Fall 2018
Sociology 952: Causal Peer Effects
(Seminar–Mathematical and Statistical Applications in Sociology)

Course location: 6125 Social Science
Meeting time: Wed 9:30am-12:00 noon
Website: https://canvas.wisc.edu/courses/117273

Instructor: Prof. Felix Elwert, Ph.D.
Office Hours: Tue 10:45-11:45am (by appointment)
Office Location: 4426 Sewell Social Science Bldg.
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Instructional Mode: Face-to-face
Credits: 3 (2.5 hours of class and 6–10 hours of work out of class per week)

Course Description
Economist Bruce Sacerdote recently noted that “[u]nderstanding and measuring peer effects are often viewed as a Holy Grail of social science” (2014:254). One finds it hard to disagree: peer effects—social interactions, network influence, contagion, spillover, interference, or whichever term you prefer for interpersonal influence—are what’s “social” about social science.

Peer effects exist if one person’s behavior or characteristics affect the behavior or characteristics of another person. The past decade has seen a veritable explosion in careful methodological work and empirical applications on peer effects. Examples are everywhere, e.g. in education (Does one disruptive student spoil it for everybody? Should schools be tracked by ability?); in medicine and public health (Does the death of one spouse kill the other? Does weight-gain spread among friends? Is teenage motherhood contagious?); in business (Do so-called social influencers actually influence anybody? How do innovations spread through markets?); and elsewhere.

The study of peer effects is a truly multidisciplinary endeavor. Sociologists, with some justification, like to stake a claim for historical primacy. The modern methodological literature, however, is largely anchored in statistics and economics.

This course has two goals. As a methods seminar, it introduces students to the concepts and statistical tools for causal inference for peer effects from several disciplines. We will emphasize statistical approaches in the potential-outcomes tradition as well as econometric work on social interaction. As a substantive seminar, we will give preference to applications from education and public health. It turns out that the world not only gets more complicated when analysts give up on the fiction of independent social actors, it also gets a whole lot more interesting.

Class structure
Class meetings will be split between lectures and seminar discussions. In some meetings, lecture will predominate, in others, we will work through key passages or results from the readings together. This requires that you have carefully read all required readings prior to coming to class.

Learning Outcomes
To establish some common ground, we will first review notation and tools commonly used in this literature (e.g. potential outcomes, directed acyclic graphs, instrumental variables estimation). We will then move to special methodological topics and empirical applications, including two-stage cluster randomized trials, partial interference, network interference, stratified inference,
includes these university highest Madison By Academic 20 Grading There is no final exam during exam period.

December 15 including tables, figures, and references. I will stop reading after 20 page 24.

part of the term paper is new. A one-page proposal for your paper in .docx format is due on October 24. The final paper should not exceed 20 double-spaced pages, 12 point font, one-inch margin, including tables, figures, and references. I will stop reading after 20 pages. Papers are due on December 15 (no extensions).

There is no final exam during exam period.

Grading
20% participation, 20% abstracts, 60% final assignment.

Academic Integrity
By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison’s community of scholars in which everyone’s academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension.
Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to studentconduct.wiscweb.wisc.edu/academic-integrity/.

Accommodations for students with disabilities
The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform me of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. I will work either directly with the you or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.

Institutional statement on diversity: “Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.”

Schedule
Material is arranged in the recommended order of reading
R = Required
O = Optional

September
5 Causal inference: Review
R: Hernan 2004
R: Angrist, Imbens, Rubin 1996
R: Elwert 2013, pp.245-261, 265-266

12 Spillover estimands
R: VanderWeele 2015 up to and including 15.2.
O: VanderWeele & An 2013 p 353-363 (easier)
R: Hudgens & Halloran 2008 (read entire, skim 4.2)
R: VanderWeele 2015, sections 15.3 and 15.4
O: Sobel 2006

19 Observational Data
R: VanderWeele 2015, sections 15.7-15.8
O: Christakis and Fowler 2007
R: Shalizi and Thomas 2009
O: Cohen-Cole and Fletcher 2008
O: VanderWeele 2011
O: An 2016

26 Instrumental variables
R: O'Malley et al. 2014
R: Kang and Imbens 2016
O: Kang and Keele 2018
| October | 3 | **Sibling Comparisons**  
| 10 | **Reflection Problem**  
| R: Blume et al. 2011, all of sections 1-3, but especially pp. 854-872.  
| O: Manski 1993 |
| 17 | **Leveraging Network Structure**  
| R: Blume et al. 2011, pp. 886-900  
| R: De Giorgi et al. 2010 |
| 24 | **Peer Effects in Education: Overview**  
| R: Sacerdote 2011  
| O: Sacerdote 2014  
| R: Sacerdote 2001 |
| Term paper proposal due in class |
| 31 | **Perils of Peer Effects**  
| R: Angrist 2014 |

| November | 7 | **Measurement error**  
| R: Feld and Zölitz 2017 |
| 14 | **Close Peers**  
| R: Guryan et al. 2009  
| R: Lu and Anderson 2014 |
| 21 | **Classroom peer effects and tracking**  
| O: Hoxby and Weingarth 2005  
| R: Duflo et al. 2011  
| R: Booij et al. 2016 |
| 28 | **Graphs for Network Inference**  
| Ogburn and VanderWeele 2014 |

| December | 5 | **Design of Saturation Experiments**  
| R: Sinclair et al 2012  
| R: Baird et al 2014 |
| 12 | **Student Term Paper Presentations** |

**Readings**


