**EPSY 5261 Discussion Assignment #5: Hypothesis Tests**

Carefully watch the Week 7 Lectures and Media before you begin this assignment. We will revisit the body temperatures of students at the U (from Discussion Assignments #3 and #4). This time, we’ll use StatKey to evaluate specific hypotheses about each context.

**Body Temperature**

**Background**: In Discussion Assignment #4, we examined data representing the body temperature of ten undergraduate students randomly sampled from the University of Minnesota. We calculated a 95% Confidence Interval for the mean body temperature for all students at the U of 97.7ºF to 98.9ºF. The sample mean was 98.3ºF, and the sample standard deviation was 0.844ºF.

**Assignment**: Professor Jones suggests that your analysis from Discussion #4 confirms that the mean body temperature for students at the U is 98.6º F. [Professor Cox](https://www.lib.ncsu.edu/archivedexhibits/cox/career.html) suggests that with only 10 students in the sample, it’s nearly impossible to *conclude* anything with confidence. However, because the sample mean was 98.3ºF, it is worth conducting another study, this time with a larger sample so that there is a smaller standard error. In order to evaluate Professor Jones’s claim (the mean body temperature is 98.6º F), Professor Cox selects a sample of 100 students from the U, via random sampling, and measures their body temperature.

The data is recorded in the **BodyTemp100.csv** file. There are 2 variables in the dataset:

* **Participant:** De-identified participant ID
* **Temp:** Body Temperature (in degrees Fahrenheit)

**Group Discussion Questions**

1. Describe the distribution of body temperature in Professor Cox’s Sample. Include a dot plot, a boxplot, and a summary table.
2. Describe Professor Jones’s null hypothesis.
   1. What does Professor Jones believe the population mean is equal to?
   2. What is the population standard deviation that we use to fill out Professor Jones’s claim in order to make it fully specify a hypothetical population?
   3. Draw a hypothetical dotplot describing Professor Jones’s claims about the population. Label the claimed population mean and the claimed range of typical body temperatures for an individual student (i.e., the middle 95%).
3. Use StatKey to evaluate Professor Jones’s null hypothesis.
   1. Describe what each dot in the randomization dotplot represents.
   2. Verify that the center of the randomization dotplot is equal to Professor Jones’s claim. Highlight this point on the randomization dotplot. Also highlight the sample mean observed in Professor Cox’s sample. Highlight this point on the randomization dotplot too.
4. Interpret your results from StatKey
   1. If Professor Jones’s hypothesis is true, is it *possible* to see a sample mean like the one we observed in real life from Professor Cox’s sample of 100 students?
   2. Obtain a *p*-value. Use it to evaluate Professor Jones’s claim. Is there statistical evidence that suggests Professor Jones’s null hypothesis may be incorrect? How strong is the evidence?