

A Minimal Book Example

John Doe

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0.1 Acknowledgements

```
bookdown::serve_book()  
bookdown::render_book("index.Rmd", "bookdown::pdf_book")
```


Chapter 1

Introduction

1.1 From 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.

1.2 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 2

Cross-references

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

2.1 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 2.
 - If you prefer text as the link instead of a numbered reference use: any text you want can go here.

2.2 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 2.1.

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

Don't miss Table 2.1.

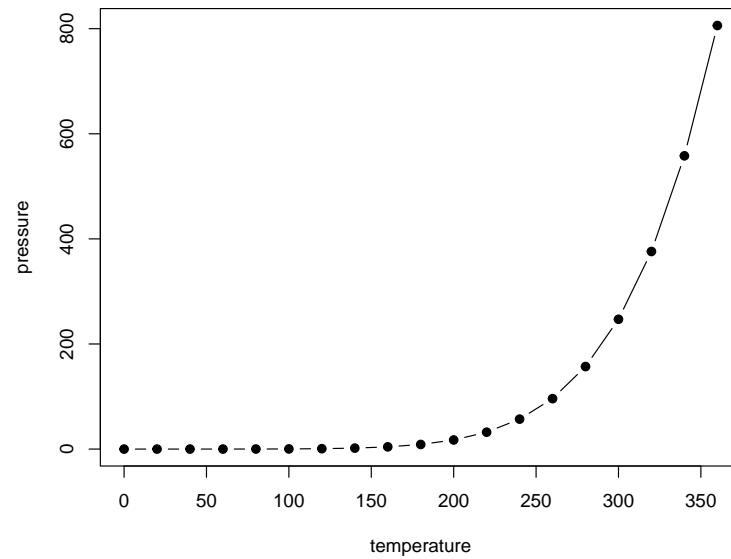


Figure 2.1: Here is a nice figure!

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


Table 2.1: 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 3

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 4

Footnotes and citations

4.1 Footnotes

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

4.2 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 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 5

Blocks

5.1 Equations

Here is an equation.

$$f(k) = \binom{n}{k} p^k (1-p)^{n-k} \quad (5.1)$$

You may refer to using `\@ref{eq:binom}`, like see Equation (5.1).

5.2 Theorems and proofs

Labeled theorems can be referenced in text using `\@ref{thm:tri}`, for example, check out this smart theorem 5.1.

Theorem 5.1. *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>.

5.3 Callout blocks

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 6

Sharing your book

6.1 Publishing

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

6.2 404 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.

6.3 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 `gitbook` uses the same social sharing data across all chapters in your book—all links shared will look the same.

Specify your book's source repository on GitHub using the `edit` key under the configuration options in the `_output.yml` file, which allows users to suggest an edit by linking to a chapter's source file.

Read more about the features of this output format here:

<https://pkgs.rstudio.com/bookdown/reference/gitbook.html>

Or use:

```
?bookdown::gitbook
```

Chapter 7

{auscensus} Vignette

Retrieved from https://gh.carlosyanez.id.au/auscensus/articles/complex_case.html

This vignette shows a more complex use case of auscensus. Let's assume we want to extract the percentage of Australian Citizens for all Commonwealth Electoral Divisions, as measured in last 4 Censuses (2006-2021).

An initial exploration shows that this data can be found in table 01 (across all four censuses) - which provided an statistical summary. However, is not published aggregated by electorate across all censuses.

```
## eval: true

census_tables <- list_census_tables() |>
  filter(if_any(any_of("Number"), ~ .x %in% c("01")))

tables_summary <- census_tables |>
  select(-contains("Table")) |>
  pivot_longer(-Number, names_to="Year", values_to = "Value") |>
  filter(!is.na(Value)) |>
  select(-Value)

list_census_geo_tables(year = tables_summary$Year, geo="CED|CED_2007|CED_2004", table_number = tabl
  mutate(Year=as.character(Year)) |>
  right_join(tables_summary, by=c("table_number"="Number", "Year"="Year"))
```

Therefore, we will retrieve the data from the lowest statistical unit. However, SA1 were not available in 2006 - where the smallest area was a “CD”.

```

## eval: true

list_census_geo_tables(year = tables_summary$Year, geo=c("SA1|CD"), table_number = tables_summary$Number) |>
  mutate(Year=as.character(Year)) |>
  right_join(tables_summary, by=c("table_number"="Number", "Year"="Year"))

```

The next step is to figure the attributes for the numbers of Australian citizen and total population, which are presented below:

```

citizenship_attributes <- tibble()

for(i in 1:nrow(tables_summary)){

  table_i <- tables_summary[i,]$Number
  year_i <- tables_summary[i,]$Year

  attr_i <- list_census_attributes(table_i) |>
    pivot_longer(~c(Table,Attribute),
                 names_to="Year", values_to = "Value") |>
    filter(Year==year_i) |>
    filter(!is.na(Value)) |>
    select(-Value)

  citizenship_attributes <- bind_rows(attr_i, citizenship_attributes)
}

citizenship_attributes |>
  head()

citizenship_attributes <- citizenship_attributes |>
  distinct(Attribute, Year) |>
  filter(str_detect(Attribute, "[Aa]ustralian")) |>
  filter(str_detect(Attribute, "[Pp]erson")) |>
  mutate(dummy=TRUE) |>
  pivot_wider(names_from = Year, values_from = dummy) |>
  bind_rows(
    citizenship_attributes |>
      distinct(Attribute, Year) |>
      filter(str_detect(Attribute, "[Tt]otal")) |>
      filter(str_detect(Attribute, "[Pp]ersons$")) |>
      mutate(dummy=TRUE) |>
      pivot_wider(names_from = Year, values_from = dummy)
  )

```

```
)

citizenship_attributes
```

Using *attribute_tibble_to_list*, this data frame can be converted into the required format.

```
citizenship_attributes <- citizenship_attributes |>
  select(Attribute) |>
  mutate(AttrNew = case_when(
    str_detect(Attribute,"Australian") ~ "Australian Citizens",
    str_detect(Attribute,"Total")      ~ "Total"
  ))

levels <- attribute_tibble_to_list(citizenship_attributes)
```

Now, we can cycle through the four censuses and extract the data. Please note that CDs and SAs are not equivalent, but they are stored together for convenience:

```
census_years <- c("2006","2011","2016","2021")

citizenship <- tibble()

for(year in census_years){

  if(year=="2006"){
    geo_structure_x <- "CD"
  } else{
    geo_structure_x <- "SA1"
  }

  citizenship_i <- get_census_summary(census_table = census_tables,
                                     selected_years = year,
                                     geo_structure=geo_structure_x,
                                     attribute = levels)

  citizenship <- bind_rows(citizenship,citizenship_i)

}

#> ERROR : [EBUSY] Failed to remove 'C:/Users/carlo/OneDrive/Documents/.auscensus_cache/CD_NSW_BO
#> ERROR : [EBUSY] Failed to remove 'C:/Users/carlo/OneDrive/Documents/.auscensus_cache/2011Cens
#> ERROR : [EBUSY] Failed to remove 'C:/Users/carlo/OneDrive/Documents/.auscensus_cache/2016Cens
```

```
#> ERROR : [EBUSY] Failed to remove 'C:/Users/carlo/OneDrive/Documents/.auscensus_cache'
```

```
rm(citizenship_i,geo_structure_x,levels,citizenship_attributes)
```

To aggregate the data, `aussiemaps::geo_aggregate()` can help using area to apportion on non-overlapping cases. Then, this package's `calculate_percentage()` will take the totals from the list and calculate percentages.

```
citizenship_ced<- tibble()
codes <- c("CD_CODE_2006","SA1_7DIGITCODE_2011","SA1_7DIGITCODE_2016","SA1_CODE_2021")
ceds  <- c("CED_NAME_2006","CED_NAME_2011","CED_NAME_2016","CED_NAME_2021")

for(i in 1:length(census_years)){

  year <- as.double(census_years[i])

  value_i <- citizenship |>
    filter(Year==year)      |>
    select(-Unit)           |>
    rename(!!codes[i]!="Census_Code") |>
    collect() |>
    aussiemaps::geo_aggregate(
      values_col="Value",
      original_geo=codes[i],
      new_geo=ceds[i],
      grouping_col = c("Year","Attribute"),
      year=census_years[i]) |>
    rename("Unit"=ceds[i]) |>
    filter(!is.na(Unit))    |>
    filter(str_detect(Unit,"[Ss]hipping",TRUE))|>
    filter(str_detect(Unit,"[Uu]sual",TRUE))  |>
    filter(str_detect(Unit,"[Aa]pplicable",TRUE))

  value_i <- value_i |>
    auscensus::calculate_percentage(key_col = "Attribute",
                                   value_col = "Value",
                                   key_value = "Total",
                                   percentage_scale = 100)

  citizenship_ced <- bind_rows(citizenship_ced,value_i)

}
```

citizenship_ced

Bibliography

Yihui Xie. *Dynamic Documents with R and knitr*. Chapman and Hall/CRC, Boca Raton, Florida, 2nd edition, 2015. URL <http://yihui.org/knitr/>. ISBN 978-1498716963.

Yihui Xie. *bookdown: Authoring Books and Technical Documents with R Markdown*, 2022. URL <https://CRAN.R-project.org/package=bookdown>. R package version 0.31.