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Office Hours:
Tuesdays & Thursdays 3-4,
and by appointment

POLI 211: Quantitative Analysis of Political Data, II
(Spring 2013)

Course Description:

This course provides an in-depth introduction to ordinary least squares (OLS) regression analysis and its use in political science. This course represents an important first step towards being able to interpret, critique, and conduct regression analyses of political data. Much of the course will focus on the assumptions underlying OLS regression, the implications of violations of these assumptions, and solutions to these violations.

Intended Student Learning Outcomes (SLOs):

At the end of this course, students should:

1. Have a thorough understanding of the assumptions, limitations, extensions, and applications of regression analysis in political science. (corresponds with PLOs 3 and 5)
2. Demonstrate an ability to use the tools of regression analysis to test hypotheses and appropriately model political phenomena. (corresponds with PLOs 3 and 5)

General Program Learning Outcomes (PLOs) for the Political Science Graduate Emphasis:

1. A comprehensive graduate-level understanding of processes, theories, and empirical regularities in the student's major area of emphasis (Political Institutions and Political Economy or Political Cognition and Behavior).
2. A graduate-level understanding of processes, theories, and empirical regularities in the student's minor area of emphasis (Political Institutions and Political Economy or Political Cognition and Behavior).
3. Competency with contemporary social science methods used to conduct rigorous research on political phenomena.
4. Effective scientific communication skills, especially the ability to convey complex concepts and information in a clear and concise manner.
5. The ability to initiate and conduct independent research that makes an original contribution to political science knowledge of a quality that can be published in a peer reviewed outlet.

Prerequisite:

POLI 210 (Quantitative Analysis of Political Data, I) is a prerequisite for this course.

Requirements:

1. There will be homework assignments that require you to apply the concepts and tools learned in class to real political data. In order to complete these homework assignments, you will need access to Stata. These assignments are based on the assumption that you have a working familiarity with this software. These assignments will constitute 50% of your grade for the course.

2. You will write an original research paper in which you identify an interesting research question, provide a theoretical answer to the question you pose, test your theoretical expectations by utilizing OLS regression to analyze relevant data (while demonstrating sensitivity to the assumptions of OLS), and interpret the results. Your paper should be the length of a short article (i.e., 15-20 pages) and should approach the quality of a paper that could be presented at a political science conference. I require that you meet with me to talk with me about your paper topic by the fourth week of the semester. Your paper will represent 45% of your course grade.

3. Students will present their papers at the end of the semester. We will emulate a conference setting, which means that each of you will get approximately 10-15 minutes to present your paper. I will invite other members of the faculty to join us, hear your presentations, and hopefully ask questions. Your presentation will be worth 5% of your course grade.

Readings:

*Required***:**

Gujarati, Damodar N. 2008. *Basic Econometrics*. 5th Edition. McGraw-Hill.

Additional required readings are listed below and will be posted on UCMCrops under "Resources."

Recommended:

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

Cameron, A. Colin, and Pravin K. Trivedi. 2009. *Microeconometrics Using Stata*. Stata Press.

Kennedy, Peter. 2008. *A Guide to Econometrics*. 6th Edition.

Wooldridge, Jeffrey M. 2009. *Introductory Econometrics: A Modern Approach*. 5th ed.

Additional recommended readings are listed below.

Class Schedule:

1/22: Review of the basic two variable OLS model

Required:

Gujarati, Introduction, Chapters 1 and Chapter 2

1/29: Estimation and an introduction to multiple regression

Required:

Gujarati, Chapters 3, 4, and Sections 7.1 - 7.4 of Chapter 7

2/5: Hypothesis testing

Required:

Gujarati, Chapter 5 and Sections 8.1 - 8.6 of Chapter 8

Recommended:

Meehl, P.E. 1967. "Theory-Testing in Psychology and Physics: A Methodological Paradox." *Philosophy of Science* 34:103-115.

Serlin, R.C., and D.K. Lapsley. 1985. "Rationality in Psychological Research: The Good Enough Principle." *American Psychologist* 40:73-83.

2/12: Model fit, predicted values, and residuals

*** Assignment 1 is due ***

Required:

Gujarati, Sections 7.5 - 7.8 of Chapter 7.

2/19: Model specification I (linearity, dummy variables)

Required:

Gujarati, Chapter 9

Recommended:

Hardy, Melissa. 1993. *Regression with Dummy Variables*. Newbury Park, CA: Sage Publications.

2/26:   Model specification II (interaction terms)

*** Assignment 2 is due ***

Required:

Gujarati, Chapter 15

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. "Understanding Interaction
    Models: Improving Empirical Analyses." *Political Analysis* 14(1):63-82.

3/5:   Model specification III (omitted variables, picking the "best" model)

Required:

Gujarati, Chapters 13 and 14.

3/12:   Outliers and selection problems

*** Assignment 3 is due ***

Required:

Bollen, Kenneth, and Robert W. Jackman. 1985. "Regression Diagnostics: An Expository
    Treatment of Outliers and Influential Cases." *Sociological Methods & Research* 13:510-
    542.

Recommended:

Heckman, James J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica*
    47:153-161.

3/19:   Multicollinearity and heteroscedasticity

Required:

Gujarati, Chapters 10 and 11.

Recommended:

Long, J. Scott. 2000. "Using Heteroscedasticity Consistent Standard Errors in the Linear
    Regression Model." *The American Statistician* 54:217-224.

4/2:   Autocorrelation

*** Assignment 4 is due ***

Required:

Gujarati, Chapter 12

Recommended:

Haining, Robert. 2003. *Spatial Data Analysis: Theory and Practice*. Cambridge: Cambridge University Press.

4/9:   Time series models

Required:

Gujarati, Chapters 17 and 21

Recommended:

Enders, Walter. 2009. *Applied Econometric Time Series*. 3rd Edition. New York: Wiley.

Freeman, John R., John T. Williams, and Tse-min Lin. 1989. "Vector Autoregression and the Study of Politics." *American Journal of Political Science* 33(4):842-877.

Granger, Clive W.J., and Paul Newbold. 1974. "Spurious Regression in Econometrics." *Journal of Econometrics* 2:111-130.

Pevehouse, Jon C., and Jason D. Brozek. 2008. "Time Series Analysis." In *The Oxford Handbook of Political Methodology*, Eds. Janet M. Box-Steffensmeier, Henry E. BRady, and David Collier. New York: Oxford University Press.

4/16:   Panel data models

*** Assignment 5 is due ***

Required:

Gujarati, Section 15.12 in Chapter 15.

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.

Stimson, James A. 1985. "Regression in Space and Time: A Statistical Essay." *American Journal of Political Science* 29:914-947.

Recommended:

Beck, Nathaniel. 2008. "Time-Series Cross-Section Methods." In *The Oxford Handbook of Political Methodology*, Eds. Janet M. Box-Steffensmeier, Henry E. Brady, and David Collier. New York: Oxford University Press.

4/23: Causal inference issues

Required:

Sovey, Allison J., and Donald P. Green. 2011. "Instrumental Variables Estimation in Political Science: A Reader's Guide." *American Journal of Political Science* 55:188-200.

Recommended:

Gujarati, Chapters 18, 19, and 20.

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): 444-455.

Granger, C.W.J. 1969. "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods." *Econometrica* 37:424-438.

Murray, Michael P. 2006. "Avoiding Invalid Instruments and Coping with Weak Instruments." *Journal of Economic Perspectives* 20(4):111-132.

4/30: Intro to MLE and limited dependent variable models

*** Assignment 6 is due ***

Required:

Gujarati, Chapter 16.

Recommended:

King, Gary. 1989. *Unifying Political Methodology: The Likelihood Theory of Statistical Inference*. New York: Cambridge University Press.

Long, J. Scott. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, CA: Sage Publications.

5/7: Student Presentations