

Syllabus for PLSC 309-001
Quantitative Political Analysis
Fall 2023
TTh 1:35 pm – 2:50 pm, Olmsted C-013

Professor: Dr. Daniel J. Mallinson

Office:	Olmsted W-160K
Office Hours:	TTh 3-5pm, By appointment
Email:	mallinson@psu.edu
Twitter:	@djmallinson
Class hashtag	#plsc309
Course Webpage	Link

Course Description

Political science and public policy researchers increasingly rely on quantitative analysis to understand political phenomena and solve policy problems. Quantitative analysis skills are also in high demand across the economy – in the private, public, and non-profit sectors. This course will introduce students to data analysis and statistical applications in political research. Topics include data processing, inferential statistics, correlation and regression, multivariate analysis, causal inference, and coding. It introduces students to the basic statistical techniques used to study politics quantitatively.

Prerequisites: Any 3 credits in political science.

Learning Goals and Objectives

- Goal 1: Students will understand statistical approaches that are fundamental to quantitative political analysis
 - Objective 1a: Students will understand how each statistical approach links to different types of research questions and data
 - Objective 1b: Students will identify the core assumptions of statistical tests
 - Objective 1c: Students will identify violations of those core assumptions
- Goal 2: Students will critically analyze data and effectively report their findings
 - Objective 2a: Students will correctly interpret statistical output
 - Objective 2b: Students will effectively communicate the meaning of statistical output in writing and orally

- Goal 3: Students will be competent in conducting their own statistical analyses and using resources to solve coding problems
 - Objective 3a: Students will code statistical analysis in R
 - Objective 3b: Students will know where and how to search for help when they run into problems with R coding
- Goal 4: Students will critically evaluate political science, public policy, and popular press articles
 - Objective 4: Students will critically evaluate statistical claims made by academics and journalists

Methods for Learning and Teaching: This course will contain a mix of lecture, in-class statistics exercises, and teamwork. It is vital for your own comprehension of the course material that you come to class prepared to discuss the readings and any relevant happenings in the news.

Reaching Our Goals

Attendance: Your attendance in class is always expected. Attending class will allow you to keep up with the course and provide for meaningful discussion as a class. I will be taking attendance in order to grade participation, but also as a way to get to know you. Please contact me via [e-mail](#) if you are unable to attend class. I will follow the University's attendance policy when it comes to excused absences. See <https://handbook.psu.edu/content/class-attendance>.

Preparation and Participation: I expect you to read the assigned material before class and be actively engaged in classes. Stats are hard for many and asking questions during class is vital for your understand. I also encourage students to work together to solve analysis problems.

Do Not Suffer in Silence: Please do not suffer in silence throughout the course if you are struggling. Instead, let me know — as soon as possible — what things are not making sense and we can work it out. If you are having a problem of any kind in the course, please talk to me about it as soon as possible.

Be Flexible: While the syllabus represents an agreement between us, I reserve the right to revise and modify it throughout the course, if it is necessary to achieve our goals. Situations beyond either of our control can also emerge that require changes to the course. I will notify you right away when any changes are made. We may cover less than intended in class, but never more.

E-mail Policy: I will work to respond to e-mails by the next business day. This means that e-mails sent on the weekends will be responded to by Monday.

Readings

The following “books” are required for the course. Each has a (legal) free version online. Physical copies can be bought, if you prefer. We are not going to read any of them in their entirety in the course, but since there are no-cost versions, we are able to pick and choose the best parts from each.

Cunningham, Scott. *Causal Inference Mixtape*. Yale University Press.

Huntington-Klein, Nick. *The Effect*. Routledge.

Cetinkaya-Rundel, Mine and Johanna Hardin. *Introduction to Modern Statistics*. OpenIntro.

James, Gareth, Daniela Witten, Trevor Hastie, and Robert Tibshirani. *An Introduction to Statistical Learning*. Springer.

Software

For statistical and research programming, we are going to use the R statistical language, the Posit Cloud (<https://posit.cloud/>), and the Quarto (<https://quarto.org>) notebook software.

Supplemental Resources

For refreshers about statistics and probability, I enthusiastically recommend Khan Academy (<https://www.khanacademy.org/>) and OpenIntro Statistics (<https://www.openintro.org/>).

Lecture Slides

I will be using lecture slides throughout the course. These will be uploaded to the course website (<https://sites.psu.edu/djmallinson/plsc-209>) and Canvas prior to each class period.

Assessing Your Progress Towards Our Goals

The following types of assessment will be used to track your progress towards meeting our course goals: homework, final project, presentation.

Each component represents the following percentage of your final grade:

10 Homework Assignments	80%
Final Project	10%
Presentation	10%

We will use the following grade scale:

Letter	Percent
A	94 to 100
A-	90 to 93
B+	87 to 89
B	84 to 86
B-	80 to 83
C+	77 to 79
C	70 to 76
D	60 to 69
F	Below 60

Homework Assignments: The skills part of the course will generally involve two class periods per topic. Each Thursday a new concept is introduced and homework is provided. Each following Tuesday will be an opportunity to review homework and examples before the homework is due.

Final Project: The final project will be a 1,500 word review of a chosen peer reviewed journal article or quantitative news article that uses a research design from this course. The written portion should include:

- A citation of the article
- A summary of the research question, test, and results
- Your analysis of whether the research was done properly

Presentation: A five minute in-class presentation will accompany the written final project. This could be a live presentation, Powerpoint, taped presentation, cinema-quality video, or something else. Be creative!

Make-Up Grades: You are allowed to make-up academic work only in the case of excused absences. These absences may include missing class for a [University-sanctioned activity](#)

(with proper documentation), illness, religious observance, or family responsibilities. If you know in advance that you are going to miss class, please contact me before the absence to make arrangements for completing the work. If you are absent for an unexpected reason, please check in with me as soon as possible. You will have one week from the day of your return to class to make up a missed assignment.

Illness: If you are not feeling well or if you have been in contact with someone who has tested positive for COVID-19, DO NOT COME TO CLASS. I cannot stress this strongly enough. We are counting on you to help contain the spread of the virus (and other illnesses) on campus by self-isolating if you have a fever, feel unwell, or have been in contact with someone who has tested positive or is showing symptoms. You may participate remotely or watch the recorded class. If you are not in class, you may be contacted by me check up on you. Again, this is important in the event that we need to follow up on a potential infection.

Academic Integrity Academic dishonesty is not limited to simply cheating on an exam or assignment. The following is quoted directly from the *PSU Faculty Senate Policies for Students* regarding academic integrity and academic dishonesty: “Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.”

All University and Penn State Harrisburg policies regarding academic integrity/academic dishonesty apply to this course and the students enrolled in this course. Refer to the following URL for further details on the academic integrity policy of Penn State Harrisburg: <https://harrisburg.psu.edu/academics/academic-guidelines-and-policies>. Each student in this course is expected to work entirely on her/his own while taking any exam, to complete assignments on her/his own effort without the assistance of others unless directed otherwise by the instructor, and to abide by University and Penn State Harrisburg policies about academic integrity and academic dishonesty. Academic dishonesty can result in an assignment of “F” or “XF” as the final grade for the student.

Disability Access

Penn State welcomes students with disabilities into the University’s educational programs. Penn State values diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create environments that are usable, equitable, inclusive, and welcoming. Every Penn State campus has a Student Disability Resources office. Student Disability Resources at Penn State Harrisburg is located in the Student Enrichment Center Room 205. The Assistant Director of Student Disability Resources, Alan Babcock, can be

reached via email at aub15@psu.edu or phone 717-948-6025.

To receive consideration for accommodations, please contact Student Disability Resources (SDR), participate in an intake interview, provide documentation of your disability, and complete an online Introductory Questionnaire. Please know that you are not required to already have documentation to begin the process with SDR, as SDR can assist with the process of requesting accommodations. Additional information is available on the (<https://harrisburg.psu.edu/student-disability-resources>). If the documentation supports requests for reasonable accommodations, SDR will provide you with an accommodations letter, which you can then give to your professors. Please know that requests for accommodations and support must be initiated by the student and communication with professors regarding the approved accommodations must be initiated by the student. You will receive accommodations after you give your accommodations letter to your professors. It is recommended that you share your accommodations letters with your professors as early in the semester as possible. Professors do not provide accommodations retroactively.

Counseling Services

Success in college depends heavily on your personal health and wellbeing. Please recognize that some stress and anxiety is a normal part of life and the college experience, and it can be compounded by unexpected setbacks or life changes outside the classroom. Penn State Harrisburg has a number of support options listed in this syllabus.

If you are experiencing issues that feel unmanageable, you reach the point that you have difficulty concentrating and/or feeling motivated, or have anxiety or feelings of depression that interfere with your ability to take care of yourself or your daily responsibilities, please consider talking with someone in CAPS (Counseling and Psychological Services). We have a range of services to help you navigate issues that are impacting your ability to be healthy, well, and productive at college.

You can learn more about the confidential mental health services available on campus by visiting the [Counseling and Psychological Services website](#) or by calling (717) 948-6025 Monday through Friday 8am to 5pm. CAPS is located on the 2nd floor of the Student Enrichment Center, Suite 205. You can access crisis services 24/7/365 by calling 1-877-229-6400 or by texting “LIONS” to 741741. Find us on Instagram or on [Facebook](#).

Educational Equity

Penn State takes great pride in fostering a diverse and inclusive environment for students, faculty, and staff. Acts of intolerance, discrimination, harassment, and/or incivility due to age, ancestry, color, disability, gender, national origin, race, religious belief, sexual orientation, or veteran status are not tolerated and can be reported through Educational Equity

at the Report Bias site: <https://equity.psu.edu/reportbias>. Penn State's Code of Conduct can be found at the following link: <https://studentaffairs.psu.edu/support-safety-conduct/student-conduct/code-conduct>.

Direct all inquiries regarding the nondiscrimination policy to The Office of Diversity, Equity, and Inclusion at Penn State Harrisburg at 717-948-6016, and to Student Diversity, Equity, and Inclusion at 717-948-4381.

Mandated Reporting

Penn State is committed to equal access to programs, facilities, admission, and employment for all persons. It is the policy of the University to maintain an environment free of harassment and free of discrimination against any person because of age, race, color, ancestry, national origin, religion, creed, service in the uniformed services (as defined in state and federal law), veteran status, sex, sexual orientation, marital or family status, pregnancy, pregnancy-related conditions, or physical or mental disability, gender, perceived gender, gender identity, gender expression, genetic information or political ideas. Discriminatory conduct and harassment, as well as sexual misconduct and relationship violence, violates the dignity of individuals, impedes the realization of the University's educational mission, and will not be tolerated. Gender-based and sexual harassment, including sexual violence, are forms of gender discrimination in that they deny or limit an individual's ability to participate in or benefit from University programs or activities. For reporting resources, and support, please visit titleix.psu.edu.

Penn State strongly encourages all members of the campus community to take appropriate action by providing support and encouraging those impacted by such incidents to submit a report to the Title IX Coordinator. You may also submit a report online by using the Incident Report Form found here: Office of Sexual Misconduct Prevention & Response Incident Report Form. If the University Title IX staff receives information about an incident, they will reach out to offer information about resources, rights, and procedural options available to you.

At Penn State Harrisburg, your point of contact is:

Nicholas Paesano Sexual Misconduct Resource Person Penn State Harrisburg E-126 Olmsted Building 717-948-4385

Penn State's Title IX Coordinator is: Amber Grove 212 Rider Building University Park, PA 16802 814-867-5088 titleix@psu.edu

Other resources that are available include:

- Penn State Harrisburg Counseling and Psychological Services, SEC 205 - 717-948-6025
- Department of Safety & Police
 - Campus Police: 717-979-7976
 - Local Police: 717-543-2200 or 911
- YWCA Confidential Domestic Violence & Sexual Assault Services: 1-800-654-1221 (available 24/7)
- Contact Helpline: 800-932-4616 (24-hour community crisis hotline)
- Pinnacle Health Harrisburg: 717-782-3131
- Penn State Harrisburg Student Health Services, 220 Capital Union Building: 717-948-61015
- Penn State Hotline: 800-560-1637 (Anonymous reporting)

In Case of Emergency In the event of a University-wide emergency, course requirements, classes, deadlines, and grading schemes are subject to changes that may include alternative delivery methods, alternative methods of interaction with the instructor, class materials, and/or classmates, and a revised semester calendar and/or grading scheme.

For more general information about the emergency situation, please refer to:

- Penn State Harrisburg's home page at <http://harrisburg.psu.edu/>
- PSUAlert (<http://psualert.psu.edu/psualert/>). This is a service designed to alert the Penn State community via text messages to cell phones when situations arise on campus that affect the ability of the campus - students, faculty and staff - to function normally. Everyone is encouraged to sign up to receive the text alerts.
- Messages will be placed at the 717-948-6000 campus phone number

In the case of a University-wide emergency, please refer to the following about changes in this course:

- Canvas: <https://psu.instructure.com/courses/2116052>
- Instructor's email: mallinson@psu.edu

Basic Needs Statement

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Office of Student Affairs (syw10@psu.edu, 717-948-6180) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable him to provide any resources that he may possess.

Writing Tutoring and Other Academic Support

The Russell E. Horn Sr. Learning Center may have a tutor who can assist you with this course. An appointment is recommended. Appointments are available in-person or on Zoom, depending on your preference.

To make an appointment:

Visit: Student Enrichment Center Room 201 Or go to: starfish.psu.edu and click on “My Success Network” Or call: 717-948-6475 Or email: PSHLearningCtr@psu.edu

The Learning Center can help you in a variety of ways:

Academic Success Coaches Get help with time management, organization, test-taking, study skills, as well as speech and presentation preparation and delivery.

Subject Area Tutoring Courses including accounting, biological and behavioral science, computer science, economics, finance, mathematics, physical sciences, statistics, engineering, and some world languages are supported by peer and professional tutoring.

Writing Get help with the development of essays, papers, resumes, cover letters, scholarship applications and much more. We can help at any stage from brainstorming ideas to citing sources to polishing your final product.

The Lambert Undergraduate Advising Center can assist you with exploring majors and minors, understanding academic policies, and planning courses for future semesters.

Drop-in Quick Question Advising is available during the semester both in-person and online (no appointment necessary!). See dates, times, and locations at: bit.ly/whatsnextbgb

To contact the Advising Center:

Visit: Student Enrichment Center Room 204 Or call: 717-948-6604 Or email: HBGAdvisingCenter@psu.edu

Course Schedule

We will attempt to follow this schedule as closely as possible, but we may take more time on some concepts and less time on others. For this reason, a digital version of this syllabus can be found on [my website](#). Slides used in class will also be posted on the online syllabus and Canvas before class. All changes to the schedule will be announced in class or via e-mail and the online syllabus will be constantly up-to-date. Required course readings are listed and due dates for assignments are in bold. Links to some additional readings are included in the syllabus on my website, others will be uploaded to Canvas. If you have trouble, please do not hesitate to [e-mail](#) me.

Week 1: Introduction

- August 22: Introduction to the class and each other
- August 24: Software
 - Personal device [R](#) and [RStudio](#)
 - [Posit](#) orientation
 - [Khan Academy](#)
 - [Quarto orientation](#)
- August 26: **Regular Drop Deadline**

Week 2: Introduction

- August 29: Software Continued
 - Playing with R, Posit, and Quarto
- August 31: No Class for APSA
 - Keep playing with software on your own

Week 3: The Basics

- September 5: Research Overview
 - *The Effect* [Chapter 1](#) and [Chapter 2](#)

- September 7: Probability
 - No Reading

Week 4: The Basics

- September 12: Variables
 - *The Effect* [Chapter 3](#) and [Chapter 4](#)
- September 14: Variables and Identification
 - *The Effect* [Chapter 5](#)

Week 5: Regression

- September 19: Lab Day
 - **Homework 1 Due**
- September 21: Regression
 - *The Effect* [Chapter 12](#) and [Chapter 13](#)

Week 6: Regression

- September 26: Lab Day
 - Homework 2 Due
- September 28: Regression
 - No new readings

Week 7: Inference

- October 3: Lab Day
 - **Homework 3 Due**

- October 5: Inference
 - *Introduction to Modern Statistics* [Chapter 11](#), skim [Chapter 13](#), [Chapter 14](#), [Chapter 15](#)

Week 8: Inference

- October 10: Lab Day
 - **Homework 4 Due**
- October 12: Inference
 - *Introduction to Modern Statistics* [Chapter 16](#), [Chapter 17](#), [Chapter 18](#), [Chapter 19](#)

Week 9: Inference

- October 17: Lab Day
 - **Homework 5 Due**
- October 19: Inference
 - *Introduction to Modern Statistics* [Chapter 20](#), [Chapter 21](#), [Chapter 22](#), [Chapter 23](#)

Week 10: Inferential Modeling

- October 24: Lab Day
 - **Homework 6 Due**
- October 26: Inferential Modeling
 - *Introduction to Modern Statistics* [Chapter 24](#), [Chapter 25](#), [Chapter 26](#), [Chapter 27](#)

Week 11: Check In

- October 31: Lab Day
 - **Homework 7 Due**
- November 2: Checking In

Week 12: Fixed Effects

- November 7: Final Project Planning
- November 9: Fixed Effects
 - *The Effect* [Chapter 16](#), skim *Causal Inference: The Mixtape* [Chapter 10](#)

Week 13: Difference-in-Differences

- November 14: Lab Day
 - **Homework 8 Due**
- November 16: Difference-in-Differences
 - *The Effect* [Chapter 18](#)

Week 14: Thanksgiving Break

- November 21 and 23
 - No classes

Week 15: Regression Discontinuity

- November 28: Lab Day
 - **Homework 9 Due**
- November 30: Regression Discontinuity
 - *The Effect* [Chapter 20](#)

Week 16: Wrapping Up

- December 5: Lab Day
 - **Homework 10 Due**
- December 7: Wrapping Up

Week 17: Finals Week

- Final paper and presentation due before the start of our assigned final exam meeting