Project homework: Commute alternatives mathematics and analysis

*Here are some materials to help you progress on your Commuter paper. Read textbook pages 556-563 for the grading rubric and checklist. You should interweave calculations, graphics, and interpretations (Criteria A, B & E): explain a calculation then discuss what it means.*

**Instructions**

1. You may copy and paste this material into your paper and edit it if you desire.
2. Fill in the gaps and rephrase to make it your own.

As was mentioned in the introduction, unusual data points require special consideration. For example, an extremely long delay caused by train mechanical problems might deceptively affect the mean calculation. Our textbook defines an outlier as data values +/- 1.5 times the IQR beyond the lower/upper quartile (Blythe 67). As is shown in Table 1 and the calculations below, one trip qualifies as an outlier, and another comes close. Both were slow trips on the 4 train. [show calculations using your own values]

….

The mean of the travel times represents one criterion to judge the two commute alternatives. A lower time in seconds means a faster commute, which is good. Taking the 4 train had a mean time of [insert value] seconds while the 5 train alternative had a mean time three minutes faster of [insert value] seconds. Similarly, the median times for the 4 train and 5 train were [insert medians] respectively, again favoring the 5 train by roughly [write out number] minutes. Clearly, in terms of central tendency—by either measure—the 5 train is better.

  
The box and whisker plots were created using the Geogebra mathematics software package

The dispersion of times tells a different story, with the 4 train being much more reliable. The calculations and results are discussed below.

The formulas for two measures of dispersion, range and inter-quartile range (“IQR”), are

where *x* are the travel times in seconds and *Q1* and *Q3* are the first and third quartile values, respectively. The calculation for standard deviation is

[state what the values for range, inter-quartile range, and standard deviation were. Explain why that is better for the 4 train, and to what degree.]

The formula to calculate the mean travel time, or average, is

where *x* represents the travel times in seconds and *n* is the number of data.

[start the references on its own page. (INSERT->PAGE BREAK)]

Works Cited

International Geogebra Institute. *Geogebra*. Version 5. www.geogebra.org. Accessed 20 April 2018.