Panel-data analysis using Stata
ICPSR Summer Program
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This workshop provides an introduction to the econometric methods for analyzing panel data and how to perform them using Stata. Morning sessions will introduce methods using a mixture of lecture and hands-on practice. Afternoon sessions will be mostly hands-on computer sessions using Stata. Both example data and simulation techniques will be used to build intuition for the covered methods.

Most of this course will describe methods for datasets with many panels and few time periods. For this type of data, the course will cover linear fixed-effects and random-effects models, linear dynamic panel-data models, and nonlinear fixed and random-effects models. For datasets with a few panels and many time periods, the course will cover the generalized least-squares approach, which assumes that the time series are stationary.

This course assumes familiarity with the linear regression model and with the maximum-likelihood estimator of the probit model as explained in Wooldridge (2006).

**Schedule** On Monday - Thursday the schedule will be
- 8:30 -12:00
- 12:00 - 1:00
- 1:00 - 4:30
On Friday the schedule will be
- 8:30 -12:00

**Textbook**
There is no required textbook for this class. But I recommend that you have access to either Wooldridge (2002) or Cameron and Trivedi (2005).
Outline

- Day 1
  - After doing a quick introduction to Stata, we review the ordinary least-squares (OLS) estimator and learn how to use simulation techniques to understand the large-sample properties of this estimator. We also look at the potential costs and benefits of panel-data and study pooled OLS estimator.

- Day 2
  - We study estimators for the parameters of random-effects and fixed-effects models and specification tests for which model is more appropriate. We will also discuss linear mixed models.

- Day 3
  - We study instrumental-variables estimators and generalized-method-of-moments estimators for the parameters of linear models with endogenous variables and linear dynamic models.

- Day 4
  - We study estimators for the parameters of nonlinear models with fixed effects and random effects. We also discuss how the individual-specific approach embodied in random-effects and fixed-effects models differs from the population-averaged approach. We will also discuss parameter interpretation in some depth.

- Day 5
  - We discuss generalized least-squares estimators for stationary models with many observations and a fixed number of panels. We also discuss the linear regression with panel-corrected standard errors.

References

