

**Public Policy 712**  
**Causal Inference in Education Policy Research**

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Course Meeting Time and Location:

M/W: 2:30-4:00pm

Weill Hall 1220

Office hours: By appointment

**Overview**

This course examines several key policy areas in the realm of early learning and K-12 education. The two primary goals of the course are (1) to familiarize students with the arguments and evidence relating to important policies and/or interventions and (2) to provide students with the analytic framework and skills necessary to evaluate education (or other public) policies in general. Specific policy topics include early learning experiences, center-based early childhood programs, parental involvement in early childhood learning, preschool, test-based accountability (i.e., high-stakes testing, including No Child Left Behind), teacher effectiveness, and virtual schooling. Specific methodological techniques include randomized-control trials (RCT), regression discontinuity analysis (RD), comparative interrupted time series (CITS), Empirical Bayes, and a brief intro to several topics in psychometrics.

**Prerequisites**

Knowledge of introductory statistics (e.g., Stats 250, PP 529, SOE 793, or equivalent) and regression analysis (e.g., Stats 413, PP 639, SOE 794 or 795, or equivalent) are required for this course. For those students who are interested, a good refresher for statistics and regression analysis can be found in the following texts:

Rossi, Peter H., Freeman, Howard E., and Lipsey, Mark W. *Evaluation: A Systematic Approach*. Sixth Edition. Thousand Oaks, CA: Sage Publications, 1999. Chapter 7 (pp: 235-278).

Orr, Larry (1999). *Social Experiments*. Sage Publications, Thousand Oaks, CA. (Chapter 1, pp 1-30).

Schneider, B., Carnoy, M., Kilpatrick, J., Schmidt, W. H., & Shavelson, R. J. (2007). *Estimating causal effects using experimental and observational designs*. Washington, DC: American Educational Research Association. Chapter 3 (pp. 38-55).

Stock and Watson, *Introduction to Econometrics* (syllabus references are to 3<sup>rd</sup> edition, but older editions contain virtually identical content).

### **Course Requirements and Grading**

General Class Participation (10%) – Students are expected to attend class regularly and to have read the assigned material prior to class. Because this is a discussion-based course, the quality of the class will depend on whether students are prepared to talk about the readings each week.

Reading Quizzes (20%) – There will be 6 short quizzes spread throughout the course. These quizzes will contain basic questions about the class readings for that day, and are merely meant to check that students have done the reading. They will consist of 1-3 questions, each of which should take no more than 2 sentences to answer. A student's lowest quiz grade will be dropped in calculating his or her quiz average (the remaining 5 count 4% each).

Problem Sets (30%) – There will be 3 required problem sets for this course (10% each), each of which will have students using real data to do empirical exercises in Stata. Students are encouraged to work in small groups (max size 4) on the assignments, though each student is required to write up and submit his or her own version of the solutions. Students must indicate the other students with whom they worked at the top of the problem set.

Note: Stata will *not* be formally taught as part of this course. The instructors will provide students a variety of online materials to help them learn the commands necessary to complete the assignments, and will be available to answer questions in office hours. However, students should expect to work independently to learn the rudiments of the Stata language themselves.

Final Project (40%) – Students will have two options for the final project.

- (1) Policy Memo – The first option is intended for most MA or MPP students. For this assignment, students will be required to carefully read and analyze an empirical study, and relate the findings from the study to other material covered in the class. The goal of this exercise is to give students practice digesting and (importantly) communicating complicated technical material to a general audience. This assignment will not require any additional research beyond the assignment article and readings the student will have done throughout the course. More details (including some example memos) will be distributed toward the end of the class.
- (2) Independent Research Paper – This option is intended primarily to allow doctoral students the opportunity to explore a topic related to their independent research agenda. Course instructors must approve all projects in this category, and will consider whether the project moves the student forward in his or her dissertation or other independent research.

### **Course Materials**

Book chapters and journal articles, all of which will be available through CANVASS.

### **Readings**

Before most classes, we will post several questions about the readings to Canvas. Some of these questions will have "right" answers (e.g. "What population does a given paper study?") while many others will not ("Do you find their identification strategy convincing?"). You don't need to write up or turn anything in (but you may find this helpful to do); just be prepared to speak. Also make sure to bring the readings to class, as we will reference them. As for reading strategy, for the more technical papers a good strategy is to read the abstract, intro, results, conclusions, tables/figures first and see how many of the questions you can answer. Then go back and try to understand it a little bit better.

### **Software**

We will program in Stata, a software program used widely by researchers and policy analysts. Having "Stata" on your resume makes you more employable, so embrace it!

We provide links to online Stata tutorials and offer training in sections. Since there is no computer lab large enough to hold our class, you will rely on your laptops to practice Stata programming during these sections. *You must therefore own a copy of Stata.*

You can get a Stata license for just this semester at a very affordable price. Order through the Stata website (<http://www.stata.com/order/new/edu/gradplans/us-pickup/>) and then pick up at Computer Showcase. You will need to have the most recent version of Intercooled Stata.

### **Academic Expectations & Resources**

Please read the information at the link below for important information on topics such as academic integrity, accommodations for students with disabilities, inclusivity and others. We expect students to be familiar with all of the expectations and resources described herein:

<http://fordschool.umich.edu/academics/expectations>

## **Module 1: 0-5 Care and Education**

### **Class Schedule and Reading List**

#### **Class 1, September 7:** Course introduction

Read the syllabus in advance of class. Come prepared with any questions.

Read the Milkie et al. article summary.

Read this article that covered the Milkie study: [https://www.washingtonpost.com/local/making-time-for-kids-study-says-quality-trumps-quantity/2015/03/28/10813192-d378-11e4-8fce-3941fc548f1c\\_story.html?tid=HP\\_more](https://www.washingtonpost.com/local/making-time-for-kids-study-says-quality-trumps-quantity/2015/03/28/10813192-d378-11e4-8fce-3941fc548f1c_story.html?tid=HP_more)

*Recommended but not required:* Milkie, M. A., Nomaguchi, K. M., & Denny, K. E. (2015). Does the amount of time mothers spend with children or adolescents matter? *Journal of Marriage and Family*, 77(2), 355-372.

#### **Class 2, September 12:** Intro to early childhood

The White House. (2014). *The economics of early childhood investments*. Available at: [https://www.whitehouse.gov/sites/default/files/docs/early\\_childhood\\_report1.pdf](https://www.whitehouse.gov/sites/default/files/docs/early_childhood_report1.pdf)

Ellwood, David (1988). Chapter 2: Values and the helping conundrum. *In Poor Support: Poverty in the American Family* (pp 14-44).

*Focal questions:* Why care about the early years? What do children need in the early years? What are the primary public education and care programs for children aged 0-5 in the U.S.? What tensions do U.S. cultural values must policy in this area confront?

#### **Class 3, September 14:** Gaps in early experiences and the power of descriptive research

Bassok, D., Lee, R., Reardon, S. F., & Waldfogel, J. (2015). *Socioeconomic gaps in early childhood experiences, 1998 to 2010*. Unpublished manuscript. Available at: [http://curry.virginia.edu/uploads/resourceLibrary/38\\_Gaps\\_In\\_Early\\_Experience.pdf](http://curry.virginia.edu/uploads/resourceLibrary/38_Gaps_In_Early_Experience.pdf)

*Focal questions:* What are the gaps in early childhood experiences between advantaged and disadvantaged children? How do we know?

#### **Class 4, September 19:** Introduction to randomized controlled trials

Murnane, R., & Willett, J. (2011). *Methods Matter*, Chapter 4.

*Focal questions:* What are the nuts and bolts of an RCT study?

### **Class 5, September 21: Imperfect compliance and alternative assignment approaches**

Gennetian, L., Morris, P., Bos, J., & Bloom, H. (2005). Using instrumental variables analysis to learn more from social policy experiments. In H. Bloom (Ed.) *Learning More from Social Experiments: Evolving Analytic Approaches* (pp. 75-88). New York: Russell Sage.

Duflo, E., Glennerster, R., & Kremer, M. (2006). Using randomization in development economics research: A toolkit. Available online: <http://www.povertyactionlab.org/sites/default/files/documents/Using%20Randomization%20in%20Development%20Economics.pdf>. (Read section 3.3, “Alternative Methods of Randomization,” pp. 24-28).

*Focal question:* How do you adjust for treatment no-shows and control cross-overs? What are alternative approaches to random assignment?

### **Class 6, September 26: Engaging parents in young children’s learning using technology**

York, B. N., & Loeb, S. (2014). *One step at a time: The effects of an early literacy text messaging program for parents of preschoolers* (No. w20659). National Bureau of Economic Research.

Also, watch the Vroom! video (<https://www.youtube.com/watch?v=trm38G2e5NE>) and then download the Vroom! app here to your smart phone: <http://www.joinvroom.org/>. Enter a profile for your child (real or imagined – pick the child age (0-5) of your choice). For four days, check the app daily for a tip for interacting with your child. If you have a young child and like the tip, try it out.

Come to class prepared to discuss at least one of these tips – Did it sound like fun? What skill was it trying to build? (No smart phone? Complete the activity using examples of activities here: <http://www.joinvroom.org/tools-and-activities>)

*Focal questions:* What are the promises and pitfalls of new technology-based approaches to engaging parents in their young children’s learning?

### **Class 7, September 28: Center-based care**

Love, J. M., Kisker, E. E., Ross, C., Raikes, H., Constantine, J., Boller, K., ... & Fuligni, A. S. (2005). The effectiveness of early head start for 3-year-old children and their parents: Lessons for policy and programs. *Developmental Psychology*, 41(6), 885.

*Focal question:* Does center-based care 0-3 promote or hinder child development?

### **Class 8, October 3: Preschool**

Read Chapter 1 (High Hopes) of Zigler, E., & Muenchow, E., (1992). *Head Start: The inside story of American’s most successful educational experiment*. New York: Basic Books.

Duncan, G. J., & Magnuson, K. (2013). Investing in preschool programs. *The Journal of Economic Perspectives*, 27(2), 109.

*Focal questions:* How historically has the U.S. supported public preschool? What is the evidence to support investment in public preschool?

### **Class 9, October 5: Regression discontinuity**

Bloom, H. (2012). Modern regression discontinuity analysis. *Journal of Research on Educational Effectiveness*, 5, 43-82. (SKIP the section on power (p. 64-68)).

### **Class 10, October 10: State-funded pre-k**

Gormley, W.T., Phillips, D.A., & Gayer, T. (2008). Preschool programs can boost school readiness. *Science*, 320, 1723-24. (Note: As common with *Science* articles, there is a supplemental online appendix for this article. Read it too.)

Barnett, W. S., Friedman-Krauss, A. H., Gomez, R. E., Horowitz, M., Weisenfeld, G. G., & Squires, J. H. (2016). *Executive summary: The State of Preschool 2015: State Preschool Yearbook*. New Brunswick, NJ: National Institute for Early Education Research. Read p. 1-39. Available here: <http://nieer.org/research/state-preschool-2015>

*Focal questions:* How is state-funded pre-k different from Head Start and how much does it vary across states? Does it work? What are the shortcomings of the age-cutoff pre-k design as typically implemented?

### **Class 11, October 12: What should preschool today look like?**

Duncan, G., Jenkins, J., Auger, A., Bitler, M., Domina, T., & Burchinal, M. (2016). *Boosting school readiness: Should preschools target skills or the whole child?* Available here: [http://inid.gse.uci.edu/files/2011/03/Duncan\\_etal\\_Preschool\\_JHRsubmit.pdf](http://inid.gse.uci.edu/files/2011/03/Duncan_etal_Preschool_JHRsubmit.pdf)

*Focal questions:* What should preschool programs teach? Are some approaches better than others?

### **October 17: No class (fall break)**

### **Class 12, October 19: Do the benefits of preschool persist?**

Bailey, D., Duncan, G.J., Odgers, C., & Yu, W. (2016). *Persistence and fadeout in the impacts of child and adolescent interventions*. Manuscript under review.

*Focal questions:* Why might the effects of preschool last and why might they not? Given the evidence on fadeout, should the U.S. invest in publicly funded preschool? How can we figure out the drivers of fadeout?

**Class 13, October 24: The new frontier of preschool research**

Dr. JoAnn Hsueh, MDRC will join us remotely as guest speaker to discuss MDRC's new early childhood initiative, ExCEL.

Readings TBA