ONLINE Ljubljana Doctoral Summer School 2023
17 – 21 July 2023
9:00 – 13:00 (*CEST, Ljubljana*)

Course title: **Quantitative Data Analysis: Issues & Applications**

ECTS credits: 4

Lecturer: HALKIAS Georgios, Copenhagen Business School, Denmark

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Aims of the course:

Sound knowledge of quantitative analysis is an essential requirement in many disciplines – more than one would expect! This course seeks to equip students with a critical understanding of *(a)* key concepts of *statistical inference* (e.g., Type I and II error, statistical significance & NHST, effect size, statistical power) and *(b)* different *methods of data analysis* (e.g., analysis of (co)variance, linear and logistic regression modelling, PCA, factor analysis).

The course integrates analytical theory with practical examples in a logical and straightforward manner in order to guide students through different techniques of quantitative data analysis. As such, it is targeted to doctoral students who either feel they lack a solid analytical background or simply want to refresh and improve their analytical and statistical inference skills.

After taking this course, students will be able to:

- Understand the logic and principles of quantitative data analysis.
- Improve statistical inference skills.
- Apply the appropriate analytical techniques to answer different research questions.
- Interpret and critically assess research results.
- Identify not-that-obvious information.
- Draw valid conclusions to improve decision-making.
- Familiarize themselves with the IBM SPSS and JAMOVI interface.

Course syllabus:

Day 1	• **What is statistics & how does it work?** *Populations & samples* • **Statistical inference I** *Parameter estimation & hypothesis formulation* *NHST & everything you need to know about it*	*Reading* Field: Chapter 2 D/S/H: Chapter 2, 6, 9
Day 2	• **Statistical inference II** *Effect size, Sample size, & statistical power* *Beyond statistical significance…* • **Data quality & analysis bias** *Measurement, centrality, & variability* *Statistical assumptions*	*Reading* Field: Chapter 2, 3, 5, 6 D/S/H: Chapter 1, 3, 8, 10
Day 3	• **Making comparisons I** *Chi-square test* *Independent sample t-test* *Paired samples t-test* *One sample t-test* • **Making comparisons II** *ANOVA* *ANCOVA* *Factorial ANOVA* *(Theory & applications)*	*Reading* Field: Chapter 10, 12, 13, 14, 19 D/S/H: Chapter 11, 12
Day 4	• **Investigating relationships I** *Correlation/Partial correlation* *Simple linear regression* • **Investigating relationships II** *Multiple regression/Moderation* *Logistic regression* *(Theory & applications)*	*Reading* Field: Chapter 8, 9, 11, 20 D/S/H: Chapter 13, 14
Day 5	• **Finding structures** *Exploratory Factor Analysis* *Principal Component Analysis* *(Theory & applications)* • **Overview & key issues**	*Reading* Field: Chapter 18 D/S/H: Chapter 14

List of readings:

Field, A. (2017), *Discovering Statistics Using IBM SPSS Statistics* (5th edition), Sage Publications: London. – *Referred to as "Field" in course syllabus.*

Diamantopoulos, A., Schlegelmilch, B., & Halkias, G. (2022). *Taking the fear out of data analysis*. 2nd edition. London: UK, Edward Elgar Publishing. – *Referred to as "D/S/H" in course syllabus.*

** Supplementary notes, texts, manuals, and how-to guides will be provided during the course (open-access)*

Teaching methods & Assessment:

Sessions combine theory, real-life examples, and (interactive) visual material in a way that enables effective understanding of different concepts/approaches of quantitative data analysis and statistics. Course evaluation is based on a *final, take-home assignment*.

Prerequisites:

This course covers all fundamental issues pertaining to quantitative data analysis. As such, it does *not* require prior knowledge of statistics. That said, having attended a general introductory course in research methods would benefit students in more effectively understanding the issues covered throughout.

Lecturer's biographical note:

Georgios Halkias is Associate Professor of Marketing at the Copenhagen Business School. His research has received several international distinctions and has been published in AJG 4/4, FT 50 and other leading journals including, among others, the Journal of Consumer Psychology, Journal of International Business Studies, International Journal of Research in Marketing, British Journal of Management, and the Journal of Advertising. Georgios sits on the Editorial Review Board of the Journal of International Marketing and has been awarded with the "Outstanding Reviewer Award 2019" as well as the "Outstanding Paper Award 2020" from the International Marketing review in the Emerald Literati Awards of Excellence. He teaches various courses on research methods, data analysis, and consumer behavior and has been awarded from the University of Vienna for outstanding teaching at the graduate level. Georgios has authored (with A. Diamantopoulos and B. Schlegelmilch) the new version of the book "Taking the Fear Out of Data Analysis."*