

SOC 303: Quantitative Sociological Analysis

Spring 2025

Instructor: Tony Bardo

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Class Time: TR 12:30-1:45pm

Class Location: 229 Patterson Hall

Office Hours: TR 11:30-12:30pm

Office Location: 1567 POT

DESCRIPTION

This course is devoted to developing a conceptual and practical understanding of foundations that underly quantitative sociological research, with an emphasis on statistical inferential reasoning. This involves a mix of both abstract and applied approaches to reasoning, which center around in-class lessons and activities anchored by a critical stance surrounding strengths and limitations embedded in the scientific process. Although focused on sociological research, learning goals are broadly relevant for evaluating the efficacy of claims based on statistical constructs, as well as understanding and articulating important risks that these claims often address. Some background regarding the scientific process and methods is required. Prereq: SOC 302 or PSY 215.

LEARNING GOALS / COURSE OBJECTIVES

After fully engaging in this course you should be able to...

1. connect the uncertainty of sampling variability with margins of error (MoE) and confidence intervals (CI)
2. demonstrate substantive understanding of statistical significance, p-values, in terms of null hypothesis testing
3. evaluate claims that arise from statistical procedures through the act of informal human inference

REQUIRED MATERIALS

Readings are freely available on our Canvas page. This class also uses freely available statistical software R and RStudio. Instructions will be provided for accessing, downloading, and using software on your personal computer. Students must bring their personal computer to class.

ATTENDANCE AND PARTICIPATION

Regular attendance is important for your success in this course! The material covered in class forms a foundation for completing homework exercises and will also be included in exams. Participation is also a key part of the course, which centers around in-class activities to help demonstrate learning goals. While missing one class won't impact your grade, consistent absences or disengagement can affect your participation grade. Please note that attendance on exam days is essential. If you're facing any serious issues that may affect your attendance, please reach out to me via email as soon as possible. You will be updated on my assessed status of your attendance and participation at five points-in-time throughout the semester.

EXAMS

Three in-class exams will be administered throughout the semester. Any material covered prior to the date of the exam is potential material for the test. Missed exams will not be rescheduled without a valid excuse recognized by university policy (see below).

ASSIGNMENTS

Assignments include a combination of hand calculation and RStudio exercises and interpretations. All assignments are due on the day noted on the assignment and should be submitted via Canvas. Each student must write up their own assignment individually and turn in their own work. Late assignments without a valid excuse recognized by university policy (see below) will not be accepted.

COURSE GRADING

Item	Points	Percent of grade	Cut-points for final grades
Attend./Partic. 1-5	50 (10 each)	10%	A = 90% to 100%
Exams 1-3	225 (75 each)	45%	B = 80% to 89%
Assignments 1-3	225 (75 each)	45%	C = 70% to 79%
Total	500	100%	D = 60% to 69%
			E < 60%

COURSE POLICIES

Late assignments and missed exams will be accepted/rescheduled only under EXTRAORDINARY circumstances (e.g. death in the family, serious illness accompanied by a doctor's note, university approved absence). All tests must be taken in class on the assigned date. Students absent for reasons of serious illness or family emergency will be permitted to take a make-up test only if the student furnishes proof for the reason for your absence (doctor's note, obituary, etc.) within one week of returning to class. Otherwise, if you are absent for a test, your grade is zero. All assignments are due in Canvas when directed by the assignment.

Valid excuses: Academic policies regarding excused absences can be found in the Senate Rules here: <https://universitysenate.uky.edu/excused-absences>

Accommodation due to a disability: If you have a documented disability that requires academic accommodation, please inform me as soon as possible. To receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center for coordination of campus disability services available to students with disabilities

Academic Integrity Policy: Students are expected to uphold the Academic Integrity Policy published in the *University of Kentucky Student Handbook*. Students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to university policy on cheating and plagiarism. The minimum penalty for a first offense is a zero on the assignment. If the offense is considered severe or the student has other academic offenses, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities.

Complete information can be found at: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. All ideas borrowed from others need to be properly credited.

Part II of Student Rights and Responsibilities (available online: <http://www.uky.edu/StudentAffairs/Code/part2.html>) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission. When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else's work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be. Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

COURSE SCHEDULE

Date	Topic	Scheduled Attend./Partic. Feedback
<i>Week 1</i>	<i>Course design and expectations</i>	
JAN 14:	course overview + R & RStudio instructions	
JAN 16:	<u>no class meeting</u> : use time to download R & RStudio	
<i>Week 2</i>	<i>Getting critical with the scientific process</i>	
JAN 21:	Scientific perspectives and theories	
JAN 23:	Hypotheses and importance of conceptualization	
<i>Week 3</i>	<i>Getting critical with the scientific process, continued</i>	
JAN 28:	Hypotheses and importance of operationalization	
JAN 30:	Study design and data	Attend./Partic. 1
<i>Week 4</i>	<i>Descriptive statistics</i>	
FEB 04:	In-class Exam 1	
FEB 06:	Central tendency	
<i>Week 5</i>	<i>Descriptive statistics, continued</i>	
FEB 11:	Central tendency with RStudio	
FEB 13:	Dispersion	
<i>Week 6</i>	<i>Descriptive statistics, continued</i>	
FEB 18:	Dispersion with RStudio	
FEB 20:	In-class lab for assignment 1	Attend./Partic. 2
<i>Week 7</i>	<i>Inferential statistics: abstract</i>	
FEB 25:	Probability [CELT assessment]	
FEB 27:	Central limit theorem	

<i>Week 8</i>	<i>Inferential statistics: abstract, continued</i>	
MAR 04:	Confidence intervals	
MAR 06:	Hypothesis testing	
<i>Week 9</i>	<i>Summarize learning goals</i>	
MAR 11:	In-class review	
MAR 13:	In-class Exam 2	Attend./Partic. 3
<i>Week 10</i>	<i>Spring Break</i>	
MAR 17-21		
<i>Week 11</i>	<i>Inferential statistics: applied, univariate</i>	
MAR 25:	Material and instruction	
MAR 27:	In-class practice lab	
<i>Week 12</i>	<i>Inferential statistics: applied, bivariate</i>	
APR 01:	Material and instruction	
APR 03:	In-class lab for assignment 2	Attend./Partic. 4
<i>Week 13</i>	<i>Inferential statistics: applied, multivariate</i>	
APR 08:	Material and instruction	
APR 10:	In-class practice lab	
<i>Week 14</i>	<i>Inferential statistics: applied, multivariate, continued</i>	
APR 15:	In-class practice lab	
APR 17:	In-class lab for assignment 3	
<i>Week 15</i>	<i>Summarize learning goals</i>	
APR 22:	In-class review	
APR 24:	In-class Exam 3	Attend./Partic. 5
<i>Week 16</i>	<i>No Class</i>	
APR 29:	No Class	
MAY 01:	READING DAY: NO CLASS	

*Syllabus subject to change—any changes will be notified and posted to Canvas