University of Guelph
College of Social and Applied Human Sciences
Department of Sociology and Anthropology
SOC 6660: Advanced Regression Methods

Instructor: David Walters
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Prerequisite
Sociology 6130, or permission by the instructor

Course Objectives

The purpose of this honors level undergraduate seminar is to provide you with an *introduction* to a number of advanced statistical methods that are commonly used in policy analysis. These techniques are also among the most commonly used in the social sciences, and are used extensively in areas such as education, business, health sciences, epidemiology, and biostatistics. We will cover generalized linear models, structural equation models, and hierarchical linear models (HLM). We will also look at common statistical methods available for longitudinal data (i.e. data collected over time), including event history models, time series analysis, and mixed models (HLM) for repeated measures. The goal of this class is to provide you with an overview of these techniques, including when, why, and how they should be used, and to help you understand what type of data (cross-sectional, longitudional etc.) are needed in order to use each technique. (Some discussion of particular statistical software available for each technique will also be provided) While this course is structured to give you an overview of a broad number of techniques, the final essay is designed so that you will become very familiar with one particular method.

For those considering graduate school, the statistical methods overviewed in this class can later be used for a master's thesis, or doctoral dissertation. Thus, this class will be of particular interest to students considering graduate studies in the social justice and equity program. Likewise, students interested in pursuing a job in the private or public sector (i.e. Statistics Canada), especially those considering a career as a research consultant or policy analyst, should find this course to be particularly useful.

Grading
Essay (draft): 15%
Class presentation: 15%
Class participation: 20%
Test: 15%
Final Paper: 35%

The deadline to withdraw from this course without academic penalty is November 5th
You will have received at least 25% of your grade in the course before this date.

Course material
There is no required textbook for this class. A weekly reading list will be provided for you during our first class.

Topics (Tentative Schedule)
Students are expected to keep up-to-date with the weekly topics and readings

Week 1
Introduction to the course
Overview of topics

Week 2
The issue of causality

Week 3
Addressing causal relationships
Experimental versus survey research
Organizing data

Week 4
Review: Ordinary least squares regression
Limitations of the general linear model

Week 5
Regression models with categorical dependent variables
(generalized linear models)

Week 6
Path analysis

Week 7
Structural equation modeling
** Draft of essay due **

Week 8
Hierarchical linear models

Week 9
Longitudinal Data
Overview

Week 10
In-Class Test

Week 11
Event history analysis

Week 12
Time Series Analysis

Week 13
Review: Putting the methods in perspective

The due date for the final paper will be assigned in class.

Late papers (both draft and final) will be penalized at 2 percent per day.

Weekly Readings (specific page numbers will be assigned in class).
Books without a call number have been ordered to the libarary

Regression Analysis

David's article "Recycling" (posted on WebCT)

Interpreting and using regression	Achen, Christopher
HA 31.3 A33 1982	RES3H
Multiple regression in practictice	Berry, William Dale
QA 278.2 B47 1985	RES3H
Applied regression : an introduct	Lewis-Beck, Michael
HA 31.3 L48 1980	RES3H

Logistic Regression

Applied logistic regression an	Menard, Scott W.
QA 278.2 M46 2002	RES3H
39157008258553	IN LIBRARY

Pampel, Fred (2000) *Logistic Regression: A primer* Series: Quantitative Applications in the Social Sciences, No. 132. Thousand Oaks, CA: Sage Publications.

Path Analysis and Structural Equation Modeling

The logic of causal order Davis, James Allan,
HA 29 D335 1985 RES3H
39157004440718 IN LIBRARY

Finkel, Steven (1995) *Causal Analysis with Panel Data*. Series: Quantitative Applications in the Social Sciences, No. 105. Thousand Oaks, CA: Sage Publications.,

Asher, Herbert (1983) *Causal modeling, second edition.* Series: Quantitative Applications in the Social Sciences, No. 3. Thousand Oaks, CA: Sage Publications.

Hierarchical Linear Modeling

Luke, Douglas (2004) *Multilevel modeling,* Series: Quantitative Applications in the Social Sciences, No. 143. Thousand Oaks, CA: Sage Publications.

Internet Resources

Goldstein, H. (1995). Multilevel Statistical Models. Kendall's Library of Statistics. Internet Edition: www.arnoldpublishers.com/support/goldstein.htm

Hox, J. J. (1995). Applied Multilevel Analysis. T. T. Publikaties: Amsterdam: www.fss.uu.nl/ms/jh/publist/amaboek.pdf

Hox, J. J. (1998). Multilevel modeling: When and why. In I. Balderjan, R. Mathar & M. Schader (Eds.), Classification, data analysis, and data highways (Pp. 147-154). New York: Springer Verlag. www.fss.uu.nl/ms/jh/publist/whenwhy.pdf

Kreft, I. G. G. (1996). Are multilevel techniques necessary? An overview, including simiulation studies. www.calstatela.edu/faculty/ikreft/quarterly/quarterly.html

Longitudinal Data Analysis

Applied longitudinal data anal Singer, Judith D.
H 62 S47755 2002 RES3H
39157008273354 IN LIBRARY

Menard, Scott (2001) Longitudinal research, second edition. Series: Quantitative Applications in the Social Sciences, No. 76. Thousand Oaks, CA: Sage Publications.

Event History Analysis (survival/hazard) Analysis

Event history analysis : regre — Allison, Paul David.
D 16 A39 1984 — RES3H
39157004440924 — IN LIBRARY

Applied longitudinal data anal — Singer, Judith D.
H 62 S47755 2002 — RES3H
39157008273354 — IN LIBRARY

Menard, Scott (2001) *Longitudinal research, second edition*. Series: Quantitative Applications in the Social Sciences, No. 76. Thousand Oaks, CA: Sage Publications.

Time series Analysis

Time series analysis : regress — Ostrom, Charles W.
HA 30.3 O88 1990 — RES3H
39157006670916 — IN LIBRARY

Sayrs, Lois (1989) *Pooled time series analysis*. Series: Quantitative Applications in the Social Sciences, No. 76. Thousand Oaks, CA: Sage Publications.

Menard, Scott (2001) *Longitudinal research, second edition*. Series: Quantitative Applications in the Social Sciences, No. 76. Thousand Oaks, CA: Sage Publications.

Berry, William D. and Stanley Feldman. (1985) *Multiple Regression in Practice*. Series: Quantitative Applications in the Social Sciences, No. 50. Thousand Oaks, CA: Sage Publications.

Survey and experimental research

Introduction to survey samplin — Kalton, Graham.
HA 29 K318 1983 — RES3H
39157004440759 — IN LIBRARY

Research designs — Spector, Paul E.
H 62 S7296 1981 — RES3H
39157004440783 — IN LIBRARY

Submitting your final essay to Turnitin.com

Our university subscribes to Turnitin.com, an online company that evaluates essays for plagiarism. Every student in the class must register with Turnitin.com within the first two weeks of class and then, later in the term, submit an electronic copy of their essay (see above) to this same website.

To enrol as a student user at Turnitin.com:

- Access www.turnitin.com; hit Login and "Click here to get started," then follow the instructions to establish your own personal information page. You will need to give your email address and a password (of your choosing)

Once your account is set up, add this course by following the instructions given.

Once your essay is complete, submit it to the Turnitin site as per the instructions given on the site itself. The date of submission will be noted, and this will determine if the electronic copy of your assignment was submitted before the deadline (see below). Please note: if your upload is successful, you will reach a screen telling you that and you will also be sent an email message giving you a receipt number. If you don't receive such a receipt, you should check your portfolio at Turnitin.com to see if your essay is there; if it is not, you will need to try again.

More information on what Turnitin.com does, and a more detailed account of the procedures for registering as new used and for uploading essays, can be found at http://turnitin.uoguelph.ca/students.htm

Please read the following…

E-mail Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the university and its students.

When You Cannot Meet a Course Requirement...

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor [or designated person] in writing, with your name, id#, and e-mail contact. Where possible, this should be done in advance of the missed work or event, but otherwise, just as soon as possible after the due date, and certainly no longer than one week later. Note: if appropriate documentation of your inability to meet that in-course requirement is necessary, the course instructor, or delegate, will request it of you. Such documentation will rarely be required for course components representing less than 10% of the course grade.

Such documentation will be required, however, for Academic Consideration for missed end-of-term work and/or missed final examinations. See the undergraduate calendar for information on regulations and procedures for Academic Consideration. (http://www.uoguelph.ca/undergrad_calendar/c08/c08-ac.shtml)

Drop Date

The last date to drop one-semester Fall 2006 courses, without academic penalty, is **Monday, November 6th** . For regulations and procedures for Dropping Courses, see the Undergraduate Calendar. (http://www.uoguelph.ca/undergrad_calendar/c08/c08-drop.shtml)

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and enjoins all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. The University of Guelph takes a serious view of academic misconduct, and it is your responsibility as a student to be aware of and to abide by the University's policy. Included in the definition of academic misconduct are such activities as cheating on examinations, plagiarism, misrepresentation, and submitting the same material in two different courses without written permission from the relevant instructors. To better understand your responsibilities, read the Undergraduate Calendar. (http://www.uoguelph.ca/undergrad_calendar/c01/index.shtml) for a statement of Students' Academic Responsibilities; also read the full Academic Misconduct Policy (http://www.uoguelph.ca/undergrad_calendar/c08/c08-amisconduct.shtml). You are also advised to make use of the resources available through the Learning Commons (http://www.learningcommons.uoguelph.ca/) and to discuss any questions you may have with your course instructor, TA, or academic counsellor.

Instructors have the right to use software to aid in the detection of plagiarism or copying and to examine students orally on submitted work. For students found guilty of academic misconduct, serious penalties, up to and including suspension or expulsion, can be imposed. Hurried or careless submission of work does not exonerate students of responsibility for ensuring the academic integrity of their work. Similarly, students who find themselves unable to meet course requirements by the deadlines or criteria expected because of medical, psychological or compassionate circumstances should review the university's regulations and procedures for Academic Consideration in the calendar (http://www.uoguelph.ca/undergrad_calendar/c08/c08-ac.shtml) and discuss their situation with the instructor and/or the program counsellor or other academic counsellor as appropriate.