Evaluation Design

Advanced Empirical Methods for Policy Analysis (PA 397C).
Fridays 9am-12pm, SRH 3.316/350

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Overview

Statistical models have grown increasingly sophisticated, yet comparatively little progress has been made in evaluating and predicting the results of policy changes. This course takes a back-to-basics approach that emphasizes collecting the right data up front, so that the statistical model can be simple and the interpretation clear. Topics include sampling, confounding, effect size, causality, and real and natural experiments.

Prerequisites

We assume acquaintance with basic statistical inference including differences between means (e.g., t tests), differences between proportions (e.g., chi-square tests), and normal linear regression.

Course Materials

Most readings will be posted to Blackboard, but we also use two books (Kalton 1983; Hamilton 2008).

- Kalton (1983) is available for about $20 at Amazon or other online bookstores. A free ebook version is available through the UTexas libraries at http://tinyurl.com/kalton1983.
- Hamilton (2008) is available used for less than $30 at Amazon or other online bookstores. Note that Hamilton's book describes Stata version 10. There is a new edition that describes Stata version 12 for more than $100, but I am going to try teaching from the old version. Be prepared to make small changes related to the version change.

Some assignments will require use of Stata software. You have several ways to access Stata:

- *Strongly recommended*. You can purchase discounted copies through the Stata Grad Plan. See http://www.stata.com/order/new/edu/gradplans/direct-ship-pricing/. Having your own copy on a laptop computer will be very useful for in-class exercises.
- Stata is installed on all 14 computers in the cluster near SRH 3.263. You need to use these computers in Windows mode (not Mac).
- You can access Stata via the SSC's StatApps server. For information on the server, see the following page: http://ssc.utexas.edu/software/stat-apps-server.

Some classroom sessions will involve simultaneous editing of spreadsheets. Please open a Google Docs account.

Grading

Weekly assignments	70% (~5% per assignment)
Final exam	30% (cumulative)

Some weekly assignments will emphasize data analysis, while others will emphasize critical reading of research. Weekly assignments are due ahead of class via email. Late assignments receive half credit.

The date of the final exam is not yet scheduled. It will be known sometime in February.

Students interested in carrying out original research can substitute a paper for the final exam. Details will be worked out by arrangement with the instructor.

Schedule

Week	Fri	Topic	Readings
1	Jan 18	*Course overview*	
2	Jan 25	Preliminaries	(Hamilton 2008, chapters 1-2 and pages 135-139, or 2012 chapters 1-2, 5)
3	Feb 1	Sampling	(Hamilton 2008, chapter 14, or 2012, chapter 4; Kalton 1983, chapters 1-2 & 4-5)
4	Feb 8	Causality, counterfactuals, and policies	(Holland 1986; Campbell 1969)
5	Feb 15	Simple randomized experiments	(Rosenbaum 2009, chapter 2.1-2.3.2; Dobbie and Fryer 2009)
6	Feb 22	Complex randomized experiments	(Bloom 2006; Schanzenbach 2006)
7	Mar 1	Regression and causality	(Berk 2004; Roscigno 1998)
8	Mar 8	As-if random assignment	(Dunning 2004)
*	*Mar 15*	*Spring break*	*None*
9	Mar 22	Logistic regression	(Long 1997, chapter 3; Hamilton 2008, chapter 10, or 2012 chapter 9)
10	Mar 29	Regression discontinuity	(Bloom 2009)
11	Apr 5	Stratification	(Greenland and Rothman 2008)
12	Apr 12	Propensity matching	(Luellen, Shadish, and Clark 2005)
13	Apr 19	Propensity matching vs. regression	(Shadish, Clark, and Steiner 2008; Peikes, Moreno, and Orzol 2008)
14	Apr 26	Crossover designs	(Allison 2009, chapters 1-2)
15	May 3	Review	

Readings

Allison, Paul D. 2009. *Fixed Effects Regression Models*. 1st ed. Sage Publications, Inc.

Berk, Richard A. 2004. "Causal Inference for the Simple Regression Model." in *Regression analysis: a constructive critique*. Thousand Oaks, CA: SAGE.

Bloom, Howard S. 2009. “Modern Regression Discontinuity Analysis: - Abstract.” *MDRC Working Paper*. Retrieved January 12, 2011 (http://www.mdrc.org/publications/539/abstract.html).

Campbell, Donald T. 1969. “Reforms as experiments.” *American Psychologist* 24(4):409–429. Retrieved April 21, 2011.

Dobbie, Will, and Roland G. Fryer. 2009. *Are High Quality Schools Enough to Close the Achievement Gap? Evidence from a Social Experiment in Harlem*. Cambridge, MA: National Bureau of Economic Research.

Dunning, Thad. 2004. “Design-based inference: Beyond the pitfalls of regression analysis.” Pp. 206–242 in *Rethinking social inquiry: diverse tools, shared standards*, edited by Henry E. Brady and David Collier. Rowman & Littlefield.

Greenland, Sander, and Kenneth J. Rothman. 2008. “Introduction to stratified analysis.” Pp. 258–282 in *Modern Epidemiology*. Lippincott Williams & Wilkins.

Hamilton, Lawrence C. 2008. *Statistics with STATA: Version 10*. 7th ed. Duxbury Press.

Hamilton, Lawrence C. 2012. *Statistics with STATA: Version 12*. 8th ed. Duxbury Press.

Holland, Paul W. 1986. “Statistics and Causal Inference.” *Journal of the American Statistical Association* 81(396):945–960. Retrieved April 21, 2011.

Kalton, Graham, ed. 1983. *Introduction to Survey Sampling*. 1st ed. Sage Publications, Inc.

Long, J. Scott. 1997. *Regression Models for Categorical and Limited Dependent Variables*. 1st ed. Sage Publications, Inc.

Luellen, Jason K., William R. Shadish, and M. H. Clark. 2005. “Propensity Scores An Introduction and Experimental Test.” *Evaluation Review* 29(6):530–558. Retrieved April 10, 2013.

Peikes, Deborah N, Lorenzo Moreno, and Sean Michael Orzol. 2008. “Propensity Score Matching: A note of caution for evaluators of social programs.” *The American Statistician* 62(3):222–231. Retrieved April 6, 2011.

Roscigno, Vincent J. 1998. “Race and the Reproduction of Educational Disadvantage.” *Social Forces* 76(3):1033–1061. Retrieved May 2, 2010.

Rosenbaum, Paul R. 2009. *Design of Observational Studies*. 1st ed. Springer.

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):1334–1344.