

PPHA 34600: Program Evaluation
SYLLABUS

Spring 2019: Tuesdays and Thursdays, 9:30-10:50a and 11:00-12:20p. Location TBD

Instructor: Fiona Burlig

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Office hours: TBD

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TAs: Terence Chau, email: terencechau@uchicago.edu

Office hours: TBD

Additional TAs TBD

Course description: The goal of this course is to introduce students to program evaluation and provide an overview of current issues and methods for estimating treatment impacts. We will

Prerequisites: PPHA31002 and PPHA31102 or equivalent coursework in statistics and economic theory. Students lacking these prerequisites should seek permission from the instructor.

Requirements and grading: Grades will be based on four problem sets and a final exam. Problem sets will count for a total of 75% and the final exam will count for 25%.

Problem sets: Problem sets must be typed and submitted electronically, and late problem sets will not be accepted. Each assignment will receive equal weight. You may work in groups of up to three on your problem sets, ask the course TAs, and get help from Harris' R consultants, but you must turn in your own problem set, with answers written in your own words. All coding in problem sets must be done in R. Due dates are as follows:

- Problem Set 1: Thursday, **April 18** at 9 pm.
- Problem Set 2: Tuesday, **May 07** at 9 pm.
- Problem Set 3: Thursday, **May 16** at 9 pm.
- Problem Set 4: Tuesday, **May 28** at 9pm.

Final exam: The take-home final exam will be due 72 hours after the assignment is made available on the last day of class. You must do your own work and may not discuss the exam with anyone before it is due. Your exam must be typed and submitted electronically. Late exams will receive a zero.

Re-grade policy: : If you think that there is an error in the grading of your work, you must submit a typed written statement of the details of the problem in question to a TA attached to the assignment in question. The TAs will review both your reasoning and the problem and respond within one week. We reserve the right to re-grade the assignment in its entirety.



Readings: Materials for this course consist of two main items: (1) my lecture slides, which will be focused on theory, and (2) a variety of papers that will be available from the course website, which will provide examples of each method. See the schedule and reading list below for topics and associated readings.

Additional policies:

Electronic devices: This course has a no-electronic-devices-in-class policy. Please refrain from using your devices in class. If you require an exemption from this policy (e.g. for a medical reason), please seek permission from the instructor.

Statistical software: Data work for this class, including problem sets and/or the final exam, will be done in R. I recommend that you use RStudio in conjunction with the tidyverse.

Academic honesty: The Harris School has a formal policy on academic honesty that you are expected to adhere to. Examples of academic dishonesty include (but are not limited to) turning in someone else's work as your own, copying solutions to past years' problem sets, and receiving any unapproved assistance on exams. Academic dishonesty will not be tolerated in this course. At a minimum, I will give zeroes on any assignments that include cheating and will strike the highest overall problem set score of any student who has cheated. I will also refer all cases of cheating to the office of the Dean of Students. They may in turn impose further penalties as per the Harris School Disciplinary Procedures, including as probation and expulsion. If you have any questions regarding what would or would not be considered academic dishonesty in this course, please do not hesitate to ask.

ADA accommodations: Any student who believes they may need assistance should inform the Office of Student Disability Services by the end of the first week of class. Once you have received an accommodation letter, it should be presented to the course instructor immediately. For more information, see <https://disabilities.uchicago.edu/>.

Tentative list of lecture topics and deadlines (subject to adjustments):

4/2: Why program evaluation?

4/4: Regression and the fundamental problem of causal inference

4/9: Randomized controlled trials I

4/11: Randomized controlled trials II

4/16: Randomized controlled trials III

4/18: Evaluation of evaluations

- **Problem set #1 due**

4/23: Selection on observables I

4/25: Selection on observables II

4/30: Panel data I

5/2: Panel data II

5/7: Panel data III

- **Problem set #2 due**

5/9: Instrumental variables I

5/14: Instrumental variables II



5/16: Regression discontinuity I

- **Problem set #3 due**

5/21: Regression discontinuity II

5/23: Big data and machine learning I

5/28: Big data and machine learning II

- **Problem set #4 due**

5/30: Does rural electrification work? I

6/4: Does rural electrification work? II

6/6: Wrapping up

- **Final exam assigned, due on 6/9**

Reading list: Readings will be made available through the course website. I'm not asking you to read much, so all readings are mandatory.

Why program evaluation?

Regression and the fundamental problem of causal inference

- Angrist, Joshua D. and Jorn-Steffen Pischke. 2015. *Mastering 'Metrics*, Princeton University Press: Princeton, NJ: Chapter 2.

Randomized controlled trials I: Overview

- Haushofer, Johannes and Jeremy Shapiro. 2016. "The Short-Term Impact of Unconditional Cash Transfers to the Poor: Experimental Evidence from Kenya." *The Quarterly Journal of Economics*, 131(4): 1973–2042.

Randomized controlled trials II: Noncompliance

- Fowlie, Meredith, Catherine Wolfram, C. Anna Spurlock, Annika Todd, Patrick Baylis, and Peter Cappers. 2017. "Default Effects and Follow-on Behavior: Evidence from an Electricity Pricing Program," *NBER Working Paper w23553*.

Randomized controlled trials III: General equilibrium effects

- Bergquist, Lauren, Marshall Burke, and Edward Miguel. 2019. "Sell low and buy high: Arbitrage and local price effects in Kenyan markets," *The Quarterly Journal of Economics*, forthcoming.

Evaluation of evaluations

- Finkelstein, Amy, et al. "The Oregon Health Insurance Experiment: Evidence from The First Year," *The Quarterly Journal of Economics*, 127(3): 1057-1106.

Selection on observables I: Adding controls

- Anderson, Michael L. 2017. "The benefits of college athletic success: An application of the propensity score design," *Review of Economics and Statistics*, 99(1): 119-134.

Selection on observables II: Matching



- Davis, Lucas W., Alan Fuchs, and Paul Gertler. 2014. “Cash for coolers: Evaluating a large-sale appliance replacement program in Mexico,” *American Economic Journal: Economic Policy*, 6(4): 207-238.

Panel data I: Overview

- Card, David. 1990. “The impact of the Mariel boatlift on the Miami labor market,” *Industrial and Labor Relations Review*, 43(2): 245-257.

Panel data II: Fixed effects A

- Jensen, Robert. 2007. “The digital divide: Information (technology), market performance, and welfare in the South Indian fisheries sector,” *The Quarterly Journal of Economics*, 122(3): 879-924.

Panel data III: Fixed effects B

- Hsiang, Solomon M. and Amir S. Jina. 2014. “The causal effect of environmental catastrophe on long-run economic growth: Evidence from 6,700 cyclones,” NBER Working Paper w20352.

Instrumental variables I: Compliance and measurement error

- Maccini, Sharon and Dean Yang. 2009. “Under the weather: Health, schooling, and economic consequences of early-life rainfall,” *American Economic Review*, 99(3): 1006-1026.

Instrumental variables II: IVs for causal inference

- Anderson, Michael L. and David A. Matsa. 2011. “Are restaurants really supersizing America?” *American Economic Journal: Applied Economics*, 3:152-188.

Regression discontinuity I: Sharp RD

- Crost, Benjamin, Joseph Felter, and Patrick Johnston. 2014. “Aid under fire: Development projects and civil conflict,” *American Economic Review*, 104(6):1833-56.

Regression discontinuity II: Fuzzy RD

- Dell, Melissa and Pablo Querubin. 2018. “Nation building through foreign intervention: Evidence from discontinuities in military strategies,” *The Quarterly Journal of Economics*, 133(2): 701-764.

Big data and machine learning I: Overview

- Mullainathan, Sendhil and Jann Spiess. 2017. “Machine learning: An applied econometric approach,” *Journal of Economic Perspectives*, 31(2): 87-106.
- Donaldson, Dave and Adam Storeygard. 2016. “The view from above: Applications of satellite data in economics,” *Journal of Economic Perspectives*, 30(4): 171-198.

Big data and machine learning II: Causality

- Burlig, Fiona, Christopher Knittel, David Rapson, Mar Reguant, and Catherine Wolfram. 2019. “Machine learning from schools about energy efficiency,” NBER Working Paper w23908.

Does rural electrification work? I



- Dinkelman, Taryn. 2011. “The effects of rural electrification on employment: New evidence from South Africa,” *American Economic Review*, 101(7): 3078-3108.

Does rural electrification work? II

- Burlig, Fiona and Louis Preonas. 2016 “Out of the darkness and into the light? Development effects of rural electrification,” Energy Institute at Haas Working Paper 268.
- Lee, Kenneth, Edward Miguel, and Catherine Wolfram. 2019. “Experimental evidence on the economics of rural electrification,” NBER Working Paper w22292.

Wrapping up