

# **Public Policy 712/Education 712**

Causal Inference in Education Policy Research I:

Early Childhood through High School

Winter 2021 M/W: 1:00-2:20 PM

Professor Christina Weiland

weilandc@umich.edu

## Office hours

Weiland: 3:45PM-4:45PM Fridays and as needed for conflicts with that time (all office hours are by appointment -- email for a slot)

**Zoom passcode for all class sessions: 8884**

## **Overview and objectives**

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, accountability, school choice, and research-practice partnerships. Specific methodological techniques include randomized-control trials (RCT), regression discontinuity analysis (RD), descriptive research, and lottery-based identification. We will also be studying topics related to the Institute of Education's SEER standards (<https://ies.ed.gov/seer/scaling.asp>).

## **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.

## Course Requirements and Grading

*Data Analysis Exercises (3)* 50%

You will replicate and extend analyses that use the quantitative methods of the course. You will work singly or with one classmate; if you work with a classmate you will submit a single product. Because we are in a pandemic, one class session will be used per problem set to answer questions and provide you with extra work time. Problem sets 1 and 2 are worth 20% and Problem set 3 (much of which will be completed in class) is worth 10%. I will grade your first submission for completion only. I will then distribute an answer key. You are to check your answers against the key, revise any that you got incorrect using Microsoft Word tracked changes, and submit the corrected version within a week after you have received the answer key.

*Take-Home Final Exam OR Research Project* 30%

A take-home exam is due on the last day of class (April 21 by 1PM) and will be provided by 5 PM on the Wednesday before. Doctoral students can (and IES fellows are required to) instead complete a research product that will be defined in consultation with me. Drafts of this research product will be due on specified dates.

*Reading Questions* 20%

I will post questions about some of the readings (to be completed before class). All times of the semester, you should write down your answers. Four times during the semester (5% each; your choice of when), you will submit copies of your answers before class.

### *Participation*

I expect active questioning and attendance in class. To further widespread participation, I will sometimes randomly call on students. The randomness is intended not to intimidate but to keep participation evenly distributed. Please let me know in advance if you need to miss class.

### **We're in a pandemic**

Life is a lot right now (for me too!). All class deadlines are flexible. Please communicate your needs to me through email and in office hours.

### **Readings**

You are expected to complete the assigned reading before class. There will typically be one or two articles assigned for each class.

You must read these closely in order to understand what is going on. Read actively: circle what is unclear, highlight what you find most interesting, peruse the bibliography for useful sources, read the footnotes and tables especially closely. It is very useful to write a summary of the paper for your own files.

## **Course Material**

One required book is available for [free download](#) from the UM Library:

Murnane, R., & Willett, J. (2010). *Methods matter: improving causal inference in educational and social science research*. New York, NY: Oxford University Press, USA.

There is no course packet. All articles are available online or on the CANVAS site. Assignments will be listed under the relevant lecture at least a week in advance. I try to provide links and/or PDFs but you are ultimately responsible for obtaining the readings. If a link is broken or a file corrupted, please find the article yourself.

## **Software**

We will program in Stata, a software program used widely by researchers and policy analysts.

You can get a Stata license for just this semester. Order through the Stata website (<http://www.stata.com/order/new/edu/gradplans/us-pickup/>). You will need Intercooled Stata to use the large datasets we will work with.

## Assignment Schedule

<b>All Students</b>	<b>Doctoral Student Option</b>	<b>Due</b>
	Research product proposal: ½ page	1/27
	Revised proposal (1 p)	2/10
Problem set #1 (posted 2/8)		2/23
	Progress Memo (paper option)	3/15
Problem set #2 (posted 3/10)		3/24
Problem set #3 (posted 4/5)		4/12
Take-home final (posted 4/14) OR	Research Product	4/21

## FORD SCHOOL OF PUBLIC POLICY INCLUSIVITY STATEMENT

Members of the Ford School community represent a rich variety of backgrounds and perspectives. We are committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- share their unique experiences, values and beliefs
- be open to the views of others
- honor the uniqueness of their colleagues
- appreciate the opportunity that we have to learn from each other in this community
- value one another's opinions and communicate in a respectful manner
- keep confidential discussions that the community has of a personal (or professional) nature
- use this opportunity together to discuss ways in which we can create an inclusive environment in Ford classes and across the UM community

**Accommodations for Students with Disabilities:** If you believe you need an accommodation for a disability, please let your instructor know at your earliest convenience. Some aspects of courses may be modified to facilitate your participation and progress. As soon as you make your instructor aware of your needs, they can work with the Services for Students with Disabilities (SSD) office to help determine appropriate academic accommodations. Any information you provide will be treated as private and confidential.

**Student Mental Health and Well-Being Resources:** The University of Michigan is committed to advancing the mental health and well-being of its students. We acknowledge that a variety of issues, such as strained relationships, increased anxiety, alcohol/drug problems, and depression, directly impact students' academic performance. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, counseling and mental health services are available. For help, contact [Counseling and Psychological Services \(CAPS\)](#) and/or [University Health Service \(UHS\)](#). This includes the [Ford School embedded CAPS counselor](#).

In a crisis or emergency, students can call the CAPS Counselor on Duty at 734-764-8312 during business hours, or the same number and then press 0 after hours. For a listing of other mental health resources available on and off campus: <http://umich.edu/~mhealth/>

**Please review additional information and policies regarding academic expectations, academic integrity, and resources at the Ford School of Public Policy at this link:**  
<http://fordschool.umich.edu/academics/expectations>

I expect students to be familiar with all of the expectations and resources described therein.

## READING LIST

### Introduction

#### **Class 1, Wednesday, January 20: Overview**

Murnane, R., & Willett, J. (2010). *Methods matter: Improving causal inference in educational and social science research*. New York, NY: Oxford University Press, USA. Chapters 1-2.

Available here:

<http://ebookcentral.proquest.com.proxy.lib.umich.edu/lib/umichigan/detail.action?docID=57879>

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*Optional:*

Angrist, J. (2004). "American education research changes tack." *Oxford Review of Economic Policy*, 20, 198-212 (stop after p. 203)

Cook, T.D. (2002). "Randomized experiments in educational policy research: A critical examination of the reasons the education evaluation community has offered for not doing them." *Educational Evaluation and Policy Analysis*, 24, 175-199.

Ioadinnis, J. (2018). The challenge of reforming nutritional epidemiologic research. *JAMA*. doi:10.1001/jama.2018.11025

### **Module 1: Early Childhood and Randomized Trials**

#### **Class 2, Monday, January 25: Early childhood policy context**

Waldfogel, J. (1998). Infants and Toddlers (p. 36-45) and Preschool-Aged Children (p. 83-85). Chapter excerpts from *What Children Need*, Cambridge, MA: Harvard University Press, 2010.

Duncan, G., & Magnuson, K. (2013). Investing in preschool programs. *Journal of Economic Perspectives*, 27(2), 109-132.

*Optional:*

Chaudry, A., & Datta, A.R. (2017). *The current landscape for public pre-kindergarten programs*. Washington DC and Durham NC: Brookings Institute and Duke Center for Child and Family Policy.

### **Class 3, Wednesday, January 27: Introduction to randomized controlled trials**

Murnane & Willett, Chapter 4

Duflo, E., Glennerster, R., & Kremer, M. (2006). Using randomization in development economics research: A toolkit. Section 3.3, “Alternative Methods of Randomization,” pp. 24-28.

### **Class 4, Monday, February 1: Imperfect compliance**

Murnane & Willett, Chapter 5

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.

### **Class 5, Wednesday, February 3: Fixed vs. random effects**

Murnane & Willett, Chapter 7, pp. 107-120 (start: beginning of chapter, stop: “Statistical power when intact groups...” subheading) & 128-134 (start: Fixed-effects multilevel models to estimate effect size..., stop: end of chapter).

<http://ebookcentral.proquest.com.proxy.lib.umich.edu/lib/umichigan/detail.action?docID=578791>

### **Class 6, Monday, February 8: How do we improve preschool quality?**

Yoshikawa, H., Leyva, D., Snow, C. E., Treviño, E., Barata, M., Weiland, C., ... & Arbour, M. C. (2015). Experimental impacts of a teacher professional development program in Chile on preschool classroom quality and child outcomes. *Developmental Psychology*, 51(3), 309.

### **Class 7, Wednesday, February 10: Identifying and Measuring Core Components and the Treatment-Control Contrast**

Weiss, M. J., Bloom, H. S., & Brock, T. (2014). A conceptual framework for studying the sources of variation in program effects. *Journal of Policy Analysis and Management*, 33(3), 778-808.

*Optional:*

Hulleman, C. S., Rimm-Kaufman, & Abry, T. (2013). Innovative methodologies to explore implementation: Whole-part-whole – construct validity, measurement, and analytical issues for intervention fidelity assessment in education research. In T. Halle, A. Metz, & I. Martinez-Beck (Eds.), *Applying Implementation Science in Early Childhood Programs and Systems*, Baltimore, MD: Brookes Publishing, pp. 65-93.

### **Class 8, Monday, February 15: Culturally Responsive, Strengths-Based Parent Interventions**

Leyva, D., Weiland, C., Shapiro, A., & Maldonado-Yeomans, G. (2020). *A Strengths-Based, Culturally Responsive Family Intervention Improves Latino Kindergarteners' Vocabulary and Approaches to Learning*. Manuscript under review (You can find it here, please read main paper + Appendix: <https://www.edworkingpapers.com/ai21-349>).

Guest speakers: Dr. Diana Leyva, University of Pittsburgh, and Dr. Gloria Yeomans-Maldonado, Children's Learning Institute, UT

### **Class 9, Wednesday, February 17: Problem Set Work Time**

No class held this day. Instead, use the time to work on your problem set. I will be available to meet during class time about any problem set questions as well.

### **Class 10, Monday, February 22: Improving Kindergarten Math Learning and Preventing Preschool Fadeout**

Jacob, R., Erickson, A., & Mattera, S. (2020). Evaluating the Impact of Small Group Supplemental Math Enrichment in Kindergarten. *Journal of Research on Educational Effectiveness*, 1-27. Available here: <https://youthpolicylab.umich.edu/uploads/evaluating-the-impact-of-small-group-supplemental-math-enrichment-in-kindergarten.pdf>

Guest speaker: Dr. Robin Jacob, University of Michigan

### **Wednesday, February 24: No class (UM Wellbeing Break)**

### **Class 11, Monday, March 1: Subgroup analysis**

Bloom, H. & Michalopoulos, C. (2013). When is the story in the subgroups? Strategies for interpreting and reporting intervention effects for subgroups. *Prevention Science*, 14, 179-188.

#### *Optional*

Shapiro, A., & Weiland, C. (2019). What Is in a Definition? The How and When of Special Education Subgroup Analysis in Preschool Evaluations. *Educational Evaluation and Policy Analysis*, 41(2), 145-163.

## **Module 2: Descriptive Analysis and Research-Practice Partnerships**

### **Class 12, Wednesday, March 3**

Loeb, S., Dynarski, S., McFarland, D., Morris, P., Reardon, S., & Reber, S. (2017). [Descriptive analysis in education: A guide for researchers](#). (NCEE 2017-4023). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

Guest lecturer: Dr. Susan Dynarski, University of Michigan



### *Optional*

Dynarski, S., K. Frank, B. Jacob and B. Schneider (2012). "[The Michigan Context - High School Attainment and College Enrollment Across the State.](#)" Michigan Consortium for Education Research brief.

Micheltmore, K. and S. Dynarski (2017). "The Gap Within the Gap: Using Longitudinal Data to Understand Income Differences in Educational Outcomes." *AERA Open*. Vol 3, Issue 1 (February).

Dynarski, S. (2016). "[Why American Schools Are Even More Unequal Than We Thought.](#)" *New York Times*, August 12, 2016, p. BU6.

### **Class 13, Monday, March 8: Research-Practice Partnerships in Early Education**

Bassok, D., Markowitz, A., & Morris, P. (2021). *Introducing the issue*. Forward to the forthcoming volume of *Future of Children* on the role of research-policy partnerships in early childhood policy research.

Bassok, D., Markowitz, A. J., Bellows, L., & Sadowski, K. (2021). New Evidence on Teacher Turnover in Early Childhood. *Educational Evaluation and Policy Analysis*, 0162373720985340.

Bassok, D., Markowitz, A., & Bellows, L. (2021). Stabilizing child care requires more than COVID-19 relief funds. Link: <https://www.brookings.edu/blog/brown-center-chalkboard/2021/02/16/stabilizing-child-care-requires-more-than-emergency-covid-19-relief-funds/>

Guest lecture: Dr. Daphna Bassok, University of Virginia

### **Module 3: Regression Discontinuity**

#### **Class 14, Wednesday, March 10: 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 15, Monday, March 15: State Pre-K Impacts**

Wong, V. C., Cook, T. D., Barnett, W. S., & Jung, K. (2008). An effectiveness-based evaluation of five state pre-kindergarten programs. *Journal of Policy Analysis and Management: The Journal of the Association for Public Policy Analysis and Management*, 27(1), 122-154. Retrieve here: <https://onlinelibrary.wiley.com/doi/pdf/10.1002/pam.20310>

#### **Class 16, Wednesday, March 17: Problem Set Work Time**

No class held this day. Instead, use the time to work on your problem set. I will be available to

meet during class time about any problem set questions as well.

### **Class 17, Monday, March 22: Does School Starting Age Matter?**

Shapiro, A. (2020). *Over-Diagnosed or Over Looked? The Effect of Age at Time of School Entry on Students Receiving Special Education Services*. Brown University: Annenberg Working Paper. Available here: <https://www.edworkingpapers.com/authors/anna-shapiro>

Guest speaker: Anna Shapiro

## **Module 4: School Choice and Lotteries as Identification**

### **Class 18, Wednesday, March 24: Policy Context and Overview**

Fuller, B., Elmore, R.F., & Orfield, G. (1996). Policy-making in the dark: Illuminating the school choice debate. *Who Chooses? Who Loses? Culture, Institutions and the Unequal Effects of School Choice*, pp. 1-21. New York, NY: Teachers College Press.

Moskowitz, E. (2017). Test scores don't lie: Charter schools are transformative. *Wall Street Journal*, August 23, 2017.

### **Class 19, Monday, March 29: Small Schools of Choice**

Bloom, H. S., & Unterman, R. (2014). Can small high schools of choice improve educational prospects for disadvantaged students?. *Journal of Policy Analysis and Management*, 33(2), 290-319.

[https://www.studentachievement.org/wp-content/uploads/Small\\_high\\_schools\\_of\\_choice.pdf](https://www.studentachievement.org/wp-content/uploads/Small_high_schools_of_choice.pdf)

Guest lecturer: Dr. Howard Bloom

### **Class 20, Wednesday, March 31: Pre-k lotteries and generalizability**

Weiland, C., Unterman, R., Shapiro, A., Staszak, S., Rochester, S., & Martin, E. (2020). The effects of enrolling in oversubscribed prekindergarten programs through third grade. *Child development*, 91(5), 1401-1422.

## **Module 5: Additional SEER Standards and Other Topics**

### **Class 21, Monday, April 5: Missing Data**

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual*

*Review of Psychology*, 60, 549-576.

Notes: In class, we will use Stata. There are no reading questions for this class.

*Additional reading (not required):*

Puma, M.J., Olsen, R.B., Bell, S.H., & Price, C. (2009). *What to Do When Data Are Missing in Group Randomized Controlled Trials (NCEE 2009-0049)*. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

### **Class 22, Wednesday, April 7: Mixed Methods**

Gibson-Davis, C., & Duncan, G. J. (2005). Qualitative/quantitative synergies in a random-assignment program evaluation. In T. S. Weisner (Ed.), *Discovering successful pathways in children's development: New methods in the study of childhood and family life* (pp. 283–303). Chicago: University of Chicago Press.

### **Class 23, Monday, April 12: Cost Analysis**

Institute of Education Sciences. (2020). *Cost Analysis: A Toolkit (IES 2020-001)*. U.S. Department of Education. Washington, DC: Institute of Education Sciences. Available at: [https://ies.ed.gov/seer/pdf/IES\\_Cost\\_Analysis\\_Starter\\_Kit\\_V1.pdf](https://ies.ed.gov/seer/pdf/IES_Cost_Analysis_Starter_Kit_V1.pdf)

Jacob, R., Armstrong, C., Bowden, A. B., & Pan, Y. (2016). Leveraging volunteers: An experimental evaluation of a tutoring program for struggling readers. *Journal of Research on Educational Effectiveness*, 9 (sup1), 67-92. Available at: [https://edre.uark.edu/resources/pdf/rp\\_jree.pdf](https://edre.uark.edu/resources/pdf/rp_jree.pdf) -- READ COST SECTIONS CAREFULLY; SKIM THE REST

Note: I will draw slides for this class largely from Brooks Bowden's 2020 SREE training. The Webinar (optional) and slides are available here: <https://www.sree.org/webinar>

### **Class 24, Wednesday, April 14: Pre-registration**

Gehlbach, H., & Robinson, C. D. (2018). Mitigating illusory results through preregistration in education. *Journal of Research on Educational Effectiveness*, 11(2), 296-315.

In class, we will examine two pre-registration approaches together:

<https://aspredicted.org/> (**Please make an account for yourself before class begins**)

<https://sreereg.icpsr.umich.edu/sreereg/> (We will use demo mode – no need to make an account)

### **Class 25, Monday, April 19: Meaningful Outcomes**

Slavin, R. (2019). *Developer- and Research-Made Measures*. Available here: <https://robertslavinsblog.wordpress.com/2019/10/24/developer-and-researcher-made-measures/>

Before class, familiarize yourself with this website (spend about 20-30 minutes navigating it and reading it): <https://edinstruments.com/>

**Class 26, Wednesday, April 21: Wrap up**