AMPBA

Advance Statistical Analysis

Individual Assignment-Part 2

This deliverable has 20% weightage in the Consolidated Total score and is the second part of the individual assignment.

General Instructions:

1. This is an Individual Assignment.
2. **Do NOT** submit **.zip** files otherwise the submission will not be considered.
3. Please note that both Report (PDF file) and Code file (R file, excel or python) **are mandatory**.
4. Any late submission will attract a penalty as mentioned in the course outline.
5. The honor code for this submission is **2N-b**.
6. Upload your submissions to '**Assignment Submission**' folder on LMS.
7. **Handwritten content will not be considered for evaluation.**
8. **Submission will not be considered if the instructions are not followed**.
9. No penalty for early submissions!
10. Please note use the same sample dataset for Assignment 1 and 2.

Assignment Deliverables:

1. A .pdf document with relevant answers and explanation.
2. R, python or excel code files used to solve the assignment. (Please be mindful that not submitting a pdf will attract penalty)
3. **Assignment Submission form should be attached.**

Instructions for Assignment:

1. **Please use the same sample dataset used in Individual assignment 1 to solve Individual Assignment 2.**

2. **The description of the variable is given below:**

Age: Age in Years

Professional Experience: Professional Experience in Years

Income: Income in '000 dollars

Family Size: Total Members in the family

CC Avg: Average spending on Credit Cards ('000 dollars)

Education: 1: UG, 2:Graduate, 3:Prof etc.

Mortgage: Amount of Mortgage ('000 dollars)

Personal Loan: Dummy variable; 1: availed, 0: not availed

Securities Account: Dummy variable; 1: has Securities account, 0: does not have

CD Account: Dummy variable; 1: has CD (Certificate of Deposit) account, 0: does not have

Online Banking: Dummy variable; 1: uses online banking facility, 0: does not use

Credit Card: Dummy variable; 1: has a credit card issued by this bank, 0: does not have

Use the Personal Loan as the Target Variable. We would like to predict whether the person is likely to accept the banks offer for a personal loan.

Assignment 2: Logistic Regression

1. Build a logistic regression equation to predict whether the person is likely to accept the bank's offer for a personal loan. If necessary, create new variables to improve the model performance.
2. Carry out the omnibus test to test whether the model as a whole is significant. Comment on the result of the omnibus test.
3. Test the hypothesis that $\beta_j = 0$ for all β_j, where β_j indicates the coefficient corresponding to j^{th} explanatory variable. Comment on the result of thes hypothesis tests.
4. Carry out the hypothesis test that the model fits the data. Comment on the results.
5. The bank would like to address the top 30 persons with an offer for personal loan based on the probability (propensity). Create a table displaying all the details of the "top" 30 persons who are most likely to accept the bank's offer. Make sure to include the probability of accepting the offer along with all the other details.
6. Compare the above list of 30 persons against the 30 persons obtained from Discriminant Analysis (Assignment 1). Comment on the similarities and dissimilarities.

Deadline: 27th March 2022, Sunday, 11:55 pm

Note: Please attach the Assignment submission form.