**Transcript: Conducting One-Sample *t* Tests in R Commander**

Today we are going to be going over how to conduct a one-sample *t* test in R Commander. The first thing we need to do is to import our data set. To do that, we're going to go to “Data”, “Data in packages”, and “Read data set from an attached package...”. The data set we will be using today comes from the carData package. So we can double click on that to see all of the available datasets, and then we'll Scroll down to the data set called “Wong”, which is what we're using today. Once we click “OK”, we've imported our data.

You can find the documentation for this data set with the lab materials, but we can also take a quick look by clicking on “View data set” and we'll see the variables in the first few cases for each of them. So, this data set comes from a group of people who have sustained traumatic brain injuries and who were in a coma following their injury. We can see here some details about the participants and about their coma experiences. We've got a research ID. This “days” variable is the days since they came out of the coma. “Duration” is the length of their coma in days. As well as their sex and age. The variables that we're going to be looking at for this analysis are these last two, “piq” and “viq”, which stand for performance and verbal IQ. Performance IQ is the more non-verbal or mathematical side of IQ.

Now, if you remember from your intro psych class, IQ or intelligence quotients have a mean of 100 and a standard deviation of 15 within the general population. So one question that we might ask since we have this data set, is do people who have been in comas have IQ's that are significantly different from 100 (which again is the population mean)? And given the context of traumatic brain injury and coma, we might hypothesise that people who have been in a coma have IQ scores that are lower than 100.

To test this hypothesis, we can conduct one-sample *t* tests. So we can close out our data set here and proceed with our analysis. To conduct a one-sample *t* test, you're going to navigate to “Statistics”, “Means”, and then “Single-sample t test”, which is another term for a one-sample *t* test. The first thing we need to do is to specify which variable we are conducting our analysis on. For this first analysis, we're going to use “piq” or performance IQ. So we just have to click that until it's highlighted and that selects that variable.

The next thing we need to do is take a look at these settings on the bottom to see whether they fit with our specific hypothesis and context. The first thing we're going to look at is this “Null hypothesis mu=”, which refers to the population mean or the value that we want to compare our data to. The default is to compare it to zero, which would be testing whether the performance IQ scores of participants in this sample are significantly different from zero. But if you think back to our research question about IQ, what we actually want to compare to is the population mean of 100. So we can select this and change it to 100. That means that we're going to test whether performance IQ values are significantly different from 100.

The next thing we're going to look at here is this “Alternative Hypothesis”. So if you'll notice the default or the first one that's selected indicates a nondirectional or two-sided test. What this means is that this sort of test tests whether performance IQ is significantly different from 100 in either direction. So either significantly greater than 100 or significantly lower. But if you remember from previously, our hypothesis in this context is specifically that the mean is going to be less than the mu zero value of 100. So we can select that directional test. If we wanted to, we could also change this “Confidence Level”. However, we're going to leave it at the default of .95.

So now that we've selected our variable, our population mu, the direction of our test, and our confidence level, we can click this “OK” button and it will run the analysis. So as you can see here, we have the output from our analysis. We're going to go over in one of the next videos how to actually interpret these values, but before we get there, let's go ahead and conduct another one-sample *t* test on our verbal IQ variable. We're going to do the same thing where we go to “Statistics”, “Means”, and “Single-sample t test”. Instead of “piq”, we're going to select “viq” for verbal IQ. And as you can see all of our previous settings for the population mean and for the direction of our tests are still there so we don't need to change any of that this time. Again, we'll click “OK” to run our test, and again, we will see this output that we will be going over in a subsequent video. So that is how you conduct a one-sample *t* test in R Commander.