Political Science 60834
Experimental Methods
MW 11:45 – 1:00pm
DeBartolo Hall, Room 113

David Nickerson
Decio 413
Phone: 631-7016
Email: dnickers@nd.edu

The primary purpose of this course is to prepare you to conduct quantitative analysis on questions of personal interest. The particular focus of this semester will be conducting field experiments. The topic may appear narrow, but the logic of experimentation underlies nearly every empirical identification strategy. A thorough understanding of how experiments allow for causal inferences will inform your understanding of more traditional empirical analyses. Field experiments in particular highlight a number of data challenges that are present in nearly every data set to one degree or another. The techniques used to analyze field experiments can also be used for lab and natural experiments. The central goal of this course is to develop skills that can be applied throughout your career on a range of topics.

Goals

The overarching purpose of this course is to prepare students to conduct quantitative analysis independently. By the end of the course, you should be able to:

1) Understand the logic behind randomization and how to apply it in real world settings;
2) Read statistical writing;
3) Understand the logic behind experimental inference and use this understanding to non-experimental models;
4) Apply the tools learned to a question of your own choosing.

Expectations

While grades in graduate school are irrelevant, the course will only be useful if you take it seriously and treat it as a job:

1) **Participation**: The material in the course builds upon itself. If you do not understand one section, the next section will be an even greater struggle. Thus, attendance is *strongly* encouraged. Similarly, if you have a question about the material, be sure to speak up in class. In general, it is best to clear up questions as they arise.
2) **Problem sets**: The weekly problem sets will be due every week at the beginning of class. You are *encouraged* to work in groups. Collaboration is an important part of academic inquiry and I see no reason to artificially impose solitude. While you should take advantage of your colleagues as an important resource, you will be required to type up the answers to the problem sets on your own. [Note: Typing mathematical notation can be painful, but will be required on all problem sets and exams. Good practice for the future.]
3) **Class research project**: You will be expected to contribute to the class research project. Skills and interest level will vary, but you should carry your weight in all phases of the project.
4) **Final exam**: The final exam will be take home and open book. It will require critical thinking and creativity more than memorization. Cramming will not help you, so it is important that you stay on top of the material.

Grading Your final grade in the class will be an "A". Ability in quantitative methods varies and not everyone will be able to "master" the material. If you need a particular methodological skill to conduct your work, I do not want grades to dissuade someone from taking a course that can help them. You will receive feedback along the way on problem sets and know how you are doing in the class, but the final grade submitted in the books will be uninformative. My goal is to give you the skills to conduct your own research, not weed people out of the program or send signals about hiring.

Office Hours Tuesday and Thursday 1:30 – 3:00 (or by appointment)

Texts There are hundreds of books on experimental methodology. A few of them are very good. Most are designed for engineers or lab psychologists. Rebecca Morton and Ken Williams recently published a book, *From Nature to Lab: Experimental Political Science and the Study of Causality*, that is well worth reading. However, my dissertation advisors, Alan Gerber and Donald Green, just finished a draft of their textbook and I offered to pilot it for them. You can download the draft from the publisher's website: http://www.wwnorton.com/college/polisci/pre/fe/. The authors are looking for feedback on the text, so as you are reading, you are encouraged to note any impressions, or areas where you were confused or impressed by the quality of the discussion. Each week another article will also be assigned to supplement the text. These articles generally provide an application of the technique discussed, but sometimes the article will offer an alternative theoretical perspective.

Software The course will primarily use Stata. A good thing about Stata is that the software is updated every few years with nifty improvements in graphics and command functionality. A bad thing about Stata is the software is updated often, changing command lines. The estimation process for the models discussed in this course should not have changed over the past ten years, so it generally should not matter whether you use Stata 7, 8, 9 or 10. The major downside to using Stata is that programming estimators yourself in Stata is cumbersome and frustrating. However, learning to use software better suited to programming such as *Gauss*, *Matlab*, or *R* is a large investment in time. In a perfect world, students would learn one of these programs, but for the purposes of this course, we will stumble along with Stata. While you may laugh at this statement at the end of the semester, the course is intended to focus on analysis more than programming (but struggling through computer code is part of empirical research).

Class Project As a class, we will conduct an original research project. The only restrictions on the project are that it must be genuinely collaborative, utilize the techniques developed in the course, and be feasible to perform in a semester. Everyone in the class will be required to take the CITI human subjects certification exam: http://www6.miami.edu/citireg/

Schedule The schedule below represents my best guess as to the speed the course will proceed. Since the material is cumulative, we will make sure that the class has a good grasp of prior material before moving on. It is possible that some sections may progress faster, while others may take longer than anticipated. Students are asked to be flexible and offer consistent feedback.

Date	Topic	Chapter	Article	Recommended Reading
Jan. 19th	Introductions	GG 1	Morton, Rebecca and Kenneth Williams. 2009. "Experimentation in Political Science" in *The Oxford Handbook of Political Methodology* eds. Janet Box-Steffensmeier, David Collier, and Henry Brady.	
Jan. 24th	Rubin Causal Model	GG2	Little, Roderick J. A. and Donald B. Rubin. 2000. "Causal Effects in Clinical and Epidemiological Studies via Potential Outcomes: Concepts and Analytical Approaches." *Annual Review of Public Health* 21: 121–145.	
Jan. 26th	Assumptions		Winship, Christopher and Stephen Morgan. 1999. "The estimation of causal effects from observational data." *Annual Review of Sociology* 25: 659–707.	
Jan. 31st	Sampling Distributions	GG3	Hansen, Ben B. and Jake Bowers. 2008. "Covariate Balance in Simple, Stratified and Clustered Comparative Studies" *Statistical Science* 23(2) 219-236.	1) Banerjee, Abhijit Vinayak, Esther Duflo, Rachel Glennerster, and Dhruva Kothari. "Improving Immunization Coverage in Rural India: A Clustered Randomized Controlled Evaluation of Immunization Campaigns with and without Incentives." WP5579. 2)
Feb. 2nd	Hypothesis Testing		Erikson, Robert S., Pablo M. Pinto and Kelly T. Rader Forthcoming. "Randomization Tests and Multi-Level Data in State Politics" *State Politics and Policy Quarterly*.	
Feb. 14th	Covariates	GG4	1) Keele, Luke J. and Corrine McConnaughy and Ismail White. (2008). "Adjusting Experimental Data." 2) Imai, Kosuke, Gary King, and Elizabeth Stuart. 2008. "Misunderstandings Among Experimentalists and Observationalists about Causal Inference." *Journal of the Royal Statistical Society*, Series A 171, part 2: 481-502.	Keane, Lauren and David W. Nickerson. (2010). "A Field on Non-Partisan Mobilization and Persuasion Down Ballot." Working paper.
Feb. 16th	Blocking		1) Iacus, Stefano M., Gary King, and Giuseppe Porro (2009). "Causal Inference Without Balance Checking: Coarsened Exact Matching." 2) Hyde, Susan D. 2010. "Experimenting with Democracy Promotion: International Observers and the 2004 Presidential Elections in Indonesia." *Perspectives on Politics* 8(2):511-27.	1) Alatas, Vivi, Abhijit Banerjee, Rema Hanna, Benjamin A. Olken, and Julia Tobias. 2010. "Targeting the Poor: Evidence from a Field Experiment in Indonesia" Working paper.
Feb. 21st	One-sided Non-compliance Two-sided Non-Compliance	GG5 GG6	1) Nickerson, David W. 2005. "Scalable Protocols Offer Efficient Design for Field Experiments," *Political Analysis* 13:233-252. 2) De La O. 2006. "Do Poverty Relief Funds Affect Electoral Behavior? Evidence from a Randomized Experiment in Mexico." Working paper. 3) Enberg et al. 2009. "Estimation of Causal Effects in Experiments With Multiple Sources of Noncompliance."	Dunning, Thad and Lauren Harrison. 2010. "Cross-cutting Cleavages and Ethnic Voting: An Experimental Study of Cousinage in Mali." *American Political Science Review* 104(1):X-XX.
Feb. 23rd				
Feb. 28st				
Mar. 3rd	Downstream analysis	GG6	1) Miguel, Edward and Michael Kremer. 2004. "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities." *Econometrica* 72(1):159–217. 2) Gerber, Alan S., Donald P. Green, Ron Shachar. 2003. "Voting May Be Habit-Forming: Evidence from a Randomized Field Experiment." *American Journal of Political Science* 47(3):540-550	

Mar. 7th	Attrition	GG7	1) Lee, David S. 2008. "Randomized Experiments from Non-random Selection in U.S. House Elections." *Journal of Econometrics* 142 (2): 675–697. 2) Valentine, Jeffrey C. and Cathleen M. McHugh. 2007."The effects of attrition on baseline comparability in randomized experiments in education: A meta-analysis." *Psychological Methods* 12(3)268-282. 3) Behaghely, L., B. Creponz, M. Gurgandx, and T. Le Barbanchon. 2009. "Sample attrition bias in randomized experiments: A tale of two surveys." Working paper.	1) Zhang, Junni L. and Donald B. Rubin. 2003. "Estimation of Causal Effects via Principal Stratification When Some Outcomes Are Truncated by "Death"". *Journal of Educational and Behavioral Statistics* 28(4):353-368. 2) Clingingsmith, David, Asim Ijaz Khwaja, and Michael Kremer. 2008. "Estimating the Impact of the Hajj: Religion and Tolerance in Islam's Global Gathering". RWP08-022
Mar. 9th				
Mar. 21st	Interference	GG8	List, John A. and Michael K. Price, "The Role of Social Connections in Charitable Fundraising: Evidence from a Natural Field Experiment," *Journal of Economic Behavior and Organization*, (2009), 69(2), pp. 160-169.	1) Olken, Benjamin A. 2007. "Monitoring Corruption: Evidence from a Field Experiment in Indonesia." *Journal of Political Economy* 115(2):200-249. 2) Karlan, Dean and Margaret A. McConnell. 2009. "Hey Look at Me:The Effect of Giving Circles on Giving." Working Paper.
Mar. 23rd	Strategies		Sinclair, Betsy, Margaret McConnell, Donald P. Green. (2010). "Detecting Spillover in Social Networks: Design and Analysis of Multi-level Experiments." Working paper.	
Mar. 28th	Heterogeneity	GG9	Peterson and Howell vs. Krueger and Zhu	1) Butler, Daniel and David W. Nickerson. 2010. ""Can Learning Constituency Opinion Affect how Legislators Vote? Results from a Field Experiment". Working Paper. 2) Chong, Alberto, Ana L. De La O, Dean Karlan, and Leonard Wantchekron. 2010. "Information Dissemination and Local Governments' Electoral Returns, Evidence from a Field Experiment in Mexico." Working paper.
Mar. 30th			1) Green, Donald P. and Holger Kern. 2010. "Modeling Heterogeneous Treatment Effects in Large-scale Experiments Using Bayesian Additive Regression Trees" 2) Feller, Avi and Chris C. Holmes. 2009. "Beyond Toplines: Heterogeneous Treatment Effects in Randomized Experiments."	
Apr. 4th	Mediation	GG10	1) Bullock, John G., Donald P. Green, and Shang E. Ha. 2010. "Yes, But What's the Mechanism? (Don't Expect an Easy Answer)." *Journal of Personality and Social Psychology* 98 (April): 550-58. 2) Imai, Kosuke, Luke Keele, and Teppei Yamamoto. (2010). ``Identification, Inference, and Sensitivity Analysis for Causal Mediation Effects." Statistical Science 25(1):51-71. 3) Druckman, James N. 2004. "On The Limits Of Framing Effects: Who Can Frame?" *The Journal of Politics* 63:1041-1066.	Berger, Daniel. 2010. ""Taxes, Institutions and Governance: Evidence from Colonial Nigeria."
Apr. 6th				
Apr. 11th	Extrapolating from Sample	GG11	1) Kam, Cindy and James N. Druckman. 2010. "Students as Experimental Participants: A Defense of the 'Narrow Data Base," in James N. Druckman, Donald P. Green, James H. Kuklinski, and Arthur Lupia, eds., *Handbook of Experimental Political Science*. 2) Huber, Gregory A. and John S. Lapinski. 2006. "The "Race Card" Revisited: Assessing Racial Priming in Policy Contests." *American Journal of Political Science* 50 (2): 421-440. 3) Gordon, M.E., L.A. Slade, and N. Schmitt. 1986. "The 'Science of the Sophomore' Revisited: From Conjecture to Empiricism." *Academy of Management Review* 11: 191-207.	Wantchekon, Leonard. 2003. "Clientelism and Voting Behavior: Evidence from a Field Experiment in Benin". *World Politics* 55(April):399–422.
Apr. 13th				
Apr. 18th	Regression Discontinuity		1) Lee, David S. Thomas Lemieux. 2010. "Regression Discontinuity Designs in Economics",*Journal of Economic Literature* 48(2)281-355. 2) 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. 3) Green, Donald P., Terence Y. Leong, Holger L. Kern, Alan S. Gerber, and Christopher W. Larimer. 2009. "Testing the Accuracy of Regression Discontinuity Analysis Using Experimental Benchmarks." *Political Analysis* 17(4): 400-417.	1) Broockman, David E. 2009. "Do Congressional Candidates Have Reverse Coattails? Evidence from a Regression Discontinuity Design." *Political Analysis* 17(4) :418–434. 2) Campbell, Donald T. and Julian Stanley. *Experimental and Quasi-Experimental Designs for Research.* (Any edition)
Apr. 20th				
April 27th				

May 2nd	Natural Experiments		1) 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(434):444-455. 2) Beaman, Lori, Raghabendra Chattopadhyay, Esther Duflo, Rohini Pande and Petia Topalova. "Powerful Women: Does Exposure Reduce Bias?" Working paper. 3) Doherty, Daniel J., Alan S. Gerber, and Donald P. Green. 2006. "Personal Income and Attitudes toward Redistribution: A Study of Lottery Winners." *Political Psychology*. 27(3):441-458.	1) Hyde, Susan D. 2007. "The Observer Effect in International Politics: Evidence from a Natural Experiment." *World Politics* 60(1):37-63. 2)
May 4th	Survey/Lab Experiments		1) Fearon, James D., Macartan Humphreys, and Jeremy M. Weinstein. 2009. "Can Development Aid Contribute to Social Cohesion after Civil War? Evidence from a Field Experiment in Post-Conflict Liberia" American Economic Review: Papers & Proceedings 99(2):287–291.	1) Huber, Gregory A. and John S. Lapinski. 2006. "The "Race Card" Revisited: Assessing Racial Priming in Policy Contests." *American Journal of Political Science* 50(2):421–440. 2) Mendelberg, Tali. 2008. "Racial Priming Revived." *Perspectives on Politics* 6(1):109-123. 3) Huber, Gregory A. and John S. Lapinski. 2008. "Testing the Implicit-Explicit Model of Racialized Political Communication." *Perspectives on Politics* 6(1):125-134