

Political Methodology I

POLS 205

Fall 2019

Syllabus

Heather Stoll

`hstoll(at)polsci.ucsb.edu`

Office: Ellison 3715

Office Hours: R 11:00 a.m.-1:00 p.m. or by appointment

Class meeting time: T R 2:00-3:25 p.m.

Class location: Ellison 3814

1 Course Objectives

This course is designed to provide an introduction to research design and especially to quantitative political methodology for political science graduate students. We will cover core issues of research design and basic probability and statistics through multivariate linear regression from a political science perspective. This means two things: that emphasis is placed upon political science applications, and that what we will study reflects the dominant philosophies and practices of the discipline. For example, with quantitative methods very dominant in the discipline today, even if you yourself will not conduct quantitative (“large- n ”) studies, you should be familiar enough with the basic techniques to be able to understand and critique them. This course accordingly aims to start you along the paths to becoming both a consumer and producer of quantitative research. It also serves as the gatekeeper to more advanced methods courses offered in the department, particularly to PS 206, which offers a more in-depth look at linear regression and its close relations. Since I not surprisingly subscribe to the well-known axiom that you only learn data analysis by doing, we will get our hands dirty from day one. Accordingly, we will learn one of the major statistical software packages used by political scientists, R, along the way. Where possible, we will also read journal articles that illustrate or otherwise illuminate the conceptual and practical issues on the table.

2 Course and Contact Information

The syllabus, assignments, and other handouts are all available from the course Gauchospace site. Announcements will be posted to the site; it should be your first port of call if you’re unsure about what’s happening when and where.

The best way to contact me is either to come to my office hours or to send me an e-mail.

- *Office Hours:* I encourage you to stop by early in the quarter so that you can get to know me and vice versa. Don’t, in other words, feel shy about coming to see me, whether you just want to chat about the weather or have more substantive course-related issues to discuss.
- *E-mail:* I will respond within twenty-four hours to e-mails that I receive during business hours on Mondays through Thursdays (I rarely check e-mail in the evenings). I will try to answer e-mails received prior to mid-afternoon on Friday by 3:00 p.m. but may not manage to respond until Monday.

3 Prerequisites

I assume only high school algebra and a tolerance for dirty hands. Regarding the former, getting your head around the material and making your statistical software package do what you want it to do can sometimes be both frustrating and time consuming. I can only encourage you to keep trying. With persistence (and sometimes a little help), you will eventually figure it out. Trust me on this—I've been there, too. Regarding the latter, calculus is helpful since some of the material we cover makes use of it. However, don't panic: it is not necessary. I will show you some math from time to time in lecture, but this will be solely to provide you with motivating, behind-the-scenes intuition. You are not expected to be able to reproduce it in problem sets.

4 Requirements

Course requirements are six assignments. These assignments will be equally weighed except for the final assignment, which will be weighed three times as much as the others and due at the end of finals week (serving somewhat as a final project).

For some assignments, I will ask you to work alone. However, for most assignments (i.e., unless I tell you otherwise), you may work with others. In fact, I strongly encourage you to form small study groups. Yet even when you work with others, the write-ups *must be your own*. This means that you can talk through how to solve a problem with someone else, but you must then on your own (in another room, later in the day, in silence) put the solution down on paper. No late assignments will be accepted without documentation. Extensions should be arranged at least twenty-four hours in advance.

5 Required Reading Materials

There is one required text for the course:

Gujarati, Damodar N. 2005. *Essentials of Econometrics*. 3rd Edition. Boston: Irwin/McGraw-Hill. Also acceptable but less preferred is the 4th edition from 2010.

(henceforth, Gujarati). Equivalent chapters from the newer Gujarati 4th edition (2010) are shown in brackets. The third edition is obviously an older edition; the bookstore cannot obtain used copies. However, it can be ordered quickly from many used book vendors online, such as Amazon. That is accordingly the route that I recommend you take. If you are having trouble obtaining a copy, please come and talk to me about alternatives. Even older editions (such as the 2nd edition from 1999) will also work; just ask me about equivalent chapters. I have also arranged for the library to put a copy of the 4th edition on reserve.

Journal articles and other reading materials that appear on the syllabus can be obtained from the course GauchoSpace site.

6 Recommended Reading Materials

6.1 Research Design

There are many excellent texts on research design available nowadays. Here are a few general texts that I recommend:

de Vaus, David. 2001. *Research Design in Social Research*. Thousand Oaks, CA: Sage Press.

Johnson, Janet Buttolph and H. T. Reynolds, with Jason D. Mycoff. 2008. *Political Science Research Methods, 6th ed.*

Judd, Charles M., Eliot R. Smith, and Louise H. Kidder. 1991. *Research Methods in Social Relations, 6th ed.* Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.

King, Gary, Robert O. Keohane, and Sidney Verba. 1994. *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton: Princeton Univ. Press.

Manheim, Jarol B., Richard C. Rich, Lars Willnat, and Craig Leonard Brians. 2006. *Empirical Political Analysis: Research Methods in Political Science*. New York: Pearson Longman.

Shively, W. Phillips. 2009. *The Craft of Political Research, 9th ed.* London: Routledge.

Singleton, Royce A., and Bruce C. Straits. 2010. *Approaches to Social Research, 5th ed.* New York: Oxford University Press.

6.2 Quantitative Methods

Relative to the required texts, the following are of an approximately equivalent to slightly lower level of difficulty:

Achen, Christopher. 1982. *Interpreting and Using Regression*. Sage University Paper 29 (Quantitative Applications in the Social Sciences). Thousand Oaks, CA: Sage Publications.

Agresti, Alan and Barbara Finlay. 1997. *Statistical Methods for the Social Sciences*. 3rd Edition. Upper Saddle River, NJ: Prentice Hall.

Field, Andy, Jeremy Miles, and Zoe Field. 2012. *Discovering Statistics Using R*. Thousand Oaks, CA: Sage Press.

Freedman, David, Robert Pisani, and Roger Purves. 1998. *Statistics*. 3rd Edition. New York: W. W. Norton.

Wonnacott, Thomas H. and Ronald J. Wonnacott. 1990. *Introductory Statistics*. 5th Edition. New York: Wiley.

The Freedman et al. text, in particular, will be very useful for those with little background in statistics: it is a source of elementary, clear, and almost completely math-free discussions of class topics. I will include optional references to relevant chapters of this text (abbreviated as FPP in the schedule below) for those who would like to do additional, math-free “background” reading on some topics. The text by Achen is a cheap, very accessible, and short overview of linear regression

that is packed with a plethora of useful tidbits, one written by one of the greatest contemporary political methodologists. I highly recommend it.

For those desiring a more mathematically rigorous but still accessible approach to the material (i.e., some calculus and linear algebra), the following texts are good places to turn. The first, in particular, is widely regarded as one of the best textbooks on statistics ever written: from personal experience, I can say that it is well worth every penny.

Rice, John A. 1995. *Mathematical Statistics and Data Analysis*. Belmont, CA: Duxbury Press.

Bailey, Michael A. 2016. *RealStats*. New York: Oxford University Press.

Dalgaard, Peter. 2002. *Introductory Statistics with R*. New York: Springer.

Fox, John. 1997. *Applied Regression Analysis, Linear Models, and Related Methods*. Thousand Oaks, CA: Sage.

Fox, John. 2002. *An R and S-PLUS Companion to Applied Regression*. Thousand Oaks, CA: Sage.

Gelman, Andrew and Jennifer Hill. 2007. *Data Analysis Using Regression and Multi-level/Hierarchical Models*. New York: Cambridge University Press.

Gujarati, Damodar N. 2002. *Basic Econometrics*. Boston: Irwin/McGraw-Hill.

Hamilton, Lawrence. 1992. *Regression with Graphics: A Second Course in Applied Statistics*. Belmont, CA: Duxbury Press.

Imai, Kosuke. *Quantitative Social Science: An Introduction*. 2017. Princeton, NJ: Princeton University Press.

Kennedy, Peter. 2003. *A Guide to Econometrics*. 5th Edition. Cambridge: The MIT Press.

Monogan, James E. 2015. *Political Analysis Using R*. New York: Springer.

Venables, W. N. and B. D. Ripley. 1999. *Modern Applied Statistics with S-PLUS*. 3rd Edition. New York: Springer.

Textbooks such as these are usually not cheap, but you will find yourself consulting the good ones throughout your academic career. Hence, view them as investments.

7 Computing

All but the first of the assignments will require you to make use of a statistical software package to actually implement the methods that we discuss in class. You are allowed to use either **STATA** or **R**, the two most popular packages amongst political methodologists. However, in class, we will only work with **R**.

R is the open source version of the commercial software program **S-PLUS**. (In the parlance of its developers, **R** is “not unlike” **S-PLUS**.) **textttR**, on the other hand, is completely free and can be easily downloaded from www.r-project.org. Instructions for downloading and installing it will be provided to you as part of the second assignment.

8 Schedule

The tentative schedule for the course follows. Some topics will take more than a week, others less.

Introduction

Gujarati, Chapter 1 [Chapter 1].

Achen, Christopher. 2002. "Advice for Students Taking a First Political Science Graduate Course in Statistical Methods." *The Political Methodologist* 10 (2): 10–12.

Key Principles of Research Design: Measurement, Causality, and Designs

Singleton, Royce A., and Bruce C. Straits. 2010. *Approaches to Social Research, 5th ed.* New York: Oxford University Press. Chapter 5, "Measurement."

de Vaus, David. 2001. *Research Design in Social Research*. Thousand Oaks, CA: Sage Press. Excerpt from Chapter 3, "Causation and the Logic of Research Design," p. 34–39.

Johnson, Janet Buttolph and H. T. Reynolds, with Jason D. Mycoff. 2008. *Political Science Research Methods, 6th ed.* Chapter 5, "Research Design" (NOT p. 166-174).

Judd, Charles M., Eliot R. Smith, and Louise H. Kidder. 1991. *Research Methods in Social Relations, 6th ed.* Fort Worth, TX: Harcourt Brace Jovanovich College Publishers. Excerpt from Chapter 4, "Randomized Experiments," p. 75–79.

Data Gathering: Survey Methods, Participant Observation, and Content Analysis

Manheim, Jarol B., Richard C. Rich, Lars Willnat, and Craig Leonard Brians. 2006. *Empirical Political Analysis: Research Methods in Political Science*. Chapter 8, "Survey Research," and Chapter 10, "Content Analysis."

Singleton, Royce A., and Bruce C. Straits. 2010. *Approaches to Social Research, 5th ed.* New York: Oxford University Press. Chapter 11, "Field Research."

Probability and Probability Distributions

Gujarati, Chapter 2 [Appendix A].

Optional: FPP, Chapters 13 and 14.

Descriptive Statistics and Data Visualization

Gujarati, Chapter 3 [Appendix B].

Agresti, Alan and Barbara Finlay. 1997. *Statistical Methods for the Social Sciences*. 3rd Edition. Upper Saddle River, NJ: Prentice Hall. Chapter 3.

Achen, Christopher. 1977. "Measuring Representation: Perils of the Correlation Coefficient." *American Journal of Political Science* 21 (4): 805–15.

Optional: FPP, Chapters 3, 4 and 7–9.

Important Probability Distributions, Sampling, and Limit Theorems

Gujarati, Chapter 4 [Appendix C].

Optional: FPP, Chapters 16–19.

Statistical Inference: Estimation and Hypothesis Testing

Gujarati, Chapter 5 [Appendix D].

Optional: FPP, Chapters 26 and 29.

Bivariate Linear Regression

Gujarati, Chapters 6 and 7 (7.2-7.8 only) [Chapters 2 and 3 (3.2-3.8 only)].

Epstein, Lee and Carol Mershon. 1996. "Measuring Political Preferences." *American Journal of Political Science* 40 (1): 261–94.

Krueger, James S. and Michael S. Lewis-Beck. 2007. "Goodness-of-Fit: R-Squared, SEE and 'Best Practice'." *The Political Methodologist* 15 (1): 2–4.

Multivariate Linear Regression

Gujarati, Chapter 8 (NOT 8.2) [Chapter 4 (NOT 4.2)].