

University of Oregon
School of Planning, Public Policy and Management (PPPM)

PPPM 413 - Quantitative Methods

Fall 2023 Syllabus

Class (CRN 14356): Tue. & Thur., 12–1:20pm, 302 Gerlinger Hall

Lab (CRN 14357): Fridays, 12–12:50pm, 442 McKenzie Hall

Lab (CRN 14358): Fridays, 1–1:50pm, 442 McKenzie Hall

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Office hours: Monday, 9:30am to 11:30am

COURSE DESCRIPTION

This course is designed to improve your ability to use empirical evidence to make decisions related to planning, public policy, and management. You will learn the basics of statistical analysis, including which statistical techniques are appropriate to use to answer different research questions. You will use statistical software (*Stata*) to manage data and conduct statistical analysis. Additionally, you will learn to interpret empirical findings and write about the results of data analysis in an accessible and clear manner.

This course assumes no prior background in statistics, and it requires no calculus. Basic algebra will be used to illustrate the intuition behind some of the statistical tests.

STUDENT LEARNING OUTCOMES

1. Students will develop skills in quantitative methods that can be used to effectively analyze issues related to planning, public policy, and management.
2. Students will develop fundamental competencies in using statistical software for data analysis.
3. Students will be able to evaluate external research and understand its implications for issues in planning, public policy, and management.

CLASSROOM AND ACADEMIC POLICIES

Course Website

The syllabus, reading materials, assignments and announcements will be posted on the University of Oregon's Canvas website: <https://canvas.uoregon.edu>. Please check the course website frequently as these materials may be updated in the future.

Classroom Policies

The following policies are designed to help ensure that all participants benefit fully from the class:

- **Work environment:** To help create a classroom in which students feel safe and comfortable enough to express their thoughts, please be open-minded and respectful of other peoples, ideas, opinions and worldviews.
- **Courtesy:** All participants in the class should treat each other with the professional courtesy and respect expected in a workplace. All forms of communications should reflect professional standards in tone, presentation, formatting, and spelling.
- **Electronic devices:** Please do not use laptops, mobile phones or unauthorized electronic devices in class unless you are using them for class-related activities (e.g. taking notes).
- **Email:** I will aim to respond to your emails within 48 hours during workdays. Please review Canvas and course syllabus prior to asking questions about the class.

Academic Misconduct

Academic misconduct is prohibited and includes, but is not limited to, **tampering with grades, resubmitting the same assignment/work for more than one class, cheating, plagiarism, fabrication, giving or receiving unauthorized help, and furnishing false information.** Please review the Dean of Student's website for the complete definition of academic misconduct. You are responsible for ensuring that your actions do not constitute academic misconduct. If there is any question about whether an act constitutes academic misconduct, it is your obligation to clarify the question with the instructor before committing or attempting to commit the act. **You will receive an "F" grade if you engage in academic misconduct.**

Violations of Course Policies

Students who fail to adhere to the guidelines described in this section will receive an "F" grade for the course and may be subject to additional penalties from the School or the University.

Writing Lab

If you would like to improve your writing skills, please take advantage of the free services provided by the Writing Lab of the Tutoring and Academic Engagement Center.

Accessibility and Disability

Students with documented accessibility/disability needs should see the course instructor as soon as possible. They should also request a verification letter from the Counselor for Students with Disabilities.

Workplace Harassment Prevention

The UO is committed to providing an environment free of all forms of prohibited discrimination and sexual harassment and abuse, including sexual assault, domestic and dating violence and gender-based stalking. UO employees have a duty to report such actions or behaviors to their supervisor or the Office of Affirmative Action and Equal Opportunity. The University Health

Center and University Counseling and Testing Center can assist and work confidentially with students.

Inclusion Statement

The College of Design is a community that values inclusion. We are committed to equal opportunities for all faculty, staff and students to develop individually, professionally, and academically regardless of ethnicity, heritage, gender, sexual orientation, ability, socio-economic standing, cultural beliefs and traditions. We are dedicated to an environment that is inclusive and fosters awareness, understanding, and respect for diversity. If you feel excluded or threatened, please contact your instructor and/or department head. The university Bias Education and Response Team is another resource that can assist you.

GRADING AND ASSIGNMENTS

Assignments

- **Attendance (10% of final grade):** You are expected to attend all class meetings. To record attendance, you will be asked to use an iClicker in class (please follow the instructions on Canvas to register your iClicker). Your presence in class will help you better understand the reading materials and prepare you well for the exams. To make room for emergencies, you are automatically excused if you miss class up to 3 times. Any missed class beyond this ceiling will be penalized unless you can show evidence of a university-approved reason for your absence. NB: Submitting an iClicker response for another student is academic misconduct.
- **7 Lab Assignments (20% of final grade):** In the lab, you will apply the data analysis techniques that we discuss in class. There are seven labs in total, each with an assignment.
- **3 Exams (70% of final grade):** There are two mid-term exams and one comprehensive final exam. Choose any location of your choice to take the exam on Canvas. The instructor will be available by email and on Zoom for questions.

Policies Related to Assignments

- Electronic Submission: All assignments including the three exams must be submitted through Canvas.
- Late Assignment Policy: The deadline for all assignments cannot be extended. Exceptions will be made only under university-approved conditions (e.g. documented serious illness, family emergency or religious obligation).
- Early/late Exams: Arrangements for early or late exams can only be allowed under university-approved conditions (e.g. documented serious illness, family emergency or religious obligation).
- Extra Credit Assignments: There are no extra credit assignments in this class.

- Independent Work: all assignments in this class are open-book, open-notes. Although you are encouraged to discuss what you are learning in class with other students and participate in study groups, **you must complete all assignments by yourself. Working with other students to complete any assignment is considered academic misconduct.**
- Generative Artificial Intelligence (GenAI): To achieve course learning outcomes, you are required to work and complete all assignments by yourself. **Do not use GenAI websites/tools such as ChatGPT in completing assignments in this class as doing so will constitute academic misconduct. You will receive an “F” grade if you engage in academic misconduct.**

Grading Scale

You are expected to receive rigorous, challenging education at this university. Hence, **please do all the required readings, attend all class meetings, turn in all assignments, and utilize office hours.** I will also strive to grade your work in a fair manner. The grading scale is displayed below. However, your grades may be adjusted upwards to ensure consistency with the distribution of grades in previous classes if necessary.

Range	Letter Grade
94.0% or higher	A
90.0 to 93.99%	A-
87.0 to 89.99%	B+
84.0 to 86.99%	B
80.0 to 83.99%	B-
77.0 to 79.99%	C+
74.0 to 76.99%	C
70.0 to 73.99%	C-
67.0 to 69.99%	D+
64.0 to 66.99%	D
61.0 to 63.99%	D-
60.99% or lower	F

COURSE STRUCTURE

Course Textbook (required): Berman, E and Wang, X. *Essential Statistics for Public Managers and Policy Analysts*, 4th ed. Washington, D.C.: CQ Press, 2017. ISBN: 978-1506364315

Supplementary Readings (optional): These readings have been selected to demonstrate the importance of some of the topics we discuss to researchers, policy makers, and the general public. Some of these readings, especially toward the beginning of the class, are very brief and from “pop” sources, such as news sites or blogs. Other readings are articles published in

academic journals and are more technical. I have marked the technical readings on the syllabus in parentheses. I will go over some highlights from these reading during lecture. The full readings are available to interested students on Canvas. The full references are listed below (in the order they appear in the syllabus). They're marked on the course schedule with the author's name and year.

- Nocera, J. 2012. The College Rankings Racket. *New York Times*.
- Thoma, M. 2011. Mean vs. Median Income Growth. *Economist's View*.
- Chetty, R., Hendren, N., Jones, M.R., Porter, S.R. 2020. Race and Economic Opportunity in the United States. *Opportunity Insights*.
- Schwabish, J. 2014. An Economist's Guide to Visualizing Data. *Journal of Economic Perspectives* 28(1): 209-234.
- Chivers, B. and G. Barnes. 2018. Sorry, Wrong Number: Tracking Court Attendance and Targetting Through Testing a "Nudge" Text. *Cambridge Journal of Evidence-Based Policy* 2:4-34.
- Astor, M. 2019. Why You Can't Volunteer for Election Polls, and Other Polling Facts. *New York Times*.
- Chugh et al. 2009. Women Have a Lower Prevalence of Structural Heart Disease as a Precursor to Sudden Cardiac Arrest: The Ore-SUDS (Oregon Sudden Unexpected Death Study). *Journal of the American College of Cardiology* 54(22): 2006-2011.
- Pew Research Center. 2019. As the Self-Employed Near Retirement, Are They Prepared? *Pew Trusts Research and Analysis Issue Brief*.
- Jacobsen, G. and Jacobsen, K. 2020. Statewide COVID-19 Stay-at-Home Orders and Population Mobility in the United States. *World Medical and Health Policy*. <https://doi.org/10.1002/wmh3.350>
- Roberto et al. 2010. Evaluating the Impact of Menu Labeling on Food Choices and Intake. *American Journal of Public Health* 100(2): 312-318.
- Oster, E. 2014. Don't Take Your Vitamins. *Five Thirty Eight Blog*.
- Dee, T. 2009. Motorcycle helmets and traffic safety. *Journal of Health Economics* 28(2): 398-412.
- Hickey, W. 2018. The Ultimate Halloween Candy Power Ranking. *FiveThirtyEight.com*.
- Monkkonen et al. 2020. Built Out Cities? How California Cities Restrict Housing Production Through Prohibition and Process. *Terner Center Land Use Working Paper Series*.
- Nesbit, R. 2011. The Influence of Major Life Cycle Events on Volunteering. *Nonprofit and Voluntary Sector Quarterly* 41(6): 1153-1174.

Stata: In this class we will use *Stata*, a commonly used statistical software program. It is available for your use at no additional cost in the McKenzie computer classrooms (when no other classes are being taught) - see SSIL website: <https://ssil.uoregon.edu/>. Additionally, it may be available through the UO Virtual Computer Lab: <https://ssil.uoregon.edu/vm/>. If you would like a copy for your own computer, a student version of Stata is available through the Stata Campus Grad Plan Program: <https://www.stata.com/order/new/edu/profplus/student-pricing/>

Math Review: This course requires some familiarity with basic concepts in mathematics and algebra at the high school level. The following (optional) book might be helpful for students seeking to improve their basic math skills:

- *Schaum's Outline of Elementary Algebra*, 3rd Ed, by Barnett Rich and Philip Schmidt. Schaum's Outline Series, McGraw-Hill, New York, ISBN 0-07-141083-X (available in print or electronic format online, including Amazon).

COURSE SCHEDULE

Date	Topic	Required Reading	Optional Reading
Week 1 (9/26)	Course Introduction	Berman, Ch. 1 Berman, Ch. 2 (pp. 21-26)	
Week 1 (9/28)	Measurement and Data Sources and Sampling	Berman, Ch. 3 Berman, Ch. 5	Nocera, 2012
Week 1 (9/29)	<i>Lab 1: Introduction to Stata</i> (Due: 10/3)		
Week 2 (10/3)	Central Tendency	Berman, Ch. 6	Thoma, 2011 Chetty, 2020
Week 2 (10/5)	Measures of Dispersion	Berman, Ch. 7	Schwabish, 2014
Week 2 (10/6)	<i>Lab 2 - Measures of Dispersion</i> (Due: 10/10)		
Week 3 (10/10)	Confidence Intervals (pt. 1)	Berman, Ch. 7 Berman, Ch. 10	Astor, 2019
Week 3 (10/12)	Confidence Intervals (pt. 2) and Midterm Review	Berman, Ch. 7 Berman, Ch. 10	
Week 3 (10/13)	<i>No Lab</i>		
Week 4 (10/17)	EXAM 1: 12–1:30pm (on Canvas, any location of your choice)		
Week 4 (10/19)	Contingency Tables and Pivot Tables, Hypothesis Testing with Chi-Square (part 1)	Berman, Ch. 8 Berman, Ch. 11	Chugh et al., 2009 (technical)
Week 4 (10/20)	<i>Lab 3: Graphing in Stata</i> (Due: 10/24)		
Week 5 (10/24)	Hypothesis Testing with Chi-Square (part 2)	Berman, Ch. 11	Pew, 2019
Week 5 (10/26)	The T-Test (part 1)	Berman, Ch. 12	Chivers and Barnes, 2018

			(technical)
Week 5 (10/27)	<i>Lab 4: Chi-Square and T-test (Due: 10/31)</i>		
Week 6 (10/31)	The T-Test (part 2)	Berman, Ch. 12	Jacobsen and Jacobsen, 2020
Week 6 (11/2)	ANOVA	Berman, Ch. 13	Roberto et al., 2010 (technical)
Week 6 (11/3)	<i>Lab 5: ANOVA (Due: 11/7)</i>		
Week 7 (11/7)	EXAM 2: 12–1:30pm (on Canvas, any location of your choice)		
Week 7 (11/9)	Simple Regression and Intro to Multivariate Regression	Berman, Ch. 14 Berman, Ch. 15	
Week 7 (11/10)	<i>No Lab – Veterans Day Holiday</i>		
Week 8 (11/14)	Multivariate Regression (part 1)	Berman, Ch. 15	Oster, 2014
Week 8 (11/16)	Multivariate Regression (part 2)	Berman, Ch. 15	Dee, 2009 (technical)
Week 8 (11/17)	<i>Lab 6: Simple Regression (Due: 11/21)</i>		
Week 9 (11/21)	Multivariate Regression (part 3)	Berman, Ch. 15	Hickey, 2018 Monkkonen, 2020 (technical)
Week 9 (11/23)	<i>No Class - Thanksgiving Break</i>		
Week 9 (11/24)	<i>No Lab – Thanksgiving Break</i>		
Week 10 (11/28)	Interaction Terms and Causality	Berman, Ch. 2 (pg. 26-39)	Nesbit, 2012 (technical)
Week 10 (11/30)	Regression Summary and Course Takeaways		
Week 10 (12/1)	<i>Lab 7: Multivariate Regression (Due: 12/2)</i>		
Monday (12/4)	FINAL EXAM: 8am – 10am (on Canvas, any location of your choice)		