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# Developing Good Research Habits

[bit.ly/research\\_habits](https://bit.ly/research_habits)

Rob J Hyndman

31 March 2025



# Outline

1 Citing

2 Searching

3 Scripting

4 Writing

## Alternative titles

There's more to being a  
researcher than writing a thesis

# Alternative titles

There's more to being a  
researcher than writing a thesis

What you should know but  
probably don't

# Alternative titles

There's more to being a researcher than writing a thesis

What you should know but probably don't

Listen up, young padawans



# Outline

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# Managing references

## Zotero

- ▶ Free and on all operating systems
- ▶ Web-version and local version synced
- ▶ Browser extension for adding papers/books
- ▶ Attach notes and annotations to papers.
- ▶ Works with Word, LibreOffice or LaTeX.
- ▶ Generate bibliography automatically
- ▶ Handles all formatting for you.

The logo for Zotero, featuring the word "zotero" in a lowercase, sans-serif font. The letter "z" is colored red, while the rest of the letters are black.

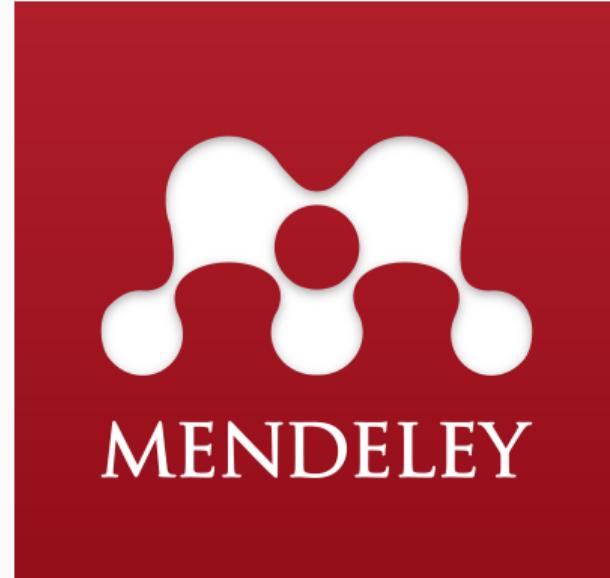
### To install:

- Set up account at [www.zotero.org](http://www.zotero.org)
- Download from [www.zotero.org](http://www.zotero.org)

# Managing references

## Mendeley

- ▶ Free and on all operating systems
- ▶ Web-version and local version synced
- ▶ Browser extension for adding papers/books
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### To install:

- Set up account at [mendeley.com](https://www.mendeley.com)
- Download from [mendeley.com](https://www.mendeley.com)

# Managing references

## Paperpile

- ➔ \$3 per month and runs on Google Chrome
- ➔ Papers stored on Google Drive
- ➔ Browser extension for adding papers/books
- ➔ Works with Google Docs or LaTeX.
- ➔ Generate bibliography automatically
- ➔ Handles all formatting for you.
- ➔ Amazingly fast



# Paperpile

### To install:

- Set up account at [paperpile.com](http://paperpile.com)
- Download Google chrome browser extension

# What to cite?

- Cite what is important.
- Cite (only) what is relevant.
- Avoid lists of gratuitous references.
- Include proper citations for all packages and software you use.



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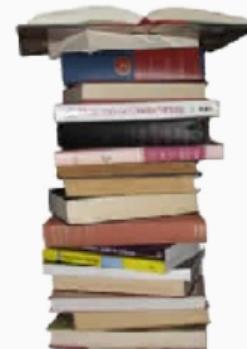


## When using R

```
citation("packagename")
```

# Sight what you cite

- Every article cited should be sighted, & preferably read.
- At the very least, check that the article cited really does say what you think it says.
- Type the reference information yourself.
- Don't just cite what other people say about citations.
- Store accurate reference info from the start.
- Give credit where it is due.



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  - ▶ Diebold did not invent PITs.
  - ▶ Hyndman did not invent exponential smoothing or ARIMA models.



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# Google Scholar

- Searching for papers
- Use advanced search
- Link GS to your reference manager
- Track citations of key papers
- Star papers for your own library
- Check recommended articles
- Check author profiles, especially highly cited authors
- Create your own GS profile once you have (at least) one paper
- Follow key authors in your area



## SEMANTIC SCHOLAR

A free, AI-powered research tool for scientific literature

Search 211,093,141 papers from all fields of science

Search

Try: [Jean Louise Cohen](#) • [Market Structure](#) • [Cultural Universals](#)

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# Reproducibility

## Not reproducible:

- Data edited in a spreadsheet
- Click and point analysis
- Copy and paste graphs and tables
- Tables typed by hand

## Reproducible

- All data edits scripted
- All analysis scripted
- Graphs and tables automatically pulled in to the thesis
- Tables generated with scripts



**STOP CLICKING  
AND START SCRIPTING**

# Reproducibility

Someone should be able to reproduce your thesis without having to guess what software you had installed, what versions, which files do what, etc.

# Reproducibility

Someone should be able to reproduce your thesis without having to guess what software you had installed, what versions, which files do what, etc.

- Stay organized.
- One system for doing this using R is to write your thesis in an Rmarkdown or Quarto file.
- Track software versions

# Version control

- `thesis_v1`, `thesis_v2`, etc., is not adequate version control.
- You need to track changes over time, have a *remote* repository, and be able to roll back as required.
- Your repository should contain *everything* required to produce your thesis including computer code, references, writing.
- Your repository should have an obvious structure and be fully documented.
- **Github** solves these problems
- Read “Happy git with R”: [happygitwithr.com](http://happygitwithr.com)



GitHub

# Version control with git

- RStudio integrates with github, so version control built in.
- But github can be used with *any* text-based language including Stata, Python, LaTeX, R, Rmarkdown, Quarto, markdown, etc.
- Git allows you to:
  - ▶ track changes
  - ▶ experiment in branches
  - ▶ undo
- Github provides:
  - ▶ backup and restore
  - ▶ synchronisation



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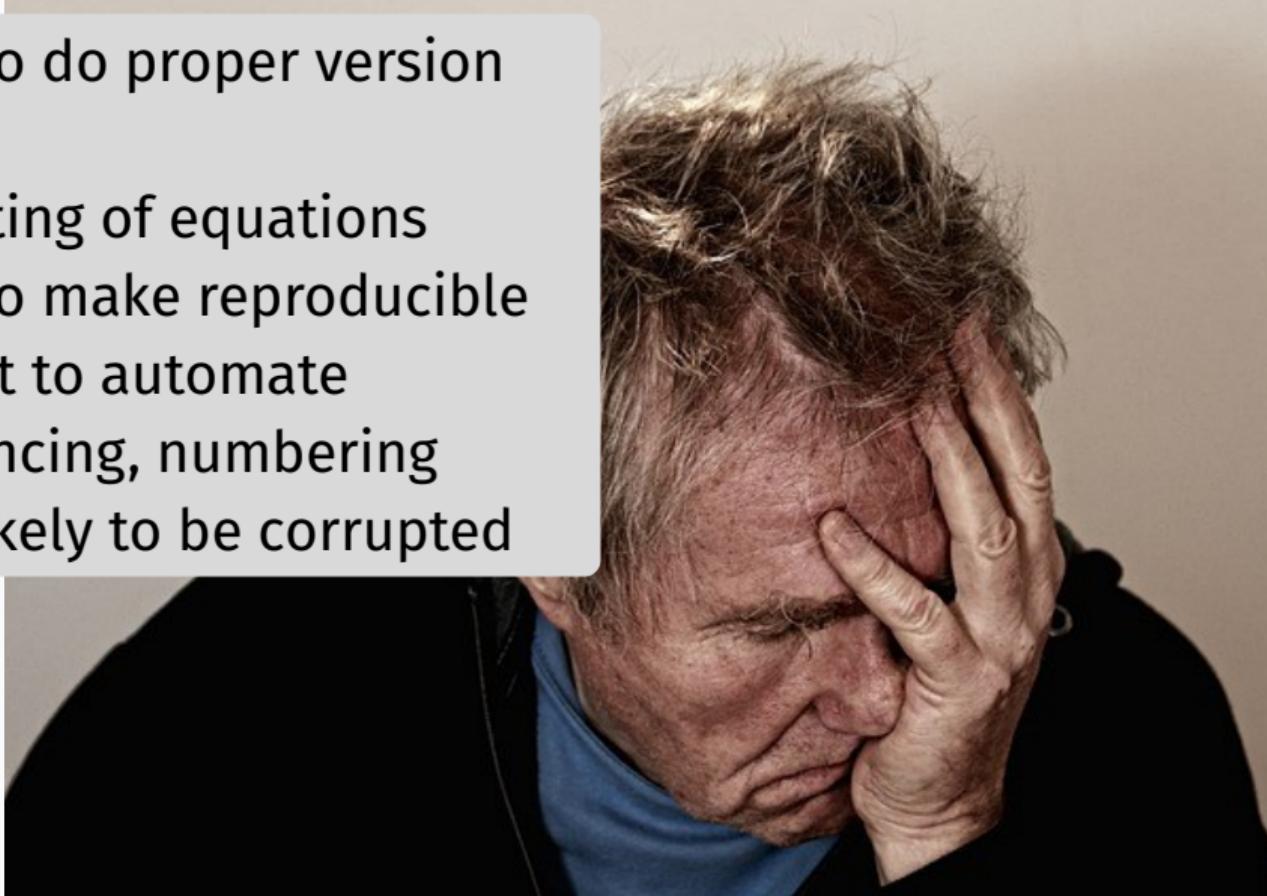
4 Writing

# Microsoft Word



# Microsoft Word

- Impossible to do proper version control
- Poor formatting of equations
- Impossible to make reproducible
- More difficult to automate cross-referencing, numbering
- Files more likely to be corrupted



# LATEX

## To install:

- Download MikTeX,  
MacTeX or TeXlive.
- Download  
TeXStudio from  
<https://www.texstudio.org/>

## Document processing

- ➔ Free and open-source
- ➔ Available on all operating systems
- ➔ Used by every mathematical publisher
- ➔ Separate content from style
- ➔ Format complex equations
- ➔ Automatic numbering
- ➔ Automatic bibliography
- ➔ Almost every language



## This is my thesis

Susan Su

B.Sc. (Hons), University of Tangambalanga

A thesis submitted for the degree of Doctor of Philosophy at Monash University  
in 2022

Department of Econometrics & Business Statistics

## Quarto

- ➔ Combines R, Python and LaTeX into one system
- ➔ Reproducible research
- ➔ Monash Thesis Template via <https://github.com/quarto-monash/thesis>
- ➔ Useful for assignments too
- ➔ See [quarto.org](https://quarto.org) for help

## Slides and links:

**[bit.ly/research\\_habits](https://bit.ly/research_habits)**