

PSCI 232: Quantitative Research Methods in Political Science
4 credits, Fall 2015

Professor Amelia Hoover Green (“Dr. Hoover Green” or “Professor Hoover Green”)

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Class Meetings: MW, 4:00 pm-5:55 pm, Hagerty L13A

Office Hours: Tuesday, 10am-12pm, or by appointment

Overview

This course follows on PSCI 131, Research Design for Political Science. In that course, students considered strategies for formulating research questions, performing literature reviews, and planning research in political science. This course builds on that material by providing students with specific tools to undertake quantitative research in political science. We consider the benefits and limitations of quantitative research, foundations of quantitative operationalization and measurement, issues associated with sampling, and basic linear regression model assumptions. Students who complete the course will be able to understand, assess and plan quantitative research in political science, and will be able to perform basic data manipulation and analyses using the statistical software package R.

Learning Outcomes

Students who successfully complete this course will be able to:

- Identify and discuss whether a quantitative approach is appropriate for a given research topic or question.
- Intelligently discuss the differences between several types of quantitative research in political science.
- Creatively assess potential measurement issues in multiple types of political science data.
- Accurately employ terms used to describe the structure of political science datasets.
- Use measures of central tendency and variation to describe political science data.
- Show an understanding of statistical significance; consider the significance of differences in means.
- Appropriately employ the maxim “Correlation is not causation.”
- Read, understand, and critique bivariate, multiple, and logistic regression results.
- Use the statistical software R for basic data analysis tasks.

Structure of the Course

This is a conceptual and practical course. It contains many statistical concepts, and a little bit of programming, but practically no math. As noted above, when you finish you’ll be able to do some basic statistical analyses that are relevant to political science. But more importantly, you’ll be able to assess quantitative claims — both claims that come from peer-reviewed political science research and random numerical claims from, e.g., the news media or your annoying housemate. To do this, I’ve divided our class time roughly in half: on Mondays, we’ll discuss readings about concepts in quantitative analysis; on Wednesdays, we’ll learn a new statistical programming skill. Along the way, we’ll also do some original quantitative data collection and analysis.

Drexel Student Learning Priorities

This course aligns with three key DSLP’s: Creative and Critical Thinking, Information Literacy, and Technology Use.

Required Texts, Software, and Technology

- The course reader, available from The Paper Chase. This is mandatory.
- Software: R. Available for free download (Windows, Mac, or Linux) at <http://cran.rstudio.com/>
- Software: RStudio (Desktop, Open Source Edition). Available for free download at <http://www.rstudio.com/products/RStudio/#Desk>
- You *must* have access to a laptop (any operating system is OK) that can run RStudio. If you don't have access to a laptop, please speak to me ASAP.

Optional/Supplemental Resources

These texts are not required and are not for sale in the bookstore, but I have found all of them helpful at one time or another.

- Rumsey, Deborah. *Statistics for Dummies* and *Statistics Workbook for Dummies*. (multiple editions) I'm not a dummy, but when I need a conceptual refresher in plain English, this is where I go. Both of these are available via Amazon for around \$10.
- There are also a large number of open-source statistics textbooks out there. Here's a good one: <http://cnx.org/content/col10522/latest/>
- Bryman, Alan. *Social Research Methods*. A great resource, though sociology-focused.
- Urdan, Timothy. *Statistics in Plain English*. We're already reading parts of this in class but it's a great book to have on hand.
- Find something cool while you were Googling "standard deviation"? Let me know!

Quantitative Social Science: Blogs and Twitter feeds

I'd like you to keep track of at least a couple of the following Twitter feeds and blogs, and to scan the news regularly for quantitative claims about politics and political science. **Discussing this stuff in class is a big part of your participation grade. Keeping up with the news and at least one of these sources is not optional.** You should also feel free to share with the class other quantitative-political-science-y resources you find.

- The Monkey Cage: Multi-topic, multi-author political science blog that often publishes quick reviews of quantitative research or quantitative claims. <http://www.washingtonpost.com/blogs/monkey-cage/> Twitter: @monkeycageblog
- Political Violence at a Glance: Just what it sounds like. Multi-author blog on political violence topics. <http://politicalviolenceataglance.org/> Twitter: @PVGlance
- Mischief of Faction: Multi-author blog about (mostly) American parties and elections. <http://www.mischiefsoffaction.com/> Twitter: @MisofFact
- Dart-Throwing Chimp: Multi-topic political science blog with clever commentary on data. <http://dartthrowingchimp.wordpress.com/> Twitter: @jay_ulfelder
- Duck of Minerva: Multi-author blog focused on international politics. <http://www.whiteoliphaunt.com/duckofminerva/> Twitter: @DuckofMinerva
- Sociological Images: Less political science, more sociology, but lots of fascinating statistical graphics and claims. <http://thesocietypages.org/socimages/> Twitter: @SocImages.
- OkTrends: OKCupid's data scientists tell us things. Not political science, but loads of interesting data here. <http://blog.okcupid.com/>

Classroom Climate and Participation: Policies

Please read this section carefully, paying close attention to the four initial paragraphs (beginning “You must”).

You must come to class, and you must come on time. This is a discussion-based class, not a gigantic lecture—your classmates and I will notice your absence. Attendance and promptness are both components of your participation grade.

You must do the reading, and you must bring your readings to class. **I expect each class session to require about two hours of preparation,** although that will vary a bit over the course of the quarter. Not understanding the readings (i.e., having a million questions) is totally fine. Not doing the readings is not. I can tell the difference.

You must participate in class. Participation accounts for a significant portion of your grade, and is an important element of both your learning and the classroom community. However, if participation is hard for you—as it is for many people—email me or meet with me. I will help you strategize about participating in a way that feels challenging but not terrifying.

You must treat me, and your classmates, with respect. Treating others with respect is a key part of your participation grade (and an important life skill!). Some indicators of respect that I demand are:

- No phones: no texting, no talking, no surfing the web. Turn them to silent and put them away.
- Computers are for notes, coding, course materials, or looking up class-relevant stuff on the web.
- No side conversations (unless I specifically ask for them, which I will occasionally do).
- Warm, non-judgmental attention to whomever is speaking. This means: active, attentive listening; nonverbal demonstrations of engagement using eye contact and/or body language and/or facial expression; expressions of support rather than dismissiveness.
- If you’re bored, I expect you to pretend otherwise. If you can’t stay awake, don’t come to class.

Participation Grading: I assign a rough 0-10 score for participation after each class period. At the end of the term, I remove the two lowest participation scores, and average the remaining scores. In general, “A+” participation for a class period (10/10) requires all of the following: (1) you attend, (2) you are extremely well-prepared, including reading the news and/or political science blogs/Twitter, (3) you make insightful comments in class, (4) your comments are relevant to the reading and the broader purposes of the class, and (5) your comments are respectful of your classmates and me. Failing to meet any of these requirements will lower your grade. In general, I assign participation grades of no lower than 5/10 when you are in class. However, two circumstances will cause zero participation grades: missing class (unless excused under my Emergencies policy below, or as an element of a disability accommodation) and behaving disrespectfully (non-note-taking computer use, sleeping, repeated interruptions, or disparaging remarks, for example).

Specific behaviors that will improve your participation grade:

- Don’t interrupt.
- Listen actively, making eye contact, signaling your agreement by nodding, and so on.
- If you have trouble participating in class, email me or make an appointment, and we’ll strategize.
- If you are someone who likes to speak a lot in class discussions, that’s awesome. Still, be mindful of colleagues who have less practice speaking up by pausing for a few seconds before you jump in.
- Really listen when your colleagues are speaking. Don’t just rehearse what you’re going to say.
- Be thoughtful as you frame remarks about cultures and practices that are not your own.
- If you disagree, do so respectfully. Try jumping off from a point of agreement.
- Don’t make assumptions about what is “basic” knowledge. Judgment makes learning harder for everyone.

If you’re not sure about your participation grade, it’s your right and responsibility to check in with me. If your participation problems are particularly severe, I may reach out to discuss them with you—but it’s not wise to assume that your participation grade is perfect just because you haven’t heard otherwise.

Other Course Policies

Please read this section, which is organized alphabetically by topic, carefully. I treat a syllabus as a contract of sorts. If you take my class you are bound by the terms here.

Academic Integrity: ALL YOUR WORK MUST BE YOUR OWN. I cannot emphasize this enough. If you feel that you're in over your head, or you don't know whether what you're doing constitutes plagiarism or another academic integrity violation, PLEASE talk to me. Making the wrong decision could get you expelled from Drexel. I take academic integrity very seriously (academic research is, after all, my job). Under most circumstances, I will pursue disciplinary action to the fullest extent for any dishonesty, cheating, plagiarism or other academic integrity violation. The full text of Drexel's academic misconduct policies can be found at http://www.drexel.edu/provost/policies/academic_dishonesty.asp.

Attendance: I do not grade on attendance. However, you receive a zero participation grade for class meetings you do not attend. Perhaps more importantly, when you are absent you do not have the opportunity to learn materials that are discussed in class rather than in the readings, which decreases your likelihood of earning full credit on written assignments.

Changes to the Syllabus: I reserve the right to change this syllabus at any time. I do my best to communicate clearly about any changes.

Disability Statement: My goal is full inclusion. (See below under "Diversity and Inclusion" for more on that.) I work hard to help everyone take full advantage of my classes, but in some cases I'm not sure what my students' specific learning needs are. If you are disabled, think you might be disabled, or become disabled, please let me know as soon as possible so that we can work out a plan. There is no need to have a specific accommodation figured out in advance; we can talk about your needs and the class requirements, and figure out what is necessary. You will probably also want to get an accommodation verification letter, as described in Drexel's official policy: "[T]he University is committed to the non-discrimination of students with disabilities. Students with disabilities requesting accommodations and services at Drexel need to present a current accommodation verification letter (AVL) before accommodation can be made. AVL's are issued by the Office of Disability Services." (The Office of Disability Services is located at 3201 Arch St. in Suite 210, and can also be reached at disability@drexel.edu.)

Diversity and Inclusion: I try to teach in a way that promotes the full, equal participation of people from lots of different backgrounds, including people who have had different educational opportunities, people with a variety of mother tongues, and people of different racial, socioeconomic, sexual and gender identities. In keeping with my focus on inclusion, there are a few things I don't tolerate under any circumstances, including slurs of any kind, body-shaming, and mocking or deriding anyone's appearance or other private choices. This stuff earns you a zero participation grade for the day. If you aren't already familiar with topics such as intersectionality, privilege, and White fragility, please take some time early in the quarter to learn about them.

- Simon Fraser University's Intersectionality 101 pamphlet is really good! The first few pages will tell you what you need to know, but read the whole thing. http://www.sfu.ca/iirp/documents/resources/101_Final.pdf
- And here is a short recap of Dr. Robin DiAngelo's work on white fragility: http://www.huffingtonpost.com/good-men-project/why-its-so-hard-to-talk-to-white-people-about-racism_b_7183710.html

Drops and Withdrawals: I adhere to the University's policies on drops and withdrawals, which are available at http://drexel.edu/provost/policies/course_drop.asp and http://drexel.edu/provost/policies/pdf/course_withdrawal.pdf, respectively.

Emergencies: If you believe you will miss class, or be unable to turn in an assignment on time, due to legitimate, verifiable illness, disability, or emergency, please contact me directly and we will consider how to proceed.

Grading Notes: I give grades of A+ only in exceptional circumstances. A rule of thumb: if your insight is new to me, and extremely clearly presented, then you *may* receive an A+. Rubrics for individual assignments will be handed out separately, but these general guidelines apply to all written assignments and are the only way to receive an A.

- For assignments that ask you to “evaluate” or “analyze,” please do so. You may summarize *if and only if* the finer points of the material summarized are relevant to the evaluative argument.
- Use evidence: quotations from the reading, examples from the news, and readings from other courses are all appropriate sources.
- Evaluate your evidence and arguments fairly. Social science writing is not about winning a debate or laying out one side of an argument; it’s about critically but open-mindedly assessing theory and evidence.
- Be clear. It doesn’t have to be beautiful prose (although that helps), but it does have to get the point across with a minimum of fuss and confusion.
- I do not grade on spelling or grammar, but I do grade on clarity. Always proofread to make sure that your writing says what you want it to say. If you’re not sure about how clear your writing is, have someone else look over it.

Grading Scale:	A+	97-100%
	A	93-96%
	A-	90-92%
	B+	87-89%
	B	83-86%
	B-	80-82%
	C+	77-79%
	C	73-76%
	C-	70-72%
	D+	67-69%
	D	63-66%
	F	62% and below

How to Turn in Your Work: All assignments are due at the BEGINNING of the class period, in hard copy. You may turn in up to two assignments per quarter via email. However, if you do so, you must *also* turn in a hard copy to my mailbox in Macalister 3025 *within 48 hours of the due date* in order to receive full credit.

Late Work: I accept late assignments for partial credit, no questions asked, until **three weeks after the original deadline** (i.e., until 8:00 am on the Monday three weeks after the due date). After that time you will receive a zero for the assignment. I deduct one letter grade (10%) from work handed in up to one week after the original deadline. After one week has passed, but before three weeks have passed, I deduct four letter grades (40%). I will not accept work that is more than three weeks late. ALL WEEKLY ASSIGNMENTS must be turned in by the beginning of class on Monday, December 7.

However, under certain circumstances, I will accept late work with no penalty. If you need an extension due to legitimate, documented illness or emergency, please speak with me before the scheduled due date if at all possible. We will create a plan specifying a new due date.

When to Expect Grades: I make every effort to return all written work promptly. In general, you should expect to receive your grade and any comments by one week after the due date. However, this is not possible in all situations. I will advise you if grading will take longer than expected.

Components of Your Grade

Component	Description	% of Final Grade
Extra credit	There will be various opportunities to earn extra credit throughout the quarter. You can use these opportunities to earn up to 10% (a full letter grade) in extra credit, but no more than this.	Up to 10% additional on final grade
Participation	Follow the guidelines above under “Classroom Climate and Participation.” Come to class. Come on time. Be prepared. Ask questions. Follow relevant news, blogs, and Twitter feeds.	20
Assignment 1	Plan a data collection. Explain what the research question is, choose a unit of analysis, and develop a set of variables with which you might attempt to answer the question. Describe each variable.	5
Assignment 2	Describe several variables from a dataset I’ll introduce in class using both R and your knowledge about variable types.	5
Assignment 3	Write three short essays about three hypothetical variables. Think about data generation, coding, and other processes that might affect reliability and validity.	10
Assignment 4	Calculate correlations between several variables, and distinguish between correlation and causation in practical terms.	5
Assignment 5	Examine and interpret some bivariate regression results. Then, conduct two bivariate regressions of your own.	5
Assignment 6	Examine and interpret some multiple regression results. Then, conduct two multiple regressions of your own.	10
Assignment 7	Write an R script that performs several key tasks we’ve learned this quarter.	5
Assignment 8	Revise your R script, adding additional functionality.	10
Assignments (total)		55
In-class assessments	Approximately every other week, we’ll have a quiz or other exercise in class to make sure that you’re holding on to key vocabulary and concepts. Keep up with your reading and R practice, and come to class! These assessments cannot be made up.	10
Final exercise	The final exercise (it will be more like a long assignment than like an exam) will bring together all the concepts and skills that you have learned. It will be “handed out” electronically on Wednesday, December 9 at 10:00 am and will be due, also electronically, by Friday, December 11 at 10:00 am.	15

Schedule of Topics, Readings, and Assignments

General topic	Due Monday	Monday topics & readings	Wednesday topics & readings
Week 1: OMG MATH!!! JK, NO MATH Sept. 21, 23	Nothing.	Introductions. Syllabus review. Topic(s) for investigation. The research process. Types of inference. Read: This syllabus	Getting started with RStudio. Using RStudio as a calculator. Assigning values to variables. Read: Gaubatz, <i>A Survivor's Guide to R</i> , ch. 1.
Week 2: WTF is a "dataset"?!?!?!?!?!?! Oct. 1	Nothing.	No class. Papal visit.	Types of political science data. Dataset structure and vocabulary. Measurement terminology. Read: Frankfort-Nachmias and Leon-Guerrero, <i>Social Statistics for a Diverse Society</i> , ch 1. Assignment 1 handed out.
Week 3: WTF is in this dataset?!? Oct. 5, 7	Assignment 1: Plan a data collection.	Assignment 1 due. Measures of central tendency and dispersion. Assessing significance. Read: Agresti and Finlay, <i>Statistical Methods for the Social Sciences</i> , ch.3. Alternatively (longer, but possibly easier reading?): Frankfort-Nachmias and Leon-Guerrero, <i>Social Statistics for a Diverse Society</i> , ch 4 & 5.	Getting data "into" RStudio. Summarizing variables. Read: Gaubatz, <i>A Survivor's Guide to R</i> , ch. 4-5. Assignment 2 handed out.
Week 4: Catching up Oct. 14	Assignment 2 (due Weds. 10/14): Summarize some data.	No class. Indigenous Peoples' Day, aka Columbus Day.	Assignment 2 due. Catching up with RStudio. Read: Hoover Green, <i>The Very Most Basic R Cheat Sheet</i> . Prepare a list of issues, difficulties, or questions about what we've done so far with R.
Week 5: How to make a statistician cry. Oct. 19, 21	Nothing.	Sampling terminology, representativeness, reliability, and validity. Read: Bryman, <i>Social Research Methods</i> , pp. 168-173, 184-207; Hoover Green, "The Devil's in the Data." Assignment 3 handed out.	Thinking critically about observational data. Read: Palermo, Bleck, and Peterman, "Tip of the Iceberg."
Week 6: Lies, damned lies, and correlation coefficients Oct. 26, 28	Assignment 3: Assess some data.	Assignment 3 due. Last chance to turn in Assignment 1. Correlation coefficients; correlation versus causation. Read: Urdan, <i>Statistics in Plain English</i> , ch. 8. Assignment 4 handed out.	Plotting and measuring relationships between variables; running R from a script. Read <i>and practice with</i> tip sheet (handed out by AHG).

General topic	Due Monday	Monday topics & readings	Wednesday topics & readings
Week 7: I'm a model, you know what I mean Nov. 2, 4	Assignment 4: Correlation, causation, and what's in between.	Assignment 4 due. Bivariate regression and regression assumptions. Read: Marchant-Shapiro, <i>Statistics for Political Analysis</i> , ch 12. Assignment 5 handed out.	Last chance to turn in Assignment 2. Linear modeling from a script. Read <i>and practice with</i> tip sheet (handed out by AHG).
Week 8: I'm a model, you have no idea what I mean (I) Nov. 9	Assignment 5: Run and interpret bivariate regressions.	Assignment 5 due. Multiple regression models with continuous dependent variables. Read: Marchant-Shapiro, <i>Statistics for Political Analysis</i> , ch. 13. Assignment 6 handed out.	No class. AHG travel.
Week 9: I'm a model, you have no idea what I mean (II) Nov. 16, 18	Assignment 6: Run and interpret multiple regressions.	Assignment 6 due. Last chance to turn in Assignment 3. Multiple regression models with continuous dependent variables (again). Read: Wheelan, <i>Naked Statistics</i> , ch. 11-12. Assignment 7 handed out.	Multiple regression from a script. Read <i>and practice with</i> tip sheet (handed out by AHG).
Week 10: Is You Is or Is You Ain't Nov. 23	Assignment 7: Your first R script!	Assignment 7 due. Last chance to turn in Assignment 4. Regression models with binomial dependent variables. Watch: https://www.youtube.com/watch?v=EocjYP5h0cE The speaker is a total weirdo but pretty good at explaining logistic regression. Make sure you take notes.	No class. Thanksgiving holiday.
Week 11: Whole > sum(Parts) Nov. 31, Dec. 2	Assignment 8: Your first R script, revised.	Assignment 8 due. Last chance to turn in Assignment 5. Review of regression assumptions and interpretation. Brief discussion of other regression models. Read: Bloom, "When do I use that model?"	R catchup day. No reading. Bring your notes about learning to use R — what worked, what didn't, ongoing issues, etc.
Week 12: Dec. 7.	Nothing.	Last chance to turn in Assignments 6, 7, and 8. In-class review session for final exercise. No reading.	No class. Final exercise handed out via email Wednesday at 10:00 am; due Friday, December 11, at 10:00 am.