Jeff Grogger
Harris School

Winter 2026
University of Chicago

PPHA 31302: Advanced Statistics for Data Analysis II

Section I: MW 9:00-10:20 am, Keller 2112
Section II: MW 10:30-11:50 am, Keller 2112

Instructor: Jeffrey Grogger
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Office hours: TBA

Teaching Assistants:

Name	Email	Office hours time/place
Brian Curran (Head TA)	bcurran@uchicago.edu	TBA
Andrew Doherty Munro	adohertymunro@uchicago.edu	TBA
Ganon Evans	ganon@uchicago.edu	TBA
Prarthna Iyer	prarthnaiyer@uchicago.edu	TBA

Weekly Discussion Sections:
Section D01: Thursday 5:00-6:20 pm, Keller 1002
Section D02: Thursday 6:30-7:50 pm, Zoom

NOTE: Due to Martin Luther King Jr Day, there will be no class on Monday, January 19. Instead, class will meet on Friday, January 23 at the usual time and location.

Web site: All materials for the class will be posted to its site on Canvas.

Course content: This class covers basic Gauss-Markov theory and other topics in regression analysis.

Prerequisites: PPHA 312 or equivalent.

Reference: The text for the class is Jeffrey Wooldridge, Introductory Econometrics, 7th edition. If you choose to use a different edition, the responsibility for cross-walking the reading assignments lies with you.

Discussion sections: Sections will be devoted to answering students' questions about the material. To give the TAs time to prepare their answers, questions must be submitted via Canvas at least 24 hours before the section. The TAs will prioritize questions according to up-votes, so even if you don't submit a question, be sure to check Canvas each week so you can up-vote the questions you want discussed.

Grading: There will be four problem sets, two quizzes, and a final exam. Problem sets will include paper-and-pencil (analytical) problems and estimation (computation) exercises.

Problem sets: Students may work together on problem sets but each student must write up his/her answer set individually. Write-ups that are materially similar between students will be regarded as cheating and receive zero credit. Problem sets will count for 30 percent of the course grade. You may drop the problem set with the lowest score for the purpose of computing your grade, provided that you hand in serious answers to all four problem sets.

Problem sets will be posted to Canvas as soon as they are available. Answer keys will be posted shortly after the date that the problem sets are due. Problem sets must be submitted on Canvas by the date and time specified. *No late problem sets will be accepted*. The due date for each problem set will appear on the heading of the problem set.

Exams. The quizzes and final exam will count for 70 percent of the course grade, with 40 percent given to the quizzes and 30 percent given to the final. Quiz 1 will be held on Friday, January 30 and Quiz 2 will be held on Friday, February 20. The final will be held on TBD. ***There will be no make-ups***.

Topics and Readings

1. Bivariate Linear Regression, Ch. 2

2. Multivariate Linear Regression

    a. Estimation, Ch. 3
    b. Inference, Ch. 4
    c. Asymptotic Inference, Ch. 5

3. Specification Issues

    a. Functional form, Chs. 2, 6
    a. Dummy Variables, Ch. 7

4. Heteroskedasticity, Ch. 8

    a. Non-Spherical Disturbances and OLS, Ch. 8.2
    b. Generalized Least Squares, Ch. 8.4
    c. Heteroskedasticity, Ch. 8.1-8.3

5. Models for Panel Data, Chs. 13, 14

6. Instrumental Variables, Ch. 15

7. Limited Dependent Variables, Ch. 17

Other readings will be added to the Canvas page from time to time.

Attendance: In accordance with Harris School policy, students are required to attend lecture sections for core courses. Absences will start being tracked in Week 3 of the quarter, as students' schedules may still be in flux during the first two weeks. You may miss up to two class sections without penalty to accommodate illness, emergencies, or similar situations. There is no need to notify the teaching staff about these absences. However, for each additional absence beyond the two allowed, one percentage point will be deducted from your final course grade. Chronic absenteeism will be reported to the Dean of Students and may result in a denial of course credit. Students are expected to come to class prepared to engage with the material.

Electronics: Harris has instituted an electronics policy. There is now considerable evidence (see, for example, here, here, here, and here) that the use of electronics in classrooms has adverse impacts on learning. The policy reads: "Harris core classes all forbid the use of screens in the classroom, with exceptions for SDS accommodations and for hand-written note-taking on tablets laid flat on students' desks."

Communication with TAs and other students: You can use the Ed Discussion board on Canvas to communicate with the TA's and other students. TA's will respond in a reasonable amount of time, but immediate turnaround is not a reasonable expectation.

Posts will be public, for several reasons. First, it is efficient. Singleton questions are rare. If you have a question, probably someone else has the same question. Everyone can benefit from the answer. Another reason is that questions beget questions. If one student sees others posting, he/she is more likely to post him/herself. And more questions are better. Third, part of professional education is learning to make yourself heard, even in situations you may find awkward. So, grit your teeth and post your question! The sky will not fall, I promise.

General resources: Students should be aware of the 8 hours of free tutoring services offered by Harris to students enrolled in core classes.

Links to other resources:
Harris Academic Support Programs and Handbook
Student Wellness
UChicagoGRAD

Academic Integrity: Students may consult with others while they work. You may also make use of LLMs in helping to generate your code, since effective use of such tools is increasingly important in today's labor market. However, students must adhere to the following procedures:

- Use of AI tools in problem sets. 1. For the analytical portions of the problem sets, the use of any AI tool (ChatGTP, Claude, Gemini, etc) is forbidden. Period. 2. For the computational portions, you may use AI tools to help you write code,

but that's it. You may not use code that is written by the AI, nor ingest either the problem set text nor any of the class data sets into an AI.

- Your problem set must be solely your authorship (written up by yourself, in your own language, including your own code.)
- Your code must have a comment at the top listing the students/TA's/consultants with whom you consulted. It must also list which LLMs were queried, including version numbers.
- Any part of your code that was substantially altered because of your discussion with other students/TA's/consultants should cite others' contributions with names and descriptions in a comment above the block of code where it is applicable.
- Any code generated with the help of an LLM must be documented in comment lines above the relevant block of code, where you must place your prompts, the code generated by those prompts, and a description of the changes you made to the code generated by the LLM.
- Any code based on code that you found online (e.g., on Stack Exchange) must be documented as such. This includes single lines of code and code that you found but then modified to fit your purpose. Documentation must include the URL and the date and time of access.
- Students may not copy other's code, or allow others to copy their code. Students may not copy other's prompts, or allow others to copy their prompts.
- Students are not permitted to introduce any class data sets or documentation into an LLM.
- Students who violate these procedures, or otherwise violate academic honesty policies, will receive a zero for the problem set or exam in question. These problem sets will NOT be dropped for the purpose of calculating your grade.
- We will spot check students' code. If your code fails to run, you will get a zero for the assignment.

All University of Chicago students are expected to uphold the highest standards of academic integrity and honesty. Among other things, this means that students shall not represent another's work as their own, use un-allowed materials during exams, or otherwise gain unfair academic advantage. All students suspected of academic dishonesty will be reported to the Harris Dean of Students for investigation and adjudication. The disciplinary process can result in sanctions up to and including suspension or expulsion from the University, in addition to the grade penalty mentioned above. The Harris policy and procedures related to academic integrity can be found at https://harris.uchicago.edu/gateways/current-students/policies. The University of Chicago Policy on Academic Honesty & Plagiarism can be found at https://studentmanual.uchicago.edu/academic-policies/academic-honesty-plagiarism/.

Disability Accommodations: The University's policies regarding students with disabilities are available below. Students who have disability accommodations awarded by the University Student Disability Services Office should inform the Harris Dean of Students office by the end of the first week of class. The Harris Dean of Students Office will work with the student and instructor to coordinate the students' accommodations implementation. Harris students are not required to submit their accommodations letter to the instructor.

Students who do not yet have formal accommodations in place but who feel they need accommodations on a temporary or ongoing basis should contact the Harris Dean of Students Office or Student Disability Services.

University policies: https://studentmanual.uchicago.edu/university-policies/disability-accommodations/

Student Mental Health and Other Support: Students who may need support for their mental health and wellness should consult the following: Mental Health and Wellness Resources.