

TOPICS IN POLITICAL DATA ANALYSIS

PSCI 7108.001
FALL 2008
WEDNESDAYS, 1 - 3:30 PM

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OFFICE HOURS: Thursdays, 10 a.m. to noon

This course is designed to build on some of the skills you learned in your prior courses on political science research and analysis. In particular, we divide our time between three different topics. We will begin with a unit on experimental design and analysis. Our focus will be on how to design and implement experiments as well as a survey of some of the analytical tools common to experimental research. Next, we will study multilevel models, considering the unique problems and challenges that occur with hierarchical data. Finally, we will spend the last unit of the course considering time series data and the best approaches for analyzing the dynamics of time series.

Given the ratio of topics to weeks of the semester, we will not have time to richly develop each topic. Instead, we will spend more time on applications and hands-on data analysis than we spend on the mathematics and statistics behind the specific methods. Those interested in developing greater specialization in a given topic are encouraged to contact the instructor for additional background readings on a topic. While we will not be writing R code or developing our own estimators in this course, you should have a basic familiarity with probability, statistics, and the classic linear model. If you have successfully completed PSCI 7085 and PSCI 7095, you should have sufficient background for the topics covered in the course.

reading assignments

Readings for the course will be drawn from several texts as well as journal articles. Journal articles are accessible through the library's website, while book chapters have been placed on the library's e-reserves. In addition, you should also purchase the following required texts. The recommended texts are also excellent references that will be useful additions to your bookshelf.

required texts:

Shadish, William R., Thomas D. Cook, and Donald T. Campbell. 2001. *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston: Houghton Mifflin.

Snijders, Tom A.B., and Roel Bosker. 1999. *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*. Thousand Oaks, CA: Sage Publications.

recommended texts:

Enders, Walter. 2003. *Applied Econometric Time Series*. 2nd ed. New York: Wiley.

Field, Andy, and Graham Hole. 2003. *How to Design and Report Experiments*. Thousand Oaks, CA: Sage Publications.

Gujarati, Damodar N. 2003. *Basic Econometrics*. New York: McGraw-Hill.

CULearn is your friend

This syllabus, assignments, data sets, and other exciting material can be accessed on the class website on culearn.colorado.edu.

requirements

homework and participation (60% of your final grade)

It is recommended that you complete each week's readings before that week's class session.

Each week, you will also be responsible for a homework assignment designed to help you practice the skills learned in class. Some of these assignments will be written memos while others will be designed as problem sets. While you are welcome to consult with your classmates on the homework assignments, the final work you turn in must be your own. Late homework assignments will not be accepted.

research paper (40% of your final grade)

You will also develop a research paper that incorporates one of the methods discussed in class. In style, this paper should resemble the journal articles you have read in your classes. The research paper will be due the last week of classes. Additional guidelines will be detailed in a separate handout.

special accommodations

If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs may be addressed. You can contact the Disability Services office for more information at www.colorado.edu/disabilityservices.

some important comments on academic integrity

- Plagiarism and other academic dishonesty will not be tolerated. If you are not familiar with the rules of citing sources in written work or what constitutes plagiarism, you should contact me or refer to the University Honor Code at www.colorado.edu/academics/honorcode. Academic dishonesty will result in an F in the course and referral to the Honor Court for additional non-academic sanctions.
- All papers are expected to be original work, not previously or simultaneously handed in for credit in another course (unless prior approval of all instructors involved is obtained).

COURSE OUTLINE

1. Introduction to the course
Wednesday, August 27

EXPERIMENTS

2. Why conduct experiments. Validity and reliability.
Wednesday, September 3
 - Shadish, Cook, and Campbell, Chapters 1-3.
3. Designing experiments
Wednesday, September 10
 - Shadish, Cook, and Campbell, Chapter 8.
4. Conducting experimental research
Wednesday, September 17
 - Shadish, Cook, and Campbell, Chapters 9-10.
5. Analyzing experimental data
Wednesday, September 24
 - Field and Hole, Chapters 6 and 7.
6. Some things to think about when designing experiments
Wednesday, October 1
 - Shadish, Cook, and Campbell, Chapter 14.
 - Horiuchi, Yusaku, Kosuke Imai, Naoko Taniguchi. 2007. "Designing and Analyzing Randomized Experiments: Application to a Japanese Election Survey Experiment." *American Journal of Political Science* 51(3):669-687.

MULTILEVEL MODELING

7. Why use multilevel modeling
Wednesday, October 8
 - Snijders and Bosker, Chapters 1-3.
8. Specification of multilevel models
Wednesday, October 15
 - Snijders and Bosker, Chapters 4-6.
 - Steenbergen, Marco R., and Bradford S. Jones. 2002. "Modeling Multilevel Data Structures." *American Journal of Political Science* 46(1):218-37.

9. Estimation and diagnostics for multilevel models

Wednesday, October 22

- Snijders and Bosker, Chapters 7, 9.
- Rahn, Wendy M., and Thomas J. Rudolph. 2005. "A Tale of Political Trust in American Cities." *Public Opinion Quarterly* 69:530-560.

10. Nonlinear multilevel models

Wednesday, October 29

- Snijders and Bosker, Chapter 14.

TIME SERIES ANALYSIS

11. Why use time series and the special problems of time series analysis

Wednesday, November 5

- Gujarati, Damodar N. 2003. *Basic Econometrics*. New York: McGraw-Hill. Chapter 17.

12. Regression models for dynamic causation

Wednesday, November 12

- Beck, Nathaniel. 1991. "Comparing Dynamic Specification: The Case of Presidential Approval." *Political Analysis* 3:51-88.
- Keele, Luke, and Nathan Kelly. "Dynamic Models for Dynamic Theories: The Ins and Outs of Lagged Dependent Variables." *Political Analysis* 14:186-205.

13. More about time series estimation, causality tests

Wednesday, November 19

- Freeman, John R. 1983. "Granger Causality and Time Series Analysis of Political Relationships." *American Journal of Political Science* 27: 327-358.

Class does not meet – fall break

Wednesday, November 26

14. Integration and cointegration

Wednesday, December 3

- Murray, Michel P. 1994. "A Drunk and Her Dog: An Illustration of Cointegration and Error Correction." *The American Statistician* 48:37-9.
- De Boef, Suzanna, and Luke Keele. 2008. "Taking Time Seriously." *American Journal of Political Science* 52(1): 184-200.

15. Pooled cross-sectional time series

Wednesday, December 10

- Stimson, James A. 1985. "Regression Models in Space and Time: A Statistical Essay." *American Journal of Political Science* 29: 914-947.
- Beck, Nathaniel and Jonathan N. Katz. 1995. "What to Do (and Not to Do) with Time Series Cross-Section Data." *American Political Science Review* 89:634-647.
- Beck, Nathaniel. 2007. "From Statistical Nuisances to Serious Modeling: Changing How We Think About the Analysis of Time-Series-Cross-Section Data." *Political Analysis* 15(2): 97-100.