BUS708 Statistics and Data Analysis

Statistical Modelling Assignment

1 Overview of the Assignment

This assignment will test your skill to collect and analyse data to answer a specific business problem. It will also test your understanding and skill to use statistical methods to make inferences about business data and solve business problems, including constructing hypotheses, test them and interpret the findings.

Suppose you work in a company that provide services for people worldwide who are moving to Australia either permanently or temporarily (e.g. international students). One of the services it provides is to assist clients with choosing accommodation. Your task is to analyse the rent in different suburbs in Sydney Metro, specifically 4 different suburbs: Sydney, Randwick, Parramatta, and Auburn and analyse the rent that international students currently pay.

2 Task Description: Written Report

Before you proceed, you need to have Dataset 1 and Dataset 2 ready:

Dataset 1: Collect data on international students' weekly rent (in Australian Dollars). There is no requirement about sampling methods and sample size, but you need to justify your approaches in Section 1 (see below).

Dataset 2: You will receive an email about the instruction to download the Rental Bond Board Property Data dataset that has been edited and allocated to you. This is a subset of NSW Rental Bonds data published by the Department of Finance, Services and Innovation.

Both datasets should be saved in an Excel file (one file, separate worksheets). All data processing should be performed primarily in Excel, or by using Statkey tool.

1. **Section 1: Introduction**
    a. Give a brief introduction about the assignment
    b. Dataset 1: Explain how you collect the data and discuss whether or not your sample is biased. Is this primary or secondary data? What type of variable(s) is involved? You don't need to display your data in this section.
    c. Dataset 2: Give a short description about this dataset. Is this primary or secondary data? What type of variable(s) is involved? Display the first 5 cases of your dataset.
2. **Section 2: International Students' Weekly Rent**
   Use Dataset 1
    a. Present your data using a suitable graphical display and numerical summary.
    b. Make a short comment about the distribution of your data (e.g. the shape, centre, spread, outlier, and any interesting point).

3. **Section 3: Rental Bond Board Property Data – Dwelling Type**
   Use Dataset 2
   a. Examine just the data relating to Dwelling Type. Describe the data using a suitable graphical display and numerical summary.
   b. Is there enough evidence that the proportion of House dwelling type is less than 10%? Perform a suitable hypothesis test at a 5% level of significance.
   c. Describe the relationship between the variables Dwelling Type and Suburb using suitable graphical display and numerical summary.
   d. What suggestions can you give for clients who would prefer to rent a house instead of a flat, in terms of their options?
4. **Section 4: Rental Bond Board Property Data – Weekly Rent**
   Use Dataset 2
   a. By considering residential with 2 bedrooms only, compare the *weekly rent* among the different *suburbs* using a suitable graphical display and numerical summary.
   b. By considering residential with 2 bedrooms only, is there any evidence of the difference in weekly rent among the different suburbs? Perform a suitable hypothesis test at a 5% level of significance.
   c. What suggestions can you give for clients who are deciding to rent in one of those suburbs, in terms of the Weekly Rent?
5. **Section 5: Bond Amount**
   Use Dataset 2
   a. Examine the relationship between the variables Weekly Rent and Bond Amount, using a suitable graphical display.
   b. Calculate the correlation coefficient and make comments, including any outliers that may present and what suggestions can you give to clients regarding bond amount.
6. **Section 6: Conclusion**
   a. What can you conclude about the weekly rent currently paid by international students and the weekly rent of properties on the market?
   b. Give suggestion for future research

3 SUBMISSION REQUIREMENT

You need to submit 2 files:

1. Main report, in a Microsoft Word document file
2. Dataset, in a Microsoft Excel file

Main report (word document):

1. Size: A4
2. No cover page
3. Write your first name(s), family name and Student ID on the first 3 lines of your document.
4. Single space
5. Font: Times New Roman, 11pt

Dataset (excel document):

1. Dataset 1 in Sheet 1
2. Dataset 2 in Sheet 2
3. Pivot tables and any other information in other sheets (rename the sheet appropriately)

4 Deduction, Late Submission and Extension

There is a 2-mark deduction (out of 20) for students who do not address the specification in the submission requirement listed in Section 4 above.

Late submission penalty: - 5% of the total available marks per calendar day unless an extension is approved.

For extension application procedure, please refer to Section 3.2.1 of the Subject Outline.

5 Plagiarism

Students are reminded of the following statements from the Subject Outline:

"Students plagiarising run the risk of severe penalties ranging from a reduction through to 0 marks for a first offence for a single assessment task, to exclusion from KOI in the most serious repeat cases. Exclusion has serious visa implications."

"Authorship is also an issue under Plagiarism – KOI expects students to submit their own original work in both assessment and exams, or the original work of their group in the case of a group project. All students agree to a statement of authorship when submitting assessments online via Moodle, stating that the work submitted is their own original work.
The following are examples of academic misconduct and can attract severe penalties:

- Handing in work created by someone else (without acknowledgement), whether copied from another student, written by someone else, or from any published or electronic source, is fraud, and falls under the general Plagiarism guidelines.
- Students who willingly allow another student to copy their work in any assessment may be considered to assisting in copying/cheating, and similar penalties may be applied. "

6 Task Description: Presentation

A presentation for the assignment is scheduled on Week 11, in your allocated tutorial.

You do NOT need to prepare a presentation material (e.g. power-point slides), instead, you will be asked to demonstrate and/or explain how you summarised the data and how you performed the analysis. You may be asked to replicate what you have made in your written report (e.g. generate a chart or numerical summary using Excel or Statkey).