CASA dissertation using Bookdown

2021-01-11

# Abstract

Placeholder

# 1 Bookdown basics

Bookdown enables us to take raw text files (e.g. Rmarkdown files) and output them into a number of different formats with ease. This is more useful than LaTex as you can create a word version for comments from your supervisor, a pdf for final submission and an online book for your own portfolio.

## 1.1 Structure

A bookdown book simply combines multiple Rmarkdown files into .pdf, html or .epub (but i’ve disabled epub here).

All Rmakdown files must be located in the base (or root) of the project. For example, don’t got putting the .Rmd in a folder called chapters and then wonder why it’s not working. They all must be in the same folder as the project file. You can however put output figure images into a folder (e.g. figures) then call them in.

## 1.2 Building the book

You will need the packages: bookdown, kabble, knitr

You also need to install tinytex::install\_tinytex() for generating .pdfs from your book.

Once installed you can build the book by clicking the Build Book icon under the build tab in the top right quadrant.

To export to word use:

bookdown::preview\_chapter("01-intro.Rmd",  
 output\_format = "bookdown::word\_document2",  
 output\_file = paste0("thesis-intro-", format(Sys.Date(), ("%d-%m-%y")), ".docx"),  
 output\_dir = "chapter-previews",)

## 1.3 YAMLs

You will see some files with a .yml extension. These stand for yet another markup language.

Open the \_output.yml and \_bookdown.yml.

The \_output.yml controls the settings for each outputted format.

The \_bookdown.yml controls the order in which the files are made into chapters - you can also change the Chapter title if you wish here.

I have set these up to create nice outputs, so there is really no need to change anything, unless you want to add a new chapter and include it in the list. To do so, simply create a new Rmarkdown document, delete all the default content, add a first level heading, and the then add it to where you want it to appear in the document in the \_bookdown.yml.

## 1.4 Formatting

You’ll notice in the \_output.yml that the various formats (html (or gitbook) and pdf) are calling styling codes. The gitbook calls style.css and the pdf\_book calls preamble.tex. These files just style the various outputs.

I have copied in a basic styling with a CASA logo in the table of contents, you can replace this with other variations of the file if you wish or look at the [minimal bookdown example](https://github.com/rstudio/bookdown-demo) or my [CASA0005 .css file](https://github.com/andrewmaclachlan/CASA0005repo/blob/master/assets/style.css).

The best place to learn more about styling is the [RStudio for education bookdown guide](https://rstudio4edu.github.io/rstudio4edu-book/intro-bookdown.html)

For the .pdf version in the preamble.tex we have to use LaTex code. I am by no means an expert in this. If you Google each package it will tell you what it does. There isn’t much here really, but all the header stuff refers to the headings at the top of each page.

## 1.5 Index file

Open up the index.Rmd this Rmd must be called first in the \_bookdown.yml list. There are a number of options here, but i’ve set them all up to be compliant with the CASA thesis requirements.

You will need to change your title and name etc. Make sure you leave the a space here: | Andrew MacLachlan this won’t work |Andrew MacLachlan

If you were to be printing your work, you’d want to change the classoption to twosides and make sure the geometry margins were correct. linestrech refers to the line spacing and the bibliography stuff we come on to later.

Input your GitHub repo and add a description.

If you ever wanted to just create a report and not a thesis you can change the documentclass to other options such report, article or letter

## 1.6 Preamble

Open the preable.Rmd and you will see all the sections that are required before the main text (e.g. Abstract, Declaration and so on). At the top of the page i’ve used a code chunk set to LaTex, saying to use Roman numbering as we don’t want page 1 to be the Abstract, we want it to be the first page of the Introduction. There are two conditions for each of the sections that state if output to HTML (gitbook) then do this, if output to LaTex then do this. This is the only place we have this. In our bookdown HTML we want to be able to click these sections, but in our LaTex .pdf we don’t want them to appear in the table of contents. This is what this code is doing.

If you look back in the \_output.yml you’ll also see the toc (table of contents) is set to false. By default this appears right after the title, but we want this to come after our preable.Rmd. You’ll see that i’ve called \tableofcontents, \listoffigures and \listoftables in the correct place again using a LaTex code chunk. These aren’t required for the bookdown output.

The last section here is the abbreviations. To make this really easy, i’ve created an excel document to add them into. The code here will load that and then use the kable package to make a table. More on this later.

## 1.7 Adding a pdf to the end of your document

If you wish to add another .pdf as an Appendix (in your .pdf) then again we need a bit of LaTex code

\includepdf[pages={-}]{mypdf.pdf}

If you look in the 08-Appendix.Rmd then you will see another if LaTex section, simply add in the line of code above, replacing mypdf.pdf with your pdf title in the main project folder. It will then be appended to the thesis.

## 1.8 Writing code

Use one project for your thesis and another for your analysis. Don’t try and do it all in a thesis project. You can set your output folder from your main analysis project to the thesis project and then easily load the figures in.

# 2 Cross referencing

Placeholder

## 2.1 Chapters or sections

### 2.1.1 Figures, tables, even code chunks

#### 2.1.1.1 Figures

#### 2.1.1.2 Tables

### 2.1.2 Citing documents

### 2.1.3 Footnotes

# 3 Equations and direct quotes

Placeholder

## 3.1 Equations

## 3.2 Block quotes (or direct quotes)

# 4 Including figures and creating tables

This section is going to focus including figures and creating tables

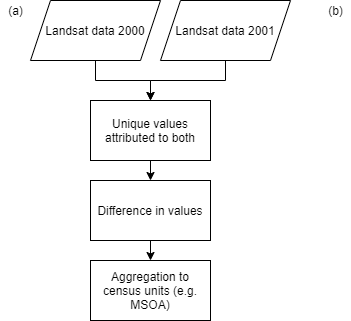


Figure 4.1: Summary of methdological procedure for (a)…. and (b)….

1. Lucidchart
2. Draw.io

# 5 Discussion

Short introduction to the chapter, reviewing the previous chapter and detailing what this one aims to achieve and build upon.

## 5.1 Research significance

### 5.1.1 Global development goals

### 5.1.2 Local policy

### 5.1.3 Academic research

## 5.2 Limitations

## 5.3 Transferability

# 6 Conclusion

Short introduction to the chapter, reviewing the previous chapter and detailing what this one aims to achieve and build upon.

## 6.1 Recommedations

1. Adapt policy x
2. Undertake data informed targeted greening
3. Further work into this area

# Appendix A Research log

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## subsection

### sub sub section