Frida Gomam

A Chapman & Hall/CRC Book Example Using bookdown

To my son,

without whom I should have finished this book two years earlier

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Preface

Hi there, this is my great book.

Why read this book

It is very important...

Structure of the book

Chapters 1 introduces a new topic, and ...

Software information and conventions

I used the **knitr** package (Xie, 2015) and the **bookdown** package (Xie, 2020) to compile my book. My R session information is shown below:

```
xfun::session_info()
```

```
## R version 4.0.2 (2020-06-22)
## Platform: x86_64-w64-mingw32/x64 (64-bit)
## Running under: Windows 10 x64 (build 19043)
##
## Locale:
##   LC_COLLATE=English_United States.1252
##   LC_CTYPE=English_United States.1252
##   LC_MONETARY=English_United States.1252
##   LC_NUMERIC=C
##   LC_TIME=English_United States.1252
```

```
##
## Package version:
##   base64enc_0.1.3 bookdown_0.21   compiler_4.0.2
##   digest_0.6.28   evaluate_0.14   fastmap_1.1.0
##   glue_1.4.2      graphics_4.0.2  grDevices_4.0.2
##   highr_0.8       htmltools_0.5.2 jsonlite_1.7.2
##   knitr_1.31      magrittr_2.0.1  markdown_1.1
##   methods_4.0.2   mime_0.11       rlang_0.4.11
##   rmarkdown_2.8   rstudioapi_0.13 stats_4.0.2
##   stringi_1.7.4   stringr_1.4.0   tinytex_0.31
##   tools_4.0.2     utils_4.0.2     xfun_0.25
##   yaml_2.2.1
```

Package names are in bold text (e.g., **rmarkdown**), and inline code and filenames are formatted in a typewriter font (e.g., `knitr::knit('foo.Rmd')`). Function names are followed by parentheses (e.g., `bookdown::render_book()`).

Acknowledgments

A lot of people helped me when I was writing the book.

Frida Gomam
on the Mars

About the Author

Frida Gomam is a famous lady. Police will always let her go.

1

Introduction

Now unplug your Internet cable, and start doing some serious work.

We have a nice figure in Figure 1.1, and also a table in Table 1.1.

```
par(mar = c(4, 4, 1, .1))
plot(cars, pch = 19)
```

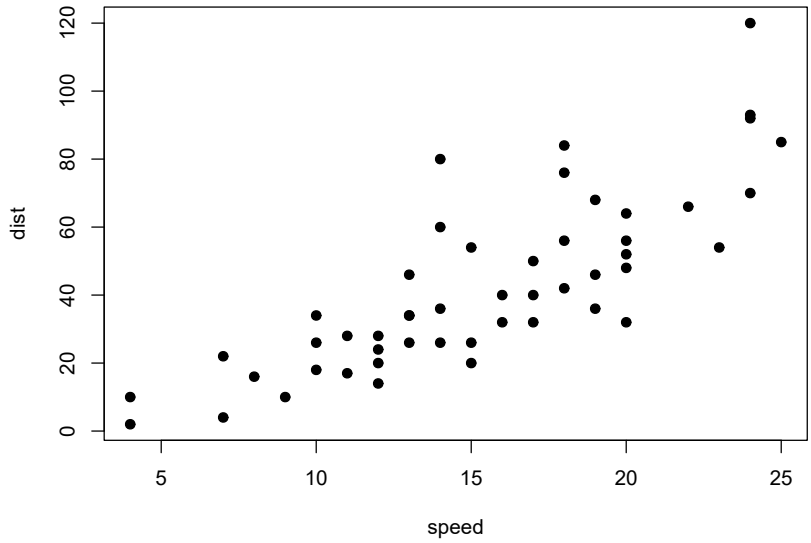

FIGURE 1.1 Hello World!

```
knitr::kable(
  head(iris), caption = 'The boring iris data.',
  booktabs = TRUE
)
```

More chapters to come in `02-foo.Rmd`, `03-bar.Rmd`, ...

TABLE 1.1 The boring iris data.

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
5.1	3.5	1.4	0.2	setosa
4.9	3.0	1.4	0.2	setosa
4.7	3.2	1.3	0.2	setosa
4.6	3.1	1.5	0.2	setosa
5.0	3.6	1.4	0.2	setosa
5.4	3.9	1.7	0.4	setosa

The following examples have been taken from the lmplot help page of the micromap R package. Figure 1.2 shows the first basic micromap plot.

```
library(micromap)
```

```
## Warning: package 'micromap' was built under R version
## 4.0.3

## Loading required package: maptools

## Warning: package 'maptools' was built under R version
## 4.0.4

## Loading required package: sp

## Checking rgeos availability: TRUE

## Loading required package: RColorBrewer

## Loading required package: rgdal

## Warning: package 'rgdal' was built under R version
## 4.0.3

## rgdal: version: 1.5-18, (SVN revision 1082)
## Geospatial Data Abstraction Library extensions to R successfully loaded
## Loaded GDAL runtime: GDAL 3.0.4, released 2020/01/28
##     Path     to     GDAL     shared     files:     C:/Users/mbeck/R/win-
library/4.0/rgdal/gdal
## GDAL binary built with GEOS: TRUE
## Loaded PROJ runtime: Rel. 6.3.1, February 10th, 2020, [PJ_VERSION: 631]
##     Path     to     PROJ     shared     files:     C:/Users/mbeck/R/win-
library/4.0/rgdal/proj
## Linking to sp version:1.4-4
## To mute warnings of possible GDAL/OSR exportToProj4() degradation,
## use options("rgdal_show_exportToProj4_warnings"="none") before loading rgdal.
```

```
# initial example

data("USstates")
head(USstates@data)
```

```
##   ST    ST_NAME AREA_KM PERIM_KM
## 0 AK     Alaska 1506038    60261
## 1 AL    Alabama  133761     2355
## 2 AR   Arkansas  137734     2172
## 3 AZ    Arizona  295267     2395
## 4 CA California  409603     5682
## 5 CO   Colorado  269600     2100
```

```
statePolys <- create_map_table(USstates, 'ST')
head(statePolys)
```

```
##   ID region poly coordsx coordsy hole plotorder plug
## 1 AK      1    1       2       5    0         1    0
## 2 AK      1    1       7      10    0         1    0
## 3 AK      1    1       4      12    0         1    0
## 4 AK      1    1       7      15    0         1    0
## 5 AK      1    1       4      15    0         1    0
## 6 AK      1    1       4      17    0         1    0
```

```
data("edPov")

# basic figure 1
lmplot(stat.data = edPov,
    map.data = statePolys,
    panel.types = c('labels', 'dot', 'dot','map'),
    panel.data = list('state','pov','ed', NA),
    ord.by = 'pov',
    grouping = 5, median.row = TRUE,
    plot.width = 2, plot.height = 6,
    map.link = c('StateAb','ID'))
```

This gets further refined now. Figure 1.3 shows the resulting second micromap plot.

```
# publication figure 1a
lmplot(stat.data = edPov,  map.data = statePolys ,
    panel.types = c('labels', 'dot', 'dot','map'),
    panel.data = list('state','pov','ed', NA),
```

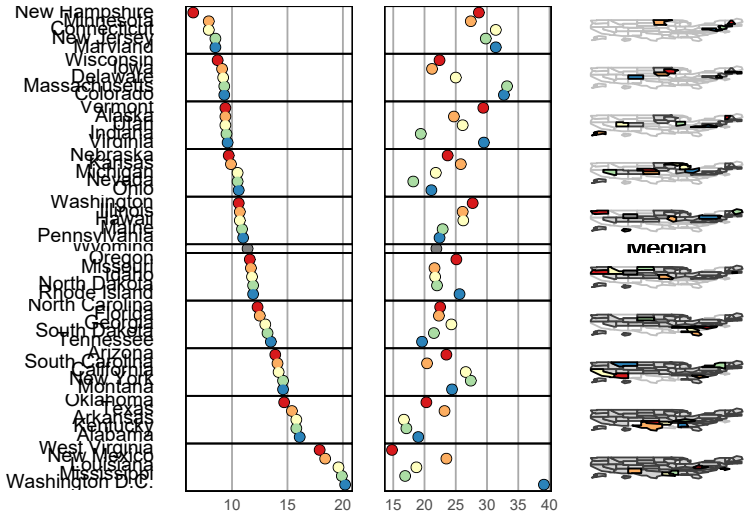

FIGURE 1.2 Here is a first micromap example.

```
    ord.by = 'pov',
    grouping = 5,
    median.row = TRUE,
    map.link = c('StateAb','ID'),

    plot.height = 9,
    colors = c('red','orange','green','blue','purple'),
    map.color2 = 'lightgray',

    panel.att = list(
        list(1, header = 'States', panel.width = .8, align = 'left',
          text.size = .9),
            list(2, header = 'Percent Living Below \n Poverty Level',
                graph.bgcolor = 'lightgray', point.size = 1.5,
                xaxis.ticks = list(10,15,20), xaxis.labels = list(10,15,20),
                xaxis.title = 'Percent'),
            list(3, header = 'Percent Adults With\n4+ Years of College',
                graph.bgcolor = 'lightgray', point.size = 1.5,
                xaxis.ticks = list(0,20,30,40), xaxis.labels = list(0,20,30,40),
                xaxis.title = 'Percent'),
            list(4, header = 'Light Gray Means\nHighlighted Above',
                inactive.border.color = gray(.7), inactive.border.size = 2,
                panel.width = .8)))
```

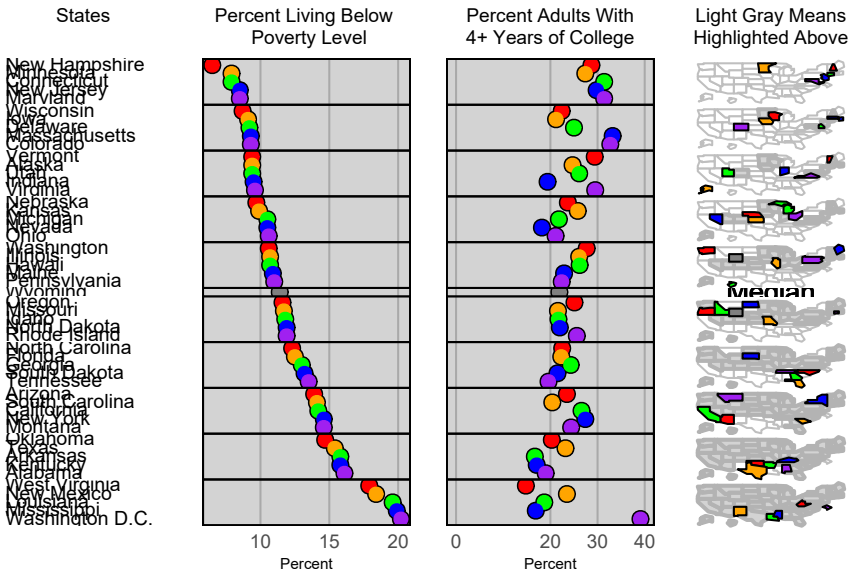

FIGURE 1.3 And here is a second micromap example.

Some more refinements, resulting in Figure 1.4.

```
edPov$points <- 0

# publication figure 1b
lmplot (stat.data = edPov, map.data = statePolys,
    panel.types = c('dot',  'labels', 'dot', 'dot', 'map'),
    panel.data = list('points', 'state', 'pov', 'ed', NA),
    map.link = c('StateAb','ID'),
    ord.by = 'pov',
    grouping = 5,
    median.row = TRUE,

    plot.height = 9,

    colors = c('red','orange','green','blue','purple'),
    map.color2 = 'lightgray',

    panel.att = list(list(1, panel.width = .15, point.type = 20,
```

```
                    graph.border.color = 'white',
                    xaxis.text.display = FALSE, xaxis.line.display = FALSE,
                    graph.grid.major = FALSE),

                list(2, header = 'States', panel.width = .8,
                    align = 'left', text.size = .9),

                list(3, header = 'Percent Living Below\nPoverty Level',
                    graph.bgcolor = 'lightgray', point.size = 1.5,
                    xaxis.ticks = list(10,15,20),
                    xaxis.labels = list(10,15,20),
                    xaxis.title = 'Percent'),

                list(4, header = 'Percent Adults With\n4+ Years of College',
                    graph.bgcolor = 'lightgray', point.size = 1.5,
                    xaxis.ticks = list(20,30,40),
                    xaxis.labels = list(20,30,40),
                    xaxis.title = 'Percent'),

                list(5, header = 'Light Gray Means\nHighlighted Above',
                    inactive.border.color = gray(.7), inactive.border.size = 2,
                    panel.width = .8)))
```

Final refinements. Here, the code is run separately. The figure is not shown. Rather, an external figure (jpeg or pdf) is created. Eventually, in Figure 1.5, this externally created figure is shown.

```
# publication figure 1c
lmplot(stat.data = edPov, map.data = statePolys,
    panel.types = c('map', 'dot',  'labels', 'dot', 'dot'),
    panel.data = list(NA, 'points', 'state', 'pov', 'ed'),
    map.link = c('StateAb','ID'),
    ord.by = 'pov',
    grouping = 5,
    median.row = TRUE,

    plot.height = 9,

    colors = c('red','orange','green','blue','purple'),
    map.color2 = 'lightgray',

    print.file = 'JSmicromap4.jpeg',
```

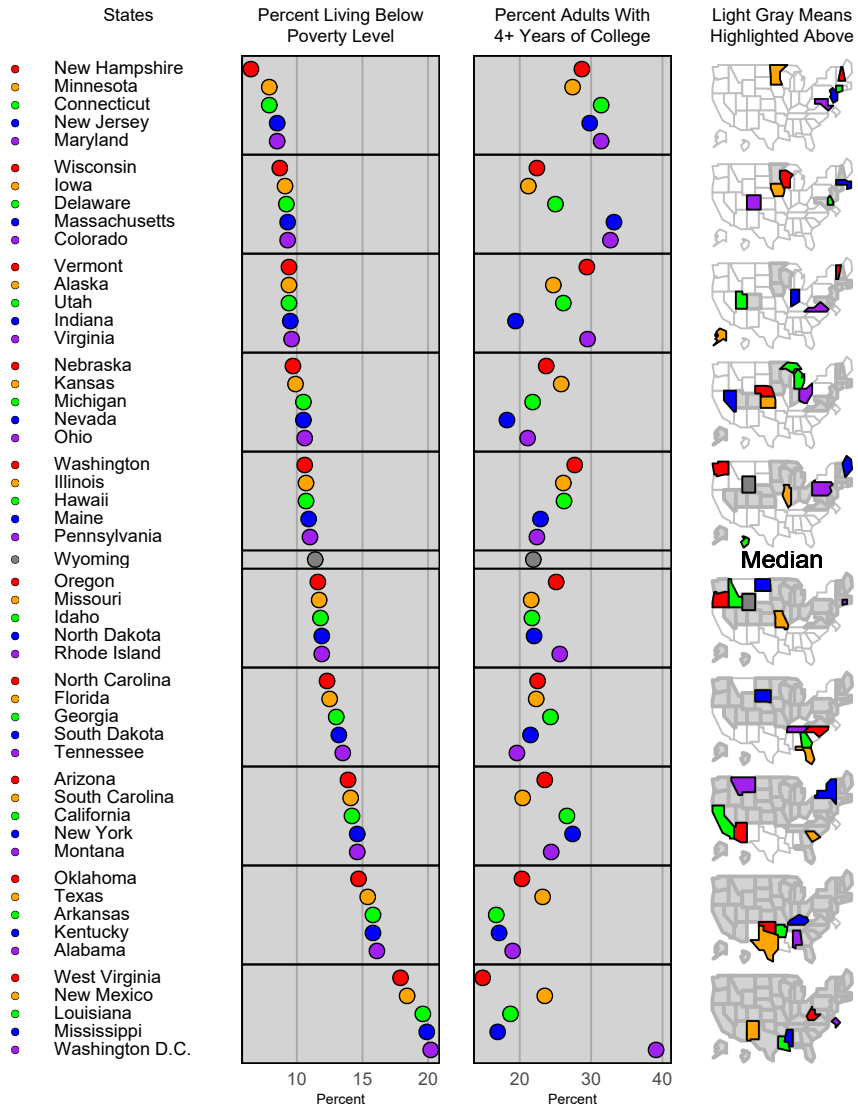

FIGURE 1.4 And now the third (revised) micromap example.

```
    panel.att = list(list(2, panel.width = .15, point.type = 20,
                graph.border.color = 'white',
                xaxis.text.display = FALSE, xaxis.line.display = FALSE,
                graph.grid.major = FALSE),

              list(3, header = 'States', panel.width = .8,
                  align = 'left', text.size = .9),

              list(4, header = 'Percent Living Below\nPoverty Level',
                  graph.bgcolor = 'lightgray', point.size = 1.5,
                  xaxis.ticks = list(10,15,20), xaxis.labels = list(10,15,20),
                  xaxis.title = 'Percent'),

              list(5, header = 'Percent Adults With\n4+ Years of College',
                  graph.bgcolor = 'lightgray', point.size = 1.5,
                  xaxis.ticks = list(20,30,40),
                  xaxis.labels = list(20,30,40),
                  xaxis.title = 'Percent'),

              list(1, header = 'Light Gray Means\nHighlighted Above',
                  inactive.border.color = gray(.7), inactive.border.size = 2,
                  panel.width = .8)))
```

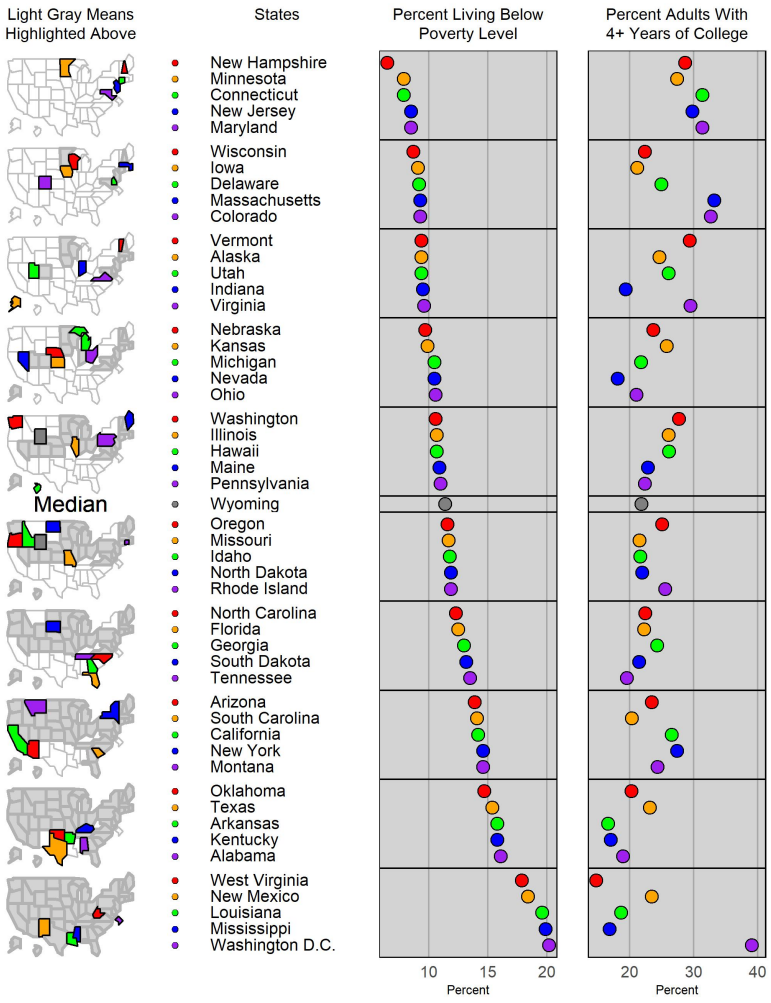

FIGURE 1.5 And now the fourth (and final) micromap example.

2

The FOO Method

We talk about the *FOO* method in this chapter.

A

More to Say

Yeah! I have finished my book, but I have more to say about some topics. Let me explain them in this appendix.

To know more about **bookdown**, see https://bookdown.org.

Bibliography

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

Xie, Y. (2020). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.21.

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