Course Description and Objectives
The goal of this course is to provide students with an introduction to key methods of quantitative policy analysis. We develop the statistical toolkit of regression analysis, reviewing the bivariate regression model and then continuing with multiple regression, and explore how these methods are applied to policy analysis in five benchmark techniques: randomized trials, direct regression analysis, instrumental variables, regression discontinuity, and difference in differences. We emphasize the distinction between regression as a statistical tool and the additional context knowledge (and occasionally assumptions) that are required to address causal policy questions.

Approach
The focus will be on learning to use the methods discussed. This involves a counterpoint between methods discussion and application. The methods discussion will lean on basic statistical concepts, but the emphasis will be on the intuition and ideas. The applications will be based on analysis of real and realistic policy-relevant data.

Grading
The course will be evaluated through five problem sets (15 points each), and a midterm exam (25%). All problem sets will make use of Stata, so please ensure you are familiar with how to access this program at NYU.

Course Structure
The class includes lectures, readings, and independent computer lab work. You are strongly encouraged to relate the general material of the course to your specific policy interests throughout the course. Class attendance is critical as interaction within the classroom is an essential aspect of this course and the learning process associated with it.

Required Books
James Stock and Mark Watson (SW below), *Introduction to Econometrics*, Pearson Addison Wesley.

Schedule

Class 1: Introduction to causality and review of the bivariate regression model
Class 2: Randomized controlled trials: Assigned: PS1.
Class 3: Multiple regression: estimation and interpretation
Class 4: Multiple regression: hypothesis testing. Due: PS1.
Class 5: Multiple regression: challenges Assigned: PS2.
Class 6: Dummy variables
Class 7: Direct regression analysis of policy: possibilities and perils. Due: PS2.
Class 8: Midterm
Class 9: Multiple regression: functional form
Class 12: Introduction to panel data.
Class 14: Introduction to time series and forecasting
Due Dec 18th: PS5.
Readings
* denotes required, # denotes an advanced reading where you should only skim the non-technical portions. All other readings are optional. All required readings are on the web directory. Some optional readings are there as well.

Class 1: Causality and the Treatment Effect, Review of Bivariate Regressions
* MM, Introduction.
* SW, Chapters 1, 4, and 5


Class 2: Randomized trials
* MM, Chapter 1.


Imbens, Guido, and Donald Rubin, Causal Inference for Statistics, Social and Biomedical Sciences. Cambridge.

Class 3: Multiple Regression: Estimation and Interpretation
* SW, Chapter 6

Class 4: Multiple Regression: Hypothesis Testing
* SW, Chapter 7.1-7.4

Class 5: Multiple Regression: Challenges
* SW, Chapters 5.4, 7.5-7.7, and 9.

Class 6: Binary Dependent Variables
* SW, Chapter 11.


Class 7: Multivariate Regression and the Analysis of Policy
* MM, Chapters 2 and 6.
* SW, Chapter 9.


Class 8: Midterm

Class 9: Multiple Regression and Functional Form
* SW, Chapter 8.
Class 10: Instrumental Variables
* MM, Chapter 3.
* SW, Chapter 12.


Class 11: Regression Discontinuity
* MM, Chapter 4.
* SW, Chapter 13.4


Class 12: Introduction to Panel Data  
* SW, Chapter 10.

Class 13: Difference-in-Differences  
* MM, Chapter 5.


Class 14: Introduction to Time Series and Forecasting  
* SW, Chapter 14.