

STA10003 FOUNDATIONS OF STATISTICS

WORK INTEGRATED LEARNING (WIL)

ASSIGNMENT PART 2

This **Assignment Part 2** is worth **20%** of your final mark for STA10003.

Scenario

You have been employed as a new graduate researcher at Social Interactions Australia. Social Interactions Australia conducts research about relationships and other social issues. You have been given a dataset which contains the results of a survey given to Melbourne adults who visited a psychologist in 2022. You have been asked to analyse the data and answer several questions of interest that are presented on the following pages.

Data Preparation

For this assignment you will use the random sample of 5000 cases that you used for Assignment Part 1. If you no longer have this random sample then you have to use SPSS to draw a new random sample of 5000 cases from the data set **STA10003 Sem 2 2024 Assignment Data.sav**.

Submission Instructions

- Your submission must be a single Word file or PDF file.
- Although a cover page is not required, you should include your name and student number within the document [e.g., in footer].
- You must submit your file via the **SUBMIT ASSIGNMENT** button on the Week 10: Assignment Part 2 page in Canvas by **Sunday October 13 by 11:59pm**. Only the last document you submit will be marked.
- Once submitted, please review your submission to ensure the correct file has been submitted.
- This is an individual assignment. Do not share your work with other students. They will have a different random sample of data, so any copying will be detected.

Plagiarism and Maintaining Academic Integrity

This is an individual assignment, so you are expected to complete it by yourself. It is important that you demonstrate good Academic Integrity by ensuring that your assignment work is entirely your own, because this shows that you have understood what you have learnt. You should not use the work of anyone else, including that of another students, for this assignment. Whilst you may seek help if there is anything about this assignment you do not understand, the assignment must be your own work.

Use of generative AI such as ChatGPT is not permitted. Any form of copying or submitting work that is not entirely done by you is a breach of academic integrity and could attract academic penalties. Your work will be checked for breaches of academic integrity.

For your Assignment Part 2, you are required to complete the first three (3) questions by producing the appropriate analyses using SPSS and writing the relevant report for each question. You are also required to complete question 4, which contains short answer questions.

For each of the first three questions you must include all relevant output immediately following each report. Provide all statistics to two decimal places, except the p value which is given to three decimal places.

Question 1

Researchers predicted that the level of conflict in relationships for Australian adults is lower than it was in 2020. Previous research indicated that for Australian adults the average level of conflict in relationships in 2020 was 90. The level of conflict in relationships is measured on a scale from 0 to 200, with higher values indicating a higher level of conflict in relationships. Conduct a one-sample t-test to test this prediction. Produce the relevant SPSS output, and write a one-sample t-test report based on your output. Include the relevant output after your report.

Question 2a

Researchers predicted that the level of happiness in relationships reported by Australian adults is lower for males than for females. The level of happiness in relationships is measured on a scale from 0 to 100, with higher values indicating a higher level of happiness in relationships. Conduct an independent samples t- test to test this prediction. Produce the relevant SPSS output, and write an independent samples t-test report based on your output. Include the relevant output after your report.

Question 2b

Check and comment on the assumptions of the independent samples t-test you did in Q2a. Include the relevant output with your answer.

Question 3a

Researchers predicted that for Australian adults the level of commitment to relationships is higher than the level of intimacy in relationships. The level of commitment to relationships and the level of intimacy in relationships were both measured on a scale from 0 to 120, with higher values indicating higher levels. Conduct a paired samples t- test to test this prediction. Produce the relevant SPSS output, and write a paired samples t-test report based on your output. Include the relevant output after your report.

Question 3b

Check and comment on the assumptions of the paired samples t-test you did in Q3a. Include the relevant output with your answer.

Question 4: Does not require SPSS

Previous research has suggested that among adults who live in metropolitan Melbourne 37% used public transport in the last month. A researcher working for the Melbourne City Council wants to know if the percentage of adults who live in metropolitan Melbourne who used public transport in the last month is different to 37%. The researcher takes a random sample of adults who live in metropolitan Melbourne to find out what percentage used public transport in the last month.

- (a) What type of statistical test would be appropriate for the researcher to use?
- (b) Explain why this statistical test would be appropriate.
- (c) If a Type I Error occurred what conclusion would the researcher make?
- (d) The researcher conducted the appropriate statistical test and obtained a p-value of 0.053. Based on this result the researcher concluded that there is no evidence to suggest that the percentage (proportion) of adults who live in metropolitan Melbourne who used public transport in the last month is not different to 37% (different to 0.37). Is this conclusion valid or not valid? Explain why this conclusion is valid or not valid.

STA10003 Assignment Part 2 Marking Rubric

Criteria	Ratings					Pts
Q1 One sample t-test	10 to >9.0 Pts Full marks allocated Report has no errors.	9 to >0.0 Pts Partial marks allocated Report has 1 to 9 errors.	0 Pts No mark allocated Question not answered, no report, report covers no relevant/correct information, there are 10 or more errors.			10 pts
Q2a Independent samples t-test	10 to >9.0 Pts Full marks allocated Report has no errors.	9 to >0.0 Pts Partial marks allocated Report has 1 to 9 errors.	0 Pts No mark allocated Question not answered, no report, report covers no relevant/correct information, there are 10 or more errors.			10 pts
Q2b Assumptions of the independent samples t-test	3 Pts Full marks allocated No errors.	2 Pts Partial marks allocated Answer has 1 error.	1 Pts Partial marks allocated Answer has 2 errors.	0 Pts No mark allocated Question not answered, answer has no relevant/correct information, there are 3 or more errors.		3 pts
Q3a Paired samples t-test	10 to >9.0 Pts Full marks allocated Report has no errors.	9 to >0.0 Pts Partial marks allocated Report has 1 to 9 errors.	0 Pts No mark allocated Question not answered, no report, report covers no relevant/correct information, there are 10 or more errors.			10 pts
Q3b Assumptions of the paired samples t-test	3 Pts Full marks allocated No errors.	2 Pts Partial marks allocated Answer has 1 error.	1 Pts Partial marks allocated Answer has 2 errors.	0 Pts No mark allocated Question not answered, answer has no relevant/correct information, there are 3 or more errors.		3 pts
Q4a	1 Pts One Correct answer.		0 Pts Zero Incorrect answer. Incomplete answer.			1 pts
Q4b	1 Pts One Correct answer.		0 Pts Zero Incorrect answer. Incomplete answer.			1 pts
Q4c	2 Pts Full marks allocated Correct answer, no errors.		1 Pts Partial marks allocated Answer has 1 or more errors.		0 Pts No mark allocated No attempt. Incorrect answer. Incomplete answer.	2 pts
Q4d	2 Pts Full marks allocated Correct answer, no errors.		1 Pts Partial marks allocated Answer has 1 or more errors.		0 Pts No mark allocated No attempt. Incorrect answer. Incomplete answer.	2 pts
Total points: 42						

Prior to submitting your Assignment via Canvas, use the following checklist as a guide to ensure that all of the relevant information is provided in your reports.

Checklist:

- Correct variable(s) used to produce output
- Correct procedure performed
- Correct test values used
- Including 95% confidence interval interpretations
- Significance interpreted correctly (i.e. not saying that the finding is significant when it is not or vice versa)
- Correctly referring to the sample or population when appropriate
- Proof reading of reports for errors