Group K: Project Proposal
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Group Members: Lauren Forando, Elle Jo Whalen, Jemimah Charles

Title: "Male Neck Circumference Estimated by Age, Weight, Wrist Circumference, Bicep Circumference, and Height"

Purpose: The purpose of our project is to estimate a male individual's neck circumference based on their age, weight, wrist circumference, bicep circumference and height. Knowing your neck circumference is a common measurement that men often need to know to buy clothing such as a button down shirt or even ties that go around their neck. This is also important for the clothing industry since men often need to know what their specific neck size is when shopping for business attire. This would allow the clothing industry to produce the correct amount of items for each size by allowing them to see the range and median of sizes.

Data: "bodyfat"
The dataset "bodyfat" was found on the StatLib website. The dataset lists estimates of the percentage of body fat determined by underwater weighing and various body circumference measurements for 252 men. The original dataset includes estimates of the percentage of body fat determined by underwater weighing and various body circumference measurements for 252 men between the ages of 22 and 81. While the initial purpose of the data set was to determine body fat percentage of men based on a multitude of predictor variables, in our case we are interested in exploring whether or not there is a linear relationship between an individuals' neck circumference and age, weight, wrist circumference, bicep circumference and height; and if we can appropriately estimate an individuals' neck circumference knowing their age, weight, wrist circumference, bicep circumference and height. We felt it was important to include both wrist circumference and bicep circumference, because these are also factors when buying clothing.

Additionally, the dataset was submitted by Roger Johnson (rwjohnso@silver.sdsmt.edu) and can be found using the link (http://lib.stat.cmu.edu/datasets/).

Population: Our population is 252 men between the ages of 22 and 81. The following variables were collected for each of the men: Density determined from underwater weighing, Percent body fat from Siri's (1956) equation, Age (years), Weight (lbs), Height (inches), Neck circumference (cm), Chest circumference (cm), Abdomen 2

circumference (cm), Hip circumference (cm), Thigh circumference (cm), Knee circumference (cm), Ankle circumference (cm), Biceps (extended) circumference (cm), Forearm circumference (cm), Wrist circumference (cm). Each column of the data set (from left to right) corresponds to each variable (first to last). With this data we will find the estimate of a male individual's neck circumference based on their age, weight, wrist circumference, bicep circumference and height.

Response Variable: In our project, we are trying to uncover the Neck Circumference of men in centimeters. This variable will approximately range from as small as 30 cms all the way up to 44 cms.

Explanatory Variables:

- Age (years) - The "Age" variable is how old the male subjects were at the time of the study, measured in years. This ranges between 22 and 81.
- Weight (lbs) - The "Weight" variable is how much each male subject weighed at the time of the study, measured in pounds (lbs).
- Height (inches) - The "Height" variable is how tall each male subject was at the time of the study, measured in inches.
- Wrist circumference (cm) - The "Wrist circumference" variable is the measurement of the circumference of each male subject's measured at the time of the study, measured in centimeters.
- Biceps (extended) circumference (cm) - The "Biceps(extended)" variable is the measurement of the circumference of the male subject's bicep at the time of the study, measured in centimeters.