University of Duisburg-Essen
Faculty of Business Administration and Economics
Chair of Econometrics

# Title

## Subtitle

Type of Paper

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**Abstract**

The abstract is written directly in the YAML header.

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# 1 Rmarkdown Template

## 1.1 R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

## 1.2 Including Plots

You can also embed plots, for example:

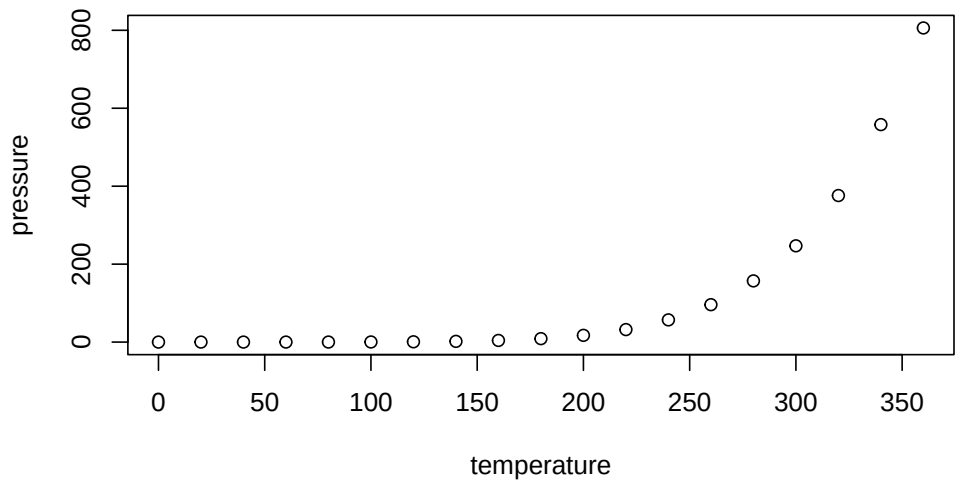



Figure 1: Pressure

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot. You can label the plot above by including the label `\\label{fig:pressure}` in the chunk argument `fig.cap`. A reference to the plot is then made as follows:

Looking at Figure 1 makes me happy.

### 1.3 The YAML Header

The YAML Header is at the very top of this document. It is enclosed in 3 dashes. Although there are already some options specified you might want to change some additional things. Here are some useful things that we have implemented for you.

#### 1.3.1 language

You can either set this to english or german. If the language is not specified in the YAML header it will use english e.g.:

language: english

language: german

This variable affects mainly the headings of your output file.

#### 1.3.2 linespread

The default value for the linespread is 1.5. Usually this is fine and sometimes it's required. If you nevertheless want to change it you can do so by specifying the linespread variable. E.g.:

linespread: 1

## 2 How Rmarkdown makes your life easy

### 2.1 The kable function

In Empirical work it's crucial not only to present your results but also to explain your research strategy. Often times that involes creating tables to present the used data and creating tables to show your results. Creating tables (e.g. in Latex) by hand is hard and time consuming but there are a variety of packages out there that can automate this job for you. One of them is the kable package. It can produce Latex tables from a variety of R Objects.

Consider the following Example: you are working on an analysis of black cherry trees and want to present n observations to the reader You can do that using the knitr::kable() function.

Table 1: 6 Observations from the trees Dataset

| Diameter | Height | Volume |
|---|---|---|
| 11.3 | 79 | 24.2 |
| 12.9 | 74 | 22.2 |
| 8.8 | 63 | 10.2 |
| 8.6 | 65 | 10.3 |
| 12.0 | 75 | 19.1 |
| 14.0 | 78 | 34.5 |

Now that we have presented our data it's analysis time! Lets start with a quick call to summary().

### 2.2 The Stargazer package

Calling summary() in a code chunk will work but this will give you quite an ugly result (just try it for yourself!). When it comes to presenting more structured objects like summaries, model results or for example correlation matrices the stargazer package is well suited.

Table 2: Summary

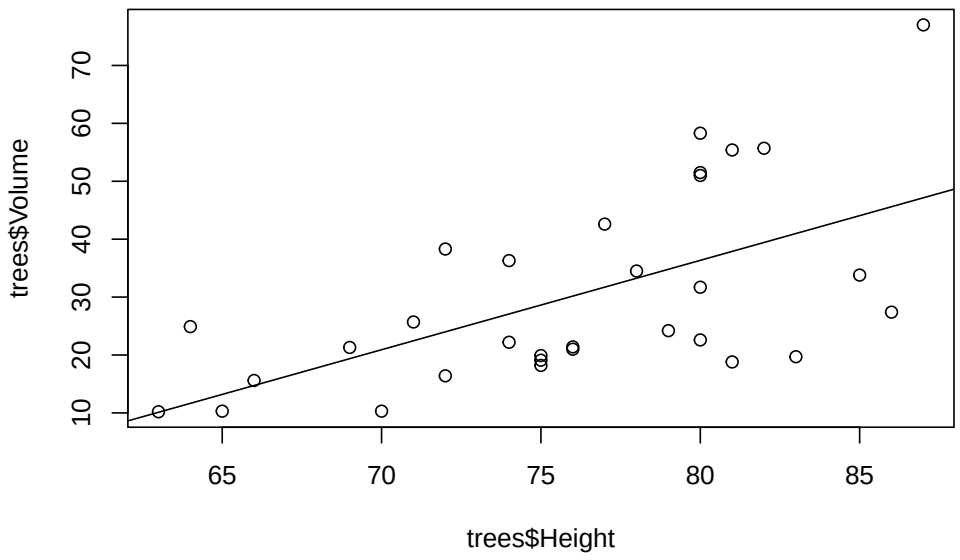
| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Girth | 31 | 13.248 | 3.138 | 8.300 | 20.600 |
| Height | 31 | 76.000 | 6.372 | 63 | 87 |
| Volume | 31 | 30.171 | 16.438 | 10.200 | 77.000 |

Assume we want to evaluate how the height and the volume of a typical cherry tree are related. We are estimating this using OLS to estimate a simple linear model.

Now that we have our model we can visualize it.

Table 3: Regression results

| | *Dependent variable:* |
|---|---|
| | Volume |
| Height | $1.543^{***}$ |
| | (0.384) |
| Constant | $-87.124^{***}$ |
| | (29.273) |
| Observations | 31 |
| $R^2$ | 0.358 |
| Adjusted $R^2$ | 0.336 |
| Residual Std. Error | 13.397 (df = 29) |
| F Statistic | $16.164^{***}$ (df = 1; 29) |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 |



## 3 Listing

- Hallo
- World

### 3.1 Citations

The a *bibtex* bibliography can be used for citations. The file name of the bibliography used in this template is `references.bib`

You can cite a source like this: (Keil et al., 2012) or Litterman (1986).

A cited source will be automatically added to the end of the document.

### 3.2 Errors and Warnings

During compilation you may encounter warnings or errors related to missing references. To resolve these, ensure that your bibliography file is correctly specified. For e.g., `biblio-files: Resources/references.bib`

If you see warnings about a label being multiply defined, it often means that the function you used to create a figure or table has inserted two identical empty `label{}` commands. To fix this, give each table or figure a unique, meaningful label— for example, `label="summary"` . If you omit a label entirely, LaTeX will warn: `There were multiply-defined labels.`

## References

**Keil**, **P.**, **Belmaker**, **J.**, **Wilson**, **A. M.**, **Unitt**, **P.**, & **Jetz**, **W.** (2012). Downscaling of species distribution models: A hierarchical approach (**R. Freckleton**, Ed.). *Methods Ecol Evol*, *4*(1), 82–94. https://doi.org/10.1111/j.2041-210x.2012.00264.x

**Litterman**, **R. B.** (1986). Forecasting with Bayesian Vector Autoregressions: Five Years of Experience. *Journal of Business & Economic Statistics*, *4*(1), 25. https://doi.org/10.2307/1391384

**Eidesstattliche Versicherung**

Ich versichere an Eides statt durch meine Unterschrift, dass ich die vorstehende Arbeit selbständig und ohne fremde Hilfe angefertigt und alle Stellen, die ich wörtlich oder annähernd wörtlich aus Veröffentlichungen entnommen habe, als solche kenntlich gemacht habe, mich auch keiner anderen als der angegebenen Literatur oder sonstiger Hilfsmittel bedient habe. Die Arbeit hat in dieser oder ähnlicher Form noch keiner anderen Prüfungsbehörde vorgelegen.

Essen, den _____ _____

Name