Political Science 8006
Introduction to Quantitative Research Methods
Hilary Term 2019 • T 9-11 • TRiSS Seminar Room, Arts Building
Th 10-11 • 3071 Arts Building

Instructor: Peter Stone
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Tutorials: F 1-3, Beckett Lab (1013 Arts Building)
Teaching Assistant: Andrea Salvi
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Module Learning Aims:

The goal of this module is to introduce students to the practice of data analysis at an introductory postgraduate level. More than ever before, political science research relies upon data—information about people, firms, nations, etc. that can be standardized, compared, and analyzed en masse. Political scientists analyze data with an eye to explaining the social world. Not all political scientists perform data analysis, of course, but because data analysis provides so much of our knowledge about politics, every student of the subject must now know at least a little about how it works. Love it or hate it—and lots of people hate it—there's no escaping data.

Module Content:

Students will learn about quantitative research methods through lectures and readings. Specifically, they gain a basic understanding of statistics and the classical model of hypothesis testing, as well as a number of key statistical tests used by social scientists in hypothesis testing. In tutorial, they will develop their knowledge of Stata, a useful statistical software package. (Students are not obliged to use this particular package for their research in the course, but it will significantly complicate their work for the class if they do not do so.) Each student will then write an original research paper that asks a social science question and uses one or more statistical tests to answer it.

Learning Outcomes:

Upon completion of this course, it is expected that students should be able:

-to develop causal models of the social world;
-to identify data useful for testing such models;
-to recognize different types of data;
-to identify populations of observations and samples selected from such populations;
-to make use of several different statistical estimators, with a basic knowledge of their respective strengths and weaknesses;
-to interpret and critique basic quantitative results found in the political science literature.

Lectures & Tutorials/Contact Hours:

There will be one lecture, one seminar, and one tutorial for the module each week. (There will be no tutorial the first week of class.) The lecture will focus upon quantitative research methods. The seminar will provide students with an opportunity to talk about their dissertation projects, and the research design issues raised by those projects. The tutorial—run by the module's Teaching Assistant—will acquaint students with the use of Stata to analyze data.

Peter Stone's office hours will be Tuesdays 2-4 or by appointment. The Teaching Assistant will hold office hours by appointment only.

Software:

I have assigned the statistical software package Stata for the module. It is relatively easy to use. Stata is available on the computers in the Beckett Lab and the Ussher Lab, and possibly other computer labs on campus. A cheap student version of the software package is available directly from Stata (http://www.stata.com/order/new/edu/gradplans/student-pricing/). Students may use a different software package (SPSS, R, etc.) should they so choose, but it is their

responsibility both to learn the package (i.e., no assistance will be guaranteed by either the instructors or the teaching assistant) and to use the package to complete the module's assignments.

Readings:

I have assigned the following four books for the module:

Achen, Christopher H. Interpreting and Using Regression. Thousand Oaks, CA: Sage, 1982.

Aldrich, John H. and Nelson, Forrest D. Linear Probability, Logit, and Probit Models. Thousand Oaks, CA: Sage, 1984.

Pollock, Philip H. The Essentials of Political Analysis. 5th ed. Washington: CQ Press, 2015.

Pollock, Philip H. A Stata Companion to Political Analysis. 3nd ed. Washington: CQ Press, 2015.

Students wanting to learn more about Stata might wish to consult the following:

Baum, Christopher F. An Introduction to Modern Econometrics Using Stata. Chicago: Stata Press, 2006.

Students should also make sure that they possess a good guide to grammar and style, as it will help them immensely with their writing. I recommend the following two works:

O'Conner, Patricia T. Woe Is I: The Grammarphobe's Guide to Better English in Plain English. New York: Riverhead Books, 1996.

Strunk, Jr., William and White, E.B. The Elements of Style. 4th ed. New York: Longman, 2000.

Another useful resource is the American Political Science Association's *Style Manual for Political Science*, which can be found at

http://www.apsanet.org/media/PDFs/Publications/APSAStyleManual2006.pdf

While students are welcome to use any citation system they desire, so long as it is used consistently and provides the relevant information, any student unsure of what citation system to use is encouraged to use the system in the *Style Manual*.

Students may also find some or all of the following readings on quantitative research methodology useful:

Berry, William D. and Sanders, Mitchell S. Understanding Multivariate Research. Boulder, CO: Westview Press, 2000.

Useful reference on multivariate linear regression. Not too technical.

Campbell, Donald T. and Stanley, Julian C. Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally, 1963).

A classic (if dry) work on the logic of experimental research.

Davis, James A. The Logic of Causal Order. Thousand Oaks, CA: Sage, 1985.

Just what the title says.

Greene, William H. Econometric Analysis. 7th ed. Upper Saddle River, NJ: Prentice Hall, 2011.

A standard textbook on statistical analysis, with particular emphasis on the scope and limits of multivariate regression. Much more advanced than Wonnacott and Wonnacott. An essential reference work, but not easy.

Huff, Darrell. How to Lie with Statistics. New York: Norton, 1993.

A short and entertaining book on the many ways that statistics can be misleading.

Kennedy, Peter. A Guide to Econometrics. 6th ed. New York: Wiley-Blackwell, 2008.

An accessible, but advanced, text.

Johnson, James. "Consequences of Positivism: A Pragmatist Assessment." Comparative Political Studies 39 (2006): 224-252

A critique of orthodox methods of theory construction and data analysis, with a focus on King, Keohane, and Verba.

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

Argues for the essential unity of qualitative and quantitative research.

Little, Daniel. "An Experiment in Causal Reasoning." In Microfoundations, Method, and Causation: On the Philosophy of the Social Sciences. New Brunswick, NJ: Transaction, 1998.

Argues effectively for the importance of theory in quantitative research.

Meehan, Eugene J. The Thinking Game: A Guide to Effective Study. Chatham, NJ: Chatham House Publishers, 1988.

Examines the nature of causal theory development, among other topics.

Shivley, W. Phillips. The Craft of Political Research. 8th ed. Upper Saddle River, NJ: Prentice Hall, 2010.

Excellent introduction to political science research methods.

Stone, Peter. “Making the World Safe for Methods.” The Political Methodologist 10, no. 1 (2001): 9–10.

A short article on teaching quantitative methods at an undergraduate level.

Traugott, Michael W. and Lavrakas, Paul J. The Voter’s Guide to Election Polls. 4th ed. Lanham, MD: Rowman & Littlefield, 2007.

A simple introduction to polling.

Tufte, Edward R. The Visual Display of Quantitative Information. Cheshire, CT: Graphics Press, 2001.

Discusses how to display quantitative data effectively.

Wonnacott, Thomas H. and Wonnacott, Ronald J. Introductory Statistics for Business and Economics. 4th ed. New York: Wiley, 1990.

A standard textbook that provides the mathematics behind some of the more basic statistical estimators. A good place to start if you want to go deeper than Pollock.

Ziliak, Stephen T. and McCloskey, Diedre N. The Cult of Statistical Significance: How the Standard Error Costs Us Jobs, Justice, and Lives. Ann Arbor: University of Michigan Press, 2008.

A critique of the classical model of hypothesis testing.

Finally, you will definitely benefit from devoting some time to improving the quality of your writing in general. The following book is an excellent resource:

Becker, Howard S. Writing for Social Scientists: How to Start and Finish Your Thesis, Book, or Article. 2nd ed. Chicago: University of Chicago Press, 2007.

I will also post some useful links to writing-related resources on the module's Blackboard page.

Assessment:

Each student will complete 8 short assignments, each of which will count for 5% of the grade. Each student will also write a research paper of approximately 6000 words (plus or minus 10%) due at the end of the module, which will count for the remaining 60% of the grade. Each student is responsible for identifying a research question that can be addressed using quantitative analysis. Students must receive approval for their topics; **no student may pass the module unless I have approved the student's research question in advance.**

All assignments must be submitted via Turnitin. Instructions on the submission process will be provided once the module begins.

Course Website:

The course has a page at Blackboard. Please make sure you are signed up for it.

Research Ethics:

In conducting their research, students should be aware of Trinity College's Policy on Good Research Practice, which can be found at

https://www.tcd.ie/research/dean/assets/pdf/FINAL_Good%20Research%20Practice%20policy_COUNCIL%20APPROVEDandminutedgg.pdf

They should also be aware of the Ethics Policy of Trinity's School of Social Sciences and Philosophy, which is at

http://www.tcd.ie/ssp/research/ethics/

I shall provide additional information on research ethics as needed.

Plagiarism and Academic Standards:

Students should be familiar with what plagiarism is, and avoid it like the plague. Plagiarism—defined by the University as the act of presenting the work of others as one's own work, without acknowledgement—is unacceptable under any circumstances. Students are referred to Part III, Section 1.32 of the College Calendar for advice on avoiding plagiarism, including through carelessness. The Calendar entry on plagiarism is at http://tcd-ie.libguides.com/plagiarism/calendar. Penalties will apply if these rules are violated.

Students should consult the University's webpage on plagiarism, which can be found at http://tcd-ie.libguides.com/plagiarism. All students must complete the online tutorial on avoiding plagiarism which can be found on this webpage. The tutorial will generate a coversheet, which should be attached to all written work submitted in the course.

It is essential that the source for your material is always clear to the reader. This does not apply only to direct quotes from a book or article; it applies to any point taken directly from something that you have read. Paraphrasing the work of others and presenting it without attribution as your own is unacceptable—a citation must be given. You should be sure that (i) direct quotes are always enclosed in quotation marks so that it is clear that you are not claiming to have written the phrases yourself; (ii) you always give the source of ideas and facts, including the precise page reference; and (iii) you cite your sources, not your source's sources. In other words, if you read a book published in 2014 and it contains a quote from a book published in 1964, make it clear that you discovered the point in the 2014 book—don't give the impression that you consulted the 1964 book and found the quote yourself.

Students must also ensure that academic work submitted for each module is "new work", i.e., it has not been previously submitted for other modules at Trinity or elsewhere.

Lecture Schedule:

Note: This schedule is subject to change.

22/1 Introduction to quantitative research. What is data? Theory construction. Experiments, natural experiments, quasi-experiments.

29/1 Types of data. Reliability and validity. Internal and external validity. Descriptive Statistics. The major statistical tests.
Reading: Pollock, chapters 1-5.

5/2 Basic probability theory.
Reading: Pollock, chapter 6.

8/2 **Assignment #1 Due**

12/2 Classical hypothesis testing. The null hypothesis. Sample size. Confidence intervals.

15/2 **Assignment #2 Due**

19/2 Application of classical hypothesis testing. Chi-Square tests.
Reading: Pollock, chapter 7.

22/2 **Assignment #3 Due**

26/2 Linear Regression. Ordinary Least Squares. Multivariate Regression.
Reading: Pollock, chapter 8.

1/3 **Assignment #4 Due**

5/3 Study Week. No Class.

12/3 Properties of Ordinary Least Squares.
Reading: Achen

15/3 **Assignment #5 Due**

19/3 Panel data/Time Series Analysis.

22/3 **Assignment #6 Due**

26/3 Logit/Probit.
Reading: Pollock, chapters 9, 10.

29/3 **Assignment #7 Due**

2/4 Multinomial and Ordered Logit/Probit.
Reading: Aldrich and Nelson

5/3 **Assignment #8 Due**

9/4 Wrap-Up.

19/4 **Research Paper Due**