Section 7200: Techniques of Demographic Analysis II
MWF 9:30-10:20 in Eppler S 306 (lab in Williams 215)
Spring 2016
Professor Kara Joyner
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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.


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/Statas. 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


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


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


Presentation of project ideas (Wednesday and Friday)

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


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)


Computer Lab: “Estimating Continuous-Time Models”
**Week 6 (2/15 to 2/19): Multi-Level Models**

Discussion of computer lab results (Monday)


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

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


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**


Computer Lab: “Fixed and Random Effects Models” (Friday)


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


Computer Lab: “Decomposition Using a Single Variable” (Friday)

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

Discussion of computer lab results (Monday)


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/aldal/

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:


