Exam 1 Review
(100 points total)

Exam 1: Tue 11/12/24 10:00 AM - Noon
You will have 2 hours to complete the test (please return by 12:00 PM via email), but the exam is designed to be approximately one hour in length. There are no restrictions on use of notes or books or other sources, but you will not likely have enough time to look up all of the answers. You must complete this exam on your own.

Short Essay (40 points)
There will be 2 short "essay" questions, 20 points each. These are open-ended questions on definitions and concepts learned from the readings and lectures. Answers should be about 1 paragraph. I will pick 2 questions from the following set:

1) Describe variance conceptually. How and why does the computation for the sample variance differ from the computation of the population variance? What is the standard deviation and why might it be preferred by researchers over the variance? What are two factors that might impact the size of the variance (and standard deviation) of a variable when conducting a study?

2) What is a *sampling distribution* and how is it used in *inferential statistics*? Be sure to define both terms and any related terms used in your answer.

3) Describe the t-test assumption concerning equal variances. When is violation of the assumption most likely to be problematic? Is there a good way to detect when this assumption is violated? Are there any remedies for addressing the problem when it occurs?

4) Define inferential statistics and contrast inferential statistics with descriptive statistics. Describe the two types of errors that can occur with inferential statistical tests. Define statistical power and three factors that can improve statistical power.

Multiple Choice (30 points)
There will be 15 multiple choice questions worth 2 points each. These may be on *any of the assigned reading* or *the lecture material (including handouts)*, up to and including Nov 7. The purpose of these questions is to make sure you have read the material and have learned the concepts from the text and class lecture.

Computations and Printout Interpretation (30 points)
There will be two short computational or printout interpretation problems (15 pts each). Please have a calculator handy and have ready access to any statistical tables you might need. You may want to consider organizing potentially needed formulas beforehand.

Computations may include following:
- Standard deviation, variance, and mean
- Independent samples t test

Be able to interpret (write-up) printouts for:
- Descriptive statistics (mean, median, standard deviation, variance, skew, kurtosis)
- Graphs (box plot, frequency histogram)
- Independent-samples t test