

17.801
Political Science Laboratory
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NOTE: Because this subject is labor-intensive and has presentation requirements, there will be enrollment limitations in this subject. See the body of the syllabus for the priority system to be used if we have to resort to them.

Purpose

How do political scientists think about empirical problems, assess arguments, and create new knowledge? To answer this question adequately would require more than just one subject (can you say "graduate school?"). This subject offers a first cut at answering this question by exploring the key statistically-based research tools that social scientists use to frame and answer empirical questions. When you finish this subject you will have a better idea about what political scientists do with their time, be better able to read critically much of the professional literature in the field, and may very well have an employable skill. The most important purpose behind the political science laboratory, however, is to help you move from being a passive reader of social scientific tomes to being a creative producer of new insights.

Producing new knowledge, or systematically probing someone else's claims, can be a lot of fun. (If it weren't, I would have become a lawyer.) In order to get to the fun, there is a lot of stuff we have to consider. Consequently, this subject runs on three (roughly) parallel tracks so that we can accomplish everything we need to get done once the semester is over.

Leaving on Track 1 is statistics. Statistical reasoning is the most important method of testing hypotheses in the social sciences. Therefore the statistical introduction offered here forms the core of the subject. The approach I will take to statistics is informal and intuitive. The approach could be more formal and less intuitive, but that would leave us with less time to get on to the new knowledge part. If this subject piques your interest in statistical methods, or if you want a more rigorous treatment of the statistical topics addressed here, you might want to consider taking 17.846 (Multivariate Political Analysis), 14.31 (Econometrics), or 6.430J (Engineering Probability and Statistics).

Leaving on Track 2 are research mechanics. When I teach my quadrennial subject on presidential elections, I try to disabuse students of the notion that electoral campaigns are things that happen in people's heads, with voters weighing the pros and cons of each candidate and then spontaneously going to the polls on election day. The word *campaign* should conjure up a physical enterprise, with the winner not always the one with the good ideas (though they don't hurt), but more often the one with the better organization, more complete voter lists, and more extensive car pool. Social science research is like that, too. Lots of people have lots of interesting ideas about

how the social world works. Some of these ideas are right, others, nuts. In the long run the researchers who are taken the most seriously and who make the biggest contributions are the ones who get down and dirty with the data. And doing good empirical research involves knowing how libraries work, how to convince people to be interviewed by you, how to type numbers into a computer, how to write code in monster statistical packages, and how to craft a clear English-language sentence. We will therefore spend a good amount of time with the mundane tasks of learning how to use one specific statistical package (called *STATA*) and learning how to write papers that follow a specific style book (Turabian's *Manual for Writers of Term Papers, Theses, and Dissertations*).

Leaving on Track C is a project of your own making. There is supposedly an old Chinese proverb that says, "I hear and I forget; I see and I remember; I *do* and I *understand*." It is this philosophy that drives the Institute's lab requirement, and it is the philosophy that drives this subject. You will be responsible for wading through the professional literature of political science, picking a subject that interests you, and applying the skills you're learning in this subject toward learning (and understanding) something new. I think this is the most interesting part of this subject. This can be fun, but it's also much more difficult than it first appears. Because doing original research is so hard, one prerequisite for this subject is that you have at least a passing acquaintance with political and other social phenomena, such as you would encounter in classes in subjects such as political science, economics, psychology, urban affairs, etc. There are no formal requisites to this subject, but you are unlikely to do well in it if you've never taken an upper-division (non-HASS-D) subject in one of these areas of study.

Subject organization

We will meet twice each week. During the first half of the semester the primary purpose of these meetings will be to review materials in two formats: lecture and discussion. The subject schedule that begins on page 4 delineates what will happen each class meeting. **I expect you to be prepared for each class meeting.** Preparation will involve different things, depending on what we will be doing in that meeting. During some meetings I will be presenting material from one of the textbooks. For those, you will be expected to have done the textbook reading before the class. During some meetings we will be discussing a reading assignment. For those, you will be expected to have read the assignment beforehand. I will be paying attention to who is prepared and who is not. If you are unprepared for a particular class meeting, come to class any way, because I will grade down people who are regularly absent from class.

During the second half of the semester we will meet twice each week to talk about your research projects. You will be required to make two class presentations during this period. At the first presentation you will be responsible for introducing the class to the problem you wish to address and how you plan to address it. At the second presentation you will be responsible for presenting your findings. These will be brief presentations, probably no more than 10-15 minutes apiece. Because you will be graded on these presentations, you should practice them beforehand. When you present will be chosen by lottery.

Subject requirements

1. *Class attendance and discussion of assigned readings.* (20% of grade) See the comments in the first paragraph of the section on **Subject Organization**. Come to all the regularly-scheduled class meetings. We will be holding *ad hoc* review and workshop sessions during the term, which are optional. **Attending the oral presentations that your colleagues give about their research is *not* optional.**

2. *Data analysis problem sets.* (20% of grade) During the first half of the semester we will have a problem set assigned roughly each week. There will be no extensions.

3. *Group project.* (20% of grade) There will be a group project assigned the first month of the semester, to give you a short introduction to doing quantitative social science research. The final product of each project will be graded, with you assigned a grade that is a linear combination of your own effort and the effort of the group.

4. *Write-up of the final research project.* (40% of grade) The final project is the culmination of this subject. You should start on the first day of the semester in thinking about what you want to research and getting together your data. Keep in mind that there is an old adage about estimating the amount of time it takes to gather and analyze data for an original project: Take your original estimate. Double it. Double it again. And again. The actual amount of time will be twice this result. In writing up your research project, you must organize the paper using a style book, preferably Kate Turabian's. The final write-up must be in my office by 5:00 p.m., December 9. Do not expect that I will grant you an extension, except under the following circumstance: If, after turning in your write-up, you'd like the opportunity to re-write your paper for a higher grade (or to help you pass the Phase II writing requirement), I'll go along with that, so long as the original draft is a *bone fide* effort.

Books to purchase

The following books are available for purchase at the Coop. Also, Graphics Arts (the center in the basement of the Infinite Corridor, not the basement of Sloan) gives away a sheet on EMACS commands. You would do well to have it, if you don't already. Other readings are on reserve at Dewey library.

David Freedman, Robert Pisani, and Roger Purves, *Statistics*, 3rd ed.

Lawrence C. Hamilton, *Statistics with STATA 5*

Edward R. Tufte, *Data analysis for politics and policy*

Enrollment limitation

This is a labor-intensive subject and one that is constrained by the requirement that people present their work. Experience has demonstrated that sixteen is the maximum number who can take this subject profitably at one time. Therefore, if more than sixteen attend the first class meeting, I will assign everyone who attends a priority number, ranging from 1 to n , n being the number of people who attend. The priority system operates in the following order:

- Political science majors, seniors
- Political science minors, seniors
- Political science majors, juniors
- Political science minors, juniors
- All other seniors
- All others.

Overall structure of subject

Here is the overall structure of the subject for this semester, organized by date. The reading assignments will follow in the next section.

	Mon.	Tue.	Wed.	Thu.	Fri.
Feb.		Introduction 6		•Designing research 8 •Measurement •Hand out group projects	
		Using STATA 1 3		Descriptive statistics 1 5	
		Monday classes 2 0		Correlation and bivariate regression 2 2	
		Multiple regression I 2 7		Multiple regression II 1	
Mar.		Presentation of group projects 6		Meet individually to talk about individual projects 8	
		Meet individually to talk about individual projects 1 3		Statistical inference I 1 5	
		Statistical inference II 2 0		•Wrap-up 2 •Pep talk 2	
		Spring break 2 7		Spring break 2 9	

	Mon.	Tue.	Wed.	Thu.	Fri.
Apr.		TBA 3		Individual presentations I 5	
		Individual presentations I 10		Individual presentations I 12	
		Patriots Day 17		Individual presentations I 19	
		Workshop 24		Workshop 26	
May		Workshop 1		Workshop 3	
		Individual presentations II 8		Individual presentations II 10	
		Individual presentations II 15		Individual presentations II 17	

Assignments

Topic	Date(s)	Assigned readings	Notes
Introduction: Approaches to political analysis	Feb. 6	None	In addition to reviewing the assignments for the subject, I will provide an overview to political analysis.
Designing research & measurements	Feb. 8	Tufte, <i>Data analysis for politics and policy</i> , chap. 1 Freedman, et al., <i>Statistics</i> , chaps. 1, 2, 6 Frederick Mosteller, "Errors: Nonsampling Errors," in the <i>International Encyclopedia of Statistics</i> . (to be handed out in class)	Hand out group projects
Introduction to STATA	Feb. 13	Hamilton, <i>Statistics with STATA 5</i> , chaps. 1–2 Handouts: "How to use the STATA infile and infix commands" and "How to use STATA "do" files."	Do the readings before class. I will do some lecturing, but I will also take advantage of the in-class workstations and do some hands-on exercises, too. Hand out problem set 1
Descriptive univariate statistics	Feb. 15	Freedman, et al, <i>Statistics</i> , chaps. 3, 4 Hamilton, <i>Statistics with STATA 5</i> , pp. 60–85, 94–98, 103–113	
Correlation and bivariate regression	Feb. 22	Tufte, <i>Data analysis for politics and policy</i> , chaps. 3, 4 Freedman, et al, <i>Statistics</i> , Chaps. 8–12	Collect problem set 1 Hand out problem set 2
Multiple regression I	Feb. 27	Hamilton, <i>Statistics with STATA 5</i> pp. 114–122, 129–137, 141–145, 147–154	

Topic	Date(s)	Assigned readings	Notes
Multiple regression II	Mar. 1		Collect problem set 2 Hand out problem set 3
Presentation of group projects	Mar. 6		Each group will have 15 minutes to make presentations
Meet individually to talk about individual projects	Mar. 8 & Mar. 13		I will meet individually with you to discuss your final project. Sign-up beforehand for 15-minute slots.
Sampling and inference I	Mar. 15	Freedman, et al., <i>Statistics</i> , 17, 18, 20, 21, 23, 24, 26, 27, 29 Hamilton, <i>Statistics with STATA 5</i> , pp. 114–122	Collect problem set 3 Hand out problem set 4
Sampling and inference II	Mar. 20	Hamilton, <i>Regression with graphics</i> , pp. 42–49, 77–81	
Wrap-up	Mar. 22		I will fill in any holes that are left and go over the assignment for the rest of the term
TBA	Apr. 3		I want you to enjoy Spring Break. Therefore, the two assignments that come next will be pushed back one class meeting, to give you time. We'll figure out what to do today when the day approaches.
Preliminary presentations	Apr. 5, 10, 12, 19		Collect problem set 4 on Apr. 5 (Presenters on the 5th have until the 10th)
Informal work sessions	Apr. 24, 26, May 1, 3		These sessions are for you to come and seek help or talk about your project.
Final presentations	May 8, 10, 15, 17		Write-ups due May 17 @ 5pm, in my office.