Awesome thesis

uOttawa

Bob Hette

A thesis submitted for the degree of
Doctor of Philosophy
at the University of Ottawa in 2024
Department of Biology

Abstract

The abstract should outline the main approach and findings of the thesis and must not be more than 500 words.

Sommaire

The abstract but in french this time.

Declaration

Reproducibility statement

This thesis was written using Quarto (Allaire et al. 2022) and the R Statistical Software v4.3.2, Eye Holes (R Core Team 2023), and the R packages listed in Table A.1. All materials (including the data sets and source files) required to reproduce this document can be found at the Github repository `github.com/youraccount/thesis`.

Author declaration

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the student, working under the supervision of Julien Martin. The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research. This thesis was written in manuscript style and I have renumbered sections of submitted or published papers in order to generate a consistent presentation within the thesis.

Co-authorship statement

The following people and institutions contributed to the publications included in this thesis:

- Bob Hette (BH): University of Ottawa, Canada
- Igor Tex (IT): University of Textile, Softland
- Julien Martin (JGAM): University of Ottawa, Canada

My first manuscript.

Integrated as Chapter 2 in this thesis. Under review at time of submission.

Authors:

- BH: Conceptualization, Investigation, Data curation, Formal analysis, Writing -Original Draft.
- IT: Writing - Review & Editing.
- JGAM: Conceptualization, Resources, Supervision, Writing - Review & Editing.

My second manuscript.

Integrated as Chapter 3 in this thesis. Under review at time of submission.

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- BH: Conceptualization, Investigation, Data curation, Formal analysis, Writing -Original Draft.
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Acknowledgements

I would like to thank my pet goldfish for ...

If you have engaged the services of a professional editor, you must provide their name and a brief description of the service rendered. If the professional editor's current or former area of academic specialisation is similar your own, this too should be stated as it may suggest to examiners that the editor's advice to the student has extended beyond guidance on English expression to affect the substance and structure of the thesis.

If you have used generative artificial intelligence (AI) technologies, you must include a written acknowledgment of the use and its extent. Your acknowledgement should at a minimum specify which technology was used, include explicit description on how the information was generated, and explain how the output was used in your work. Below is a suggested format:

"I acknowledge the use of [insert AI system(s) and link] to [specific use of generative artificial intelligence]. The output from these was used to [explain use]."

Free text section for you to record your acknowledgment and gratitude for the more general academic input and support such as financial support from grants and scholarships and the non-academic support you have received during the course of your enrolment.

You may also wish to acknowledge significant and substantial contribution made by others to the research, work and writing represented and/or reported in the thesis. These could include significant contributions to: the conception and design of the project; non-routine technical work; analysis and interpretation of research data; drafting significant parts of the work or critically revising it so as to contribute to the interpretation.

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Chapter 1

Introduction

This is where you introduce the main ideas of your thesis, and an overview of the context and background.

In a PhD, typically, Chapters 2–4 would contain your own contributions. Think of each of these as potential papers to be submitted to journals. Finally, Chapter 5 provides some concluding remarks, discussion, ideas for future research, and so on. Appendixes can contain additional material that don't fit into any chapters, but that you want to put on record. For example, additional tables, output, etc.

1.1. Quarto

In this template, the rest of the chapter shows how to use quarto. The big advantage of using quarto is that it allows you to include your R or Python code directly into your thesis, to ensure there are no errors in copying and pasting, and that everything is reproducible. It also helps you stay better organized.

For details on using Quarto, see http://quarto.org.

1.2. Data

Included in this template is a file called `sales.csv`. This contains quarterly data on Sales and Advertising budget for a small company over the period 1981–2005. It also contains the GDP (gross

domestic product) over the same period. All series have been adjusted for inflation. We can load in this data set using the following code:

```
sales <- readr::read_csv(here::here("data/sales.csv")) |>
  rename(Quarter = `...1`) |>
  mutate(
    Quarter = as.Date(paste0("01-", Quarter), "%d-%b-%y"),
    Quarter = yearquarter(Quarter)
  ) |>
  as_tsibble(index = Quarter)
```

Any data you use in your thesis can go into the `data` directory. The data should be in exactly the format you obtained it. Do no editing or manipulation of the data prior to including it in the `data` directory. Any data munging should be scripted and form part of your thesis files (possibly hidden in the output).

1.3. Figures

Figure 1.1 shows time plots of the data we just loaded. Notice how figure captions and references work. Chunk names can be used as figure labels with `fig-` prefixed. Never manually type figure numbers, as they can change when you add or delete figures. This way, the figure numbering is always correct.

1.4. Results from analyses

We can fit a regression model to the sales data.

If y_t denotes the sales in quarter t, x_t denotes the corresponding advertising budget and z_t denotes the GDP, then the resulting model is:

$$y_t = \beta x_t + \gamma z_t + \varepsilon_t \tag{1.1}$$

where $\hat{\beta} = 1.85$, and $\hat{\gamma} = 1.04$. We can reference this equation using Equation 1.1.

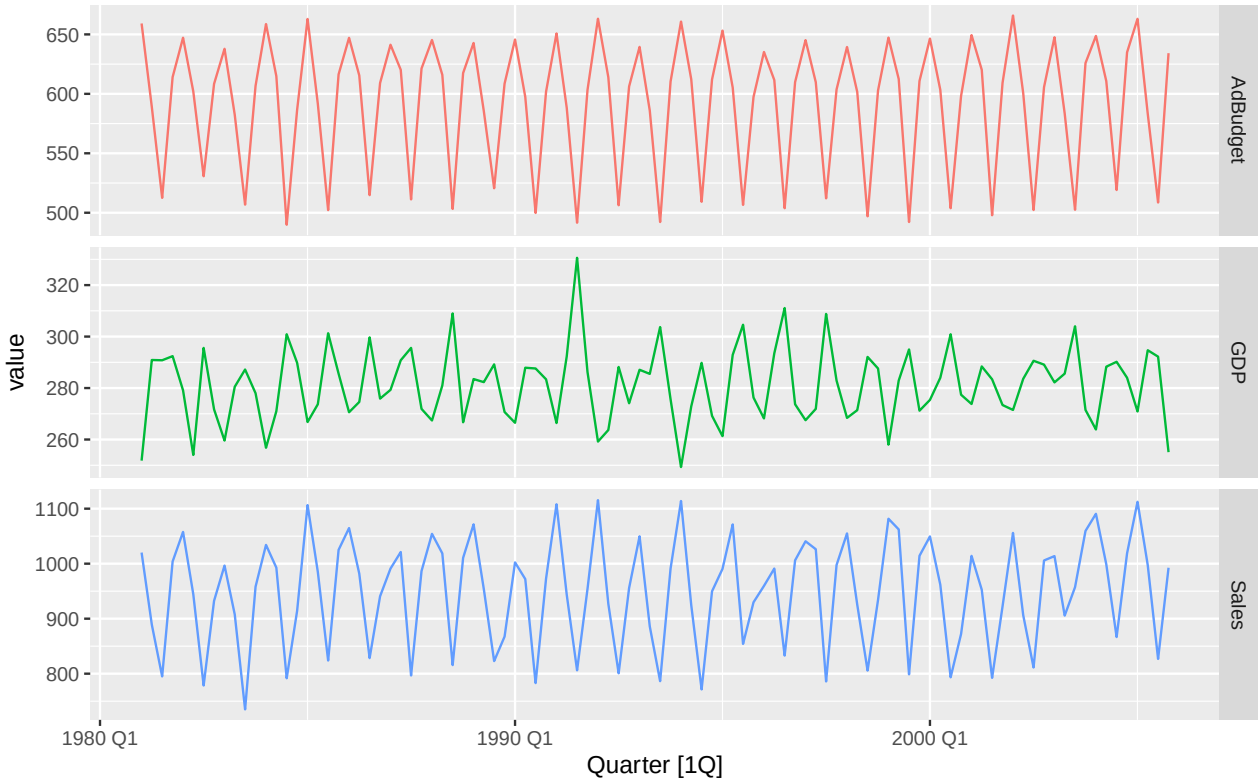

Figure 1.1.: Quarterly sales, advertising and GDP data.

1.5. Tables

We can also make a nice summary table of the coefficients, as shown in Table 1.1

Table 1.1.: Coefficients from the fitted model.

Coefficient	Estimate	P value
(Intercept)	-438.98	0.02
GDP	1.04	0.02
AdBudget	1.85	0.00

Again, notice the use of labels and references to automatically generate table numbers.

Chapter 2

My first manuscript

Hette Bob, Tex Igor & Martin Julien

Submitted to Journal of No-nonsense

Abstract

2.1. Introduction

2.2. Methods

2.3. Results

2.4. Discussion

Acknowledgements

specific to the study as per your manuscript

Chapter 3

My second manuscript

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Abstract

3.1. Introduction

3.2. Methods

3.3. Results

3.4. Discussion

Acknowledgements

specific to the study as per your manuscript

Chapter 4

Conclusion

It cannot be a good day without Lasagna

– My stomach, 2023 –

here you should provide some concluding remarks, discussion, ideas for future research, and so on.

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Appendix A

R Packages

Table A.1.: Packages used to generate this thesis

Package	Version	Citation
base	4.3.2	R Core Team (2023)
fable	0.3.3	O'Hara-Wild et al. (2023a)
feasts	0.3.1	O'Hara-Wild et al. (2023b)
grateful	0.2.4	Francisco Rodriguez-Sanchez and Connor P. Jackson (2023)
here	1.0.1	Müller (2020)
kableExtra	1.4.0	Zhu (2024)
knitr	1.45	Xie (2014); Xie (2015); Xie (2023)
rmarkdown	2.25	Xie et al. (2018); Xie et al. (2020); Allaire et al. (2023)
tidyverse	2.0.0	Wickham et al. (2019)
tsibble	1.1.4	Wang et al. (2020)

Appendix B

Additional stuff

You might put some computer output here, or maybe additional tables. It is possible to have multiple appendices. Just list them in the appropriate place within `_quarto.yml`.