ICPSR Summer Program

Multi-level Modelling *

A 3-day course.

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Mark Tranmer is a Professor of Quantitative Social Science at the University of Glasgow. He has been working with multilevel models since 1993 and teaching multilevel modelling at since 1999, including invited courses to Australia, New Zealand and Spain, as well as MSc modules, and external short courses for academic and non-academic audiences. He has published 15 peer reviewed academic journal papers using multilevel modelling, alongside book chapters and reports. His most recent publication on the topic was in 2016 in the Journal Social Networks.

Essential elements in green.
Optional in yellow.

Day 1:
- Introduction to multilevel models and hierarchical structures
- Random Intercepts model
- Random slopes model
- Multilevel models for longitudinal data
- Examples in R. Examples in MLwiN

- Multivariate Responses

Day 2:
- Logistic regression models
- MCMC estimation
- Other Categorical Responses
- Examples in R. Examples in MLwiN
- R2MLwiN interface

- MLwiN and Stata.
Day 3:

- Non-hierarchical structures
- Cross Classified Models
- Multiple Membership Models
- Examples in R2MLwiN and MLwiN.

- Applications to Spatial Analysis
- Applications to Social Network Analysis

Main Software used for teaching this course:

MLwiN (free to uk academics with an .ac.uk email)

R / R studio

Key reference:

https://www.stats.ox.ac.uk/~snijders/multilevel.htm

Pre-requisites.

Familiarly with linear regression (and ideally logistic regression too).
Familiarity with R to fit linear regression models (and ideally logistic regression models too).

Useful resources for learning R:

Try - R
http://tryr.codeschool.com/

Swirl Stats
http://swirlstats.com

Quick R
http://www.statmethods.net

I will make no assumptions about MLwiN but these could be useful resources

http://www.ats.ucla.edu/stat/MLwiN/faq/default.htm
http://www.bristol.ac.uk/cmm/software/mlwin/