Week 4 – Battery Data Confidence Interval Exercise

Instructions: This exercise provides an opportunity to work with real data and develop a confidence interval. The data set represents battery life in mobile phones for two different types of batteries: NiCad and Li-Ion. The research question is whether the Li-Ion batteries (labelled as type 2 in the data set) offer a better battery life than the NiCads.

1. Download the provided CSV file and read in the data using the Import Data dialog in R-Studio. Once imported, the data should show in a View() window in the upper left pane of R-studio. Scroll through the data and name the variables here:
2. Subset the data in order to place the NiCad observations in one vector and the Li-Ion observations in the other. Here are two lines of code that will do the job:  
     
   nicad <- Batterydata\_R$Time[Batterydata\_R$Battery==1]  
   liion <- Batterydata\_R$Time[Batterydata\_R$Battery==2]  
     
   Explain briefly how the subsetting works in these two lines of code:  
   This is creating separate variable for time where batter =1 and battery =2
3. Calculate the mean and standard deviation of both nicad and lion. Which mean is higher?

Mean(nicad) = 1323.64

Sd(nicad) = 58.355

Mean(liion) = 1394.59

Sd(liion) = 3.8

1. Use the t.test() command to create a confidence interval for the mean difference between these two vectors of data. Report the numeric values of the upper and lower bounds of the confidence interval.

1323.64 1394.59

1. In a brief sentence or two, interpret the confidence interval. Make sure to explain what a confidence interval and what, if anything, you know about the population mean difference between the two types of battery.

The population mean will fall between -83 and -58 percent of the time.