MAT 9102 - Probability and Statistical Inference
Assignment – IV

03/12/2020

Submission guidelines:

- You will need to upload only one single R markdown **(.Rmd)** file.
- File name of your RMD file must be **regnumber_assignemntnumber**
- Do not upload given datasets (if any).
- Make use of R built in datasets (if mentioned in the question). If you have considered external dataset instead of R built in, upload the dataset without zipping it.
- Please use the following statement while installing any package. *if(!require(packageName))install.packages("packageName")*

General Instructions:

- Read the questions carefully and answer all parts to secure full marks.
- Post any queries in public channel or send a personal message
- Do not ask for direct solutions. This is a part of your assessment.
- Assignment will be penalized if you miss any of the submission guidelines.

Consider the dataset "weatherhistory.csv".

Linear regression with dummy variable [5 marks]

1. Describe dependent variable pressure and independent variable temperature.
2. Explore the relationship between pressure and temperature.
3. Build a linear model considering temperature and pressure.
4. Identify a dummy variable and build extended model considering dummy variable.
5. Report your findings.

Consider the dataset "weatherhistory.csv".

Multiple Linear Regression [6 marks]

1. Explore the relationship between pressure and windspeed.

2. Build a linear model considering (windspeed, humidity, temperature) and pressure.
3. Assess how model meets key assumptions of linear regression.
4. Investigate a differential effect by adding dummy variable.
5. Investigate an interaction effect for windspeed and dummyvariable.
6. Report your findings.

Consider the dataset "heartfailure.csv".

Logistic regression [4 marks]

1. Build a model considering diabetes as predictor.
2. Calculate and analyze odds ratio of the model.
3. Extend the model by considering variable age. (Convert the age into categorical data, if age ¡ 55 , category 1; age is between 55 and 68 category 2 ; otherwise category 3)
4. Report your finding.