DUE: January 25th, 2018 at 11:59 PM

QMM 1002 Module 2 Assignment /25

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. **(2 marks)** What is the P-value for $t \leq -2.77$, when the degrees of freedom are the last 2 digits of your student number.

2. **(7 marks)** After completing training at a telemarketing company, it is expected that an employee will make an average of 420 calls per day. For a certain employee, the number of calls made daily is tracked over 30 days, and the average number of calls made per day is found to be 386, with a standard deviation of 85 calls. The manager would like to see if there is evidence that this employee is underperforming. Test the manager's hypothesis given a significance level of 0.01.
   a) What are the null and alternative hypotheses?
   b) What is the value of the test statistic?
   c) What is the critical value t^* given an alpha level of 0.01?
   d) What do you conclude at this significance level? Interpret the result.

3. **(9 marks)** Read the "Donors.csv" dataset into R. This dataset contains a random sample of 916 donors (from a population of 1.5 million) who have donated to a Canadian charitable organization. It includes the variables age (in years), homeowner (H=yes, U=unknown), gender, wealth (1=lowest, 9=highest), children, donated last (0=did not donate, 1=did donate), and amount donated last (in dollars).
   a) Since there are 9 categories of wealth, the mean value is 5. An analyst for the organization is interested in whether the mean wealth category of the donor population differs from 5. Test this hypothesis at the $\alpha = 0.05$ level, and interpret your results using the t.test() function.
   b) What R command would you use to calculate the p-value in part a) from the obtained value t=3.7438?
   c) What is the critical value of t for this test?

4. **(7 marks)** In Canada, the average age of a person is approximately 39 years old. Using the "Donors.csv" data the Canadian charitable organization would like to know if the average age of their donors is greater than 39 years. Test this hypothesis at the 0.01 level, and interpret your results. Is the nearly normal condition satisfied?

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Save your R Script as: Last Name, First Name Module 2 Assignment

Upload your R Script to the "Module 2 Assignment" drop box on Moodle before January 25th at 11:59 PM.