# Government 10: Quantitative Political Analysis

## Sean Westwood

## Spring 2024

**Office Hours:** Monday 5:30-6:30 PM EST
**Office hours appointments:** https://calendly.com/seanjwestwood/office-hours

## Course Overview

The growing amount of available quantitative data is changing the way we understand and engage in politics, how we implement policy, and how organizations across the world make decisions. In this course, we will learn the fundamental tools of quantitative analysis and apply them to a wide range of political and policy oriented questions. How do we predict presidential elections? Did economic voters bring Hitler to power? How does the ideology of the Supreme Court change over time? These are just a few of the questions we will work on in the course.

Students are not expected to have any programming knowledge, and the course will be centered around assignments that will help build R statistical skills from scratch. Students will leave the course equipped for work in any setting that requires a social scientific approach to data science, from policy non-profits to government, from Silicon Valley to Wall Street and beyond. There are no formal prerequisites for this course.

You need to bring your laptops to class so that we can actively code during lecture. This will help you "learn by doing" and it will ensure that the transition from lecture to lab to problem sets is smooth.

## Teaching

This will be a mostly flipped class. You will be expected to do all assigned reading *before* class starts. There will be some lecture, but this will be a small part of the class. We will work together in class on exercises and problem sets. We will meet during our normally scheduled time (3A) throughout the term.

## Communication

Outside of class and office hours, I can be reached by email. However, I ask that you primarily use Ed Discussion (I find that most students have similar questions, so asking on Ed Discussion can help provide an answer to other students who might not want to reach out by email). Please refer to this document if you have logistical questions. Also feel free to schedule an office hour meeting. If you can't wait for office hours or cannot get the answer on Piazza, email.

## Study Groups and Help

The most successful students will form study groups. You can work together on problem sets, but you must submit your own work. You can not work together during quizzes or exams.

We will use the Ed Discussion (part of Canvas) discussion tool in this course. Ed Discussion allows students to ask questions about course content and assignments. Both I and other students will respond to questions. Use of Ed Discussion will count toward class participation (15% of final grades). Questions about the class, assignments and R should be posted to Ed Discussion.

## Statistical Software

You must install three (free) applications for this class. Please make sure you have done this before the first day of class.

Mac users:

- R (a software environment for statistical computing): https://cran.r-project.org/bin/macosx/
- RStudio (an IDE for R): https://download1.rstudio.org/electron/macos/RStudio-2023.12.1-402.dmg
- Git (a code management tool): https://sourceforge.net/projects/git-osx-installer/files/latest/download

Windows Users:

- R (a software environment for statistical computing): https://cran.r-project.org/bin/windows/
- RStudio (an IDE for R): https://download1.rstudio.org/electron/windows/RStudio-2023.12.1-402.zip
- Git (a code management tool): https://github.com/git-for-windows/git/releases/download/v2.42.0.windows.1/Git-2.42.0-64-bit.exe

## Required Text:

*Data Analysis for Social Science: A Friendly and Practical Introduction* by Elena Llaudet and Kosuke Imai.

On Amazon: https://tinyurl.com/9n2kthcv

$45 paperback; $33.99 on Kindle

## Assignments

Grading in this class will be based on the components described below. Late work will not be accepted without prior permission. Makeup exams will not be given, and students who miss exams will receive a score of 0 absent extraordinary circumstances.

- 40% Problem sets: Problem sets will be distributed each Monday. These are individual assignments and are due at 11:59 PM on Sunday. All assignments are to be submitted electronically. As I will post solution sets, no late assignments will be accepted.
- 15% Midterm Exam: The midterm exam will be held on 4/24 and will cover the material discussed in class up to that point.
- 20% Final Exam: Comprehensive final exam will be on 5/31 (Friday) @ 11:30 AM
- 10% Quizzes: Short quizzes given throughout the course.
- 15% Class Participation: Class participation is awarded based on post-class submissions (due at 11:59 PM the day of class), engagement in lecture, and engagement on Ed Discussion.

## Schedule

1. 3/25 - Introduction to GOVT 10 and Introduction to R

   - Reading: Chapter 1 to 1.6.1

2. 3/27 - Working with statistical software

   - Reading: Chapter 1.62 to 1.7.5
   - Problem Set 0 Assigned

3. 4/1 - Working with data in R

   - Reading: Chapter 1.62 to end of chapter
   - Problem Set 1 Assigned

4. 4/3 - Causality

   - Reading: Chapter 2

5. 4/8 - Working with data

   - Problem Set 2 Assigned
   - Quiz 1

6. 4/10 - Measurement

7. 4/15 - Working with survey data

   - Reading: Chapter 3 to 3.4
   - Reading: http://www.sthda.com/english/wiki/r-base-graphs
   - Reading: https://intro2r.com/simple-base-r-plots.html
   - Problem Set 3 Assigned

8. 4/17 - Relationships between two variables

   - Reading: Chapter 3.5 to end of chapter
   - Quiz 2

9. 4/22 - Midterm Review

10. 4/24 - Midterm

11. 4/29 - An introduction to loops

    - Problem Set 4 Assigned
    - Reading: https://intro2r.com/loops.html

12. 5/1 - Predicting election outcomes

    - Reading: https://intro2r.com/conditional-statements.html

13. 5/6 - Regression coefficients

    - Reading: Chapter 4 to 4.3
    - Problem Set 5 Assigned

14. 5/8 - Predicting with regression

- Reading: Chapter 4.4 to end of chapter
- Quiz 3

15. 5/13 - Working with Observational data

    - Reading: Chapter 5 to 5.3.1

16. 5/15 - Multivariate regression

    - Reading: Chapter 5.4 to end of chapter
    - Problem Set 6 Assigned

17. 5/20 - Uncertainty

    - Reading: Chapter 7
    - Problem Set 7 Assigned

18. 5/22 - Uncertainty and regression as a causal test

    - Quiz 4

19. 5/29 - Final review

20. 5/31 - Final (Friday) @ 11:30 AM

# Manditory disclosures

### AI in the classroom

You are permitted to use AI of all kinds on all assignments, quizzes and exams. You might pass with AI, but you will not get an A.

### Dartmouth's Academic Honor Principle.

http://www.dartmouth.edu/judicialaffairs/honor/index.html

### Accessibility Needs

For detailed information regarding expectations of the faculty to ensure accessibility for all students, please see the website for Dartmouth's Student Accessibility Services (SAS) (https://students.dartmouth.edu/ student-accessibility/, then click on "faculty and staff"). In addition, please post the paragraph below to your course Canvas sites:

Students with disabilities who may need disability-related academic adjustments and services for this course are encouraged to see me privately as early in the term as possible. Students requiring disability-related academic adjustments and services must consult the Student Accessibility Services office (Carson Hall, Suite 125, 646-9900). Once SAS has authorized services, students must show the originally signed SAS Services and Consent Form and/or a letter on SAS letterhead to their professor. As a first step, if students have questions about whether they qualify to receive academic adjustments and services, they should contact the SAS office. All inquiries and discussions will remain confidential.