

UEP 305: Urban Data Analysis
Urban & Environmental Policy Department, Occidental College
Fall 2025

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Lecture: Tuesday and Thursday, 1:30-2:55pm, Berkus 232

Lab: Tuesday or Thursday, 3:05-4:30pm, Berkus 232

Student Hours: Tuesday, 4:45-6pm and Friday, 10:15am-12pm in UEP Building (1882 Campus Rd) Office #203. Sign up [here](#). If these times do not work for you, email me to find a time.

Canvas Sites: [Lecture](#), [Tuesday Lab](#), [Thursday Lab](#)

Course Description & Objectives

Data are powerful. Data help us understand the magnitude of urban and environmental problems—as well as the people who, and places that, disproportionately suffer from such problems. Data also help us identify solutions, including public policies, and evaluate the effectiveness of such solutions. In this course, students will learn how to document and analyze urban and environmental problems and public policies using quantitative data. Toward this goal, this course reviews the basic foundations of statistics for social science applications. Additionally, students will learn how to use statistical analysis programs to manage and analyze quantitative data, particularly for applied research. The concepts and skills that students learn in this course will prepare them to conduct their senior comprehensive research projects and act as a steppingstone toward other courses focused on quantitative analysis. But ultimately, as a methods course in the UEP department, our task is to develop quantitative reasoning skills to use in organizing, advocacy, and leadership toward a more just and equitable society.

Student Learning Objectives

1. Build critical thinking skills related to quantitative data and analysis, including the ability to assess quantitative research through lenses of rigor and justice
2. Develop technical and statistical analysis skills using Excel and Stata
3. Understand the research design process from a social science perspective
4. Learn to work with a team on research projects and presentations on topics in urban and environmental policy

Course Requirements

<i>Requirement</i>	<i>% of Course Grade</i>	<i>Due Date</i>
1) Participation	20%	
2) Problem Sets	20%	
<i>a. Problem Set #1</i>	5%	Sept. 11
<i>b. Problem Set #2</i>	5%	Sept. 26
<i>c. Problem Set #3</i>	5%	Oct. 10
<i>d. Problem Set #4</i>	5%	Nov. 4
3) Midterm Exam	15%	Oct. 16
4) Group Project	25%	
<i>a. Memo #1: Project Proposal</i>	5%	Oct. 2
<i>b. Memo #2: Background & Methods</i>	5%	Oct. 28
<i>c. Memo #3: Findings & Conclusions</i>	5%	Nov. 11
<i>d. Presentation</i>	10%	Nov. 18 or 20
5) Final Exam	20%	TBD

Participation

Participation is 20 percent of students' course grade and includes:

- 1) In-class attendance: Attending class is critical to understanding of the course material, as lectures and discussions draw on yet go beyond readings. I take attendance. However, if there is a medical issue or family emergency, please communicate with me; I recognize that life issues can arise unexpectedly. If you must miss class due to an official Oxy event, or due to [reasons of faith or conscience](#), please communicate this to me as early as possible.
- 2) In-class engagement with course material and others: I ask questions of students during lectures and discussions (but I never cold call), and I highly encourage students to ask questions and make comments, including in response to peers. It is also important to recognize that participation is not about speaking for the sake of speaking; it is about being present and engaged, which also includes active listening.

Assignments

- 1) Problem Sets: Students will complete and submit four problem sets (each worth 5 percent of students' course grade) over the course of the semester. Problems sets allow students to:
a) Apply statistical concepts learned in lecture, class discussions, and readings; b) Practice technical skills learned in lab; and c) Learn how to read and understand research articles employing quantitative analyses.
- 2) Group Project Memos: In groups, students will undertake a quantitative data analysis project focused on a topic related to urban and environmental policy. The first set of assignments for the project include three memos (short papers), each worth 5 percent of students' course grade:
 - Memo #1: A project proposal, describing why the topic is important, naming the research question, and describing the data
 - Memo #2: A brief background on the topic and a description of the methods used to analyze the data
 - Memo #3: A write-up of the results and findings of your analysis, and conclusions and/or recommendations you can make based on your findings.
- 3) Group Project Presentation: The group project will culminate in an in-class presentation, worth 10% of the course grade. The presentation will be based on the memos and will ultimately allow students to practice "telling a story" with quantitative data about critical topics in urban and environmental policy.

All assignments are to be submitted through Canvas. For Group Project assignments, students are to submit one assignment per group, and each student will receive the group grade.

Exams

The midterm and final exams will assess students' understanding of the course material. Both exams will be timed and held in class, and students will take exams by hand (i.e., on paper with a writing utensil, not on a computer or tablet).

Grading

For assignments and exams, I care more that students make a sincere effort and show their work than simply write down the answer. I take students' work seriously and grading reflects that. Moreover, AI tools like ChatGPT may not be used to complete any assignment (or exam, although exams are by hand, in class). The use of such tools hinders, rather than enhances, the student learning objectives of this course, which center around developing one's critical

thinking and technical skills. (I also encourage you to educate yourself about [the harm of AI on the environment](#), if you haven't already.)

Late assignments will be marked down one letter grade (e.g., from A to A-) for each 24-hour period that they are late. If you are unable to submit an assignment on time, please communicate with me.

Grading Rubric:	A	93-100	B-	80-83	D+	67-70
	A-	90-93	C+	77-80	D	63-67
	B+	87-90	C	73-77	F	0-63
	B	83-87	C-	70-73		

Materials

- Textbook: Moore, David S., William I. Notz, and Michael A. Fligner. *The Basic Practice of Statistics*. Dublin: Macmillan. 7th, 8th, or 9th edition.
- Laptop with Microsoft Excel and Parallels Client installed (to use during Lab, not Lecture). Note that students may request a loaner laptop from the Library Information Desk at the Academic Commons.
 - All Oxy students can download the Microsoft Office Suite (including Excel); [here are instructions](#) on how to do so.
 - Parallels Client provides access to the [Oxy Virtual Computer Lab](#), through which you can access the statistical analysis software Stata.

Electronic Devices Policy

In Lecture, students will not be allowed to use laptops, tablets, or phones (with the exception of specific accommodations). There is well-established research that shows how note-taking on laptops and other electronic devices impedes learning. Such devices also distract us during class, making it difficult to develop and sustain a community of inquiry. Please come to class prepared to take notes by hand. This means bringing a notepad and a writing utensil to each class. Lecture notes will be available on Canvas to guide and supplement note-taking.

On the flip side, as the express purpose of this course's Lab is for students to learn and practice using statistical software—and interpreting the output of their analyses—students are required to bring laptops to Lab (see “Materials” above).

Classroom Environment

I strive to foster an inclusive classroom environment. Consistent with College [policy on discrimination, harassment, and retaliation](#), I seek to maintain an environment of mutual respect among all members of our community. On the first day of class, I borrow the movement

practice of co-developing shared classroom agreements with students toward practicing mutual respect, which we will adjust throughout the semester if necessary. If you feel comfortable doing so, please feel free to communicate with me about any concerns, questions, or ideas.

Credit Hour Policy

UEP 305 is a 4-unit course with a 0-unit lab associated with the course. On average, you should expect to spend at least (12) hours a week (including in-class time and in-lab time) on average.

Core Program Requirements

UEP 305 fulfils the [Core Program Math or Science \(CPMS\) requirement](#).

College Policies

See the [UEP305 Canvas site](#) for information on the following college policies: Shared Academic Integrity Commitment; Civil Rights & Title IX; Special Accommodations/Learning Differences; and Accommodations for Reasons of Faith and Conscience.

Course Schedule: Topics, Readings, and Assignment Deadlines (by Week/Date)

WEEK 1

August 26: Introduction to Course and Each Other

August 28: Types of Research and Variables

- Reading:
 - Cokley, Kevin, and Germine H. Awad. 2013. "In Defense of Quantitative Methods: Using the 'Master's Tools' to Promote Social Justice." *Journal for Social Action in Counseling & Psychology* 5(2):26–41.
 - Chapter 1 "Picturing Distributions with Graphs"

Lab: Excel Basics

WEEK 2

September 2: Descriptive Statistics

- Reading: Sections 2.1-2.6 in Chapter 2 "Describing Distributions with Numbers"

September 4: Variance, Standard Deviation, and the Normal Distributions

- Reading:
 - Section 2.7 in Chapter 2 "Measuring Variability: The Standard Deviation"
 - Chapter 3 "The Normal Distributions"

Lab: Charts and Descriptive Statistics in Excel

WEEK 3

September 9: Sampling and Standard Normal Calculations

- Reading:
 - Sections 8.1-8.4 in Chapter 8 "Sampling"
 - Sections 15.1-15.4 in Chapter 15 "Sampling Distributions"
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WEEK 3 CONT.

September 11: Central Limit Theorem and Confidence Intervals

- Reading:
 - Sections 15.5-15.6 in Chapter 15 “Sampling Distributions”
 - Chapter 16 “Confidence Intervals: The Basics”
- Assignment DUE: Problem Set #1

Lab: Variance, Standard Deviation, Pivot Tables, and Conditional Formatting in Excel

WEEK 4

September 16: Scatterplots and Correlation

- Reading:
 - Chapter 4 “Scatterplots & Correlation”
 - Chapter 6 “Two-way Tables”

September 18: Research Design and Research Ethics

- Reading:
 - Sections 8.5-8.7 in Chapter 8 “Sampling”
 - Chapter 10 “Data Ethics”

Lab: Scatterplots and Correlation in Excel

WEEK 5

September 23: Probability

- Reading:
 - Chapter 12 “Introducing Probability”
 - Chapter 13 “General Rules of Probability”
 - Chapter 14 “Binomial Distributions”

September 25: Introduction to Data Sources with Guest Speaker Kristin Peace, Social Sciences & Data Literacy Librarian

- Assignment DUE: Problem Set #2

Lab: Data Management in Excel

WEEK 6

September 30: Introduction to Regression Analysis

- Reading: Chapter 5 “Regression”

October 2: Regression Analysis Continued

- Assignment DUE: Group Project Memo #1 (Project Proposal)

Lab: Regression in Excel

WEEK 7

October 7: Binary and Count Dependent Variables

October 9: Midterm Review

- Assignment DUE: Problem Set #3

Lab: Introduction to Stata

WEEK 8

October 14: NO CLASS (Fall Break)

October 16: Midterm Exam

Lab: NO LAB

WEEK 9

October 21: Statistical Tests and Hypotheses

- Reading:
 - Chapter 17 “Tests of Significance: The Basics”
 - Chapter 18 “Inference in Practice”
 - Section 22.3 in Chapter 23 “Inference about a Population Proportion”

October 23: NO CLASS AND NO THURSDAY LAB (Thursday Lab will find a different time TBD)

Lab: Regression in Stata

WEEK 10

October 28: Statistical Tests and Hypotheses Continued

- Reading: Chapter 20 “Inference about a Population Mean”
- Assignment DUE: Group Project Memo #2 (Background & Methods)

October 30: Regression Inference

- Reading: Chapter 26 “Inference for Regression”

Lab: Data Management in Stata

WEEK 11

November 4: Two-sample t Statistic

- Reading: Chapter 21 “Comparing Two Means”
- Assignment DUE: Problem Set #4

November 6: Chi-Square Tests

- Reading: Chapter 25 “Two Categorical Variables: The Chi-Square Test”

Lab: Significance Tests in Stata

WEEK 12

November 11: ANOVA

- Reading: Chapter 27 “One-Way Analysis of Variance: Comparing Several Means”
- Assignment DUE: Group Project Memo #3 (Findings & Conclusions)

November 13: Using Quantitative Data Analysis for Equity and Justice with Guest Speakers Lupe Renteria Salome (Data Analyst, USC Equity Research Institute) and Greg Bonett (Public Counsel)

Lab: Work on Group Presentation

WEEK 13

November 18: Group Presentations

November 20: Group Presentations

Lab: In-class Problem Set in Stata

WEEK 14

November 25: Final Exam Review

November 27: NO CLASS (Thanksgiving Break)

Lab: NO LAB

WEEK 15 or 16

DATE/TIME TBD (determined by the Registrar): Final Exam
