

University of Massachusetts-Lowell
College of Arts and Sciences
Department of Regional Economic and Social Development

57.506 – RESEARCH METHODS FOR ECONOMIC AND SOCIAL DEVELOPMENT

Fall 2007
9-11-07 version

Tuesdays, 6:00-8:50pm, RESD OL 500M

Professor Phil Moss

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Office Hours: M 2-3, T 1-2:30, W 5-6 (and most other times for that matter)

1) Course description

This course offers an introduction to two sets of research techniques, statistics and qualitative methods. We will focus on social science uses of both sets of methods. It also gives an introduction to research design, and gets you started on the thinking and writing process that will lead to your thesis or project. The great majority of the course will focus on statistics.

Statistics uses numbers to describe, compare, and study relationships among collections of things--especially in situations where only incomplete information is available. The “things” in question could be individuals, families, industries, communities, regions, among many other possibilities. The introduction to statistics will range from basic descriptive statistics to multiple regression. We will work with familiar measures such as averages and percentages, but also develop new ones such as standard deviations and correlation coefficients. We will focus a lot on how to determine a “margin of error” and whether apparent differences (for example, a difference in average wage between two regions) are just a fluke, or are actually “statistically significant.” We will teach much of this portion of the course on computers, in a computer lab (in the Graduate School of Education, across the hall from RESD) using Excel 2002 (running on Windows). It is important to emphasize, however, that understanding and doing sensible statistics involves more than learning which calculations to do on the computer. I hope to teach you how to understand what makes sense in statistics.

Qualitative methods emphasize non-numerical questions such as “what kind,” “how,” and “why” rather than numerical questions such as “how many” and “higher or lower.” They generally describe, compare, and study relationships among smaller collections of things, in order to generalize from close study. We will discuss qualitative methods in general, and look more closely at three specific approaches: open-ended interviewing, case studies, and participatory action research. A majority of our students rely more heavily on qualitative methods in writing their theses or doing their projects, than they do on statistics and quantitative methods (almost all students use basic descriptive quantitative

methods such as tables, charts, averages, etc.) You will certainly learn introductory concepts for qualitative research in this class, but you will also benefit greatly from Professor Kuhn's course, Qualitative Research Methods, 57.592. Professor Kuhn's class goes into much more depth on qualitative methods than we can do in our course, and therefore can give more attention to helping you design the research for your thesis, or the tasks for your project.

In addition to studying the two sets of methods separately, we will discuss how they complement each other. And we will talk about how to go beyond individual methods to think through a large piece of research (such as a thesis) or of professional practice (such as a project). The course also includes a very brief introduction to Geographic Information Systems (GIS), which use mapping to organize, present, and analyze data about geographic areas.

2) Course objective

By the end of the course, students should be able to intelligently produce and consume statistics and qualitative research for a broad range of purposes related to economic and social development. They should also have started the thesis/project process, including identifying a topic and advisor and beginning to move forward on the topic with the help of the advisor.

3) General information

Course schedule and location

Monday evenings 6-8:50; O'Leary 500Q

Time allotment

3 class hours per week; 3 credits

Prerequisites

Students should have some familiarity with algebra and with Excel; no specific course prerequisites.

Attendance

Attendance is mandatory. Through the participation grade, attendance counts toward your overall grade. But what's more important is that the classroom time is most important source of information, and in an intensive course of this nature the cost of missing one class is substantial.

Teaching methods

Lecture and discussion, hands-on computer work, in-class group exercises, problem sets, exams, and a research project.

Evaluation method

Your course grade will have approximately the following weights:

Midterm exam 20%

Final exam	25%
Nine problem sets	25%
Research project	20%
Class participation	10%

4) *Course requirements*

The requirements of the class include:

- Attendance
- Approximately weekly problem sets
- Midterm exam (take-home)
- Final exam (take-home, but perhaps some of it will be in class)
- Research project (can be group or individual)

The midterm, final, and research project will account for the bulk of the grade. Given the compressed nature of the course, the research project will be relatively narrow in scope, and quantitative data will be provided (but you will be expected to gather qualitative data through an interview).

Much of the learning in the class takes place as you try to apply the methods in the problem sets; it is very important for you to keep up with the problem sets. You are encouraged to work together with fellow students as groups to solve problems, but please do your own calculations and type up and turn in your own work.

5) *Required texts*

There is one required text, and another which may be useful for those of you who are not that familiar with Excel. Both are available at South Campus bookstore:

The **required** book is :

David Freedman, Robert Pisani, and Roger Purves (FPP), *Statistics*, Third Edition, NY, NY: W.W. Norton 1998.

This is a non-mathematical introductory statistics book. It does not serve the purpose of showing you how to do statistics on the computer using Excel, which is a major goal of this course. However, it is an excellent book—in the opinion of many, the best book—from which to learn the *ideas* in statistics. I will lean on this book in explaining what it is we are actually doing. If you really prefer explanations with more mathematical expression, I can lend you or recommend to you various books that use more mathematics.

The potentially useful book is

David L. Eldredge, *A Microsoft Excel Companion for Business Statistics*, 3rd edition Cincinnati: South-Western, 2005.

NOTE: If you already have some experience with Excel you may not want this book. This book is for learning how to do statistical calculations using Excel. It explains the mechanics of Excel. It is not a great book for understanding what statistics is about, what particular calculations mean, whether a particular procedure makes sense, or why you might want to do one procedure versus another. Another potential problem is that the problems we work through using excel were gathered from elsewhere for this course, and do not always correspond to the type of problems used for illustration in the Eldredge

book. The book would be useful for someone unfamiliar with excel so that you can learn the basic excel procedures and the statistical commands.

Assigned readings beyond the Eldredge and FPP texts will be available from the instructor. In addition to the texts, detailed lecture notes will be handed out with almost every class.

6) Other important information

Computer work and versions of Excel

Excel is available on computers across the campus--including the drop-in Centers for Learning computer labs on the third floor of Southwick and the computer labs in O'Leary. We will make use during class hours of the Graduate School of Education computer lab on the 5th floor of O'Leary, directly across from RESD. This lab may not always be available to you at other times, however.

Getting extra help

If you need help with statistics, there are several options. If you need help with statistics or other concepts from the course, PLEASE do not wait until you get frustrated or frightened. Get in touch with me and/or with Linh Tran (the teaching assistant for this course) right away. You can make use of my office hours (or schedule a meeting at another time if they are not possible for you). Linh will be around the department frequently, will set up some regular times for students, and can be reached at lptran81@hotmail.com. The Centers for Learning does not offer tutoring in statistics, but can help you with basic algebra. Call 934-2941 (or drop in on O'Leary 3rd floor) on South campus, or 934-2936 (Southwick 301) on North. This course can appear intimidating to many students unfamiliar or rusty with math and math related concepts. I will try my best to keep this from happening. BUT, again, please be in touch as soon as you feel you are confused, or having trouble, or falling behind.

7) Course outline

Week 1: Introduction, and beginning of describing one data on variable (September 11, 2007)

- ❖ Freedman Pisani and Purves (FPP)—Chapters 1-3. Chapters 1 and 2 can be read quickly to get a feel for thinking about statistical studies. Chapter 3 is about histograms.
- ❖ Eldredge, Chapter 1 is an introduction to Excel, and 2.2 gives an introduction to charts in Excel. Skim this to see what you need. Some of you will know most of this, some will not.
- ❖ Eldredge, Chapter 2.1 (pages 26-33)

- ❖ Charles C. Ragin. *Constructing Social Research: The Unity and Diversity of Method*. Thousand Oaks, CA: Pine Forge, 1994. Chapter 1, “What is social research?”

- Introduction to the course
- Basic concepts of research methods
- Interview exercise, survey exercise
- Frequency distributions, histograms, and other graphs of one variable
- Introduction to Windows and Excel

Problem Set 1 handed out

Week 2: Describing one variable, continued (September 18, 2007)

- ❖ FPP, Chapter 4
- ❖ Eldredge, Chapter 3 (skip 3.5)—pages 49-65
 - What are “typical” values for the data: average (mean), median, mode
 - How spread out (or varied) are the data: average deviation, standard deviation, variance

Problem Set 1 due; Problem Set 2 handed out

Week 3: Introduction to the normal curve (September 25, 2007) FPP Chapter 5 (whole chapter, 78-96)

- ❖ Eldredge, Section 4.2.1, pages 78-81
 - Normal approximation for data

Problem Set 2 due; Problem Set 3 handed out

Week 4: Sampling, estimation, and confidence intervals (October 2, 2007)

FPP Chapters 13 (221-27), 16 (273-77 only), 20 (whole chapter, 354-74)

- ❖ Eldredge, Section 4.1.1, (pages 70-74), Section 4.3 (84-90)
 - Introduction to probability
 - Chance models (random variables)
 - Binomial, uniform chance models
 - Sampling as a chance model
 - Normal approximation for chance models

Problem Set 3 due; Problem Set 4 handed out

Week 5: Introduction to interviewing, research design (October 9, 2007)

- ❖ Herbert J. Rubin and Irene S. Rubin. *Qualitative Interviewing: The Art of Hearing Data* (Thousand Oaks, CA: Sage Publications, 2005). Ch.2 (pages 30-39 only), 3, and 4 (through p.78).
- ❖ Colin Robson. *Real World Research: A Resource for Social Scientists and Practitioner-Researchers* (Oxford: Blackwell, 1993). Ch.3, “General design issues” (38-45, 63-76)
- ❖ Ernest Sternberg, “What is a Master’s thesis in planning?” *Journal of Planning Education and Research* 13: 284-289, 1994.
- ❖ Barbara Schram, *Creating Small Scale Programs* (Newbury Park, CA: Sage Publications, 1997), “Overview” (1-6, 10-14, 18-20; we recommend that people planning to do a project read 1-24)

- Class will begin with presentations by organizations that are interested in hosting student projects
- What is a thesis? What is a project? (Sternberg, Schram)
- Qualitative research and the responsive interviewing model (Rubin and Rubin)
- How do you design a thesis or project? (Robson, Rubin and Rubin)
- Designing an interview-based research project (Rubin and Rubin)

Problem Set 4 due; Problem Set 5 handed out

Week 6: Interviewing, continued (October 16, 2007)

- ❖ Herbert J. Rubin and Irene S. Rubin. *Qualitative Interviewing*, skim Chs. 5-9 (79-200)
- ❖ Steinar Kvale, *InterViews: An Introduction to Qualitative Research Interviewing* (Thousand Oaks, CA: Sage Publications 1996), skim Ch.11 (187-209); take the time to read 188-193 carefully
 - Designing questions and conducting a successful interview (Rubin and Rubin)
 - Analyzing interview results (Kvale)

Problem Set 5 due; Problem Set 6 handed out

Week 7: Interviewing concluded; hypothesis testing (October 23, 2007)

- ❖ Eldredge, Sections 5.1 (91-106), 6.1 (128-135)
- ❖ FPP, Chapter 21 (whole chapter, 375-94), 23 (whole chapter, 409-37), 26 (whole chapter, 475-502)
 - The accuracy of averages and proportions taken from samples
 - Confidence intervals
 - Null and alternative hypotheses, z-tests and possible chance errors
 - Small samples, t vs. z-tests
 - Hypothesis tests for averages and proportions

Problem Set 6 due; Problem Set 7 handed out

Week 8: More hypothesis tests, including ones using tables (October 30, 2007)

- ❖ Eldredge, Chapter 5, sections 5.2-5.4; Chapter 6, section 6.2; Chapter 9
- ❖ FPP Chapter 27 and 28
 - Tests of difference of averages and proportions from two samples
 - Categorical variables and tables
 - Chi-squared tests

Problem Set 7 due; Take-Home Midterm handed out

Week 9: Case study analysis (November 6, 2007)

- ❖ Robert K. Yin. *Case Study Research: Design and Methods*. Newbury Park: Sage Publications, 1989. Chapters 1 and 2.
 - Case study research defined
 - Designing case study research

Take-Home Midterm due; Problem Set 8 handed out (including expanded proposal)

Week 10: Scatter plots, correlation, and simple regression (November 13, 2007)

- ❖ Eldredge sections 3.5, 10.1, 10.2
- ❖ FPP Chapters 8-12. This, of course, is too much to read in one week. My suggestion is to look at chapter 8 and 10 and then at 12. If you do get a chance to read the rest—9, and 11—over the next couple of weeks it will greatly increase your understanding.
 - Scatter plots
 - Correlation
 - Regression as a descriptive tool
 - Regression estimates and tests based on samples

Problem Set 8 due; Problem Set 9 handed out

Week 11: Multiple regression (November 20, 2007)

- ❖ Eldredge, section 10.3
 - The multiple regression model
 - Multiple regression parameters and tests
 - Modelling, multicollinearity

Problem Set 9 due; Regression practice handed out

Week 12: Multiple regression continued (November 27, 2007)

We will use this class to finish talking about regression—work through problems, and discuss the final exam, which will be handed out and will be due the following week.

Final exam handed out. Due next week.

Week 13: Participatory Action Research (PAR) (December 4, 2007)

- ❖ William Foote Whyte, ed. *Participatory Action Research*. Newbury Park: Sage Publications, 1991. Chapter 2 and skim chapters 3 and 4.
 - What is PAR? When what are its strengths and weaknesses?
 - PAR exercise

Final exam due.

Week 14: Writing, and brief student presentations on final project (December 11, 2007)

- ❖ Joan Bolker, *Writing Your Dissertation in 15 Minutes a Day* (New York: Henry Holt and Company, 1998). Chapters 3 (Getting started writing), 4 (From zero to first draft), 8 (Revision)—skim all.
 - How do you get started in writing something long, like a thesis?
 - How do you make revisions without going crazy?
 - Presentation: What did you learn from the interview? Thoughts about how this might help guide your quantitative analysis. Plans for quantitative analysis for final project.

Week 15: Geographic Information Systems (???) Let's see if we can find a time for this class. It is a class you do not have to prepare for. I think you will particularly enjoy this class as GIS is an extremely useful skill and you will be able to create a useful map in just this one class.

- ❖ Mark Monmonier. *How to Lie With Maps*. Second edition. Chicago: University of

Chicago Press, 1996. Skim Chs.1-4 It will help if you do this, but because it is the end of the semester, you will survive if you do not skim this reading.

- Introduction to Geographic Information Systems
- Check-in on final projects
- Celebration of end of class!!

Location may be different than our usual location, but I will inform you.

Final project due December 20 by end of the day. Please send project by email.