



FURTHER EDUCATION | WORKSHOP

Multilevel Modeling with R

Principles and Practice

- Instructor:** Constantin Manuel Bosancianu¹
- Date & Time:** Wednesday, 20.01 to Friday, 22.01.2021, 10:00 a.m. to 02:00 p.m. (s.t.)
Practical exercises to follow each session
- Place:** Online sessions via Zoom
- Registration:** To register, please send an email to courses.bagss@uni-bamberg.de by
22.12. 2020.
- Registration is mandatory. The number of participants is limited to 12.

Short Outline

The workshop will expose participants to the rigorous application of multilevel models (MLMs) in the R statistical environment. Over the course of 3 days, we cover the fundamentals of such hierarchical linear models, starting from simple random-intercept specifications and advancing to more complex ones, which allow us to understand how an effect varies between contexts. During this progression we touch on estimation of MLMs, sample size considerations, and model fit criteria. In the last part of the class we discuss how MLMs can be used to model change over time, under the form of the longitudinal growth model, and practice estimating such a model.

The class should serve participants who have not had previous contact with multilevel models, but who wish to working knowledge in the topic. The sessions will be conducted entirely in R, and the lme4 and nlme packages. The theoretical material will be primarily based on selected chapters from Gelman and Hill's *Data Analysis using Regression and Multilevel/Hierarchical Models*, and Singer and Willett's *Applied Longitudinal Data Analysis*.

The workshop is mainly aimed at doctoral fellows, members of BAGSS and LifBi. In case of any vacant places, it is open to anyone interested.

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About the Trainer

I am a postdoctoral researcher in the Institutions and Political Inequality unit at the WZB Berlin Social Science Center. I focus on the intersection of political economy and electoral behaviour: how to measure political inequalities between citizens of both developed and developing countries via observational and experimental methods, and exploring the linkages between political and economic inequalities. I am interested in statistics, causal inference, and data visualization. My work has appeared in the Quantitative Applications in the Social Sciences series at SAGE, and the Social Science Quarterly. In 2018 I was the recipient of the Cora Maas Award of the ECPR for teaching statistics.

Format

3.5 hours / day in classroom, evenly split between theoretical sessions and applied work in R. Data sets and code files will be supplied by the instructor.

Prerequisites

In order to benefit from the class, participants will need to have a thorough understanding of OLS linear regression, both at a theoretical and practical level. They are also expected to have practical experience with R for data management and data transformations, making exploratory graphs, running OLS regressions, and plotting quantities of interest based on regression output.

Follow Up

In the Summer Semester 21, Constantin Manuel Bosancianu will offer an advanced course on Multilevel Modeling, SEM Models and Multilevel SEM Models in R.