

QMM 1002 Case Study 1: An in-depth analysis of a Sudbury Franchise's Performance

Introduction:

As a Business Analyst for a major coffee franchise, you are tasked with creating a detailed report about a Sudbury franchise's performance. You randomly selected 10 days' profits from before the renovation, then re-sampled for those 10 days a year later (after the renovation was complete). Your colleague is doing a similar analysis of a North Bay franchise location, and she shares her 10-day post-renovation profit data with you (although these are not for the same dates in the year).

Your company plans to keep franchises open if two of the three business questions below are true:

- 1) After the franchise was renovated, were their profits larger than an average of \$12,000/day (the national average for the franchise)?
- 2) Have profits increased in the franchise after the renovation?
- 3) After the franchise was renovated, was it more profitable than a comparable renovated franchise?

Datasets:

You will be given datasets based on your student number. **Failure to use your designated datasets will result in a mark of 0.**

The data are available in the Case Study 1.xlsx – navigate to the first tab (StudentDatasetKey) to find your assigned datasets based on your student number. Then, find the corresponding dataset tab. The following datasets within your tab are available to you:

- 1) Sudbury Before: 10 randomly selected daily profits from the Sudbury franchise before renovations.
- 2) Sudbury After: Matching data 1 year later from the Sudbury franchise (after renovations).
- 3) North Bay (after renovation): 10 randomly selected daily profits from the North Bay franchise after the store went through the same renovation process.

Expectations:

You are to create a short (1-3 page) RMarkdown report that includes an Introduction, Methods/Analysis, and Conclusion section. Your conclusion should be to evaluate whether or not you believe the Sudbury franchise should stay open, based on the three questions posed in the Introduction. You should be able to state your conclusions for each business question with 95% confidence.

Assumptions: you will only be required to check/report on the assumptions for the first business question – you can assume the other two will have their relevant assumptions met.

Figures/Charts: you should produce a figure or chart for every statistical test you perform (assumption tests, `t.test()`, etc.).

RMarkdown: Please produce your final report in **Word**. You should also include your .Rmd file in your submission.

Marking Scheme (34 Marks):

- Report: (6 marks)
 - Includes all sections
 - Proof-read, “ready for publication” (-1 for every spelling/grammar mistake)
 - Correct word format
 - Includes .rmd file
 - Includes the datasets in the correct format, as necessary.
- Introduction: (5 marks)
 - Clearly states the background of data
 - Clearly states the business problems
- Methods/Analysis: (21 marks)
 - Defines the assumptions/conditions for the first test and if they’re met (including figures as necessary).
 - Clearly states the methods used to answer each business problem.
 - Correctly answers business question 1 (including figure and correct statistical analysis).
 - Correctly answers business question 2 (including figure and correct statistical analysis).
 - Correctly answers business question 3 (including figure and correct statistical analysis).
- Conclusion: (2 marks)
 - Reiterates business problems.
 - Provides a conclusion that is justified based on the analysis.