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PADP 8140 – Advanced Topics in Statistical Modeling
M, 3:35-6:35 PM
Fall 2017

Course Description I will help you develop a deeper understanding of key concepts in statistical modeling. We will proceed on three tracks:

- A discussion of likelihood theory and maximum likelihood estimation.
- A discussion of limited dependent and categorical variables.
- A discussion of modern statistical computing using Stata.

Required Materials

- We will read selections from a number of texts.
- Buy this book from Amazon: Long, J. Scott and Jeremy Freese. 2014. Regression Models for Categorical Dependent Variables Using Stata, 3rd Edition. College Station, TX: Stata Press
- I will distribute other readings at https://uga.view.usg.edu. Use your UGA myID for access.
- Buy your own copy of Stata for your own machine. Or use http://vlab.uga.edu.

General Expectations All students are expected to behave professionally in this class. This means attending class regularly, being on time, and participating in discussions. You are responsible for all material in the readings and lectures, even if you are unable to attend class. You are responsible for all specific deadlines or dates posted on the syllabus or on the class website. Assignments must be completed on time.

Evaluation

40% Exercises.
40% Course project.
20% Class participation and presentations.

An A will be given to anyone with 93 or more points, an A- to those with 90-92 points, a B+ to those with 87-89 points, a B to those with 83-86 points, a B- to those with 80-82 points, a C+ to those with 77-79 points, a C to those with 73-76 points, a C- to those with 70-72 points, a D to those with 60 to 69 points, and an F to anyone receiving fewer than 60 points in the course.

Teaching Approach I assume you have a strong knowledge of the material offered in PADP 8130, including basic probability theory, statistical inference, hypothesis testing, and least squares estimation. I also assume you have a working knowledge of calculus and linear algebra.

We will have a weekly class meeting where I will offer a lecture-based workshop. We will start with covering the mathematics necessary for understanding MLE theory and mechanics. We will cover some of this material, but students must also undertake on their own to understand this.

After this, we will address MLE theory and mechanics, and then review models that are estimated using ML. I will lecture on the key material from the readings, and try to answer all student questions. The bulk of learning in the course, however, will take place outside of the classroom. Students will complete regular assignments and turn them in to be graded. The exercise will be delivered on Monday and due back the following Monday.

This term our focus is on models for categorical and limited dependent variables. For each week, I have chosen basic readings on the models, and supplemented those readings with papers that apply the models to data from public administration and policy studies. You will choose four papers to read during the term, and for that session, you will be prepared to make a short 5-8 minute presentation on the paper. You will prepare a written report of one or two paragraphs (no more than one written page). Bring a copy of that report for each member of the class. You may arrange to provide a report on an alternative paper with my approval.

The last formal requirement for the course is a course project; each of you will choose your own topic for your paper. Your goal is to produce a manuscript that you can submit for publication, using a model (or models) discussed in the course. I will be available throughout the semester to discuss modeling, specification, and software issues with each student. You should write on a topic close to your substantive interests. You can recycle parts of papers from other classes only with my permission.

Class Attendance/Participation Your grade will be based on class attendance and the quality of your participation in class. Students are expected to participate through asking questions and answering inquiries raised in class. Keep in mind that it is difficult to participate without being physically present. To adequately prepare for class, all assigned readings should be completed by the dates indicated on the course schedule. Not all assigned readings may be discussed in class; nonetheless you are responsible for familiarizing yourself with them.

Miscellaneous No "extra credit" will be assigned in this course under any circumstances. Keep in mind that final grades may only be changed in the event of a clerical error (e.g., points summed incorrectly). Also, for privacy reasons, information pertaining to course grades cannot be discussed over the telephone or via email. A final grade of "Incomplete" will only be given in this course under extraordinary circumstances and is solely at the discretion of the instructor. The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary. Please silence devices while in class. Devices and laptops may only be used in-class with my permission. I accept late work after the due date only by prior arrangement. You must type any grade appeals and attach supplemental information as appropriate.

Instructor Availability If you would like to speak with me outside of class, feel free to stop by my office during scheduled office hours. Occasionally I have meetings during the day and may be unavailable. To ensure that I am available on a given day, email me at least 24 hours in advance to set a specific time to meet.

Special Needs and Academic Honesty Students with special needs that require accommodation should notify the Office for Disability Services and me as soon as possible so the appropriate arrangements can be made. All information as well as documentation is considered confidential. All academic work must meet the standards contained in "A Culture of Honesty." Students are responsible for informing themselves about those standards before performing any

academic work. The link to more detailed information about academic honesty can be found at: http://www.uga.edu/honesty/ahpd/culture_honesty.htm.

Religious Holidays Students who are absent from academic or social activities because of religious observances will not be penalized. If you desire to be excused from class to observe a religious holiday, notify me in advance. You are still responsible for any material covered during the excused absence, but will be permitted a reasonable amount of time to make up any work missed. If an event is scheduled during the class at which you are excused for a religious observance, you should make arrangements with me as soon as possible for an alternate time or be given a comparable assignment.

Schedule of Topics:

- **Assigned readings are to be completed by the dates listed below**
- **All readings (other than Long and Freese) will be delivered via** https://uga.view.usg.edu
- **See the course website for week-by-week details on the readings**

Week 1 (8/14 – Introduction and Overview)

Week 2 (8/21 – Review, Exercise 1)

Week 3 (8/28 – Review, Exercise 2)

Week 4 (9/11 – MLE Theory and Mechanics, Exercise 3)

Week 5 (9/18 – MLE Theory and Mechanics)

Week 6 (9/25 – Logit/Probit, Exercise 4)

Week 7 (10/2 – Logit/Probit Interpretation, Exercise 5)

Week 8 (10/9 – Alternatives to Logit/Probit, Exercise 6; Ordered, Exercise 7)

Week 9 (10/16 – Ordered, Exercise 7; Nominal, Exercise 8)

Week 10 (10/23 – Class won't meet on 10/23. Will explain alternative arrangements later.)

Week 11 (10/30 – Bivariate/Multivariate/SUR, Exercise 9)

Week 12 (11/6 – Truncation/Censoring/Selection, Exercise 10)

Week 13 (11/13 – Event Counts, Exercise 11)

Week 14 (11/27 – Durations, Exercise 12)

Week 15 (12/4 – Presentations)