Exam 1 Review
(100 points total)

Midterm Exam: 2/13/25 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 worth 20 points each. These are open-ended questions on definitions and <u>concepts</u>. Answers should be about 1 paragraph and ***in your own words***. I will pick 2 of the following questions:

- In general, how do simple and multiple regression differ? What are two primary advantages of using multiple regression over simple regression? How does the interpretation of the regression coefficient in multiple regression differ from the interpretation of the regression coefficient in simple regression. In words, how does the computation of the multiple regression slope differ from the computation of the simple regression slope to provide this interpretation?

- Describe the relationship between a t-test, correlation, regression, and ANOVA when there is a single independent variable with two values (i.e., two groups). Assuming a multiple category independent variable is dummy coded, what special interpretations do the slopes, the intercept, and the test of R-squared have? How is ANCOVA related to regression?

- What is a residual? Describe the importance of residuals for providing information about the overall model fit, significance testing, choosing the line of best fit, outliers, and model assumptions.

- Name and describe three of the assumptions of regression analysis. How are these assumption violations detected and how can they be addressed?

Multiple Choice (30 points)
There will be 15 multiple choice questions worth 2 points each. These may be on <u>*any of the assigned reading*</u> or <u>*the lecture material*</u> up to and including **2/11/25**. The purpose of these questions is to make sure you have read the material and learned the concepts from the text and class lecture.

Interpretation of Results (30 points)
There will be two printout interpretation questions (15 pts each) that involve a write-up similar to those in the homework. These questions may include one or more of the following:

> **Computations**: none
>
> **Interpretation**: SPSS and R correlation, simple regression, and simultaneous multiple regression output; SPSS hierarchical regression output; intercept, standard error, R^2; B; β; t-test; F-test; R^2-change; F-change; drawing and labeling a Venn diagram based on regression output.