



Quantitative Research Methods

PSCI 2075

Instructor Info



Prof. Siegel



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TA Info



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Course Overview

Data are all around us. Quantitative data frequently appear in the media, in politics, the workplace, and even in our own lives. This course is designed to turn you into a better consumer—and producer—of analyses using quantitative data. These skills are becoming increasingly more important in both public and private sector careers. And the skills learned in this course will be needed in future courses you will take in the political science department.

Data analysis takes practice. To better assist you in gaining skills necessary when working with quantitative data, this course will be taught in the style of “learning-by-doing.” On Mondays you will listen to short pre-recorded lecture segments. On Wednesdays we will “flip” the classroom and you will work individually and in small groups to complete assignments using the statistical computer program R. No prior experience with R is necessary. The goal is to familiarize you with analyzing, presenting, and interpreting patterns in data. While the data used in this class will place an emphasis on the social sciences, the tools learned in this class are easily applied to many other settings.

Each of you are also assigned a recitation session, which is taught by one of the course TAs. What is covered in recitation differs by week; some may delve deeper into a topic we cover in lecture. Other times it may involve allowing time to work on group assignments, or reviewing for exams and individual assignments.

Note that this is an involved, hands-on, rigorous course. You will need to complete readings each week, attend lecture and recitation, and work with your group to complete any assignments. You can expect to spend around 8-12 hours per week on classes/assignments/readings related to this course.

Learning Objectives

- Become a better and more engaged consumer of data
- Become familiar with examining and analyzing data using R
- Become a producer of quantitative analyses

Course Schedule

Class	Instructor	Time	Location
Lecture (010)	Prof. Siegel	Mon & Wed 12:40-1:30	Remote
Recitation (011)	Connell	Mon 11:30-12:20	DUAN G2B90
Recitation (012)	Bessen	Wed 11:30-12:20	DUAN G1B20
Recitation (013)	Connell	Fri 9:10-10:00	Remote
Recitation (014)	Kaur	Wed 8:00-8:50	Remote
Recitation (015)	Bessen	Mon 11:30-12:20	UMC 382
Recitation (016)	Sohn	Mon 5:20-6:10	Remote
Recitation (017)	Sohn	Mon 10:20-11:10	Remote
Recitation (018)	Kaur	Mon 4:30-5:20	Remote

Pre-Requisites & Course Requirements

There are no prerequisites for this course. You will need access to a computer with internet connectivity for each class session (remote or in person). We will use R and RStudio as well as Google Collab Notebooks in this course. No prior experience with these applications is necessary.

Textbooks & Course Website

There are two required textbooks for the course:

- Pollock, Philip H. III and Barry C. Edwards. 2020. The Essentials of Political Analysis. 6th edition. Sage. ISBN 9781596379616.
- Pollock, Philip and Barry C. Edwards. 2018. An R Companion to Political Analysis. 2nd edition. Sage. ISBN: 978-1-5063-6884-9

We will also draw from an additional textbook for this course, but you do not need to purchase it since it has not been published yet:

- Brown, David S. Introduction to Statistics with R: The Art and Practice of Data Analysis. In Press.

All other course materials(including the Brown text book) will be available on the PSCI2075 course website on Canvas.

Note that it is expected that you read the required readings before watching lecture videos or completing course assignments each week after Week 1.

Grading Scheme

Course grades will be based on the following:

10%	Recitation Participation / Attendance
10%	DataCamp Homework Assignments
10%	Quizzes
25%	Group Assignments
20%	Midterm Exam
25%	Final Exam

The following scale will be used to convert numerical grades into letter grades. Note that I will round up a letter should your grade fall on the number (but on or above 0.5) between two letters (e.g., 89.5 up to 90 rounds up to an A-). A = 95-100; A- 90-94; B+ 87-89; B 84-86; B- 80-83; C+ 77-79; C 74-76; C- 70-73; D+ 67-69; D 64-66; D- 60-63; F < 60.

Recitation Participation / Attendance

It is important to attend and participate in your recitation session. Regularly attending and being an active participant in recitation is worth 10% of your final grade.

DataCamp Homework Assignments

You will be asked to complete several modules on “DataCamp,” an online platform with resources for learning R. Completion of these assignments will be worth 10% of your final grade.

Quizzes

To encourage you to watch the lecture videos and do the reading, you will periodically need to complete quizzes to test your comprehension of the week’s assigned material. These quizzes will be worth 10% of your final grade. Timed quizzes will be administered on Canvas during the Wednesday class period.

Group Assignments

Approximately every other week you will complete a group assignment, which will be uploaded to Canvas. Groups will be assigned in the based on recitation sections. These group assignments will be worth 25% of your final grade.

Midterm Exam

About halfway through the semester, a take-home midterm exam will be administered. You will have a 24 hour window in which to take the exam, and will upload you answers to Canvas. The midterm is an individual assignment; you will need to work on your own to complete the exam. The midterm will be worth 20% of your final grade. This will be cumulative, so everything we have learned up to this point is fair game.

Final Exam

At the end of the semester, a take-home final exam will be administered during the final exam time scheduled for this course. You will have a 24 hour window in which to take the exam, and will upload you answers to Canvas. The final is an individual assignment; you will need to work on your own to complete the exam. The final will be worth 25% of your final grade. This will be cumulative, so everything we have learned up to this point is fair game.

Extra Credit

Throughout the semester there may arise opportunities for extra credit. These will be announced via email to the class.

Late Work

Sometimes the need arises to turn in assignments late. This may be especially true this semester as unforeseen circumstances due to COVID-19 may interrupt students' abilities to complete assignments. If you are unable to make a deadline for a group assignment, cannot take a quiz during the Wednesday class time, or cannot take the midterm or final during the scheduled 24 hour period, please contact your TA in advance of the deadline and we will work out a reasonable accommodation. *Note, you are not required to state the nature of your illness to receive an accommodation.*

Contact with Instructors

While office hours and Methods Lab are a great time to ask questions, please feel free to email me and the TAs. During the week, you can typically expect to receive a response within 24 hours. If you have gone more than 48 hours without a response, please send a follow-up. When you write your email, ensuring that it is both professional and clear is the best way to get a complete answer to your question. Try to clearly identify the question you have. Since many of your questions will revolve around R, it may be necessary to attach a screenshot.

Syllabus Changes

I reserve the right to make changes to the syllabus during the course of the semester as needed and will make the most updated copy available to you on Canvas, and announce said changes via email. This is especially likely to happen this semester given uncertainty surrounding COVID-19.

Class Schedule

PART 1

Week 1 (Aug 24 & Aug 26)	Course introduction and introduction to R	Brown, Preface, Chapter 1; Chapter 1 of Essentials of Political Analysis (EPA)
Week 2 (Aug 31 & Sept 2)	Introduction to descriptive statistics	Brown, Chapter 2; EPA, Chapter 2 (up to p. 55); RCPA, Chapter 2
Week 3 (Sep 7 & Sept 9)	Descriptive statistics (continued)	Brown, Chapter 3; EPA, Chapter 2, p. 55-on; RCPA, Chapter 3
Week 4 (Sep 14 & Sept 16)	Graphical Representations of Data	Brown, Chapter 4
Week 5 (Sep 21 & Sept 23)	Controlled Comparisons	Brown, Chapter 5; EPA, Chapter 5 (up to p. 146); RCPA, Chapter 4
Week 6 (Sep 28 & Sept 30)	Bivariate Regression	Brown, Chapter 6; EPA, Chapter 3 (p. 72-85)
Week 7 (Oct 5 & Oct 7)	Multiple Regression	Brown, Chapter 7; EPA, Chapter 8 (up to p. 260); RCPA, Chapter 9 (up to p. 151, 156-157)
Week 8 (Oct 14)	MIDTERM EXAM	24 hour take home exam

PART 2

Week 9 (Oct 19 & Oct 21)	Dichotomous Variables and Interactions	Brown, Chapter 8; EPA, Chapter 5(p.146-158); Chapter 8 (260-267); RCPA, Chapter 9 (p.151-154)
Week 10 (Oct 26 & Oct 28)	Making inferences & statistical significance	Brown, Chapter 9; EPA, Chapter 6; RCPA, Chapter 6
Week 11 (Nov 2 & Nov 4)	Making inferences & statistical significance (cont.)	EPA, Chapter 7 (p.199-215, 231-232)
Week 12 (Nov 9 & Nov 11)	Causal Inference & Experimental Design	QSS Chapter 2.1-2.4
Week 13 (Nov 16 & Nov 18)	Causal Inference w/ Observational Data	QSS Chapter 2.4-2.8
Week 14 (Nov 23 & Nov 25)	Text as Data	Welbers et al. 2017
Week 15 (Nov 30 & Dec 2)	Review for Final Exam	
Week 16 (Dec 9)	FINAL EXAM	24 hour take home exam

CU Boulder Syllabus Statements

Classroom Behavior

Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. For more information, see the policies on classroom behavior and the Student Code of Conduct.

Requirements for COVID-19

As a matter of public health and safety due to the pandemic, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements, and public health orders in place to reduce the risk of spreading infectious disease. Required safety measures at CU Boulder relevant to the classroom setting include:

- maintain 6-foot distancing when possible,
- wear a face covering in public indoor spaces and outdoors while on campus consistent with state and county health orders,
- clean local work area,
- practice hand hygiene,
- follow public health orders, and
- if sick and you live off campus, do not come onto campus (unless instructed by a CU Healthcare professional), or if you live on-campus, please alert CU Boulder Medical Services.

Students who fail to adhere to these requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct and Conflict Resolution. For more information, see the policies on COVID-19 Health and Safety and classroom behavior and the Student Code of Conduct. If you require accommodation because a disability prevents you from fulfilling these safety measures, please see the “Accommodation for Disabilities” statement on this syllabus.

Before returning to campus, all students must complete the COVID-19 Student Health and Expectations Course. Before coming on to campus each day, all students are required to complete a Daily Health Form.

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID-19 must stay home and complete the Health Questionnaire and Illness Reporting Form remotely. In this class, if you are sick or quarantined, we will work out reasonable accommodations to enable you to complete the course. Please email TAs as soon as you think you may need an accommodation so that we can create the best possible outcome. *Note, you are not required to state the nature of your illness to receive an accommodation.*

Accommodations for Disabilities

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the Disability Services website. Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition, see Temporary Medical Conditions on the Disability Services website.

Preferred Pronouns

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code (honor@colorado.edu); 303-492-5550). Students found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the Honor Code Office website.

Sexual Misconduct, Discrimination, Harassment, and/or Related Retaliation

The University of Colorado Boulder (CU Boulder) is committed to fostering an inclusive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, or protected-class discrimination or harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or cureport@colorado.edu. Information about the OIEC, university policies, anonymous reporting, and the campus resources can be found on the OIEC website.

Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, dating and domestic violence, stalking, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

Religious Holidays

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, Faculty: insert your procedures here. See the campus policy regarding religious observances for full details.