PSCI 2075: QUANTITATIVE RESEARCH METHODS
Fall 2021 Continuing Education

Pavel Bacovsky, Ph.D.
Pavel.Bacovsky@Colorado.edu
Office Hours: Fridays 9:30 – 11:30 AM Mountain Time at [Zoomlink];
or by appointment at https://professorpavel.youcanbook.me/

SYLLABUS

This syllabus represents a general plan for the course, including a detailed outline of the course material. I reserve the right to make changes to this syllabus and to the course outline as necessary. Students will be given advance notification of any changes to the course plan via email and Canvas LMS announcement system. Students are responsible for the contents outlined within this syllabus and any changes made thereafter.

COURSE DESCRIPTION

Our world grows evermore digital, and evermore dependent on quantitative information. In order to make sense of our changing world we must learn to evaluate arguments grounded in quantitative data. This class is designed to provide students with the basics of data analysis, which serves two purposes. First, data analysis skills are in high demand – whether in government or in private industry. Individuals with some familiarity with data analysis are more competitive on the job market, and command higher salaries than people who have no data analysis skills. Second, democracy depends on debate and discussion grounded in empirical reality. To understand a concept is to wield its power. Ignoring or cowering in fear of statistics only serves to empower the individuals who do understand them. This class is meant to democratize the power of statistics by giving you the ability to use it to your advantage.

COURSE OBJECTIVES

This course will introduce students to basic concepts and techniques in quantitative analysis and show them how these concepts and techniques are applied to social science questions. Along the way, students will learn how to intelligently read the quantitative output and how to design their own statistical models to answer political questions. By the end of this course students should be able to interpret, design, and manipulate statistical tests in multivariate linear models. Students should be able to communicate differences in the quality of statistical models. Lastly should be able to diagnose and ameliorate issues that plague poorly designed statistical analyses. Students will accomplish these tasks with the statistical software package **R**. Students will learn to conduct linear regressions and will be able to display visual representations of their analysis in **R**.

REQUIRED TEXTS

Agresti, Alan, and Barbara Finlay. 2008. *Statistical Methods for the Social Sciences*. 4th edition. Upper Saddle River, N.J: Prentice Hall.[1]

Wheelan, Charles. 2014. *Naked Statistics: Stripping the Dread from the Data*. 1st edition. New York, NY: W. W. Norton & Company.

ADDITIONAL COURSE REQUIREMENTS

You will be required to download and install the software package R onto your computer. R will not work on your phone's operating system without the use of third-party software. I cannot troubleshoot any technical issues if you choose to use a phone or a tablet, I highly encourage you to access a PC or Mac operating system to best use the software required for this course. Students are also required to upload homework assignments and exams to Canvas LMS. Students are therefore required to have access to a word processor program that can save files as .doc/.docx or .pdf file extensions. Assignments submitted as any other extension will not be graded and will count as not submitted.

OFFICE HOURS AND EMAIL PROTOCOL

Office hours for this course will be held on Zoom on Fridays from 9:30 to 11:30 am Mountain Time. The Zoom Meeting ID and passcode are posted at the top of the syllabus, and should remain consistent for the duration of the course. If there is any change to that information, I will send an email and Canvas LMS announcement. You can also meet with me by appointment, and you can book a meeting using the link: https://professorpavel.youcanbook.me/.

Outside of office hours, I am best reached by email. I respond to emails within 24 hours Monday through Friday. I recommend you do not attempt to email me with time-sensitive questions on Friday after 5 PM as I do not guarantee I will get to them over the weekend.

Emails constitute professional correspondence. They should be formatted as a letter, with a greeting and a sign-off. You should tell me in the subject line the reason for the email. I will not respond to emails that read like text messages or are missing key grammar components such as punctuation marks.

ASSIGNMENTS & GRADING

Your final grade will be based on the following four graded items:

- Homework (30%),
- Midterm Exam (20%),
- Final Exam (40%), and
- Participation (10%).

Homework (30%)

There will be a total of six (6) homework assignments throughout the course. Note that the material in this class is a rather technical. You will benefit enormously from repetition and practice. This is a class where you will learn by doing. As such, I strongly recommend that you attempt the homework on your own before seeking help from others. If you simply copy someone's

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[1] Fifth Edition by Alan Agresti is also acceptable, although the page numbers and practice exercises will differ.

answers, you will not learn anything from puzzling over the problems and will likely do poorly on exams. Moreover, everyone has their own unique style to organizing their work, copying is easily identified in methods classes like this. You are required to turn in every homework assignment on the date they are due. Because I discuss the homework solutions in the following lecture, you will not be allowed to move forward in the class lectures until you have turned in the homework from the previous section of the class.

Midterm Exam (20%)

You will have a 48-hour window to start and finish the exam. Within that period, you will have 24 hours from opening the exam to submit your answers to Canvas LMS. I will release the exam to the class at midnight (Mountain Time) on Thursday, October 21 and you will have until 11:59 PM (Mountain Time) on Friday, October 22 to submit your exam for full credit. I will deduct 20 points from the exam grade for every hour that the exam is late. The exam is open note and open book, but you are not allowed to work together or use outside help.

Final Exam (40%)

The final exam is comprehensive, which means it will cover material from the entire semester. Like the midterm, you will have a 48-hour window to begin the exam. Within that period, you will have 24 hours from opening the exam to submit your answers to Canvas LMS. I will release the exam to the class at midnight (Mountain Time) on Thursday, December 9 and you will have until 11:59 PM (Mountain Time) on Friday, December 10 to submit your exam for full credit. I will deduct 20 points from the exam grade for every hour that the exam is late. The exam is open note and open book, but you are not allowed to work together or use outside help.

Participation (10%)

Your participation grade will be evaluated on your preparation, effort, and involvement in class discussion. Specifically, your grade is based on your discussion of course material across any of the following: lecture comments and discussion boards on Canvas, office hours, or directly with me via email. Questions about lectures or about readings are considered in your participation grade. You will maximize your ability to get a good participation grade if you demonstrate to me that you are engaged in the class.

Your final grade will be determined based on the following scale:

		B+	89.9 – 87	C+	79.9 – 77	D+	69.9 – 67		
A	100 – 94	B	86.9 – 83	C	76.9 – 73	D	66.9 – 63	F	< 59.9
A-	93.9 – 90	B-	82.9 – 80	C-	72.9 – 70	D-	62.9 – 60		

A Note on Math: This is a course designed to teach you both the theory behind statistical inference as well as how to apply the theory to real-world political issues. This course touches on topics ranging from probability and probability distributions, simple univariate and bivariate statistics for discrete and continuous variables, and multiple regression.

COURSE OUTLINE

LECTURE	CONTENT	ASSIGNMENT
Unit 1	**Data & Friends**	
Week 1 Aug 30 – Sep 3	Course Introduction	Syllabus Wheelan, Introduction
Week 2 Sep 7 – Sep 10	Navigation & Data Management	Wheelan, Ch. 1 Agresti & Finlay, Ch. 1
Week 3 Sep 13 – Sep 17	Units of Analysis	Wheelan, Ch. 7 Agresti & Finlay, Ch. 2 Homework #1 due Sep 17, 11:59 PM (Mountain Time)
Week 4 Sep 20 – Sep 24	Descriptive Statistics	Wheelan, Ch. 2 Agresti & Finlay, Ch. 3 Homework #2 due Sep 24, 11:59 PM (Mountain Time)
Unit 2	**Probability**	
Week 5 Sep 27 – Oct 1	Probability	Wheelan, Ch's. 5 and 5½
Week 6 Oct 4 – Oct 8	Probability Distributions	Agresti & Finlay, Ch. 4 Homework #3 due Oct 8, 11:59 PM (Mountain Time)
Week 7 Oct 11 – Oct 15	The Central Limit Theorem	Wheelan, Ch. 8
Week 8 Oct 18 – Oct 22	Statistical Inference	Wheelan, Ch. 9 Agresti & Finlay, Ch. 5
Midterm Exam	Exam is available from Thursday, Oct 21, 12:00 AM (Mountain Time) to Friday, Oct 22, 11:59 PM (Mountain Time). You have the entire period to start and finish the exam, but you only have one submission attempt.	
Unit 3	**Bivariate Associations**	
Week 9 Oct 25 – Oct 29	Bivariate Associations	Agresti & Finlay, Ch. 6 *Optional:* Agresti & Finlay, Ch's. 7 and 8
Week 10-11 Nov 1 – Nov 12	Regression	Wheelan, Ch. 4 Agresti & Finlay, Ch. 9 Homework #4 due Nov 12, 11:59 PM (Mountain Time)
Unit 4	**Multivariate Relationships**	
Week 12 Nov 15 – Nov 19	Multivariate Regression	Wheelan, Ch's. 11 and 12 Agresti & Finlay, Ch. 10 and pp. 321-340 Homework #5 due Nov 19, 11:59 PM (Mountain Time)
Thanksgiving Break		
Week 13 Nov 29 – Dec 3	Interactive Relationships	Agresti & Finlay, pp. 341-343 Homework #6 due Dec 3, 11:59 PM (Mountain Time)

LECTURE	CONTENT	ASSIGNMENT
Week 14 Dec 6 – Dec 10	Diagnostics	Wheelan, Ch. 12
Final Exam	Exam is available from Thursday, Dec 9, 12:00 AM (Mountain Time) to Friday, Dec 10, 11:59 PM (Mountain Time). You have the entire period to start and finish the exam, but you only have one submission attempt.	

GENERAL COURSE AND UNIVERSITY POLICIES

Course Plagiarism Policy

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 who are 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.

Netiquette

All students should be aware that their behavior impacts other people, even online. I hope that we will all strive to develop a positive and supportive environment and will be courteous to fellow students and your instructor. Due to the nature of the online environment, there are some things to remember:

1. Always think before you write. In other words, without the use of nonverbals with your message, your message can be misinterpreted. So please think twice before you hit submit.
2. Keep it relevant. There are places to chat and post for fun everyday stuff. Do not stray from the discussion in the assigned questions.
3. Never use all caps. This is the equivalent of yelling in the online world. It is not fun to read. Only use capital letters when appropriate.
4. Make sure that you are using appropriate grammar and structure. In other words, I don't want to see anyone writing "R U" instead of "are you". There are people in the class that may not understand this type of abbreviation, not to mention it does nothing to help expand your writing and vocabulary skills. Emoticons are fine as long as they are appropriate. A smile 😊 is welcome, anything offensive is not.
5. Treat people the same as you would face-to-face. In other words, it is easy to hide behind the computer. In some cases, it empowers people to treat others in ways they would not in person. Remember there is a person behind the name on your screen. Treat all with dignity and respect and you can expect that in return.

University Policies

[Most up-to-date university policies go here.]