MATH 4753   Assignment 4: QUESTIONS Due: 1.00pm WED. June 8, 2016

Please answer all questions. Remember this assignment is worth 5% and is your fourth assignment for the course. Make sure that you place all answers and output into a word document and store in a safe area till finished, all working must be shown in the assignment answers. Keep a file (from Tinn-R or RStudio) with all your **R** code in – use `#Q1` etc to divide off questions. All statistical computing is to be done in **R** , please note that **MS**=Mendenhall and Sincich, *STATISTICS for science and engineering* 6th edition. You will need to convert the `.xls` files into comma delimited files `.csv` in excel and use `read.table( ..., header=TRUE,sep=",")` to read them into **R** . **PLEASE NOTE: IF THERE IS NO REQUIREMENT TO USE R THEN DON'T USE IT. THE ANSWERS SHOULD CONTAIN NO R CODE!**

Place the following files in the dropbox before 1.00pm Wed June 8.

1. Text file containing all the R commands used to generate answers, FILE SHOULD HAVE EXTENSION ".txt".

2. pdf file of the answers. (**NO ZIPPED FILES**)

I do not want a massive file for this assignment (make it less than 6 MB) – **the answers only in the pdf and the code that produced them in a different file.**

Show all working – No working No marks!

1. **MS 7.118 - pg 364**

2. **MS 7.120 - pg 365**

3. **MS 7.128 - pg 367**

4. **MS 8.24 - pg 390**

5. **MS 8.28 - pg 392**

6. **MS 8.44 - pg 401**

7. **MS 8.84 - pg 425**

8. **MS 8.99 - pg 438**

9. **MS 8.104 - pg 439**

10. Please be careful to complete all the parts of this problem. The question is not simply about reproducing my graph but to adjust the code so that when any sample is placed into the function it will create a correct plot with ci's automatically made.

    - `set.seed(35); sam<-round(rnorm(30,mean=20,sd=3),3)`. Copy the data to your answers.
    - **Adjust** the code I have placed on **D2L** `myboot()` to output the following on **ONE graphical device!** – remember you will be using a resampling method, the above vector `sam` will be resampled (it does not change). Since the seed has been set all in the class will have exactly the same data. Recreate the plot shown in figure 1 (All ci's are to be MADE in the function so that this function will work for any sample). The blue interval is a theoretical interval using only the sample information. The red interval is the bootstrap interval and the black number is the sample point estimate.

    It must also return the following

    ```
    $fun
    [1] "mean"

    $x
     [1] 23.195 20.399 19.898 19.865 30.014 18.821 21.232 18.313
    23.574 21.047 21.535 21.336 17.695 18.497 14.274 14.664 22.593
     18.963 25.515 25.019 22.053 22.871 23.006
    [24] 23.829 19.038 21.735 21.461 21.659 21.703 21.049

    $t
    [1] 2.04523

    $ci
        2.5%     97.5%
    20.06700 22.26845

    $cit
    [1] 20.04155 22.28199
    ```
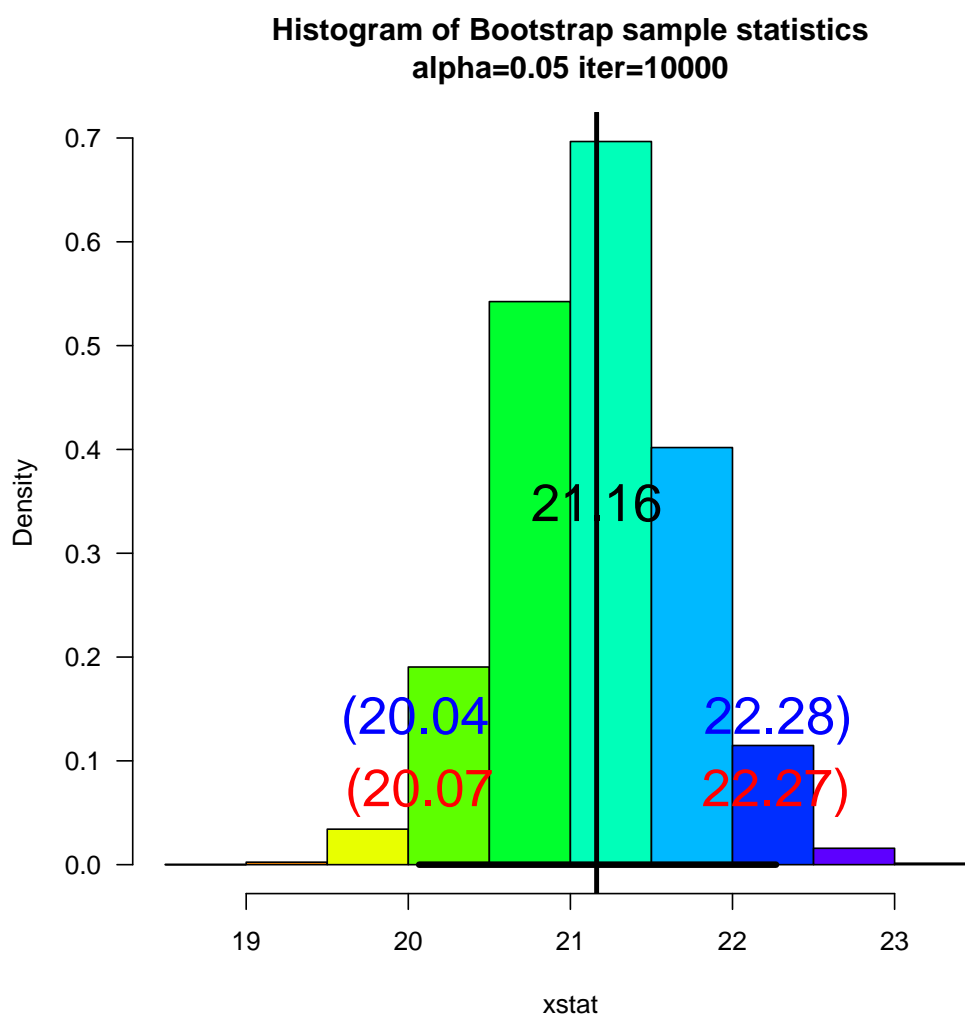
Figure 1: Bootstrapping the sample