GOV 2080
Quantitative Analysis in Political Science
Spring 2023

MW
1:15-2:40pm
VAC North 304

Instructor: Michael Franz	Office Hours:
Email: mfranz@bowdoin.edu	Tuesday, 9-11am
Phone: 207-798-4318 (office)	Thursday, 2-3pm
Office: 200 Hubbard Hall	Book an appointment in Blackboard;
	Or email about a different time as needed

This course examines the use of empirical methods to study political phenomena. It is designed to help you think like a social scientist and to give you the tools to investigate interesting and important social/political phenomena. Research begins with a puzzle and a question. What makes a puzzle worth investigating? What makes a particular research project worth pursuing? Ask first, who cares? After surmounting this hurdle (a hard enough challenge), it is imperative that we think first about process. How is my puzzle generated? For example, what process generates turnout rates on Election Day? Do voters make rational decisions about the costs and benefits of voting? Or do they care more about civic and democratic responsibilities? Once we hypothesize a process, we must then consider its implications— what should we observe if I'm right? This should motivate us to collect data and leverage it against our expectations. Does the evidence support my claims? How might I be wrong? Finally, we must write it all down, and in a way that is digestible to our readers.

We begin the semester with one major goal of social science, <u>descriptive inference</u>. This is not just description as in the collection and discussion of facts. Descriptive inference is the use of a sample of data to explain a larger social or political phenomenon. Polls are the most common example of a descriptive inference. We will discuss and review the use of polls in American politics, with a specific emphasis on good and bad practices in the polling profession. We follow this with a consideration of <u>causal inference</u>. That is, how do we identify relationships between variables? How are we sure that one variable has a causal effect on another? When are those relationships significant? This raises important questions about how to collect and code our data.

Ultimately, the best way to think like a social scientist is to act like one. As such, your assignments will push you to practice the tools we will read about and discuss in class. This course satisfies the MCSR distribution requirement. To that effect, we cover issues of data collection (which can be simple but challenging) and data analysis (which can be as basic a cross-tabulation and as complex as multi-variate statistical inference tests).

Learning Goals
In this course, you should:

1. Learn about the basics of social science research. You should, in meeting this goal, become familiar with the objectives of descriptive and causal inference.
2. Learn about and practice some common and important statistical analysis tools.
3. Become knowledgeable about statistical analysis software, in this case R, including the writing and usage of scripts to load and analyze data.

These skills are useful beyond the particulars of social science academic work. The software and data skills will be applicable in future jobs, for example. Moreover, the way we think about the challenges of data collection and analysis, and by implication the way we accumulate knowledge and make inferences about the broader world, will ideally make you a better citizen.

Course Requirements
There are five major components to your grade:

1. **Two short assignments** (15 points; each worth 7.5 points)—Topics and instructions are provided below on each due date.

2. **Four problem sets** (50 points; the first three are worth 10 points and the fourth is worth 20 points)—these will cover topics from the Pollock and Edwards text. Due dates are listed on the syllabus. Two will be completed as timed assignments and two will be take-home assignments with a longer completion time.
   *On the third and fourth problem sets, you may work together on problem sets, if and only if it is a collaborative process. Should you find yourself relying on your partner to "carry" you through the exercise, you are not collaborating. Even if working together in some capacity, *you are responsible for writing up and turning in work separately*. You must also list on the top of the problem sets your collaborators. Any evidence that your work is not your own (e.g., copying significant portions of a write-up) will result in a referral to the College's Judicial Board.

3. **Discussion Board posts** (5 points)—You will post three times to Canvas Discussion Boards. I will assign you specific weeks. Prompts are provided in the linked Discussion Boards in the relevant weeks. You will be asked to identify a news story or website that raises an interesting data question. This can cover any course concept or idea that we have covered to date in the semester.

4. **Five lab assignments** (20 points)— See the syllabus for due dates and details on each assignment. You will be graded on these largely for effort. Learning R is hard, and the start-up cost is steep. As such, the main goal—especially with the first few assignments—is to do your best and demonstrate an investment in learning how to code and run analysis in R.

5. **Class participation** (10 points)—this includes attendance and class participation.
   *You are encouraged also to read and comment on classmates' Discussion Board posts. This is a good way to make up for gaps in your in-class participation.

Readings
There are two books for this course, and several outside articles. All the outside readings can be accessed through Blackboard.

1. *The Essentials of Political Analysis*, 6th edition, by Philip Pollock III and Barry Edwards. Sage.

2. *An R Companion to Political Analysis*, 3rd edition, by Philip Pollock III and Barry Edwards. Sage.
   *The 3rd edition is much revised over the 2nd edition, so it is not advisable to purchase and use the 2nd edition.

Other Issues

1. I expect all students to abide by the Bowdoin Academic Honor Code, which can be accessed online at: https://www.bowdoin.edu/dean-of-students/ccs/community-standards/the-codes.html. If you have any concerns or questions about how to cite work appropriately, please consult a reference librarian or me.

2. If you have chosen to take the class as Credit/D/F, I will only grant a Credit grade if the student has completed all the work for the class.

3. Cite your sources in submitted papers. Talk with me about proper citation if you have any questions. I'm open to any approach you take, so long as it is consistent and generally well-regarded. Consider the Chicago Style, as I'm partial to that one.

Class Schedule

Week 1

January 23: Introductions and Expectations

January 25: Understanding Concepts
*   Pollock and Edwards, Chapter 1
Lab Session—Summary statistics in Excel/Sharing our experience with data

Week 2

January 30: Understanding Concepts, cont.
*   Pollock and Edwards, Chapter 2

February 1: *Lab Session*—Excel, Introduction to R
*   Pollock and Edwards [R Companion], Introduction and Chapter 1

Short Assignment 1, due 2/3 by 5pm (7.5 points): Choose one of the following concepts, all of which are used a lot on our campus: intellectual fearlessness, the Common Good, and Inclusive Excellence. Define the concept using the template in Chapter 1 of the Pollock and Edwards textbook. Discuss how you might operationalize and therefore measure the concept. What type of variable would it be, given the discussion in Chapter 2? Conclude with a brief discussion of the challenges of defining this concept.
*3 pages (double-spaced)
**Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.

Week 3

February 6: Descriptive Inference
*   John Gerring. 2012. "Mere Description," *British Journal of Political Science*. 42(4): 721-746.

February 8: An Introduction to Polls
*   Pew Research Reports:
    o   "U.S. Survey Research"
    o   "What Our Transition to Online Polling Means for Decades of Phone Survey Trends"
*   *Skim!* (pp. 1-73): "Task Force on 2020 Pre-election Polling: An Evaluation of the 2020 General Election Polls," American Association for Public Opinion Research
Lab Session—Reading data, changing directories, and summary statistics in R
*   Pollock and Edwards [R Companion], Chapter 2

LAB ASSIGNMENT 1 (due by 2/10 at 5pm): Complete Exercise 5 in Chapter 2 of the R Companion book. Use R Markdown to generate a pdf of your work. Sometimes the exercises will ask you to write up briefly some results or to answer some short questions. You should answer those in the R Markdown file by repeating the question and then providing your answer. ****Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.**

Week 4

February 13: Question Writing in Polls
- Jean Converse and Stanley Presser, "Survey Questions: Handcrafting the Standardized Questionnaire," Sage.

February 15: *Lab Session*—R scripts, manipulating data (aggregating, recoding)
- Pollock and Edwards [R Companion], Chapter 3

LAB ASSIGNMENT 2 (due by 2/17 at 5pm): Complete Exercise 3 in Chapter 3 of the R Companion book. Use R Markdown to generate a pdf of your work. ****Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.**

Short Assignment 2, due 2/19 at 5pm (7.5 points): Design two survey questions for our class poll. Why did you select these topics and questions? Defend the form and content of your questions by referring to the arguments in Converse and Presser. For example, why did you choose open or closed forms? Are there concerns about question order and wording? Good papers will demonstrate that your questions are designed in part with the advice of Converse and Presser.
*3 pages (double-spaced)
**Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.

Week 5

February 20: *Lab Session*—R scripts, statistical analysis (comparing means and trends across groups)
- Pollock and Edwards [R Companion], Chapters 4 and 5

February 22: no class

Week 6

February 27: Analyzing a Poll
- Pollock and Edwards, Chapter 6

March 1: *Lab Session*—Statistical analysis (difference of means)
- Pollock and Edwards [R Companion], Chapters 7-8

LAB ASSIGNMENT 3 (due by 3/3 at 5pm): Complete Exercises 2 and 3 in Chapter 8 of the R Companion book. Use R Markdown to generate a pdf of your work. ****Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.**

Week 7
Target Week for Spring 2023 Polar Poll
(more info forthcoming)

March 6: Review for Problem Set 1

March 8: Finalizing the 2021 Polar Poll
   Lab Session—Statistical analysis (difference of means)
    • Pollock and Edwards [R Companion], Chapter 9

Problem Set 1, due 3/10 at 5pm (10 points)
You can complete this on paper and scan your work and/or take a picture of the work and upload as an image file or pdf.
*You will have two hours to complete the problem set. It will be available starting on Tuesday morning on 3/7, and you have until 5pm on Friday (3/10) to complete it. I will discuss in class additional details of accessing the problem set.
**Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.

Weeks 8 and 9
Spring Break!

Weeks 10 and 11

March 27 and April 3: Analyzing a Poll, cont.
   • Pollock and Edwards, Chapter 7

March 29 and April 5: *Lab Session*—Statistical analysis (Chi-square and Measures of Association)
[Initial look at Polar Poll data on 3/29]
   • Pollock and Edwards [R Companion], Chapter 10

Week 12

April 10: Review for Problem Set 2

April 12: Introducing Causal Inference
   • Reading TBD
   Lab Session—R Graphics

Problem Set 2, due 4/14 at 5pm (10 points)
You can complete this on paper and scan your work and/or take a picture of the work and upload as an image file or pdf.
*You will have two hours to complete the problem set. It will be available starting on Tuesday morning on 4/11, and you have until 5pm on Friday (4/14) to complete it. I will discuss in class additional details of accessing the problem set.
**Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.

Week 13

April 17: Framing Hypotheses
   • Pollock and Edwards, Chapters 3 and 4

April 19: *Lab Session*—Statistical analysis (regression)
   • Pollock and Edwards [R Companion], Chapter 11

LAB ASSIGNMENT 4 (due by 4/21 at 5pm): Complete Exercise 3 in Chapter 11 of the R Companion book. Use R Markdown to generate a pdf of your work. ****Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.**

Week 14

April 24: Experiments and Controlled Comparisons
- Pollock and Edwards, Chapter 5

April 26: Experiments and Controlled Comparisons, cont.
- Reading TBD
Lab Session—Statistical analysis (regression)
- Pollock and Edwards [R Companion], Chapter 11

LAB ASSIGNMENT 5 (due by 4/28 at 5pm): Run a bi-variate regression model using the Polar Poll data and using code supplied by Professor Franz. Use R Markdown to generate a pdf of your work. ****Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.**

Week 15

May 1: Bivariate and Multivariate Regression
- Pollock and Edwards, Chapter 8

May 3: Bivariate and Multivariate Regression, cont.
- Reading TBD
Lab Session—More graphics
- Pollock and Edwards [R Companion], Chapter 12

Problem Set 3, due 5/5 at 5pm (10 points)
You can complete this on paper and scan your work and/or take a picture of the work and upload as an image file or pdf. You might consider using R Markdown to generate a pdf of your work, but that is not required for this assignment.
*The assignment will be posted on Friday, 4/28. There is no time limit for completing this problem set.
**Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.

Week 16

May 8: Bivariate and Multivariate Regression, cont.
- Reading TBD

May 10: Logistic regression
- Pollock and Edwards, Chapter 9
Lab Session—Logistic regression
- Pollock and Edwards [R Companion], Chapter 14

Problem Set 4, due 5/18 at 10pm (20 points)
*The assignment will be posted on Monday, 5/1. Use R Markdown to generate a pdf of your work.
**Upload the assignment in Canvas, in the "Assignments" section located in the left-side menu options.