MAST90027 2022: Assignment 5: Consulting report

This assignment is worth 25% of the total marks for Practice of Statistics and Data Science.

The task for this assignment is to write a consulting report for a client who has brought you data on arteries harvested from patients undergoing coronary artery bypass graft surgery.

This assignment can be submitted in any typeset format. If you use R Markdown here you may consider including that as an Appendix.

You should frame this as a consulting report, rather than an academic journal article.

There is some background information that you may find useful.

1. The web resource here has a lot of information about the study.
2. There is an article here about the study.

The main question posed here has never been addressed for these data, so you should not waste time trying to find a previous analysis.

You should read the information on the website and in the article to acquaint yourself with the background of the study, and for that reason this assignment does not define terms etc.

The data provided relates to the 110 subjects from whom morphometric data on the internal thoracic artery and the radial artery could be obtained. They also had several other variables, as outlined in the information. The data set is provided in CANVAS.

There are several important outcomes measured on the arteries; two are considered here, namely, radial artery (RA) medial calcification and internal thoracic artery (ITA) intimal abnormality.

The clients who carried out the study have thought about combining these two outcomes, which makes four groups (RA medial calcification: yes/no combined with ITA intimal abnormality yes/no).

The question they have is this: how are the explanatory variables age, gender, diabetes, ever smoked, PVD and CVD related to this variable? Can you predict which of the four groups someone will be in, based on these variables and these data? Is there more than one way of doing this? They are asking you to explore the associations and the potential to get a useful prediction.

For this assignment, you need to write a coherent report, explaining how you have considered the question. Your report should be well structured and neatly presented. You should include clear graphs and any relevant tables. Your aim is to design approaches to the question that are statistically sound; you may use any analytic approach you consider to be appropriate. Key criteria in marking this assignment will include the soundness of your approaches, the statistical understanding you demonstrate, the quality of your explanations and the clarity of your report.

I do not want to be prescriptive about the required length of the assignment; you should aim to produce something that is succinct, clear and efficiently presented.

Due: To be submitted via CANVAS by 11:59 pm on Sunday November 13.