Sociology 314, Sociological Statistics

Fall, 2011
MW 10-11:20am, KAP 305
Class Website: https://blackboard.usc.edu/
(USC login, then click our class)

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MW 1-2
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INTRODUCTION

This is a course about **how statistics can be used to answer questions** about a multitude of attitudes and behaviors that fall within the research areas of sociology and related social sciences. Its purpose is to 1) show you how statistics can help you answer questions that you may have about yourselves and the world around you; 2) facilitate your mastering of some of the basic statistical techniques used by social scientists to analyze survey data; 3) increase your ability to comprehend and be a critical consumer of tabular, graphical, statistical, and numerical data that you encounter in academic books and journal articles as well asd on TV, in newspapers and magazines; and 4) enhance your ability to think through problems guided by principles of statistical reasoning, statistically analyze data, discuss the main stories suggested by the data, and visually depict patterns in the data, so that skills developed here will have applications well beyond this course. To achieve these goals, each of you will apply the statistical methods that we learn to real survey data using SPSS statistical software. Among the best ways to really learn statistics is to do statistical research.

In lectures, I will apply the statistics that we learn to concrete sociological problems and data. I want you to understand the logic behind various statistics, their calculation, their interpretation, and their application to actual substantive questions. Because of my own research biases and interests, these questions will generally focus on the contemporary United States, and they will revolve around issues of families and social inequality, education, race/ethnicity, gender, attitudes and values, and a number of socio-demographic phenomena including marital status, family size, and age (or life course stage, from infancy to old age). Classes will be taught in the Lab (Kap 305) using Excel and SPSS software, mixing lectures, hands-on examples, and in-class exercises. The class will taught in a workshop style.

REQUIRED COURSE MATERIALS

1) Required text: *OpenIntro: Statistics* by David Diez, Christopher Barr and Mine Cetinkaya-Rundel. Copyright © 2011. First Edition: July, 2011.

This book is available for free in pdf on our Blackboard website. It is also available online for free (openintro.org/stat) and is released by OpenIntro under Creative Commons Attribution-NonCommercial-NoDerivs 3.0 United States license at openintro.org.

(Backup if you need it (not required): *Elementary Statistics in Social Research: Essentials, 3/E*, by Levin and Fox. Pearson.)

REQUIREMENTS

1) Homework Assignments

There will be 5 homework assignments, focusing on selecting, calculating, and interpreting statistics toward the end of solving concrete research problems and answering interesting and well-defined sociological questions. Most of the homework assignments will be based on exercises that I have constructed coupled with problems from *OpenIntro*. Most will require statistical analyses of social survey data.

No late homework assignments will be accepted unless you have made arrangements with the instructor prior to the homework due-date. Exceptions will only be made if you provide clear evidence that circumstances beyond your control prevented your timely performance.

Collaboration: You may discuss homework problems with other students (and with the instructor and TFs, of course), but you must write your final answer yourself, in your own words. Solutions prepared "in committee" or by copying or paraphrasing someone else's work are not acceptable. All computer output you submit must come from work that you have done yourself.

2) Midterm and Final Examinations

There will be 2 in-class closed-book exams in the course, a midterm and a final. Their purpose is to develop your skills at using statistics to answer substantively important questions, and to assess your understanding of statistical concepts and your ability to interpret statistical information. **No late exams will be offered unless you have made arrangements with the instructor prior to the exam date**.

FINAL GRADING SCHEME

Requirement	Percentage of Final Grade
5 Homework Assignments (10% each)	50%
Midterm Exam	25%
Final Exam	30%
Total	100%

IMPORTANT DATES

Wed. Sept. 7 - Homework 1 due in class
Mon. Sept. 26 - Homework 2 due in class
Mon. Oct. 10 - Homework 3 due in class
Wed. Oct. 12 - Midterm in class
Mon. Oct. 31 - Homework 4 due in class
Mon. Nov. 21 - Homework 5 due in class
Mon. Dec. 12 - Final exam in class, 8am -10am

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS/gov/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

TOPIC AND READING SCHEDULE

WEEKS 1-2
I. What are statistics, and what are they doing in sociology?
II. Introduction to surveys: Conceptualization and measurement
III. Statistics for describing the distribution of categorical variables, grouping, graphing
IV. Statistical inference: Confidence interval for a percentage/proportion
V. Exploring relationships among two categorical variables
VI. Visually looking at your data, Graphing

(OpenIntro Chapter 1)

WEEKS 3-4
I. Statistics for describing relationships between categorical variables, and measuring association in two-way contingency tables (crosstabulations)
II. Statistical inference: Significance tests and confidence intervals for difference between two percentages/proportions; chi-square test of independence in contingency tables

(OpenIntro 1.4, Chapters 4, 5.3, 5.4, 5.6)

WEEK 5
Controlling for variables through multi-way contingency tables: spurious relationships, conditional relationships, and Simpson's Paradox

(posted articles)

WEEKS 6-7
IV. Describing quantitative variables
-Statistics for describing central tendency and dispersion of quantitative variables
-Statistical inference: Confidence intervals for estimating quantitative characteristics of populations based on samples

(OpenIntro rest of Chapters 5, Chapter 6)

WEEKS 8-9
I. Descriptive and inferential statistics for comparing means across groups
II. Hypothesis testing

(OpenIntro posted articles)

WEEKS 10-11
ANOVA, Two-Way ANOVA

(posted articles, OpenIntro 8.4)

WEEKS 12-14
Least squares Regression (prediction, dummy variables, diagnostics, multicollinearity, heteroskedasticity, model building, model selection)

(OpenIntro Chapters 7 & 8)

WEEK 15
Closing the circle