2021 Doctoral Winter School
15 – 19 February
16.00 – 20.00 (CET, Ljubljana)

Quantitative Research with R Studio (ECTS: 4)

PAHOR Marko, University of Ljubljana, School of Economics and Business, Slovenia

Aims of the course:

The purpose of this intensive course is to introduce someone, who has some background in quantitative methods but is new to the R (Studio) environment to the data analysis in R studio. The course assumes no previous knowledge of the R Studio environment, so we start with the basics, but very quickly work our way towards advanced data analytics with the help of the most popular analytical packages in R. At the end of the course the participants should be able to independently do the quantitative analysis on their own data.

Course syllabus:

Introduction to R and R Studio
Objects in R and basic operations on objects
Descriptive statistics using Stats and DescTools packages
Transforming data using the dplyr package
Visualization of data using the ggplot2 package
Regression and regression diagnostics using the ggplot's autoplot
Generalized linear models and predictions
Exploratory factor analysis using the psych package
Confirmatory factor analysis with lavaan package
Basic structural equation modeling with lavaan package

Date	Topics
Monday, 15 Feb	Introduction to R and R Studio, objects and basic operations
Tuesday, 16 Feb	Descriptive statistics, transformations and visualizations
Wednesday, 17 Feb	Regression, regression diagnostics and GLM
Thursday, 18 Feb	Exploratory factor analysis in psych
Friday, 19 Feb	CFA and SEM with lavaan

Teaching methods/Online tools and software:

Lectures will be held over Zoom, the supporting materials will be available on Canvas. Links to both will be provided to registered participants before the start of the course. The course participants are asked to have, before the start of the course on of the following:

- A desktop installation of R base (get it from https://cran.r-project.org) and R Studio (get it from https://rstudio.com/products/rstudio/download/); or

- An account on the RStudio.Cloud.

List of readings:

- Navarro, Daniele: *Learning Statistics with R: A tutorial for psychology students and other beginners.* https://open.umn.edu/opentextbooks/textbooks/learning-statistics-with-r-a-tutorial-for-psychology-students-and-other-beginners . 2018
- Grolemund , Garrett and Wickham, Hadley: *R for Data Science.* https://r4ds.had.co.nz . 2017
- Kamel Gana and Guillaume Broc: *Structural Equation Modeling with lavaan.* ISTE/Wiley, 2019

Course credit:

A take-home exam will be provided for students needing credits from this course.

Course leaders' biographical note:

PAHOR Marko is a researcher and professor at the University of Ljubljana, School of Economics and Business, currently serving as the vice dean for finance. He teaches courses in applied statistics and research methods at all three Bologna levels. His main research interests are in application of novel approaches in advanced research methods and data analysis, including social network analysis, agent based modeling and non-parametric statistics, to problems in business and economics. His later interests involve also applications of data analytics. He publishes with co-authors in a wide area of business and economics, including tourism economics, marketing and finance.