

# Political Science 771: Public Data Analysis

## Fall 2019

Professor Kelsey Shoub  
Department of Political Science  
University of South Carolina  
Thursdays, 5:50 - 8:35 PM  
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Office Hours: R 1-3 pm and by appointment

### COURSE DESCRIPTION

This course provides an introduction to research design, data analysis and presentation techniques, and statistical software useful for individuals working in applied settings in public affairs. The goal is to make you a competent consumer and producer of basic data analysis since the ability to understand and present quantitative data is essential for almost any manager in the public and non-profit sectors. Whether you are trying to demonstrate to the city council that you need more funding for Parks and Rec due to a spike in activity at local parks or are fulfilling the program evaluation portion of a grant from a private foundation as a non-profit manager, an ability to know what type of data to collect, and how to effectively analyze and present those data is essential. This course will also serve as an introduction for those students wishing to pursue careers in policy analysis, where more advanced research designs and data analysis skills are required.

Students are required to have passed an undergraduate statistics or data analysis class to enroll in this course. However, for many of you this class could have been taken a number of years ago and thus I assume that students have minimal familiarity with or perhaps memory of statistical concepts and data analysis techniques. Additionally, I assume that you have never used R or a program like it to conduct data analysis. As long as you work hard, prepare for class and ask questions when you have them, you can do just fine even if you do not remember much from undergraduate statistics and have never used R before.

### LEARNING OUTCOMES

Upon completion of this course, students will be able to:

- Understand and critique basic data analyses performed by others
- Use quantitative reasoning when making decisions
- Understand common data analysis approaches
- Produce and present original data analysis using appropriate approaches
- Use common data analysis and visualization software

## TEXTS

There is one required text:

Diez, David M., Christopher D. Barr and Mine Cetinkaya-Rundel. 2019. *Open Intro Statistics*, 4<sup>th</sup> ed.

- A PDF can be downloaded for free at: <https://www.openintro.org/stat/textbook.php>
- If you want to purchase a hard copy click on the Amazon.com link on that webpage.
- Also, please consider making a donation to this organization since they are providing a good service and are basically saving you \$150.

Other articles or book chapters may also be assigned.

## GRADING

Grades in this course will be determined as follows:

- Class Participation (10% of the course grade)  
*Class participation and attendance are essential for success in the course because the material builds on concepts learned earlier in the course. In a class like this it is essential for students to come prepared by having read the material and with any questions that arise from the reading. The class participation portion of your grade will be determined both by your attendance in class and your participation during class. As a general rule, the expectation is that students will not miss any classes during a semester.*
- Homework Assignments (12% of the course grade)  
*We will have four homework assignments (3% for each assignment) over the course of the semester. Assignments will be a mix of questions about concepts and actual analysis. Analysis in assignments will require you to use R, which you will become familiar with in class.*
- Midterm Exam (20% of the course grade)  
*The exam will involve both conceptual questions and questions requiring data analysis and presentation. We will discuss the midterm in more detail in class.*
- In Class Quizzes (18% of the course grade)  
*There will be a quiz on the readings each week of the course for which readings are required (2% per quiz). Each quiz will be given at the very beginning of class, and there are no make-up quizzes.*
- Research Paper (40% of the course grade)  
*Students will complete an original research paper that requires them to set up their research question, gather appropriate data, analyze the data and present the results of the analysis in this paper. The paper can examine either a theory of interest to public administration or policy scholars (e.g. how does public service motivation affect agency performance?) or a practical descriptive empirical question taken from their professional service or potential professional service (e.g. how long does it take the police to respond to emergency calls in different parts of the city and what factors shape response times?). A handout with more information will be provided early in the semester. The paper itself constitutes 20% of the overall grade, while the presentation and each of three updates are worth 5% of the overall grade.*

## POLICIES AND PROCEDURES

*Please note that the following policies/statements are taken verbatim or very close to verbatim from the website of the Center for Teaching Excellence and are consistent with university rules and procedures*

### Recording Lectures

Students may not record class sessions or any portion of class sessions without the advance permission of the instructor or from the University's Office of Student Disability Services. Under no circumstances are students allowed to share material from lectures with other students or members of the public.

### Academic Integrity

Assignments and examination work are expected to be the sole effort of the student submitting the work. Students are expected to follow the University of South Carolina Honor Code and should expect that every instance of a suspected violation will be reported. Students found responsible for violations of the Code will be subject to academic penalties under the Code in addition to whatever disciplinary sanctions are applied. Cheating on a test or copying someone else's work, will result in a 0 for the work, possibly a grade of F in the course, and, in accordance with University policy, be referred to the University Committee for Academic Responsibility and may result in expulsion from the University.

### Attendance Policy

In graduate classes that meet once a week you should not miss any classes. When you miss class, you miss important information. If you are absent, you are responsible for learning material covered in class. If you are absent when an assignment is due, you must have submitted the assignment prior to the due date to receive credit. If you miss more than 10% of the classes, whether excused or unexcused, your grade will be dropped one letter grade.

### Expectations for Classroom Behavior

All cell phones and pagers are to be turned off or silenced during class (not on vibrate). All cell phones are to be put away out of view during class; there is no text messaging, web browsing, etc, during class. Failure to adhere to these classroom rules may result in your being dismissed from class and/or an academic penalty. Please be respectful of each other, the instructor, and any guest presenters while in class. We are all here to learn! Any disrespectful or disruptive behavior may result in your referral to the Office of Student Judicial Programs.

### Assignment Submission

Assignments are always due at the beginning of class on the day noted. Late assignments will be accepted only in cases of emergency. Unless otherwise noted all assignments should be turned in as a hard copy and emailed assignments will not be accepted.

### Make Up Exams

**Midterm Exams:** Makeup exams will be allowed only with pre-approval of the instructor or with an acceptable, documented reason. Acceptable reasons for makeup exams include severe illness, family emergencies or other unavoidable events including dangerous weather conditions and car accidents. Exam format for makeup exams may be different than the original exam and will likely utilize a short answer format. An oral examination may also be utilized if deemed appropriate by the instructor.

**Final Exams:** Students who are absent from any final examination will be given the grade of F on the course if they have not offered an excuse acceptable to the instructor. Re-examinations for the purpose of

removing an F or raising a grade are not permitted. If the absence is excused, students will be assigned a grade of I, and may complete the course under the conditions specified by the instructor in the "Assignment of Incomplete Grade" form. A student with excused absence from a final examination in one semester may take the deferred examination at the next regular examination period provided the examination is taken at the convenience of the professor. The examination must be taken within one calendar year from the time the absence was incurred. Deferred exams will be granted only in case of absence certified as unavoidable because of documented illness or other cause, rendering attendance at final examinations impossible.

### **Accommodating Disabilities**

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, contact the Office of Student Disability Services: 777-6142, TDD 777-6744, email [sasds@mailbox.sc.edu](mailto:sasds@mailbox.sc.edu), or stop by LeConte College Room 112A. All accommodations must be approved through the Office of Student Disability Services.

### **Diversity**

In order to learn, we must be open to the views of people different than ourselves. While in class, please honor the uniqueness of your fellow classmates and appreciate the opportunity we have to learn from one another. Please respect each other's opinions and refrain from personal attacks or demeaning comments of any kind. Finally, remember to keep confidential all issues of a personal or professional nature that are discussed in class.

### **Instructional Methods**

This course will be taught using multiple instructional methods, including but not limited to: lecture, group discussion, oral presentations, and in-class lab.

### **Recommended Study Habits**

Readiness to learn means that you will come to class with questions and insights and prepared to discuss the relevance and application of course materials. I have found that students who do well in my class also: check blackboard often for announcements and upcoming assignments; highlight the textbook or take notes as you complete reading assignments to help you prepare for class and tests; form small study groups to prepare for exams; get the phone numbers or e-mail addresses of at least two classmates whom you can contact if you have questions or need help studying.

### **Expectations of the Instructor**

The instructor is expected to facilitate learning, to answer questions appropriately, to be fair and objective in grading, to provide timely and useful feedback on assignments, to maintain adequate office hours, and to treat students as she would like to be treated in their place.

### **Amending the Syllabus and Rules**

Amendments and changes to the syllabus, including evaluation and grading mechanisms, are possible. The instructor must initiate any changes. Changes to the grading and evaluation scheme must be voted on by the entire class and approved only with unanimous vote of all students present in class on the day the issue is decided. The lecture schedule and reading assignments (daily schedule) will not require a vote and may be altered at the instructor's discretion. Grading changes that unilaterally and equitably improve all students grades will not require a vote. Once approved amendments will be distributed in writing to all students via e-mail or Blackboard.

## DAILY COURSE SCHEDULE

Date	Topic	Readings ( <i>To be read by the start of the class period</i> )	Assignments
August 22	Data in Public Affairs		HW 1 Assigned + Due
August 29	NO CLASS (Out of Town for a Conference)		
September 5	Research Designs, Conceptualization, and Measurement	OIS, Chapter 1 (pgs 1-21 and 32-34); "Should Value Added Models be Used to Evaluate Teachers?" in <i>Point/Counterpoint in the Journal of Policy Analysis and Management</i> Vol. 28(4): 692-712	
September 12	Probability, Sampling, and Distributions	OIS, Chapter 1 (22-28) and 3 and 4 (pgs 131-144 and 149-158)	
September 19	Understanding and Presenting Descriptive Statistics	OIS, Chapter 2	HW 2 + Paper Update 1 Assigned
September 26	Foundations for Inference	OIS, Chapter 5	HW 2 + Paper Update 1 Due
October 3	Inference with Numerical Data	OIS, Chapter 7	HW 3 Assigned
October 10	NO CLASS (Fall Break)		
October 17	Inference with Categorical Data	OIS, Chapter 6	HW 3 Due
October 24	Intro to Linear Regression	OIS, Chapter 8	HW 4 Assigned
October 31	Multiple Regression	OIS, Chapter 9	HW 4 Due
November 7	Violations of Linear Regressions and Extensions	OIS, Chapter 9	
November 14	Midterm		Paper Update 2 Assigned
November 21	Wrangling + Cleaning (Open) Public Data		Paper Update 2 Due + Paper Update 3 Assigned
November 28	NO CLASS (Thanksgiving)		
December 5	Final Paper Presentations		Paper Update 3 Due
<b>Final Papers due at the beginning of the FINAL EXAM PERIOD Consult University Schedule for Date and Time</b>			