CCJ7742 Research Methods in Crime, Law, and Justice II
SYA7933 Advanced Quantitative Methods
Department of Sociology and Criminology & Law
Fall 2021
Professor: Chris Gibson, Ph.D.

Office: Turlington 3330
Office Hours: Tuesday 11:35am – 1:35pm; (also available by appointment via zoom)
Phone: (352) 392-0265 (ext 206)
Email: clgibson@ufl.edu (I will try to respond to emails within 48 hrs of receiving)

Class Time: Thursday 3:00pm – 6:00pm
Room: PSY0129

Course overview

This course is designed to expand on linear regression by examining generalized linear models, causal models for observational data, and longitudinal models for examining change in an outcome over time or age. Knowing when to use each model given your data and research question is one important goal of this course. Another goal is to gain an understanding of these models through learning how to estimate and interpret results, as well as, understanding empirical articles, which have utilized these methods.

Our strategy will be to "learn by doing." We will work with a variety of data sets to answer substantive research questions that require using the statistical models mentioned above. Data sets provided will be used to fit increasingly more sophisticated statistical models.

Course Philosophy and Structure

CCJ 7742 will focus on the application of statistical models and how to answer research questions using them. While not sacrificing intellectual rigor, lectures will center on the conceptual properties of each technique. In addition, we will spend considerable time working with data sets. Data analysis is often a tricky art which can give birth to several problems that may lead to inaccurate statistical results (e.g., model specification and parameter interpretation, etc.). In this class it will be imperative for you to "learn by doing" so that correct decisions can be made when analyzing your own data.

I anticipate using a three-pronged approach for each of the statistical models that will be covered this semester. First, I will deliver a conceptual lecture. Second, you will read articles that either explain the model and/or use the model to answer a substantive research question. Third, we will estimate models using data I provide. In doing so, we focus on interpreting the output and drawing conclusions about our research questions.

As scheduled and consistent with UF policy, this course will be delivered in person/face-to-face. This course will not have a hyflex option; therefore, lectures will not be online synchronous and lectures will not be posted on the canvas course.

Suggested Texts

Recommended (not required)

Long, S. J. & Freese, J. (2001) *Regression Models for Categorical Dependent Variables using Stata*. (1st or 2nd edition) College Station, TX: Stata Press

Long, S.J, (1997). Regression Models for Categorical and Limited Dependent Variables. Thousand Oaks, CA: SAGE Publications, Inc

Menard, S. (1995). *Applied Logistic Regression Analysis*. Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-106. Newbury Park, CA: Sage.

Nagin, D. (2005). Group-based modeling of development. Harvard Press.

Rosenbaum, P. (2017). Observational & Experimental: An Introduction to Causal Inference. Harvard University Press.

STATA Computing

Statistical computing will be an integral part of this course. We will use STATA 15 , and it will be required that students obtain a copy of STATA.

Students can purchase STATA 15 under the grad plan option at http://www.stata.com/order/educational.html.

Although we will use STATA extensively, we can't cover every type of analysis that can be executed in this statistical package. It will be your own responsibility to learn how to estimate statistical models that are not covered in this course. Also, I recommend purchasing an introductory book on STATA to help with data management and variable creation and coding; Acock published a book titled "A gentle introduction to STATA" which I highly recommend.

I also recommend that you take advantage of UCLA's statistical computing services. The link below offers free training on basic data manipulation to advanced statistical modeling in STATA and other statistical software. Several free movies are available that you can watch in your spare time. These tutorials walk you through various analyses and manipulations using data sets that are available online.

http://www.ats.ucla.edu/stat/seminars/default.htm

I also recommend using the online STATA tutorial offered free by the Carolina population center:

http://www.cpc.unc.edu/services/computer/presentations/statatutorial

Data Analysis Assignments

Becoming proficient in data analysis requires working with data and estimating models often. In an attempt to help students, fine-tune their quantitative skills, I have developed four assignments that focus on data analysis. Assignments will consist of a research question that you will answer using data I provide. These assignments will help you gain experience estimating and describing results from statistical models you learn about in this class. Finally, these assignments will provide practice in creating tables and graphs to display your findings.

Term Paper and Presentation

The term paper will require you to develop a research question and hypothesis/hypotheses to be examined using a statistical technique learned during this class. You are only required to turn in a 1-2 page intro, methods section, analytic strategy section, and results section for the term paper.

Although you are NOT required to complete a full literature review and discussion section for the term paper, I do expect your research question and hypothesis to be embedded in extant literature and to develop an awareness of your study limitations. You should be prepared to describe these as part of your 15 to 20-minute research project presentation. I will provide more details on the term paper and presentation in the next few weeks.

A word of advice: Start your project early in the semester. By the 4th week of this course you are required to email me a one-page proposal briefly describing your topic, research question, and a brief description of the data set you are planning to use to answer your question. I understand that some students will have access to data sets and others may need to locate a data set for their course project. A good starting point for locating a data set would be to browse through the National Archives of Criminal Justice Data and ICPSR. You will find the link to these websites below. You can search for data sets by topic and category.

http://www.icpsr.umich.edu/NACJD/ http://www.icpsr.umich.edu/

Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/ (Links to an external site.). Students will be

notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/ (Links to an external site.). Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/ (Links to an external site.).

University's honesty policy regarding cheating and plagiarism

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Click here to read the Honor Code (Links to an external site.). Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk (Links to an external site.)at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
Career Connections Center (Links to an external site.): Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
Library Support (Links to an external site.): Various ways to receive assistance with respect to using the libraries or finding resources.
Teaching Center (Links to an external site.): Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information (Links to an external site.).

Accommodations for students with disabilities

University of Florida is an Equal Opportunity and Affirmative Action institution committed to providing reasonable accommodations for any person with a disability who meets the definition of disabled as described in the Americans with Disabilities Act.

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. Click here to get started with the Disability Resource Center (Links to an external site.). *It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.*

Health and Wellness Resources

E-learning technical support: Contact the UF Computing Help Desk (Links to an external site.)at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
Career Connections Center (Links to an external site.): Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
Library Support (Links to an external site.): Various ways to receive assistance with respect to using the libraries or finding resources.
Teaching Center (Links to an external site.): Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.*Writing Studio:* 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
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Grades

Data analysis assignments (4):	300 points (75 point per assignment)
Term paper:	150 points
Video Presentation:	150 points
	600 total points

Grading Scale:

A 600-537 points
B+ 536-520 points
B 519-478 points
C+ 477-460 points
C 459-418 points

Tentative Course Outline

Date	General Topic	Readings
Week 1 Aug 26	***Course Introduction***	
Week 2 Sept. 2	**Significance Testing and Statistical Power Analysis**	Cohen, J. (1992). A Power Primer. Psychological Bulletin, 112, p 155-159. Mayr et al. (2007). A Short Tutorial of Gpower. Tutorials in quantitative Methods for Psychology, 3, p 51- 59. Faul et al. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analysis. Behavior Research Methods, 41, 1149-1160.
Week 3 Sept. 9	**Missing Data and Imputation Methods**	Pigott, T. (2001). A Review of Methods for Missing Data. Educational Research and Evaluation, 7, p 353-383. Soley-Bori, M. (2013). Dealing with missing data: Key Assumptions and Methods for Applied Analysis. Technical Report 4. Azur, M. et al. (2011). Multiple imputation by chained equations. What is it and how does it work? Int J Methods Psychiatr Res, 20, 40-49. ****Assignment 1 handed out****
Week 4 Sept. 16	**Logistic Regression Models: Introduction/Assumptions**	Britt & Weisburd (2011). Logistic regression models for categorical variables. *Statistics in Criminal Justice. Pages 649-656.* ***** 1 page summary of your research topic, research question, and data set*****
Week 5 Sept 23	**Logistic Regression: Model Estimation/Interpretation**	Gibson, C.L. Fagan, A.A., & *Antle, K. (2014). Avoiding violent victimization among youth in urban neighborhoods:

The importance of street efficacy. *American Journal of Public Health*. 104, e154-e161.

Breen, R. et al. (2018). Interpreting and understanding logits, probits, and other nonlinear probability models. Annual Review of Sociology, 44, 39-54.

Week 6

Sept 30

Logit Regression: Post Estimation, Margins, and Predicted Probabilities

Review info on following website:
https://stats.idre.ucla.edu/stata/dae/using-margins-for-predicted-probabilities/

Royston, P. (2013). marginscontplot: Plotting the marginal effects of continuous predictors. *Stata Journal*, 3, 510-527

****Assignment 2 handed out****

Week 7

Oct. 7

Psychometrics and Multiple Item Scale Construction

Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16, 297-334.

Tavakol, M., & Dennick R. (2011). Making sense of Cronbach's alpha. International Journal of Medical Education, 2, 53-55.

****Assignment 3 handed out****

Week 8

Oct. 14

Ordinal and Multinomial Regression: Assumptions, Model Estimation, and Interpretation

Lu, M. (1999). Determinants of residential satisfaction: Ordered logit versus regression models. Growt*h and Change*, 30, 264-287.

Review power points slides on ordered logit from Princenton (posted on canvas)

Week 9

Oct. 21

Regression with Count Data: Poisson and Negative Binomial Regression

Gardner et al., (1995). Regression analysis of counts and rates: Poisson, Overdispersed poisson, and negative binomial. *Psychological Bulletin*, 118, 392-404.

MacDonald & Lattimore (2011). *Count models in criminology*. In (Eds) Piquero and Weisburd. Handbook of Quantitative Criminology, Springer-Verlag.

****Assignment 4 handed out****

Week 10
Oct 28

Group-Based Trajectory Analysis: Introduction

Nagin (1999). Analyzing developmental trajectories: A semi-parametric group-based approach. Psychological Methods, 4, 139-157.

Nagin and Odgers (2010). Group-based trajectory modeling in clinical research. *Annual Review of Clinical Psychology*, 6, 109-138.

Week 11
Nov 4

Group-Based Trajectory Analysis: Estimation/interpretation

Nagin & Jones (2012). A STATA plugin for estimating group-based trajectory models.

Eggleston et al. (2004) Methodological Sensitivities to latent class analysis of long-term criminal trajectories. Journal of Quantitative e Criminology. 20, 2-26.

Skardhamar, T. (2010). Distinguishing facts and artifacts in group-based modeling. Criminology, 48, 295 – 320.

Week 12
Nov 11

NO CLASS (Veterans Day)

Week 13
Nov 18

Propensity Score Matching: Introduction

Haukoos, J., & Lewis, R. (2015). The propensity score. JAMA, 314, 1637-1638.

Gibson, C.L., Miller, J.M., *Jennings, J.M., Swatt, M., & Gover, A. (2009). Using propensity score matching to assess the relationship between gang membership and violent victimization: A research note. *Justice Quarterly, 26,* 625-643.

Gibson, C.L., Swatt, M., Miller, J.M., Jennings, W., & Gover, A. (2012). The causal relationship between gang joining and violent victimization: A critical review and directions for future research. J*ournal of Criminal Justice,* 40, 490-501.

Week 14

Nov 25 **NO CLASS (Thanksgiving)**

Week 15

Dec. 2 **Propensity Score Matching Models: Estimation/Interpretation**

D'Agostino, R. B., Jr. (1998). Propensity Score Methods for Bias Reduction in the Comparison of a Treatment to a Non-Randomized Control Group, *Statistics in Medicine, 17*, 2265-2281.

TBA

Dec. 8 ***Submit Video Presentation of Course Project***

Dec. 15 ***Submit Term Paper***