

Introduction to data analyses in R

2h/week

Instructor: Aurelién Vivancos

Session I: Introduction

- Downloading and Installing R
- Packages
- Help/online resources
- Importing datasets
- Presentation of the different R objects and their differences (vector, matrix, list, dataframe...)
- Simple data exploration

Session II: Some coding

- Subsetting datasets
- Combining datasets
- Concatenating datasets
- Tapply, sapply and lapply function
- Loops and functions

Session III: Descriptive statistics and graphics

- Summary statistics
- Graphic with ggplot
- Histograms
- Boxplots

Session IV: Hypothesis testing

- One-sample t test
- Two-sample t test
- The paired t test
- One-way anova

Session V: Regression and correlation

- Simple linear regression
- Residuals and fitted values
- Prediction and confidence bands
- Correlation
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Session VI: ANOVA

- One-way ANOVA
- Bartlett's test
- Kruskal-Wallis test
- Two-way ANOVA