Introduction to the workbook

In this introduction some basic principles are defined that are followed throughout the workbook to guide you through discovering statistics using R. However, to help you understand the basic theoretical principles of statistics we use the open-source textbook *Learning Statistics with R (Version 0.6)*, which is freely available at https://learningstatisticswithr.com/lsr-0.6.pdf. The required reading from this textbook is shown at the beginning of each chapter. While working through the assignments of the various chapters there are a couple of different sections that you can encounter.

Learning objectives

Every chapter has specific learning objectives that give you an initial impression about what you will learn during the assignments of that chapter. These learning objectives also provide a good indication of your ability after finishing the assignments in a chapter, since you can go back and make sure that you master all of them.

The learning objectives are shown at the beginning of each chapter in a `yellow` box.

Learning objectives of this chapter:

Exercises by hand

Fancy some mathematical exercise? When you see the icon to the right you know that you will be expected to perform calculations by hand (or by the use of a simple calculator). For example, you may get asked to calculate the mean of a small data set in an assignment.

Exercises in R

The icon to the right is shown when it is time to start programming in R. You may warm up your programming fingers, since you will be asked to write and run your own code in the assignments that follow.

Writing exercises

In practice, being able to perform the required statistical analysis is only the beginning. When the results are in, they need to be clearly communicated to other stakeholders. The icon to the right appears when an assignment requires you to write a small report about your investigation and results.

Hints

When you see the icon to the right it means that you will be given a hint for that question. Hints can be useful if you do not know how to get started with an assignment, or if you are a little bit lost in the middle of one. Pay close attention to these hints, as they may also guide your attention to important aspects that can be easily overlooked.

Statistical concepts

Various important statistical concepts will present itself during the assignments. These statistical concepts are highlighted in **red** and can be found all over the text of the assignments. When these concepts can be calculated, their formulas can often be found in the formula sheet on page 138. An example of such an important statistical concept can be the mean.

mean

Data sets

The color **green** is used to indicate the name of a data set that can be found in the online resources that accompany this workbook. For example, you might be asked to read a data set into R for further use in an assignment.

example.csv

R code

R code in the assignments is displayed in **blue** . These short lines of code are generally used in the assignments to highlight objects or variables that exist in your current R session. It can also highlight certain functions that you can use on an R object.

```
View(dataset)
```

R code blocks

R code blocks are used throughout the assignments to indicate R code that should be executed together. Copy this code into your script in RStudio and highlight all of the code to run at it at once. Be sure to do this at all times when you see a code block, as running some lines of code individually may influence your results drastically.

```
x <- c(1, 5, 8, 3)
mean(x)
```

If you want to get a head start with R, it is recommend to go through the R exercises on page 156 before you start with the first chapter. You can also do these exercises at a later time, since you will learn much of what is discussed there when working through the assignments.