

# MLDS Ethics - Part 1

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# Chapter 1

## About

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

### 1.1 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.

### 1.2 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.



## Chapter 2

# Hello bookdown

All chapters start with a first-level heading followed by your chapter title, like the line above. There should be only one first-level heading (#) per .Rmd file.

### 2.1 A section

All chapter sections start with a second-level (##) or higher heading followed by your section title, like the sections above and below here. You can have as many as you want within a chapter.

#### An unnumbered section

Chapters and sections are numbered by default. To un-number a heading, add a {.unnumbered} or the shorter {-} at the end of the heading, like in this section.





## Chapter 3

# Cross-references

Cross-references make it easier for your readers to find and link to elements in your book.

### 3.1 Chapters and sub-chapters

There are two steps to cross-reference any heading:

1. Label the heading: `# Hello world {#nice-label}`.
  - Leave the label off if you like the automated heading generated based on your heading title: for example, `# Hello world = # Hello world {#hello-world}`.
  - To label an un-numbered heading, use: `# Hello world {-#nice-label}` or `{# Hello world .unnumbered}`.
2. Next, reference the labeled heading anywhere in the text using `\@ref(nice-label)`; for example, please see Chapter 3.
  - If you prefer text as the link instead of a numbered reference use: any text you want can go here.

### 3.2 Captioned figures and tables

Figures and tables *with captions* can also be cross-referenced from elsewhere in your book using `\@ref(fig:chunk-label)` and `\@ref(tab:chunk-label)`, respectively.

See Figure 3.1.

```
par(mar = c(4, 4, .1, .1))
plot(pressure, type = 'b', pch = 19)
```

Don't miss Table 3.1.



Figure 3.1: Here is a nice figure!

```
knitr::kable(  
  head(pressure, 10), caption = 'Here is a nice table!',  
  booktabs = TRUE  
)
```

Table 3.1: Here is a nice table!

temperature	pressure
0	0.0002
20	0.0012
40	0.0060
60	0.0300
80	0.0900
100	0.2700
120	0.7500
140	1.8500
160	4.2000
180	8.8000



## Chapter 4

# Parts

You can add parts to organize one or more book chapters together. Parts can be inserted at the top of an .Rmd file, before the first-level chapter heading in that same file.

Add a numbered part: `# (PART) Act one {-}` (followed by `# A chapter`)

Add an unnumbered part: `# (PART\*) Act one {-}` (followed by `# A chapter`)

Add an appendix as a special kind of un-numbered part: `# (APPENDIX) Other stuff {-}` (followed by `# A chapter`). Chapters in an appendix are prepended with letters instead of numbers.



## Chapter 5

# Footnotes and citations

### 5.1 Footnotes

Footnotes are put inside the square brackets after a caret `^[]`. Like this one <sup>1</sup>.

### 5.2 Citations

Reference items in your bibliography file(s) using `@key`.

For example, we are using the **bookdown** package (Xie, 2022) (check out the last code chunk in `index.Rmd` to see how this citation key was added) in this sample book, which was built on top of R Markdown and **knitr** (Xie, 2015) (this citation was added manually in an external file `book.bib`). Note that the `.bib` files need to be listed in the `index.Rmd` with the YAML `bibliography` key.

The `bs4_book` theme makes footnotes appear inline when you click on them. In this example book, we added `cs1: chicago-fullnote-bibliography.cs1` to the `index.Rmd` YAML, and include the `.cs1` file. To download a new style, we recommend: <https://www.zotero.org/styles/>

The RStudio Visual Markdown Editor can also make it easier to insert citations: <https://rstudio.github.io/visual-markdown-editing/#/citations>

---

<sup>1</sup>This is a footnote.





## Chapter 6

# Blocks

### 6.1 Equations

Here is an equation.

$$f(k) = \binom{n}{k} p^k (1-p)^{n-k} \quad (6.1)$$

You may refer to using `\@ref{eq:binom}`, like see Equation (6.1).

### 6.2 Theorems and proofs

**Theorem 6.1.** *For a right triangle, if  $c$  denotes the length of the hypotenuse and  $a$  and  $b$  denote the lengths of the **other** two sides, we have*

$$a^2 + b^2 = c^2$$

Labeled theorems can be referenced in text using `\@ref{thm:tri}`, for example, check out this smart theorem 6.1.

Read more here <https://bookdown.org/yihui/bookdown/markdown-extensions-by-bookdown.html>.

### 6.3 Callout blocks

The `bs4_book` theme also includes special callout blocks, like this `.rmdnote`.

You can use **markdown** inside a block.

```
head(beaver1, n = 5)
#>   day time  temp activ
#> 1 346  840 36.33     0
#> 2 346  850 36.34     0
#> 3 346  900 36.35     0
#> 4 346  910 36.42     0
#> 5 346  920 36.55     0
```

It is up to the user to define the appearance of these blocks for LaTeX output.

You may also use: `.rmdcaution`, `.rmdimportant`, `.rmdtip`, or `.rmdwarning` as the block name.

The R Markdown Cookbook provides more help on how to use custom blocks to design your own callouts: <https://bookdown.org/yihui/rmarkdown-cookbook/custom-blocks.html>

## Chapter 7

# Sharing your book

### 7.1 Publishing

HTML books can be published online, see: <https://bookdown.org/yihui/bookdown/publishing.html>

### 7.2 404 pages

By default, users will be directed to a 404 page if they try to access a webpage that cannot be found. If you'd like to customize your 404 page instead of using the default, you may add either a `_404.Rmd` or `_404.md` file to your project root and use code and/or Markdown syntax.

### 7.3 Metadata for sharing

Bookdown HTML books will provide HTML metadata for social sharing on platforms like Twitter, Facebook, and LinkedIn, using information you provide in the `index.Rmd` YAML. To setup, set the `url` for your book and the path to your `cover-image` file. Your book's `title` and `description` are also used.

This `bs4_book` provides enhanced metadata for social sharing, so that each chapter shared will have a unique description, auto-generated based on the content.

Specify your book's source repository on GitHub as the `repo` in the `_output.yml` file, which allows users to view each chapter's source file or suggest an edit. Read more about the features of this output format here:

[https://pkgs.rstudio.com/bookdown/reference/bs4\\_book.html](https://pkgs.rstudio.com/bookdown/reference/bs4_book.html)

Or use:

```
?bookdown::bs4_book
```

# Build Information

This book was written in bookdown inside RStudio. The website [ethics-1.zakvarty.com](https://ethics-1.zakvarty.com) is hosted with Netlify. The complete source is available from GitHub.

The course logo was designed by Zak Varty.

This version of the book was built with:

```
#> setting value
#> version R version 4.2.0 (2022-04-22)
#> os      macOS Big Sur/Monterey 10.16
#> system  x86_64, darwin17.0
#> ui      X11
#> language (EN)
#> collate en_GB.UTF-8
#> ctype   en_GB.UTF-8
#> tz      Europe/London
#> date     2022-07-27
#> pandoc   2.18 @ /Applications/RStudio.app/Contents/MacOS/quarto/bin/tools/ (via rmarkdown)
```

Along with these packages:

Package	Version	Date	Source
bookdown	0.26	2022-04-15	CRAN (R 4.2.0)
brio	1.1.3	2021-11-30	CRAN (R 4.2.0)
cachem	1.0.6	2021-08-19	CRAN (R 4.2.0)
callr	3.7.0	2021-04-20	CRAN (R 4.2.0)
cli	3.3.0	2022-04-25	CRAN (R 4.2.0)
crayon	1.5.1	2022-03-26	CRAN (R 4.2.0)
desc	1.4.1	2022-03-06	CRAN (R 4.2.0)
devtools	2.4.3	2021-11-30	CRAN (R 4.2.0)
digest	0.6.29	2021-12-01	CRAN (R 4.2.0)
ellipsis	0.3.2	2021-04-29	CRAN (R 4.2.0)
evaluate	0.15	2022-02-18	CRAN (R 4.2.0)
fastmap	1.1.0	2021-01-25	CRAN (R 4.2.0)
fs	1.5.2	2021-12-08	CRAN (R 4.2.0)
glue	1.6.2	2022-02-24	CRAN (R 4.2.0)
htmltools	0.5.2	2021-08-25	CRAN (R 4.2.0)
knitr	1.39	2022-04-26	CRAN (R 4.2.0)
lifecycle	1.0.1	2021-09-24	CRAN (R 4.2.0)
magrittr	2.0.3	2022-03-30	CRAN (R 4.2.0)
memoise	2.0.1	2021-11-26	CRAN (R 4.2.0)
pkgbuild	1.3.1	2021-12-20	CRAN (R 4.2.0)
pkgload	1.2.4	2021-11-30	CRAN (R 4.2.0)
prettyunits	1.1.1	2020-01-24	CRAN (R 4.2.0)
processx	3.5.3	2022-03-25	CRAN (R 4.2.0)
ps	1.7.0	2022-04-23	CRAN (R 4.2.0)
purrr	0.3.4	2020-04-17	CRAN (R 4.2.0)
R6	2.5.1	2021-08-19	CRAN (R 4.2.0)
remotes	2.4.2	2021-11-30	CRAN (R 4.2.0)
rlang	1.0.2	2022-03-04	CRAN (R 4.2.0)
rmarkdown	2.14	2022-04-25	CRAN (R 4.2.0)
rprojroot	2.0.3	2022-04-02	CRAN (R 4.2.0)
rstudioapi	0.13	2020-11-12	CRAN (R 4.2.0)
sessioninfo	1.2.2	2021-12-06	CRAN (R 4.2.0)
stringi	1.7.6	2021-11-29	CRAN (R 4.2.0)
stringr	1.4.0	2019-02-10	CRAN (R 4.2.0)
testthat	3.1.4	2022-04-26	CRAN (R 4.2.0)
usethis	2.1.6	2022-05-25	CRAN (R 4.2.0)
withr	2.5.0	2022-03-03	CRAN (R 4.2.0)
xfun	0.31	2022-05-10	CRAN (R 4.2.0)
yaml	2.3.5	2022-02-21	CRAN (R 4.2.0)

# Bibliography

Xie, Y. (2015). *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2nd edition. ISBN 978-1498716963.

Xie, Y. (2022). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.26.