

Syllabus applied statistics in R

Teacher

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Classes

Each Monday, 13.00-14.30, Nebenhaus computer room 00.010.

Description

This seminar will teach you how to work with R, the free software environment for statistical computing and graphics. Over the last decades, R has gained much popularity in many fields of science and engineering. R thanks this popularity to many features: R is versatile and powerful (in particular when compared to, e.g., SPSS). R allows for easy custom data handling and for creating impressive (custom) graphics. Also, R is free and open source and the coding is platform-independent. The seminar consists of lectures and practical programming exercises with existing data sets. In these exercises, you learn to manipulate the data, apply various statistical analyses and to graphically represent the results. After this seminar, you will be able to analyze your own (e.g., master's project) data with R. Basic statistical and computer skills are required for this seminar.

Important sources

R-course webpage on my website: <http://gillesdutilh.com/pages/R-course.htm>

R homepage: <http://cran.r-project.org/index.html>

R for Beginners book: http://cran.r-project.org/doc/contrib/Paradis-rdebuts_en.pdf

Introduction to R book: <http://cran.r-project.org/doc/manuals/R-intro.pdf>

Requirements to pass

- 1 - Attend classes (unless you inform me beforehand about a good reason not to)
- 2 - Hand in homework in time. Whether or not you manage to solve the homework assignments, *I want to see how you tried*, so I can adjust the lectures accordingly.
- 3- Pass final recap assignment. Note that this assignment is not exactly an exam that you should study for. If you attend the lectures and seriously work on the homework, this final assignment should be easy.

Class 1, September 26th, 2016

The basics of R; first steps in writing code; variables; functions; vectors; simple calculations

Class 2, October 3rd, 2016

Vectors; matrices; indexing, NA's

Class 3, October 10th, 2016

Working directory, reading and writing, loading and saving data, data frames.

Class 4, October 17nd, 2016

Character string manipulation

Class 5, October 24th, 2016

Programming: "if" statements and the "for loop"

Class 6, October 31st, 2016

Lists, arrays, apply-functions

Class 7, November 7th, 2016

Simple graphing; scatterplots; lineplots; histograms; boxplots

Class 8, November 14th, 2016

Simulating a fake data set and recap lecture

Class 9, November 21st, 2016

Linear regression and anova

Class 10, November 28th, 2016

Using analysis output, advanced graphing

Class 11, December 5th, 2016

Writing functions; planning in programming

Class 12, December 12th, 2016

More advanced graphing & recap of entire seminar

Class 13, December 19th, 2016

Final assignment ("exam")