University Mannheim
School of Social Sciences
Chair of Political Methodology
Fall Semester 2025

Introduction to R

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Time: see Below
Room: A5, B 318

Course description: This course provides an introduction to the statistical programming language R. The course material centers on the core tasks necessary to perform statistical analyses underlying quantitative research in the social sciences. No previous knowledge of R is necessary to follow this course, we will begin from zero by explaining the logic behind coding in general then move to getting more familiar with R. The goal of this course is to get the students comfortable with using R and provide them with an introduction to key functions, packages, and prominent datasets in Political Science. Upon successful completion of the course, students are capable of performing the complete workflow of a quantitative research project in R before conducting an analysis. This includes basic R programming, data import, data cleaning and wrangling, exploratory data analysis and visualization. Additionally, students will get time to perform coding exercises.

The plan is to cover four modules while allowing time for you to try out the code yourselves and do exercises. The materials will be provided through a GitHub repository.

Requirements: Please bring your own laptops and charging devices. Download and install R and R Studio. Here you can find nice instructions on how to download R and RStudio.

Schedule:

25.08. Monday 15:00 – 18:30

26.08. Tuesday 9:30 – 13:30

27.08. Wednesday 15:00 – 18:30

28.08. Thursday 9:30 – 13:00

Introduction to R

Content

1. **The logic of programming and the R environment**
   - Basic Functionality (Calculations, Vectors, Matrices, Lists)
   - Object classes
   - Accessing, Subsetting and Naming Objects
2. **Data Visualization**
   - Base R - ggplot2
   - Constructing Plots
   - Line plots, Boxplots, Scatter plots
   - Histogram, Density plots
3. **Data Manipulation**
   - Pipelines or Piping
   - The tidyverse – Dplyr
   - Loading and Storing Data
   - Ordering your Data
   - Transforming Variables
   - Missing Values
   - Merging Data
4. **R Programming**
   - For-Loops
   - Apply function
   - Functions

Extra Material: Exploratory Data Analysis

- Summary Statistics - the Psych package
- Frequency Tables
- Cross-Tabulations, Correlation Matrices