Political Science 8006
Introduction to Quantitative Research Methods

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Office Hours: Friday 10am-12pm

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Module Description

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 analysed en masse. Political scientists analyse 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.

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. 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

On successful completion of this module students should be able to:

- Develop causal models of the social world;
- Identify data useful for testing such models;
- Recognize different types of data;
- Identify populations of observations and samples selected from such populations;
- Make use of several different statistical estimators, with a basic knowledge of their respective strengths and weaknesses;
- Interpret and critique basic quantitative results found in the political science literature.

Module Structure

There will be one lecture, one seminar, and one tutorial for the module each week. The times are as follows:

Lecture:

Tue 9-11am (weeks 21-26, 28-32) ARTS TRISS Seminar Room (6th Floor of the Arts Block)

Seminar:

Thurs 10-11am (weeks 21-26, 28-32) ARTS 3071

Tutorial/lab:

Fri 1-3pm (weeks 21-26, 28-32)

The lecture will focus upon quantitative research methods. The seminar provides an opportunity to discuss some of the key points from the lecture, as well as allowing students to talk about their dissertation projects, and the research design issues raised by those projects.

The tutorial—run by the module's Teaching Assistant, Silvia Decadri—will acquaint students with the use of the statistical software Stata to analyse data.

Lisa Keenan's office hours will be Fridays 10am-12pm in room C6.009 in TRISS on the 6th Floor of the Arts Block. Silvia Decadri can be contacted via email.

Software

The statistical software package Stata will be used in the module. Stata is available on the computers in the Beckett Lab, the Riada PC Lab, and other computer labs on campus. For students who wish to use the package on their laptops, a student version of the software package is available directly from Stata (http://www.stata.com/order/new/edu/gradplans/student-pricing/) at a cost of $45 for a six months license (there are other options available for students who wish to purchase).

Students may use a different software package (SPSS, R, etc.) to complete assignments 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.

Using Stata to complete this module is strongly encouraged.

Readings

The core texts for the course are the following:

- Achen, C. (1982). *Interpreting and Using Regression*. Thousand Oaks, CA: Sage.
- Aldrich, J. H. & Nelson, F. D. (1984). *Linear Probability, Logit, and Probit Models*. Thousand Oaks, CA: Sage.
- Pollock, P. H. (2016). *The Essentials of Political Analysis*. Washington: CQ Press.
- Pollock, P. H. (2015). *A Stata Companion to Political Analysis*. Washington: CQ Press.

These texts are available from the library, some of them in e-book format which can be read on the Library reading room computers. I do not recommend buying all of the textbooks.

Students who want to learn more about Stata or are having issues working with it should consult the following text:

- Pevalin, D., & Karen, P. D. J. R. (2009). *The Stata Survival Manual*. McGraw-Hill Education (UK).

The text above is highly recommended as a very practical guide to conducting statistical analysis in Stata. It gives clear examples and works through them using Stata commands and output. If students are interested in working with Stata in the future, this guide is a worthwhile purchase.

Students who need a simple guide to data analysis should consult the following:

- Newton, R. R., & Rudestam, K. E. (2012). *Your Statistical Consultant*. Sage.

This text provides practical guidelines to approaching and conducting the analysis of data that will be useful in the completing the project for the course.

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

- King, G., Keohane, R. O. & Verba, S. (1994). *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton: Princeton University Press.
- Berry, W. D. & Sanders, M. S. (2000). *Understanding Multivariate Research*. Boulder, CO: Westview Press.
- Campbell, D. T. & Stanley, J. C. (1963.) *Experimental and Quasi-Experimental Designs for Research.* Chicago: Rand McNally.
- Davis, J. A. (1985). *The Logic of Causal Order*. Thousand Oaks, CA: Sage.
- Little, D. (1998). An Experiment in Causal Reasoning. In *Microfoundations, Method, and Causation: On the Philosophy of the Social Sciences*. New Brunswick, NJ: Transaction
- Meehan, E. J. (1988). *The Thinking Game: A guide to effective study*. CQ Press.
- Shively, W. P. (2016). *The Craft of Political Research*. Routledge.
  Stone, P. (2001). Making the World Safe for Methods. *Political Methodologist*, *10(1)*, 9-10.

Students who are interested in reading criticism of some of the core tenets of the discipline should start here:

- Johnson, J. (2006). Consequences of positivism: A pragmatist assessment. *Comparative Political Studies*, *39* (2), 224-252.
- Huff, D. (1993). *How to Lie with Statistics*. New York: Norton.
- Ziliak, S T. & McCloskey, D. N. (2008). *The Cult of Statistical Significance: How the Standard Error Costs Us Jobs, Justice, and Lives*. Ann Arbor: University of Michigan Press.

The following readings may be of practical use for students in completing their projects:

- Traugott, P. D. M. W., & Lavrakas, P. D. P. J. (2016). *The Voter's Guide to Election Polls*. Lanham, MD: Rowman & Littlefield.
- Tufte, E. R. (2001). *The Visual Display of Quantitative Information*. Cheshire, CT: Graphics Press.
- Baum, C. F. (2006). *An Introduction to Modern Econometrics using Stata*. Stata press.

This course is introductory. However, some students may already have some grounding in statistics. They may find these more advanced texts useful:

- Wonnacott, T. H. and Wonnacott, R. J. (1990). *Introductory Statistics for Business and Economics*. New York: Wiley.
- Greene, W. H. (2011). *Econometric Analysis*. Upper Saddle River, NJ: Prentice Hall.
- Kennedy, P. (2008). *A Guide to Econometrics*. New York: Wiley-Blackwell.
- Gujarati, D. (2004). *Basic econometrics*. McGraw− Hill.

Additional material may be posted on the module's Blackboard page.

Assessment

The module is assessed entirely through course work. Each student will complete 8 short assignments, each of which will count for 5% of the grade (these assignments make up 40% of the final grade). 4 of these assignments will consist of statistics exercises and 4 will relate to the research paper. All assignments are due at midnight on a Thursday (the day before the tutorials take place).

Each student will also write a research paper of approximately 6,000 words (plus or minus 10%) 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 the research question has been approved in advance.** 4 of the short assignments are geared towards helping students to select a research topic, find a research question, choose appropriate data, and conduct data analysis.

The research paper is due at **midnight on the 13th of April.**

All assignments must be submitted via Turnitin. Details about how to sign up will be provided.

Course Website

The course has a page on Blackboard (tcd.blackboard.com/webapps/login/). Additional material may be posted here.

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/.

Due to the time-delay which can result from requesting ethical approval to conduct a study, students are strongly advised to use existing datasets rather than gathering their own.

Additional information on research ethics will be provided 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.

Week	Class dates	Lecture 9am-11am Tue TRISS Seminar Rm	Seminar 10am-11am Thurs ARTS 3071	Lab 1pm-3pm Fri ARTS 1013	Homework exercises (due before tutorial)
1	16th Jan 18th Jan 19th Jan	Introduction to Quantitative Analysis & Data	Theory construction	Introduction to Stata	None
2	23rd Jan 25th Jan 26th Jan	Descriptive Statistics & Statistical Tests	TBC	Descriptive Statistics in Stata I	None
3	30th Jan 1st Feb 2nd Feb	Introduction to Probability Theory	TBC	Descriptive Statistics in Stata II	Assignment #1 due: 1st Feb (midnight)
4	6th Feb 8th Feb 9th Feb	Univariate Statistics [Rm change for lecture to ARTS 5025]	TBC	Exploring Relationships Between Variables in Stata I	Assignment #2: 8th Feb (midnight)
5	13th Feb 15th Feb 16th Feb	Bivariate Statistics	TBC	Exploring Relationships Between Variables in Stata II	Assignment #3 due: 15th Feb (midnight)
6	20th Feb 22nd Feb 23rd Feb	Simple Linear Regression & Multivariate Regression (OLS)	TBC	Regression Analysis in Stata I (OLS)	Assignment #4 due: 22nd Feb (midnight)
7		**Study week**	**Study week**	**Study week**	None
8	6th Mar 8th Mar 9th Mar	Properties of OLS & Robustness Checks	TBC	Regression Analysis in Stata II (Robustness checks)	Assignment #5 due: 8th Mar (midnight)
9	13th Mar 15th Mar 16th Mar	Logit/Probit Models	TBC	Regression Analysis in Stata III (Logit/Probit)	Assignment #6: 15th Mar (midnight)
10	20th Mar 22nd Mar 23rd Mar	Multinomial & Ordered Logit/Probit Models	TBC	Regression Analysis in Stata IV (Ordered Logit)	Assignment #7 due: 22nd Mar (midnight)
11	27th Mar 29th Mar 30th Mar	Panel data/Time Series Analysis	TBC	**Good Friday – No lab.**	Assignment #8: 29th Mar (midnight)
12	3rd Apr 5th Apr 6th Apr	Recap & wrap-up	Discussion of Projects	Regression Analysis in Stata V (Times series) & Recap	None

Assigned reading

These readings are subject to change. Additional material may be posted to Blackboard.

Week 1: Introduction to Quantitative Analysis & Data

- Pollock, chapters 1-5.

Week 2: Descriptive Statistics & Statistical Tests

- Pollock, chapter 6

Week 3: Introduction to Probability Theory

- Pollock, chapter 6

Week 4: Univariate Statistics

- Pollock, chapter 6

Week 5: Bivariate Statistics

- Pollock, chapter 7

Week 6: Simple Linear Regression & Multivariate Regression (OLS)

- Pollock, chapter 8

Week 7 – **Study week**

Week 8: Properties of OLS & Robustness Checks

- Achen

Week 9: Logit/Probit Models

- Pollock, chapters 9,10

Week 10: Multinomial & Ordered Logit/Probit Models

- Aldrich and Nelson

Week 11: Panel data/Time Series Analysis.

Week 12: Recap & wrap-up