Course Title: Health Services and Policy Research Methods
Course Number: HSAP 0614J
Course Location: Piscataway
Course Date & Time: Wednesday, 6:00 p.m.- 9:00 p.m.
Course Instructor: Irina B. Grafova, Ph.D, Assistant Professor, grafovib@sph.rutgers.edu, 732-235-5619, SPH Building, Room 321
Office Hours: By Appointment
Course Assistant: N/A

Required Course Text:

Additional/Supplemental Readings/Resources: Required readings will consist of mostly textbook reading in the first part of the course and journal article reading in the second part of the course. Weekly readings are drawn from peer-reviewed journals from a variety of fields, including public health, health economics, epidemiology, and demography. For doctoral students all supplemental readings are required. For MHP students readings are designated either as required or as recommended but not required. The recommended but not required readings for MPH students are marked by (**).

Course Description: A great deal of health services and applied health policy research is based on the analysis of publicly available surveys of households, providers, and other institutions as well as analyses of administrative records. This course is designed to introduce students to the foundations of such secondary data analysis. The course will begin by introducing students to examples of survey data that are nationally representative or representative of state-specific populations, along with examples of data from administrative records. Next, students will learn how to conduct descriptive analyses of such data. Then, the course will concentrate on the most basic method of multivariate data analysis: Ordinary Least Squares (OLS). Using OLS as an estimation framework, students will learn about estimation issues common to various methods of multivariate analysis. These estimation issues include multicollinearity, heteroscedasticity, omitted variable bias, weighting of the data, and complex survey design. The final part of the course will be devoted to the central challenge in health service and policy research: identifying causal relationships. Students will be introduced to various methods of addressing this issue including instrumental variables, fixed and random effects, and natural experiments. The course is structured so that a theoretical discussion of a particular technique or estimation issues is followed by an example of how this technique was applied by researchers.
Selected Department Competencies Addressed: Each Department identifies competencies for each degree offered. The competencies addressed in this course for the MPH for the Department of Health Systems and Policy include:

- Use economic theories, concepts and methodologies in the analysis and evaluation of current health care issues and problems
- Apply quantitative and qualitative research methods in the analysis of health service and policy issues
- Assess and delineate public health policies and practices recognizing legal and ethical implications for individuals and populations

Please visit the Department webpages on the School of Public Health’s website at http://sph.rutgers.edu/ for additional competencies addressed by this course for other degrees and departments.

Course Objectives: By the completion of this course, students will be able to:

- find and choose the survey data most suitable for their needs and how to compare the advantages and disadvantages of various sources of data.
- identify and address methodological and estimation challenges in data analysis.
- plan analyses that will be helpful in distinguishing causal from non-causal relationships.
- Students will be able to compare various methods of identifying and specifying probable cause in a multivariate setting.

Course Requirements and Grading: In this section, Instructor should include

Student class and discussion participation 10%
Critique paper assignments (2x15%)= 30%
Project Proposal 45%
Project Proposal Presentation 15%

Student class and discussion participation grades will be based on attendance at lectures and comments and discussion of assigned readings in class.

Attendance is required and will be counted toward your final grade. Under exceptional circumstances, if a student needs to miss class, arrangements should be made in advance with the instructor.

No late assignments will be taken unless accompanied by a doctor’s written note or unless approved by the instructor beforehand.

In critique paper assignments students will read and critically analyze some of the latest papers in the area of health services and policy research, using the information obtained during the course.
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All critique papers should be typed with 12 point font, double-spaced with margins 1 inch on all four sides, and should be at least four pages long.

Please note that the critique paper should not be a summary of the paper you have read.

Critique papers should follow the following structure:

1. Some background on the topic (very brief).
2. Short summary of the purpose, hypothesis, methodology, results, conclusion of the study (studies).
3. Discussion of any problem with the methodology, data analysis, conclusions, etc. Are the conclusions justified? Include the positive aspects of the paper as well as the shortcomings of the study. How did the authors deal with methodological challenges? Are there estimation issues that have not been addressed? The bulk of the critique paper should be devoted to this section. Your grade will be based not only on your ability to summarize the research but also on your ability to understand and critique the study, applying the information from this course.

In the Project Proposal assignment, students should write a research proposal on a topic of their own choosing. The only requirement is that the topic be within the broad area of public health research and that the proposal is based on a large secondary data survey. The proposal should be typed with 12 point font, double-spaced with margins 1 inch on all four sides, and should be no more than ten pages long. The proposal should include the following sections:

1. Title page.
2. Abstract page. An abstract is a project summary and is written after the proposal is finished. The abstract may include a summary of the different sections of the proposal and highlight the importance of the project. (250 words maximum)
3. Introduction.
   a. Background and significance: Why is the research topic an important one?
   b. Describe you research questions: What questions do you want to get answers to? What does the previous literature tell us about this research topic? What are the gaps in the literature?
   c. Aims: What are the research questions to be answered by the proposed research? How does it address some of the knowledge gaps described above?
4. Data. Describe the survey data you are going to use and the variables of interest.
5. Methods. Describe how you are going to analyze the data. What models are you going to use. What methodological challenges you are likely to encounter? How are you going to address them?
6. References. Cite all articles referenced in your proposal in AJPH style. Make sure that all references are mentioned in your proposal.
Course Schedule: The schedule provided is only tentative and the instructor reserves the right to make any changes in the schedule. These changes will be announced in class.

Week 1: January 22
Survey and Administrative Data in Health Services and Policy Research
Week 1 will provide a brief overview of three main sources of data used in health services and policy research: national-level survey data, state-level survey data, and administrative data. What are strengths and weaknesses of these types of data? How should one choose what data to use?

- S&W chapter 1
- National-Level Survey Data
- State-Level Survey Data
- Administrative data

Week 2: January 29
Math and statistics review

Week 3: February 5
Class cancelled due to the inclement weather

Week 4: February 12
Outcome Measures, Descriptive Statistics
Depending on the research question and data availability, the outcome of interest will take different forms. For instance it could be a continuous measure (e.g. individual Body Mass Index), a dichotomous measure (e.g. whether have any disabilities or not, whether overweight or not), or a count measure (e.g. number of cigarettes smoked a day). Week 2 will start by introducing students to these various forms of outcome measures and to different ways of describing them, such as constructing and comparing sample means and sample distributions.

- S&W chapters 2,3,4; 6.2-6.6

Application:

Week 5: February 19
Ordinary Least Square (OLS) Model, Part I
This week will familiarize students with Ordinary Least Squares Model and will show how to recognize and treat common problems that violate the assumptions of OLS, such as multicollinearity, heteroscedasticity.

- S&W 6.7; 5.4; 6.1; pages 316-318;

Application:


Week 6: February 26
Ordinary Least Square (OLS) Model, Part II
Survey data are obtained by collecting data from samples of a population of interest. Frequently, data is collected disproportionately for groups of particular policy concern. Thus, a basic question for analyses of these data is whether such data should be weighted. What happens if complex survey design is not accounted for? How does one account for it?

- S&W chapter 17.5;
- "Table 2 from Sandra L. Hofferth and Sally Curtin "Poverty, Food Programs, and Childhood Obesity", Journal of Policy Analysis and Management (2005)

Application:


Week 7: March 5
Ordinary Least Square (OLS) Model, Part III
What to do if some observations are missing? Is measurement error a problem? What could be done about it? Should the outcome measure be measured on a natural scale or be transformed into other units (such as a natural logarithm)? What is the dummy variable trap?

- S&W p. 319-322; 201-202, chapter 8;
Application:

- Frederick J. Zimmerman and Janice F. Bell "Associations of Television Content Type and Obesity in Children" American Journal of Public Health 2010 100:2, 334-340.

Week 8: March 12
Dichotomous Outcomes
Critique assignment is due at the beginning of the class
This week will be devoted to the discussion how to analyze models with dichotomous outcomes. Linear probability, logit and probit models will be examined and compared. How to interpret the coefficients in logits and probits? What do odds ratios and marginal effects tell us? How to interpret a model with interaction terms?

- S&W chapter 11

Applications: Critique Assignment paper discussed

Week 9: March 19
No class

Week 10: March 26
Example: Medical Expenditure Data
This week will be devoted to the discussion of model choice issues using the example of modeling medical expenditures.

  http://www.unc.edu/~enorton/iHEA_Barcelona_slides.pdf#search=%22Modeling%20Health%20Care%20Costs%20and%20Counts%E2%80%9D%22

Application:

Week 11: April 2

Critique assignment is due at the beginning of the class

Identifying Causality: the Key Issue in Health Services and Policy Research.
Specifying a multivariate model to capture the relationship between a key variable of interest
and an outcome measure does not guarantee that the researcher has established a causal
relationship between these two variables. This section will start by introducing students to the
problem of identifying causality. What is endogeneity? What are structural and statistical
endogeneity? What is reverse causality? In the second part of the class, we shall discuss what
are structural equation and reduced form equations and how to estimate structural equations
using two-stage least squares (2SLS). The example of whether a causal relationship exists
between alcohol excise taxation and the consumption of alcohol will be discussed.

- S&W chapter 9
  and Financing and Organization, AcademyHealth.

Application: Discuss critique assignment paper

Week 12: April 9

Heckman Correction and Instrumental Variable (IV) Techniques
This will be devoted to instrumental variable techniques and the Heckman correction. How to
choose instruments? What is the weak instrument problem? What's the difference between
sample selection and endogeneity? What was the choice of instruments? How did authors
address such issues as the problem of weak instruments?

- S&W chapter 12
- Daniel Millimet. 2001. "What is the Difference between "Endogeneity" and "Sample-
  Selection Bias"? http://www.stata.com/support/faqs/statistics/endogeneity-versus-
  sample-selection-bias/
  in Dental Health Services Research". Journal of Dental Research, 84:942-946.
- **Mingshan Lu. 199. "The Productivity of Mental Health Care: An Instrumental Variable
  Cigarette Price Provided Better Estimate of Effects of Smoking on SF-12." Journal of
  Clinical Epidemiology, 57:284-293.

Applications:

- Excise Tax Example from S&W
  Weight on Employment Disability” Health Services Research, 35:1159-1179.
- Joseph P. Newhouse and Mark McCellan. 1998. “Econometrics in Outcome Research:
Week 13: April 16  
Natural Experiments  
Instrumental variable techniques studied in weeks 10 and 11 are only one of the ways to address endogeneity. Another very popular method is the so-called natural, or quasi-experiment. This week we will discuss strengths, weaknesses, and potential pitfalls of this method.

- S&W chapter 13  
- ** Bruce D. Meyer. "Natural and Quasi-Experiments in Economics"  

Week 14: April 23  
Panel Data: Fixed and Random Effects  
Another method of addressing causality if longitudinal data is available is to estimate random effect or fixed effect models. This week we will discuss these two types of models as well as their applications.

- S&W chapter 10;  

Application:

Week 15: April 30  
Proposal is due at the beginning of the class  
Presentations

School of Public Health Honor Code: The School of Public Health Honor Code is found in the student bulletin (sph.rutgers.edu/academics/catalog/index.html ). Each student bears a fundamental responsibility for maintaining academic integrity and intellectual honesty in his or her graduate work. For example, all students are expected to observe the generally accepted principles of scholarly work, to submit their own rather than another’s work, to refrain from falsifying data, and to refrain from receiving and/or giving aid on examinations or other assigned work requiring independent effort. In submitting written material, the writer takes full responsibility for the work as a whole and implies that, except as properly noted by use of quotation marks, footnotes, etc., both the ideas and the works used are his or her own. In addition to maintaining personal academic integrity, each student is expected to contribute to the academic integrity of the school community by not facilitating inappropriate use of her/his own work by
others and by reporting acts of academic dishonesty by others to an appropriate school authority. It should be clearly understood that plagiarism, cheating, or other forms of academic dishonesty will not be tolerated and can lead to sanctions up to and including separation from the Rutgers School of Public Health.

Policy Concerning Use of Recording Devices and Other Electronic Communications Systems: When personally owned communication/recording devices are used by students to record lectures and/or classroom lessons, such use must be authorized by the faculty member or instructor who must give either oral or written permission prior to the start of the semester and identify restrictions, if any, on the use of mobile communications or recording devices.