

SESSIONS QUANTITATIVE ANALYSIS
FEBRUARY 2024 (7, 9 & 12)
JOSEP RIALP

Outline

To present and work different quantitative research techniques for developing basic research in social sciences.

Training Objectives of the Course

The aim of this course is to introduce some basic statistic concepts and ideas that could be followed for developing research in social sciences. These concepts are univariant analysis techniques (descriptive statistics, statistical inference and test of hypotheses) and bivariant techniques (contingency tables, mean comparison through t-test and anova, and linear regression) and multivariant (multiple regression, factor analysis, logit, cluster, panel data). All techniques are studied using statistical packages (R Studio). These analyses allow derive conclusions about the available information. The approach of this subject is essentially practical, with the aim of providing the students the basic knowledge for developing basic empirical research.

Competences and skills

At the end of the course, students should be able to use R Studio for running basic data analysis and be able to interpret the results.

Course requirements

Previous knowledge related to two semesters of basic statistics is convenient. It is recommended to review a statistics book, for example:

NEWBOLD, P. (2003): Statistics for business and economics. Prentice Hall. Chap 1 to 6.

Course/classes methodology

The sessions will combine theoretical and practical explanations. Exercises and questions will be proposed for being discussed in class, and the active participation of the students will be required

RStudio

Participants in the course should download R Studio in their laptops.

R Studio is free software and works on mac, windows and linux. To install it, you need to follow the next two steps:

1.-Install the R software. You can download it from the following link:

<http://cran.rediris.es/>

2.-Once R is installed, you need to install Rstudio Desktop (also free). You can download it from the following link:

<https://www.rstudio.com/products/rstudio/download/>

Structure of the course

SESSION	Date	Topic
1	07_02_2024	1. Introduction to R STUDIO 2. Descriptive statistics (univariate analysis) 3. Inferential statistics 4. Hypotheses testing 5. Contingency tables (Chi square).
2	09_02_2024	6. ANOVA (F test) 7. Correlation & simple regression 8. Multiple regression 9. Factor analysis and correspondence analysis
3	12_02_2024	10. Logistic regression 11. Cluster analysis (hierarchical, K-means) 12. Decision tree

Readings

Basic material for the course is a set of notes which will be delivered to the students before each class. These notes will help to follow the class explanations and will be also useful for solving the exercises.

Another complementary material can be found in the following readings:

NEWBOLD, P., CARLSON, W., & THORNE, B. (2013). *Statistics for Business and Economics*. Global Edition. Pearson Higher Ed.

GREENE, W. H. (2008). *Econometric analysis*. Prentice Hall, New York.

JOHNSON, R. & KUBY, P. (2004). *Elementary statistics*. International Thomson Editors.