Statistics Lab on Fun with Phones

Math 1600, Fall 2016

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Fun with Phones (Based on a lab by John M. Cimbala at Penn State)

In this lab we will sample the time it takes for a cell phone call to go through. You will need two cell phones and a time (probably a stopwatch on your phone). You will also need to open an Excel spreadsheet to record your data.

Before you start the experiment, estimate time for a cell phone call to go through.

Record your estimate of the **mean** time in seconds here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Record your estimate of the **standard deviation** here: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Experiment**

1. Now, we will take several measurements of how long it takes for a cell phone call to go through. Get two cell phones – one will be the caller and one will be the receiver.
2. Call the receiver phone from the caller phone. With a stopwatch, time how long it takes from the time you hit the SEND button until the first ring on the receiver phone. Record the time (seconds) as precisely as possible (typically to 1/100 of a second) in an Excel spreadsheet.
3. Repeat as many times as you want – no fewer than 20. Again, the more data you take the better should be your statistics.
4. Calculate the ***sample mean***, ***sample median***, and ***sample standard deviation***.

Sample mean = \_\_\_\_\_\_\_\_\_\_\_ s

Sample median = \_\_\_\_\_\_\_\_\_\_\_ s

Sample standard deviation = \_\_\_\_\_\_\_\_\_\_\_ s

1. Draw a nice-looking histogram of the data.

Give a brief summary of the experiment and what you observed.

(Consider the relationships between the statistics you computed.)

Now compare the statistics you computed from the data with your estimates.

(Explain the similarity or discrepancies.)