**Transcript: Conducting Paired Samples *t* Tests in R Commander**

In video, we're going to go over how to conduct a paired samples *t* test in R Commander. I've already loaded in the data set we'll be using, which is called “Davis” and which we've used in a previous lab. As a reminder, this data set contains information on 200 individuals and their weight and height. The variables we're going to be looking at for our first analysis are height and self-reported height. “Height” is the actual participant’s height measured in centimeters, and this was measured by the researcher; “rptheight” is the participant’s self-reported height. You can see that participant 1 self-reported their height as 180 centimeters, but their actual height was 182.

We might wonder whether people are consistently reporting their height as significantly different from their real height. If we wanted to address this research question, an appropriate analysis to use would be a paired samples *t* test. The reason for this is that we have two observations from every individual: their actual height and their self-reported height. So, we wouldn't want to do an independent samples *t* test where we just compare all the measured heights to all of those self-reported heights. Number one, because our data violates the assumption of independence since we have multiple measurements from each individual, and number two, because we lose this information that these two values are paired. It's really important when we do our analysis that we take into account that the actual height of 182 and the reported height of 180 go together instead of just being these two big groups.

Before we dive into our independent samples *t* test, let's look at some descriptive statistics for the discrepancy between self-reported and actual height. To do this, we will create a new variable that represents the difference between self-reported height and actual height. We will navigate to “Data”, “Manage variables in active data set”, and “Compute new variable”. This is the same window that we saw in Lab 5 when we looked at variable transformations. I'm going to name our new variable “height\_dif” for difference. The way that we will compute this is by taking self-reported height and subtracting measured height. This means that if the participant overestimated their height, we will give get a positive value, and if they underestimated their height we will get a negative value. Once we click “OK”, we've added our new variable to our data set.

Let's go ahead and look at some descriptive statistics for this new variable of height difference. We will navigate to “Statistics / Summaries” and “Numerical summaries”. We can select our “height\_dif” variable and click “OK”, and we will see here our descriptive statistics for the discrepancy between self-reported and measured height. Our mean is -1.48, meaning that on average participants under-estimated their height by 1.48 cm and the standard deviation is 8.25 cm.

Next, let's conduct our paired samples *t* tests. To do this, we will go to “Statistics / Means” and “Paired t-test”. Next, we need to select our two variables that we will be using in our paired *t* test. The first one is self-reported height [i.e., “repht”] and the second one is “height” or measured height. If we go into “Options”, we can select our alternative hypothesis. In this case, we don't have a directional hypothesis. We're simply testing the alternative hypothesis that self-reported height is different from measured height. However, if we had a directional hypothesis, we could select one of these two alternatives.

Once we click OK, R Commander will run our paired *t* test and we will be able to see the output here. In a later video we will go over how to interpret this output for this paired *t* test.