Which Stats Method Should I Use?

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Contents

Chapter 1

Syllabus

1.1 Logistics

Instructor: Richard White [richard.white@fhi.no]

Time: 09:00 - 11:45, 18th September 2017

Location: Main auditorium, L8, Lindern Campus

Language: English

1.2 Format and Procedures

09:00 - 10:00: Lecture 1

10:00 - 10:10: Break

10:10 - 11:10: Lecture 2

10:10 - 10:15: Break

11:15 - 11:45: Real examples from FHI

1.3 Rationale and Course Aims

This course will provide a basic overview of general statistical methodology that can be useful in the areas of infectious diseases, environmental medicine, and labwork. By the end of this course, students will be able to identify appropriate statistical methods for a variety of circumstances.

Note: This course will **not** teach students how to implement these statistical methods, as there is not sufficient time.

1.4 Course Specific Learning Outcomes

Lecture 1

1. Identify continuous, categorical, count, and censored variables
2. Identify when your data does not have any dependencies (i.e. all observations are independent of each other)

3. Identify when your data has complicated dependencies that need to be taken into account (longitudinal data, clustered data, matched data)
4. Identify when linear and logistic regression models should be used
5. Identify when poisson, negative binomial, and cox regression models should be used

Lecture 2

6. Identify when mixed effects regression models should be used
7. Understand the similarities between t-tests, ANOVA, and regression
8. Understand the different imputation methods used when lab data is below the limit of detection (LOD)
9. Understanding best practicies for data files and project folders

1.5 Course Requirements

To participate in this course, it is recommended that you have some experience with either research or data.

For the last 30 minutes of the course, we will be going through examples of analyses performed at FHI, and identifying which statistical methods are appropriate. If you would like your analysis to be featured/included in this section, please send an email to richard.white@fhi.no briefly describing your problem.

Chapter 2

File setup

2.1 blah

Instructor: Richard White [richard.white@fhi.no] Time: 09:00 - 11:45, 18th September 2017 Location: Main auditorium, L8, Lindern Campus

2.2 Rationale

You can label chapter and section titles using `{#label}` after them, e.g., we can reference Chapter 2. If you do not manually label them, there will be automatic labels anyway, e.g., .

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 2.1. Similarly, you can reference tables generated from `knitr::kable()`, e.g., see Table 2.1.

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

You can write citations, too. For example, we are using the **bookdown** package (Xie, 2016) in this sample book, which was built on top of R Markdown and **knitr**

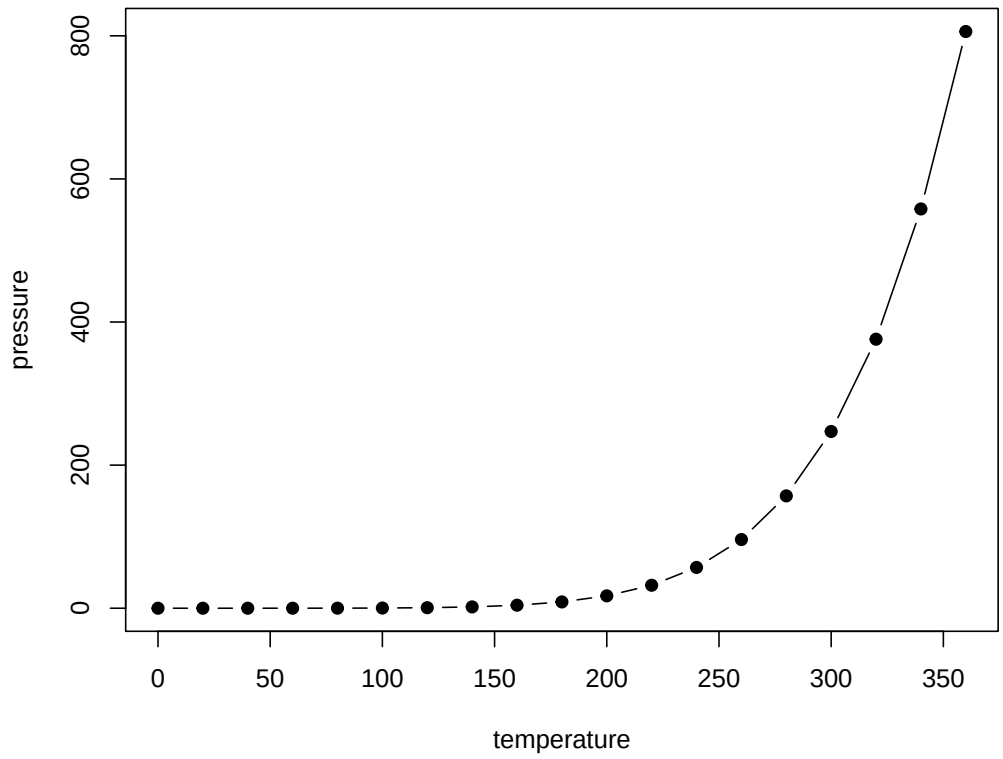

Figure 2.1: Here is a nice figure!

Table 2.1: Here is a nice table!

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
4.6	3.4	1.4	0.3	setosa
5.0	3.4	1.5	0.2	setosa
4.4	2.9	1.4	0.2	setosa
4.9	3.1	1.5	0.1	setosa
5.4	3.7	1.5	0.2	setosa
4.8	3.4	1.6	0.2	setosa
4.8	3.0	1.4	0.1	setosa
4.3	3.0	1.1	0.1	setosa
5.8	4.0	1.2	0.2	setosa
5.7	4.4	1.5	0.4	setosa
5.4	3.9	1.3	0.4	setosa
5.1	3.5	1.4	0.3	setosa
5.7	3.8	1.7	0.3	setosa
5.1	3.8	1.5	0.3	setosa

Chapter 3

Folder structure

Here is a review of existing methods.

Bibliography

Xie, Y. (2016). *bookdown: Authoring Books and Technical Documents with R Markdown*. R package version 0.3.8.