Sociology 7200: Techniques of Demographic Analysis ll
MWF 9:30-10:20 in Eppler S 306 (lab in Williams 215)
Spring 2016
Professor Kara Joyner
237 Williams Hall, 419-372-7166
e-mail: kjoyner@bgsu.edu
Office Hours: TR 10:00-12:00 (or by appointment)

Required Reading for the Course: Students are required to read articles listed under the scheduled topics (available electronically). Those who plan to pursue a project that involves survival analysis are advised to buy one of the two books below (depending on whether they plan to use SAS or Stata). Note that additional articles may be added during the semester.

> Allison, Paul. 2010. *Survival Analysis Using the SAS System: A Practical Guide*. Cary, N.C.: SAS Institute.

> Cleves, Mario A., William W. Gould, Roberto G. Gutierrez, and Yulia Marchenk. 2010. *An Introduction to Survival Analysis Using Stata*. 3rd edition. College Station, TX: Stata Press.

Course Description: This course builds on the material in Demographic Analysis 1; however, this course does not require students to have taken the first course in the sequence. Students in this course will learn about four specific techniques: survival analysis, multi-level models, fixed effects models, and decomposition analyses. These methods are useful for examining the effects of variables on the timing of events; exploring contextual influences on the outcomes of individuals; estimating causal effects for units that are measured over time; and decomposing differences in rates for two groups or time periods. In addition to covering overviews and recent applications of these methods, this course reviews relevant material covered in the first course. The assignments rely on publically-available data.

Format: I will lecture and generate discussion during some parts of the class. During other parts, students will share their answers to assignments and manipulate data in a computer lab using Excel and SAS/Stata. Students will lead the discussion of readings that apply these methods (indicated below by a *). They will also update the class on their projects at three different points during the semester. In the event that students are not participating (or participating but obviously not prepared) exams will be added to the schedule.

Grading: Grades will be based on assignments (20%), class participation (30%), and an individual project (50%). The assignments require students to properly code variables and create appropriate file structures. They should attempt to complete the assignments *prior* to the labs. (An inappropriate file structure or error in the coding of variables may lead to a model that is essentially producing garbage.) Students are expected to read the assigned material *before* it is covered in the lectures. The individual projects require students to incorporate feedback they receive from others and to read more extensively about their focal method.

Absences: Students are responsible for finding out about announcements made and material covered during their absence. Regular class attendance, including the lab component, is very critical. If you experience extenuating circumstances during the semester, please contact me.

Individuals Project Proposals (due May 4th): Your individual project will focus on an outcome, method (i.e., one of the four methods covered in the course), and data set of your choice. It is essentially the back end of a journal article addressing: the hypotheses and rational for the focal variables; a description of your data and sample; a presentation of descriptive statistics; details on the models you are estimating; and interpretation of results from the models. A one-page proposal suggesting four potential projects (i.e., one for each method) is due Monday, January 25th before midnight; this document will be circulated to everyone in this course. You are advised to work on this document *while* we are covering the four applications. A one-page proposal of the individual project (based on your focal method) is due Monday March 14th. A revised version of your proposal with descriptive statistics and preliminary findings from your models is due Friday April 14th; this revised version will be circulated to the class.

Discussion of Journal Articles. Students will be responsible for guiding the discussion of one journal article that applies the techniques of this course. The discussion should include a one-page summary that addresses the motivation for using the technique, the statistical program used, important details about the file structure, results for key variables, and questions or concerns about the models.

Schedule:

Week 1 (1/11 to 1/15): Introduction to Course / Applications of Survival Analysis

Heaton, Tim B., and Vaughn Call. 1995. "Modeling Family Dynamics with Event History Techniques." *Journal of Marriage and the Family* 57:1078-1090.

*Schwartz, Christine R., and Hongyun Han. 2014. "The Reversal of the Gender Gap in Education and Trends in Marital Dissolution." *American Sociological Review* 79, no. 4: 605-629.

*Massoglia, Michael, Brianna Remster, and Ryan D. King. 2011. "Stigma or Separation? Understanding the Incarceration-Divorce Relationship." *Social Forces* 90, no. 1 (2011): 133-155.

Week 2 (1/20 & 1/22): Applications of Multi-Level Models & Fixed Effects Models

Teachman, J. and K. Crowder. 2002. "Multilevel Models in Family Research: Some Conceptual and Methodological Issues." *Journal of Marriage and Family,* 64:280-294.

*Strully, Kate. 2014. "Racially and Ethnically Diverse Schools and Adolescent Romantic Relationships." *American Journal of Sociology* 120, no. 3: 750-797.

Firebaugh, Glenn, Cody Warner, and Michael Massoglia. 2013. "Fixed effects, random effects, and hybrid models for causal analysis." In *Handbook of Causal Analysis for Social Research*, pp. 113-132. Springer Netherlands.

*LaFree, Gary, Eric P. Baumer, and Robert O'Brien. 2010. "Still Separate and Unequal? A city-Level Analysis of the Black-White Gap in Homicide Arrests Since 1960." *American Sociological Review* 75, no. 1: 75-100.

Week 3 (1/25 to 1/29): Applications of Decomposition Techniques

Fairlie, Robert W. 1999. "The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment." *Journal of Labor Economics* 17, no. 1: 80-108.

*Cancian, Maria, Daniel R. Meyer, Patricia R. Brown, and Steven T. Cook. 2014. "Who Gets Custody Now? Dramatic Changes in Children's Living Arrangements after Divorce." *Demography* 51, no. 4: 1381-1396.

Presentation of project ideas (Wednesday and Friday)

Week 4 (2/1 to 2/5): Survival Analysis

Section on the cohort life table in Preston, Samuel H., Patrick Heuveline, and Michel Guillot. 2001. *Demography: Measuring and Modeling Population Processes*. Malden, Massachusetts: Blackwell Publishers.

Chapter 3 from Allison (2010); Chapter 8 from Cleves et al. (2010)

Computer Lab: "Producing Life Table Estimates in SAS or STATA"

Week 5 (2/8 to 2/12): Survival Analysis

Discussion of computer lab results (Monday)

Allison, Paul D. 1984. *Event History Analysis: Regression for Longitudinal Event Data*. No. 46. Sage.

Computer Lab: "Estimating Continuous-Time Models"

Week 6 (2/15 to 2/19): Multi-Level Models

Discussion of computer lab results (Monday)

Chapters 2 and 4 in Raudenbush, S.W., & Bryk, A.S., 2002. *Hierarchical Linear Models: Applications and Data Analysis Methods*. Newbury Park, CA: Sage. 2nd edition.

*Hagan, J. and Foster, H., 2012. Children of the American Prison Generation: Student and School Spillover Effects of Incarcerating Mothers. *Law & Society Review*, *46*(1), pp.37-69.

Computer Lab: "Aggregating Individual-Level Data to the School Level" (Friday)

Week 7 (2/22 to 2/26): Multi-Level Models

Singer, J.A.1998. "Using SAS PROC MIXED to Fit Multilevel Models, Hierarchical Models, and Individual Growth Curves" *Journal of Educational and Behavioral Statistics* 24(4): 323-355.

Guo G. and Zhao, H. 2000. "Multilevel Models for Binary Data." *Annual Review of Sociology* 26: 441-462.

Computer Lab: "Replication of Results from Singer" (Friday)

Week 8 (2/29): Multi-Level Models

Discussion of computer lab results

Week 9 (3/14 to 3/18): Fixed Effects Models

Chapters 1 and 2 from Allison. P.D. 2005. *Fixed Effects Regression Models for Longitudinal Data Using SAS*. Cary: SAS Institute.

*Phillips, Julie A., and David F. Greenberg. 2008. "A Comparison of Methods for Analyzing Criminological Panel Data." *Journal of Quantitative Criminology* 24, no. 1: 51-72.

*Massoglia, Michael, Glenn Firebaugh, and Cody Warner. 2013. "Racial Variation in the Effect of Incarceration on Neighborhood Attainment." *American Sociological Review* 78, no. 1: 142-165.

Computer Lab: "Fixed and Random Effects Models" (Friday)

Week 10 (3/21 to 3/25): Fixed Effects Models

*Houle, Jason N., and Michael T. Light. 2014. "The Home Foreclosure Crisis and Rising Suicide rates, 2005 to 2010." *American Journal of Public Health* 104, no. 6: 1073-1079.

*Schneider, Daniel. 2015. "The Great Recession, Fertility, and Uncertainty: Evidence from the United States." *Journal of Marriage and Family* 77, no. 5: 1144-1156.

Computer Lab: "Hybrid Models" (Friday)

Week 11 (3/28): Fixed Effects Models

Discussion of computer lab results

Week 12 (4/4 to 4/8): Decomposition

Chapter 2 in Preston, Samuel H., Patrick Heuveline, and Michel Guillot. 2001. *Demography: Measuring and Modeling Population Processes*. Malden, Massachusetts: Blackwell Publishers.

*Levitt, Steven D. 1999. "The Limited Role of Changing Age Structure in in Explaining Change in Aggregate Crime Rates." *Criminology* 37, no. 3: 581-598.

Computer Lab: "Decomposition Using a Single Variable" (Friday)

Week 13 (4/11 to 4/15): Decomposition

Discussion of computer lab results (Monday)

*Levitt, Steven D. 2004."Understanding Why Crime Fell in the 1990s: Four Factors that Explain the Decline and Six That Do Not." *Journal of Economic perspectives*: 163-190.

*Phillips, Julie A. 2013. "Factors Associated with Temporal and Spatial Patterns in Suicide Rates across US States, 1976–2000." *Demography* 50, no. 2: 591-614.

Week 14 (4/18 to 4/22): Presentation of projects

Week 15 (4/25 to 4/29): In-class work on projects

Notes: No class on 3/2, 3/4, 3/30, and 4/1 due to academic travel.

Useful Links:

German Rodriguez: http://data.princeton.edu/

Programming for Applied Longitudinal Data Analysis:
http://www.ats.ucla.edu/stat/examples/alda/

Centre for Multilevel Modeling: http://www.bristol.ac.uk/cmm/

Programming for Multilevel Models:
http://www.ats.ucla.edu/stat/examples/ma_snijders/default.htm

Additional Reading:

Allison. P.D. and N.A. Christakis. 2006. "Fixed Effects Methods for the Analysis of Non-Repeated Events," *Sociological Methodology* 36(1): 155-172.

Barber, J.S., S. Murphy, W.G. Axinn, and J. Maples. 2000. "Discrete-Time Multilevel Hazard Analysis." *Sociological Methodology* 30:201-235.

Guo, Guang. 1993. "Event-History Analysis for Left-Truncated Data." *Sociological Methodology* 23:217-243.

Gupta, Prithwis Das. "A General Method of Decomposing a Difference between Two Rates into Several Components." *Demography* 15, no. 1 (1978): 99-112.

Singer, J.D. and Willett, J.B., 2003. *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford University Press.

Teachman, J. 2011. "Modeling Repeatable Events Using Discrete-Time Data: Predicting Marital Dissolution." *Journal of Marriage and Family,* 73:525-540.