Skill-Builder Session: T-Tests

July 12, 2016

Walden University

Remote

7:00 p.m. - 7:45 p.m. CST

* * * * *

This text is being provided in a rough-draft format.

Communication Access Realtime Translation (CART) is provided in order to facilitate communication accessibility and may not be a totally verbatim record of the proceedings.
For additional help, contact the Academic Skills Center Tutoring Services:
ASCTutoring@Waldenu.edu
To schedule a tutoring session, go to:
https://waldenu.mywconline.com/

CART Provided by Jayne Carriker, RPR, CCP
Paradigm Reporting & Captioning, Inc.
612.339.0545
caption@paradigmreporting.com
>> Pat: Also go ahead if you have questions on T-Tests the Q and A pod on the lower left right below our pictures feel free to start loading up your questions.

So as you're logged in, I put up a poll to see if anybody has done these skill builders.

The way we do this is we try to leave as much room as possible for Q and A.

So in the Q and A pod right below our pictures you can ask questions.

So go ahead and -- you don't have to wait until the start of the webinar.

You can start loading up your questions.

>> Kim: Yeah, everyone, the Q and A pod, that's for questions regarding the presentation and then chat is just basically a place for you guys to chat to each other.

You can chat to us, ask questions that are outside of the content of the skill-builder webinar.
And then if we have time at the end for Q and A, Pat can answer the questions, which we usually do have some time.

>> Pat: Uh-huh.

I'm going to go to my -- actually I should test it. So I'm going to go to my desktop and actually run -- I'm
going to go to SPSS and to Excel.

But I think when I do, that messes up the area.

I'm going to test it.

>> Kim:   Okay.

You're going to jump out to SPSS?

>> Pat:   Yeah.

Let me know what it does to the -- does that take over

the full screen?

>> Kim:   It's in the whole pod.

So then students could just make it larger.

>> Pat:   Okay.

So they still have access to the -- okay.

>> Kim:   Yeah, are you going to do that, or are you
going to jump out?

>> Pat:   I'm going to jump out.

I'm going to go through a presentation first and then

jump out, and then I'll jump back for the Q and A.

>> Kim:   Okay.

So everyone, when Pat does go out into SPSS, on your
screen above the presentation pod, you'll see four arrows.

You can click on that and that will bring it full screen.

Because I know it looks tiny and then SPSS is going to look tiny because you're going to have all the numbers,
so I just want to let everyone know.

>> Pat: And we do have a question from Mia.

I may wait -- I'll answer it now, but remind me, Kim, to go back and answer this while it's recorded.

It's not a matter of better or worse.

They're used for two different types of tests, and I'll get into that.

But a T-Test is only used to compare two groups, and ANOVA is used in a similar manner but when there's more than two groups.

>> Kim: Right.

ANOVA is a little bit more detailed too and don't you get a T-Test through in ANOVA?

You do.

>> Pat: You get -- there are post hoc tests with the ANOVA, and depending on the type of post hoc, you will -- some of the post hocs actually are T-tests.

Feel free to ask questions about ANOVA, but depending how many questions we get we'll focus on the T-Tests if
you can -- they're very similar.

>> Kim: We can do ANOVA next month maybe

>> Pat: Yeah, we probably will in fact.

>> Kim: You know how ANOVA is built off T-Tests, they're very similar.

That might be a nice scaffold type of thing.
All right.

It looks like we have a good group.

We're going to get started in about a minute.

>> Kim: And don't forget the record, Pat.

>> Pat: Right.

I have to tie a string around my finger to remember.

>> Kim: We have another Brooklynite.

We need Bronx, Staten Island.

Nice.

The beach.

>> Pat: We have two from Dallas

>> Kim: And we have some West Coasters over here

>> Pat: Okay.

It is 7:00.

I think I'll begin.

We've got a lot to cover.
I need to go back to sharing a document.

>> Kim: Yeah, you've got to share your...

>> Pat: Okay.

All right.

I'm going to hit the record.

Okay.
Good evening and welcome to tonight's skill-builder.

Our topic tonight will be on T-tests.

My name is Pat Dunn and I'm joined by Kim Palermo-Kielb.

Welcome, Kim.

>> Kim: Thank you, Pat.

Welcome, everyone.

>> Pat: All right.

We have a lot to cover, and it's really hard to get to all of this information and to get to all of your questions, so without further ado I'm going to kind of jump into it.

But for those of you that haven't attended a skill-builder, this is intended to be very open ended.

Obviously you can't talk, so the only way you can communicate with us is through either the chat area or the Q and A.

We'd really like you to ask your questions in the Q and A pod, and Kim will try to help me stay organized.

That's no small fete sometimes, but she does a great job
So anyway, we'll go ahead and start.

So tonight the agenda is on T-Tests.

What I'm going to try to do is talk a little bit about T-Tests and actually go to both SPSS and to Excel and show you how you can actually run a T-Test in both of
those programs, and then we’ll open up the chat lines for questions.

So I always start out with why is this important.

Well, probably for most of you the most important reason is, number one, T-tests are one of the most common statistical tests used in the literature.

Probably even more germane to most of you, it's covered in any statistics course so to get through stats courses, you're going to have to understand and apply T-Tests, and the good news is you can run T-Tests in either SPSS, Excel and even with standard calculators.

And what do you need to know.

T-Tests are used to compare two groups, and that's a very important distinction.

There are other types of tests.

The next most common test is called ANOVA or analysis of variance.

The T-Test and the ANOVA are almost identical except the ANOVA compares more than two groups so if you're just
comparing two groups so males to females or like true
false or, you know, anything where there's only two
groups to compare, then the T-Test is your bet.
If you have more than two groups, you cannot use a
T-Test because what you're doing is you're increasing
your odds or chances of committing what's called a
type 1 error.

Okay.

So we want to try not to do that if we can.

That's why the ANOVA was invented.

There are three kinds of T-Tests.

That's also an important distinction.

There's a one sample, an independent sample and a paired.

Okay.

And I'll show you examples of how to do all three.

The other thing that is crucially important in a T-Test is that there are some very important assumptions that really must be met for the test to be valid.

The first is called normality.

And the other is that you have equal variance and you'll notice in the T-Test, and this can be a little confusing in the SPSS, it's called an Levine's test and I'll show it to you.

It tests for equality of variance and then it does the
actual T-Test, so that's an important -- so important that it's just always done.

What else do you need to know.

Well, in any type of T-Test you always have a dependent variable and the variable must be continuous.

In other words, it's on a scale and it has numbers and
those numbers have meanings, that they're not just codes for things, so it's typically interval, ratio, scale, whatever you want to call it, but it has to be one of those types of variables.

And in the case of an independent sample T-Test, the independent variable must be categorical so again if you're comparing weight, which is a continuous dependent variable, and you're comparing males and females, that's a categorical with two levels.

That would be an example of a T-Test.

So to understand a T-Test, you need to understand it’s a test for comparing means, but to really understand how a T-Test works, you also need to understand variation, so here’s an example of a bell-shaped curve, and it has the mean in that middle bar and it has the confidence intervals or standard deviations, whichever way you want to apply that, and that's the variation.

As you can see, you can have a distribution with the same mean but a very different variation or very
different distribution, and that can radically or
dramatically change the results that you would get on a
T-Test.

So let's do an easy one.

I've actually used this example in prior webinars, so I
already have my math worked out here, but let's talk
about my commute time.

I actually really have a horrible commute time.

These are actual real numbers.

My average commute time is about 75 minutes, and most of the time it takes between 60 and 90 minutes so that's the variation in my sample of commute times.

So what we're going to do is we can run a T-Test. What we're doing is we're testing for the significance. What is the probability that the variation in my sample can be attributed to chance.

And that's expressed as a P value.

If you're using SPSS, you'll never find the term P value.

It's going to be called the sig, s-i-g, or two tailed but it refers to the P value or probability.

Typically that's set at .05 or less than 5 percent, but it also depends on the type of research that you're doing.

Sometimes it can be a little bit more or a little bit
less, but typically it's .05, and that would be aligned also with a 95 percent confidence interval.

Here again is my example and we're going to calculate the significance.

We're basically going to run a T-Test on my commute times.
Okay.

And we're going to run this as an independent sample T-Test.

Okay.

So we have my normal commute time, okay, and then we have my commute time during rush hour.

So it might -- the mean goes from 75 minutes up to 105 minutes.

And if you look at the confidence intervals, the 90 and the 95 kind of right in the middle there, you'll notice basically the confidence intervals do not overlap, okay, and so that would be an example of a T-Test where you would reject the null hypothesis.

The null hypothesis in this case would be there's no difference in commute times from normal hours to rush hours.

You could actually also run this as a one-sample T-Test.

If you had -- if -- let's say 75 was your known sample and you say, okay, how many times it takes my 105
minutes.

Is that outside of the confidence interval.

So you're basically applying the same concept.

You're going to test for is 105 significantly different than the 75 and again in this case you would find that to be true.
Here's another example, comparing morning to evening commutes.

And you notice that in this case -- so it's a pretty small difference, so we went from 75 to 100, but you notice how these two curves overlap.

In fact the confidence intervals overlap, and what that means is there's actually a section of those -- both of those graphs that are the same.

Okay.

And that means that there is a possibility, a good possibility, in fact, greater than a 5 percent possibility that these -- the difference here is just chance.

It's just the fact that, you know, just, you know, normal variation in my commute times cause this difference to occur.

So that's basically what we're doing with the T-Test.

So let's do it for real.

All right.
So I'm going to share my screen.

And, Kim, you'll have to keep me honest if this doesn't look right on the screen.

Okay.

And I know this can be very tiny.

This can be very tiny.
I'm just going to -- I'm going to talk you through this.

Okay.

And of course we'll have time at the end for questions, and we'll talk at the end also about how you could do, you know, set up tutoring session or use a roll accounts if you need further clarifications.

All right.

What I have here is an SPSS data set of blood pressures, and it's got a few different types, variable types in there.

We've got baseline and follow-up blood pressures.

We have other different types of variables in this data set.

What I'm going to do first is I'm going to run a one-sample T-Test.

So I'm going to go analyze, compare means, that's where you're going to find all of the T-Tests, and I'm going to run a one sample.

And what I'm looking for in the one sample is I'm going
to use the baseline systolic here, and I'm going to say
my blood pressure this morning -- and let's just say
this baseline systolic was kind of a -- you know, a
pretty good sample here, and my test value I'm going to
put in as 140.
Okay.
And what I want to do then is see if my sample is significantly different than 140. That's all I'm doing here. So I have output. I'm sure these tables are way too tiny to see. Not a problem.

What we're looking at here on the top table is your descriptive statistics, so simply the number, the mean, the standard deviation and the standard error. On the bottom what you see, you have a T statistic. That's the statistic that is used to calculate a T-Test. You have the degrees of freedom and the sig two tail, which is the probability or significance level. And if this number is less than .05 and I have triple 0's so it's clearly less than .05 I would reject my null hypothesis. Remember going back to my PowerPoint seeing how whether they overlap or not, the way you interpret a confidence interval of a difference between two values is if 0,
think of 0 as being the ultimate of no change.

If 0 is in the range, then you don't reject the null hypothesis.

The only way 0 can be in the range is if the lower number is a negative number and the upper number is a positive number.
In this case they're both negative, so again I'll reject my null.

I'm going to move on to an independent sample.

Again we're going to go analyze, compare means, independent samples.

And let's use diastolic this time and we're going to compare gender.

We're going to compare males to females.

What you need to know is how they're coded in SPSS so this is the grouping variable and you click on defining groups.

You'll notice in my data set here they're all 1's and 2's and that means -- 1's are coded as males and 2 are coded as females.

To continue click okay and now I have my independent samples T-Test, and the same thing applies.

You have your sig two tailed.

In this case my sig is .951, which means there's virtually no difference between these two groups.
You can look in my descriptives and see that.

In my confidence intervals you have a negative number as a lower and an upper number as a positive.

So 0 is in the range.

Also notice here on the independent sample you have this Levine's test which is measuring the equality of
variance.

It is not the T-Test.

The T-Test is a couple of columns over in the sig two tailed.

Okay.

A lot of people get that confused.

And then finally let's go to the paired.

So we'll go analyze, compare means, and a paired sample T-Test.

So here what we're going to compare is baseline systolic to the last systolic, so variable 1 and variable 2.

And here you get three tables, descriptives, you actually get a correlation coefficient.

And then whoever designed SPSS, I don't know why they did this, but the table has almost the same information.

It's just in a different order in a pair.

So you have the confidence intervals in the middle and the sig two-tailed over to the right.

I don't know why they did that. Love to have a
conversation with someone from SPSS some day, but I doubt that that will happen.

But it's the same thing.

So in my paired sample I have an sig of 000, and I have -- in my confidence intervals I have two positive numbers.
So in this case I am going to reject my null hypothesis that there's no difference.

All right.

That is SPSS in three minutes or less.

Now to be really crazy, let's go to Excel because some of you use SPSS, and I know from tutoring some of you use Excel.

So I want to point out a couple of things in Excel.

You can also run a T-Test.

You don't get quite the same information, but you can run it.

The way I run a T-Test is I go to the data tab, and I click on this data analysis tab.

You may or may not have this.

If you don't have this, I want to show you this.

It's pretty cool.

Click on file.

Go to options.

Click on add-ins.
And you can actually download the analysis tool pack, and that gives you all kinds of really cool stat tests to run.

You click on data analysis, and you can select the test, so you can run, you know, all of these, you know, a paired and several different types of two-sample tests.
Okay.

And the way -- and if you don't have this or you don't have any desire to do this, the other way to do this is go to formulas. You're going to get virtually the same information, not exactly the same information.

Go to the statistical tab here.

You can either go statistics or you can -- whoops -- you can search -- where is my search?

Insert function.

You can just type it in.

So here again we're going to go back to they're just all done in alphabetical order.

So I have these different types of T-Tests that you click on T-Tests, and this works the same way as in the data pack, so if I want to say do baseline as array 1, follow-up as array 2, and then what you do is you say how many tails, one or two, so I'm going to do two tailed and what type of test.

I know this is really tiny, but this will say is this a
paired, a two sample with equal variance.

Remember that or two sample with unequal variance.

We're going to call this -- you run a -- just using this statistics function, you're going to get the P value here.

That's all you're going to get.
All right.

If you run it from the data analysis tab over here, you're going to get a lot of the same types of data that we got in SPSS. So same thing.

We want our range, we go baseline, our second range. Same question.

We have an alpha value here. It's even -- looking for effect size.

Okay. So we can run those data in here. And we can even say where it's going to be published. Okay.

So that's how to run a T-Test in both SPSS and Excel, and I left myself ten minutes for questions. So how did we do?

Kim -- whoops, let me go back and share my document. And I'm ready for some questions.

While those questions are getting loaded up, Kim, maybe
if you could mention a little bit about the tutoring and

the roll accounts.

>> Kim:  Sure, sure.

Okay, yeah, there was a question, and it came into the Q

and A from Jennifer but I told her -- I'm sorry, in chat

so I told her to put it in the Q and A so keep an eye
So yes, I'll try to do it really quickly because I know time is not on our side with these.

So yeah.

So our tutoring services program is a free tutoring service for Walden students.

It allows for one-on-one tutoring with a statistics tutor.

We also have tutors in MS Word and MS PowerPoint, and we basically I think our tutors although they're not statisticians, actually they're graduate assistant students just like everyone here.

They can tutor in the areas of general statistics, biostatistics, dissertation statistics and like I had said already MS Office which includes Excel, and our tutoring center is available to our students via an online platform it's called Wc online.

The tutoring sessions are open Monday through Sunday from 6 a.m. through 11 p.m. and of course that depends
on our availability on the tutors, their schedules, but that is when we have the schedule open for.

Tutoring sessions are made and attended in eastern standard time and they can being booked up to 60 minutes.

I tell students you can just book it for 60 minutes and
you can leave it whenever you want or you can have the full-time.

Students are able to make appointments as early as a few weeks in advance or as late as the same day, and if they're not able to attend, they are able to cancel up to 30 minutes of their appointment time.

So that's one on one is when you need a lot of time.

Wc on line there's an area where you can upload your assignments and we can see what you're working on.

We have these roll accounts. They're specialized e-mail accounts and our graduate assistant tutors monitor these accounts on a regular basis.

We have an account for math help, which is mathsupport@waldenu.edu.

We have an account for statistics.

Which is statsupport@waldenu.edu.

And also for Excel students can e-mail stat support.

Pat, what you just showed your presentation using Excel, that's also part of the statistics area.
We also have Wordsupport@waldenu.edu and that's for MS Word help and also for Microsoft PowerPoint help.

And tutors their response time is -- they really strive to get back to students within 24 hours and 48 hours over the weekend.

Now, to register for tutoring we online I'm going to put
this in our chat there's a link here and students can go in here, wconline.com and they just need to register with a Walden student e-mail address and create a password.

They just have to -- there's a few questions that we need from our end because we capture our data.

We do a data driven program and we like to see how we're helping students and in what area, so we ask you a few questions, and they can go right back in and click on schedules.

There's dissertation, there's non-dissertation, so dissertation would be for students only in dissertation and that's dissertation statistics.

There's non-dissertation for students in stats that are course related and we have the MS Word and PowerPoint schedule.

So students can go in there and see availability. If they have any questions regarding tutoring you can reach me.
I'm the coordinator of instructional support at asctutoring@waldenu.edu.

Pat has it up on the screen.

We are short on tutors because we've had a few graduate but we are getting more.

So if the schedule is booked, please utilize the stat
support e-mail.

They will help you there.

And also in our web links box we have a few things that Pat put up for you.

We have a survey we'd like you to take and we have an archive where you can go to get this webinar and you can get the transcript and the presentation and where to go for our tutoring center to learn about our guidelines.

I did that in five minutes.

>> Pat: That was awesome.

>> Kim: That was a lot of information in five minutes.

I want to give some time for questions.

>> Pat: And if you posted a question, take a look.

I've been answering some of those questions in the Q and A pod itself, but I will try to go back and pick up a couple of common questions.

One of them relates to the confidence intervals.

Okay.
So again you have -- so the alpha, the level of significance, the less than .05 that's also known as the chance of a type 1 error, which is you rejected a null hypothesis that should not have been rejected.

Another way to look at that -- so the reverse of a point 05, which is 5 percent is the 95 percent confidence
interval.

So if you go back to the -- if you go back here actually to these, okay, these curves have confidence intervals, so basic -- if you're looking at two different groups, what you're looking for is is there an overlap.

Now in SPSS what it does with the confidence interval is it doesn't show you the 75 and the 100. What it's looking at is the difference between the two. So the mean difference here is 30. So 105 minus 75.

And what it's doing then is it's taking those confidence intervals and saying, okay, if we repeated this test 100 times, you know, how many times would those -- would they be different or similar, and if they're going to be outside of the difference 95 times out of 100, then you would reject the null hypothesis.

So a related question, again, going back to the 0, think about it now.

If you are comparing the difference between two groups,
the ultimate -- I don't think this is actually a scientific or a statistical term.

It's just a commonsense concept.

The ultimate of no difference is zero.

Think of it that way.

Zero.
So if zero is in the range of possibilities, then it's possible that the difference is zero even if it's never -- you know, if it's not exactly zero.

It means zero is one of the possibilities.

So that's why you're looking for is zero in the range.

And so the only -- so think of a number line.

Okay.

Where you have negative numbers to the left and positive numbers to the right and zero is right in the middle.

So the only way zero can be in the middle of two numbers is if the first number is negative and the second number is positive.

Think of your number line.

If you have two negative numbers or you have two positive numbers, then zero isn't in that range.

Okay.

I need to --

>> Kim: Yeah, there were a few more in there.

>> Pat: So again, the 95 percent confidence interval,
so what it's saying is it has the two numbers.

So look on the -- look -- let me go back to here.

Okay.

Let's pretend these are confidence intervals.

So you have the 75 as the mean and the 60 and the 90 to the left and to the right.
Let's say those are 95 percent confidence intervals.

What it's saying is if I repeated this test 100 times,

95 times out of 100 the mean is going to be between 60 and 90.

It's probably never ever again going to be 75.

It might be 83.5 or 74.4.

But 95 times out of 100, 19 out of 20 times it's going to be in that range.

One in twenty times it's going to be outside of that just due to sampling error.

That's why you have what's called a type 1 error.

Okay.

Question, if you had -- yeah, if you had more than two groups so let's say instead of comparing males and females, you're comparing race, and so you have black, white, Hispanic and Asian.

You can't run a T-Test because that risk of a type 1 error goes up with every group that you add.

That's why the ANOVA is used.
Yes, this recording -- or this webinar is being recorded.

You'll be able to find it in the resources that Kim mentioned.

There's a question about can I use three separate paired T-Tests.
Yeah, when you're doing your dissertation, you're not limited to the number of tests that you can perform. So you can run three separate paired sample T-Tests, but what you can't do is run one paired sample T-Test with three points in time.

If you're -- if you do that, then you would run what's called an ANOVA with repeated measures.

Okay.

So that's the distinction.

You can run as many paired T-Tests as you see fit, but you can't run a T-Test comparing more than two things.

>> Kim: Yeah, the T-Test is for two levels whereas the ANOVA is three or more, is that right?

>> Pat: That's right.

>> Kim: I always think of it as levels as categories I guess.

>> Pat: There's a question about sample size.

That's a whole other conversation but --

>> Kim: Yeah, I was going to bring that up.
In fact, our colleague Dr. Zin Htway has done a really nice series on G power.

G power is a software program you can download that will help you with power and sample size.

The bottom line is there's no upper limit.
There are very large studies that use T-Tests.

On the lower side if you get too small, then you're running the risk of violating this normal distribution thing, you know, maybe you only have five samples.

Then you may have to resort to maybe a non-parametric test.

>> Kim: And there's a question about where to find the G power information.

We have a youtube channel where we have all of Zin's G power. I think, Pat, are they in the stats chat?

>> Pat: Yep.

>> Kim: If you go -- [audio cutting out].

I'll try to put that -- I'll put that on -- [audio cutting out]

>> Pat: And while you're doing that because we're a little -- again let me reiterate a key -- a very important assumption is that the two groups have a normal -- that the two groups have equal variance.

Okay.
It's on this slide here.

And so the -- it's called the Levine's test for equality of variances.

In the ANOVA it's called the homogeneity of variances.

Okay.

>> There was a question in the chat in regard to that.
This would be better off for a tutoring session but

Marcia wrote her dissertation is on ethics.

The one survey if they're at work or if they're at home.

Should this be a paired T-test or independent.

But if she wants to talk about, you know, that she could probably make a tutoring appointment to get more into it because it's also based on I think what you're asking your research question, you know, there's more to it.

>> Pat: Yeah, the other thing is in your data set itself in order to run a paired sample, you have -- the same participants have to have both units, so if you're running like a, you know, stats knowledge at the beginning of the course to the end of the course, so each student, you know, did a little survey and you had data on, you know, time one and time two, then you could run it.

If -- so that would be an example of a paired sample T-Test.

If you were going to compare stats knowledge of males
and females, that would be an independent sample.

You broke it into two different groups.

>> Kim: Right.

If the one survey is at home and one is at work but the same people are taking it -- so if you have one group taking the survey at home and the other group taking it
at work, that would be independent, right.

>> Pat: That's right, yep.

>> Kim: If there was a pretest and a post test situation where you had the same group taking, then that would be the paired sample possibly.

>> Pat: That would be paired, that's right.

And like if you do it every year for three years, there would be an ANOVA with repeated measures.

>> Kim: Oh, yes, that's right.

So over time that makes sense.

>> Pat: Question, and I think we'll make this the last question.

>> Kim: Yeah.

>> Pat: Explain the concept of normality so that's the normal distribution.

It's this thing right here on the screen.

A normal distribution looks like a bell-shaped curve.

Okay. So and your mean is right in the middle.

The median and the mode.
So the most common and the middle value and the average value are all right in the middle and it slopes down equally on both sides.

That's a normal distribution.

Okay.

If it doesn't look like that -- now, no distribution
ever looks exactly like that.

But it should look kind of like that.

If the looks more like a ski slope or if it maybe has two humps in it, that would be called bimodel, then you may have a case where you don't have a normal distribution.

I'll do two quick questions one that has to do with the degrees of freedom which has to be with the sample size and the number of groups.

Okay.

So that's how those are calculated and again the computers will do all of that for you.

Question, what does it mean if the results stand alone. I'm not sure exactly what that means, Kayla. I mean no one result is ever like the definitive result because we're dealing with probability. We're not dealing with certainty.

But it just means -- I think what it means is was it
well done, was it clear, does it point in the direction that, you know, the literature and the conceptual model and all that said it would.

When things become a little messy, then, you know, they’re not quite as standalone-ish, but I think that’s what it means.
Kim: Yeah, I think I’ve heard that.

There was a question about G power.

Susan, I recommend that you e-mail stat support for Dr. Htway. I’m going to put his name here in the chat. He's our G power -- I don't even know what you'd say.

Expert?

Pat: Yes, yes.

So if you e-mail statsupport@waldenu.edu and I'm going put that in there, and you say hello, Dr. Htway, and ask him a G power question, he'll answer you right away.

He's really good at that.

Pat: Yep.

Okay.

I think I'm going to hit the stop record.

Kim: Okay.

Now we have a couple other webinars coming up I wanted to let students know about.

Let me find my calendar.
Let's see.

I believe we have two more coming at the end of the month.

So on the 23rd we have a skill-builder graphs in Excel and SPSS.

So we're going to go over charts and graphs.
That's on Saturday July 23, so students can go to our registration page on our skill-builder website to register for that, and then we have a follow-up on -- this is different -- on the 30th Pat will be talking about data management using Excel, so we're kind of focusing a little bit more on Excel this month than we usually do because we were getting a lot of questions in tutoring about Excel, so I just want to let students know to keep those two dates in mind so the 23rd and the 30th.

So, yeah, it goes very fast.

But a lot of good information.

>> Pat: Yeah.

>> Kim: And I want to thank everybody for attending.

>> Pat: Yep.

[ This text is being provided in a rough-draft format.

Communication Access Realtime Translation (CART) is provided in order to facilitate communication]
accessibility and may not be a totally verbatim record of the proceedings.