HPM 771
Introduction to Regression Models for Health Services Research
(Credit Hours: 3)
Department of Health Policy and Management
Gilling School of Global Public Health

Spring 2018 Syllabus
Class Location: 2304 McGavran-Greenberg
Class Meeting Times: MW 9:05-10:20*

Faculty:	**Sally C. Stearns**
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*Sally is available for questions from 10:20-11:00 am after class, for office hours, and for individual meetings by appointment/request.

Course Overview

This course provides an introduction to regression models used in health services research. We will cover both ordinary least squares regression models, in which the dependent variable is continuous, and logit models, in which the dependent variable is binary. Complex survey methods are covered. We will focus on applications of these models in health services research rather than theoretical underpinnings. We will use Stata software in the course for examples and assignments. The course uses a combined lecture with team-based learning approach.

Learning Objectives and HPM Competencies

	Course Learning Objective	*Competencies*
1	To understand the regression framework and the basic assumptions of ordinary least squares and logit regression models.	Analytical Thinking
2	To understand how to estimate and interpret results from OLS and logit models.	Analytical Thinking
3	To conduct original research using OLS, including being able to describe a data set, use survey weights, estimate an OLS model, and provide a coherent and concise description of the results.	Communication Skills Innovative Thinking
4	To be an informed reader of the health services research literature which uses OLS and logit models	Analytical Thinking

Resources

Website

HPM 771 has its own website using Sakai software. (See http://sakai.unc.edu.) The most current syllabus and class schedule are posted on the website.

Be sure to check that the email address Sakai has for you is correct. Click on the "My Workspace" tab in Sakai and then click on "Profile." If you need to change your email address, click on "Edit" under "Contact Information" and follow the directions. Note that you may need to change your email address in both Sakai and the On-Line Campus Directory.

Text & Other Course Materials

The required materials are:

- Text: <u>Applied Statistics for the Social and Health Sciences</u>, by Rachel A. Gordon. 2012. All Chapter readings in the detailed schedule refer to chapters in this text.

- StataCorp. 2014. *Stata Statistical Software: Release 14.0* College Station, TX: Stata Corporation. (www.stata.com)

  The Stata manuals are available in the computer lab or in the department. Students who plan to use Stata from home or on a regular basis may want to purchase their own copy. Explanations of many of the procedures and tests are surprisingly good. Earlier versions of Stata are generally acceptable.

- Lecture notes will be made available to students through Sakai.

Additional readings from recent journal articles will be required for the course and are available on Sakai.

For students who are interested, a solid econometrics text provides a more detailed understanding of the theoretical background for the statistical models. The following are good general textbooks; older and current editions are useful. These texts are *not* required for this course.

- Wooldridge, Jeffrey M. <u>Introductory Econometrics: A Modern Approach</u>. South-Western College Publishing
- Cameron, A.C. and P.K. Trivedi. <u>Microeconometrics</u>. New York: Cambridge University Press.
- Gujarati, D.N. <u>Basic Econometrics</u>. Third edition. New York: McGraw-Hill, Inc.
- Kennedy, P. <u>A Guide to Econometrics</u>. Cambridge: MIT Press.

Web Sources: National Survey Data Sets

We will use the National Health and Nutrition Survey (NHANES) and the Medical Expenditure Panel Survey (MEPS) for class examples and homework assignments. These data are available for free from the National Center for Health Statistics (http://www.cdc.gov/nchs/nhanes.htm) and the Agency for Healthcare Research and Quality (AHRQ: www.meps.ahrq.gov).

Requirements and Expectations

Prerequisites

BIOS 600 (http://sph.unc.edu/bios/bios-600-faqs/) or an equivalent graduate statistics course and HPM 880 (http://sph.unc.edu/files/2014/06/hpm_880_syllabus.pdf) are prerequisites for HPM 771. Waivers to course pre-requisites must be approved.

Course Format

This course includes lecture and team components. Teams will be formed on the first day of class. Team assignments may be both *critical*, in terms of analyzing manuscripts, and *constructive*, in terms of developing estimates. Some team assignments build on homework questions. Both team assignments and individual homework assignments are intended to give students further practice applying the course materials and experience working in a research team. Team participation may be evaluated by other team members and will constitute a small fraction of the final grade.

Readings:

Students should at least skim the readings prior to class. See the detailed Course Schedule for specific dates. More detailed reading will likely be beneficial after class once the key points are identified.

Assessment Types:

This course will use several different types of assessments to ensure that course competencies are met. These types are described below. The weighting of each type of assessment is discussed under Evaluation Methods.

Homework problems

Homework assignments will be required most weeks during the semester. Homeworks should be done individually, not in teams. Please see the honor code below for expectations about homework assignments.

Homework assignments should be submitted in Word format to facilitate comments by the instructor. Sections of the Stata log should be included for many of the applied questions. Because Stata output is easiest to read in proportional fonts (such as Courier New), read/copy the Stata log file into a Word document and change the font to Courier New (8 point may help shrink to fit to the word page limits, but decreasing the margins in Word to 0.5" may also help). Add edits/comments as needed to identify key points.

Generally, homeworks will be given full credit for submission. Selected questions may be graded, and answers will be provided.

The lowest HW assignment score will be dropped from grading.

Weekly Office Hours and Problem Session Review

The period immediately following class will be used to review problem set answers and Stata coding for upcoming homeworks. Students should plan to be available during the scheduled problem session time to the extent possible. Students who have problems on the HW assignment as well as those who could benefit from extra review should plan to attend the problem sessions.

Team Assignments

Team assignments are designed to provide an opportunity for students to apply the skills they have learned in the readings. Team assignments are intended to be completed *during* class; teams are not expected to meet outside of class time. However, all students should be sure to read the article for a team assignment **before** class.

Most Team Assignments involve interpretation of published work conducted by others. Most team assignments will require minimal write-up by team members. The results of team assignments will be discussed in class.

Brief Papers

Students will write two brief papers (5 pages each) for this course. Papers will use regression techniques taught in class to answer an assigned research question. Papers will be graded on

students' ability to use and interpret appropriate regression models and to clearly and succinctly describe their results.

Final Presentation

The course will conclude with a 10-15 minute individual presentation during the last two-three scheduled classes. The presentation will provide draft results for the second paper.

Midterm and Final Exams

This course will have a midterm and a final exam, both of which will be taken individually. The midterm will be scheduled during class time before spring break. The midterm will be closed book, while the final exam will be open book. The final exam will be cumulative and will be taken via Sakai at a time/location of your choosing during May 5-7th, with with submission due by noon on May 7th per the University exam schedule (http://registrar.unc.edu/academic-calendar/final-examination-schedule-spring/). Please make sure you know the dates of these exams; alternate dates will only be scheduled in cases of serious illness.

Course Readings

Readings should generally be completed **before** the class for which they are assigned.

- Unless otherwise indicated, assignments for the class are due by the beginning of class. Completed assignments should be uploaded on Sakai if possible. Paper versions will also be accepted if hand-written answers are most efficient. These should be turned in at the beginning of the class in which they are due.

Late Assignment Policy

Assignments should be submitted on Sakai prior to class on the relevant date. Late assignments will not be accepted, except in extreme circumstances with the approval of the instructor.

Cell Phones and Laptops

Turn off cell phones in class and during exams. Laptops may be used in class only for taking notes and running Stata. Please be considerate when using laptops as they are noisy and distracting.

Ethics Guidelines, Training, and IRB Requirements for Student Research

Student research at UNC should be conducted under guidelines provided by the Institutional Review Board (IRB) and Office of Human Research Ethics:
http://research.unc.edu/offices/human-research-ethics/

Helpful information (including required training and an overview of the process) is provided at:
http://research.unc.edu/offices/human-research-ethics/getting-started/

For this class, most students will use survey data that can be downloaded from the web, and you will not need to see IRB review. However, if you use other data for your papers for this course, your work *may* require IRB review. Please review the extremely helpful document provided by the Office of Undergraduate Research to understand the requirements and process:
https://our.unc.edu/files/2013/02/student_research_irb_guidance_16_Feb_20121.pdf
In particular, the document at this link can help you determine if you need IRB review and approval for your research.

Receiving IRB approval takes some time, so students who anticipate needing approval should start this process several weeks before the research has actually begun. In order to submit to the IRB, you must have received an ethics certificate after successfully completing the CITI module. If you have not done so, please start this process immediately.

Evaluation Methods

Grade Components

The course grade will incorporate performance in the areas listed below.

Grading:	HW Assignments	15%	(Full credit for completion)
	Class Quizzes	5%	(Full credit for completion)
	Team Assignments	10%	(Full credit for completion)
	First Paper	15%	
	Second Paper	20%	
	Midterm Exam	15%	
	Final Exam	15%	
	Final Presentation	5%	

Final grades:	H 90% or higher
	P 70-90%
	L 60-70%
	F <60%

UNC Honor Code

The principles of academic honesty, integrity, and responsible citizenship govern the performance of all academic work and student conduct at the University as they have during the long life of this institution. Your acceptance of enrollment in the University presupposes a commitment to the principles embodied in the Code of Student Conduct and a respect for this most significant Carolina tradition. Your reward is in the practice of these principles.

Your course participation comes with the expectation that your work will be completed in full observance of the Honor Code. Academic dishonesty in any form is unacceptable. Any breach in academic integrity, however small, strikes destructively at the University's life and work.

If you have any questions about your responsibility or the responsibility of faculty members under the Honor Code, please consult with someone in either the Office of the Student Attorney General (966-4084) or the Office of the Dean of Students (966-4042).

Read "The Instrument of Student Judicial Governance" (http://instrument.unc.edu).

Specific honor code guidelines for HPAA 771 are as follows:

Students are allowed and encouraged to collaborate on team assignments. Students are also reminded that they must at all times abide by the UNC Code of Student Conduct.

Homework assignments should be completed individually. Students should not consult any available homework answers from prior years or from sources available on the internet, including resources provided by the textbook publisher. Students may work together *before* they begin the write-up of their homework assignments, but written homework answers **should not be shared prior to submission**, except as directed in team assignments.

Recognizing, Valuing, and Encouraging Diversity

The importance of diversity is recognized in the mission statement of HPM. In the classroom, diversity *strengthens* the products, *enriches* the learning, and *broadens* the perspectives of all in the class. Diversity requires an atmosphere of inclusion and tolerance, which oftentimes challenges our own closely-held ideas, as well as our personal comfort zones. The results, however, create a sense of community and promote excellence in the learning environment. This class will follow principles of inclusion, respect, tolerance, and acceptance that support the values of diversity.

Diversity includes consideration of: (1) life experiences, including type, variety, uniqueness, duration, personal values, political viewpoints, and intensity; and (2) factors related to "diversity of presence," including, among others, age, economic circumstances, ethnic identification, family educational attainment, disability, gender, geographic origin, maturity, race, religion, sexual orientation, social position, and veteran status.

Disability Accommodation

UNC-CH supports all reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability, or a pregnancy complication resulting in difficulties with accessing learning opportunities.
All accommodations are coordinated through the UNC Office of Accessibility Resources & Services (ARS), http://accessibility.unc.edu; phone 919-962-8300, email accessibility@unc.edu. Students must document/register their need for accommodations with ARS before accommodations can be implemented.

Course Evaluation

HPM participates in the UNC-CH's online course evaluation system. Your responses will be anonymous, with feedback provided to the instructor in the aggregate. Open-ended comments will be shared with instructors, but not identified with individual students. Your participation in course evaluation is an expectation, since providing constructive feedback is a professional obligation. Feedback is critical, moreover, to improving the quality of our courses, as well as for instructor assessment.