



<b>ASSESSMENT BRIEF</b>	
<b>Subject Code and Name</b>	STAT6003 : Statistics for Financial Decisions
<b>Assessment</b>	Assessment 4 – Case Study
<b>Individual/Group</b>	Individual
<b>Length</b>	(2000 words, +/- 10%)
<b>Learning Outcomes</b>	<p>This assessment addresses the following subject learning outcomes:</p> <ol style="list-style-type: none"><li>Examine the statistical techniques for the quantitative evaluation of data in decision making for accounting, finance and business applications.</li><li>Identify and apply appropriate statistical techniques to the problems and challenges.</li><li>Students will develop analytical and statistical skills through Excel data analysis to manipulate data into meaningful information for the purpose of decision making.</li><li>Select and apply a range of data analysis tools to inform problem solving and decision making.</li><li>Conduct quantitative research, articulate and present findings to a wide range of stakeholders, from accounting and non- accounting backgrounds.</li></ol>
<b>Submission</b>	By 11:55pm AEST/AEDT Sunday of Module 6.1 (week 11)
<b>Weighting</b>	30%
<b>Total Marks</b>	100 Marks

**Context:**

The main aims to develop students' competency in statistical literacy for decision making in the local and global business environment. It reviews statistical techniques for the quantitative evaluation of data in Financial applications. Students will develop analytical and statistical skills to enable them to transform data into meaningful information for the purpose of decision making

**Instructions:**

- To more broadly understand the statistical literacy for decision making.
- Interpret statistical results and communicate their statistical analysis in business reports.



### **Submission Instructions:**

This individual assessment requires you to apply statistical knowledge and skills learned from STAT6003 lectures between weeks 1, 2, 7, 8, 9, 10 and 11.

- This assessment can be based on several theories and methods.
- Please use Excel for statistical analysis in this assessment. Relevant Excel statistical output must be properly analysed and interpreted.
- Please provide a number for every table, graph or figure used and make clear reference to the table/graph/figure in your discussion.
- The word limit for this group assignment is 2,000 words (excluding Excel output).

Submit a copy of presentation Report in .docx, or .pdf format via the **Assessment** link in the main navigation menu in STAT6003. The Learning Facilitator will provide feedback with reference to the criteria below via the Grade Centre in the LMS portal. Feedback can be viewed in My Grades.

**Assessment tasks:** The variables for this assignment are as follows:

- V1) Market Price (\$000)
- V2) Sydney price Index
- V3) Total number of square meters
- V4) Age of house (years)

### **Task 1: Selecting your Random Sample and Creating your Sample Data File ( 8 Marks)**

In order to select the sample data that will form the basis of your assignment you will need to make use of the random number table provided with this assignment. The provided table of random numbers is, as the title suggests, a sequence of randomly generated numerical digits (0 to 9). These digits are arranged in a table with one hundred rows numbered 01 to 00 and twenty columns spread over two pages. The entries in each column of each row consist of five single digits.

The property data from which you will select your sample data consists of 400 IDs each with an identifying property number (PN) ranging from 1 (or 001) to 400.

Your first task is to select 50 three digit random (property) numbers ranging from 001 to 400 from the provided table of random numbers. We will ask you to select 50 numbers, to begin with, just to cover the distinct possibility that you may select the same three digit number more than once. The type of simple random sampling that we will be engaged in here is termed “without replacement” because we specifically do not want to allow a property identification number to be selected more than once.

In order to select your 50 random property identification numbers you will need to first go to a starting position row and column in the random number table. Defined by the last three digits of your Torrens University student identification number. The last two digits of your Torrens ID number identifies the row and the third last digit identifies the column of your (relatively) “unique” starting position.



For the demonstration last three digits of 312, reading across row 12 from left to right starting at column 3 as instructed, you would encounter the following three digit numbers;

**293    313    381    349    656    985    295**

You need to record these first three acceptable ID numbers, **293, 313, 381** and **349** into the first column of an Excel spread-sheet and then continue this process until **fifty** valid three-digit **personal identification numbers selected**.

## **Task 2:**

1. Provide the complete summary statistics for Market Price (\$000) and Age of house (years). **(5 Marks)**
2. Describe the shape of the distributions for Market Price (\$000) and Age of house (years). **(5 Marks)**
3. Test whether the population's average Market Price (\$000) is different from 777. **(5 Marks)**
4. Construct a 95% confidence interval for the Market Price (\$000), also Interpret the confidence interval. **(4 Marks)**
5. Provide an introduction section on the rationale of your model , sample size, and the dependent and independent variables (including their unit of measurement) in this model. **(4 Marks)**
6. Plot the dependent variable against each independent variable using scatter plot/dot function in Excel. Examine these scatter plots and correctly assess the strength and the nature of the relationship between the dependent and the independent variables? **(6 Marks)**
7. Present the multiple regression model with complete regression summary output in your assignment. **(6 Marks)**
8. Provide the simple linear regression data analysis for the market price as the response variable and the Land size in Square meters as the explanatory variable. Write down the least square regression equation and correctly interpret the equation. **(6 Marks)**
9. Write a clear interpretation of the slope of the regression line from question 8. You must refer to the variables of interest. **(4 Marks)**
10. What is the value of the coefficient of determination for the relationship between the dependent and independent variable from question 8. Interpret this value accurately and in



a meaningful way.

**(4 Marks)**

11. State the 95% confidence interval for the slope coefficient and interpret this interval from question 8.

**(5 Marks)**

12. Compare the multiple regression model (question 7) and simple linear regression model (question 8) and evaluate the goodness of fit between these two modelling techniques.

**(8 Marks)**

13. Predict the market price of a house (in \$) with a building area of 300 square meters. Explain why your answer is valid.

**(4 Marks)**

14. By performing an appropriate hypothesis test what decision and conclusion would you draw about the hypothesis that the Land size in Square meters useful in predicting the market price of a house (in \$)? Use the data provided to justify your answer, as appropriate. When answering this research question.

**(8 Marks)**

15. For statistical analysis involving hypothesis testing in this assignment, you are required to:

- Formulate the null and alternative hypotheses for full model.
- State your statistical decision using significant value ( $\alpha$ ) of 5% for this test.
- State your conclusion in this context.

**(8 Marks)**



**Learning Rubric: Assessment 4**

<b>Assessment Criteria</b>	<b>Fail (Unacceptable) 0-49%</b>	<b>Pass (Functional) 50-64%</b>	<b>Credit (Proficient) 65-74%</b>	<b>Distinction (Advanced) 75 -84%</b>	<b>High Distinction (Exceptional) 85-100%</b>
<p><b>Data Analysis using Excel 45%</b></p> <p>SLO addressed: Examine the statistical analysis through Excel</p>	Limited or no understanding of the statistical data analysis.	Identifies a proportion of the understanding of the statistical data analysis.	Identifies a majority of the understanding of the statistical data analysis.	Correctly identifies all of the analytical techniques and understanding of the statistical data analysis.	Not only identifies all of the analytical techniques with good understanding of the statistical data analysis.
<p><b>Application of Framework 45%</b></p> <p>SLO addressed: Identify and apply appropriate frameworks and tools to the problems and challenges</p>	Demonstrates no understanding of the framework and concepts relevant to the data analysis.	Demonstrates little understanding of the framework and concepts relevant to the data analysis.	Demonstrates good knowledge of the framework and concepts relevant to the data analysis.	Demonstrates correct knowledge of the framework and concepts relevant to the data analysis.	Demonstrates correct and complete knowledge of the framework and concepts relevant to the data analysis.
<p><b>Correct citation of key resources and evidence 10%</b></p> <p>Overall structure, appearance and referencing of the report are assessed.</p>	<p>Demonstrates inconsistent use of good quality, credible and relevant resources to support and develop ideas.</p> <p>Very badly written, incorrect grammar, badly organised with no logical flow of the arguments. The document is missing in text referencing and/or a reference list.</p>	<p>Demonstrates use of credible and relevant resources to support and develop ideas, but these are not always explicit or well developed.</p> <p>The document is very poorly referenced.</p>	Demonstrates use of high quality, credible and relevant resources and evidence to support and develop ideas.	Demonstrates use of good quality, credible and relevant resources and evidence to support and develop arguments and statements.	Demonstrates use of high-quality, credible and relevant resources and evidence to support and develop arguments and position statements.