Ph.D. in "Life Course Research" – Socio-demographic curriculum

Academic Year 2023-2024

Random effects models for multilevel and longitudinal data

Prof. Leonardo Grilli
University of Florence
leonardo.grili@unifi.it

Prof. Carla Rampichini
University of Florence
carla.rampichini@unifi.it

Objectives

The course introduces the theory and practice of random effects (mixed effects) models for the analysis of multilevel data in both cross-sectional and longitudinal settings. Emphasis is placed on model specification and interpretation. The course covers random effects models for continuous responses and for categorical responses.

Program

Monday 22/01/2024 (Instructor: Leonardo Grilli and Carla Rampichini):
– Basics of multilevel analysis
– The two-level linear model: specification and estimation

Tuesday 23/01/2024 (Instructor: Leonardo Grilli and Carla Rampichini):
– Within, between and contextual effects
– Fixed vs random effects

Wednesday 24/01/2024 (Instructor: Leonardo Grilli and Carla Rampichini):
– Complex multilevel structures
– The random effects logit model: specification and interpretation

Thursday 25/01/2024 (Instructor: Leonardo Grilli and Carla Rampichini):
– The random effects logit model: estimation and prediction
– Multilevel models for longitudinal data

Suggested readings

Grilli L., Rampichini C. (2018). A handful of critical choices in multilevel modelling. Boletín de Estadística e Investigación Operativa, 34 (1).

Hox J.J., Moerbeek M. and van de Schoot R. (2017). Multilevel Analysis: Techniques and Applications, Third edition, Routledge

Rabe-Hesketh S. and Skrondal A. (2022). Multilevel and longitudinal modeling using Stata, Fourth edition, Stata Corp.

Snijders T.A.B. and Bosker R.J. (2012). Multilevel Analysis: An introduction to basic and advanced multilevel modeling, Second edition, Sage.

Requirements
Basic knowledge of statistical inference, linear regression and logistic regression. Knowledge of Stata is helpful but not necessary (files with commands are always provided).