



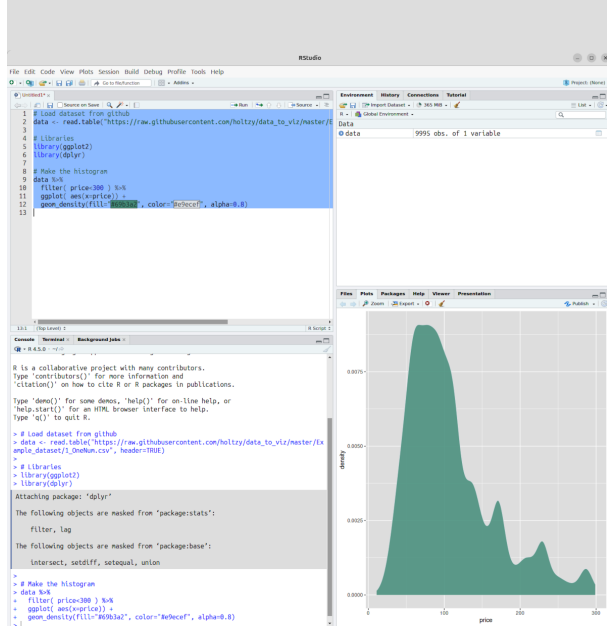
Einführung in R und RStudio

[Termin 3]

Miguel Alvarez

kamapu.net

22. Mai 2025





Der Kurs

■ ~~Termin 1~~

- ~~Grundlagen von R~~
- ~~Einführung in RStudio~~

■ ~~Termin 2~~

- ~~Vektorenklassen~~
- ~~Objekten~~

■ Termin 3

- Daten Lesen und Schreiben
- Datenstrukturierung

■ Termin 4

- Explorative Datenanalyse (EDA)
- Datenvisualisierung

■ Termin 5

- Syntax in tidyverse
- Grafiken mit ggplot2

■ Termin 6

- Funktionen selber definieren
- *To loop or not to loop*

■ Termin 7

- Jocker-Karte

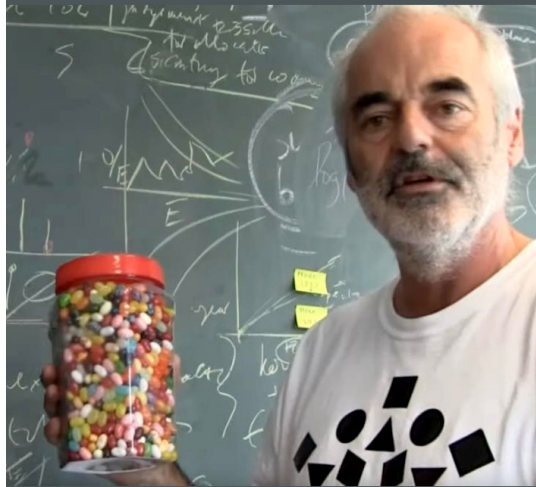
■ Termin 8

- Schluss



Experiment

Wie viele Jelly Beans sind in diesem Behälter?





CRAN

(Comprehensive R Archive Network)

- `install.packages()`
- `update.packages()`

```
install.packages("ade4")  
update.packages(ask = FALSE)
```

<https://cran.r-project.org/>

Available CRAN Packages By Name

ABCDEFGHIJKLMNOPQRSTUVWXYZ

A3
AATools
ABACUS
abbreviate
abbyyR
abc
abc.data
ABC.RAP
abcADM
ABCanalysis
abclass
ABCOptim
ABCP2
abcrf
abcrlda
abctools
abd
abdiv
abe
abess
abglasso
ABHgenotypeR
abind
abjData
abjutils
abmR
abn
abnormality
abodOutlier
ABPS
abstr
abstractr
abtest
abundant
Ac3net
ACA
academictwitter

Accurate, Adaptable, and Accessible Error Metrics for Predictive Models
Reliability and Scoring Routines for the Approach-Avoidance Task
Apps Based Activities for Communicating and Understanding Statistics
Readable String Abbreviation
Access to Abbyy Optical Character Recognition (OCR) API
Tools for Approximate Bayesian Computation (ABC)
Data Only: Tools for Approximate Bayesian Computation (ABC)
Array Based CpG Region Analysis Pipeline
Fit Accumulated Damage Models and Estimate Reliability using ABC
Computed ABC Analysis
Angle-Based Large-Margin Classifiers
Implementation of Artificial Bee Colony (ABC) Optimization
Approximate Bayesian Computational Model for Estimating P2
Approximate Bayesian Computation via Random Forests
Asymptotically Bias-Corrected Regularized Linear Discriminant Analysis
Tools for ABC Analyses
The Analysis of Biological Data
Alpha and Beta Diversity Measures
Augmented Backward Elimination
Fast Best Subset Selection
Adaptive Bayesian Graphical Lasso
Easy Visualization of ABH Genotypes
Combine Multidimensional Arrays
Databases Used Routinely by the Brazilian Jurimetrics Association
Useful Tools for Jurimetrics Analysis Used by the Brazilian Jurimetrics Association
Agent-Based Models in R
Modelling Multivariate Data with Additive Bayesian Networks
Measure a Subject's Abnormality with Respect to a Reference Population
Angle-Based Outlier Detection
The Abnormal Blood Profile Score to Detect Blood Doping
R Interface to the A/B Street Transport System Simulation Software
An R-Shiny Application for Creating Visual Abstracts
Bayesian A/B Testing
High-Dimensional Principal Fitted Components and Abundant Regression
Inferring Directional Conservative Causal Core Gene Networks
Abrupt Change-Point or Aberration Detection in Point Series
Access the Twitter Academic Research Product Track V2 API Endpoint



Pakete

devtools

- `install()`
- `install_github()`

<https://ropensci.org/>

devtools 2.4.5 Reference Articles ▾ News ▾



devtools

The aim of devtools is to make package development easier by providing R functions that simplify and expedite common tasks. [R Packages](#) is a book based around this workflow.

Installation

```
# Install devtools from CRAN
install.packages("devtools")

# Or the development version from GitHub:
install.packages("devtools")
devtools::install_github("r-lib/devtools")
```



Import/Export

- readLines()
- read.table()
 - read.csv()
 - read.csv2()

```
Bonn2021 <- read.csv("Bevoelkerung-2021.csv")  
head(Bonn2021[ , 1:6])
```

	BezirkNr	BezirkName		
1	110	Zentrum-Rheinviertel		
2	111	Zentrum-M\x81nsterviertel		
3	112	Wichelshof		
4	113	Vor dem Sterntor		
5	114	Rheindorfer Vorstadt		
6	115	Ellerviertel		
	Gesamt	DichteKm2	Maenner	MaennerProzent
1	2343	6508	1166	49.8
2	3161	6585	1537	48.6
3	6768	11874	3189	47.1
4	8906	16193	4575	51.4
5	5157	4334	2481	48.1
6	6495	4707	3120	48.0



Import/Export

- `readLines()`
- `read.table()`
 - `read.csv()`
 - `read.csv2()`
- `write.table()`
 - `write.csv()`
 - `write.csv2()`

```
write.csv(iris, file = "iris.csv")  
write.csv2(iris, file = "iris2.csv")
```



Import/Export

Pakete können eigene Funktionen für Importieren und Exportieren anbieten.

■ xlsx

- `read.xlsx()`
- `write.xlsx()`

■ readODS

- `read_ods()`
- `write_ods()`

R Data Import/Export

This is a guide to importing and exporting data to and from R.

This manual is for R, version 4.3.0 Under development (2022-10-23).

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Import/Export

R-Images

- Workspace
 - `save()`
 - `load()`
 - Dateierweiterung **.rda** oder **.RData**
- Einzelnes Objekt
 - `saveRDS()`
 - `readRDS()`
 - Dateierweiterung **.rds**



Vielen Dank!

```
library(fortunes)  
fortune(10)
```

Overall, SAS is about 11 years behind R and S-Plus in statistical capabilities (last year it was about 10 years behind) in my estimation.

-- Frank Harrell (SAS User, 1969-1991)
R-help (September 2003)