

TI

2023-03-07

Contents

	5
1	7
1.1 Usage	9
1.2 Render book	9
1.3 Preview book	9
2	11
2.1	11
2.2	11
2.3 (Stem-and-Leaf)	11
2.4	12
2.5	13
3 Hello bookdown	17
3.1 A section	17
4 (PART*)	19
5 Hello bookdown	21
5.1 A section	21
6 Hello bookdown	23
6.1 A section	23
7 Hello bookdown	25
7.1 A section	25
8 Hello bookdown	27
8.1 A section	27
9 Hello bookdown	29
9.1 A section	29

10 Hello bookdown	31
10.1 A section	31
11 Hello bookdown	33
11.1 A section	33
12 Hello bookdown	35
12.1 A section	35
13 Hello bookdown	37
13.1 A section	37
14 Hello bookdown	39
14.1 A section	39
15 Hello bookdown	41
15.1 A section	41
16 Hello bookdown	43
16.1 A section	43
17 Hello bookdown	45
17.1 A section	45
18 Hello bookdown	47
18.1 A section	47
19 Cross-references	49
19.1 Chapters and sub-chapters	49
19.2 Captioned figures and tables	49
20 Parts	53
21 Footnotes and citations	55
21.1 Footnotes	55
21.2 Citations	55
22 Blocks	57
22.1 Equations	57
22.2 Theorems and proofs	57
22.3 Callout blocks	57
23 Sharing your book	59
23.1 Publishing	59
23.2 404 pages	59
23.3 Metadata for sharing	59

<https://bookdown.org/yihui/rmarkdown-cookbook/>

Chapter 1

```
1          ( )

= -          = - \times 9

*          *

2          4          6

\bullet
\bullet
\bullet          4          \underline{ }
\bullet
\bullet

3          \end{exampleblock}

%\pause

\begin{itemize} \item          '' \item \underline{ } \underline{ } ''
\end{itemize}

4          ''          ''
\end{exampleblock}

%\pause

\begin{itemize} \item          “ ”          \begin{itemize} \item
2          %          2015/4/2 \end{itemize}

\item          \item          “ ”
\end{itemize}
```

5

`\end{exampleblock}`

`\pause`

`\begin{itemize} \item GDP`

`\begin{alertblock}{ (2015)} \begin{itemize} \item 1\% 1 GDP 0.24\%`

`\item 1\% 1 GDP 0.32\% \end{itemize} \end{alertblock} (2015)`

`%(http://www.esri.go.jp/jp/archive/e_\dis/e_\dis314/e_\dis3`

`14.p df) \end{itemize} \end{alertblock} \begin{itemize} \item`

`\item 1\%\uparrow 1 GDP 0.24\%\downarrow`

`\item 1\%\uparrow 1 GDP 0.32\%\downarrow \end{itemize} (2015)`

`%(http://www.esri.go.jp/jp/archive/e_\dis/e_\dis314/e_\dis314.pdf)`

`\end{itemize} \end{itemize}`

6



Figure 1.1: image of histogram

%%%%%%%%%

`\begin{frame}\frame{ } \begin{block}{ }`

`\end{block}`

`\begin{enumerate} \item \textcolor{red}{ } \textcolor{red}{ }`

`\pause \vspace{5mm}`

`\item \textcolor{red}{ } \textcolor{red}{ } \end{enumerate}`

-
- 1 ()
 - 2 ()
 - 3
 - 4
 - 5
-

Qiita <https://qiita.com/kamorits/items/6f342da395ad57468ae3>

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.

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/>.

1.3 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()
```


Chapter 2

2.1

•

ID					...	GPA	()
155001	3	S	A	...	3.67	45	
155002	3	C	B	...	1.73	90	
:	:	:	:		:	:	

{ }

2.2

2.3 (Stem-and-Leaf)

() 50 ()

|—|—|—|—|—|—|—|—|—| 5 | 9 | 15 | 15 | 17 | 24 | 25 | 25 | 27 | 29 | 29 |
29 | 32 | 32 | 34 | 34 | 35 | 36 | 36 | 38 | 38 | 39 | 39 | 39 | 39 | 43 | 44 | 44 | 44 |
45 | 45 | 47 | 47 | 47 | 52 | 54 | 54 | 56 | 58 | 59 | 59 | 67 | 73 | 75 | 79 | 82 | 84 |
| 84 | 89 | 99 |

()
• ()
•

29
↑ ↑

10	1
0	59
1	557
2	4557999
3	2244566889999
4	344455777
5	2446899
6	7
7	359
8	2449
9	9

() 50
• 25
• 25
•
(, median) ,

2.4

() 50 ()

0-9	2
10-19	3
20-29	7
30-39	13
40-49	9
50-59	7
60-69	1

70-79	3
80-89	4
90-99	1

frequency distribution

class

frequency

- — 10 2 90 1 30
- —
- 100 10 5 ⇒ “ ”

2.5

() 50 (histogram)

()

50 (histogram)

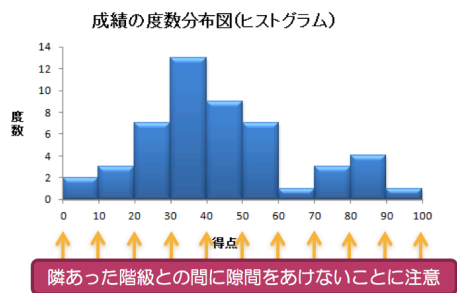


Figure 2.1: image of histogram

(Sturges)

- $$1. \quad m \qquad n \qquad m$$

$$m \approx 1 + \frac{\log_{10} n}{\log_{10} 2} \approx 1 + 3.32 \log_{10} n$$

$$\approx \quad (\log_{10} 2 \approx 0.301)$$

- $$c \approx \frac{x_{\max} - x_{\min}}{1 + 3.32 \log_{10} n} = \frac{1000000 - 100000}{1 + 3.32 \log_{10} 1000000} = 100000$$

- (maximum)'' (minimum)''
- “ (range)''

$$\left(\begin{array}{c} \\ \end{array} \right) \begin{array}{c} 50 \\ 5 \end{array} \quad \left(\begin{array}{c} \\ \end{array} \right) \begin{array}{c} 5 \\ 99 \end{array} \quad m \quad c$$

1.

<hr/>	
<hr/>	
n	50
x_{max}	99
x_{min}	5
<hr/>	

2. m

$$m \approx 1 + 3.32 \times \log_{10} \underset{\substack{\uparrow \\ n}}{50} \approx 1 + 3.32 \times 1.699 \approx 1 + 5.64 = 6.64$$

3. c

$$c \approx \text{---} \approx \frac{99 - 5}{7} \approx 13$$

1.

2.

3.

1.

2.

2.5.1

()

1. 30

2. 30

3. 50

4. 50

1. 13 2. 26 3. 34 4. 68

() 31 40

$$30 = \frac{30}{\text{---}} = \frac{13}{50} = 0.26$$

	()	()	
0-9	2	0.04	$\leftarrow 2/50$
10-19	3	0.06	$\leftarrow 3/50$
20-29	7	0.14	
30-39	13	0.26	$\leftarrow 13/50$
40-49	9	0.18	
50-59	7	0.14	
60-69	1	0.02	
70-79	3	0.06	
80-89	4	0.08	
90-99	1	0.02	
	50	1.00	

Chapter 3

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.

3.1 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 4

(PART*)

Chapter 5

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.

5.1 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 6

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.

6.1 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 7

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.

7.1 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 8

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.

8.1 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 9

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.

9.1 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 10

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.

10.1 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 11

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.

11.1 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 12

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.

12.1 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 13

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.

13.1 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 14

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.

14.1 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 15

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.

15.1 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 16

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.

16.1 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 17

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.

17.1 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 18

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.

18.1 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 19

Cross-references

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

19.1 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 19.
 - If you prefer text as the link instead of a numbered reference use: any text you want can go here.

19.2 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 19.1.

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

Don't miss Table 19.1.

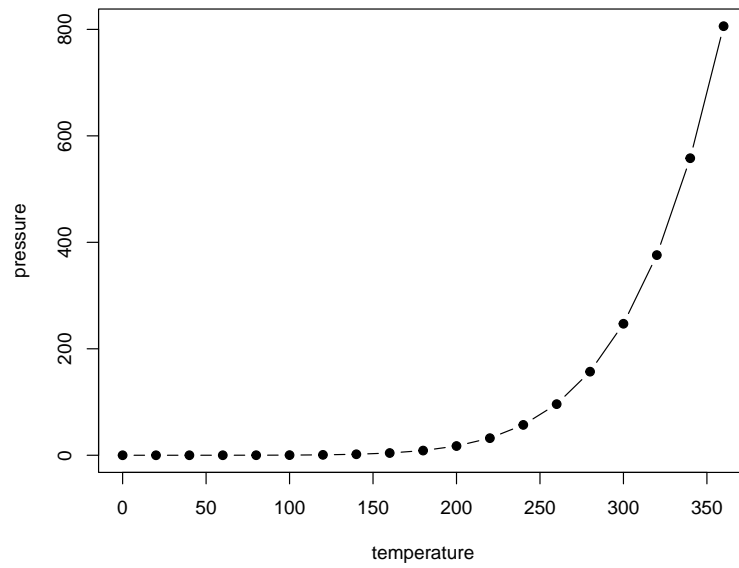


Figure 19.1: Here is a nice figure!

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

Table 19.1: 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 20

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 21

Footnotes and citations

21.1 Footnotes

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

21.2 Citations

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

For example, we are using the **bookdown** package (Xie, 2023) (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>

¹This is a footnote.

Chapter 22

Blocks

22.1 Equations

Here is an equation.

$$f(k) = \binom{n}{k} p^k (1-p)^{n-k} \quad (22.1)$$

You may refer to using `\@ref{eq:binom}`, like see Equation (22.1).

22.2 Theorems and proofs

Labeled theorems can be referenced in text using `\@ref{thm:tri}`, for example, check out this smart theorem 22.1.

Theorem 22.1. *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*

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

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

22.3 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 23

Sharing your book

23.1 Publishing

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

23.2 404 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.

23.3 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

Or use:

```
?bookdown::bs4_book
```

Bibliography

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

Xie, Y. (2023). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.32.