GOV 391L: Statistical Analysis in Political Science II

Spring 2020
TTH 2:00-3:30pm, MEZ 1.104

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Course Description

This course will introduce students to the estimation of linear regression models, diagnostics, and the presentation and interpretation of results. The course will require a significant time commitment from most students and will move at a rapid pace, covering a good deal of material beginning with an introduction to Ordinary Least Squares (OLS) for multiple regression and ending with an overview of some of the more advanced statistical tools used in political science research. In addition to the class meetings, students are expected to keep up with the readings, complete biweekly problem sets, and attend weekly discussion sections that will focus on reviewing material and introducing students to the computing tools used in the course, particularly the R statistical computing environment.

Course Requirements and Grading

Your grade in this course will be based on four components as follows:

Problem Sets	50%
Midterm Exam	25%
Final Project	25%

There will be six problem sets assigned over the course of the semester. Students are encouraged to work in groups on problem sets and in studying for exams, but all work should be written up individually. All problem sets should be typed up in LaTeX or R Markdown. When R is used for a problem set, students should include a clean copy of their code in a fixed width font along with the write up. Problem sets will only be accepted as hard copies and should never be emailed to the professor or TA without explicit prior approval. You will have one week to complete each assignment and are strongly advised to begin work early as the problem sets will take multiple hours of work to complete and late assignments will not be accepted.

The midterm exam will be an in-class exam on the material covered during the first two units of the course (Regression and Diagnostics) and is tentatively scheduled for March 12.

In lieu of a final exam, students will complete a final project consisting of a presentation and a paper utilizing the tools you will learn this semester. The final paper will include two components: 1) the replication of a published paper in political science in which you obtain the data from the author and attempt to reproduce their results, and 2) the extension of the existing work into an original research paper that includes a well-defined research question, theory, hypotheses, results, and robustness checks. Possible avenues for extension include revamping the analysis, testing an alternative hypothesis, or adding new data. The paper will be due May 15.

The final presentations will be in the style of conference presentations in that you will have 10-12 minutes to present your work and one of your classmates will be assigned as your discussant to provide feedback on your research. You will need to provide your discussant with an outline or draft of your paper at least a week before the presentation (including all results). Discussants will need to read the paper and prepare 2-3 minutes of comments. Students will be graded on both their own presentation and the quality of their discussant comments. In addition, all students are expected to attend all presentation days to support their classmates and contribute to discussion.

Required Texts

- Jeffrey Wooldridge. *Introductory Econometrics: A Modern Approach.* Cengage, 6th edition, 2016

In addition to the required text, you will need R, R Studio, and LaTeX installed on your computer. Journal articles will also be assigned throughout the semester to provide examples of regression applications and discussions of best practices.

Recommended Texts

I strongly recommend picking up a second regression text of your choosing that you can reference when you need more information or an alternate perspective. A few of the texts I like are listed below.

- John Fox and Sanford Weisberg. *An R Companion to Applied Regression.* Sage Publishing, 2011.

- William H. Greene. *Econometric Analysis.* Pearson, 8th edition, 2017. (If you intend to study methods, I strongly advise picking up a copy of Greene as it is an excellent reference that you'll use repeatedly.)

- Damodar N. Gujarati and Dawn C. Porter. *Basic Econometrics.* McGraw-Hill, 5th edition, 2008.

- Peter Kennedy. *A Guide to Econometrics*. Wiley-Blackwell, 6th edition, 2008.

Administrative Issues

Academic Dishonesty

All violations of university academic conduct guidelines, including plagiarism, will be referred to the Dean of Students and will result in a zero on the assignment or exam in question. Plagiarism is the use of others' ideas or work without credit and/or presenting derivative work as one's own. This includes, but is not limited to, cutting and pasting from someone else's work or an internet source, failing to identify exact quotes, failing to cite a source for information that is only available from that source, failing to cite a source for an idea or argument you borrowed from that source, and turning in work that is not your own.

Disability Accommodations

Students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities (512-471-6259, http://www.utexas.edu/diversity/ddce/ssd/).

Religious Holidays

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, I will give you an opportunity to complete the missed work within a reasonable time after the absence.

Emergency Evacuation Policy

Occupants of buildings on the University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building. Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class. Information regarding emergency evacuation routes and emergency procedures can be found at: utexas.edu/emergency.

Course Outline

This is an approximate schedule that is subject to change depending on how quickly we move through the material.

January 21: Introduction
- No readings

January 23: Data Workshop
- No readings

January 28: Multiple Linear Regression
- Wooldridge, Chapter 2
- Robert S. Erikson. The puzzle of midterm loss. *Journal of Politics*, 50(4):1011–1029, 1988

January 30: Regression in Matrix Form
- Wooldridge, Chapter 3.1-3.2 and Appendices D & E-1

February 4: Properties of OLS
- Patrick B. Johnston. Does decapitation work? assessing the effectiveness of leadership targeting in counterinsurgency campaigns. *International Security*, 36(4):47–79, 2012
- Gary King. Replication, replication. *PS: Political Science and Politics*, 28(3):444–452, 1995

February 6: Gauss-Markov Assumptions
- Wooldridge, Chapter 3.3-3.6 and Appendix E-2

February 11: Inference
- Wooldridge, Chapter 4 and Appendix E-3

February 13: Model Specification
- Gary King. How not to lie with statistics: Avoiding common mistakes in quantitative political science. *American Journal of Political Science*, 30(3):666–687, 1986
- Kay Lehman Schlozman, Nancy Burns, and Sidney Verba. Gender and the pathways to participation: The role of resources. *Journal of Politics*, 56(4):963–990, 1994

February 18: Joint Hypothesis Testing
- Wooldridge, Chapter 3.3a-c
- Gary King. Publication, publication. *PS: Political Science and Politics*, 39(1):119–125, 2006

February 20: Multicollinearity
- Wooldridge, Chapter 3.4a
- Kees Aarts and Holli A. Semetko. The divided electorate: Media use and political involvement. *Journal of Politics*, 65(3):759–784, 2003

February 25: Qualitative Variables
- Wooldridge, Chapter 7.1-7.3
- Suzanne Mettler. Bringing the state back in to civic engagement: Policy feedback effects of the g.i. bill for world war ii veterans. *American Political Science Review*, 96(2):351–365, 2002

February 27: Measurement Error
- Wooldridge, Chapter 9.4-9.5
- Lonna Rae Atkeson. Sure, i voted for the winner! overreport of the primary vote for the party nominee in the national election studies. *Political Behavior*, 21(3):197–215, 1999

March 3: Interaction Terms
- Wooldridge, Chapters 6.2c-d and 7.4
- Thomas Brambor, William Roberts Clark, and Matt Golder. Understanding interaction models: Improving empirical analyses. *Political Analysis*, 14:63–82, 2006

March 5: Regression Diagnostics
- Sangit Chatterjee and Frederick Wiseman. Use of regression diagnostics in political science research. *American Journal of Political Science*, 27(3):601–613, 1983
- Robert W. Jackman. Political institutions and voter turnout in the industrial democracies. *American Political Science Review*, 81(2):405–423, 1987

March 10: Catch up and Review

March 12: Midterm

March 16-21: Spring Break

March 24: Outliers and Influential Observations
- Wooldridge, Chapter 9.5c-9.6
- Robert W. Jackman. The politics of economic growth in the industrial democracies, 1987-80: Leftist strength or north sea oil? *Journal of Politics*, 49(1):242–256, 1987

March 26: Variable Transformation
- Wooldridge, Chapter 6.1-6.2
- Kenneth N. Bickers and Robert M. Stein. The congressional pork barrel in a republican era. *Journal of Politics*, 62(4):1070–1086, 2000

March 31: Heteroskedasticity
- Wooldridge, Chapter 8.1-8.3
- Gary King and Margaret E. Roberts. How robust standard errors expose methodological problems they do not fix, and what to do about it. *Political Analysis*, 23(2):159–179, 2015

April 2: Weighted Least Squares
- Wooldridge, Chapter 8.4-8.5
- WLS Example TBD

April 7: Autocorrelation
- Wooldridge 12.1-12.5

- Luke Keele and Nathan J. Kelly. Dynamic models for dynamic theories: The ins and outs of lagged dependent variables. *Political Analysis*, 14(2):186–205, 2006

April 9: Panel Data
- Wooldridge, Chapter 13.3-4 and 14.1-2
- Nathaniel Beck and Jonathan N. Katz. What to do (and not to do) with time-series cross-section data. *American Political Science Review*, 89(3):634–647, 1995

April 14: Introduction to Advanced Models

April 16: Logistic Regression
- Wooldridge, Chapter 17
- Jaleh Dashti-Gibson, Patricia Davis, and Benjamin Radcliff. On the determinants of the success of economic sanctions: An empirical analysis. *American Journal of Political Science*, 41(2):608–618, 1997

April 21: Time Series
- Wooldridge, Chapter 10
- Janet M. Box-Steffensmeier, Suzanna De Boef, and Tse-Min Lin. The dynamics of the partisan gender gap. *American Political Science Review*, 98(3):515–528, 2004

April 23: Causal Inference
- Wooldridge, Chapter 15
- Alan Gerber. Estimating the effect of campaign spending on senate election outcomes using instrumental variables. *American Political Science Review*, 92(2):401–411, 1998

April 28: More Advanced Models
- TBD

April 30: Presentations

May 5: Presentations

May 7: Presentations