

# PSCI 2075: Quantitative Research Methods

University of Colorado Boulder

Spring 2020

**Time:** Monday and Wednesday, 1:00-1:50

**Location:** VAC 1B20

**Instructor:** Dr. Andrew Q. Philips

**Office:** KTCH 144

**Email:** andrew.philips@colorado.edu

**Instructor's office hours:** Wednesday, 2:00 - 4:30 or by appointment

**Teaching assistants:** Brett Bessen, Alexander Jensen, Trenton Marlar, and Hyodong Sohn

**TA office hours:** –Tuesday/Thursday (11:00-12:00, KTCH 236) (Bessen)

–TBA (Jensen)

–Tuesday/Wednesday (2:00-3:00, KTCH 236) (Marlar)

–Wednesday (2:00-4:00, KTCH 411) (Sohn)

**Methods lab coordinator:** Ian Shapiro

**Office hours:** Monday (8:00-4:00), Tuesday (8:00-1:00), Wednesday (8:00-3:00), KTCH 251

Class	Day	Time	Where	Instructor
Lecture (010)	M/W	1:00-1:50	VAC 1B20	Dr. Philips
Recitation (011)	M	12:00-12:50	STAD 140	Prof. Jensen
Recitation (012)	W	12:00-12:50	STAD 140	Prof. Bessen
Recitation (013)	W	3:00-3:50	KTCH 1B44	Prof. Jensen
Recitation (014)	W	11:00-11:50	STAD 136C	Prof. Bessen
Recitation (015)	M	2:00-2:50	STAD 135	Prof. Marlar
Recitation (016)	M	9:00-9:50	STAD 136C	Prof. Sohn
Recitation (017)	W	4:00-4:50	KTCH 1B44	Prof. Marlar
Recitation (018)	M	11:00-11:50	STAD 136C	Prof. Sohn

**COURSE DESCRIPTION:** 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 even 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, we will have a traditional lecture in the main course (section 010). On Wednesdays, we will ‘flip’ the classroom; you will work with others in your group in class on an assignment using the statistical computer program R. No prior experience with this application 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.

**GOALS OF THE COURSE:** By the end of this course you should be able to:

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

**PREREQUISITES/REQUIREMENTS:** There are no prerequisites for this course. You will need to bring a laptop every day to class. We will also use R and RStudio 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 textbook) will be available on the PSCI 2075 course website on Canvas. Note that it is expected that you read the required readings or watch any assigned webcasts *before* coming to class.

**GRADES:** Course grades will be based on the following:

- **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.
- **Recitation Quizzes:** To help spur attendance in recitation, periodic quizzes will be administered. These are worth 10% of your final grade. These will not be difficult, but cannot be made up without a university-excused absence.
- **Lecture Quizzes:** There will be occasional quizzes administered in the main lecture, to encourage attendance as well as completing the course readings. These will be worth 10% of your final course grade. These will not be difficult, but cannot be made up without a university-excused absence.
- **Group Assignments** Much of the work on the flipped class days will involve working with your group (of about 3 students each) to complete an assignment. These are due roughly every other week (and will be uploaded to Canvas), and are worth 25% of your final grade. Groups will be assigned in the first week of classes, based on recitation session.

- **Midterm:** 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 your 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 your 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.

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

The following scale will be used to turn numerical grades into letter ones. 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-).

#### Grade Scale

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	0-59

**EXTRA CREDIT AND LATE WORK:** Throughout the semester there *may* arise opportunities for extra credit. These will typically involve attending a lecture or attending a speaker series, and will be announced in class.

Sometimes the need arises to turn in assignments late. Group assignments can be turned in late, but will lose a full letter grade for each day late (e.g., what would be graded as an A- is now a B-). However, after three full days have passed after the due date, the assignment will receive a score of 0. Recitation and lecture quizzes cannot be made up without a university-excused absence. The midterm and final exam also cannot be turned in late without a university-excused absence.

**CONTACT WITH INSTRUCTORS:** While office hours 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.

### **TENTATIVE SCHEDULE:**

#### **Week 1: Jan 13 and 15**

Course introduction and introduction to R

Required Readings:

- Brown, Preface, Chapter 1 and 13
- Chapter 1 of *Essentials of Political Analysis* (EPA)

Suggested Readings:

- Introduction, Chapter 1 of *An R Companion to Political Analysis* (RCPA)

#### **Week 2: Jan 20 and 22 (no class Jan 20, MLK day)**

Introduction to descriptive statistics

Required Readings:

- Brown, Chapter 2
- EPA, Chapter 2 (up to p. 55)
- RCPA, Chapter 2

#### **Week 3: Jan 27 and 29**

Intro to descriptive statistics (continued). Transforming variables

Required Readings:

- Brown, Chapter 3
- EPA, Chapter 2, p. 55-on
- RCPA, Chapter 3

#### **Week 4: Feb 3 and 5**

Graphical presentations of data

Required Readings:

- Brown, Chapter 4

#### **Week 5: Feb 10 and 12**

Controlled Comparisons

Required Readings:

- Brown, Chapter 5
- EPA, Chapter 5 (up to p. 146)
- RCPA, Chapter 4

## **Week 6: Feb 17 and 19**

Bivariate regression

Required Readings:

- Brown, Chapter 6
- EPA, Chapter 3 (p. 72-85)

Suggested Readings:

- RCPA, Chapter 8

## **Week 7: Feb 24 and 26**

Multiple regression

Required Readings:

- Brown, Chapter 7
- EPA, Chapter 8 (up to p. 260)
- RCPA, Chapter 9 (up to p. 151, 156-157)

## **Week 8: Mar 2 and 4**

Dichotomous variables and interactions

Required Readings:

- Brown, Chapter 8
- EPA, Chapter 5 (p. 146-158), Chapter 8 (260-267)
- RCPA, Chapter 9 (p. 151-154)

## **Week 9: Mar 9 and 11, MIDTERM EXAM**

Midterm held on March 11. March 9 will be review.

## **Week 10: Mar 16 and 18**

Making inferences, statistical significance, and the Central Limit Theorem

Required Readings:

- Brown, Chapter 9
- EPA, Chapter 6
- RCPA, Chapter 6

## **Week 11: NO CLASS, SPRING BREAK**

## **Week 12: Mar 30 and Apr 1**

Making inferences, statistical significance, and the Central Limit Theorem (continued) Required Readings:

- EPA, Chapter 7 (p. 199-215, 231-232)

### **Week 13: Apr 6 and 8**

Post-estimation and regression diagnostics

Required Readings:

- Brown, Chapter 10

Suggested Readings:

- EPA, Chapter 8 (p. 267-271)

### **Week 14: Apr 13 and 15**

Logistic regression

Required Readings:

- Brown, Chapter 11
- EPA, Chapter 9 (up to p. 300)
- RCPA, Chapter 10

### **Week 15: Apr 20 and 22**

Predicted probabilities and simulating quantities of interest

Required Readings:

- EPA, Chapter 9 (p. 300-304)
- Browse through the Zelig website: <http://docs.zeligproject.org/articles/quickstart.html>

### **Week 16: Apr 27 and 29**

Course review week will be devoted to doing exercises in class that will help prepare for the final.

### **FINAL EXAM: TBA**

### **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 during class.

**Last updated:** January 10, 2020

### **UNIVERSITY-MANDATED STATEMENTS**

#### **Accommodation 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](mailto:dsinfo@colorado.edu) for further assistance. If you have a temporary medical condition or injury, see [Temporary Medical Conditions](#) under the Students tab on the Disability Services website.

## **Classroom behavior**

Students and faculty each have responsibility for maintaining an appropriate learning environment. 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](#).

## **Preferred student names and 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](mailto: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 a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct, intimate partner abuse (including 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](mailto: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, 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, I will try to accommodate your requests, but you must contact me early in the semester.

See the [campus policy regarding religious observances](#) for full details.