

HDSP 463 — Topics in Research Methods: Regression Analysis in Human Development
Research
Spring 2006

Lecture: Monday 8:30-11 Annenberg 325

Lab: Thursday 9-10:30 Library PC Classroom, room B183

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The purpose of this course is to provide students with an introduction to research uses of regression models and the statistical analysis of longitudinal data. Topics will include a review of the OLS regression model, logistic regressions models, descriptive techniques for longitudinal data, event-history methods, and various other techniques for analyzing longitudinal data. The approach taken in the class will be a relatively intuitive one, with plenty of computer exercises between classes to become familiar with the material.

It is hoped that by the end of the course students will be able to understand the statistical underpinnings of most current social-science research using cross-sectional and longitudinal data. It is also a stepping stone to more advanced courses that will enable students to conduct longitudinal data analyses of their own.

Mastering the material will require a careful reading of the course texts as well as persistent attention to the exercises that will be handed out each week. There is one formal class session each week—on Monday between 8:30 and 11:00. Problem sets will be handed out each week at that time and are due in Duncan's 1st floor Annenberg mailbox by noon on Friday of the week in which they are assigned. Jennifer will hold an optional group problem-solving session on Thursday mornings between 9:00 and 10:30 to answer questions and work through problem sets.

I will require two papers during the quarter, one just before the middle and another due on the last day of class. The first paper is very short and requires students to invent a "natural experiment" to test a hypothesis of interest. The second paper will require an analysis of one of the two data sets we will be working with as part of the class. Students who wish to use their own data sets to do their papers are encouraged to do so. There will be one in-class exam around the middle of the quarter.

The class grade will depend on the following criteria:

- 10% — quality of contributions to class discussion
- 25% — quality of homework
- 10% — first paper
- 20% — exam
- 35% — second paper

A coursepack with xeroxed readings can be purchased from Mary Lou Manning.

HDSP 463 — Topics in Research Methods: Longitudinal Data Analysis

Required texts, available at the Norris Bookstore:

Paul D. Allison, Event History Analysis, Sage University Papers Series, Sage Publications, 1984

Paul D. Allison, Multiple Regression: A Primer, Pine Forge Press, 1999

Jeffrey M. Woolridge, Introductory Econometrics, Second Edition, South-Western College Publishing, 2003

Lawrence C. Hamilton, Statistics With Stata, Duxbury-Thomson Learning, 2003 (best to buy Version 7 or 8)

Week 1, March 27: Introduction to the course, the income data set, UNIX and STATA

Readings for class:

Chapters 1 and 4, plus pg. 51 on survey commands in Hamilton, Statistics with Stata

Exercise assigned: *a simple STATA exercise using the income data set*

Week 2, April 3: Review/extensions of OLS model

Readings for class:

Chapters 1 and 2 of Allison, Multiple Regression: A Primer

Chapters 1 and 2 (Sections 2.1-2.3) of Woolridge, Introductory Econometrics

Chapter 2 and 6 in Hamilton, Statistics with Stata

Duncan, G., W. Yeung, and J. Brooks-Gunn. "How Much Does Childhood Poverty Affect the Life Chances of Children?" *American Sociological Review*, Volume 63, Number 3, June 1998, pp. 406-423.

Exercise assigned: *age-earnings wage profiles using data from the income data set*

Week 3, April 10: Continued review of OLS, simple path analysis

Readings for class:

Chapters 3-9 (especially 8 and 9) of Allison Multiple Regression: A Primer

Chapters 2 (sections 2.4-2.6), 3, 6 (especially sections 6.1 and 6.2), 7 (sections 7.1-7.4) and Appendix A from Woolridge, Introductory Econometrics

Eamon, M. K. "Effects of Poverty on Mathematics and Reading Achievement of Young Adolescents" *Journal of Early Adolescence*, 22(1), 2002, pp. 49-74.

Exercise assigned: *intergenerational models based on the income data set*

Week 4, April 17: Logistic regression

Readings for class:

Chapter 7 (section 7.5) and 17 (section 17.1) of Woolridge, Introductory Econometrics

Chapter 10 in Hamilton, Statistics with Stata

De Maris, Alfred. "A Tutorial in Logistic Regression" *Journal of Marriage and the Family*, 57, Nov. 1995, 956-968.

Scott, K., Mason, C. and Chapman, D. "The Use of Epidemiological Methodology as a Means of Influencing Public Policy" *Child Development*, 70: 1263-1272.

Exercise assigned: *labor supply from income file*

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| Week 5, April 24: Natural experiments and regression discontinuity models |
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Readings for class:

Duncan, G., Magnuson, K. and Ludwig, J. "The Endogeneity Problem in Developmental Studies" *Research in Human Development*, Vol. 1, Nos. 1&2, 2004, pp. 59-80.

Hanuschek, E. and Raymond, M. "Does School Accountability Lead to improved Student Performance?" *Journal of Policy Analysis and Management*, Spring 2005, Vol. 24(2): 297-327.

Barnett, S. "The Effects of State Pre-Kindergarten Programs on Young Children's School Readiness in Five States" National Institute for Early Education Research, Rutgers.

Exercise assigned: *NONE — study for the mid-term*

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| Week 6, May 1: Change and other simple longitudinal models |
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Mid-Term Exam: Second half of class (75 minutes)

Readings for class:

Chapter 13 in Hamilton, Statistics with Stata

Chapter 14 (sections 14.1-14.2) in Woolridge, Introductory Econometrics

Duncan, G. and W. Rodgers. "Has Children's Poverty Become More Persistent?" *American Sociological Review*, 56, Aug. 1993: 538-550.

Exercise assigned: *Poverty dynamics based on the income file*

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| Week 7, May 8: More change models |
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Short paper on natural experiments are due

Readings for class:

Allison, Paul D. "Change Scores as Dependent Variables in Regression Analysis" in C.C. Clogg Sociological Methodology, Oxford: Basil Blackwell.

NICHD Early Child Care Research Network and Greg Duncan, "Modeling the Impacts of Child Care Quality on Children's Preschool Cognitive Development". *Child Development*, Vol. 74, No. 5, October 2003, pp. 1454-1475.

Exercise assigned: *Wage change based on the income file.*

Week 8, May 15: Event history methods, part I

Readings for class:

Paul D. Allison, Event History Analysis, Sage University Papers Series, Sage Publications, 1984
Chapter 11 in Hamilton, Statistics with Stata

Bane, Mary Jo and David Ellwood. “Slipping Into and Out of Poverty: The Dynamics of
Spells” *Journal of Human Resources*, 1986, 1-23.

Exercise assigned: *Life tables based on marriage file*

Week 9, May 22: Event history methods, part II

Readings for class:

Long, J.S., P.D. Allison, and R. McGinnis. “Rank Advancement in Academic Careers”
American Sociological Review, 58, October 1993: 703-722.

Exercise assigned: *No assignment – work on your papers!*

Monday, June 5 *SECOND PAPER DUE*

**School of Education and Social Policy
Academic Integrity Statement**

Students in this course are expected to comply with the policies found in the booklet, “Academic Integrity at Northwestern University: A Basic Guide.” All papers submitted for credit in this course must be sent as email attachments as well as delivered in printed form. Your written work may be electronically tested for plagiarized content. For details regarding academic integrity at Northwestern, visit: <http://www.northwestern.edu/uacc/>. If you need a copy of the brochure visit the SESP Student Affairs Office.