

PSC 702
Advanced Research Design and Methodology
Spring 2006

Instructor: Dr. David Damore
Time: W 5:30 – 8:20
Location: WRI B224

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Scope and Purpose:

Building on the material taught in PSC 701, this course seeks to instill the skills necessary to evaluate and conduct systematic research in political science using quantitative methods. The course is divided into three parts. Part one (roman numerals one through three below) examines the role of quantitative methods in the research process and introduces basic statistical techniques and concepts (e.g., descriptive statistics, statistical significance, and bivariate regression). Part two covers (roman numerals through four and five below) the course's main emphasis: an in depth treatment of multivariate regression analysis, with particular attention given to the causes, consequences, and remedies for assumption violations. Part three (roman numerals through six and seven below) introduces students to more advanced statistical techniques including robust regression, time-series analysis, and maximum likelihood estimation. Upon completion, students should be able to read, understand, and evaluate original scholarly research employing these techniques, as well as develop, estimate, and interpret their own statistical models. The course is taught at a level that assumes minimal prior knowledge of statistics and basic math skills. With this said, success in this course requires that students work with the material on a daily basis. Also, because the course builds incrementally, thorough knowledge of introductory material is essential for comprehension of later material.

Course Material:

Required

Berry, William D., and Stanley Feldman. 1985. *Multiple Regression in Practice*. Newbury Park: Sage Publications.

Gujarati, Damodar. 2006. *Essentials of Econometrics*, 3rd edition. Boston: Irwin McGraw-Hill.

Levin, Jack, and James Alan Fox. 2004. *Elementary Statistics in Social Research, The Essentials*. Boston: Pearson Education.

Lewis-Beck, Michael S. 1980. *Applied Regression: An Introduction*. Newbury Park: Sage Publications.

Recommended

Cronk, Brian. 2004. *How to Use SPSS: A Step-by-Step Guide to Analysis and Interpretation*. Glendale, CA: Pyrczak Publishing

Other Material

Course Reader and Lecture Notes (accessible via WebCt; articles and book chapters that are not available electronically may be obtained from the instructor for photocopying)

For information about SPSS (if you do not purchase the Cronk text):

[http://wadsworth.com/sociology_d/templates/student_resources/0534630367_babbie/pri
mers/SPSS_11.0_complete/index.html#toc](http://wadsworth.com/sociology_d/templates/student_resources/0534630367_babbie/pri
mers/SPSS_11.0_complete/index.html#toc)

Students need to have access to SPSS to complete course assignments. All of the computer labs on campus have SPSS. Students also may purchase an annual SPSS license through UNLV (<http://ccs.unlv.edu/ccs/SoftwareLicense/SPSS.asp>). If you have access to an older version of SPSS, that will suffice.

Calculator

Requirements:

1. Homework (35%): Several assignments made throughout the semester related to topics covered in lecture. The assignments include a combination of problem solving (both by hand and with SPSS), application, and interpretation. All homework may be resubmitted within one week's time for up to half of deducted amount.
2. Exams (55%): Two take home exams; the first of which is worth 15% and will occur after coverage of bivariate regression. The second exam is worth 40% and will occur during finals week.
3. Participation (10%): Participation is based upon students' attendance, preparation, and willingness to enter into discussions as they arise. More to the point, class time provides you with the opportunity to ask questions and receive clarification, as well as provides me with opportunity to qualitatively assess your level of understanding and engagement with course material.

Policies and Miscellaneous:

1. The honor code is strictly enforced. Any evidence of collaboration, plagiarism, or other violations of the honor code will be immediately referred to the proper authority. The only exception to this is that students may help one another in completing the homework assignments (although all students must turn in their own assignment).

2. Make-ups are granted for documented illnesses or deaths in the immediate family. **Late work is not accepted.** If you need to miss class because of observance of a religious holiday or because you represent UNLV at any official extracurricular activity you must notify me ASAP.
3. If you choose to attend lecture, plan to do so for its duration. Do not disrupt class by showing-up late, leaving early, or talking throughout. Repeated violations, including cell phone or pager interruptions and text messaging, will impact adversely upon your final grade. **Given the nature of course material, students who do not attend class will do poorly.**
4. While the amount of reading for this class is less than what is typically assigned in graduate courses, it is far more technical and dense than you may be accustomed to. As a consequence, it may take multiple readings to comprehend concepts presented in the readings. It is expected that reading assignments will be completed prior to the lectures for which they are assigned.
5. If you have a documented disability that may require assistance, you need to contact the Disability Resource Center (DRC) for coordination in your academic accommodations (the Disability Resource Center is located in Reynolds Student Services Complex, Room 317, 895-0866).
6. Cut-offs for final grades are as follows:

A = 100–94.0	B = 86.9–84.0	C = 76.9–74.0	D = 66.9-64.0
A- = 93.9–90.0	B- = 83.9–80.0	C- = 73.9–70.0	D- = 63.9-60.0
B+ = 89.9–87.0	C+ = 79.9–77.0	D+ = 69.9– 67.0	F = 59.9-0

Course Organization and Reading Assignments

My teaching strategy is to move through the material at a pace that insures that all students understand what is going on. Moreover, the difficulty of course material is variable which should allow us to move quickly in some cases, while in other instances the pace may slow. As a consequence, I have organized the courses in terms of topics, as opposed to fixed dates.

I. Introduction

1. Course Overview
2. Introduction to SPSS

Gujarati: chapter 1
 Levin and Fox: chapters 1 and 2
 Reader: “The Research Process”

II. Basic Statistical Concepts

1. Descriptive statistics
2. Probability distributions, statistical significance, and hypothesis testing
3. Primer on basic inferential statistics

Gujarati: chapters 2, 3, 4, 5

Levin and Fox: chapters 2 – 8; skim chapters 9 and 12

Reader: “‘The Most Liberal Senator’? Analyzing and Interpreting Congressional Roll Calls”

Suggested Reading

Reader: “Political Innumeracy: Encounters with Coincidence, Improbability, and Chance”

III. Bivariate Regression

1. Correlation and covariance
2. Assumptions and criteria for good estimators
4. Interpretation and inference

Gujarati: chapters 6 and 7

Levin and Fox: chapters 10 and 11

Lewis-Beck: chapters 1 and 2

***** Exam 1 *****

IV. Multiple Regression

1. Introduction
2. Assumptions
3. Interpretation and inference

Berry and Feldman: chapter 1

Gujarati: chapter 8

Lewis-Beck: pages 47-57, 63-65, 71-74

Reader: “Sophomore Surge in State Legislative Elections, 1968-86.”

Suggested Reading

Reader: “What Does ‘Explained Variance’ Explain?: Reply,” “How Not to Lie with Statistics: Avoiding Common Mistakes in Quantitative Political Science,” “‘Truth’ Is Stranger than Prediction, More Questionable than Causal Inference,” and “The R-Squared: Some Straight Talk”

V. Violations of Regression Assumption: Causes, Consequences, and Remedies

1. Specification and measurement error

Berry and Feldman: chapters 2 and 3
Gujarati: chapter 11

Suggested Reading

Reader: “Let’s Put Garbage-Can Regressions and Garbage-Can Probits Where They Belong,” and “The Phantom Menace: Omitted Variable Bias in Econometric Research”

2. Multicollinearity, nonlinearity, and nonadditivity

Berry and Feldman: chapters 4 and 5
Gujarati: chapters 9, 10, 12
Lewis-Beck: 58-62, 66-70

Reader: “The Effect of the AFL-CIO’s ‘Voter Education’ Campaigns on the 1996 House Elections” and “Stereotype Threat and Race of Interviewer Effects in a Survey on Political Knowledge”

Suggested Reading

Reader: “In Defense of Multiplicative Terms in Multiple Regression Equations”

3. Outliers, leverage points, heteroskedasticity and autocorrelation

Berry and Feldman: chapters 6 and 7
Gujarati: chapters 13, 14

Reader: “A Dynamic Model of Candidate Fundraising: The Case of Presidential Nomination Campaigns,” “Outlying and Influential Data,” and “Political Institutions and Voter Turnout in the Industrial Democracies”

Suggested Reading

Reader: “Regression Diagnostics: An Expository Treatment of Outliers and Influential Cases”

VII. Extensions of the Basic Regression Model

1. Pooled models

Reader: “Explaining Japanese Aid Policy in Latin American: A Test of Competing Theories”

2. Causal modeling

Reader: "The Multi-Layered Impact of Public Opinion on Capital Punishment Implementation in the American States"

3. Robust regression

Reader: "Concepts and Suggestions for Robust Regression Analysis"

4. Time series analysis

Gujarati: chapter 16.1 – 16.5

Reader: "Can Government Regulate Safety? The Coal Mining Example" and "Time Series Analysis Regression Techniques, 2nd ed."

Suggested Reading

Reader: "What to Do (and What Not to Do) With Time-Series Cross-Section Data" and "Regression in Time and Space: A Statistical Essay"

VIII. Beyond Regression: Maximum Likelihood Estimation (MLE)

1. The theory and mechanics of MLE
2. Analyzing dichotomous dependent variables: logit and probit

Gujarati: 16.6

Reader: "Probing the Bounds of Conventional Wisdom: A Comparison of Regression, Probit, and Discriminant Analysis" and "The Dynamics of Issue Ownership in Presidential Campaigns"

Course Readings

Applications

Clinton, Joshua D., Simon Jackman, and Doug Rivers. 2004. "The Most Liberal Senator"? Analyzing and Interpreting Congressional Roll Calls." *PS: Political Science and Politics* 37:805-811.

Damore, David F. 2004. "The Dynamics of Issue Ownership in Presidential Campaigns." *Political Research Quarterly* 57:391-397.

Damore, David F. 1997. "A Dynamic Model of Candidate Fundraising: The Case of Presidential Nomination Campaigns." *Political Research Quarterly* 50:343-364.

- Davis, Darren W., and Brian D. Silver. 2003. "Stereotype Threat and Race of Interviewer Effects in a Survey of Political Knowledge." *American Journal of Political Science* 47:33-45.
- Holbrook, Thomas M., and Charles M. Tidmarch. 1991. "Sophomore Surge in State Legislative Elections, 1968-86." *Legislative Studies Quarterly* 16:49-63.
- Jackman, Robert W. 1987. "Political Institutions and Voter Turnout in the Industrial Democracies." *American Political Science Review* 81:405-423.
- Jacobson, Gary C. 1999. "The Effect of the AFL-CIO's 'Voter Education' Campaigns on the 1996 House Elections." *The Journal of Politics* 61:185-94.
- Lewis-Beck, Michael S., and John R. Alford. 1980. "Can Government Regulate Safety? The Coal Mining Example." *American Political Science Review* 74:745-756.
- Norrander, Barbara. 2000. "The Multi-Layered Impact of Public Opinion on Capital Punishment Implementation in the American States." *Political Research Quarterly*. 53:771-793.
- Tuman, John P., and Craig F. Emmert. 2001. "Explaining Japanese Aid Policy in Latin America: A Test of Competing Theories." *Political Research Quarterly* 54:87-101.

Statistics (Required)

- Aldrich, John, and Charles F. Cnudde. 1975. "Probing the Bounds of Conventional Wisdom: A Comparison of Regression, Probit, and Discriminant Analysis." *American Journal of Political Science* 19:571-608.
- Asher, Herbert B. 1984. "The Research Process." In *Theory-Building and Data Analysis in the Social Sciences*, eds Herbert B. Asher, Herbert F. Weisberg, John H. Kessel, and W. Phillips Shively. Knoxville: University of Tennessee Press.
- Fox, John. 1991. "Outlying and Influential Data." In *Regression Diagnostics*. Newbury Park: Sage Publications.
- Ostrom, Charles W. Jr. 1990. *Time Series Analysis Regression Techniques*, 2nd ed. Newbury Park: Sage Publications. Chapters 1, 2, and 4.
- Western, Bruce. 1995. "Concepts and Suggestions for Robust Regression Analysis." *American Journal of Political Science* 29:786-817

Statistics (Suggested)

- Achen, Christopher H. 2005. "Let's Put Garbage-Can Regressions and Garbage-Can Probits Where They Belong." *Conflict Management and Peace Science* 22:327-39.
- Achen, Christopher H. 1990. "What Does 'Explained Variance' Explain?: Reply." In *Political Analysis*, Volume 2. Ann Arbor: The University of Michigan Press.
- Beck, Nathaniel, and Jonathan N. Katz. 1995. "What to Do (and What Not to Do) With Time-Series Cross-Section Data." *American Political Science Review* 89:634-647.
- Bollen, Kenneth A., and Robert W. Jackman. 1990. "Regression Diagnostics: An Expository Treatment of Outliers and Influential Cases." In *Modern Methods of Data Analysis* eds, John Fox and J. Scott Long. Newbury Park: Sage Publications.
- Clarke, Kevin A. 2005. "The Phantom Menace: Omitted Variable Bias in Econometric Research." *Conflict Management and Peace Science* 22:341-52.
- Friedrich, Robert J. 1982. "In Defense of Multiplicative Terms In Multiple Regression Equations." *American Journal of Political Science* 26:797-833.
- King, Gary. 1991. "'Truth' Is Stranger than Prediction, More Questionable than Causal Inference." *American Journal of Political Science* 35:1047-53.
- King, Gary. 1986. "How Not to Lie with Statistics: Avoiding Common Mistakes in Quantitative Political Science." *American Journal of Political Science* 30:666-87.
- Lewis-Beck Michael S., and Andrew Skalaban. 1990. "The R-Squared: Some Straight Talk." In *Political Analysis*, Volume 2. Ann Arbor: The University of Michigan Press.
- Mock, Carol, and Herbert F. Weisberg. 1992. "Political Innumeracy: Encounters with Coincidence, Improbability, and Chance." *American Journal of Political Science* 36:1023-46.
- Stimson, James A. 1985. "Regression in Time and Space: A Statistical Essay." *American Journal of Political Science* 29:914-47.