

Sociology 8200 / Fall Semester 2009

Regression Models for Categorical Data



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Office Hours: 2 - 3 on Tuesdays and Thursdays (and by appointment)
Class Schedule: Tuesday and Thursday, 12:30-1:45 p.m. / Classroom: Baldwin 114A

Description and Objectives

The linear regression model is without doubt the most commonly used approach to the analysis of non-experimental social science data. Quite appropriately, it receives the lion's share of attention in most graduate-level courses on quantitative data analysis. In many situations, however, a dependent variable of interest may be binary, ordinal, or nominal. In other cases, the dependent variable may indicate a count of events or a length of time. While dependent variables of that sort are common, they are troublesome because they fail to conform to the assumptions upon which the linear regression model is developed and justified. Faced with dependent variables that appear unsuited to the linear regression model, many researchers refuse to relinquish linear regression, often claiming that linear regression is "robust" and fully able to withstand departures from key assumptions. Although there may be some support for that claim in particular situations, it is a weak and easily-challenged position nowadays because there are a number of appropriate and accessible regression-like models for categorical and limited dependent variables.

This seminar is designed to introduce students to some of the most commonly used models for categorical and limited dependent variables. We explore a series of models that are both popular and appropriate for categorical dependent variables: binary logistic regression, multinomial logit models, ordered logit, models for count data, and event-history (or "survival") models. The objective throughout the seminar will be to provide students with an understanding of (a) when particular models are appropriate, (b) the basic logic of various models, (c) how model results are interpreted and evaluated, and (d) how to conduct "hands on" analyses using Stata software. Given that each model covered in this seminar could be (and often is) the subject of a semester-long course, the main goal is for students to gain an awareness of and appreciation for alternatives to linear regression that are more appropriate for categorical and limited dependent variables. Those who seek rigorous mathematical treatments of these models or full-term coverage of particular models should pursue courses in the Statistics Department.

Readings

We will make use of one main book which should be at the university bookstore: Long, J. Scott, and Jeremy Freese. 2006. *Regression Models for Categorical Dependent Variables Using Stata. Second Edition*. College Station, TX: Stata Corporation. That text is subsequently referred to here as *RMCD*. Additional reading material will be available via an informal coursepack that will be described in class.

Grades and Attendance

Grades will be based on participation (20%) and a series of data-analysis projects (80%). The data-analysis projects will be interspersed throughout the term; they will be described in more detail as the term unfolds. Please attend our class sessions. I reserve the right to administratively withdraw students with more than two absences.

Class Schedule

| Date | Topic / Readings |
|------------------|---|
| Tu 8/18 -Th 8/20 | Welcome and Overview; a Zippy Review of Ordinary Least Squares Regression; Overview of Stata; Drive-by of the Tobit Model Readings: review old class notes or books on regression; Chapters 1 - 3 in <i>RMCD</i> . |

| Date | Topic / Readings |
|-------------------|---|
| Tu 8/25 - Th 8/27 | <p>Regression for Binary Outcomes: Purpose, Logic, Interpretation, and Estimation</p> <p>Readings: Chapter 4 in <i>RMCD</i>; Pp. 1-30 and 74-81 in Fred C. Pampel's (2000) <i>Logistic Regression: A Primer</i>.</p> |
| Tu 9/1 | <p>Regression for Binary Outcomes: Examples of Published Research</p> <p>Readings: Clay-Warner, Jody. 2002. "Avoiding Rape: The Effects of Protective Actions and Situational Factors on Rape Outcomes." <i>Violence and Victims</i> 17(6): 691-705.</p> <p>Maume, David J. 2008. "Gender Differences in Providing Urgent Childcare among Dual-earner Parents." <i>Social Forces</i> 87(1): 273-97.</p> <p>Phillips, Scott. 2009. "Status Disparities in the Capital of Capital Punishment." Forthcoming in <i>Law & Society Review</i>.</p> <p>Schnittker, Jason, Jeremy Freese, and Brian Powell. 2003. "Who Are Feminists and What Do They Believe?" <i>American Sociological Review</i> 68:607-22</p> |
| Th 9/3 - Tu 9/8 | <p>Multinomial Logit: Purpose, Logic, Interpretation, and Estimation</p> <p>Readings: Chapter 6 in <i>RMCD</i>; Pp. 60-71 in Alfred Demaris (1992) <i>Logit Modeling: Practical Applications</i>.</p> |
| Th 9/10 | <p>Multinomial Logit: Examples of Published Research</p> <p>Readings: Brooks, Clem. 2000. "Civil Rights Liberalism and the Suppression of a Republican Political Realignment in the United States, 1972 to 1996." <i>American Sociological Review</i> 65:483-505.</p> <p>Earl, Jennifer, Sarah A. Soule, and John D. McCarthy. 2003. "Protest Under Fire? Explaining the Policing of Protest." <i>American Sociological Review</i> 68: 581-606.</p> <p>Reynolds, Jeremy. 2003. "You Can't Always Get the Hours You Want: Mismatches between Actual and Preferred Work Hours in the U.S." <i>Social Forces</i> 81(8): 1171-99.</p> <p>Wight, Vanessa R., Sara B. Raley, and Suzanne M. Bianchi. 2008. "Time for Children, One's Spouse and Oneself among Parents Who Work Nonstandard Hours." <i>Social Forces</i> 87(1):243-71.</p> |
| Tu 9/15 | <p>Discussion of Analysis Projects and Material Covered To Date</p> |
| Th 9/17 - Tu 9/22 | <p>Regression for Ordered Outcomes: Purpose, Logic, Interpretation, and Estimation</p> <p>Readings: Chapter 5 in <i>RMCD</i>; Pp. 114-47 in Scott Long (1997) <i>Regression Models for Categorical and Limited Dependent Variables: Analysis and Interpretation</i>.</p> |
| Th 9/24 | <p>Regression for Ordered Outcomes: Examples of Published Research</p> <p>Readings: Craemer, Thomas. 2009. "Psychological 'Self-Help Overlap' and Support for Slavery Reparations." <i>Social Science Research</i> 38:668-80.</p> <p>Emerson, Michael O., George Yancey, and Karen J. Chai. 2001. "Does Race Matter in Residential Segregation? Exploring the Preferences of White Americans." <i>American Sociological Review</i> 66:922-35.</p> |

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|---------------------|---|
| | <p>Hill, Mark E. 2002. "Race of the Interviewer and Perception of Skin Color: Evidence from the Multi-City Study of Urban Inequality." <i>American Sociological Review</i> 67:99-108.</p> <p>Roth, Louise Marie, and Jeffrey C. Kroll. 2007. "Risky Business: Assessing Risk Preference Explanations for Gender Differences in Religiosity." <i>American Sociological Review</i> 72(April):205-20.</p> |
| Tu 9/29 - Th 10/1 | <p>Comparing Coefficients Across Equations: Conceptual Issues and the Use of Heterogeneous Choice Models</p> <p>Readings: Allison, Paul. 1999. "Comparing Logit and Probit Coefficients Across Groups." <i>Sociological Methods & Research</i> 28:186-208.</p> <p>Williams, Richard. 2009. "Using Heterogeneous Choice Models to Compare Logit and Probit Coefficients Across Groups." <i>Sociological Methods & Research</i> 37(4):531-59.</p> <p>Williams, Richard. 2008. "Estimating Heterogeneous Choice Models in Stata." Unpublished Manuscript.</p> |
| Tu 10/6 | <p>An Example of Research-in-Progress: Victim Gender and Death Sentencing</p> <p>Readings: None. Listen and learn. Heckle and mock. Your choice.</p> |
| Th 10/8 | No Class Today: Preparation Day for Next Tuesday's Session |
| Tu 10/13 | Discussion of Analysis Projects and Material Covered To Date |
| Th 10/15 - Tu 10/20 | <p>Models for Count Data: Purpose, Logic, Interpretation, and Estimation</p> <p>Readings: Chapter 8 in <i>RMCD</i>; Beck, E. M., and Stewart E. Tolnay. 1995. "Analyzing Historical Count Data: Poisson and Negative Binomial Regression Models." <i>Historical Methods</i> 28 (Summer): 125-31.</p> |
| Th 10/22 | <p>Models for Count Data: Examples of Published Research</p> <p>Readings: Cornwell, Benjamin, Edward O. Laumann, and L. Philip Schumm. 2008. "The Social Connectedness of Older Adults: A National Profile." <i>American Sociological Review</i> 73(April):185-203.</p> <p>Isaac, Larry, and Lars Christiansen. 2002. "How the Civil Rights Movement Revitalized Labor Militancy." <i>American Sociological Review</i> 67:722-46.</p> <p>Kalleberg, Arne L., Barbara F. Reskin, and Ken Hudson. 2000. "Bad Jobs in America: Standard and Nonstandard Employment Relations and Job Quality in the United States." <i>American Sociological Review</i> 65:256-78.</p> <p>Okamoto, Dina G. 2006. "Institutional Panethnicity: Boundary Formation in Asian-American Organizing." <i>Social Forces</i> 85(1):1-25.</p> |
| Tu 10/27 - Th 10/29 | <p>Event History or "Survival" Analysis: Discrete-Time Models</p> <p>Readings: Pp. 9-22 in Paul D. Allison (1984) <i>Event History Analysis: Regression for Longitudinal Event Data</i>.</p> |

| Date | Topic / Readings |
|--------------------|---|
| Tu 11/3 | <p>Discrete-Time Event History Models: Examples of Published Research</p> <p>Readings: Rojek, Dean G., James E. Coverdill, and Stuart Fors. 2003. "The Impact of Victim Impact Panels on DUI Rearrest Rates: A Five-Year Follow-Up." <i>Criminology</i> 41(4): 1319-40.</p> <p>South, Scott J. 2001. "Time-Dependent Effects of Wives' Employment on Marital Dissolution." <i>American Sociological Review</i> 66:226-245.</p> <p>Staff, Jeremy, and Jeylan T. Mortimer. 2007. "Educational and Work Strategies from Adolescence to Early Adulthood: Consequences for Educational Attainment." <i>Social Forces</i> 85(3):1169-94.</p> <p>Sweeney, Megan M. 2002. "Two Decades of Family Change: The Shifting Economic Foundations of Marriage." <i>American Sociological Review</i> 67:132-47.</p> |
| Th 11/5 - Tu 11/17 | <p>Event History or "Survival" Analysis: Parametric Models and Cox Regression</p> <p>Readings: Pp. 22-66 in Paul D. Allison (1984) <i>Event History Analysis: Regression for Longitudinal Event Data</i>.</p> |
| Th 11/19 | <p>Parametric Models and Cox Regression: Examples of Published Research</p> <p>Readings: Sucoff, Clea A., and Dawn M. Upchurch. 1998. "Neighborhood Context and the Risk of Childbearing Among Metropolitan-Area Black Adolescents." <i>American Sociological Review</i> 63:571-585. (Cox Model)</p> <p>Ramirez, Francisco O., Yasemin Soysal, and Suzanne Shanahan. 1997. "The Changing Logic of Political Citizenship: Cross-National Acquisition of Women's Suffrage Rights, 1890 - 1990." <i>American Sociological Review</i> 62:735-45. (Piecewise Exponential Model)</p> <p>Warren, John Robert, and Rachael B. Kulick. 2007. "Modeling States' Enactment of High School Exit Examination Policies." <i>Social Forces</i> 86(1):215-29.</p> |
| Tu 12/1 - Th 12/3 | <p>Discussion of Analysis Projects and Material Covered To Date</p> |

Human Rights Statement

All students should know that the Department of Sociology has a Human Rights Committee for the resolution of student grievances. Any student registered for a sociology course at the University of Georgia who feels that he or she has not been treated in a fair or professional manner by an instructor is advised to follow these procedures:

(1) The student should discuss his or her problems with the instructor of the course, unless extenuating circumstances prohibit this. (2) If that discussion does not resolve the grievance, the student should then discuss the problem with the Head of the Department of Sociology. (3) If that discussion does not resolve the grievance to the satisfaction of the student, the student may request the activation of the Human Rights Committee by submitting a letter to the Chairman of the Human Rights Committee, Department of Sociology, University of Georgia.

The Human Rights Committee will have the responsibility of investigating all charges in accordance with procedures on file in the Sociology office, copies of which are available to students. The Committee will also have the responsibility of making recommendations in writing to the Head, copies of which will be made available to the student complainant and the instructor involved. The Department Head will review the recommendations and make a decision in writing, with copies to the students complainant and the instructor or staff member involved. Any appeal of that decision must be to the Dean of the college of Arts and Sciences.