MATH 2310
Confidence Intervals

In this lab, you will use software to calculate summary statistics for data, and then use those summary statistics to calculate confidence intervals by hand.

For this lab, we will be working with the same snow geese data that we used in our first lab assignment. The columns are not labeled in this data set. The first variable is just an index of the trial number. The second variable is a description of the type of diet fed to the goose. The third variable is their percent weight change after being allowed to feed for 2.5 hours. The fourth variable is their digestion efficiency. The fifth variable is the amount of acid-detergent fiber in their digestive tract.

Goals for this assignment:
- Refresh how to calculate summary statistics in R
- Practice calculating confidence intervals
- Interpret results of confidence intervals

Grading: there are two possible points for each skill objective and analysis objective.

Activity 1
We will first analyze the weight change for the snow geese.

Skill Objective: Use R to calculate the means and standard deviations for weight change for geese fed a plant diet, and for geese fed a chow diet. Then, using these results, calculate a 99% confidence interval for the mean weight change for geese fed a plant diet, and a 99% confidence interval for the mean weight change for geese fed a chow diet.

Analysis Objective: Is there evidence that geese fed a plant diet will, on average, either gain or lose weight? What about for geese fed a chow diet?

Activity 2
Now we will examine digestion efficiency.

Skill Objective: Use R to calculate the means and standard deviations for digestion efficiency for geese fed a plant diet, and for geese fed a chow diet. Then, using these results, calculate a single 99% confidence interval for the difference in mean digestion efficiencies between these two groups.

Analysis Objective: Based on your confidence interval, what can you say about how the average digestion efficiency compares between the two diets?