

# Bookdown, Travis, Fonts

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Stand: 07. May 2020 00:21 Uhr

## Inhaltsverzeichnis

<b>1</b>	<b>Prerequisites</b>	<b>1</b>
<b>2</b>	<b>Introduction</b>	<b>2</b>
<b>3</b>	<b>Literature</b>	<b>4</b>
<b>4</b>	<b>Methods</b>	<b>4</b>
4.1	Inline and simple display . . . . .	4
4.2	Using environments . . . . .	4
<b>5</b>	<b>Applications</b>	<b>4</b>
5.1	Example one . . . . .	5
5.2	Example two . . . . .	5
<b>6</b>	<b>Final Words</b>	<b>5</b>

## 1 Prerequisites

This is a sample book written in **Markdown**. You can use anything that Pandoc's Markdown supports, e.g., a math equation  $a^2 + b^2 = c^2$ .

The **bookdown** package can be installed from CRAN or Github:

```
install.packages("bookdown")  
# or the development version  
# devtools::install_github("rstudio/bookdown")
```

Remember each Rmd file contains one and only one chapter, and a chapter is defined by the first-level heading #.

To compile this example to PDF, you need XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): <https://yihui.org/tinytex/>.

## 2 Introduction

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., [Chapter 4](#).

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)
```

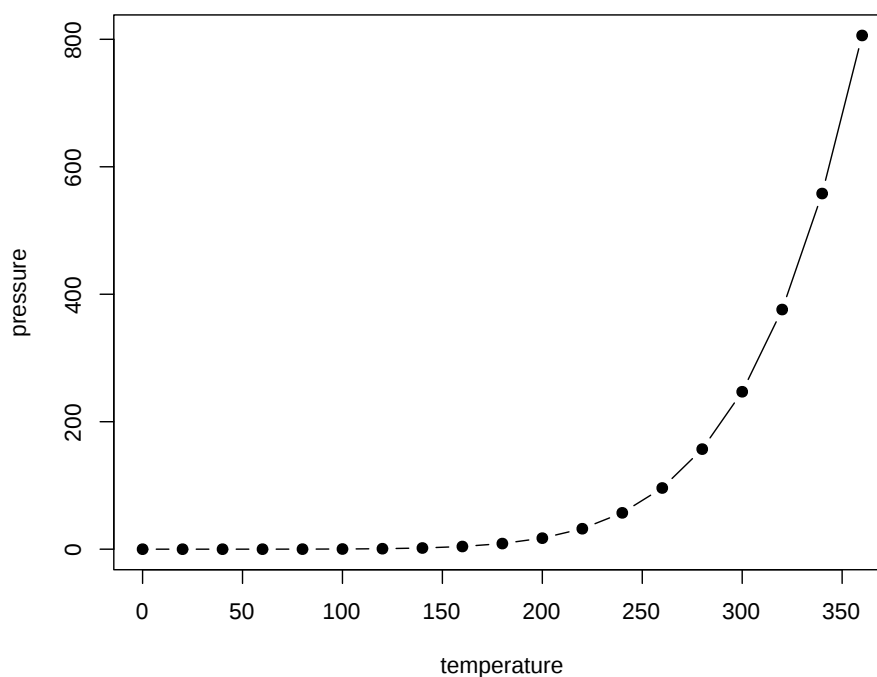


Abbildung 1: Here is a nice figure!

Reference a figure by its code chunk label with the `fig:` prefix, e.g., see [Figure 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
)
```

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

Tabelle 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

### 3 Literature

Here is a review of existing methods.

### 4 Methods

Some example math:

#### 4.1 Inline and simple display

Using one dollar sign:  $\beta = (X^T X)^{-1} X^T Y$

Display style with two dollar signs:

$$\beta = (X^T X)^{-1} X^T Y$$

#### 4.2 Using environments

$$\mathbb{E}(\hat{\beta}) = \mathbb{E} \left( (X^T X)^{-1} X^T Y \right) \quad (1)$$

$$= \mathbb{E} \left( (X^T X)^{-1} X^T (X\beta + \varepsilon) \right) \quad (2)$$

$$= \mathbb{E} \left( (X^T X)^{-1} X^T X\beta + (X^T X)^{-1} X^T \varepsilon \right) \quad (3)$$

$$= \underbrace{(X^T X)^{-1} X^T X\beta}_{=I} + \underbrace{(X^T X)^{-1} X^T \mathbb{E}(\varepsilon)}_{=0} \quad \left| \mathbb{E}(\varepsilon) = 0 \right. \quad (4)$$

$$= \beta \quad \square \quad (5)$$

equation from bookdown book:

$$f(k) = \binom{n}{k} p^k (1-p)^{n-k} \quad (6)$$

### 5 Applications

Some significant applications are demonstrated in this chapter.

### **5.1 Example one**

### **5.2 Example two**

## **6 Final Words**

We have finished a nice book.

### **Literatur**

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 0.18.