

Research Methods

Descriptive Statistics Assignment (30 points)

The file *Beatles.csv* presents information on the 12 studio albums by The Beatles. Specifically, it gives the lengths, in seconds, of the songs, by album: Please Please Me (PPM), With The Beatles (WTB), A Hard Day's Night (HDN), Beatles for Sale (BFS), Help! (HLP), Rubber Soul (RBS), Revolver (RVR), Sgt. Pepper's Lonely Hearts Club Band (SPL), The Beatles (TBS), Yellow Submarine (YSB), Abbey Road (ABR), and Let It Be (LIB). The albums are ordered by release date (i.e. PPM was the first album released, WTB was the second album released, etc.). The song-lengths are arranged for each album in increasing order.

- a. Determine the median song length of each album. Construct a bar graph with album name on the horizontal axis and median song length on the vertical axis. Interpret your graph, keeping in mind that the albums are ordered by release date.
- b. Determine the range of song lengths for each album. Construct a bar graph with album name on the horizontal axis and range of song lengths on the vertical axis. Interpret your graph.
- c. Find the quartiles of song length for each album.
- d. Determine the IQR of song lengths for each album. Construct a bar graph with album name on the horizontal axis and IQR of song lengths on the vertical axis. Interpret your graph.
- e. Find the lower and upper limits of song length for each album. Identify which albums have potential outliers.
- f. For each album, construct a boxplot of the song lengths, and interpret your results in terms of the variation of the song lengths. Are the outliers the same as what you determined in part e?

Note: You may find some of the following commands in R helpful in doing this assignment: *median*, *quantile*, *IQR*, *barplot*, *boxplot*.