Data Simulation Workshop

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Welcome

We are looking forward to meeting you at the "Data Simulation Workshop 2024" in Bern at the Institute of Psychology from the 31.01.2024 - 02.02.2024.

Here, you will find the most important information about the course.

Course program

First course day*: General introduction in R and RStudio*

31st of January 2024

09:00-12:00

Room: B102, Fabrikstrasse 8, 3012 Bern

This course day is led by Rahel Steuri and Gerda Wyssen. We will give a brief introduction to working with R and RStudio as well as an overview of the key functions for day 2 and 3. Specifically, we will cover how to install R and RStudio, load packages, import data, data wrangling, and data visualization.

If you are proficient (i.e. regular use) in R and RStudio, you can skip this day as we will provide a general introduction only. The content of the introduction can be found here. The script for day 1 will be also available on this website.

Second and third course day*: Data simulation with Lisa deBruine*

1st and 2nd of February 2024

09:00-17:00

Lunch break: 12:00-13:00 *Lunch will not be provided (Mensa/ Cafeteria is open)*

Room: B102, Fabrikstrasse 8, 3012 Bern

During these two course days, Prof. Dr. Lisa deBruine will give a hands-on introduction to data simulation. It is best to bring your own data to work on during the workshop.

Course prerequisites for day 2 and 3

- R and RStudio installed on a laptop,

- basic knowledge of R(Studio) and R Markdown,

- installed packages ({faux}, {afex}, {broom}, {tidyverse}, and {lme4} from CRAN),

- if possible: bring your own data sets, information on planned analyses, etc.

(Support for installing R and RStudio/ packages, and a basic introduction in R will be provided on day 1 of this course)

About: Lisa deBruine

Prof. Dr. Lisa deBruine is a professor of psychology at the University of Glasgow School of Psychology and Neuroscience. She created the R package {faux} to facilitate data simulation for multilevel modelling.

For more information, *visit:*

https://debruine.github.io

https://debruine.github.io/project/faux

https://rstudio-connect.psy.gla.ac.uk/debruine

Contact

For further questions and course registration, please contact

jeannette.gatschet@unibe.ch

If you wish to join day 1 only (introduction to R and RStudio), please contact Jeannette Gatschet.

Certificate of attendance

We can provide you with a certificate of attendance upon request.

Why a data simulation workshop?

Data simulation enables the careful planning of the research process, from calculating power and sensitivity for analyses, constructing reproducible examples, to preparing analysis scripts for your data. Especially with the increasing importance of pre-registering studies, data simulation has become an essential tool. This workshop will cover the basics of data simulation in R.

Introduction in R and RStudio

On the first course day (31st January) we will provide a short introduction into R and RStudio.

We will cover the following topics and functions:

- R and RStudio Installation
- R-Projects, RMarkdown and Quarto
    - How to use projects
    - How to set up an RMarkdown/Quarto File and its most important functions
- Install and load packages
    - `install.packages()`
    - `library()`
- Load and save data
    - `read_csv()`
    - `write_csv()`
- Data wrangling in `tidyverse`
    - `mutate()`
    - Filter and select data: `filter()`, `select()`
    - Change the data frame: `as.factor()`, `pivot_longer()`, `pivot_wider()`, `relevel()`
    - Create new variables based on conditions: `case_when()`
    - use pipes `|>`
- Summarize data

- – `summarise()`

- Data visualisation using the `ggplot` - package

  - – choose an informative graph

  - – mapping: `aes()`

  - – geoms: `geom_boxplot()`, `geom_violin()`, …

  - – change colors, shapes, labels & more

- Ressources for further learning