COMM 7790
STATISTICAL APPLICATIONS IN COMMUNICATION II

School of Communication
Spring 2023, Wednesdays & Fridays: 9:35-10:55am, JR 224

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Office hours: Wednesdays & Fridays 11:00am-noon; or by appointment

Course description

This course is a continuation of the Autumn semester graduate statistics class COMM 6661. The course covers an introduction to the analysis of data using the general linear model and serves as a foundation for more advanced statistical methods courses offered throughout the university. Focus is on conceptual understanding rather than mathematical computation. Students will gain hands-on experience practicing their learning through various assignments using SPSS software.

Course learning goals and outcomes

(1) To develop a clear conceptual understanding of simple and multiple regression, analysis of variance and covariance, moderation, and if time permits, mediation. Other topics in linear models may be introduced as time allows.
(2) To acquire skills of developing and testing aforementioned statistical models. At the end of the course, you should be able to correctly formalize your theoretical hypotheses using statistic models, apply statistical tests, identify model assumptions, interpret model parameters, perform model comparisons, and report the analysis and results in APA style.
(3) To gain experience in using SPSS software to test the aforementioned statistical models. (If a student prefers another computational software, such as STATA, SAS, R, or MATLAB, to conduct work for this course, the student can discuss the options with me.)

Mode of delivery

This course is set to be hybrid for this semester, but we will only use the online Zoom format for lectures when necessary (e.g., medical reasons, health concerns). We will have lectures in the classroom. We will use Carmen to organize the course lectures, assignments, and other materials. Assignments should be submitted via Carmen as well.

Each student should install SPSS on her/his own computer for all the in-class exercises and take-home assignments.

Required Course materials

(1) Hayes, A. F. (2005). *Statistical methods for communication science* (Chapters 12 to 16). Mahwah, NJ: LEA.

(2) Additional readings will be accessible from the course Carmen website or class handouts.

In addition, you may find the following (and many other textbooks at intermediate levels) supplement your learning:

Gravetter, F. J., & Wallnau, L. B. (2005). *Essentials of statistics for the behavioral sciences*. Belmont, CA: Thomas Wadsworth.

Stevens, J. (1999). *Intermediate statistics: A modern approach* (2nd Ed.). Mahwah, NJ: LEA.

Assignments and Grading

One take-home final exam (30%)
There will be one take-home final examination that requires you to demonstrate, in written form, that you are comfortable with the statistical methods learned in the class, and can use them for your research and academic publications.

Homework assignments (70%)
Each cohort of students are different in their statistical and quantitative research background. I try to evaluate these differences and make the course more adaptive to the students' background and needs, with an emphasis on building a solid foundation of linear modeling. I try to make the assignments adaptive to the learning progress of the majority of the students in the class, the exact number of the assignments will depend on the collective progress made throughout the semester by the class of students. I plan to frequently survey all students in the class to obtain anonymous feedback and based on the feedback, I try to adjust the content and pacing of teaching and assignments.

Basically, about every 1-2 weeks, you will receive an assignment to complete which corresponds to and extends what is learned in the class during the time and integrates earlier learning components. The due date of the assignments will be announced when the assignments are distributed (typically one week from when the assignment is distributed). Generally, it is a good idea to learn from peers, but when it comes to statistics assignments, it is important to work on them independently. The all-consuming process of figuring things out on your own is valuable for your learning of statistics and modeling. Therefore, we will have two types of assignments: ungraded and graded, with the graded assignments accounting for 70% of your final grade.

For ungraded assignments, you are encouraged to discuss and work together with your fellow classmates if needed. You may collaborate in person, through Zoom meetings, or other communication methods of your choice. Typically, these assignments can help prepare you for the independent, graded assignments.

For graded assignments and the take-home final exam, you may NOT work with others when working through the assignments, and you must submit your own independently written answers for each problem. It is a violation of the Code of Student Conduct to prepare your written answers together and submit answers that are in effect copies of each other, either in whole or part.

For all statistics homework, in some cases, answers will be right or wrong; but in some other cases, there is room for subjective grading based on presentation, thoroughness, and so forth. Writing quality will matter when I grade your assignments. Be specific, precise, attentive to detail, and careful in how you phrase your answers, as you will be graded based on your actual answer, not what you intended to say or said ambivalently. Do not wait until the last minute to start the assignments, as eventually, procrastination will show in the quality of your work. Use Word or a comparable word processing program. Be careful in your formatting of mathematical equations and be aware of order of operations rules. Submit something presented neatly and that you will be proud to claim is a product of your thinking. This writing process can be consuming, but it is important training for social scientific research writing and publishing.

The answers for each assignment will be provided soon after the assignment is due. It is up to you to check your responses with the my answer sheet. If you do not understand any inconsistencies between the answers and your own, I will be more than happy to help. Frequently, we will review the assignments in class after the due date has passed.

Final Grades
This course uses a percentage-based grading system, where > 90% = A, 81-90% = B, 71-80% = C, 61-70% = D, < 61% = E, and +/- determinations are based on proximity of your % to the cutoffs.

Late Assignments
Unless otherwise notified, assignments are due *by the beginning of the class on the due day.* An assignment will not be accepted more than 24 hours after the due date. The only exceptions to these rules are extraordinary and unforeseen personal circumstances that are convincingly documented no later than 24 hours after the due date**.**

Attendance
Although attendance will not be formally taken, you are expected to attend every class, arrive on time, and participate in class activities. Not attending class normally is a poor decision, as some of the examined material will be presented only during lectures, and many of the SPSS techniques to be discussed are not documented anywhere except in class. Each class will have class activities and participation, including understanding data structure, practicing analytic and computational techniques on your own computer, and making sense of the analysis results. Students' hands-on participation in the activities is not graded, but it is an essential part of the learning.

Academic Misconduct

It is extremely important for every individual to preserve academic integrity. All students at Ohio State University are bound by the Code of Student Conduct. Violations of this code in this class, especially pertaining to 3335-23-04 Section A on Academic Misconduct, will be prosecuted through the procedures the university has set up to deal with violations of the Code. Any violations of the Student Code will be referred to the Committee on Academic Misconduct. *Not following the rules of the course as outlined in this syllabus is considered a violation of the code*

of student conduct. Make sure that you are familiar with the Code of Student Conduct, and familiarize yourself with "Ten Suggestions for Preserving Academic Integrity" available online at https://oaa.osu.edu/academic-integrity-and-misconduct/student-misconduct

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.

Diversity

The School of Communication at The Ohio State University embraces and maintains an environment that respects diverse traditions, heritages, experiences, and people. Our commitment to diversity moves beyond mere tolerance to recognizing, understanding, and welcoming the contributions of diverse groups and the value group members possess as individuals. In our School, the faculty, students, and staff are dedicated to building a tradition of diversity with principles of equal opportunity, personal respect, and the intellectual interests of those who comprise diverse cultures.

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 Interim Ohio State Title IX Coordinator, Molly Peirano, at titleix@osu.edu

Students with Special Needs

The university strives to make all learning experiences as accessible as possible. Students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. 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; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

COVID and Illness Policies

Student illness or absence
If *you* are too ill to participate in this course due to COVID or another illness, please contact the instructor as soon as you are able. All materials will be made available, and I will be happy to meet with you when you are able to go over the materials. Alternate assignments or extensions may be arranged.

Instructor illness or absence
If the *instructor* is too ill to teach the course for a period of time, the designated backup for this course will step in. You will be notified via email from the School of Communication.

Please take care of yourself (Mental Health Statement)

As a student (with multiple other social roles), you may experience a range of issues 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 are or someone you know is 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. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766.

If you are thinking of harming yourself or need a safe, non-judgmental place to talk, or if you are worried about someone else and need advice about what to do, 24-hour emergency help is also available through the Suicide Prevention Hotline (Columbus: 614-221-5445 / National: 800-273-8255); or text (4hope to 741741); or at suicidepreventionlifeline.org

Mathematics Anxiety

Often one of the student's greatest barriers to mastering material in statistics courses is fear of mathematics. Many students lock up with anxiety when they are asked to do any computation and this anxiety typically interferes with the ultimate goal of conceptual understanding. I hope you will not let this happen to you. In this class, most of the computations will be done by computer, although during lectures, some basic computations are inevitable. And yes, you will be shown formulas and expect to understand them. However, you need not understand the mathematics of the formula so much as you need to understand how they are conceptually used. To be sure, you need to be comfortable with basic mathematical operations. You have chosen to

study the scientific discipline of communication (or other disciplines with empirical, quantitative research). You will have to think analytically and quantitatively throughout your days as a graduate student and scholar. *You will be challenged in this course, but everyone can do well.* The best thing that you can do to enhance your likelihood of success is discarding all the baggage that you may be bringing with you into the course—fear, anxiety, or a belief that you are no good with numbers.

With these words of encouragement, at the same time remember that this is a graduate-level course. M.A. students with less experience dealing with the face and intense pace of graduate school are warned not to approach this course as if it were an undergraduate course. *You will not succeed if you don't dedicate time and energy to reading and contemplating the material. You will probably find yourself working harder in this course than you have in others in your graduate career.* The topics we discuss are abstract. Strong performance in a solid introductory statistics course is a prerequisite, and it is unlikely you will do well in this course if you aren't comfortable with fundamental statistical principles. For a review of the basics, read the first 11 chapters of Hayes (2005). For an alternative and more entertaining perspective on introductory-level material, see Gonick & Smith's (1993) *Cartoon Guide to Statistics*.

Course Schedule

As explained earlier, I try to make the course adaptive to the class' learning and progress, so there is not a specific preset date on each unit of learning, but the typical content is covered below. The course will be divided up into units. Lecture slides will be provided for each unit of content when we start the unit. You will be told when we are transitioning into the next unit. *I recommend you read each chapter several times as we work through the unit*, for your understanding will grow by this repetition, and after concepts that may have confused you at first are clarified during lectures, and you may develop an in-depth understanding of the content. You will not do well in this course if you do not read the textbook. *You are advised to set aside time each day to read what you have not, and reread what you have.*

Please note that the schedule below has been set on purpose to be general because of the nature of learning statistics. Learning of later units depend on what has been learned and how well it has been learned in earlier units. We will move onto the next unit when the class overall shows the mastery of content from the preceding unit.

Unit I: Basic principles of ordinary least squares regression
Hayes (2005), Chapter 12

Unit II: Multiple predictors, statistical control, and partial association
Hayes (2005), Chapter 13

Unit III: Categorical predictors/ANOVA/ANCOVA
Hayes (2005), Chapters 14 and 15

Unit IV: Moderation (*if time available*)
Hayes (2005), Chapter 16

Hayes, A. F., & Matthes, J. (2009). Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods, 41*, 924-936.

Unit V (*if time available* and per the research interests of the class members):
Repeated-measures ANOVA, logistic regression, mediation, or an overview on model comparison methods, depending on the class members' interests and needs, as well as the time we may have.

Philosophy is written in this grand book—the universe—which stands continuously open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometrical figures, without which it is humanly impossible to understand a single word of it…

— Galileo Galilei (1564-1642)

Even if there is only one possible unified theory, it is just a set of rules and equations.

— Stephen Hawking (1942-2018)

Be the change you want to see in the world.

— Mahatma Gandhi (1869-1948)