

POLS Y576: Political Data Analysis II

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Course Description

This course is designed to build upon the concepts and skills developed in POLS Y575 (Political Data Analysis I). Successful completion of the Y575 course is a prerequisite for enrolling in this course (unless permission has been obtained from the instructor). The first half of the course will introduce students to bivariate and multivariate regression models. We will begin with the linear model, including a discussion of the goals and assumptions of ordinary least squares (OLS). The second half of the course will introduce students to models for limited dependent variables. Students will also be introduced to the logic of causal inference. Topics covered include experiments, difference-in-difference designs, regression discontinuities, and instrumental variables.

Course Objectives

1. Develop knowledge of ordinary least squares (OLS).
2. Gain understanding of modern statistical techniques, particularly in causal inference.
3. Reinforce skills in the R programming language.

Required Books

The following books are required for this course.

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

Wooldridge, Jeffrey M. 2012. *Introductory Econometrics: A Modern Approach, 5th edition*. Cengage Learning.

Course Policy

The details of the course are outlined below.

Grading Policy

- 25% of your grade will be determined by a midterm examination. This exam will cover all of the material that was covered prior to the date of the exam.

- 25% of your grade will be determined by a final examination. This exam will cover all of the material that was covered prior to the date of the exam but *not* the material covered before the midterm exam. In other words, this exam is not cumulative. Nevertheless, because many of the concepts in this course build on one another, knowledge of the material covered earlier in the semester will be essential for successfully completing this exam.
- 50% of your grade will be determined by a series of problem sets. You are welcome to work on these problem sets with classmates; however, the work you turn in must be your own.

Late assignments will not be accepted without penalty. I will deduct five percentages points from the grade on the late assignment for each day that it is late. Additionally, I do not communicate about grades over email. If you are unsatisfied with your grade on an assignment, you can appeal your grade within one week of the date the assignment was returned. To appeal your grade, you need to write a one-page, double-spaced explanation of why you think your work merits a higher grade. After reviewing the appeal, I will re-grade your assignment. Note that your grade can go up, stay the same, or go down upon re-grading.

Attendance Policy

The student responsibility form requires that you take your temperature every morning and that you refrain from attending class if you have a temperature of 100.4 or other symptoms of illness. In order to ensure that you can do this, attendance will not be a factor in the final grade. Attendance may still be taken to comply with accreditation requirements.

Note, however, that attending class—whenever possible—is tremendously important. As this is a graduate seminar, learning takes place through engaging in thoughtful deliberation with your peers. This is only possible if you are in attendance. Therefore, I expect you to make every effort to attend each class session. If you know that you will not be able to attend class for some particular week, please email me a week in advance to let me know that you will not be in attendance. Excused absences include religious observances or other university-sanctioned absences. If you are sick, *please stay home*.

Masks and Physical Distancing Requirements

In recognition of what all IU community members owe to each other all students, staff, and faculty signed an acknowledgement of their responsibility to follow public health measures as a condition for returning to the campus this fall. Included in that commitment were requirements for wearing masks in all IU buildings and maintaining physical distancing in all IU buildings. Both are classroom requirements.

Both requirements are necessary for us to protect each other from transmission of COVID-19. Therefore, if a student is present in class without a mask, the instructor will ask the student to put a mask on immediately or leave the class. If a student comes to class a second time without a mask, *the student's final grade will be reduced by one letter* (e.g., from an A to a B, for instance), and the instructor will report the student to the Office of Student Conduct of the Division of Student Affairs. If a student refuses to put a mask on after being instructed to do so, the instructor may end the class immediately and report the student to the Office of Student Conduct. The student will be summarily suspended from the university pursuant to IU's Summary Suspension Policy. If Student Conduct receives three cumulative reports from any combination of instructors or staff members that a student is not complying with the requirements of masking and physical distancing, the student will be summarily suspended from the university for the semester.

Summary Suspension Policy

A student may be summarily suspended from the university and summarily excluded from university property and programs by the Provost or designee of a university campus. The Provost or designee may act summarily without following the hearing procedures established by this section if the officer is satisfied that the student's continued presence on the campus constitutes a serious threat of harm to the student or to any other person on the campus or to the property of the university or property of other persons on the university campus.

The Provost has determined that refusal to comply with the public health requirements specified in the Student Responsibility form, including the requirement of wearing a mask in all IU buildings, constitutes "a serious threat of harm to other persons" within the meaning of the summary suspension policy. In addition, the Provost has determined that a person who does not comply with these requirements, as evidenced by three credible violations of the policy reported to the campus from any source, constitutes "a serious threat of harm to other persons" within the meaning of the summary suspension policy.

Student Rights

Any student who believes another person in a class is threatening the safety of the class by not wearing a mask or observing physical distancing requirements may leave the class without consequence.

Assigned Seating

In order to ensure we can contact you in the event you are exposed to COVID-19, you must remain in your assigned seat for the entire semester.

The Honor Code and Plagiarism

Plagiarism is a serious offense. If you are using someone's words without proper citation, you are guilty of plagiarism. See the IU [policy handbook](#) for a more thorough definition. Any work that is suspected of containing plagiarism will receive a zero and will be reported to the appropriate University committee. If you are in doubt, cite your sources!

Laptop/Phone Policy

Laptops are welcome so long as they are used for note taking or doing work in R.

Students with Disabilities

If any student requires assistance or accommodations for a disability, please get in touch with me at your earliest convenience. You can reach me via email or by attending office hours. You must have established your eligibility for disability support services through the Office of Disability Services for Students in Wells Library, W302, 812-855-7578.

Class Schedule

1/20: Crash Course in R for Social Science

- As necessary, read through Wickham, Hadley, and Golemund, Garrett. *R for Data Science*. Available for free at <https://r4ds.had.co.nz/>.

1/27: Introduction to Regression & OLS

- *Wooldridge*, pgs. 1-23

2/3: Gauss-Markov Assumptions and Parameter Estimation

- *Wooldridge*, Chs. 2-4; pgs. 809-811

2/10: OLS Diagnostics

- *Wooldridge*, Ch. 8

2/17: Variable Transformations & Interaction Effects

- *Wooldridge*, Chs. 6-7

2/24: The Experimental Ideal & Potential Outcomes

- *Mostly Harmless Econometrics*, Ch. 2

3/3: Analysis of Experiments with OLS

- *Mostly Harmless Econometrics*, Ch. 3

3/10: Review for Midterm Exam

3/17: Midterm Exam

3/24: IU Wellness Day (no class)

3/31: Models for Binary DVs

- *Wooldridge*, Ch. 17

4/7: Multinomial DVs

4/14: Topics in Causal Inference #1

- *Mostly Harmless Econometrics*, Ch. 4
- *Wooldridge*, Ch. 15
- *Mostly Harmless Econometrics*, Ch. 6

4/21: Topics in Causal Inference #2

- *Mostly Harmless Econometrics*, Ch. 5
- *Wooldridge*, Chs. 13-14

4/28: Review for Final