Statistics Homework 4

Mr. Grant

July 31, 2017

Due Date: Tuesday, July 18th

This homework can be done either by hand or on the computer. It will be **much** faster if you do it on the computer–trust me. If you do it on the computer, turn in a word document with the graphs pasted into it. If you do it by hand, you will have to draw the graphs neatly by hand. In either case,

- Be neat

- Put your name, the date, and the name of this class on your homework

- Number each problem clearly

- Show your work

These questions all use the data from *class_data_complete.csv*.

1. Make boxplots of the heights of the girls and the boys in the class (use the Shoe Gender variable to determine gender). Put the boxplots on the same graph, so that you can compare the boys to the girls easily. We will learn how to do this in R on Wednesday (or you can Google it!).

2. What do the boxplots tell you about the height of the average woman in the class versus the height of the average man? Why? Which gender has more variability in height, and how can you tell from the boxplot? We already know the answers to these questions from class, so your explanation of how you can tell from the boxplot is what matters.

3. Suppose Booker randomly picks a girl in the class to go on a date with. What is the probability that she is 5'4" or shorter? What is the probability that she is taller than 5'8"? **Given that he has picked a girl who is 5'5" or taller**, what is the probability that Booker chose Idara? What is the probability that Booker goes on a date with a Hawaiian who is exactly five feet tall?

4. Consider the boxplot you made in question 1 and answer the following true/false questions. With each question, give a 1-sentence explanation of why you know your answer is correct.

- The tallest $\frac{3}{4}$ of the boys in the class are taller than the shortest $\frac{3}{4}$ of the girls.
- If Idara were a boy, she would be shorter than Q3.
- If Pearson were a girl, he would be an outlier.

5. Read this article and answer the following questions:

   - Which is more likely–a white student getting a degree from the college they started at in 6 years, or a black student getting a degree from any university in 6 years?
   - Approximately how many–not what percent, but how many–eligible Asian students did not enroll in college in 2010 (the number of students of each race is shown at the bottom of the graph; for example, there were 322,205 Hispanic students in this study)?
   - Do you think the percentages in this study are likely to apply to STEMPrep students? Why or why not?