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PADP 8140 – Advanced Topics in Statistical Modeling
Fall 2020

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.

Evaluation

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

An A will be awarded 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 expect to meet weekly for 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 Tuesday and due back the following Tuesday.

This term our focus is on models for categorical and limited dependent variables. For each week, I have chosen basic readings on the models.

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 Students are expected to participate by asking questions and answering inquiries raised in class. Keep in mind that it is difficult to participate without being present. To adequately prepare for class, you should complete all assigned readings by the dates indicated on the course schedule. Not all assigned readings may be discussed in class; nonetheless you should read them.

All students are expected to behave professionally in this class. 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.

Please follow UGA's required procedures regarding class attendance during the current coronavirus epidemic. Our current class size should allow all students to attend class, given current guidelines, if you feel safe doing so. Please email me to discuss any missed classes. I will post the printed lecture online; I will not record the lecture.

Use of Software I use Stata in this course. However, some students may want to learn an extra statistical software package. You may use any extra time for the following:

- Read any relevant sections of this open access textbook:
  - Jenkins-Smith, Hank, et al. 2017. Quantitative Research Methods for Political Science, Public Policy and Public Administration, With Applications in R. University of Oklahoma Libraries.
  - Available at: https://open.umn.edu/opentextbooks/textbooks/quantitative-research-methods-for-political-science-public-policy-and-public-administration-with-applications-in-r-3rd-edition
- Install R and RStudio on your computer, as discussed in the book.
- Install R Commander, as shown at https://www.rcommander.com.
- Practice using R to do basic statistics, as shown in the book.
- Alternatively, use R, RStudio, and R Commander on Vlab at https://vlab.uga.edu/vpn/index.html (although workspaces may need to be reestablished regularly) or RStudio online at https://rstudio.cloud (although you will not be able to run R Commander in this environment).

I encourage you to learn a statistics package like R if you have time and energy. However, my first commitment is to Stata. For this reason, I will not devote time in class to covering R, helping with installs, etc.

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 email me to arrange a meeting. 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.

Mental Health and Wellness Resources:

- If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit https://sco.uga.edu. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.
- UGA has several resources for a student seeking mental health services (https://www.uhs.uga.edu/bewelluga/bewelluga) or crisis support (https://www.uhs.uga.edu/info/emergencies).
- If you need help managing stress anxiety, relationships, etc., please visit BeWellUGA (https://www.uhs.uga.edu/bewelluga/bewelluga) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center.
- Additional resources can be accessed through the UGA App.

Campus resources: There are many resources on campus that offer support during your time here at UGA. They are here for you, so please take advantage of them.

Academic support

- The Division of Academic Enhancement Academic Coaching:
  - https://dae.uga.edu/services/academic-coaching/
- The Presentation Collaboratory:
  - https://dae.uga.edu/services/presentation_collaboratory/
- Student Success Workshops:
  - https://dae.uga.edu/services/student-success-workshops/
- Tutoring through the Academic Resource Center:
  - https://dae.uga.edu/services/tutoring/
- Resources for academic success at UGA:
  - https://dae.uga.edu/resources/academic_success_resources/
- First Generation Student Resources:
  - https://dae.uga.edu/resources/first_generation_student_resources/
- International Student Resources:
  - https://dae.uga.edu/resources/international-student-resources/
- Intensive English Program
  - https://dae.uga.edu/iep/intensive-english-program/

Technology support

- If new to campus:
  - https://eits.uga.edu/support/new_to_campus/
- Mobile App Warehouse
  - https://dae.uga.edu/resources/mobile-app-warehouse/
- Enterprise Information Technology Services
  - https://eits.uga.edu
- EITS Support
  - https://eits.uga.edu/support/
- Site-licensed Software
  - https://eits.uga.edu/hardware_and_software/
- Vlab
  - https://eits.uga.edu/support/vlab/
- Printing Kiosks
  - https://eits.uga.edu/support/printing_kiosks/
- Accessibility Group
  - http://www.amacusg.gatech.edu/wag/Main_Page

Personal support

- Graduate Student Financial Aid
  - https://dae.uga.edu/iep/intensive-english-program/
- Aid for Student Veterans and Military-Connected Students
  - https://osfa.uga.edu/types-of-aid/DoD_tuition_assistance/
- Student Veterans Resource Center

    - https://svrc.uga.edu
- Dean of Students
    - https://dos.uga.edu
- Counseling Center
    - https://www.uhs.uga.edu/caps/welcome
- Disability Resource Center
    - https://drc.uga.edu/site
- Financial Hardships Support Gateway
    - https://financialhardship.uga.edu/content_page/uga-resources-funding-and-employment
- Women's Resource Center
    - https://women.uga.edu
- LGBT Resource Center
    - https://lgbtcenter.uga.edu
- Student Care and Outreach
    - https://sco.uga.edu
- UGA Police
    - https://www.police.uga.edu
    - 911 or 706-542-2000

Coronavirus Information for Students

Face Coverings:

Effective July 15, 2020, the University of Georgia—along with all University System of Georgia (USG) institutions—requires all faculty, staff, students and visitors to wear an appropriate face covering while inside campus facilities/buildings where six feet social distancing may not always be possible. Face covering use is in addition to and is not a substitute for social distancing. Anyone not using a face covering when required will be asked to wear one or must leave the area. Reasonable accommodations may be made for those who are unable to wear a face covering for documented health reasons. Students seeking an accommodation related to face coverings should contact Disability Services at https://drc.uga.edu/.

DawgCheck:

Please perform a quick symptom check each weekday on DawgCheck—on the UGA app or website—whether you feel sick or not. It will help health providers monitor the health situation on campus: https://dawgcheck.uga.edu/

What do I do if I have symptoms?

Students showing symptoms should self-isolate and schedule an appointment with the University Health Center by calling 706-542-1162 (Monday-Friday, 8 a.m.-5 p.m.). Please DO NOT walk-in. For emergencies and after-hours care, see https://www.uhs.uga.edu/info/emergencies.

What do I do if I am notified that I have been exposed?

Students who learn they have been directly exposed to COVID-19 but are not showing symptoms should self-quarantine for 14 days consistent with Department of Public Health (DPH) and Centers for Disease Control and Prevention (CDC) guidelines. Please correspond with your instructor via email, with a cc: to Student Care & Outreach at sco@uga.edu, to coordinate continuing your coursework while self-quarantined. If you develop symptoms, you should contact the University Health Center to make an appointment to be tested. You should continue to monitor your symptoms daily on DawgCheck.

How do I get a test?

Students who are demonstrating symptoms of COVID-19 should call the University Health Center. UHC is offering testing by appointment for students; appointments may be booked by calling 706-542-1162.

UGA will also be recruiting asymptomatic students to participate in surveillance tests. Students living in residence halls, Greek housing and off-campus apartment complexes are encouraged to participate.

What do I do if I test positive?

Any student with a positive COVID-19 test is required to report the test in DawgCheck and should self-isolate immediately. Students should not attend classes in-person until the isolation period is completed. Once you report the positive test through DawgCheck, UGA Student Care and Outreach will follow up with you.

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 (8/25 – Introduction and Overview)

Week 2 (9/1 – Review, Exercise 1)

Week 3 (9/8 – Review, Exercise 2)

Week 4 (9/15 – MLE Theory and Mechanics, Exercise 3)

Week 5 (9/22 – MLE Theory and Mechanics)

Week 6 (9/29 – Logit/Probit, Exercise 4)

Week 7 (10/6 – Logit/Probit Interpretation, Exercise 5)

Week 8 (10/13 – Alternatives to Logit/Probit, Exercise 6)

Week 9 (10/20 – Ordered, Exercise 7)

Week 10 (10/27 – Nominal, Exercise 8)

Week 11 (11/3 – Bivariate/Multivariate/SUR, Exercise 9)

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

Week 13 (11/17 – Paper Workshop, Exercise 11)

Week 14 (11/24 – Paper Workshop, Exercise 12)

Week 15 (12/1 – Presentations. Deliverables due. Online only.)