Causal Inference
POL 676
Mondays 2:30 PM to 5:30 PM
Fall 2014

Instructor: Dr. Jason Barabas
Class Location: Social and Behavior Sciences, N705
Office: Social and Behavior Sciences, N727
Office Hours: Tuesdays 2:00 -3:00 PM, Wednesdays 2:00-3:00 PM or by appointment
Office Phone: 631-632-4304
Email: jason.barabas@stonybrook.edu
Website: www.jasonbarabas.com or Blackboard (Bb) Course Site

Course Description and Objectives:
Social scientific research entails formulating and documenting relationships. Symbolically, the endeavor can be depicted as trying to show that some variable of interest, typically labelled "X," affects some outcome, often called "Y."

$$X \rightarrow Y$$

In the diagram above, the arrow denotes causality. It suggests that X causes Y. Here the relationship is vastly simplified (e.g., there are often more arrows and other possible influences on Y beyond X). However, this general principle and the degree to which X truly affects Y in a particular study embodies *internal validity*. Whether the X's and Y's actually represent the components of the underlying theoretical relationship is called *construct validity*. Whether the correlation between X and Y is assessed properly embodies *statistical conclusion validity*. Finally, the extent to which the pattern holds across different units, settings, treatments, and measurement choices constitutes *external validity*. This course is about the various forms of validity in social science research, but causal inference (internal validity) will occupy most of our attention.

Student assessment will come in the form of homework assignments, short papers, class participation, and a final project. In terms of prerequisites, student are required to have successfully completed at least two graduate-level courses in statistics. Also, most students will have completed the graduate-level classes on experiments being offered in the Department of Political Science. Although this course on causality and the experiments course are similar in many ways, we will go beyond typical laboratory experiments to consider experimentation (e.g., field experiments) as well as well as observational techniques or situations that permit some claim on causal inference.

Upon successful completion of POL 676 students will be able to:

1. Better understand the challenges of establishing causal generalizations;
2. Gain an appreciation for counterfactuals and counterfactual inference;
3. Be able to critique and improve upon existing methods and published work;
4. Incorporate the insights and concepts in original research studies;

Required Books:
The forms of validity discussed earlier are featured in Shadish, Cook, and Campbell's (2002) book titled, *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. This book, cited thousands of times according to Google Scholar, builds upon previous versions (Cook and Campbell 1979; Stanley and Campbell 1963), and it is the first book we read from the required reading list. However, we will also read other books which feature many of the same concerns, particularly when it comes to demonstrating causal effects and doing so in a generalizable manner. The required books are available at the university bookstore or via online vendors (e.g., Amazon). Students can access other assigned readings (published articles or book chapters) either through J-STOR (http://jstor.org), the university library, or as made available by the instructor.

Dunning, Thad. 2012. *Natural Experiments in the Social Sciences: A Design-Based Approach.* New York: Cambridge.

Gerber, Alan S. and Donald P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: W.W. Norton.

Guo, Shenyang, and Mark W. Fraser. 2014. *Propensity Score Analysis: Statistical Methods and Applications, 2nd edition.* Thousand Oaks, CA: Sage.

Morgan, Stephen L., and Christopher Winship. 2007. *Counterfactuals and Causal Inference: Methods and Principles for Social Research*. New York: Cambridge University Press.

Shadish, William R, Thomas D. Cook, and Donald T. Campbell. 2002. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston: Houghton Mifflin.

Recommended Books:
Angrist, Joshua D., and Jorn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press.

Gerring, John. 2012. *Social Science Methodology: A Unified Framework*, 2nd ed. New York: Cambridge University Press.

Imbens, Guido W., and Donald B. Rubin. 2014 [November]. *Causal Inference in Statistics, Social, and Biomedical Sciences: An Introduction*. New York: Cambridge.

Manski, Charles E. 2007. *Identification for Prediction and Decision*. Cambridge: Harvard University Press.

Morton, Rebecca and Kenneth Williams. 2010. *From Nature to the Lab: The Methodology of Experimental Political Science and the Study of Causality.* New York: Cambridge.

Pearl, Judea. 2009. *Causality: Models, Reasoning, and Inference,* 2nd edition. New York: Cambridge.

Rosenbaum, Paul R. 2009. *Design of Observational Studies*. New York: Springer.

Grading:	**% of Final Grade**
Class Participation	25%
Research Paper	25%
Homework Assignments	25%
Reaction Papers	25%

Participation: This is a methodology class but the format will vary from week to week; sometimes I will lecture and other times it will be more like a seminar or a lab session. Irrespective of what I do, students are expected to attend class and participate in discussions every week. In particular, you are expected to read the required texts/readings *before class* and come to class with questions and/or comments. If you have an emergency situation and cannot fulfill these requirements, you must let me know. There may be times that students are assigned to be responsible for particular readings or topics. In addition, the instructor reserves the right to give unannounced pop quizzes that will contribute to the participation grade. In general, aim for quality rather than quantity when it comes to participation, but try not to go the entire class period without contributing and do not do other things that are unrelated to the class (e.g., web surfing, internet videos, video games, sleeping). In the past, I have punished students harshly on their participation grades for these behaviors.

Research Paper: By the end of the semester you will be asked to write a paper in which you apply the techniques that you have learned. Hopefully your paper will have the potential to be published one day. Most of the grade will be based upon the methods used, but it helps if there is a clear presentation of the literature and theory as well.

Homework Assignments: There will be a few homework assignments throughout the course designed to illustrate key concepts and give students a chance to hone their skills.

Short Reaction Papers: There will be three short reaction papers. Two of them are limited to 500 words and one is capped at 750 words (it is your choice on when you do the longer one). These papers are probably unlike others you have written. The goal is to help prepare you to write like an academic, especially when you must get to the essence of an argument quickly. Here are a few tips. First, the word limit is strictly enforced. In fact, you should conduct your own word count (using the word count feature of your software program) and include the total on the front page. The word limit sometimes proves to be limiting factor that causes some students to struggle. Be parsimonious!

Second, the papers may be on any subject or topic you like, but hopefully they will integrate concepts from the course. Again, the flexibility with respect to topic is sometimes challenging. It will require a lot of creativity and insight. In general, do not waste words on a formal introduction or conclusion, just get into your argument without much set-up. Instead, once you have your argument in mind, you will likely spend more time editing than writing. For instance, you might want to write something on the order of 3-5 pages and then edit (and re-edit) it down to 500 words (approx. 1 1/2 pages). For the longer paper, it might be possible to include empirical analyses but this not required. You should plan ahead. Do not save these papers for the last minute.

Finally, feel free to use short and punchy sentences; there will probably be no space for empirical analyses or citations (if you are referring to something we've read in class, just use the authors' last names; if it is new, provide a complete citation in a footnote). As an example of what you could do, you might identify a key weakness in something we have read or an omission common to several works; what are the missing pieces or unresolved puzzles and how would you resolve the issue.

Grading Scale: Barring any unforeseen changes, the grading scale for the course is as follows:

A	93.50 to 100	C	73.50 to 76.49
A-	89.50 to 92.49	C-	69.50 to 73.49
B+	86.50 to 89.49	D+	66.50 to 69.49
B	83.50 to 86.49	D	63.50 to 66.49
B-	79.50 to 83.49	D-	59.50 to 63.49
C+	76.50 to 79.49	F	59.49 and below

If you want to add, drop, or change the grade status of this course, you are responsible for complying with all deadlines in this regard. Such deadlines are a matter of University policy. Please visit the appropriate university website for the deadlines.

Course Website:
Blackboard will allow students to access course materials. The Blackboard system is available from any computer with access to the Internet at the following website, http://blackboard.stonybrook.edu. Logging into Blackboard requires a NET ID and a Password. Use this page to obtain additional readings, electronic copies of assignments, and other course handouts and resources.

University Attendance Policy: Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy: The Stony Brook University policies on academic dishonesty are available at: http://www.stonybrook.edu/commcms/academic_integrity/policies.html. The website explains the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to the policies.

Americans with Disabilities Act: If you have a physical, psychological, medical or learning dis-ability that may impact your course work, please contact Disability Support Services, ECC (Edu-cational Communications Center) Building, Room 128, (631) 632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation will be kept confidential. This should be done during the first week of class.

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.

Electronic Communication Statement: Email is one of the ways the faculty officially communicates with you for this course. Another common communication platform is the course Blackboard website. It is your responsibility to make sure that you read your email in your official University email account and check in with Blackboard regularly. For most students that is Google

Apps for Education (http://www.stonybrook.edu/mycloud), but you may verify your official Electronic Post Office (EPO) address at http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-addressin-the-epo. If you choose to forward your official University email to another off-campus account, faculty are not responsible for any undeliverable messages to your alternative personal accounts. You can set up Google Mail forwarding using instructions found at http://it.stonybrook.edu/help/kb/settingup mail-forwarding-in-google-mail. If you need technical assistance, contact Client Support at supportteam@stonybrook.edu.

Syllabus Change Policy: This syllabus is a guide for the course and is subject to change with advance notice. Please monitor the class webpage on the Blackboard system for the latest announcements and changes.

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COURSE SCHEDULE

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Whenever possible I will put copies (PDFs) of the assigned non-required book readings on the class Blackboard website.

Week 1 – Introduction and Inspiration (8/25/2014)

Readings:
Ioannidis, John P.A. 2005. "Why Most Published Research Findings Are False." *PLoS Medicine* 2, e124.
Gerber, Alan S., and Neil Malhotra. 2008. "Do Statistical Reporting Standards Affect What Is Published? Publication Bias in Two Leading Political Science Journals." *Quarterly Journal of Political Science* 3: 313-26.
Boutron, Isabelle, Peter John, and David J. Torgerson. 2010. "Reporting Methodological Items in Randomized Experiments in Political Science." *Annals of the American Academy of Political and Social Science* 628: 112-31.   ALSO SEE: http://e-gap.org/design-registration/
Levitt, Steven D., and John A. List. 2007. "What Do Laboratory Experiments Measuring Social Preferences Reveal about the Real World?" *Journal of Econometric Perspectives* 21 (Spring): 153-74.
Mitchell, Gregory. 2012. "Revising Truth or Triviality: The External Validity of Research in the Psychology Laboratory." *Perspectives on Psychology* 7 (2): 109-17.

Recommended:
Achen, Christopher H. 2005. "Let's Put Garbage-Can Regressions and Garbage-Can Probits Where They Belong." *Conflict Management and Peace Science* 22(4): 327-39.
Clarke, Kevin A. 2005. "The Phantom Menace: Omitted Variable Bias in Econometric Research." *Conflict Management and Peace Science* 22(4): 341-52.
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, *Problems and Methods in the Study of Politics*. New York: Cambridge University Press. pp. 251-73.
Gerber, Alan S., Neil Malhotra, Conor M. Dowling, and David Doherty. 2010. "Publication Bias in Two Political Behavior Literatures." *American Politics Research* 38 (4): 591-613.
Imai, Kosuke, Gary King, and Elizabeth A. Stuart. 2008. "Misunderstandings between Experimentalists and Observationalists about Causal Inference." *Journal of the Royal Statistical Association A* 171 (Part 2): 481-502.

Kahneman, Daniel. 2012. Open Letter on "A Proposal to Deal with Questions about Priming Effects." Available via link from Ed Yon article in Nature.

Levitt, Steven D., and John A. List. 2007. "Viewpoint: On the Generalizability of Lab Behaviour to the Field." *Canadian Journal of Economics* 40 (2): 347-70.

Week 2 – Forms of Validity (9/1/2014)   LABOR DAY, <u>NO CLASS</u>

NOTE: BE PREPARED TO DISCUSS THESE READINGS ON 8/25 DUE TO HOLIDAY

Readings:

Shadish, Cook, and Campbell 2002, Preface and Chapters 1-3, 8

King, Gary, Christopher J. L. Murray, Joshua A. Salomon, and Ajay Tandon. 2004. "Enhancing the Validity and Cross-Cultural Comparability of Measurement in Survey Research." *American Political Science Review* 98 (Feb.): 191-207.

Zaller, John. 2002. "The Statistical Power of Election Studies to Detect Media Exposure Effects in Political Campaigns." *Electoral Studies* 21: 297-329.

Week 3 – Causality and the Neyman-Rubin Causal Model (9/8/2014)*

Readings:

Morgan and Winship 2007, Chapters 1-3

Gerber and Green 2012, Chapters 1-2

Guo and Fraser 2014 (or 2010 if not available yet), Chapters 1-4

Brady, Henry. 2009. "Causality and Explanation in Social Science" In *The Oxford Handbook of Political Methodology*, eds. J. Box-Steffensmeier, H. Brady and D. Collier. New York: Oxford University Press.

ALSO SEE: http://e-gap.org/resources/guides/

Recommended:

Sekhon, Jasjeet. 2009. "The Neyman-Rubin Model of Causal Inference and Estimation Via Matching Methods." In *The Oxford Handbook of Political Methodology*, eds. J. Box-Steffensmeier, H. Brady and D. Collier. New York: Oxford, pp. 271-99.

Freedman, David A. 1991. "Statistical Models and Shoe Leather." *Sociological Methodology* 21: 291-313.

Holland, Paul W. 1986. "Statistics and Causal Inference*." Journal of the American Statistical Association* 81 (396): 945–60.

Week 4 –Designs Overview: Selection on Observables vs. Unobservables (9/15/2014)*

NOTE: SHORT PAPER DUE; SUBMIT VIA BLACKBOARD BY 9/14/14 AT 11:59 PM

Readings:
SCC, Chapters 4, 5, 7, 9-11
Morgan and Winship, Chapters 5
Dunning, Chapters 1-2

Week 5 – Natural Experiments (9/22/2014)

Readings:
Dunning, Chapters 3-11
Barabas, Jason, and Jennifer Jerit. 2010. "Are Survey Experiments Externally Valid?" *American Political Science Review* 104 (May): 226-42.

Recommended:
Dunning, Thad. 2008. "Improving Causal Inference: Strengths and Limitations of Natural Experiments." *Political Research Quarterly* 61 (June): 282-93.
Lassen, David Dreyer. 2005. "The Effect of Information on Voter Turnout: Evidence from a Natural Experiment." *American Journal of Political Science* 49 (Jan.): 103-18.
Hainmueller, Jens, and Dominik Hangartner. 2013. "Who Gets a Swiss Passport? A Natural Experiment in Immigrant Discrimination." *American Political Science Review* 107 (Feb .): 159-87.
Robinson, Gregory, John E. McNulty, and Jonathan S. Krasno. 2009. "Observing the Counterfactual? The Search for Political Experiments in Nature." *Political Analysis* 17 (Autumn): 341-57.

Week 6 – Regression Discontinuity Design (9/29/2013)

Readings:
Shadish, Cook,. and Campbell, Chapter 7
Green, Donald P., Terence Y. Leong, Holger L. Kern, Alan S. Gerber, and Christopher W. Laimer. 2009. "Testing the Accuracy of Regression Discontinuity Analysis using Experimental Benchmarks." *Political Analysis* 17 (Autumn): 400-17.
Wing, Coady, and Thomas D. Cook. 2013. "Strengthening The Regression Discontinuity Design Using Additional Design Elements: A Within-Study Comparison." *Journal of Policy Analysis and Management* 32 (4): 853-77.
Cook, Thomas D., William R. Shadish, Vivian C. Wong. 2008. "Three Conditions Under Which Experiments and Observational Studies Produce Comparable Causal Estimates: New Findings from Within-Study Comparisons." *Journal of Policy Analysis and Management* 27 (Autumn): 724-50.

Recommended:
Wong, Vivian C., Peter M. Steiner, and Thomas D. Cook. 2012. "Analyzing Regression-Discontinuity Designs with Multiple Assessment Variables: A Comparative Study of Four Estimation Methods." *Journal of Educational and Behavioral Statistics* 27 (April): 1-35.
Hahn, Jinyong, Petra Todd, and Wilbert van der Klaauw. 2001. "Identification and Estimation of Treatment Effects with a Regression-Discontinuity Design." *Econometrica* 69: 201-09.
Imbens, Guido W., and Thomas Lemieux. 2008. "Regression Discontinuity Designs: A Guide to Practice." *Journal of Econometrics* 142: 615-35.
Lee, David S. 2008. "Randomized Experiments from Non-random Selection in U.S. House Elections." *Journal of Econometrics* 142 (2): 675-97.
Sekhon, Jasjeet, and Devin Caughey. 2011. "Elections and the Regression-Discontinuity Design: Lessons from Close U.S. House Races, 1942-2008." *Political Analysis* 19 (4): 385-408.
Sekhon, Jasjeet, and Rocio Titiunik. 2012. "When Natural Experiments are Neither Natural Nor Experiments." *American Political Science Review* 106 (Feb.): 35-57.

Week 7 – Field Experiments, IV, and CACE/LATE (10/6/2014)

Readings:
Gerber and Green, Chapters 3-6
Morgan and Winship, Chapters 6-8
Healy, Andrew, and Neil Malhotra. 2013. "Childhood Socialization and Political Attitudes: Evidence from a Natural Experiment." *Journal of Politics* 75 (Oct.): 1023-37.

Recommended:
Angrist, Joshua D., Guido W. Imbens, and Donald B. Rubin. 1996. "Identification of Causal Effects using Instrumental Variables." *Journal of the American Statistical Association* 91 (June): 444-55.
Aronow, Peter M., and Allison Carnegie. 2013. "Beyond LATE: Estimation of the Average Treatment Effect with an Instrumental Variable." *Political Analysis* 21 (4): 492-506.
Betz, Timm. 2013. "Robust Estimation with Nonrandom Measurement Error and Weak Instruments." *Political Analysis* 21: 86-96.
Bound, John, David A. Jaeger, and Regina M. Baker. 1995. "Problems with Instrumental Variables When the Correlations between the Instruments and the Endogenous Explanatory Variables is Weak." *Journal of the American Statistical Association* 90 (June): 443-50.
Esarey, Justin. 2014. "Using One-Sided Conditional Relationships as Instrumental Variables for Causal Identification." Rice University: Working Paper at 2014 Polmeth Conference.
Gerber, Alan S., and Donald P. Green. 2000. "The Effects of Canvassing, Telephone Calls, and Direct Mail on Voter Turnout: A Field Experiment." *American Political Science Review* 94 (Sept.): 653-63.
Kern, Holger Lutz, and Jens Hainmueller. 2009. "Opium for the Masses: How Foreign Media can Stabilize Authoritarian Regimes." *Political Analysis* 17: 377-99.
Murray, Michael P. 2006. "Avoiding Invalid Instruments and Coping with Weak Instruments." *Journal of Economic Perspectives* 20 (Fall): 111-32.
Sovey, Allison J., and Donald P. Green. 2011. "Instrumental Variables Estimation in Political Science: A Reader's Guide." *American Journal of Political Science* 55 (Jan.): 188-200.

Week 8 – Pre-Treatment, Selective Treatments, & Effect Duration/Heterogeneity (10/13/2014)

NOTE: SHORT PAPER DUE; SUBMIT VIA BLACKBOARD BY 10/12/14 AT 11:59 PM
Readings:
Gerber and Green, Chapter 9
Druckman, James N., and Thomas J. Leeper. 2012. "Learning More from Political Communication Experiments: Pretreatment and Its Effects." *American Journal of Political Science* 56 (Oct.): 875-96.
Mitchell, Dona-Gene. 2012. "It's About Time: The Lifespan of Information Effects in a Multiweek Campaign." American Journal of Political Science 56 (April): 298—311.
Hill, Seth J., James Lo, Lynn Vavreck, and John Zaller. 2013. "How Quickly We Forget: The Duration of Persuasion Effects from Mass Communication." *Political Communication* 30: 521-47.
Gaines, Brian J., and James H. Kuklinski. 2011. "Experimental Estimation of Heterogeneous Treatment Effects Related to Self-Selection." *American Journal of Political Science* 55 (July): 724-36.
Green, Donald P., and Holger L. Kern. 2012. "Modeling Heterogeneous Treatment Effects in Survey Experiments with Bayesian Additive Regression Trees." *Public Opinion Quarterly* 76 (Fall): 2012.

Recommended:
Arceneaux, Kevin, Martin Johnson, and Chad Murphy. 2012. "Polarized Political Communication, Oppositional Media Hostility, and Selective Exposure." *Journal of Politics* 74 (Jan.): 174-86.
Imai, Kosuke, and Marc Ratkovic. Forthcoming. "Estimating Treatment Effect Heterogeneity in Randomized Program Evaluation." *Annals of Applied Statistics*.

Week 9 – Mediation (10/20/2014)

Readings:
Gerber and Green, Chapter 10
Baron, Rueben M., and David. A. Kenny. 1986. "The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations." *Journal of Personality and Social Psychology* 51 (6): 1173–82.
Bullock, John G., Donald P. Green, and Shang E. Ha. 2010. "Yes, But What's The Mechanism? (Don't Expect and Easy Answer)." *Journal of Personality and Social Psychology* 98 (4): 550-8.
Imai, Kosuke, Luke Keele, Dustin Tingley, and Teppei Yamamoto. 2011. "Unpacking the Black Box of Causality: Learning about Causal Mechanisms from Experimental and Observational Studies." *American Political Science Review* 105 (November): 765-89. [Bb]
Renshon, Jonathan, Jooa Julia Lee, and Dustin Tingley. Forthcoming. "Physiological Arousal and Political Beliefs." *Political Psychology*.
Tingley, Dustin, Teppei Yamamoto, Kentaro Hirose, Luke Keele, and Kosuke Imai. Forthcoming. "Mediation: R Package for Causal Mediation Analysis." *Journal of Statistical Software*.

Recommended:
Becher, Michael, and Michael Donnelly. 2013. "Economic Performance, Individual Evaluations, and the Vote: Investigating the Causal Mechanism." *Journal of Politics* 75 (Oct.): 968-79.
Brader, Ted, Nicholas A. Valentino, and Elizabeth Suhay. 2008. "What Triggers Public Opposition to Immigration? Anxiety, Group Cues, and Immigration." *American Journal of Political Science* 52 (4): 959–78.

Week 10 – Comparing Samples– (10/27/2014)

Readings:
Berinsky, Adam J., Gregory Huber, and Gabriel Lenz. 2012. "Evaluating Online Labor Markets for Experimental Research: Amazon.com's Mechanical Turk." *Political Analysis* 20 (3): 351-368
Druckman, James N., and Cindy D, Kam. 2011. "Students as Experimental Participants: A Defense of the 'Narrow Data Base." In *Cambridge Handbook of Experimental Political Science* by J. Druckman, D. Green, J. Kuklinski, and A. Lupia. New York: Cambridge, pp. 41-57.
Leeper, Thomas J., and Kevin J. Mullinix. 2013. "To Whom, with What Effect? Parallel Experiments on Framing." Working Paper: Aarhaus University.
Clifford, Scott, and Jennifer Jerit. Forthcoming. "Is There a Cost to Convenience? An Experimental Comparison of Data Quality in Laboratory and Online Studies." *Journal of Experimental Political Science.*
Krupnikov, Yanna, and Adam Seth Levine. Forthcoming. "Cross-Sample Comparisons and External Validity." *Journal of Experimental Political Science.*

Recommended:
Huff, Connor, and Dustin Tingley. 2014. "'Who Are These People?': Evaluating the Demographic Characteristics and Political Preferences of MTurk Survey Respondents." Working Paper: Harvard University.

Week 11 – Comparing and Improving Methods – (11/3/2014)

Readings:
Berinsky, Adam J., Michele F. Margolis, and Michael W. Sances. 2013. "Separating the Shirkers from the Workers? Making Sure Respondents Pay Attention on Self-Administered Surveys." *American Journal of Political Science*
Clifford, Scott, and Jennifer Jerit. 2014. "Do Attempts to Improve Respondent Attention Increase Social Desirability Bias?" *Public Opinion Quarterly*: Forthcoming.
Keele, Luke J., and William Minozzi. 2013. "How Much if Minnesota Like Wisconsin? Assumptions and Counterfactuals in Causal Inference with Observational Data." *Political Analysis* 1-24.
Jerit, Jennifer, Jason Barabas, and Scott Clifford. 2013. "Comparing Contemporaneous Laboratory and Field Experiments on Media Effects." *Public Opinion Quarterly* 77 (Spring): 256-82.
Barabas, Jason, Rachel Clark, and Yamil Velez. 2014. "Augmented Experiments: Employing Population Data for Increased Power and Unbiased Estimation under One-Sided Noncompliance." Paper presented at the annual conference of the American Political Science Association, Washington DC, August 28-30.

Recommended:
Gerber and Green, Chapter 7 on Attrition in Experiments
Aronow, Peter M., Alan Gerber, Donald P. Green, and Holger L. Kern. 2013. "Double Sampling for Missing Outcome Data in Randomized Experiments." Working Paper: SSRN.
Gerber, Alan S., Donald P. Green, Edward H. Kaplan, and Holger L. Kern. 2010. "Baseline, Placebo, and Treatment: Efficient Estimation for Three-Group Experiments." *Political Analysis* 18 (3): 297-315.
Keele, Luke J., Corrine McConnaughy, and Ismail White. 2012. "Strengthening the Experimenter's Toolbox: Statistical Estimation of Internal Validity." *American Journal of Political Science* 56 (2): 484-99.

Week 12 – Introduction to Matching [Selection on Observables]   (11/10/2014)*

NOTE: SHORT PAPER DUE; SUBMIT VIA BLACKBOARD BY 11/9/14 AT 11:59 PM

Reading:
Guo and Fraser 2010, Chapters 5-12
Morgan and Winship 2007, Chapter 4
Sekhon, Jasjeet. 2009. "Opiates for the Matches: Matching Methods for Causal Inference." *Annual Review of Political Science* 12:487−508.
Ho, Daniel, Kosuke, Imai, Gary King, and Elizabeth Stuart. 2007. "Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference." *Political Analysis* 15: 199-236.
King, Gary, and Langche Zeng. 2006. "The Dangers of Extreme Counterfactuals." *Political Analysis* 14 (2): 131-59.
Iacus, Stefano M., Gary King, and Guiseppe Porro. 2012 "Causal Inference without Balance Checking: Coarsened Exact Matching." *Political Analysis* 20 (Winter): 1-24.

Recommended:

Abadie, Alberto, David Drukker, Jane Leber Herr, and Guido W. Imbens. 2001. "Implementing Matching Estimators for Average Treatment Effects in Stata." *Stata Journal* 1: 1-18.

Barabas, Jason. 2004. "How Deliberation Affects Policy Opinions." *American Political Science Review* 98 (Nov.): 687-701.

Barabas, Jason. 2009. "Not the Next IRA: How Health Savings Accounts Shape Public Opinion." *Journal of Health Politics, Policy and Law* 34 (April): 181-217.

Blackwell, Matthew, Stefano Iacus, Gary King, and Guisepe Porro. 2009. CEM: Coarsened Exact Matching in Stata." *The Stata Journal* 9: 524-46.

Cochran, W. G. 1968. The Effectiveness of Adjustment by Subclassification in Removing Bias in Observational Studies. *Biometrics* 24: 295-313.

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.

Sekhon, Jasjeet S. 2011. "Multivariate and Propensity Score Matching Software with Automated Balance Optimization: The Matching Package for R." *Journal of Statistical Software* 42 (May): 1-52.

Week 13 – Boxing Match[ing] (11/17/2014)   [Student Presentation Teams TBA]

CONTROVERSY 1

LaLonde, Robert J. 1986. "Evaluating the Econometric Evaluations of Job Training with Experimental Data." *American Economic Review* 76 (Sept.): 604-20.

Dehejia, Rajeev H., and Sadek Wahba. 1999. "Causal Effects in Nonexperimental Studies: Re-evaluating the Evaluation of Training Programs." *Journal of the American Statistical Association* 94 (Dec.): 1053-1062.

Dehejia, Rajeev H., and Sadek Wahba. 2002. "Propensity Score Matching for Nonexperimental Causal Studies." *Review of Economics and Statistics* 84 (Feb.): 151-61.

Smith, Jeffrey A., and Petra Todd. 2005. "Does Matching Overcome LaLonde's Critique of Nonexperimental Estimators?" *Journal of Econometrics* 125: 305-53.

CONTROVERSY 2

Gerber, Alan S., and Donald. P. Green. 2000. "The Effects of Canvassing, Telephone Calls, and Direct Mail on Voter Turnout: A Field Experiment." *American Political Science Review* 94 (Sept.): 653-63.

Imai, Kosuke. 2005. "Do Get-Out-the-Vote Calls Reduce Turnout? The Importance of Statistical Methods for Field Experiments." *American Political Science Review 99* (May): 283-300.

Gerber, Alan S., and Donald P. Green. 2005. "Correction to Gerber and Green (2000), Replication of Disputed Findings, and Reply to Imai (2005)." *American Political Science Review* 99 (May): 301-13.

Hansen, Ben B., and Jake Bowers. 2009. "Attributing Effects to a Cluster-Randomized Get-Out-the-Vote Campaign." *Journal of the American Statistical Association* 104: 873-85.

CONTROVERSY 3

Kam, Cindy D., and Carl L. Palmer. 2008. "Reconsidering the Effects of Education on Political Participation." *Journal of Politics* 70 (July): 612-31.

Henderson, John, and Sara Chatfield. 2011. "Who Matches? Propensity Scores and Bias in the Causal Effects of Education on Participation." *Journal of Politics* 73 (July): 646-58.

Mayer, Alexander K. 2011. "Does Education Increase Political Participation?" *Journal of Politics* 73 (July): 633-45.

Kam, Cindy D., and Carl L. Palmer. 2011. "Rejoinder: Reinvestigating the Causal Relationship between Higher Education and Political Participation." *Journal of Politics* 73 (July): 659-63.

Recommended:

King, Gary, and Langche Zeng. 2007. "When Can History Be Our Guide?: The Pitfalls of Counterfactual Inference." *International Studies Quarterly* 51: 83-210.

Ladd, Jonathan McDonald, and Gabriel S. Lenz. 2009. "Exploiting a Rare Communication Shift to Document the Persuasive Power of the News Media." *American Journal of Political Science* 53 (April): 394-410.

Sekhon, Jasjeet S. 2011. "Multivariate and Propensity Score Matching Software with Automated Balance Optimization: The Matching Package for R." *Journal of Statistical Software* 42 (May): 1-52.

Week 14 – Matching Critiques, Diagnostics, and Innovations (~~11/24/2014~~; rescheduled to 11/20/14 in the Afternoon/Evening or Date TBA)

[Student Presentation Teams TBA]

<u>Matching Critiques & Diagnostics</u>

Critiques:

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 (Winter): 37-62.

Arceneaux, Kevin, Alan S. Gerber, and Donald P. Green. 2010. "A Cautionary Note on the Use of Matching to Estimate Causal Effects: An Empirical Example Comparing Matching Estimates to an Experimental Benchmark." *Sociological Methods and Research* 39 (Aug.): 256-82.

Shadish, William R., Peter M. Steiner, and Thomas D. Cook. 2012. "A Case Study about Why it Can Be Difficult to Test Whether Propensity Score Analysis Works in Field Experiments." *Journal of Methods and Measurement in the Social Sciences* 3 (2): 1-12.

Diagnostics:

Rosenbaum, Paul R., 2010. *Observational Studies*, 2nd ed. New York: Springer, Chapter 4.
http://cran.r-project.org/web/packages/rbounds/rbounds.pdf
http://www.polisci.ohio-state.edu/faculty/lkeele/rbounds.html

<u>Matching Innovations: Synthetic Controls, Entropy Matching, and Within-Survey/Within-Subjects</u>

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, Alexis Diamond, and Jens Hainmueller. 2011. "Synth: An R Package for Synthetic Control Methods in Comparative Case Studies." *Journal of Statistical Software* 42 (13): 1-17.

Keele, Luke, Neil Malhotra, and Colin H. McCubbins. 2013. "Do Term Limits Restrain State Fiscal Policy? Approaches for Causal Inference in Assessing the Effects of Legislative Institutions." *Legislative Studies Quarterly* 3 (August): 291-326.

Hainmueller, Jens. 2012. "Entropy Balancing for Causal Effects: A Multivariate Reweighting Method to Produce Balanced Samples in Observational Studies." *Political Analysis* 20: 25-46. Also see; ebal package in R: http://cran.r-project.org/web/packages/ebal/ebal.pdf

Barabas, Jason, and Jennifer Jerit. 2009. "Estimating the Causal Effects of Media Coverage on Policy-Specific Knowledge." *American Journal of Political Science* 53 (Jan.): 73-89.

Recommended:
Arceneaux, Kevin, and David W. Nickerson. 2009. "Who Is Mobilized to Vote? A Re-Analysis of 11 Field Experiments." *American Journal of Political Science* 53 (Jan.): 1-16.

Barabas, Jason. 2008. "Presidential Policy Initiatives: How the Public Learns about State of the Union Proposals from the Mass Media." *Presidential Studies Quarterly* 38 (June): 195-222.

Blackwell, Matthew. 2014. "A Selection Bias Approach to Sensitivity for Causal Effects." *Political Analysis* 22: 169-82.

Fong, Christian, and Kosuke Imai. 2014. "Covariate Balancing Propensity Scores for Generalized Treatment Regimes." Working Paper: Princeton and 2014 Polmeth.

Glynn, Adam N., and Kevin M. Quinn. "Why Process Matters for Causal Inference." *Political Analysis* 19: 273-86.

Hollister, Matissa. 2009. "Is Optimal Matching Suboptimal?" *Sociological Methods and Research* 38 (2): 235-64.

Imai, Kosuke, Gary King, and Clayton Nall. 2009. "The Essential Role of Pair Matching in Cluster-Randomized Experiments, with Application to the Mexican Universal Health Insurance Evaluation." *Statistical Science* 24(1):29–53

[ALSO SEE: King, Gary, et. al. 2007. "A 'Politically Robust' Experimental Design for Public Policy Evaluation, with Application to the Mexican Universal Health Insurance Program*." Journal of Policy Analysis and Management* 26 (3): 479-506.]

Keele, Luke J. Rocio Titunik, and Jose Zubizarreta. 2014. "Enhancing a Geographic Regression Discontinuity Design through Matching to Estimate the Effect of Ballot Initiatives on Voter Turnout." *Journal of the Royal Statistical Society, Series A*.

King, Gary, Richard Nielsen, Carter Coberley, James E. Pope. 2011. "Comparative Effectiveness of Matching Methods for Causal Inference." Working Paper.

Ratkovick, Marc. 2012. "A Matching Method for General Treatment Regimes." Working Paper: Princeton University. http://www.princeton.edu/~ratkovic/Matching_OrdCat.pdf

Pohl, Steffi, Peter M. Steiner, Jens Eisermann, Renate Soellner, and Thomas D. Cook. 2009. "Unbiased Causal Inference from an Observational Study: Results of a Within-Study Comparison." *Educational Evaluation and Policy Analysis* 31 (4): 463-79.

Xu, Yiquing. 2014. "Generalized Synthetic Control Method for Causal Inference in Time-Series Cross-Sectional Data." Working Paper: MIT and 2014 Polmeth.

Week 15 – Student Final Project Meetings (12/1/2014 or at Date/Time TBA)
    Schedule to be Determined

Week 16 – Final Project Paper Due (Tentatively, 12/8/2014, 11:59 PM)