SOSC4250 & SOSC6030R: Experiments and Quasi-Experiments in the Social Sciences

Division of Social Science
Hong Kong University of Science and Technology
Spring 2024

Instructor Information

Primary Instructor
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Overview

This course explores the most popular class of statistical methods used for causal inference in the social sciences. Working within the potential outcomes framework, we discuss how the logic of inference for randomized experiments is the same as for non-randomized (observational) studies under certain additional assumptions. Though randomized experiments serve as the gold standard for causal inference, we note how it may sometimes be reasonable to treat non-experimental data as if it had been drawn from an experiment. Usually, this involves some knowledge about how the natural world produced the data through a quasi-random process. Research designs and methods covered include randomized experiments, matching, instrumental variables, difference-in-differences, synthetic control, and regression discontinuity designs. In turn, we discuss how all of these methods require a unique set of assumptions to allow us to make valid causal inferences. Throughout the course we will draw examples from across the social sciences to illustrate the vast range of applications of these methods. Furthermore, the course will include computing sessions during which students are taught how to implement the techniques using modern statistical software.

Meeting Time and Place

Thursdays, 19:00 - 21:50
Room 4402, Main Academic Building, Lifts 17-18

Intended Learning Outcomes

At the end of the course, students should be able to:

1. Understand the history and development of the experimental method across the social sciences.
2. Understand the history and development of quasi-experimental research designs across the social sciences.
3. Understand the history and development of the potential outcomes framework.
4. Identify and understand the major identification assumptions and data structures required for credible causal inference in modern applied social science statistics.
5. Conduct and interpret statistical analyses of data from social science research designs using experimental and quasi-experimental designs.
6. Apply their knowledge of how to conduct and interpret statistical analyses to original social science problems.

Grading

10% Fundamentals Problem Set

Students will complete one homework assignment consisting of questions about the potential outcomes framework. Responding to these questions will involve some basic mathematics, understanding of philosophical issues regarding causality in the potential outcomes framework, and interpretation of statistical results. Students are encouraged to use any class notes and books or supplemental materials that they find useful, and to work with other students in the class. However, each student must submit an individual assignment. Though cooperation and use of notes and books is encouraged, students must put answers into their own words and plagiarism will not be tolerated. [ILOs 1, 2, 3, and 4]

- Distributed on February 8 after class, due by midnight on February 23

10% Individual Presentation in Experiment Workshop

We will hold a two-day workshop during the semester focused on applied social science journal articles that use experimental methods. During the workshop, students will give individual presentations focused on a summary and critique of an article of their choosing in consultation with the instructor. A detailed description of the assignment, as well as a schedule for the presentations, will be provided in class and on Canvas. [ILOs 4 and 5]

- Presentations will occur during class on April 11

50% Computing Problem Sets

Throughout the semester, students will complete a series of structured problem sets primarily focused on performing statistical analysis using R and accompanied written interpretation of statistical results. For each problem set, students will be provided with a dataset and a series of tasks to perform. Answers should be submitted in pdf format, with the computer code used to produce the results included (rendered R Markdown documents with the computer code embedded inline in the document are welcome, but not required). Examples of similar analyses will be covered during the lectures. Students are encouraged to use any class notes, readings, or supplemental materials that they find useful, and to work with other students in the class. However, each student must submit an individual assignment.

Though cooperation and use of notes and books is encouraged, students must put answers into their own words and plagiarism will not be tolerated. **Note: When calculating final grades on Computing Problem Sets for SOSC4250 students, the lowest score will be dropped; for SOSC6030R students, all scores will be counted.** [ILOs 4, 5, and 6]

- Computing Problem Set 1: Experiments
  - Distributed on February 15 after class, due by midnight on February 26
- Computing Problem Set 2: Instrumental Variables
  - Distributed on February 22 after class, due by midnight on March 1
- Computing Problem Set 3: Matching and Weighting
  - Distributed on March 7 after class, due by midnight on March 15
- Computing Problem Set 4: Regression Discontinuity Designs
  - Distributed on March 21 after class, due by midnight on April 8
- Computing Problem Set 5: Difference in Differences
  - Distributed on April 18 after class, due by midnight on April 26

20% Final Paper

In a paper (of about 3000 words for SOSC4250 and about 5000 words for SOSC6030R students), students will conduct an original data analysis on a topic of their choosing and write up the results in the style of a research note journal article. Student topics should be chosen in consultation with the instructor. A detailed description of the assignment will be provided in class and on Canvas. [ILOs 4, 5, and 6]

- Topics should be finalized in consultation with the instructor by April 19
- Papers are due by midnight on May 26

10% Attendance

After the Add/Drop period, attendance will count toward students' final grade. Students can miss two class sessions for any reason without penalty. Any additional absences will be penalized unless they are valid excuses backed up by documentation.

Readings

Required readings should be completed prior to the date they are listed on the schedule. All readings will be provided through Canvas. There is no text that is perfect for this course, and therefore there is no text that students are required to purchase. However, the following books are *highly* recommended, particularly if students wish to dive deeper into the topics covered in this course or pursue them in their own research.

- Angrist, Joshua D., and Jörn-Steffen Pischke. 2015. *Mastering 'Metrics: The Path from Cause to Effect*. Princeton: Princeton University Press.
- Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press.
- Gerber, Alan S., and Donald P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: W.W. Norton & Co.
- Imbens, Guido W., and Donald R. Rubin. 2015. *Causal Inference for Statistics, Social, and Biomedical Sciences*. Cambridge: Cambridge University Press.
- Morgan, Stephen L., and Christopher Winship. 2007. *Counterfactuals and Causal Inference: Methods and Principles for Social Research*. Cambridge: Cambridge University Press.

- Rosenbaum, Paul R. 2010. *Design of Observational Studies*. New York: Springer.
- Shadish, William R., Thomas D. Cook, and Donald T. Campbell. 2002. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. New York: Houghton and Mifflin.

Schedule

Schedule is subject to change with advanced notice from the instructor. If any changes are made to the schedule or readings, said changes will be announced in class and an updated version of the syllabus posted to Canvas.

Thursday, February 1

- **Topic: History of experimental research; development and evolution of the experimental method in various social science disciplines; introduction and overview of quasi-experiments**
  - Required Readings:
    - Druckman, James N., Donald P. Green, James H. Kuklinski, and Arthur Lupia. 2011. "Experimentation in Political Science." In James N. Druckman, Donald P. Green, James H. Kuklinski, and Arthur Lupia, eds., *Cambridge Handbook of Experimental Political Science*. Cambridge: Cambridge University Press, pp. 3-11.
    - Angrist, Joshua D., and Jörn-Steffen Pischke. 2010. "The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics." *Journal of Economic Perspectives* 24(2): 3-30.

- **Topic: Introduction to the Potential Outcomes Framework**
  - Required Readings:
    - Holland, Paul W. 1986. "Statistics and Causal Inference." *Journal of the American Statistical Association* 81(396): 945-970. [*Focus on parts 1-4 only]
    - Freedman, David A. 1991. "Statistical Models and Shoe Leather." *Sociological Methodology* 2: 291-313.
  - Recommended Readings:
    - Jackson, Michelle, and D.R. Cox. 2013. "The Principles of Experimental Design and Their Application in Sociology." *Annual Review of Sociology* 39: 27-49.
    - Shadish, William R., Thomas D. Cook, and Donald T. Campbell. 2002. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. New York: Houghton, Mifflin, and Co. [Chapter 1]
    - Gerber, Alan S., Donald P. Green, and Edward H. Kaplan. 2004. "The Illusion of Learning from Observational Research." In Ian Shapiro, Rogers Smith, and Tarek Massoud, eds., *Problems and Methods in the Study of Politics*. New York: Cambridge University Press, pp. 251-273.
    - Morton, Rebecca B., and Kenneth C. Williams. 2010. *Experimental Political Science and the Study of Causality: From Nature to the Lab*. Cambridge: Cambridge University Press. [Chapter 1]
    - Neyman, Jerzy Splawa-, [Dabrowska, D. M., and T.P. Speed]. 1923 [1990]. "On the Application of Probability Theory to Agricultural Experiments. Essay on Principles. Section 9." *Statistical Science* 5(4): 465-472.

* Rubin, Donald B. 1990. "Comment: Neyman (1923) and Causal Inference in Experiments and Observational Studies." *Statistical Science* 5(4): 472-480.
* Morgan, Stephen L., and Christopher Winship. 2007. *Counterfactuals and Causal Inference*. Cambridge University Press. [pp. 3-23]

Thursday, February 8

- **Topic: Placing Experiments in the Potential Outcomes Framework**
  - Required Readings:
    * Gerber, Alan S., and Donald P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: W.W. Norton & Co. [Chapters 1 and 2]
    * Rosenbaum, Paul R. 2009. *Design of Observational Studies*. New York: Springer. [Chapters 2.1-2.3.2: pp. 21-35]

- **Topic: Internal and External Validity**
  - Required Readings:
    * Shadish, William R., Thomas D. Cook, and Donald T. Campbell. 2002. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. New York: Houghton, Mifflin, and Co. [pp. 53-63, 83-93]

- **Topic: Ethical Considerations in Social Science Experiments**
  - Required Readings:
    * Humphreys, Macartan. 2015. "Reflections on the Ethics of Social Experimentation." *Journal of Globalization and Development* 6(1): 87-112.
    * Teele, Dawn Langan. 2014. "Reflections on the Ethics of Field Experiments." In Dawn Langan Teele, ed., *Field Experiments and their Critics: Essays on the Uses and Abuses of Experimentation in the Social Sciences*. New Haven: Yale University Press, pp. 115-140.
  - Recommended Readings:
    * McDermott, Rose. 2011. "Internal and External Validity." In James N. Druckman, Donald P. Green, James H. Kuklinski, and Arthur Lupia, eds., *Cambridge Handbook of Experimental Political Science*. Cambridge: Cambridge University Press, pp. 27-41.
    * Jiménez-Buedo, Maria, and Luis M. Miller. 2010. "Why a Trade-Off? The Relationship between the External and Internal Validity of Experiments." *Theoria: Revista de Teoría, Historia y Fundamentos de la Ciencia* 25(3): 301-321.
    * Morton, Rebecca B., and Kenneth C. Williams. 2010. *Experimental Political Science and the Study of Causality: From Nature to the Lab*. Cambridge: Cambridge University Press. [Chapter 7]
    * Wilke, Anna Marie, and Macartan Humphreys. 2020. "Field Experiments, Theory, and External Validity." In Luigi Curini, and Robert Franzese, eds., *The SAGE Handbook of Research Methods in Political Science and International Relations*. London: SAGE Publications, Ltd., pp. 1007-1035.
    * Barabas, Jason, and Jennifer Jerit. 2010. "Are Survey Experiments Externally Valid?" *American Political Science Review* 104(2): 226-242.
    * Aronow, Peter M., and Cyrus Samii. 2016. "Does Regression Produce Representative Estimates of Causal Effects?" *American Journal of Political Science* 60(1): 250-267.

* Dickson, Eric S. 2011. "Economics versus Psychology Experiments: Stylization, Incentives, and Deception." In James N. Druckman, Donald P. Green, James H. Kuklinski, and Arthur Lupia, eds., *Cambridge Handbook of Experimental Political Science*. Cambridge: Cambridge University Press, pp. 58-70.
* Milgram, Stanley. 1963. "Behavioral Study of Obedience." *Journal of Abnormal and Social Psychology* 67(4): 371-378.
* Baumrind, Diana. 1964. "Some Thoughts on Ethics of Research: After Reading Milgram's 'Behavioral Study of Obedience."' *American Psychologist* 19(6): 421-423.

Thursday, February 15

- **Topic: Extending Experiments**
  - Required Readings:
    * Gerber, Alan S., and Donald P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: W.W. Norton & Co. [pp. 71-85; 253-273; 289-312]
  - Recommended Readings:
    * Fisher, Ronald A. 1935. *Design of Experiments*. New York: Hafner. [Chapters 1-2]
    * Boruch, Robert, Henry May, Herbert Turner, Julia Lavenberg, Anthony Petrosino, Dorothy De Moya, Jeremy Grimshaw, and Ellen Foley. 2004. "Estimating the Effects of Interventions That Are Deployed in Many Places: Place-Randomized Trials." *American Behavioral Scientist* 47(5): 608-633.
    * Collins, Linda M., John J. Dziak, Kari C. Kugler, and Jessica B. Trail. 2014. "Factorial Experiments: Efficient Tools for Evaluation of Intervention Components." *American Journal of Preventive Medicine* 47(4): 498-504.
    * Imai, Kosuke, and Marc Ratkovic. 2013. "Estimating Treatment Effect Heterogeneity in Randomized Program Evaluation." *Annals of Applied Statistics* 7(1): 443-470.
    * Na, Chongmin, Thomas A. Loughran, and Raymond Paternoster. 2015. "On the Importance of Treatment Effect Hetorogeneity in Experimentally-Evaluated Criminal Justice Interventions." *Journal of Quantitative Criminology* 31: 289-310.

- **Topic: Statistical Analysis of Experiments**
  - Required Readings:
    * None

Thursday, February 22

- **Topic: Instrumental Variables Analysis**
  - Required Readings:
    * Angrist, Joshua D., Guido W. Imbens, and Donald B. Rubin. 1996. "Identification of Causal Effects Using Instrumental Variables." *Journal of the American Statistical Association* 9: 444-455.

- **Topic: Statistical Analysis Within the Instrumental Variables Framework**
  - Required Readings:
    * None
  - Recommended Readings:

* Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press. [Chapter 4.1-4.4.4]
* Angrist, Joshua D. 2006. "Instrumental Variables Methods in Experimental Criminological Research: What, Why and How." *Journal of Experimental Criminology* 2(1): 23-44.
* Angrist, Joshua D., and Alan B. Krueger. 2001. "Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments." *Journal of Economic Perspectives* 15(4): 69-85.
* Gerber, Alan S., and Donald P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: W.W. Norton & Co. [pp. 173-192]
* Morgan, Stephen L., and Christopher Winship. 2007. *Counterfactuals and Causal Effect: Methods and Principles for Social Research*. Cambridge: Cambridge University Press. [Chapter 7]
* Sovey, Allison J., and Donald P. Green. 2011. "Instrumental Variables Estimation in Political Science: A Reader's Guide." *American Journal of Political Science* 55(1): 188-200.
* Angrist, Joshua D. 1990. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records." *American Economic Review* 80(3): 313-336.
* Deaton, Angus. 2010. "Instruments, Randomization, and Learning about Development." *Journal of Economic Literature* 48(2): 424-455.

Thursday, February 29

- **Topic: Matching and Weighting**
  - Required Readings:
    * Rosenbaum, Paul. 2009. *Design of Observational Studies*. New York: Springer. [Chapter 7, pp. 153-160; Chapter 8.1-8.3, pp. 163-172; and Chapter 9, pp. 187-194]
    * Cochran, W.G. 1968. "The Effectiveness of Adjustment by Subclassification in Removing Bias in Observational Studies." *Biometrics* 24: 295-313.
    * Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press. [Chapter 3.3.1-3.3.3, pp. 69-91]
    * Dehejia, R. H. and S. Wahba. 1999. "Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs." *Journal of the American Statistical Association* 94: 1053-1062.
  - Recommended Readings:
    * Ho, Daniel E., Kosuke Imai, Gary King, and Elizabeth A. Stuart. 2007. "Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference." *Political Analysis* 15(3): 199-236.
    * Sekhon, Jasjeet S. 2009. "Opiates for the Matches: Matching Methods for Causal Inference." *Annual Review of Political Science* 12: 487-508.
    * Stuart, Elizabeth A. 2010. "Matching Methods for Causal Inference: A Review and a Look Forward." *Statistical Science* 25(1): 1-21.

* Heckman, James J., Hidehiko Ichimura, and Petra Todd. 1998. "Matching as an Econometric Evaluation Estimator." *Review of Economics and Statistics* 65(2): 261-294.
* Imbens, Guido W. 2004. "Nonparametric Estimation of Average Treatment Effects Under Exogeneity: A Review." *Review of Economics and Statistics* 86(1): 4-29.
* Lyall, Jason. 2010. "Are Coethnics More Effective Counterinsurgents? Evidence from the Second Chechen War." *American Political Science Review* 104(1): 1-20.
* Gordon, Sanford C., and Gregory A. Huber. 2007. "The Effect of Electoral Competitiveness on Incumbent Behavior." *Quarterly Journal of Political Science* 2(2): 107-138.
* Gilligan, Michael J., and Ernest J. Sergenti. 2008. "Do UN Interventions Cause Peace? Using Matching Methods to Improve Causal Inference." *Quarterly Journal of Political Science* 3(2): 89-122.
* Simmons, Beth A., and Daniel J. Hopkins. 2005. "The Constraining Power of International Treaties: Theory and Methods." *American Political Science Review* 99(4): 623-631.
* Blattman, Christopher, and Jeannie Annan. 2010. "The Consequences of Child Soldiering." *Review of Economics and Statistics* 92(4): 882-898.
* Arceneaux, Kevin, Alan S. Gerber, and Donald P. Green. 2006. "Comparing Experimental and Matching Methods Using a Large-Scale Voter Mobilization Experiment." *Political Analysis* 14(1): 37-62.
* Hansen, Ben B. 2004. "Full Matching in an Observational Study of Coaching for the SAT." *Journal of the American Statistical Association* 99(467): 609-618.
* Concato, John, Nirav Shah, and Ralph I. Horowitz. 2000. "Randomized, Controlled Trials, Observational Studies, and the Hierarchy of Research Designs." *New England Journal of Medicine* 342(25): 1887-1892.
* Shadish, William R., M.H. Clark, and Peter M. Steiner. 2008. "Can Nonrandomized Experiments Yield Accurate Answers? A Randomized Experiment Comparing Random and Nonrandom Assignments." *Journal of the American Statistical Association* 103(484): 1334-1356.
* Rosenbaum, Paul R., and Donald B. Rubin. 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika* 70(1): 41-55.
* Rosenbaum, Paul R., and Donald B. Rubin. 1985. "Constructing a Control Group Using Multivariate Matched Sampling Methods That Incorporate the Propensity Score." *The American Statistician* 39(1): 33-38.
* Iacus, Stefano M., Gary King, and Giuseppe Porro. 2012. "Causal Inference without Balance Checking: Coarsened Exact Matching." *Political Analysis* 20(1): 1-24.
* Abadie, Alberto, and Guido W. Imbens. 2006. "Large Sample Properties of Matching Estimators for Average Treatment Effects." *Econometrica* 74(1): 235-267.
* Abadie, Alberto, and Guido W. Imbens. 2011. "Bias-Corrected Matching Estimators for Average Treatment Effects." *Journal of Business and Economic Statistics* 29(1): 1-11.
* Rubin, Donald B. 2001. "Using Propensity Scores to Help Design Observational Studies: Application to the Tobacco Litigation." *Health Services and Outcomes*

Research Methodology 2(4): 169-188.

Thursday, March 7

- **Topic: Statistical Analysis Using Matching and Weighting**
  - Required Readings:
    - None

Thursday, March 14

- **Topic: Regression Discontinuity Designs**
  - Required Readings:
    - Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press. [Chapter 6]
    - Lee, David S. 2008. "Randomized Experiments from Non-random Selection in U.S. House Elections." *Journal of Econometrics* 142(2): 675-697.
    - Ludwig, Jens, and Douglas L. Miller. 2007. "Does Head Start Improve Children's Life Chances? Evidence from a Regression Discontinuity Design." *Quarterly Journal of Economics* 122(1): 159-208.
    - Urquiola, Miguel, and Eric Verhoogen. 2009. "Class-Size Caps, Sorting, and the Re-gression-Discontinuity Design." *American Economic Review* 99(1): 179-215.
  - Recommended Readings:
    - Cattaneo, Matias D., Nicolás Idrobo, and Rocío Titiunik. 2019. *A Practical Introduction to Regression Discontinuity Designs: Foundations*. New York: Cambridge University Press.
    - Imbens, Guido W., and Thomas Lemieux. 2008. "Regression Discontinuity Designs: A Guide to Practice." *Journal of Econometrics* 142(2): 615-635.
    - Cook, Thomas D. 2008. "'Waiting for Life to Arrive': A History of the Regression-Discontinuity Design in Psychology, Statistics and Economics." *Journal of Econometrics* 142(2): 636-654.
    - Cook, Thomas D., and Vivian C. Wong. 2008. "Empirical Tests of the Validity of the Regression Discontinuity Design." *Annales d'Économie et de Statistique* 91/92: 127-150.
    - Sekhon, Jasjeet J., and Rocío Titiunik. 2017. "On Interpreting the Regression Discontinuity Design as a Local Experiment." In Matias D. Cattaneo, and Juan Carlos Escanciano, eds., *Regression Discontinuity Designs: Theory and Applications (Advances in Econometrics, Volume 38)*. Bingley, UK: Emerald Publishing Ltd., pp. 1-28.
    - Caughey, Devin, and Jasjeet S. Sekhon. 2011. "Elections and the Regression Discontinuity Design: Lessons From Close U.S. House Races, 1942-2008." *Political Analysis* 19(4): 385-408.
    - Hahn, Jinyong, Petra Todd, and Wilbert Van der Klaauw. 2001. "Identification and Estimation of Treatment Effects with a Regression Discontinuity Design." *Econometrica* 69(1): 201-209.
    - Calonico, Sebastian, Matias D. Cattaneo, and Rocio Titiunik. 2014. "Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs." *Econometrica* 82(6): 2295-2326.

* Keele, Luke J., and Rocío Titiunik. 2015. "Geographic Boundaries as Regression Discontinuities." *Political Analysis* 23(1): 127-155.
* Eggers, Andrew C., Ronny Freier, Veronica Grembi, and Tommaso Nannicini. 2018. "Regression Discontinuity Designs Based on Population Thresholds: Pitfalls and Solutions." *American Journal of Political Science* 62(1): 210-229.
* Pettersson-Lidbom, Per and Björn Tyrefors. 2007. "The Policy Consequences of Direct versus Representative Democracy: A Regression-Discontinuity Approach." *Working Paper*. Available at: http://www.ne.su.se/polopoly_fs/1.214891.1418657730!/menu standard/file/directdem.pdf
* de la Cuesta, Brandon, and Kosuke Imai. 2016. "Misunderstandings About the Regression Discontinuity Design in the Study of Close Elections." *Annual Review of Political Science* 19: 375-396.
* Banks, James, and Fabrizio Mazzonna. 2012. "The Effect of Education on Old Age Cognitive Abilities: Evidence from a Regression Discontinuity Design." *Economic Journal* 122(560): 418-448.
* Almond, Douglas, and Joseph J. Doyle, Jr. 2011. "After Midnight: A Regression Discontinuity Design in Length of Postpartum Hospital Stays." *American Economic Journal: Economic Policy* 3(3): 1-34.
* Eggers, Andrew C., Anthony Fowler, Jens Hainmueller, Andrew B. Hall, and James M. Snyder. 2015. "On the Validity of the Regression Discontinuity Design for Estimating Electoral Effects: New Evidence from Over 40,000 Close Races." *American Journal of Political Science* 59(1): 259-274.
* Hainmueller, Jens, and Holger Lutz Kern. 2008. "Incumbency as a Source of Spillover Effects in Mixed Electoral Systems: Evidence from a Regression-Discontinuity Design." *Electoral Studies* 27(2): 213-227.
* Hainmueller, Jens, Andrew B. Hall, and James M. Snyder. 2015. "Assessing the External Validity of Election RD Estimates: An Investigation of the Incumbency Advantage." *Journal of Politics* 77(3): 707-720.
* Hainmueller, Jens, Dominik Hangartner, and Giuseppe Pietrantuono. 2015. "Naturalization Fosters the Long-Term Political Integration of Immigrants." *Proceedings of the National Academy of Sciences* 112(41): 12651-12656.
* Hall, Andrew B. 2015. "What Happens When Extremists Win Primaries?" *American Political Science Review* 109(1): 18-42.
* Eggers, Andrew C., and Jens Hainmueller. 2009. "MPs for Sale? Estimating Returns to Office in Post-War British Politics." *American Political Science Review* 103(4): 513-533.
* Butler, Daniel M., and Matthew J. Butler. 2006. "Splitting the Difference? Causal Inference and Theories of Split-party Delegations." *Political Analysis* 14(4): 439-455.
* Bertanha, Marinho, and Guido W. Imbens. 2019. "External Validity in Fuzzy Regression Discontinuity Designs." *Journal of Business & Economic Statistics* 38(3): 1-39.

Thursday, March 21

- **Topic: Statistical Analysis of Regression Discontinuity Designs**
  - Required Readings:

    - None

Thursday, April 11

- **Topic: Experiments Workshop**
  - Required Readings:
    - No additional readings beyond your group's presentation article
  - Assessment:
    - In class: Group presentation of experimental article

Thursday, April 18

- **Topic: Difference in Differences**
  - Required Readings:
    - Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion.* Princeton: Princeton University Press. [Chapter 5, pp. 221-246]
    - Card, David, and Alan B. Krueger. 1994. "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania." *American Economic Review* 84: 772-793.
    - Beatty, Timothy K.M., and Jay P. Shimshack. 2011. "School Buses, Diesel Emissions, and Respiratory Health." *Journal of Health Economics* 30(5): 987-999.
  - Recommended Readings:
    - Card, David. 1990. "The Impact of the Mariel Boatlift on the Miami Labor Market." *Industrial and Labor Relations Review* 43: 245-257.
    - Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2004. "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics* 119(1): 249-275.
    - Bai, Ying, and Ruixue Jia. 2016. "Elite Recruitment and Political Stability: The Impact of the Abolition of China's Civil Service Exam." *Econometrica* 84(2): 677-733.
    - Fu, Alex Z., William H. Dow, and Gordon G. Liu. 2007. "Propensity Score and Difference-in-Difference Methods: A Study of Second-Generation Antidepressant Use In Patients with Bipolar Disorder." *Health Services and Outcomes Research Methodology* 7(1-2): 23-38.
    - Bechtel, Michael M., Jens Hainmueller. 2011. "How Lasting Is Voter Gratitude? An Analysis of the Short- and Long-Term Electoral Returns to Beneficial Policy." *American Journal of Political Science* 55(4): 851-867.
    - Malesky, Edmund J., Cuong Viet Nguyen, and Anh Tran. 2014. "The Impact of Recentralization on Public Services: A Difference-in-Differences Analysis of the Abolition of Elected Councils in Vietnam." *American Political Science Review* 108(1): 144-168.
    - Lyall, Jason. 2009. "Does Indiscriminate Violence Incite Insurgent Attacks? Evidence from Chechnya." *Journal of Conflict Resolution* 53(3): 331-362.

- **Topic: Statistical Analysis of Difference in Differences**
  - Required Readings:

    - None
  - Recommended Readings:
    - Hansen, Bertel T., Søren D. Østergaard, Kim M. Sønderskov, and Peter T. Dinesen. 2016. "Increased Incidence Rate of Trauma- and Stressor-Related Disorders in Denmark After the September 11, 2001, Terrorist Attacks in the United States." *American Journal of Epidemiology* 184(7): 494-500.
    - Dynarski, Susan M. 2003. "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion." *American Economic Review* 93(1): 279-288.
    - Ruhm, Christopher J. 1998. "'The Economic Consequences of Parental Leave Mandates: Lessons from Europe." *American Economic Review* 113(1): 285-317
    - Cantoni, Davide, and Noam Yuchtman. 2014. "Medieval Universities, Legal Institutions, and the Commercial Revolution." *Quarterly Journal of Economics* 129(2): 823-887.
    - Gentzkow, Matthew. 2006. "Television and Voter Turnout." *Quarterly Journal of Economics* 121(3): 931-972.
    - Muralidharan, Karthik, and Nishith Prakash. 2017. "Cycling to School: Increasing Secondary School Enrollment for Girls in India." *American Economic Journal: Applied Economics* 9(3): 321-350.

Thursday, April 25

- **Topic: The Synthetic Control Method**
  - Required Readings:
    - Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. 2010. "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program." *Journal of the American Statistical Association* 105(490): 493-505.
    - Abadie, Alberto, and Javier Gardeazabal. 2003. "The Economic Costs of Conflict: A Case-Control Study for the Basque Country." *American Economic Review* 93(1): 113-132.

- **Topic: Statistical Analysis of Synthetic Control Designs**
  - Required Readings:
    - None
  - Recommended Readings:
    - Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. 2015. "Comparative Politics and the Synthetic Control Method." *American Journal of Political Science* 59(2): 495-510.
    - Doudchenko, Nikolay, and Guido W. Imbens. 2016. "Balancing, Regression, Difference-In-Differences and Synthetic Control Methods: A Synthesis." *NBER Working Paper 22791.*
    - Xu, Yiqing. 2017. "Generalized Synthetic Control Method: Causal Inference with Interactive Fixed Effects Models." *Political Analysis* 25(1): 5776.
    - Arkhangelsky, Dmitry, Susan Athey, David A. Hirshberg, Guido W. Imbens, and Stefan Wager. 2019. "Synthetic Difference In Differences." *NBER Working Paper 25532.*

        * Bohn, Sarah, Magnus Lofstrom, and Steven Raphael. 2019. "Did the 2007 Legal Arizona Workers Act Reduce the State's Unauthorized Immigrant Population?" *Review of Economics and Statistics* 96(2): 258-269.
        * Ben-Michael, Eli, Avi Feller, and Jesse Rothstein. 2021. "The Augmented Synthetic Control Method." *Journal of the American Statistical Association* 116(536): 1789-1803.
        * Billmeier, Andreas, and Tommaso Nannicini. 2013. "Assessing Economic Liberalization Episodes: A Synthetic Control Approach." *Review of Economics and Statistics* 95(3): 983-1001.
        * Kreif, Noémi, Richard Grieve, Dominik Hangartner, Alex James Turner, Sylviya Nikolova, and Matt Sutton. 2016. "Examination of the Synthetic Control Method for Evaluating Health Policies with Multiple Treated Units." *Health Economics* 25(12): 1514-1528.

Thursday, May 2

- **Topic: Frontiers in Experimental and Quasi-Experimental Research in the Social Sciences**
    - Required Readings:
        * TBD

Thursday, May 9

- **Topic: Course Overview and Wrap-Up**
    - Required Readings:
        * None