Solutions for Computational Probability and Statistics

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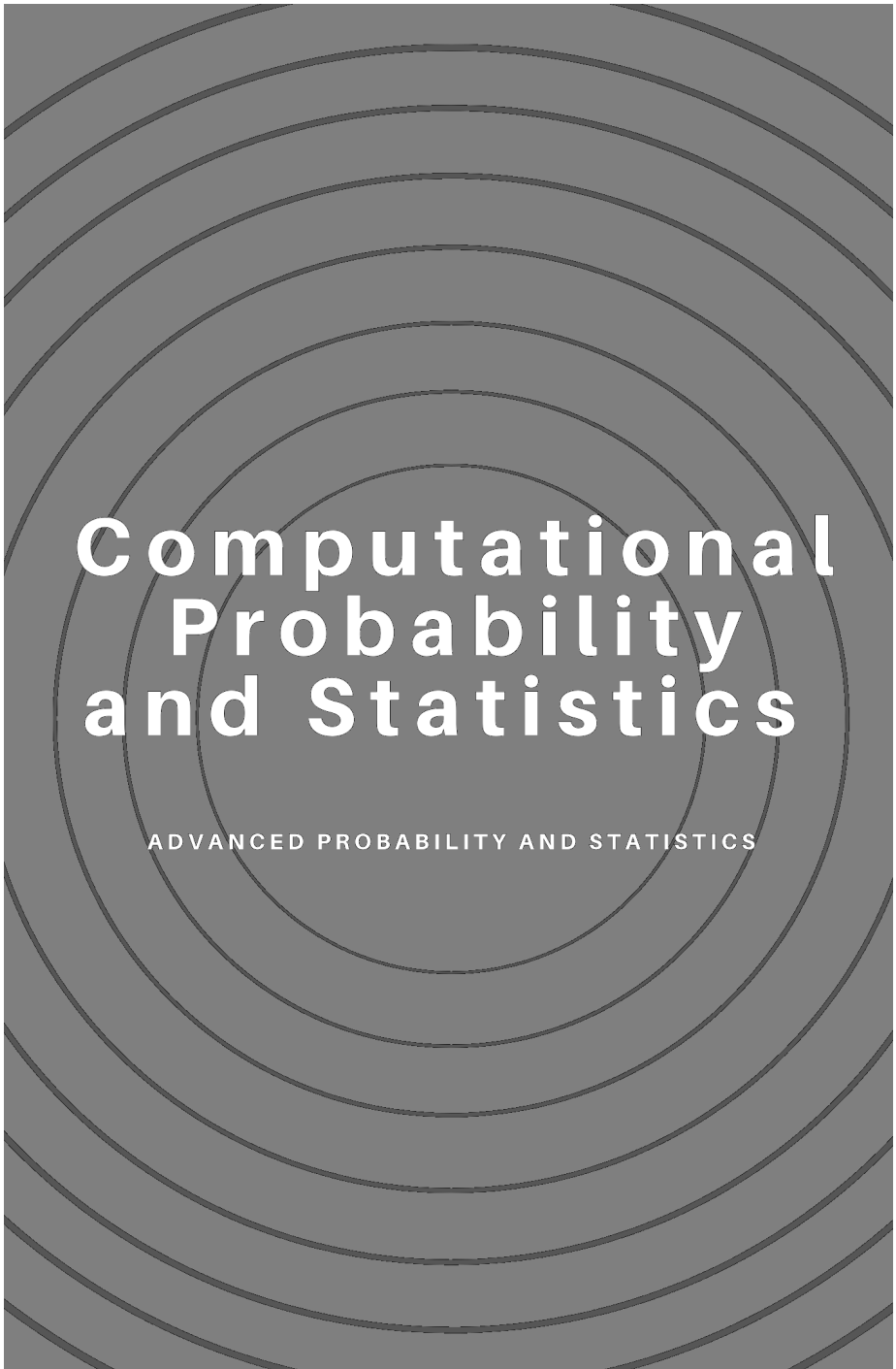
Contents

Preface


Computational
Probability
and Statistics
ADVANCED PROBABILITY AND STATISTICS

Contained in this volume are the solutions to homework problems in the Computational Probability and Statistics book.

0.1 Book Structure and How to Use It

This solution manual is setup to match the structure of the accompanying book.

The learning outcomes for this course are to use computational and mathematical statistical/probabilistic concepts for:

a. Developing probabilistic models
b. Developing statistical models for inference and description
c. Advancing practical and theoretical analytic experience and skills

0.2 Packages

These notes make use of the following packages in R **knitr** (Xie, 2020b), **rmarkdown** (Allaire et al., 2020), **mosaic** (Pruim et al., 2020), **mosaicCalc** (Kaplan et al., 2020), **tidyverse** (Wickham, 2019), **ISLR** (James et al., 2017), **vcd** (Meyer et al., 2020), **ggplot2** (Wickham et al., 2020), **MASS** (Ripley, 2019), **openintro** (Çetinkaya Rundel et al., 2020), **broom** (Robinson et al., 2020), **infer** (Bray et al., 2020), **ISLR** (James et al., 2017), **kableExtra** (Zhu, 2020), **DT** (Xie et al., 2020).

0.3 File Creation Information

- File creation date: 2021-03-08
- Windows version: Windows 10 x64 (build 18362)
- R version 3.6.3 (2020-02-29)

Chapter 1

Introduction

You can label chapter and section titles using `{#label}` after them, e.g., we can reference Chapter 1. If you do not manually label them, there will be automatic labels anyway, e.g., Chapter 3.

Figures and tables with captions will be placed in `figure` and `table` environments, respectively.

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

Reference a figure by its code chunk label with the `fig:` prefix, e.g., see Figure 1.1. Similarly, you can reference tables generated from `knitr::kable()`, e.g., see Table 1.

```
knitr::kable(
  head(iris, 20), caption = 'Here is a nice table!',
  booktabs = TRUE
)
```

Here is a nice table!

Sepal.Length

Sepal.Width

Petal.Length

Petal.Width

Species

5.1

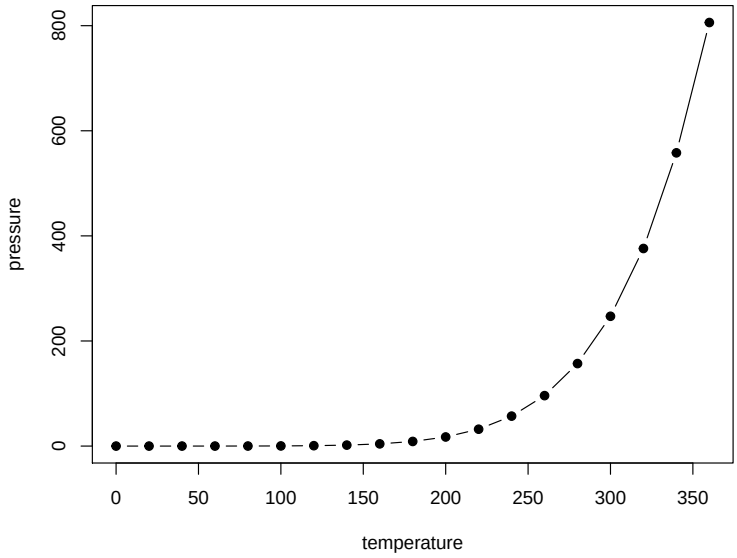


Figure 1.1: Here is a nice figure!

3.5

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setosa

You can write citations, too. For example, we are using the **bookdown** package (Xie, 2020a) in this sample book, which was built on top of R Markdown and **knitr** (Xie, 2015).

Chapter 2

Literature

Here is a review of existing methods.

Chapter 3

Methods

We describe our methods in this chapter.

Chapter 4

Applications

Some *significant* applications are demonstrated in this chapter.

4.1 Example one

4.2 Example two

Chapter 5

Final Words

We have finished a nice book.

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