

GCEP Training Course

Estimating Causal Effects and Policy Effects

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In this course we will cover several methods for estimating causal effects with an emphasis on methods that can be used to analyze policy interventions. For cross-sectional data we consider cases where the assignment is randomized; randomized conditional on observed covariates; and where assignment depends fundamentally on unobservables. In addition to instrumental variables methods we will cover control function methods that allow estimation of a variety of causal effects. We will also discuss the basics of regression discontinuity designs, which can be used to exploit institutional features of program participation.

General difference-in-differences (DID), including allowing for multiple treatment groups and time periods, with different pre-treatment trends, will also be covered. There will also be a bit on nonlinear DID. The final topic is policy analysis with panel data. Throughout I will mention certain issues in obtaining valid standard errors and confidence intervals.

My book *Econometric Analysis of Cross Section and Panel Data*, 2e, 2010, MIT Press covers some but not all of the topics. Some others are in

Imbens, G.W. and J.M. Wooldridge (2009), "Recent Developments in the Econometrics of Program Evaluation," *Journal of Economic Literature* 47, 5-86.

I will provide some other references as the course nears.

Program

DAY 1

Session 1: 9:30-11:00

Definitions, Parameters, Assumptions, and Identification under Random and Ignorable Assignment

Coffee: 11:00-11:15

Session 2: 11:15-12:30

Estimation under Ignorable Assignment, Part 1

Lunch: 12:30-2:00

Session 3: 2:00-3:30

Estimation under Ignorable Assignment, Part 2

Coffee Break: 3:30-3:45

Session 4: 3:45-5:00

Instrumental Variable and Control Function Methods

DAY 2

Session 1: 9:30-11:00

Regression Discontinuity Designs

Coffee: 11:00-11:15

Session 2: 11:15-12:30

Difference-in-Differences: Pooled Cross Sections

Lunch: 12:30-2:00

Session 3: 2:00-3:30

Difference-in-Differences: Pooled Cross Sections and Panel Data

Coffee Break: 3:30-3:45

Session 4: 3:45-5:00

General Policy Analysis with Panel Data