STATISTICAL TECHNIQUES FOR THE BIOMEDICAL SCIENCES
BMR 617
SPRING 2023

Assignment 5. Bar graphs with error bars

In this assignment, you'll practice creating bar charts in R and adding error bars to them. You'll create bar charts with error bars representing the standard deviation, the standard error of the mean, and 95% confidence intervals.

Since this is more just practice with R, there is no need to export the results to a Word file. Just turn in the R script file that generates the graphs described.

This assignment is due Thursday February 16th.

Assignment:

Retrieve the kidney tumor and normal protein expression data from
https://denvirlab.marshall.edu/BMR617-2023/data/RenalProteinExpression.csv

1. Create a single bar graph showing the expression of each protein in each tissue type. The graph should be arranged so that the expression in the normal tissue is next to the expression in the tumor tissue for each protein. Make the colors of the bars represent the tissue type. Show error bars representing the standard deviation.
2. Repeat question 1, but have the error bars represent the standard error of the mean.
3. Repeat question 1, but have the error bars represent the 95% confidence interval.
4. Think about which of the three bar graphs would be most appropriate for presentation in the results section of a manuscript. Be prepared to discuss this in class on 2/17.