Quantitative Methods in Political Science

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Office Hours: Th, 12pm-2pm

POSC 3410, Fall 2019
T, Th 9:30am-10:45am
Classroom: 124 Earle

Course Description

Political science is full of intriguing questions; compelling answers, however, are much harder to find. Quantitative methods offer one approach to coming up with these answers. The purpose of this course is to provide you with (1) the ability to understand this approach to political science and (2) practical experience conducting these kinds of empirical analyses.

To that end, this course focuses on quantitative approaches commonly used by researchers to describe the political world and evaluate theories of actors, institutions, and power. We will cover the application of the scientific method to political science, explore different kinds of data, and consider the major methodological tools used by quantitative political scientists.

What you learn in this course will provide you with the ability to evaluate quantitative research of all kinds and valuable skills of your own in data analysis. While you may not be interested in the lifelong study of politics, these skills should be important to you in whatever you do after this course (other courses at Clemson, internships, future employment, and more).

Course objectives

Through this course, students will:
1. Understand how the scientific method applies to political science research
2. Evaluate when to use quantitative approaches
3. Explain different types of variables (dependent, independent, nominal, ordinal, etc.) and the basic characteristics of those variables (central tendency, spread, etc.)
4. Interpret quantitative methods as used by others
5. Apply quantitative methods themselves in problem sets and a research design

Course texts (available from the University Bookstore)

Kellstedt, Paul M. and Guy D. Whitten (2013). *The Fundamentals of Political Science Research*. 2nd. New York, NY: Cambridge University Press. (referred to as **KW** throughout)

Other readings will be posted on Canvas.

Statistical software

A large part of this course involves statistical analyses of some kind. We will not perform any of these calculations by hand – instead, you will be required to use either Stata or R. I am agnostic between the two – for the purposes of this class, both generate equivalent results. For the sake of simplicity, I would suggest that you choose one and stick with it throughout the course – switching back and forth will likely hurt more than help.

Some things to consider in choosing between Stata and R:
- Ease of use
  - Stata has a much easier learning curve and operates much like a supercharged version of Excel.
  - Stata also comes preloaded with (nearly) every command and analysis you will need to run for this course.
  - R, on the other hand, is a much different approach – think of it as an empty space into which you can load in various datasets and objects of all types.
  - R comes as a blank slate – you must install various "packages" (bundles of commands) to do anything besides basic math and variable manipulation.
- Cost
  - To run Stata on your personal computer, you will need to purchase a license to do so. This will cost about $45 for a six month license; you can find instructions here. **You can also access Stata for free via CU Apps.**
  - R is open-source and completely free. You can download it here. I would also recommend downloading a more user-friendly interface for R called RStudio; that can be downloaded here. Download this after you download R.
- Other things to consider
  - Commands in Stata are much more intuitive; R can seem much more like computer code and nonsensical jargon.
  - R is a much more flexible platform – someone has likely written a command to do anything you would want to do.
  - The opposite of this is that Stata is more stable – the commands are more likely to work the same way every time (whereas updates to R can cause changes in code).

To help you to learn how to use either one of these programs, the first two problem sets will involve tutorials on how to use both platforms. Completing these carefully will help you with the later problem sets, which will assume a basic level of familiarity with Stata or R.

If at any point you are having trouble with the software, please reach out to me. Please do not spend hours and hours fighting with the computer program – chances are, I've run into something similar before. I would much rather you send me an email to make sure there is not an easy fix than you spend multiple hours working with computer code.

Classes, Assignments, and Grades

Grades will be determined from the following assessments (each of which is explained below):

Assignment	Due date	Percentage of final grade
Reflections (10)	Various	5
Application days (6)	Various	5
Problem sets (5)	Various	25
Research design idea	9/12	3
Midterm	10/10	15
Research design rough draft	11/12	-
Research design	12/3	12
Final	12/11	30
Participation	-	5

The letter grade distribution for the course is as follows:

A	B	C	D	F
89.5-100	79.5-89.49	69.5-79.49	59.5-69.49	<59.5

Additional details on each assignment can be found on Canvas. The following sections are meant to give you the basic details of each.

Reflections

To help prepare you process and engage with the topics for the course, you will be asked to write reflection paragraphs throughout the semester. The prompts for each week will be posted on Canvas – for each, consider the prompt and respond with *no more than 250 words.* These assignments are meant to provide you with the opportunity to reflect on what we are learning and how you are doing in the course, rather than serve as formal writing assignments.

You will be given one of three possible grades for these submissions – check minus, check, and check plus. Check minus means that you have not completed the assignment well, either because you did not respond to the prompt or did not demonstrate that you spent time reflecting on the relevant materials. Check minus corresponds with a 80% on the response. Check signifies that you completed the assignment well and according to my instructions and will be given a 100% for that report. Check plus indicates that you went above and beyond, with a particularly detailed or insightful response; you will be given 105% on that kind of reflection. Note that if you do not provide a response with some substance (e.g, you type out one or two words), you will not get credit for the response.

There are 10 opportunities to complete these responses – you must turn in 8 of the 10 to get full credit on this part of your grade.

Please turn your weekly response by 9:20am on its listed due date via Canvas (this means prior to class each due date). Late submissions will not be accepted.

Application days

Part of our class is putting the topics from lecture into practice. To this end, we will have several application days where you will be asked to complete practice test questions, software examples, etc. These class meetings are critical to helping you prepare for the exams and learn how to use Stata/R.

To encourage you to make the most of these class meetings, 5 percent of your grade will come these class meetings. To get these points, you must turn in something that demonstrates you worked on the application exercises – this can be turning in the paper worksheet at the end of class, submitting your completed software file on Canvas, etc. You will be given instructions on what to turn in for each application day. You will get full credit for turning it in and no credit otherwise. No late work will be accepted. There are 6 application days; you must turn in this evidence of effort for five of them for full credit.

Problem sets

A key part of learning quantitative methods is applying the concepts from class. To that end, you will complete five problems sets, oriented towards helping you achieve the course objectives. They will ask you a series of questions about the material from class and will involve various application exercises. You will need to type out your responses in Word or another similar program – handwritten assignments will only be accepted with prior permission from me.

Some students find it helpful to work in groups on these assignments. You should feel free to do if you find it helpful. If you work in a group, indicate your group members at the top of your problem set. Please note, however, that working in groups does not mean you can turn in a single, shared document for your problem set OR that you can all turn in the same document as your group members. ***You need to write out your own responses to the problem set in your own words. If you ignore these instructions and turn in identical documents, this will be considered plagiarism and will be handled accordingly per the university's academic integrity policies.***

Each problem set will be posted on Canvas at least one week before it is due. They are due by 9:20am on its due date and should be turned in on Canvas. Problem sets that are turned in at 9:21am or later will receive a penalty of 10 percent per day (including the first day) and must be turned in within seven days (including weekends) to receive any credit. Each problem set is worth 5 percent of your overall grade – in total, the problem sets account for 25 percent of your grade in the course.

Research design

You will also apply the concepts we cover in the class is in a research design project, where you come up with a research question and lay out how you would answer this question using the methods we have discussed in class. **You are not required to actually conduct these analyses or gather the data. Instead, think of what the perfect data would be for you, no matter how expensive or hard to track down it would be.** You can include real data and analyses in your paper if you like, but it is not required.

This project has three graded parts. The first is to come up with a research question that interests you. This need not be a question we have discussed in class nor does it need to be within any particular area of political science. The most important things about this question are that (1) it interests you and (2) it is something that could be answered using quantitative methods.

To encourage you to start thinking about this project early on, you will be asked to turn in your research question (Research Design idea) to Canvas by 9:20am on September 12th. This should be brief but needs to include your specific research question and how you plan to approach this question methodologically. What kind of data could you use to answer your question? What kind of analysis will you use? This research design idea is worth 3 percent of your overall grade.

Like the reflection assignments, you will be given one of three possible grades for your research design idea – check minus, check, and check plus. Check minus means that you have not completed the assignment well, either because you did not demonstrate you had thought much about your approach or you did not provide enough detail for me to give you good feedback. Check minus corresponds with a 80% on the response. Check signifies that you completed the assignment well and according to my instructions and will be given a 100% for that report. Check plus indicates that you went above and beyond, with a particularly detailed or insightful

idea; you will be given 105% for a check plus. Note that if you do not provide a response with some substance (e.g, you type out one or two words), you will not get credit for the response. I will send you brief feedback on your ideas by September 19th.

From here, you should develop the complete research design. This is a substantial part of your grade for the course and a significant project; you will be most successful if you work on it throughout the semester. What you turn in for the research design should be a written document that has the following elements (with a brief explanation in italics and the points from each section in parentheses):

1. Introduction and research question: *Here you introduce your question, why it is important, and give a preview of the paper. You should cite at least two academic sources in this section. (1 point)*
2. Expectations: *What answer do you think you would find to your question? What hypotheses or predictions do you have based on what you know about this topic? (2 points)*
3. Design: *This is where you describe the research approach you will take, the methods you will use, the sample you will draw from, etc. This should be in enough detail so that I can accurately tell what exactly you will be doing (don't just say "I'll run a regression"; instead, say "I will regress variable Y on variable X and these specific control variables…"). This is the place where you should show that you have applied and mastered the material from the course. Go into as much depth as you can – if you want to conduct a t-test, explain why that is the right method to use. If you want to run a regression, explain how you would evaluate how robust those results are. No matter what you do, consider the four causal hurdles we discussed in class. (6 points)*
4. Results: *Here you can describe how you would present the results (e.g., blank tables, blank figures) and the way you would discuss what you would find. If you have any actual data, you can present it here. This section need not be extremely long. (1 point)*
5. Conclusion: *Again, this section need not be long, but you should conclude your paper by revisiting your research question, reminding us why it is important, and describing why the design you've suggested is a good one. (1 point)*
6. Citations: *You must document any sources you use in this paper using the citation style of your choice. (1 point)*

While your research design project needs to include all of these components, you have the freedom to organize them in any way that you think is most effective. Additionally, you can write the paper in whatever format you would like *so long as you include all of the information discussed above.* If you would prefer to write it in the style of a research-oriented blog post (like this one: https://www.washingtonpost.com/news/monkey-cage/?utm_term=.4f44690571bd), a research report (like this one: http://www.people-press.org/2018/06/28/shifting-public-views-on-legal-immigration-into-the-u-s/), or an academic research paper, you may. Choose the format you feel most comfortable with, but remember that whatever the format, you will be graded on the way you include the information listed above. Your written paper should be produced using Word or some similar program, be in 12-point font. This project should between 3,500 and 5,000 words in length. Please put the word count on the first page of the paper.

You will be required to participate in a peer review of another students' research design. We will conduct this in class on November 12th. **As such, you must bring a printed copy of a rough draft of your research design with you to class. If you do not attend this class meeting or do not bring a rough draft, you will lose 1 point on your final research design.**

You may find the university's writing center to be helpful (more information available here: https://www.clemson.edu/centers-institutes/writing/index.html). If you attend an appointment with the writing center, you will receive 1 extra credit point (making your maximum 13 out of 12) if you provide documentation of this appointment. This need not be anything more complex than forwarding me an email, providing a written statement from the writing tutor, etc.

I am also happy to give you feedback on your research designs. You must send them to me by Friday, November 29th if you would like my comments. You can send me complete drafts or sections that you would like me to look over.

The completed research design project is due at 9:20am on December 3rd. You will lose ten percentage points for every day that this assignment is late – for example, if you turn it in at 9:21am on the due date, you will lose 10 percent. If you turn it in at 9:21am on the following day, you will lose 20 percent. This penalty will be applied on weekends as well as weekdays.

Midterm

The midterm will be completed in class on October 10th and is worth 15 percent of your final grade. As we will not have covered much in the way of calculations by this point, you will not be asked to use statistical software or perform any analyses. You may, however, be asked the formula and conceptual definition for the statistics we have covered up to the midterm.

The format of the midterm will be similar to that of the problem sets, although more extensive. Unlike the problem sets, you *cannot* complete it in groups, cannot use your notes, and must finish it within the class period for that day. There will be a range of conceptual questions and application examples.

Final exam

In this course, we have covered both conceptual and analytical skills. To evaluate you on both, the final exam has two parts – a closed note portion asking conceptual questions from all parts of the course and an open note portion covering statistical analyses. You will complete both on the final exam, which will be held in person on Wednesday, December 11th from 8am to 10:30am. You will have 75 minutes to complete each part and will be required to complete the closed note portion first.

The closed portion will be similar to the midterm. You will be asked a series of conceptual questions from all parts of the course. This part of the final must represent your own, unassisted work. You may not consult with others, search the internet, use your textbook, or refer to your class notes. You will have 75 minutes to complete this portion of the final. This is to ensure that you have enough time for the open-note portion of the test.

The open note portion of the exam will ask you to complete a series of analyses, much like those required for the later problem sets. You may reference your notes, textbook, problem sets, and the internet, although **you cannot work in groups or discuss it with other class members**. You will have 75 minutes to complete this exam. For your response to this part of the exam, you will turn in your analysis file (.do file or R script) to Canvas.

In total, the final is worth 30 percent of your overall grade. These points are evenly split between the take home and in-person portions of the test.

Participation

Engaging in class discussions, asking questions, and otherwise participating are critical components of learning in this course. As a result, part of your grade is determined by your participation. This participation can take many forms – including (but not limited to) asking questions in class, answering questions, coming on time, not leaving early, staying engaged with the class discussion, speaking with me during office hours, and participating in class activities. Repeatedly failing to come to class will adversely affect your participation grade (and your ability to succeed on the various class assignments). If you miss more than two class periods, you will begin to lose points on your participation grade.

As part of our class meetings, I may call on you to answer questions about the readings and topics for that day. If you have not prepared enough for that class period and cannot provide an answer, you will begin to lose participation points. Note that an answer can be an informed question about some element of the reading/material/question that you do not yet understand. If you have concerns about this policy, please meet with me at the start of the semester, and we will find a way to make it work for you.

Prior to the midterm, I will email you a brief statement about your participation which will indicate what grade you are likely to receive if you continue participating as you have been to that point. This will also include a more general note about your performance to that point in the course. We can speak at that point if you have any concerns.

To help me evaluate your participation, I will take attendance throughout the class. At times this will involve a sign-in sheet, and at other times, I will take roll on my own. You are responsible for attending class regardless of which method I use.

Your feedback

Your feedback is invaluable to the class as a way to evaluate the assignments and activates I use in class. As such, I ask you for feedback at various points in the class. You are not obligated to complete these but doing so will help me adjust my teaching in the course to benefit you and other students in the class.

Excused absences

Any student missing an exam or a due date must provide documentation to schedule a make-up or turn in a late paper/assignment. You must contact me within one week of the exam or due date to schedule a make-up option and present documentation.

In the case of emergencies, please contact me as soon as safely possible.

General Course Policies

Late policy and grade appeals
The grading of each assignment lays out the way late or incomplete work will be handled. In general, you will lose ten percent of your grade for an assignment each day is late, and late work must be turned in no more than 7 days after the original due date – unless specified otherwise in the description of that assignment. If you would like to appeal an assigned grade, *you must*

submit a written statement to me explaining why the grade should be changed (within two class periods of receiving the grade).

Rescheduling Exams
Only in the rarest of circumstances will I consider giving you an exam on an alternative date or time. Examples of such circumstances include emergencies in one's immediately family, university excused absences, and having more than two schedules on the same day during final exams (per the university's polices, as explained here). Examples of circumstances where I will not consider giving you an alternative exam time are: personal travel plans, sleeping in, and coursework in other classes. You must contact me at least one week prior to the exam (in the case of final exams, one week before the last class meeting) about these issues, and preferably at the start of the semester. If I agree to give you the exam at an alternative date, I reserve the right to give you an alternative version of the exam to protect the fairness of the exam for all students in the class. In the case of unexpected emergencies, please let me know about your situation as soon as is safe.

If you ask me to reschedule an exam for you but I decide not to, you must complete the exam at the normal time or you will receive a score of 0% on that test.

Contact and office hours:
The best way to reach me is by email – please contact me at ecbusby@clemson.edu. If you email me and do not hear from me within 3 business days, please follow-up (in person or by email again). In general, if you contact me outside of normal working hours (M-F, between 8am and 6pm), I may not respond until the next business day. You can still email me outside of this window, but my response will be delayed. Additionally, please put "POSC 3430" in the subject line of your email so that I prioritize your messages.

It is critical that you check Canvas and your email to succeed in this course. I will send out reminders and announcements through Canvas and to your university email address. If you choose not to check your email and/or Canvas you are taking the risk of missing critical course information.

The easiest way to meet with me in person is to drop by my office during my office hours. You can stop by at any time; however, outside of office hours, there's a good chance I will not be available to me with you. Feel free to email me in advance if you need to meet with me outside of my office hours and would like to set up an appointment. Office hours are an opportunity for you to do any or all of the following: get help on course material you find difficult, review material for exams, ask questions about upcoming assignments, discuss connections between our course and other classes you are taking, get advice about being a successful student, discuss what graduate school is like, and get other help that you need.

Note taking
Cell phones and laptop computers may only be used for note-taking and software exercises – if you choose to use a laptop for notetaking, please sit on the edges of the room so that other students are not distracted by your computer. Misuse of technology in class will adversely affect your participation grade; I may also ask you to put it away or leave class if it disrupts our class meeting or other students. For some class discussions, I will ask you to put away your computer; should you choose not to participate in these activities, you will lose participation points.

Classroom environment

At times, we may cover topics and have conversations that challenge your viewpoints or provoke intense discussion. I expect everyone to be respectful of others' views, *especially when those views challenge their own*. My goal is to create an environment where all students feel safe sharing their views and, in turn, feel respected by other students and myself. You should feel free to present viewpoints that differ from my own and to ask challenging questions of the material presented in class.

Courtesy and sensitivity are especially important with respect to differences of race, culture, religion, politics, sexual orientation, gender, and nationalities. Disruptive behavior such as disrespecting a member of the class, holding personal conversations during class, disrespecting another member of our community, or using hurtful language will not be tolerated. I reserve the right to ask students to leave the classroom and take further action if disruptive behavior persists, in particular if a verbal warning is ineffective at eliminating the behavior or if a single incident is particularly egregious.

If, at any point, you feel that I have failed to create this type of environment or have not been respectful of your views, I ask that you please inform me as soon as you can so that I can address the issue appropriately. If you feel that this would not be appropriate, please speak with the department chair (Professor Peake - jpeake@clemson.edu) about your concerns. Additionally, if you have any concerns about the topics planned for the course, I would ask you to speak with me as far in advance as possible.

Policy on Absent Instructor
If I have not arrived by 8:15am, you are free to leave without penalty. I will send an email with as much advanced notice as possible if I need to cancel class.

Class Cancellations:
Any exam that was scheduled at the time of a class cancellation due to inclement weather will be given at the next class meeting otherwise instructed by me. Any assignments due at the time of a class cancellation due to inclement weather will be due at the next class meeting unless otherwise instructed by me. Any extension or postponement of assignments or exams must be granted by me via email or Canvas within 24 hours of the weather-related cancellation. *Note that this policy does not apply to assignments or exams that are to be submitted via Canvas. Any changes to deadlines on Canvas submissions will be announced on Canvas.*

Academic Continuity Plan for this course: Clemson has developed an Academic Continuity Plan for academic operations. Should university administration officially determine that the physical classroom facility is not available to conduct classes in, class will be conducted in a virtual (online) format. The University issues official disruption notifications through email /internet /text notification/Social Media.

When notified, use one of the following links to navigate to Clemson Canvas where you will find important information about how we will conduct class:
- http://www.clemson.edu/canvas/
- You can also use the Canvas Student App.

Our activities for teaching and learning will occur through our Canvas course. This includes online discussions, online reflection activities, and videos posted by me. More details for specific activities will be available when necessary.

As indicated in the course schedule, August 29, 2019 is e-Learning Day, a real-time test of the Academic Continuity Plan. That day, our class will be conducted entirely online. Please see the pages on Canvas under Assignments and Discussions for what is expected of you for this day.

Academic Integrity, Cheating and Plagiarism:
The university has a detailed Academic Integrity policy, which includes the following:

> *As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a "high seminary of learning." Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. When, in the opinion of a faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall make a formal written charge of academic dishonesty, including a description of the misconduct, to the Associate Dean for Curriculum in the Office of Undergraduate Studies. At the same time, the faculty member may, but is not required to, inform each involved student privately of the nature of the alleged charge.*

Every student is capable of succeeding in this course without resorting to plagiarism or cheating. All work you submit must be your own work – that is, of your own construction; any materials that come from other sources should be appropriately referenced or cited. You should not submit work performed by another student as your own. You may work with other students on problem sets (as stated earlier), but you must submit your own problem set and that must be in your own words – in other words, do not turn in the same document as the other people you are working with. You should also not submit work from previous courses as though it were an original creation for this class. Any questions should be directed to me early on in the term.

Any student found guilty of academic dishonesty in this course will be penalized per the academic integrity policies on campus.

Copyright:
Some of the materials in this course are copyrighted. They are intended for use only by students registered and enrolled in this course and only for instructional activities associated with and for the duration of the course. They may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the Teach Act. Please refer to the Use of Copyrighted Materials and "Fair Use Guidelines" policy on the Clemson University website for additional information: http://www.clemson.edu/library/

Academic Access Letters:
Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to this class should let the professor know, and make an

appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848, by emailing studentaccess@lists.clemson.edu, or by visiting Suite 239 in the Academic Success Center building. Appointments are strongly encouraged – drop-ins will be seen if at all possible, but there could be a significant wait due to scheduled appointments. Students who receive Academic Access Letters are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student's responsibility to follow this process each semester. You can access further information here: http://www.clemson.edu/campus-life/campus-services/sds/.

If your Academic Access Letter provides you with accommodated testing, you are responsible for scheduling the Test Proctoring Center at least one week in advance of your exam. Detailed information on this policy and on how to schedule the Test Proctoring Center can be found here: https://www.clemson.edu/academics/studentaccess/test-center.html .

Title IX:
Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is located at http://www.clemson.edu/campus-life/campus-services/access/title-ix/. Ms. Alesia Smith is the Clemson University Title IX Coordinator, and the Executive Director of Equity Compliance. Her office is located at 110 Holtzendorff Hall, 864.656.3181 (voice) or 864.656.0899 (TDD).

Date and Objectives	Readings	Assignments
August 22nd (1) What is required of me in this course? (2) What questions do I have on the syllabus? (3) What statistical software do I want to use? (4) What is the best way to read research articles?	*Introduction* **KW:** Skim table of contents Syllabus Cheat sheets for R and Stata "How to Read Scientific Papers" infographic	Complete introductory survey at this link
August 27th (1)What is the scientific method? (2)How well does the scientific method apply to political science? (3)What makes a particular approach, design, or study "scientific"?	*Scientific method, theories, and research questions* **KW:** Chapter 1: The Scientific Study of Politics Watch this YouTube video of a TEDx talk by Teman Cooke **KW:** Chapter 2: The Art of Theory Building	

August 29th	e-Learning Day: Online activities only (we will not meet in-person this day)	Reflection due;
(1)What are the goals of a literature review? (2)How do literature reviews fit in with theories and research questions? (3)How do you find sources for a literature review?	*Literature review* **KW:** Chapter 12, section 12.2 (pg. 278-281) Knopf, Jeffrey W. (2006). "Doing a Literature Review". In: PS: Political Science and Politics 39.1, pp. 127–132.	Complete assignment and discussion activity on Canvas
September 3rd		
(1)How do we measure the things in our theories/hypotheses? (2)What makes something a good or a bad concept?	*Conceptualization and measurement* **KW:** Chapter 5, sections 5.2-5.6 (p. 95-109). Consider these comics and how they relate to the textbook material: • https://xkcd.com/927/ • https://xkcd.com/2023/	Problem Set (PS) 1 Due
September 5th	*Variable types and summary statistics*	
(1)What determines if a variable is the independent or dependent variable? (2)What are the different categories of variables?	**KW:** Chapter 5, sections 5.1, 5.7-5.12 Watch all of the following Khan Academy videos: • Statistics intro: Mean, median, and mode: https://www.youtube.com/watch?v=h8EYEJ32oQ8&feature=youtu.be • Mean, median, and mode example: https://youtu.be/k3aKKasOmIw • Representing data: https://youtu.be/0ZKtsUkrgFQ	

(3)Why are summary statistics important?		
September 10th Apply the lessons from the previous class to a series of examples in class	*Variable types and summary statistics: Application* Read application examples on Canvas	Reflection due
September 12th (1)What prevents us from making the causal inferences we might otherwise want to? (2)How can/should we address the fundamental problem of causal inference (f.p.c.i.)?	*Fundamental problem of causal inference* **KW:** Chapter 3: Evaluating causal relationships See this comic: https://xkcd.com/552/	Research Design idea due
September 17th (1)What is the purpose of descriptive research? (2)How important is descriptive research?	*Description* Gerring, John. 2012. "Mere Description". *British Journal of Political Science* 42(4):721-746. Broockman, David and Neil Malhotra. 2017. "America's tech entrepreneurs are Democrats not libertarians, but they may be changing the Democratic Party". *Monkey Cage*. https://www.washingtonpost.com/news/monkey-cage/wp/2017/09/22/americas-	Reflection due

(3)How does descriptive research add to political science theories?	tech-entrepreneurs-are-democrats-not-libertarians-but-they-may-be-changing-the-democratic-party/?utm_term=.813b34c6aedb	
September 19th Apply the lessons from the previous class to a series of examples in class	*Description: Data sources and applications* Read application examples on Canvas	PS 2 Due
September 24th (1)Why use inferential statistics? (2)What is a random variable? (3)Why do we care about distributions?	*Inferential statistics (probability theory)* **KW:** Chapter 6: Probability and Statistical Inference Khan Academy "Inferring population mean from sample mean" https://youtu.be/k5EbijWu-Ss *Review the other Khan Academy videos on concepts that were not clear to you from the chapter.*	
September 26th (1)What is the goal of a t-test? (2)How do t-tests help us in building and evaluating theories?	*Inferential statistics (hypothesis tests)* **KW:** Chapter 7: Bivariate Hypothesis Testing Consider how this comic relates to the chapter: https://xkcd.com/882/	Reflection due

(3)When should you not use a t-test?		
October 1st	*Inferential statistics: software / application day*	
October 3rd (1)What is a confidence interval and what does it mean? (2)What do confidence intervals tell us that t-tests do not?	*Inferential statistics (confidence intervals)* Watch all three videos on confidence intervals on this page: https://www.khanacademy.org/math/ap-statistics/estimating-confidence-ap/introduction-confidence-intervals/v/confidence-intervals-and-margin-of-error Harris, Richard. 2019. "The Case Against 'Statistical Significance' in Scientific Research. NPR. March 21.	PS 3 Due
October 8th (1)How do experiments address the f.p.c.i? (2)What things are best suited for experiments? (3)What things are poorly suited to experiments?	*Experiments* **KW:** Chapter 4, sections 4.1 and 4.2 Druckman, James N., Donald P. Green, James H. Kuklinski, and Arthur Lupia. 2006. "The Growth and Development of Experimental Research in Political Science", *American Political Science Review* 100(4):627-635. Watch this YouTube video: https://www.youtube.com/watch?v=TYIh4MkcfJA What do you think of this experiment?	
October 10th	MIDTERM	MIDTERM
October 15th	**FALL BREAK – NO CLASS**	

October 17th Review notes; write down some thoughts about the midterm	Review material to that point; debrief on midterm	Reflection due
October 22nd (1)What is a quasi-experiment? In what way is it better/worse than an actual experiment? (2)Application examples	*Quasi-experiments, observational methods, and application day* **KW:** Chapter 4, section 4.3 Read application examples on Canvas	
October 24th (1) Does it matter *who* we study? (2) How do we select individuals for our research? (3) Why does survey question wording matter?	*Survey research* Kennedy, Courtney. 2017. "How can a survey of 1,000 people tell you what the whole U.S. thinks?" Pew Research Center. http://www.pewresearch.org/fact-tank/2017/05/12/methods-101-random-sampling/ Kennedy, Courtney. 2018. "Can we still trust polls?" Pew Research Center. http://www.pewresearch.org/fact-tank/2018/05/14/can-we-still-trust-polls/ Smith, Scott. 2013. "Survey Questions 101: Do You Make any of These 7 Question Writing Mistakes?" *Qualtrics Blog* www.qualtrics.com/blog/writing-survey-questions/	Reflection due
October 29th	*OLS Regression* **KW:** Chapter 8	PS 4 Due

(1)How does regression address the f.p.c.i.? (2)What, conceptually, is regression trying to accomplish? (3)Why do you think regression is used so widely?	Watch this YouTube video: https://www.youtube.com/watch?v=zPG4NjIkCjc	
October 31ˢᵗ (1)What needs to be true for regression to work? (2)What needs to be true to make causal claims from regression? (3)How can regression be used in description?	OLS Regression **KW:** Chapter 9 Krueger, James S. and Michael S. Lewis-Beck. 2008. "Is OLS Dead?" *The Political Methodologist* 15(2):2-4.	Reflection due
November 5ᵗʰ	*OLS Regression* **KW:** Chapter 10 Consider these comics in the context of what we've learned about OLS regression • https://xkcd.com/1725/ • https://xkcd.com/1007/	

November 7th	*OLS Regression (software / application day)*	Reflection due
November 12th Bring printed rough draft of research design to class	Peer review day for research designs	Bring rough draft for peer review
November 14th (1)What is ML? (2)How is ML different/similar to regression? (3)When might you use ML?	*ML models* **KW:** Chapter 11, sections 11.1 and 11.2 Come up with three situations where you would want to use a ML approach instead of linear regression (OLS).	Reflection due
November 19th	*ML models (software / application day)*	PS 5 Due
November 21st (1)What do we do differently when considering over-time data? (2)Why not just use regression or ML models?	*Time series analysis* **KW:** Chapter 11, section 11.3 Consider this example of time-series data: http://themonkeycage.org/2011/09/terrorism-over-time/ https://xkcd.com/418/	Reflection due
November 26th	**THANKSGIVING, NO CLASS**	
November 28th	**THANKSGIVING, NO CLASS**	

December 3rd (1)What kinds of theories and research questions are well-suited to quantitative approaches? (2)What kinds are not?	*When to use quantitative methods* Mahoney, James and Gary Goertz. 2006. "A Tale of Two Cultures: Contrasting Quantitative and Qualitative Research". *Political Analysis* 14(3):227-249.	Research Design Due
December 5th Review	Fill out survey indicating topics you are interested in or things you want to review. Link here	
Wednesday, December 11th *8:00am to 10:30am*	FINAL EXAM	