DUE: January 18th, 2019 at 11:59 PM

QMM 1002 Module 1 Assignment /30

Create and submit an R script which, when run, will print the answers to the following questions. Your R script must include a title with your name and student number and comments for each question number.

1. **(7 marks)** Twenty-five individuals were randomly selected from a population of 1000 and asked approximately how many hours of TV they watched per week. The results are shown in the array below.

23	22	25	14	15
23	1	21	12	14
12	9	10	23	20
20	2	29	24	22
6	3	2	6	23

   a) Determine the mean and standard deviation of the number of hours of television watched per week.
   b) Calculate the standard error of the mean.
   c) How many degrees of freedom does the t-statistic have?
   d) Construct a 98% confidence interval for the mean number of TV hours watched per week.
   e) State your final interval and interpret it in the context of the problem.

2. **(4 marks)** For the hours of TV watched data given in Question 1. Determine if each of the following conditions are met and explain your reasoning in EACH case.
   a) Is the independence assumption satisfied?
   b) Is the randomization condition satisfied?
   c) Is the 10% condition satisfied?
   d) Is the nearly normal condition satisfied? Show your histogram.

3. **(5 marks)** Determine the following:
   a) Find the critical t-value for a 95% confidence interval, use the last 2 digits of your student number as the sample size.
   b) Find the sample size given that the critical t-value is 2.5 for a 98% confidence interval.

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4. **(14 marks)** Determine the following: Read in the "Health" dataset into R. This dataset gives a sample from 129 individuals of body temperature (in degrees Fahrenheit) and heart rate in beats per minute. Note that 1=male and 2=female.
   a) Use a histogram to check the nearly normal condition for body temperature and heart rate. In each case, is the condition satisfied?
   b) Determine the 90%, 95%, and 98% confidence intervals for the population body temperature mean. Which interval is the widest?
   c) What is the margin of error for the 90% confidence interval for the population body temperature mean?
   d) Calculate the 95% confidence interval for the population mean heart rate, then calculate the 95% confidence interval for the ***male*** population mean heart rate. (Hint: use the subset command). Do males have a lower heart rate?

Save your R Script as: Last Name, First Name Module 1 Assignment

Upload your R Script to the "Module 1 Assignment" drop box on Moodle before January 18th at 11:59 PM.