DEPARTMENT OF POLITICAL AND SOCIAL SCIENCES

SPS, 2nd term seminar 2022-2023

Applied mixed modelling for comparative, hierarchical and panel data

Given by Herman van de Werfhorst

Thursdays, 11:00 - 13:00, Seminar Room 2

Register online

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Many social-scientific data have a so-called 'nested structure': observations are clustered within a larger observed unit. Examples are students in school classes in a large dataset with different students and schools, individuals within countries in cross-national survey data, or repeated observations when individuals are followed through time in a prospective panel dataset. In this seminar students learn about various regression models that allows to deal with such a data structure. Research questions that may be answered using such data are: how are individual (e.g. education) and country characteristics (e.g. income inequality in a society) related to individual opinions and preferences? To what extent does school performance depend on social background, and do school characteristics (e.g. the quality of teachers) matter as well? To what extent do life events (getting married, getting children) affect the labour market opportunities of men and women if we follow them through time? The underlying statistical models to answer these questions are very similar, because they often include both fixed and random effects.

The focus is on understanding the statistical models (including their weaknesses), applying such models in Stata, and interpreting research papers using such models.

Some knowledge on linear regression models is desirable as entry level for this seminar.

PREPARATION:

Please install STATA on your computer; it is available through the EUI.
We work with version 16 or 17.

Literature:

- Habe-Resketh & Skrondal (2022). Multilevel and longitudinal modeling using stata, Fourth edition. Vol I (parts). (HRS-I herafter)
- Papers using mixed models to be provided during the course.

Week 1: Recapitulating the OLS model, introduction to Stata.
Literature: HRS-I Chapter 1

Week 2: Variance components and random intercept models
HRS-I pp. 1-7, pp. 75-104 (Chapter 2 till 2.8 fixed and random effects, inclusive).

Week 3: Random intercept models
HRS-I pp. 133-178 (Chapter 3 till 3.8 Fixed and random effects revisited, inclusive).

Week 4: random slope models
HRS-I Chapter 4

Week 5: Covariance structures
HRS-I Chapter 4

Week 6: Residual analysis
HRS-I pp. 178-181 (Chapter 3.9), pp. 227-229 (Chapter 4.8.4).

Week 7: More complex data structures: repeated cross-sectional cross-national surveys
HRS-I: Chapter 8

Week 8: More complex data structures: cross-classified models
HRS-I: Chapter 9

Week 9 (double session): Causality and multilevel models