

**HS 237B: INTRODUCTION TO HEALTH SERVICES RESEARCH METHODS**  
**Winter 2005**  
**Tuesdays and Thursdays 10-11:50 AM, Room 41-235 CHS**

**Instructors**

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**Objectives**

The purpose of this course is to provide experience in conducting applied statistical analysis using cross-sectional data in the area of health services research. To illustrate the methods, the class will conduct weekly assignments using data provided by the instructor. Building on knowledge gained in HS 237A about appropriate study designs, the successful student will leave this course with an understanding of how to: (1) conduct empirical analyses using cross-sectional data, as well as how to test for various threats to validity, and (2) use the STATA statistical package to conduct multivariate analyses using continuous and dichotomous dependent variables.

**Assignments**

To develop fundamental skills in using the STATA statistical package, students will be expected to complete 9 weekly computer assignments. The schedule for when each assignment is due can be found on the class web site. These assignments account for 45% of the final grade.

Students will also be required to write a paper 10-15 double-spaced pages in length that addresses a research question using multivariate analysis. The paper should be written in a format and style suitable for submission to a peer-reviewed health services journal. Specifically, the paper should have the following sections:

1. Introduction, including statement of research question and literature review,
2. Methods, including description of data and specification of conceptual model and estimation model,
3. Results, including a Table of Descriptive Statistics and model finding summarized in succinct, formatted tables (i.e., no photocopies of STATA or SAS output),
4. Discussion.

The paper can use any cross-sectional database of interest to the student, including the Medical Expenditures Panel Survey (MEPS) and the California Health Interview Survey (CHIS), although students should explain in their paper proposal how they are going to obtain the data for their paper, and whether it has sufficient sample and variables to investigate the proposed research topic. This assignment will be due **Tuesday, March 22, 2005**. This assignment will be 50% of the final grade.

Class participation will account for the remaining 5% of the final grade.

### **Textbooks**

The following required paperback textbooks are used in this course, all available in the Medical Bookstore:

1. Katz, Michael, *Multivariable Analysis: A Practical Guide for Physicians*, New York: Cambridge University Press, 1999.
2. Hamilton, Lawrence C., *Statistics with STATA*, Belmont, CA: Duxbury Press, 2002.
3. Kennedy, Peter, *A Guide to Econometrics, 5<sup>th</sup> Edition*, Cambridge, MA: MIT Press, 2003.

### **Handouts (downloadable from Internet)**

Dowd B, Town R. Does X really cause Y? Washington, DC: AcademyHealth, September 2002, <http://hcfo.net/pdf/xy.pdf>.

Manning WG. The logged dependent variable, heteroskedasticity, and the retransformation problem. *Journal of Health Economics* 1998;17:283-295.

Ai C, Norton EC. Interaction terms in logit and probit models. *Economics Letters* 2003;80(1):123-129.

### Schedule of Classes

Session	Topic	Readings
1	Overview of Course Introduction to Multivariate Analysis in Health Service Research	Kennedy, Chap. 21
2	Model Development and Variable Selection	Hamilton, Chap. 2-4; Katz, Chap. 4
3	Missing Data and Imputation; Multiple Imputation	
4	Presenting OLS and Logistic Regression Results in Peer-Reviewed Publications Requirements for Final Paper	Katz, Chap. 14
5	Assumptions of OLS Models	Kennedy, Chap. 3; Hamilton, Chap. 6; Katz, Chap. 5
6	Violations of OLS Assumptions Omitted Variables	Hamilton, Chap. 7; Katz, Chap. 10; Dowd and Towne (2002)
7	Multicollinearity Pooled versus Stratified Analysis: Chow Test	Kennedy, Chap. 11, 14; Katz, Chap. 6
8	Propensity Scores	
9	First-Difference and Fixed Effects Models	
10	Random Effects Models Comparison of Fixed and Random Effects	Kennedy, Chap. 17
11	Variable Transformations and Retransformations	Manning (1998)
12	Variable Transformations and Retransformations (cont.)	
13	Variable Transformations and Retransformations (cont.)	
14	Generalized Linear Models <b>PAPER OUTLINES DUE</b>	
15	Survival Analysis	Katz, Chap. 11; Hamilton, Chap. 11
16	Survival Analysis (cont.)	
17	No class	
18	Survival Analysis (cont.)	
19	Sampling Theory and Survey Weights	
20	Micro-Simulation Models	
	<b>PAPERS DUE: TUESDAY, MARCH 22</b>	