SOCI 583: Quantitative Data Analysis II   **Spring 2025**

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Class Meets: 9:25-10:40am, Tuesdays & Thursdays
                341 Kraft Hall

Office Hours: 10:45am-12:15pm Tuesdays and by appointment
                265 Kraft Hall

Course Description

In this course, we will continue our progress in learning common statistical methods used in sociology. We will focus on better understanding the assumptions behind linear regression, making adjustments when those assumptions are violated, and moving into the world of generalized linear models. Keep in mind that much of statistics is about understanding the underlying theory and practicing the application of the concepts, <u>not</u> necessarily about being "good at math." That is why we will focus on underlying assumptions and practice continually, both in class and out, to ensure that you understand the material. <u>Do not get behind</u>, because it will then become increasingly difficult to catch up.

Course Objectives

- Understand and apply OLS regression with multiple predictors
- Understand the rationale behind and interpretation of variable transformations
- Understand and apply logistic regression
- Understand and apply multinomial, ordinal, Poisson, and negative binomial regression
- Operationalize research questions from start to finish
- Write up findings appropriately for a sociology journal

Textbooks

Reading textbooks can feel like a chore during the semester, particularly if you feel like you're 'getting it' based on lecture alone. But they are invaluable references to have at your disposal during the semester to supplement in-class lectures and, <u>especially</u>, *after* the course ends to refresh your understanding of these methods. The following textbooks are strongly recommended for these purposes. You are not required to have read certain chapters before class meetings, but I will post which chapters/pages of each book are relevant to each lecture so that you can read accordingly to strengthen your understanding.

1. Agresti and Finlay, *Statistical Methods for the Social Sciences* (Fourth Edition) **OR** Agresti, *Statistical Methods for the Social Sciences* (Fifth Edition)
2. Long and Freese, *Regression Models for Categorical Dependent Variables Using Stata* (Third Edition)

Course Requirements

1. Exams (2): 20% each
   We will have two in-class exams. Late test submissions are subject to a penalty of ½ point per minute late.

2. Problem sets (3): 10% each

You will have 3 problem sets to complete. You may <u>consult</u> each other for help and advice, but the work you turn in <u>must</u> be your own. **In other words, all Stata code and written responses must be your own work.** Remember that it doesn't do you any good to receive help but not understand the answer!

You **may not** consult problem sets, output, Stata code, or exams from prior years of this course, <u>nor may you receive assistance from students **who have already received a grade and instructor feedback** on their problem set</u>. Doing so would constitute a serious honor code violation. All problem sets should be uploaded to Canvas by <u>9am</u> (Central) on the day on which they are due. I will post the problem sets at least a week before they are due via Canvas.

3. **Final paper: 30%**

For your final paper, you will write a complete – but abbreviated – sociological research paper in which you identify your research question, choose hypotheses, identify and code data, construct at least one categorical dependent variable, conduct an appropriate statistical analysis to test your hypotheses, and write up your findings. You are encouraged to choose a topic/project which is closely aligned with your MA thesis, though you are not required to do so. Paper components will be due throughout the semester, culminating in a complete paper, which will be due at the conclusion of finals period in May. *Each part has detailed instructions <u>available on Canvas in the Assignments</u> area*. Although you will submit components of your paper throughout the semester, you will just receive one grade for your final paper, so you are strongly encouraged to view submissions as an opportunity to gain useful feedback as you progress on your paper draft.

   a. Paper Proposal (Feb. 12): state topic, formulate research question(s) and hypotheses
   b. Data Details (Mar. 12): find data and select variables to match research questions/hypotheses as closely as possible
   c. Flash Talks (Mar. 25): short, in-class presentations to receive feedback
   d. Mini Draft (Apr. 16): one-page lit review, plus revised research questions, hypotheses, and analysis plan incorporating class feedback
   e. Analysis Draft (Apr. 25): rough draft of data & methods and results sections
   f. Final Paper (May 5)

Important Dates at a Glance (all assignments due by 9am)

Feb. 5	(Wednesday)	Problem Set #1 due
Feb. 12	(Wednesday)	Paper Proposal due
Feb. 26	(Wednesday)	Problem Set #2 due
Mar. 6	(Thursday)	Exam 1
Mar. 12	(Wednesday)	Paper Data Details due
Mar. 25	(Tuesday)	Paper Flash Talks (in class)
Apr. 2	(Wednesday)	Problem Set #3 due
Apr. 10	(Thursday)	Exam 2
Apr. 16	(Wednesday)	Paper Mini Draft due
Apr. 25	(Friday)	Paper Analysis Draft due
May 5	(Monday)	Final Paper due

Course Policies

Questions about assignments: If you have a question about any of the assignments or exams, you're probably not the only one. Thus, for the sake of fairness and full information for all, I will only answer general questions about upcoming assignments and exams either (1) in class or (2) in the Canvas discussion board devoted to this topic. If you wish to talk about the particulars of *your* paper topic or about feedback/grades you received on already submitted assignments or completed exams, I am of course happy to discuss with you privately.

Attendance & Participation: Other students' questions in quantitative methods classes tend to be incredibly helpful in clarifying one's own understanding of the material. Therefore, attendance is expected at all classes. Absences from class will be excused for medical reasons or for religious observance, but I cannot individually review the lecture for every student who misses a class. Therefore, if you know in advance you will be missing a class, please make arrangements with a classmate for them to take notes on your behalf. If you have unexpectedly missed a class, please carefully review the posted lecture slides and the notes embedded in them (be sure to open them in PowerPoint to see the notes) and notes from a classmate, then plan to attend office hours to discuss any questions you have after going over the materials.

Assignment Deadlines: Assignment deadlines are scheduled to ensure that I will be able to give you timely feedback, and I will always prioritize grading for assignments that were turned in on time. If you turn an assignment in late, I will still grade it, but I cannot promise you that I will be able to do so quickly. Please keep in mind that the feedback you receive on problem sets and paper components will be important for helping you progress throughout the semester. Please note that getting assistance from other students who have already received feedback on their problem sets before submitting your own will be considered a violation of the honor code. Additionally, you may be asked to exit the classroom briefly while we discuss problem set solutions if you have not yet submitted yours.

AI Usage Policy: This course allows for the thoughtful use of AI tools to support your learning process. You may use AI for purposes such as:

- Seeking help with identifying the correct Stata commands to allow you to accomplish your coding goals
- Enhancing your writing through proofreading and grammar checks

The primary intellectual contribution, including analysis, argumentation, and original content creation for all assignments, should come from you. You should not rely upon generative AI when interpreting the output of your regressions or answering problem set questions. The highest priority goal of this course is for you to develop the skill to properly answer such questions and interpret regression output on your own. Achieving that goal requires practice and independent thought.

If/when you use AI tools, you are expected to provide a brief explanation of how they contributed to your work and include appropriate citations. If you're unsure about how to use AI tools effectively or have limited access to them, please consult with the instructor for guidance or alternative options.

Statement on Disabilities: If you have a documented disability that may affect academic performance, you should: (1) make sure this documentation is on file with Disability Resource Center (Allen Center, Room 111 / adarice@rice.edu / 713-348-5841) to determine the accommodations you need; and (2) contact me to discuss your accommodation needs.

Honor Code at Rice University: All students in this course will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at

. Violations include, but are not limited to: cheating on exams, having unauthorized possession of an exam, and submitting the work of another person as your own (including copying other students' work on problem sets). When in doubt about what constitutes academic dishonesty, please ask! Ignorance of this policy is not an acceptable excuse for noncompliance.

Syllabus Change Policy: This syllabus is only a guide for the course and is subject to change with advanced notice. Always attending class will ensure that you're never in the dark about syllabus changes!

Sociology Department Guidelines for Paper Format and Citations

While the Honor Code system is designed to enforce rules about what is considered acceptable and honorable behavior, Rice does not have a unified Honor Code policy that *defines* these rules. Therefore, we list below a standard set of rules that will apply to academic writing in sociology classes at Rice. All students must follow this format when citing published works. This includes material drawn from books and journal articles (including those assigned for the course, and additional readings that you find to include in written assignments), in addition to personal interviews and information obtained online. Information from class lectures does not need to be cited in-text. If you have any questions, please ask!

Unless specified otherwise, ALL paper assignments must be/use:

- Typed
- Double-spaced
- Paginated
- Stapled
- 12-point font
- Times New Roman font
- "Normal" character spacing (this is the default setting in Microsoft Word)
- One-inch margins on all sides

Citation Rules for Sociology Classes:

All students are required to follow ASA rules for format and style when writing papers for sociology classes. Below we give examples for both in-text citations and the bibliography page. If you have any questions, please ask – or you can Google "ASA style guide" to find links to several on-line postings that provide additional detail on rules for citing.

1. ***In-text citations***
   You must cite the original author if you pull in either exact phrases or sentences, or if you use essentially the same ideas, concepts, or research findings -- even if paraphrasing. That is, even if you rewrite the author's words, you must still cite the original author as the source of the ideas.

   - When referencing work in the body of a paper, you must always include (a) the author name, and (b) the year of publication. Example:

     In her study of men in "women's professions," Williams (1995) demonstrates that men are not disadvantaged by their gender minority status in the same way that women often are in predominantly male workplaces.

   - You can also cite multiple authors who draw on the same ideas, who have similar findings on similar topic. Example:

     Men in "women's professions" often feel their masculinity is called into question by outsiders (Williams 1995; Cross and Bagilhole 2002).

- Whenever you draw on a new idea, concept, or finding, you must use internal citations with author's names and years of publications. However, if you are discussing the same article or author in a series of sentences, you only need to provide a citation the first time. Example:

  Miller (1997) demonstrates how the military men in her study engage in gender harassment of their women superiors. She illustrates several forms of this gender harassment, including foot-dragging and rumor spreading.

  Note: In the second sentence, there is no citation for the year, as you provided it in the previous sentence. However, if you discuss Miller later in the paper, you will provide the year again to make clear you are discussing the same article.

- When quoting directly, you must also include the page(s) the quote is found on and enclose the quote in parentheses. Example:

  According to Tran (2002:34), the "way of the way is the way."

- For citations with four or more authors, use "et al." rather than list all author names in-text. Example:

  Research has documented elevated infant mortality rates among children born to teenage mothers (Jackson et al. 1992).

- Do not use titles of books and articles in your paper, or the author's first name. Rather, use the author's last name and internal citations to give the year of the publication. Example:

  INSTEAD of: *Virginia Valian, in her 1999 book Why So Slow: The Advancement of Women, shows that women in professional occupations often advance more slowly than their men counterparts.*

  USE: *Valian (1999) shows that women in professional occupations often advance more slowly than their men counterparts.*

- Common mistakes you should take care to avoid:
  - In all of these examples listed above, the period comes AFTER the parentheses, NOT before it. Please remember that the author citation is part of the sentence, so it should be listed before you end the sentence with a period.
  - Many students use too many direct quotes from a book or journal article. Quotes should be used very sparingly, while paraphrasing from the text should be the norm.

2. Bibliography page

A bibliography page lists all sources cited in the paper. The page should follow the basic format of author, year of publication, title of publication, publisher, and if an article, the volume and page numbers. Here are some examples:

Anderson, Maya. 1978. *Ever Heard of Hip Hop?* New York: Oxford University Press.

Centers for Disease Control and Prevention. 2006. "Cigarette Use Among High School Students – United States, 1991-2005." *Morbidity and Mortality Weekly Reports* 55:724-726.

Cleary, Paul D., Lawrence B. Zaborski, and John Z. Ayanian. 2004. "Sex Differences in Health over the Course of Midlife." Pp. 37-63 in *How Healthy Are We? A National Study of Well-being in Midlife*, edited by O.G. Brim, C.D. Ryff, and R.C. Kessler. Chicago: University of Chicago Press.

**Note that all authors after the first author have their first names listed first.

U.S. Census Bureau. 2002. "Hispanics Growing Fast." Washington, DC: U.S. Department of
Commerce. Retreived March 30, 2007. (http://www.census.gov/hispanic.html).

Williams, Genia. 1997. "The Lonely Way." *American Journal of Sociology* 42:37-64.

Zenia, Genco. 2007. Personal Interview. Conducted April 2, 2007.
**Only include if person gives permission to be cited by name.