

Instrumental Variables Methods: A Two-Day Workshop

Professor: Peter Hull (Brown University)
Website: <http://peterhull.net>
Email: peter_hull@brown.edu

Course Description

Instrumental variables (IV) is a powerful tool for leveraging external (“exogenous”) variation to estimate the causal effects of otherwise confounded (“endogenous”) variables. This two-day workshop will introduce the basics of IV through different practical examples, formalize the requirements of a valid and powerful IV, and discuss the mechanics of the two-stage least squares (2SLS) estimator. Special focus will be paid on interpreting linear IV under heterogeneous treatment effects and recent advances with “formula” instruments. The course includes a programming exercise where IV techniques are illustrated in a real-world application.

About the Instructor

Peter Hull is a Professor of Economics at Brown University and a Research Associate at the National Bureau of Economic Research. He has published papers on topics in applied econometrics, education, healthcare, and criminal justice, in outlets such as the *American Economic Review*, the *Quarterly Journal of Economics*, the *Review of Economic Studies*, and the *New England Journal of Medicine*. His research is focused on developing and applying new instrumental variable methods to measure the quality of institutions, such as schools or hospitals, as well as discrimination and bias in human and algorithmic decision-making. Prior to Brown, Professor Hull taught at the Kenneth C. Griffin Department of Economics at the University of Chicago and worked at Microsoft Research and the Federal Reserve Bank of New York. He earned his PhD in economics from MIT in 2017, under 2021 Nobel Laureate Josh Angrist.

Course Objectives

This course is appropriate for students familiar with core causal inference tools (e.g. potential outcomes and/or causal graphs) and the basics of linear regression. The course will cover core topics on IV and 2SLS as well as more recent methodological advances; we will focus on applications and practical issues in the coding lab. Students should be familiar with either Stata, R, or Python to complete these labs.

Course Structure

This is a two-day intensive workshop, with five hours of lectures and a take-home coding lab. The remaining time will be given to breaks and 20 minutes of live-coding solutions to the coding lab.

Schedule

Tuesday 2/10	6:00-7:20pm	Lecture 1: Introduction / IV Mechanics
	7:20-7:35pm	Break
	7:35-9:00pm	Lecture 2: IV Interpretation (Part 1)
Wednesday 2/12	6:00-6:30pm	Coding Lab
	6:30-7:20pm	Lecture 2: IV Interpretation (Part 2)
	7:20-7:35pm	Break
	7:35-9:00pm	Lecture 3: Formula Instruments