

UNIVERSITY OF COLORADO
DEPARTMENT OF SOCIOLOGY

Fall 2006

SOCY 4061 SOCIAL STATISTICS
TR 2:00-3:15 PM Ketchum 119, Ketchum 33

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Office Hours: 3:30-4:30 TR in Ketchum and by appointment in IBS	
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Objectives

This course is intended to introduce students to quantitative analysis. If you already

- Know how to locate and download from the internet the article Miller McPherson, Lynn Smith-Lovin, and Matthew E. Brashears. 2006. Social isolation in America: Changes in Core Discussion Networks over Two Decades. *American Sociological Review*. 71(3) 353-375.
- Are confident of your ability to interpret all the results presented in this article
- Are able to use the two datasets on which the article is based and replicate the analyses presented, excluding multiple regression
- Can think of additional questions you'd like to address using these data – and are convinced you can carry out the appropriate analyses
- Have taken the survey quiz on statistics in McClelland's *Seeing Statistics* and scored well (The quiz can be found by going to page 1.0.2, scrolling to the bottom of the page, and clicking on the Survey icon to the right)

then you do not need to take this course.

If you do not yet possess these skills, the objective of this course is to provide you with the opportunity to gain them and be confident that you can both understand quantitative research studies and carry out your own analyses. The course is intended to prepare students for additional courses on multivariate quantitative analysis and research methods. The approach throughout will be experiential - we use a recent study of social isolation that has received a great deal of media attention and will replicate most of the published analyses and add some of our own. The approach to learning statistical theory is visual, using CU Professor Gary McClelland's unique on-line text, *Seeing Statistics*, and the approach to learning statistical analysis is through doing analyses using STATA and CU graduate Larry Hamilton's book, *Statistics with STATA*.

The course begins with our reading the focal article to understand what the authors say they did. We then turn to an introduction to surveys and, in particular, the General Social Survey (GSS) 1985 and 2004 – the two surveys used in the McPherson et al. article. We look at the survey questions and their correspondence to the questions the article addresses. We begin to use STATA first to manage and then to describe the 1985 GSS data – in words, tables, and graphs. The next portion of the course emphasizes statistical theory – how can we use samples to learn about the population group of interest? When we use a sample and calculate a mean, why do we choose to use the mean? How sure are we that our sample mean is close to the true mean of the

population sampled? Can we estimate how far away from the true value a sample value may be? If we use two samples – GSS 1985 and GSS 2004 – to look at how confidante networks have changed over time, how do we know whether the difference is real or could have happened simply by taking two samples from a population in which no change over time has taken place? We will also ask questions about relationships between individual characteristics – for example, do women have more confidantes than men? Is the number of confidantes greater for young people compared to older people? Does it vary by education?

Focal article and selected media responses:

Miller McPherson, Lynn Smith-Lovin, and Matthew E. Brashears. 2006. Social isolation in America: Changes in Core Discussion Networks over Two Decades. *American Sociological Review*. 71(3) 353-375.

Social Isolation: Americans Have Fewer Close Confidantes. NPR *All Things Considered*, June 24, 2006 · Debbie Elliott speaks with sociology professor Lynn Smith-Lovin of Duke University about a new survey documenting what seems to be Americans' growing social isolation. Back in 1985, respondents reported, on average, that they had three people in their lives who were close confidantes. They now report having two people with whom they can discuss important personal topics. <http://www.npr.org/templates/story/story.php?storyId=5509381>

Pat Burson. Study: Fewer find close friends. *Newsday*, July 29, 2006. Reprinted in *Daily Camera*

Ellen Goodman. The demise of friendship. Syndicated column. *Daily Camera*, June 30, 2006.

Ann Hulbert. The Way We Live Now: Confident Crisis. *New York Times Magazine*, July 16, 2006.

Hilary Macgregor. Study finds Americans need friends. *Los Angeles Times*, July 1, 2006. Reprinted in *Daily Camera*.

Required Texts:

For basic statistical theory and concepts:

Gary McClelland. 1999. *Seeing Statistics*. Duxbury Press. www.seeingstatistics.com/ Access free through any CU website. If you're accessing the web from outside of CU, you need to have VPN dialer on your computer.

For applied statistics and use of STATA:

Lawrence C. Hamilton. 2006. *Statistics with STATA*. Belmont CA: Duxbury, an imprint of Thomson Brooks/Cole. You may use earlier versions of this book.

Recommended Texts: If you'd like to refer to more standard statistical texts – any edition published in the past five years is fine.

Frederick J. Gravetter and Larry B. Wallnau. 2005. *Essentials of Statistics for The Behavioral Sciences*. Wadsworth Group/Thompson Learning.

James T. McClave and Terry Sincich. *Statistics*. Ninth Edition, 2003 or Tenth Edition, 2006. New York: Prentice Hall.

Larry Gonick & Woollcott Smith. *The Cartoon Guide to Statistics*. 2005. New York: Collins Reference, an imprint of HarperCollins Publishers. This book is

inexpensive, accurate, and a lot more fun to read than most stat texts!

Online:

Philip B. Stark. SticiGui: Statistics Tools for Internet and Classroom Instruction with a Graphical User Interface

<http://www.stat.berkeley.edu/users/stark/SticiGui/index.htm>

David Lane. HyperStat Online Statistics Textbook, Rice Virtual Lab in Statistics

<http://onlinestatbook.com/rvls/>

South Africa Distance Learning Project: The Analysis of South African Household Survey Data

<http://saproject.psc.isr.umich.edu/>

Assignments

There will be weekly assignments and three short quizzes.

The course highlights four components of learning statistics: terminology, computation, application, and interpretation of results. Although most important, the application component depends on mastery of terminology and computations. Each component requires a different type of assignment.

First, it helps to view statistics as a language with its own terms and concepts. Students must master the terms and concepts just as they must learn nouns, verbs, and grammar of a foreign language. *Seeing Statistics* defines and explain relevant terms and concepts. I will also review this material but expect students to read the assigned material on their own before class. Then, we can devote more class time to discussion of issues of application and interpretation. A series of three quizzes covers the definitions, terms, and concepts of the readings.

Second, to understand the concepts and techniques, students need to do computations themselves once or twice. Abstract equations and ideas take on concrete meaning when one substitutes numbers into formulas and calculates statistics either by hand or using a computer, but not the automatic statistical features of a package like STATA. Otherwise, statistical packages on computers can do the calculations most efficiently. I will assign several problem sets using material in *Seeing Statistics* or using the GSS1985 and/or the GSS2004 for you to complete and turn in for grading. You may pair with another student to complete these assignments.

Third, the ultimate goal of learning statistical techniques is to apply them to real research problems. With that in mind, we will use the McPherson et al. article extensively. We will review in class the relevant substantive issues they raise and the ways in which the statistical techniques they use to address the substantive issues. I will assign a series of short weekly papers in the second half of the course based on analysis of the GSS1985 and/or the GSS2004. The papers involve using the techniques studied in class and interpreting your own statistical results. As part of the

papers, I may also assign a set of questions that involve the interpretation of the statistical results in a table from a published article.

The papers should be clearly written, as if for a professional audience. One needs considerable practice to write clear, organized, and theoretically meaningful prose when describing statistical results. Make every attempt to rewrite, revise, edit, and (perhaps most importantly) organize your papers until they read smoothly, proceed logically, and highlight the substantive meaning of the statistical results.

You'll use STATA for Windows on the machines in the Ketchum Labs for the paper assignments. STATA, a set of pre-written computer programs, performs the step-by-step calculations needed to obtain nearly any desired statistic. It also includes procedures to organize, access, graph, and print a set of data. Users need only to select the desired procedures and identify the variables to perform them on. You will learn to write short STATA DO files (a series of commands) to carry out your analyses. I assume little or no experience with STATA and an important part of the course is your introduction to data management and statistical analysis using this program.

Grading

There will be an assignment just about every week: three short quizzes covering the terms and concepts of the readings, six problem sets using material from *Seeing Statistics* or the GSS and four short papers (at most 3 pages) based on interpretation of your computer output from STATA and statistics presented in a table from a published article. Each quiz constitutes 10% of the grade, each problem set constitutes 5% of the total grade, and each short paper constitutes 10% of the total grade.

Schedule

The schedule below lists the topics, readings, and assignment for each week (I will accommodate students whose disability requires special arrangements or whose religious obligations conflict with any assignments). Although I hope we can stick roughly to this schedule, some adjustment during the semester may prove necessary, especially since this is a completely new approach to teaching this course.

Week	Date	Topic	Reading
1	Aug 29 Aug 31	Introduction Discussion	McPherson et al. media responses
2	Sep 5	Description of GSS	Handout from ICPSR Hamilton Ch 1
<i>Introduction to Data Management and Description using STATA (with a short introduction to Seeing Statistics)</i>			
	Sep 7	Getting onto STATA	Hamilton Ch 2
3	Sep 12	Data and Comparisons	McClelland Chs 1-2
	Sep 14	Describing the Center	McClelland Ch 3
4	Sep 19	Finding data on the web	Handouts
	Sep 21	Describing data	Hamilton Ch 2
5	Sep 26	Describing the Spread	McClelland Ch 4
	Sep 28	Seeing Data Again	McClelland Ch 5
<i>Underpinnings of Statistics</i>			
6	Oct 3	Probability	McClelland Ch 6
	Oct 5	Normal distribution	McClelland Ch 7
7	Oct 10	Inference and confidence	McClelland Ch 8
	Oct 12	continued	
8	Oct 17	One-Sample Comparisons	McClelland Ch 9
	Oct 19	continued	
9	Oct 24	Two-Sample Comparisons	McClelland Ch 10
	Oct 26	continued	
10	Oct 31	Categorical Data Comparisons	Handouts
	Nov 2	continued	
11	Nov 7	Correlation and Regression	McClelland Ch 12
	Nov 9	continued	
<i>Data Analysis and Interpretation of Results</i>			
12	Nov 14	Back to the data	Hamilton Ch 4
	Nov 16	continued	
Fall Break and Thanksgiving			
13	Nov 28	Graphing Data in STATA	Hamilton Ch 3
	Nov 30	continued	
14	Dec 5	Summary Statistics and Tables	Hamilton Ch 4
	Dec 7	continued	
15	Dec 12	Linear Regression Analysis	Hamilton Ch 6
	Dec 14	Wrapup	
16	Dec 19	Last paper due	

