

PPHA 34600: Program Evaluation
Section 01: General focus
SYLLABUS

Instructor: Prof. Fiona Burlig
Email: burlig@uchicago.edu

Course logistics: Due to COVID-19, we are unable to meet in person. Instead, class will work as follows (subject to change):

- Lectures: I will post lecture recordings to the course's Canvas website. This is the majority of the course material; you are responsible for the content in these recordings. I will not hold live lecture.
- Open discussion/live Q&A sessions: I will hold Zoom open Q&A during the first half of our regularly-scheduled class time on Tuesdays (9:30-10:10A), beginning the second week of class. I will send out Zoom meeting details via Canvas.
- Office hours: I will hold Zoom office hours during the second half of our regularly-scheduled class time on Tuesdays (10:10-10:50A), beginning the second week of class. If you are interested in joining for office hours, please sign up at [this link](#). You may sign up alone, or in a group of up to 5. Please be respectful of your classmates when signing up for office hours. Any office hour sign-ups more than 2 weeks in advance without my prior permission will be deleted. I will admit you into the Zoom meeting when your scheduled time begins. I will send out Zoom meeting details via Canvas.
- Class happy hour: In order for us to have a little bit more time to interact with one another, I will hold Zoom happy hour three times throughout the quarter, from 7-8 PM Chicago time: 4/21, 5/13, 6/4. These are not mandatory, but you and your adult beverages are welcome! I will send out Zoom meeting details via Canvas.

TAs:

- *Head TA:* Terence Chau, terencechau@uchicago.edu
- Angel Aliseda, aaliseda@uchicago.edu
- Anna-Elise Smith, annaelise@uchicago.edu
- Borui Sun, boruis@uchicago.edu
- Daniella Choi, daniellac@uchicago.edu
- Jena Manilla, jmanilla@uchicago.edu
- Simon Park, simonpark@uchicago.edu
- Luis Recalde, luisrecalde@uchicago.edu
- Yumeng Wang, yumengwang@uchicago.edu
- Zhijie Yan, zhijiey@uchicago.edu

TA Sessions and office hours:

- TA sessions will include pre-recorded content, which will be posted to Canvas.



- The TAs will also hold office hours during your scheduled lab sections. The TAs will be in touch with Zoom details.

Course description: The goal of this course is to introduce students to program evaluation, provide an overview of current issues and methods for estimating treatment impacts, and prepare students to be effective consumers of empirical evaluations of real-world policies.

A note on course sections: This course is divided into three sections, each with a slightly different focus. PPHA 34600-01 (9:30-10:50A) will have a general focus. PPHA 34600-02 (11:00A-12:20P) will have an international development focus. PPHA 34600-03 (2:00-3:20p) will have an energy and environment focus. The three sections will share TAs, problem sets, final exams, due dates, and the majority of the course material, but we will read different papers (see below). Note that if you are taking this course to fulfill a certificate requirement in international policy and development or in energy and environmental policy, you must register for the section that corresponds with your certificate.

TA sessions: TA sessions are not mandatory, but will be extremely helpful. I will not have time to cover coding in class; instead, this will take place through the pre-recorded TA sessions and live TA office hours. I strongly encourage you to attend.

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. You may share code with other members of your group, but you may not share written answers with other students (including members of your own group). All coding in problem sets must be done in R. Due dates are as follows:

- Problem Set 1: Thursday, **April 23** at 9 pm.
- Problem Set 2: Thursday, **May 14** at 9 pm.
- Problem Set 3: Thursday, **May 21** at 9 pm.
- Problem Set 4: Thursday, **May 28** at 9pm.

Final exam: The take-home final exam will be assigned on May 31st, and due at **9 PM on June 3rd**. 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. all coding on the exam must be done in R. 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. If you are requesting a re-grade based on other students' grades, you must submit your own problem set and the other student's problem set with your request in order to receive a re-grade. Regrades must be submitted within a week of problem sets being returned.

Readings: Materials for this course consist of two main items: (1) my recorded lectures, and the accompanying 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. Instruction on and practice with coding will take place in TA sessions. See the schedule and reading list below for topics and associated readings.

Additional policies:

Piazza: The course will have a Piazza site, accessed through Canvas, and maintained by the TAs. If you have content-related questions, please post them on Piazza. Note that neither I nor the TAs will respond to Piazza questions submitted within 24 hours of a problem set deadline or the exam deadline.

Email: Please use Piazza over email for questions related to course content. If your non-content-related email cannot be answered in a paragraph or less, I will ask you to come to office hours or make an appointment so that we can discuss it in person. I will do my best to respond to emails within 48 hours (M-F). If you have not heard from me within 48 hours, please re-send your email. To greatly increase the likelihood that I (or the TAs) see your email, please be sure to include [PPHA 34600] in the subject line. Neither I nor the TAs will respond to emails sent within 24 hours of a problem set deadline or the exam deadline.

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, turning in the same written text as someone else on a problem set/exam, copying solutions to past years' problem sets, and receiving any unapproved assistance on exams. This course has a zero-tolerance policy for academic dishonesty. Any student found in violation of this academic honesty policy will receive an automatic F in the class. 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 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. Note that this policy extends to online class.

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):

- 4/7: Why program evaluation?
- 4/9: Treatment parameters and regression
- 4/14: Randomized controlled trials I
- 4/16: Randomized controlled trials II
- 4/21: Randomized controlled trials III
 - **4/21: Zoom happy hour!**
- 4/23: Evaluation of evaluations
 - **Problem set #1 due**
- 4/28: Selection on observables
- 4/30: Instrumental variables I
- 5/5: Instrumental variables II
- 5/7: Instrumental variables III
- 5/12: Panel data I
 - **5/13: Zoom happy hour!**
- 5/14: Panel data II
 - **Problem set #2 due**
- 5/19: Panel data III
- 5/21: Regression discontinuity I
 - **Problem set #3 due**
- 5/26: Regression discontinuity II
- 5/28: Big data and machine learning
 - **Problem set #4 due**
- 6/2: Policy lab I
- 6/4: Policy lab II
 - **Final exam due on 6/3**
 - **6/4: Zoom happy hour!**

Reading list: Readings will be made available through the course website. I am not asking you to read much, so all readings are mandatory unless otherwise noted. Please read the version from the course website to make sure we are all on the same page.

Why program evaluation?

- No readings for the first class.

Treatment parameters and regression

- Angrist, Joshua D. and Jorn-Steffen Pischke. 2015. *Mastering 'Metrics*, Princeton University Press: Princeton, NJ: pp 82--97.
- Angrist, Joshua D. and Jorn-Steffen Pischke. 2009. *Mostly Harmless Econometrics*, Princeton University Press: Princeton, NJ: pp 27--64.

Randomized controlled trials I



- Dynarski, Susan, C. J. Libassi, Katherine Michelmore, and Stephanie Owen. 2018. “Closing the gap: The effect of a targeted, tuition-free promise on college choices of high-achieving, low-income students,” *NBER Working Paper w25349*.

Randomized controlled trials II

- 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

- 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*, 134(2): 785--842.
- *Optional reading*: Baird, Sarah, J. Aislinn Bohren, Craig McIntosh, and Berk Ozler. 2014. “Designing experiments to measure spillover effects,” *IIEP working paper*.

Evaluation of evaluations

- Spurlock, Anna, Peter Cappers, Jing Lin, Annika Todd, and Patrick Baylis. 2016. “Go for the silver? Evidence from field studies quantifying the difference in evaluation results between ‘gold standard’ randomized controlled trial methods versus quasi-experimental methods,” *ACEEE Summer Study on Energy Efficiency in Buildings*, 2-1--2-13.

Selection on observables

- Chetty, Raj, John N. Friedman, and Jonah E. Rockoff. 2014. “Measuring the impacts of teachers II: Teacher value-added and student outcomes in adulthood,” *American Economic Review*, 104 (9): 2633--2679.

Instrumental variables I

- Norris, Samuel, Matthew Pecenco, and Jeffrey Weaver. 2020. “The effects of parental and sibling incarceration: Evidence from Ohio,” *Working Paper*.

Instrumental variables II

- Ashenfelter, Orley, and Alan Krueger. 1994. “Estimates of the economic return to schooling from a new sample of twins,” *American Economic Review*, 84 (5), 1157--1173.

Instrumental variables III

- No new reading. Review Fowlie, Wolfram et al.

Panel data I

- Davis, Lucas. 2004. “The effect of health risk on housing values: Evidence from a cancer cluster,” *American Economic Review* 94 (5): 1693--1704.

Panel data II



- Kleven, Henrik, Camille Landais, and Jakob Egholt Søgaaard. 2019. “Children and gender inequality: Evidence from Denmark,” *American Economic Journal: Applied Economics* 11(4): 181--209.
- *Optional reading*: Goodman-Bacon, Andrew. 2018. “Difference-in-differences with variation in treatment timing,” *Working paper*.

Panel data III

- Chetty, Raj, Adam Looney, and Kory Kroft. 2009. “Salience and taxation: Theory and evidence,” *American Economic Review* 99 (4): 1145--1177.

Regression discontinuity I

- Ludwig, Jens and Douglas L. Miller. 2007. “Does Head Start improve children’s life chances? Evidence from a regression discontinuity design,” *The Quarterly Journal of Economics* 122(1): 159--208.

Regression discontinuity II

- Chen, Yuyu, Avraham Ebenstein, Michael Greenstone, and Hongbin Li. 2013. “Evidence on the impact of sustained exposure to air pollution on life expectancy from China’s Huai River Policy,” *Proceedings of the National Academy of Sciences*, 110(32): 12936--12941.
- *Optional reading*: Ebenstein, Avraham, Maoyong Fan, Michael Greenstone, Guojun He, and Maigeng Zhou. 2017. “New evidence on the impact of sustained exposure to air pollution on life expectancy from China’s Huai River Policy,” *Proceedings of the National Academy of Sciences*, 114 (39): 10384--10389.

Big data and machine learning

- Burlig, Fiona, Christopher Knittel, David Rapson, Mar Reguant, and Catherine Wolfram. 2020. “Machine learning from schools about energy efficiency,” NBER Working Paper w23908.
- *Optional reading*: Mullainathan, Sendhil and Jann Spiess. 2017. “Machine learning: An applied econometric approach,” *Journal of Economic Perspectives*, 31(2): 87--106.
- *Optional reading*: Donaldson, Dave and Adam Storeygard. 2016. “The view from above: Applications of satellite data in economics,” *Journal of Economic Perspectives*, 30(4): 171--198.

Policy lab: Impacts of health insurance I

- Hanratty, Maria J. 1996. “Canadian national health insurance and infant health,” *American Economic Review*, 86 (1), 276--284.
- Currie, Janet and Jonathan Gruber. 1996. “Health insurance eligibility, utilization of medical care, and child health,” *The Quarterly Journal of Economics*, 111 (2): 431--466.

Policy lab: Impacts of health insurance II

- Finkelstein, Amy, Sarah Taubman, Bill Wright, Mira Bernstein, Jonathan Gruber, Joseph P. Newhouse, Heidi Allen, Katherine Baicker, and the Oregon Health Study Group. 2012. “The Oregon health insurance experiment: Evidence from the first year,” *The Quarterly Journal of Economics*, 127 (3): 1057--1106.
- Baicker, Katherine, Sarah L. Taubman, Heidi L. Allen, Mira Bernstein, Jonathan H. Gruber, Joseph P. Newhouse, Eric C. Schneider, Bill J. Wright, Alan M. Zaslavsky, and Amy N.



Finkelstein. 2013. “The Oregon experiment -- Effects of Medicaid on clinical outcomes,” *New England Journal of Medicine*, 368: 1713--1722.

- Baicker, Katherine, Amy Finkelstein, Jae Song, and Sarah Taubman. 2014. “The impact of Medicaid on labor market activity and program participation: Evidence from the Oregon health insurance experiment,” *American Economic Review*, 104 (5): 322--328.