POLITICAL SCIENCE 312, SPRING 2025

JAYE SEAWRIGHT
J-SEAWRIGHT@NORTHWESTERN.EDU
OFFICE HOURS: TUESDAYS, 3-5PM

Email: j-seawright@northwestern.edu

1. Basic Course Information

How racist is the average American, and what makes some more racist than others? Why can't Democrats and Republicans just get along? Does a country's colonial experience shape its future political and economic possibilities? These questions, and many more, have been addressed by statistical research in political science. This course explores quantitative/statistical research methods in the social sciences, with the goal of determining what makes a good descriptive or causal inference about politics. In this course, we will review the basics of statistical theory and quantitative research design, and then we will proceed to carefully examine in practical terms how to carry out and particularly analyze a quantitative study in political science.

Throughout the quarter, you will work on hands-on projects involving a research question and data set of your own choosing. Thus, you will learn how to evaluate other people's statistical work, but also how to design, execute, and interpret their own statistical models.

Course Objectives: By the end of the course, students will be expected to:

- Design, implement, execute, and interpret their own research project in statistical social science.
- Present results in a clear and interpretable way using graphs and tables, and also interpret and critique the graphs and tables used in other people's quantitative social science work.
- Explain the key assumptions behind common forms of statistical analysis in social science, and be able to perform common tests to check whether those assumptions are plausible in a given application.
- Identify the implications of statistical results for social science causal theories.
- Write papers clearly and concisely explaining statistical results.

Class Materials (Required): *The Fundamentals of Political Science Research, 3rd Edition*, by Paul M. Kellstedt and Guy D. Whitten. *Using R for Data Analysis in the Social Sciences*, by Quan Li.

Grading and Evaluation: Grades will be based on weekly hands-on assignments (5% each), participation based on self-assessment and comments in a survey after each class meeting (35%), and a final assignment (30%).

Note: Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

Class Time: Mondays and Wednesdays, 9:30 to 10:50am

Class Room: University Hall 122

Office Hours: Tuesdays, 3-5pm, 316 Scott Hall

1.1. **Academic Honesty.** Each thing that you turn in for this course must, of course, reflect your original work. Any quotations from other people's work must be fully cited and documented. The same is true for paraphrases or for statistics or facts that are not general knowledge. Please do not hesitate to ask for additional details if you are confused about this assignment. The WCAS policy on academic integrity reads:

> In a scholarly community like Northwestern, academic integrity is of the utmost importance. If you are guilty of dishonesty in academic work, you may receive a failing grade in the course and be suspended or permanently excluded from the University. The brochure "Academic Integrity at Northwestern: A Basic Guide" details the types of offenses that constitute academic dishonesty and contains a thorough discussion of the proper citation of sources. You can get this brochure at the Office of Undergraduate Studies and Advising. A document on how instances of alleged academic dishonesty are handled is available online. The Undergraduate Catalog contains a non-exhaustive list of behaviors that violate standards of academic integrity. These include: cheating, plagiarism, fabrication, obtaining an unfair advantage, aiding and abetting dishonesty, falsification of records and official documents, and unauthorized access to computerized academic or administrative records or systems. Each of these is described in more detail in the catalog. One important type of academic dishonesty is plagiarism. Plagiarism includes more than just copying someone else's work. Northwestern's "Principles Regarding Academic Integrity" defines plagiarism as "submitting material that in part or whole is not entirely one's own work without attributing those same portions to their correct source." A Northwestern web page provides links to additional information on academic integrity, including information on relevant policies and on how to recognize and avoid violations of academic integrity in your own work. More tips on avoiding

plagiarism are available from Northwestern's Writing Place. Sometimes students think that another student has acted in a way that is academically dishonest. In this situation you should consult with the Weinberg College Adviser.

2. Course Schedule and Readings

This schedule is subject to changes (minor or major) depending on how long each topic actually takes us to cover, as well as on the needs of the class.

Tuesday, April 1st: Finding Good Questions in Statistical Social Science

Before class, read either: Kellstedt and Whitten, Chapters 1-2 or The Effect, Chapters 1-2.

Class activity: work with your group to design a good social-science research question on a topic randomly chosen for you, and find out what research has already been done to answer the question you choose

Wednesday, April 2nd: Getting Started with R

Before class, read: Li, Chapters 1-2

Class activity: If you are new to R, work through the introductory exercises. If you have experience with R, help classmates with challenges they encounter in trying the exercises and discuss the results together.

Monday, April 7th: What Is Causation, Anyway?

Before class, read either: Kellstedt and Whitten, Chapter 3 or The Effect, Chapters 5-7.

Class activity: did attitudes about COVID cause people's voting behavior in the 2020 presidential election?

Wednesday, April 9th: Finding or Creating Statistical Data

Before class, read: Kellstedt and Whitten, Chapters 4-5

Class activity: work with your group to locate, download, and load into R a high-quality data source for a topic randomly chosen for you. Evaluate what is present in the data, and what is missing that you would have wanted to see in it.

Monday, April 14th: Good Description

Before class, read: Kellstedt and Whitten, Chapter 6 or The Effect, Chapters 3-4

Class activity: describe the relationships that exist between voters' social identities and voting behavior in the 2020 election. Which relationships are stronger and which are weaker? Can you convey this information clearly in a way that communicates to someone who is not a quantitative social scientist?

Wednesday, April 16th: Significance Tests in R

Before class, read: Li, Chapters 3-4

Class activity: Provide a good test for each of the relationships described in last class's work. Also test whether there is a connection between education and voting behavior. Practice explaining what your test results mean in a way that is accurate but not weird.

Monday, April 21st: Why is Regression Everywhere?

Before class, read: Kellstedt and Whitten, Chapter 9 or The Effect, Chapters 12-13

Class activity: for a research question randomly provided for your group, find at least five published quantitative articles. Count the number of regressions and similar methods. What do the authors use these methods to accomplish? How do they explain their goals in using them, and how do they interpret the results?

Wednesday, April 23rd: Regression in R

Before class, read: Li, Chapter 5

Class activity: assemble the best regression you can predicting voting behavior in 2020 on the basis of the kinds of variables we've looked at so far in this class. Explain why you chose your model, what the numbers mean, and what we can learn from it in terms of social science.

Monday, April 28th: Choosing Control Variables

Class activity: using causal graphs, determine the set of control variables that are needed to enable causal inference for at least one key relationship in the regression regarding voting behavior that you set up in the previous class. Introduce the control variables you've identified, to the best of your ability, and reestimate the regression. Explain what the new results mean compared to your findings from the previous class.

Wednesday, April 30th: Regression Extensions

Before class, read Kellstedt and Whitten, Chapters 11 and 12 (up to but not including the time-series stuff)

Class activity: Test your regression for influential cases and multicollinearity. If you have a limited dependent variable, consider estimating a logit. Do you need to alter your model as a result of these extensions? If so, how?

Monday, May 5th: Regression and Non-Linearity

Class activity: Test your regression for curves and interactions. If these are present, find a way to interpret and present the results.

Wednesday, May 7th: More Advanced Social-Science Designs

Before class, read The Effect, Chapters 18-21

Class activity: for a research question randomly provided for your group, find at least five published quantitative articles that use designs other than regression with control variables

(experiments, difference-in-differences, instrumental variables, regression discontinuity, synthetic control, etc.). How do these methods work in practice to answer this question? Does your group find them more or less plausible than the regression-type studies we've considered so far? What are the strengths and weaknesses of each?

Monday, May 12th: Difference-in-Differences

Before class, read `https://mixtape.scunning.com/09-difference_in_differences`

Class activity: Does transitioning to democracy increase the chance of military conflict? We can study this with a difference-in-differences design using historical data on countries' regimes and conflicts, and you get to do just that. Test as many of your assumptions as you can, and explain what you learn!

Wednesday, May 14th: Synthetic Control

Before class, read `https://mixtape.scunning.com/10-synthetic_controls`

Class activity: Did Trump's first election in 2016 set the US on a path of democratic backsliding? We can study this with a synthetic control design using historical data on countries' regimes, and you get to do just that. Present graphs and other results to explain your analysis, showing the quality of the control before the treatment as well as the size of any effect afterwards.

Monday, May 19th: Social Science Transparency Practices

Before class, read Christensen, Garret, Zenan Wang, Elizabeth Levy Paluck, Nicholas Swanson, David Birke, Edward Miguel, and Rebecca Littman."Open science practices are on the rise: The state of social science (3S) survey." (2020). `https://escholarship.org/uc/item/0hx0207r`

Class activity: for a research question randomly provided for your group, find at least five published quantitative articles and evaluate the transparency practices of those articles. Was there preregistration, are data and code available for replication, etc.? Search for at least one preregistration form related to the research question to see the format of such documents.

Wednesday, May 21st: Writing Quantitative Social Science

Before class, read BOTH Daniel M Butler, Elin Naurin, and Patrik Öhberg, "Constituents Ask Female Legislators to do More." *The Journal of Politics*. Forthcoming. https://doi.org/10.1086/719631

AND

Noam Lupu and Leonid Peisakhin, 2017, "The Legacy of Political Violence across Generations." *American Journal of Political Science* 61 (Oct.): 836-51.

We will discuss together the features of well-written quantitative social science, and how to structure a successful paper/article in this genre.

Monday, May 26th: No classes, Memorial Day

Wednesday, May 28th: Workshop Time for Final Paper

Monday, June 2nd: Workshop Time for Final Paper

316 Scott Hall, Department of Political Science, Northwestern University
Email address: j-seawright@northwestern.edu