

POLS H277 Fall 2019: Introduction to Quantitative Research Methods in Political Science

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Class Location: Stokes 4

Class Time: Tues-Thurs, 10-11:30 AM

Office Hours: Wed. 3-5 PM + More TBA

Email is the best way to contact me. Please include "277" in the email subject line to ensure that it is sorted appropriately. I will make every effort to respond to emailed inquiries within 1 business day (i.e. within 24 hours, Monday-Friday).

This syllabus is subject to change; any changes or additions will be announced in class and posted on Moodle.

What is this course about?

What explains why some people vote while others do not? Is a project designed to educate voters about democracy in a newly democratic country effective? Does the presence of natural resources increase the likelihood that a country will experience violent conflict? One way to answer these questions and many others in the broader field of Political Science is through the use of quantitative analysis. This simply means analyzing quantitative (numerical) data with the goal of better understanding political phenomena. The goal of this course is to introduce students to the logic of designing an effective research project and provide you with a powerful set of quantitative tools to help answer a variety of political questions. Seniors writing a thesis as well as students looking to improve their research skills may find the discussion of research design and quantitative tools useful. Students interested in careers in policy, academia, tech, or government service will benefit from a better understanding of quantitative methods as both future consumers and producers of such research.

This course is intended to complement other courses in the Political Science department that focus more on qualitative methods like process-tracing, case studies, and case comparisons. We will discuss the limitations of quantitative research and touch on debates between users of quantitative and qualitative methods, but this course is focused on teaching quantitative methods. Courses in the Sociology, Economics, and Statistics Departments may provide further opportunities to continue studying the methods introduced in this course.

What will I specifically get out of this course?

By the end of this course, you will be able to do all of the following (and more!):

- Understand major debates in Political Science about quantitative methods and what they can (and can't) do
- Understand how to translate an abstract political concept into a concrete, measurable variable
- Understand how to construct hypotheses to explain relationships between independent and dependent variables
- Understand the importance of random sampling to making valid statistical inferences
- Understand how political polling works
- Explain what statistical significance means and conduct significance tests between two quantities of interest
- Understand the basic statistical theory behind linear regression and use linear regression in research
- Critically analyze published research in Political Science with regards to research design, the specific analytical methods used, and results obtained
- Communicate quantitative research in a concise manner and respond constructively to others' research

Students will also learn how to conduct statistical analysis and visualizations using the R statistical software:

R Statistical Software

This course will use the statistical software R (<https://www.r-project.org/>). R is free, highly customizable, and increasingly used in both academia and industry. This course will stay focused on the basics of loading, organizing, and analyzing data in R at a fairly introductory level. No coding or programming experience will be assumed. We will work together within class in a number of lab sessions to help everyone learn the language. Students who already have experience with R or a similar type of statistical program (SPSS, SAS, STATA, etc.) are welcome to take this course too, but the targeted level of instruction will be for beginners.

While R is installed in the computer labs in Haverford, it is highly recommended if possible to download and use it on your personal computer, especially in conjunction with the RStudio (<https://www.rstudio.com/>) program that makes using R much easier (I will post tips for installing these on Moodle, but feel free to install them yourself). We will go over resources designed to help everyone with coding, especially in terms of trouble-shooting and finding help online. These resources will be distributed in class and on Moodle.

What do I need to succeed in learning the material for this course?

Familiarity with statistical concepts may be helpful, but the course is designed to start with the basics and move forward only so long as everyone in the class understands the concepts and feels comfortable with each skill. Some topics and concepts may need to be re-read and explained multiple times from multiple sources before they “sink in.” This is totally normal. If you don’t understand something at first, you won’t be alone. One of the key parts of this course is developing the ability to learn how to learn new information or resolve problems on your own outside of the course (which will be quite useful in a job or research position for instance). Though we will cover all the topics in the course during class, students will greatly benefit from reviewing concepts outside of class as needed by their own interest, especially for the research project.

Why are you (the Instructor) teaching this course?

I’m teaching this course in part because of my own difficulty in initially understanding this material when I was an undergraduate student. Though those experiences were frustrating, the concepts and tools proved to be extraordinarily important for my later research and led me to want to do better when I got the chance to teach. I am here to help you learn and will do my best to ensure that every student leaves this course at least conversant, if not proficient, in the language of empirical research design and quantitative analysis of politics.

Required Books

We will use two books in this class, plus a few other readings that will either be linked in the syllabus or posted on Moodle.

Pollock, Kenneth. *The Essentials of Political Analysis*. CQ Press, 2015 (5th edition, 4th edition will generally be fine as well too)

This book [henceforth, **Pollock**] focuses on the nuts-and-bolts of designing a research project and the basic math behind the analysis. It’s a good straightforward (if somewhat dry) text with lots of examples from politics. Note that there is a brand-new 6th edition, but it’s quite pricey and a big change from the 5th and 4th.

Howard, Christopher. *Thinking Like a Political Scientist*. University of Chicago Press, 2017.

In contrast to Pollock, this book [henceforth, **Howard**] is more focused on giving a broad overview of the research design process and how quantitative methods fit in at a more theoretical level within the discipline of political science. It’s a bit more irreverent than Pollock and also touches on a broader range of research tools.

A list of completely optional supplementary (useful for building up an understanding of statistics) books and resources will be available on the Moodle page. There is also a list of more-advanced books for those interested.

Haverford College Statement on Accommodations:

Haverford College is committed to providing equal access to students with a disability. If you have (or think you have) a learning difference or disability – including mental health, medical, or physical impairment - please contact the Office of Access and Disability Services (ADS) at hc-ads@haverford.edu. The Coordinator will confidentially discuss the process to establish reasonable accommodations.

Students who have already been approved to receive academic accommodations and want to use their accommodations in this course should share their verification letter with me and also make arrangements to meet with me as soon as possible to discuss their specific accommodations. Please note that accommodations are not retroactive and require advance notice to implement.

It is a state law in Pennsylvania that individuals must be given advance notice if they are to be recorded. Therefore, any student who has a disability-related need to audio record this class must first be approved for this accommodation from the Coordinator of Access and Disability Services and then must speak with me. Other class members will need to be aware that this class may be recorded.

Electronics Policy

You may bring your laptops to class, though do note that class will be held in a computer lab.

Outline of the Course

9/3: Introductions, Student Interest Survey, Overview of the Course, R demonstration

9/5: A Gentle Introduction to R (in class); discussion of R resources

Skill: Be able to read in data and conduct basic data management in R

9/10: Politics as “Science”: an introduction to the concept and debates

Read: “Political Scientists are Lousy Forecasters”

https://www.nytimes.com/2012/06/24/opinion/sunday/political-scientists-are-lousy-forecasters.html?pagewanted=1&_r=1

Read: Dart-throwing Chimps and Op-Eds”

<https://themonkeycage.org/2012/06/dart-throwing-chimps-and-op-eds/>

Read: **Pollock**, Introduction

Read: **Howard**, Preface (for Students) and Introduction

Skill: Understand the Major Debates in Political Science about the use of Quantitative Methods and what they can (and can't) do

9/12: Defining and Measuring Concepts

Read: **Pollock**, Chapter 1

Read: Reeves, Richard, Guyot, Katherine, and Krause, Eleanor. “A Dozen Ways to Be Middle Class,” May, 8, 2018. <https://www.brookings.edu/interactives/a-dozen-ways-to-be-middle-class/>

Skill: Understand how to translate an abstract political concept into a concrete, measurable concept

9/17: Empirical Measurements

Read: **Pollock**, Chapter 2

Read: **Howard**, Chapter 2

Skill: Understand different types of variables and describe how they are distributed

9/19: Measuring Variables in R; Research Paper Discussion

Read: **Howard**, Chapter 1

First Module Assigned

Skill: Use R to plot and measure the central tendencies and distribution of empirical data

9/24: Thinking about Independent and Dependent Variables

Read: **Pollock**, Chapter 3

9/26: More discussion of Hypothesis Testing; additional in-class work reviewing R

Skill: Understand how to construct hypotheses to explain relationships between independent and dependent variables

Paper Stage I: first meetings with Instructor to discuss research paper topics finished by now

10/1: Designing Experiments and Addressing the Need for Controls

Read: **Howard**, Chapter 3

Read: **Pollock**, Chapter 4

Skill: Understand how to design an ideal experiment as the first step to studying any question

First Module Due on 10/1

10/3: Catch-up/Review Day

Paper Stage II: Research Question and Literature Review Due by 10/4

10/8: Cross-tabulation and Additional Discussion of Controls

Read: **Pollock**, Chapter 5

10/10: More Practice with using R for crosstabs and plotting; Research Paper group discussion

Read: **Howard**, Chapter 4

Paper Stage III: Data Source and Specific Hypotheses DRAFT Due by 10/11

Skill: Understand how to use crosstabs to make basic controlled comparisons between groups

Skill: Use R to plot variables in a scatterplot or histogram

[Fall Break]

10/22: Making Statistical Inferences

Read: **Pollock**, Chapter 6

10/24: Political Polling is Great/Terrible

Read: **Howard**, Chapter 5

Read: Blumenthal, Mark. "2012 Poll Accuracy: After Obama, Models And Survey Science Won The Day." *The Huffington Post*. https://www.huffpost.com/entry/2012-poll-accuracy-obama-models-survey_n_2087117

Read: Cohen, Nate, Katz, Josh, and Quealy, Kevin. "Putting the Polling Miss of the 2016 Election in Perspective," *The New York Times*. Nov. 13th, 2016.

<https://www.nytimes.com/interactive/2016/11/13/upshot/putting-the-polling-miss-of-2016-in-perspective.html>

Read: Silver, Nate. "Why FiveThirtyEight Gave Trump A Better Chance Than Almost Anyone Else" *FiveThirtyEight*. Nov. 11, 2016.

<https://fivethirtyeight.com/features/why-fivethirtyeight-gave-trump-a-better-chance-than-almost-anyone-else>

Read: Gawiser, Sheldon R. and Witts, G. Evans. "20 Questions A Journalist Should Ask About Poll Results," *National Council on Public Polls*. <http://www.ncpp.org/?q=node/4>

Skill: Understand the importance of random sampling to making valid statistical inferences

Skill: Understand how political polling works and be able to explain it to your friends in time for Election Day

Paper Stage III: Data Source, Specific Hypotheses, and Research Design FINAL Due by 10/25
Second Module Assigned

10/29: Catch-Up/Review Day; Instructor Presentation

10/31: Statistical Significance

Read: Pollock Chapter 7

Skill: Be able to explain what statistical significance means and conduct significance tests between two quantities of interest

11/5: Correlation; towards the fundamentals of Linear Regression

Read: Pollock, Chapter 8

Skill: Understand the difference between correlation and causation

Second Module Due 11/6 (5 PM)

11/7: Linear Regression, Continued

Read: Howard, Chapter 7

Skill: Understand the statistical theory behind linear regression

11/12: Linear Regression; towards Multiple Regression

Skill: Conduct a Linear Regression in R and interpret the results

Third Module Assigned

11/14: Multivariate Regression and Visualizations in R

Skill: Understand the theory behind and know how to conduct a multivariate regression in R

Paper Stage IV: Check-In (individual meeting with instructor) Finished By 11/15

11/19: Catch-Up Day; Potential Experiments Discussion; *Sign-Up for Presentations*

11/21: Overview of Logistic Regression

Skill: Understand how logistic regressions differ from linear regressions and when they are appropriate to use

Read: Pollock, Chapter 9

Third Module Assigned

11/26: Reading Political Science Articles; Interactions in Regression

Read: Pape, Robert A. "The Strategic Logic of Suicide Terrorism." *American Political Science Review*. Vol. 97, No. 3 (August 2003) pp. 343-361

Read: Scott Ashworth, Joshua D. Clinton, Adam Meirowitz and Kristopher W. Ramsay. "Design, Inference, and the Strategic Logic of Suicide Terrorism." *The American Political Science Review* Vol. 102, No. 2 (May, 2008), pp. 269-273

Skill: Critically analyze published research in Political Science with regards to research design and specific analytical methods used

[Thanksgiving Break]

12/3: Ethical Concerns in Quantitative Research

Read: <https://www.theguardian.com/commentisfree/2010/mar/08/political-science-moral-ethical>

Read: <https://www.nytimes.com/2014/10/29/upshot/professors-research-project-stirs-political-outrage-in-montana.html>

Read: <https://thomasleeper.com/2014/10/montana-experiment/>

Read: <https://slate.com/culture/2015/06/gay-marriage-study-faked-how-grad-student-david-broockman-uncovered-a-huge-scientific-fraud.html>

Read: <https://fivethirtyeight.com/features/how-two-grad-students-uncovered-michael-lacour-fraud-and-a-way-to-change-opinions-on-transgender-rights/>

12/5: Preview of Advanced Methods and Discussion of the Role of Quant Methods in Political Science

Read: Lupia, Arthur. “Evaluating Political Science Research: Information for Buyers and Sellers”

https://docs.wixstatic.com/ugd/fa8393_07621c9c6d2a4f4e90103cbc8497cdd5.pdf

Read: Desch, Michael. “How Political Science Became Irrelevant.”

<https://www.chronicle.com/article/How-Political-Science-Became/245777>

Third Module Due Monday 12/9 (5 PM)

12/10: Presentations

12/12: Presentations

Skill: Communicate research in a concise manner and respond constructively to others’ research

Final Draft of the research paper will be due in lieu of a final exam (12/20, 12 PM Noon)

Course Assessment

Engagement: 20%

This is a measure of engagement with the course, including both participation in class (including any in-class assignments and quizzes that count solely for completion) and participation on Moodle (especially as part of a “Stack Exchange” model; we’ll discuss this more in class). Engagement is not simply a matter of how many times one speaks within the classroom, but a more general set of contributions to the course in terms of thoughtful questions and comments both in-person and online. We will discuss this more the first week of class and go over as a group the expectations for useful, inclusive, and insightful classroom discussions.

Modules: 30% (10% each)

There will be a total of 3 modules that will have a variety of specific questions, tasks, and prompts related to the course material. The goal of these modules is to give you practice with the skills we learn in class and apply them to different subjects and data. Modules will be assigned at least one week before they are due and will be due at the start of class on the day which they are due; you should turn in your own answers, including R code as needed. Each Module will use a different set of skills, most of which we will cover and practice in class. While there will be some applied math problems within these modules, there will also be writing and mini-research assignments (hence “Module” rather than “Problem Set” as the name).

Collaboration Policy: You are welcome to talk to other members of the class about the modules (online or in-person) and/or work in a group with them. All writing and code, however, must be done individually and

should not be copied; you should explain things in your own words and not copy others. If you do work with a group of other students, please indicate whom on your module when you turn it in. The goal of these modules is to make sure that everyone feels comfortable using the skills that we are developing in this course, so learning from and teaching others is encouraged. But ultimately, each student needs to be able to understand the concepts and skills themselves.

Note that there will be specific parts of each module (that will be clearly indicated and marked with an asterisk) that will ask you to find, analyze, and explain some examples within the media or academic literature; members of the same group should NOT write about the same examples for these.

Research Design Paper (and stages): 50%

The capstone of this course will be an approximately 15-20 page paper that presents a research design with a quantitative analysis component. This project will be presented shortly before the final version of the paper is due at the end of the course and subject to constructive feedback and questions from one's peers. The paper will consist of the following sections:

- Introduction/Puzzle/Question: What are you studying and why should people care?
- Literature Review and Theory
- Research Design, Specific Hypotheses, and Threats to Validity
- Data — describe the data source and summarize the dataset appropriately
- Results (at least some preliminary ones) and Interpretation/Discussion
- Visualizations of the Data and/or Results (at least 2 visuals, no more than 5)

Stage I: Research Idea Discussion (individual meeting with instructor) [Due by 9/27]

Stage II: Research Question and Literature Review (5%) [Due 10/4]

Stage III: Data Source and Specific Hypotheses (5%) [Due 10/11]

Stage IV: Check-In (individual meeting with instructor) [Due by 11/8]

Stage IV: Brief Presentation (10 minutes) and Slides (10%) [Due 12/10 or 12/12]

Stage V: Final Paper Draft Due (30%) [Due in lieu of a final exam]

Exact requirements for each stage will be announced in class and posted on Moodle as a separate document. We will draw up a specific rubric for evaluating the presentations and final draft together in class around the midterm.

This paper is an excellent opportunity to make use of the library resources of Haverford. The libraries and librarians can be an outstanding source of expertise, guidance, and suggestions for the literature review and data collection part of the course.