Credit Scoring

2019 - Assignment 1

This assignment is to be submitted by 12:00 noon, on Friday February 15.

It can be submitted either in the box outside the M.Sc. Hub in the JCMB or on Learn.
If submitting on Learn, please submit your assignment as a pdf file.

This is an individual assignment.
Students are expected to work on this assignment independently, and for the work submitted to be their own. Further, while this is not a test of the English language, students are expected to express ideas in their own words; and not simply re-use phrases from the lecture notes.

Answer the questions using full sentences and do not just write the calculations and the final result. The style in which you present your answers is part of the marking.

There are **six** questions. You should attempt all questions.

This assignment contributes 35% of the grade for the course.

Please include appropriate print-out's of your calculations, manipulations, data modelling, etc., especially but not only for Question 3 and Question 5.

Question 1 (3 marks)

In a scorecard, the Good:Bad odds at 580 are 64:1 and the scorecard scale is 20 PDO. At what score do we have Good:Bad odds of 1:1?

What is the answer if the scorecard has a scale of 15 PDO?

Question 2 (2 marks)

In a scorecard development, we are trying to measure the divergence between Goods and Bads.
In the development, we have the following data:

	Number of Cases	Mean of Scores	Variance of Scores
Goods	12800	322.6	820.6
Bads	1683	291.1	1123.3

What is the value of the divergence?

Question 3 (5 marks)

In performing the analysis in a scorecard development, we have the following data:

Time at Address	% of Goods	% of Bads
1-2 years	3.70%	9.40%
13-24 years	23.40%	17.70%
25+ years	25.40%	16.90%
3-5 years	9.60%	15.10%
6-8 years	19.60%	22.80%
9-12 years	7.30%	3.60%
<1 year	11.00%	14.50%

Although we often use K-S to assess the power of a scorecard, we can also use it as a measure of the power of a characteristic.

Calculate the K-S statistic to measure the difference in Good and Bad performance on this characteristic.

Question 4 (7 marks)

Two of the bank's customers are twins, both unmarried, who have had a credit card for a few years and have the same type of job and the same salary.
Place the following four factors in the order that you think is likely to lead to a different application score for these two customers when they each apply for a 36-month £8000 loan to buy a second-hand car. Justify your choices:

Gender
Credit history
Application score from the credit card product
Sector in which they are employed

Question 5 (11 marks)

In the Irish data set, examine the characteristic Current Account - Average Number of Monthly Transactions last 6 Months.

There are many values / attributes for this – too many to include in our modelling.
Also, some of the attributes have very few cases, and some have no Bad cases.
Examine the data and produce a coarse-classed characteristic that would be capable of being used in the modelling phase.

As a first step, you might like to group the numbers of transactions in bands of 5, with suitable attributes at the very smallest and largest numbers of transactions.

Using the weights of evidence, the attribute proportions, the attribute meanings, and any other information, reduce the number of attributes.
Justify your choices, calculate the power and comment on any changes in the power.
Add any other relevant comments regarding the data.

Question 6 (7 marks)

The characteristic below is being considered for inclusion in a scorecard.
The score range for the eventual scorecard will be from 100 to 700.

In the application process, the applicant's details were matched against the lender's files and previous loans identified. A check was also made against the data from the credit reference agency.
Data on previous loans was then extensively analysed and modelled and the score weights below were derived.

Consider the various aspects of data discussed.
Consider also the desirable features for scorecard characteristics.
Discuss the weaknesses that this characteristic has.

Characteristic:	Previous Loan
Score	Attribute
14	No Previous Loan
17	Previous Loan repaid with no missed payments
12	Previous Loan repaid with some missed payments
9	Previous Loan not fully repaid