing to keep in mind.
All right.
I think we have done it, Kim.
I'm going to stop the recording.