SCHAR SCHOOL OF POLICY AND GOVERNMENT
George Mason University

POGO 511: Intro Data Analysis: Pol/Govt

Syllabus [Draft, Subject To Change]

Fall 2025
Wednesday 7:20-10:00 pm
Flipped classroom pedagogy

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- Office hours: By appointment. To make an appointment, please visit Canvas course website and click "Office Hours".
    - Please make an appointment up to 30 minutes per week so that other students will also have a chance to meet with me.
- Please email me if you have quick questions. During the semester, I will try my best to respond within 1-2 business days.
- If you have questions regarding your grades, please make an office-hour appointment to speak with me directly (see the first bullet point on how to make an appointment). I won't answer any questions regarding your grades via email.

Course Description/Overview: Many times, public policy work requires statistical analysis. POGO 511 introduces various quantitative tools used to inform public policy issues. The course is divided into four broad units: Descriptive Statistics, Probability, Statistical Inference, and Regression Analysis. The course emphasizes how they are applied to practical policy questions. The course also introduces you to STATA, commonly used software in social sciences, as a tool to analyze quantitative data.

Course Learning Outcomes:

- *Conduct* basic statistical analysis (hypothesis testing, regression, etc.) to analyze various policy issues.
- *Interpret* the STATA outputs of various basic statistical analyses.
- *Acquire* programming skills necessary to conduct basic statistical analysis in STATA. In this class, I will only introduce basic skills of STATA to facilitate the understanding of statistical analysis. The purpose of this class is not to be proficient at STATA.
- *Critically consume* policy studies/papers/reports in which statistical analysis is used.

Course Website: Canvas

- Please carefully read all announcements under "Announcements" left panel.

Course Format: This class will apply **the flipped classroom pedagogy** instead of the traditional lecture-based format. Specifically,

- Students listen to lecture videos and do exercises to test their understanding of the reading and lecture videos.
- Lecture videos will be available one week before weekly quizzes and discussion boards are due (more on weekly quizzes and discussion boards below).
- Below is the structure of a weekly in-person class meeting:
    - Part 1 (~ 45 minutes-1 hour): We will review key concepts in the lecture videos. I will also answer general questions on the discussion board (see below for the description of the discussion board).
    - Part 2 (~ 45 minutes-1 hour): We will do more practice exercises to deepen your understanding of the material.
    - Part 3 (the remaining time): Answer any individual's questions that I haven't answered in parts 1 and 2.

I understand that this learning style is not for everyone. If you think this course format is not for you, please consider switching to another section that suits your study style better.

Course Texts and Resources:

1. Textbook (Optional):
   Statistics: A Tool for Social Research, 10th edition, by Joseph Healey. Publisher: Cengage. ISBN-13: 978-1285458854. ISBN-10: 1285458850
    - You can rent or buy an eText version or a hard copy (new or used) from online sources like Amazon.
    - Earlier edition:
        - It is fine with me if you want to use an earlier edition. However, you should make sure that you can find the appropriate readings.
        - Some former students reported that they found a free PDF version of the 9th edition online.

In the past, I used to make the textbook a required part of the course. While some students found the textbook helpful, others found my lecture slides and videos sufficient to understand the class material. Therefore, this semester, I will leave it up to you if you want to use the textbook as another resource. I provide the textbook reading list in the syllabus in case you find it helpful.

2. *Getting Started with Stata for Windows (or Mac) - Release 14*
   Publisher: Stata Press
   You can download *Getting Started with Stata for Windows (or Mac) - Release 14* for free here.
3. UCLA statistics website

Required Course Software: STATA 14 or later version. You will need access to this software in and outside of class.

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Ways to get access to STATA:

1. You are *recommended* to purchase a 6-month (or longer) license of Stata 14 or newer version, either BE or SE.
    - If the system asks you for a GradPlan ID, please put down your student ID. If the system does not ask you, then you do not need to provide your student ID.
    - STATA BE should be enough for the exercises we will do in class.
    - If you plan to deal with a large dataset for your group data exercise (more on the data exercise below), you may want to invest in SE rather than BE.
    - For the product (BE vs. SE) comparison, please go here.
    - For detailed pricing information, please go here.

2. STATA is accessible in the school's computer labs on the 2nd and 3rd floor of Van Metre Hall.

3. You can get free access to STATA using the Citrix Virtual Lab here.

I highly recommend you purchase STATA (option 1) unless you are very familiar with Virtual Computing Lab.

Study Group:

- I believe that we learn better when we work together and learn greatly from our peers. So I highly recommend a weekly study group.
- Throughout the semester, you will work with students in your study group on data exercises and weekly discussion boards (more on them below).
- At the beginning of the semester, I will randomly assign you to a study group of 3-4 students. You have until the fourth class meeting to decide if you want to stay or switch to another group.
- If you want to switch to a different group (you can only do so until the fourth class meeting of the semester):
    - Make sure that your original group still has the same number of members. For example, if your original group has 3 people, ensure that this group still has 3 people after switching.
    - All members of the old group and the new group agree with the exchange.
    - Email to inform me by the fourth class meeting.
- If you decide to stay with the assigned group, you don't need to do anything.

Grading Schema: The conventional grade scheme is roughly as follows: A: >= 93%, A-:[90-93%), B+: [87-90%), B: [83-87%), B-: [80-83%), C: [70-80%), F: <70%

I'll adjust a curve if the class average is lower than the conventional scheme.

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Grade Weights & Grading-related Policies

Exams (Midterm: 32.5%, Final: 32.5%): Individual submission, NO group discussion

- If you do better on the final than on the midterm, your final grade will replace your midterm grade. Likewise, if you miss the midterm for any reason (including illness, travel, emergency, etc), your final grade will replace your midterm grade. Technically, you can skip the midterm and let it ride on the final. However, I do not recommend this strategy as it exposes you to unnecessary risk. Taking the midterm can never hurt your grade, and it may even help.
- Exams may cover any material from lectures, weekly quizzes, problem sets, ungraded exercises, data exercises, and in-class exercises. The final is cumulative (about 20%-30% of the material would be before the midterm, and about 70%-80% would be after the midterm).
- All students must turn in the exams by the due dates. Please check the exam dates and arrange your schedule accordingly.

Weekly Quizzes and Problem Sets (Total of 10%): Individual submission, and group discussion is encouraged

Weekly Quizzes:

- Weekly quizzes instantly assess how well you absorb the weekly material.
- They are multiple-choice questions. You have unlimited attempts to get the correct answers by the due dates.

Problem Sets:

- The weekly problem sets are to ensure that you have understood the important concepts from the lecture.
- You may work in small groups. However, you must write up your answers individually, in your own words.
- You will have unlimited attempts on problem sets. Blackboard will automatically grade your problem sets.
- Open-ended questions are graded based on efforts. Please check the answer keys for corrected answers.

No late quizzes and problem sets will be accepted. I will drop the six lowest scores among problem sets and quizzes. For example, if your 6 lowest scores are 4 problem sets and 2 quizzes, I will drop these 4 problem sets and 2 quizzes. This flexibility is intended to cover legitimate issues such as illness, personal emergencies, crunch time in other classes or work, or circumstances beyond your control. These six drops are on the honor system – there's no need to provide me with an explanation or documentation.

Peer Evaluation (5%): Individual submission

- Throughout the semester, you will work with your group on data exercises and weekly discussion boards (more below). Peer evaluation allows you to evaluate how collaborative your peers are. Peer evaluation is confidential and will be due at the end of the semester.

Weekly Discussion Board (5%): Group submission

- I believe that we learn better when we work together, and we learn greatly from our peers. So I highly recommend a weekly study group.
- To encourage regular study group meetings, I will post weekly extra exercises, which won't be graded, for your group to have something concrete to work together.
- Each group member will take turns as the weekly group's summarizer, who will post on the discussion board what the group understands and does not understand about the weekly material.
- I will incorporate the content on the discussion board in our weekly class meeting.
- No late assignments will be accepted. I will drop the three lowest scores. This flexibility is intended to cover legitimate issues such as illness, personal emergencies, crunch time in other classes or work, or circumstances beyond your control. These three drops are on the honor system – there's no need to provide me with an explanation or documentation.

Data Exercises (15%): Group submission

- There are 5 data exercises throughout the semester. The 5 exercises are different steps to answer one policy-relevant question of your choice using a quantitative method. But instead of having one big quantitative project at the end of the semester, I partition it into 5 parts (data exercises 1 through 5), so that I can guide you through the process and give you regular feedback throughout the semester.
- I will suggest a topic and a dataset. You can either work on the topic and the dataset I suggest or pick your topic or dataset.
- Data exercises are graded based on the quality of your work. After receiving my feedback, your group will have one chance to redo each data exercise from parts 1 through 4. I will keep the higher score between the original data exercise and the redo. Data exercise part 5 will combine data parts 1 through 4.
- The data exercises help you familiarize yourself with STATA and understand how to do quantitative data analysis.
- It also enhances your critical thinking as a consumer of policy analyses.
- No late assignments will be accepted.

Class participation and engagement:

- In-class participation will be a mix between volunteering and cold calling. You are encouraged to ask questions, share relevant insights from previous experiences, and treat your classmates' participation with courtesy.

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How can you succeed in this course?

- For nearly all students, the answer is simple: "By really trying and putting in the effort." A weekly average of at least 8-11 hours of preparation is required for most students. For some students, 14-18 hours per week may be necessary. This time includes reading and re-reading the textbook, watching and re-watching lecture videos, and repeatedly solving problems to test understanding.

Date	Topics	Assignments Due On Wednesdays at 9:00 am
Lecture 1: August 27	**Course Road Map& Review Descriptive Statistics** Read: - Optional: Healey: Basic mathematical review, Chapter 1, chapter 2.1-2.4, 2.6, 2.7, 3.2-3.4, 4.1, 4.3, 4.6, 4.7. Watch: - Required: Lecture videos	- Syllabus quiz. - Lecture 1's weekly quizzes. Note: I accept late assignments for the first week if you turn them in by the due date of the second week. But I strongly recommend completing these assignments before the first class, in case you have any questions about the material.
Lecture 2: Sept 3	**Probability, Normal Distribution, t-distributions, & Introduction To STATA** Read: - Optional: Healey: Chapter 5 - Required: Handout "Open STATA& Descriptive Statistics" Watch: - Required: Lecture videos	- First week assignments if you have not turned them in. - Lecture 2's weekly quizzes - The group summarizer posts on the discussion board. - Problem set 1.
Lecture 3: Sept 10	**Sampling Distribution.** Read: - Optional: Healey: Chapter 6's Introduction, 6.1, 6.3, 6.4, 6.5 Watch: - Required: Lecture videos	- Lecture 3's weekly quizzes - The group summarizer posts on the discussion board. - Problem set 2.
Lecture 4: Sept 17	**Hypothesis Testing of One Sample** Read: - Optional: Healey from ch 8.1 to ch 8.9 Watch:	- Lecture 4's weekly quizzes.

	- Required: Lecture videos	- The group summarizer posts on the discussion board. - Problem set 3. - Data exercise 1.
Sept 24	**Catch-up and Midterm Review**	- The group summarizer posts on the discussion board. - Problem set 4.
Oct 1	**Midterm Exam**	
Lecture 5: Oct 8	**Confidence Interval** Read: - Optional: Healey: Chapter 7 Watch: - Required: Lecture videos	- Lecture 5's weekly quizzes - The group summarizer posts on the discussion board. - Data exercise part 2, optional Data 1 Redo
Lecture 6: Oct 15	**Ordinary Least Squares Simple Regression** Read: - Optional: Healey: ch.13.1, 13.2, 13-3b, 13.4, 13.8. - Required: Handout "STATA Lab_Simple Regression_Part1" Watch: - Required: lecture videos	- Lecture 6's weekly quizzes - The group summarizer posts on the discussion board. - Problem Set 5.
Lecture 7: Oct 22	**Ordinary Least Squares Simple Regression: Hypothesis Testing** Read: - Required: Handout "STATA Lab_Simple Regression_Part2" Watch: - Required: Lecture videos	- Lecture 7's weekly quizzes - The group summarizer posts on the discussion board. - Problem set 6. - Data exercise 3, Optional data exercise 2 redo.
Lecture 8: Oct 29	**Ordinary Least Square: Multiple Regression** Read: - Required: Handout "STATA syntax for Multiple Regression." Watch: - Required: Lecture videos	- Lecture 8's weekly quizzes - The group summarizer posts on the discussion board - Problem set 7.

Lecture 9: Nov 5	R-squared, Simple, and Multiple Regression Assumptions Read: - Required: Handout "Reading_OLS Assumptions" Watch: Required: Lecture video	- Lecture 9's weekly quizzes - The group summarizer posts on the discussion board - Problem set 8. - Data exercise 4, Optional data exercise 3 redo
Lecture 10: Nov 12	Make-up class if necessary. Otherwise, more on Simple and Multiple Regression	- The group summarizer posts on the discussion board Problem set 9.
Nov 19	TBA	- The group summarizer posts on the discussion board. - Data exercise 5 (comprehensive data exercise), Optional data exercise 4 redo. - Peer evaluation.
Nov 26	Thanksgiving break, no class	
Dec 3	TBA	
Dec 10	In-class final (cumulative)	

Academic Standards

Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.

As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices,

disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:

- Honesty: Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
- Acknowledgement: Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, coauthored pieces, and project reports.
- Uniqueness of Work: Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

Violations of these standards—including but not limited to plagiarism, fabrication, and cheating—are taken seriously and will be addressed in accordance with university policies. The process for reporting, investigating, and adjudicating violations is outlined in the university's procedures here. Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

The principles outlined in these academic standards reflect our collective commitment to upholding the highest standards of honesty, acknowledgement, and uniqueness of work. By adhering to these principles, we ensure the continued excellence and integrity of George Mason University's academic community.

Student responsibility:

Students are responsible for understanding how these general expectations regarding academic standards apply to each course, assignment, or exam they participate in; students should ask their instructor for clarification on any aspect that is not clear to them.

Accommodations for Students with Disabilities

Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit the Disability Services website for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu. Phone: (703) 993-2474.

Student responsibility:
Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor in advance of any relevant class meeting, assignment, or exam.

FERPA and Use of GMU Email Addresses for Course Communication
The Family Educational Rights and Privacy Act (FERPA) governs the disclosure of education records for eligible students and is an essential aspect of any course. **Students must use their GMU email account** to receive important University information, including communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.

Student responsibility:
Students are responsible for checking their GMU email regularly for course-related information, and/or ensuring that GMU email messages are forwarded to an account they do check.

Title IX Resources and Required Reporting
As a part of George Mason University's commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, **all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct** (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required. If outreach is required, the individual the report is about (the "Complainant") will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.

For more information about non-confidential employees, resources, and Prohibited Conduct, please see University Policy 1202: Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence. Questions regarding Title IX can be directed to the Title IX Coordinator via email to TitleIX@gmu.edu, by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

Student opportunity:
If you prefer to speak to someone confidentially, please contact one of Mason's confidential employees in Student Support & Advocacy (SSAC), Counseling and Psychological Services (CAPS), Student Health Services (SHS), and/or the Office of the University Ombudsperson.