

Selected Quantitative Methods

GSSS PhD Course 2013-2014

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October 30 2013

Lecture 1a

Two kinds of data

- Continuous or semi-continuous data, that allow metric summaries: average, variance (sd), covariance-correlation.
- Appropriate models: OLS regression, factor and component analysis, (m)anova, SEM models.
- Discrete, nominal data (sometimes with an ordinal or metric scaling).
- Appropriate models: binomial, multinomial and conditional multinomial logistic regression; log-linear models of cross-classified data.

My choice

- In the past, the SQM course has alternated between SEM models for continuous data and logistic regression models for discrete choice data.
- This year it will be SEM in Stata
- SEM models: Simultaneous Equation Models.
- So we also have to learn Stata.
- Stata can do much more (than SPSS), also in discrete data modeling.

SEM: what is so great about it?

- Makes you think about data in a causal framework.
- Makes you think about the world as a covariance system: total, direct, indirect and confounding effects.
- Makes you think and care about (random and systematic) measurement error: unreliability and invalidity; SEM cannot only diagnose but also repair measurement error.

SEM, other advantages

- Integration of measurement and causal modeling: increased statistical power.
- Full Information ML for missing values.
- Constrained estimation
- Cross-lagged panel models
- Instrumental variables modeling (causality).
- Reciprocal causation.

SEM, not so great

- SEM is not so great for studying interactions, in particular not between continuous predictors.
- SEM's are sometimes hard to estimate (do not converge) and occasionally hard to interpret.
- SEM's cannot really cope with discrete data, in particular as dependent of intervening variables.

How the course is organized

- We meet twice a week in practicum style. Bring you computers. Software will be available.
- Reading materials are primarily Stata 12 manuals – available from the webpage.
- Webpage contains provisional schedule of topics / lectures.
- Examples and exercises will primarily come from your own research and data.

Next week

- Further introduction into elementary principles of SEM with a worked example.
- Getting to work with Stata. Read the Getting Started manual.