

# Applications of R for research

Anthony Davidson

2022-05-03



# Contents

<b>1</b>	<b>BIOL8700_setup_2022</b>	<b>5</b>
1.1	Results . . . . .	5
1.2	RStudio project file . . . . .	5
1.3	Usage . . . . .	5
1.4	Render book . . . . .	6
1.5	Preview book . . . . .	6
1.6	RMarkdown reports . . . . .	6
1.7	Manual references . . . . .	7



# Chapter 1

## BIOL8700\_\_setup\_\_2022

The goal of `BIOL8700__setup__2022` is to setup and generate documents using RStudio, RMarkdown and github

What is special about using `README.Rmd` instead of just `README.md`? You can include R chunks like so:

You'll still need to render `README.Rmd` regularly, to keep `README.md` up-to-date. `devtools::build_readme()` is handy for this. You could also use GitHub Actions to re-render `README.Rmd` every time you push. An example workflow can be found here: <https://github.com/r-lib/actions/tree/v1/examples>.

### 1.1 Results

You can also embed plots, code and data in an RMarkdown document. The core results of this repository are as follows:

In that case, don't forget to commit and push the resulting figure files, so they display on GitHub.

### 1.2 RStudio project file

- <https://r4ds.had.co.nz/workflow-projects.html> # About

This is a *sample* book written in **Markdown**. You can use anything that Pandoc's Markdown supports; for example, a math equation  $a^2 + b^2 = c^2$ .

### 1.3 Usage

Each **bookdown** chapter is an `.Rmd` file, and each `.Rmd` file can contain one (and only one) chapter. A chapter *must* start with a first-level heading: `# A`

good `chapter`, and can contain one (and only one) first-level heading.

Use second-level and higher headings within chapters like: `## A short section` or `### An even shorter section`.

The `index.Rmd` file is required, and is also your first book chapter. It will be the homepage when you render the book.

## 1.4 Render book

You can render the HTML version of this example book without changing anything:

1. Find the **Build** pane in the RStudio IDE, and
2. Click on **Build Book**, then select your output format, or select “All formats” if you’d like to use multiple formats from the same book source files.

Or build the book from the R console:

```
bookdown::render_book()
```

To render this example to PDF as a `bookdown::pdf_book`, you’ll need to install XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): <https://yihui.org/tinytex/>.

## 1.5 Preview book

As you work, you may start a local server to live preview this HTML book. This preview will update as you edit the book when you save individual `.Rmd` files. You can start the server in a work session by using the RStudio add-in “Preview book”, or from the R console:

```
bookdown::serve_book()
```

This week we are going to set up our projects ready for Terry Newmans sample/survey design session next week.

This will involve:

## 1.6 RMarkdown reports

We should all know what these are and how to render a report in RMarkdown. This week we will produce a Rmarkdown report for your question ready to add data and other sampling design using a simple word, html or pdf template.

```
library(rmarkdown)
library(rticles)
```

```
library(bookdown)
library(bookdownplus)
```

What does this tell us about how RProjects and other funky things work?

### 3. Data import

```
library(tidyverse)
#> -- Attaching packages ----- tidyverse 1.3.1 --
#> v ggplot2 3.3.5      v purrr  0.3.4
#> v tibble  3.1.6      v dplyr  1.0.8
#> v tidyr   1.2.0      v stringr 1.4.0
#> v readr   2.1.2      v forcats 0.5.1
#> -- Conflicts ----- tidyverse_conflicts() --
#> x dplyr::filter() masks stats::filter()
#> x dplyr::lag()    masks stats::lag()
library(readxl)
```

### 4. Data visualisation

### 5. Tidyverse approach

### 6. ggplot

Tasks ready for next week:

1. Outcome and predictor variables
2. Other studies with same sampling design
3. Other reference material.
4. Read a cool sampling design/issue paper

Watch this short (ish video) as a summary of what you should understand so far.

The references for a bookdown or rmarkdown file can be included using the following information in the yml header of the index file.

## 1.7 Manual references