



THE OHIO STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

Statistics 6510

Survey Sampling Methods

Fall 2022

NOTE: Syllabus may be subject to change as the semester evolves

Instructor: Dr. Elizabeth A. Stasny, 319 Cockins Hall, 614-292-0784, stasny.1@osu.edu

Zoom Office Hours (Stasny): 2:30 – 3:30 Tuesday beginning September 13, and by appointment (see Zoom link document on Carmen for more details)

Course Assistant: Ms. Wenxin Du, du.888@osu.edu

Zoom Office Hours (Du): 1:00 – 2:00 Wednesdays

Textbook: Lohr, Sharon L., "Sampling: Design and Analysis", Chapman and Hall/CRC; 2019. (This is a reprinting of the 2nd edition published by Brooks/Cole; 2010.) The unlimited user ebook is available at <https://library.ohio-state.edu/record=b8944076~S7>.

Other Sampling References:

Cochran, "Sampling Techniques"

Schaeffer, Mendenhall, and Ott, "Elementary Survey Sampling"

Kish, "Survey Sampling"

Hanson, Hurwitz, and Madow, "Sample Survey Methods and Theory", Vols. I and II

Groves, Fowler, Couper, et al., "Survey Methodology"

Prerequisites: A good background in the material covered in Statistics 5301 or Public Health Biostatistics 6212. Students should be knowledgeable about and comfortable with discrete data distributions, expected values, variances, confidence intervals, and regression. Many of these topics are reviewed in Appendix A of the course textbook.

Course Requirements: You are responsible for all material covered in class, in assigned readings, and on homework assignments. You are expected to attend all classes*. **Attendance is mandatory* for all class meetings at which students make presentations.** Reflection papers will be assigned after class group discussions and student presentations.

Course delivery – in the event of virtual classes Any classes that must be held remotely will be delivered synchronously using CarmenZoom from 3:00 – 4:20 MW, as scheduled. Video and audio recordings of class lectures may be made during any virtual classes in case a student is ill or otherwise cannot attend. The video and audio recording will be used for educational purposes only and may be made available upon request only to a student presently enrolled in the course.

Use of Electronic Devices in Class: Any recording during class, using video, audio, or still photography, is permitted only with prior permission from the instructor.

Computing: I will use the Statistical package R for my computing needs in the course. R is freely available for most operating systems (<http://www.r-project.org/>). If you are not already familiar with R, there are online tutorials available. I recommend getting started with swirl. This site <http://swirlstats.com/students.html> has instructions for downloading R, RShiny, and opening the swirl tutorial system. Once inside, you can learn the basics of working with R via the tutorial "R Programming: The basics of programming in R."

Alternately, you may use any statistical package you prefer for the work in this course; I may not be able to help you with the package you choose, however.

Homework: Assignments will be due online just before the start of class approximately weekly. You must ensure that your homework is easy to grade. Any computer output must be edited and annotated; graphs and plots must be clearly labeled and discussed in the context of the problem. Problems that are out of order or having parts not clearly identified may not receive full credit.

It can be helpful to discuss course material with your colleagues outside of class, but your submissions must be your own and should demonstrate your personal understanding of the material covered in the problems. Solutions will be made available on Carmen.

Additionally, reflection papers of 250-300 words will be due the class period after the 2-3 classes in which we have group discussions and after class presentations for which you are not a presenter. These will count as homework assignments for determining course grades.

No late assignments of any type will be accepted*.

Midterm: On or about Wednesday, October 19, during class time. You may use one sheet, 8.5"x11", of handwritten notes during the exam.

Final Class Presentations: For the final exam, each student will be required to make a 12-15-minute class presentation on an appropriate paper, report, or other similar document from the literature. I will provide a list of suggested papers on Carmen, but students may suggest other papers or topics. Possible topics include Political Polling, the Decennial Census, Survey Biases, Questionnaire Design, Cognitive Aspects of Surveying, Web-based Surveys, and Complex Surveys. Requirements for presentations will be covered as the class progresses. Presentation papers must be decided by the end of September.

The following dates are reserved, in part, for class presentations (**attendance is required***). I will assign students to a date based on the topic of papers they choose:

November 2 (Political Polling since this is the week before the US general election)

November 9

November 16

November 30

December 9 (During the Final Exam time of 12:00-1:45 p.m.)

Ohio State's academic integrity policy: It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism

and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

Grades: The final numerical grade will be determined as follows:

Homework (lowest grade dropped)	23%
Midterm Exam	35%
Class Presentation	35%
Class Participation**	7%

Copyright disclaimer: The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on title IX: Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu.

Accessibility accommodations for students with disabilities: The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; 098 Baker Hall, 113 W. 12th Avenue.

* Obviously, if you are ill or caring for someone who is ill, we will make alternate arrangements. Please contact me by email as soon as possible and keep me apprised of your situation.

** You may earn two points towards the seven possible points for class participation by posting a video introducing yourself to me and your classmates by 11:59 p.m. Saturday, August 27.

Your mental health: As a student you may experience a range of problems that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you, or someone you know, are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614- 292-5766. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 988 or at suicidepreventionlifeline.org.

Tentative Schedule of Topics

Introduction to sampling and its history	2 classes
Simple Random Sampling Estimating population means, proportions and totals Variances and Interval estimates Sample Size Determination	3 classes
Stratified Sampling Estimating population means, proportions and totals Variances and Interval estimates Designing good strata Sample size and sample allocation Sample-based weights	3 classes
Estimating a Ratio and Ratio Estimation Estimating population means, proportions and totals Variances and Interval estimates	2 classes
Cluster Sampling Estimating population means, proportions and totals Variances and Interval estimates Good versus practical clustering Single-stage, equal and unequal cluster sizes Two-stage cluster sampling Sample-based weights	4 classes
Probability Proportional to Size Sampling	1 class
Introduction to Questionnaire Design and Question Writing	2 classes
Nonsampling Errors Frame Design and Error Response Bias Nonresponse Other sources of error	3 classes
Ranked Set Sampling	1 class

Class Plan – Subject to Change as needed

Monday	Tuesday	Wednesday	Thursday	Friday
Aug. 22	23 First Day of OSU Classes	24	25	26
29	30	31 Virtual Class	Sept. 1	2
Sept. 5 Labor Day	6	7	8	9
12	13 Regular Office Hours Start	14	15	16
19	20	21	22	23
26	27	28	29	30
Oct. 3	4	5	6	7
10	11	12	13 Fall Break	14 Fall Break
17	18	19 Midterm	20	21
24	25	26	27	28
31	Nov. 1	2	3	4
7	8	9	10	11 Veteran's Day
14	15	16	17	18
21	22	23 Thanksgiving	24 Thanksgiving	25 Thanksgiving
28	29	30	Dec. 1	2
5	6	7 Last Day of Classes	8	9 Final Exam 12:00-1:45 p.m.

29 class periods plus final.