

SOCIOLOGY 311

RESEARCH METHODS

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TTh: 1:10-2:30
ETC 205
Office hours TBA

Course description: This is a rigorous, workshop-based course designed to provide students with the basic skills for planning and conducting research in sociology. The course focuses mainly on analyses of quantitative data. Skills and topics covered include locating and downloading data sets, descriptive statistics and exploratory data analysis, hypothesis testing and the logic of statistic inference, ANOVA, regression analysis and its extensions. Students will become familiar with STATA, an excellent data analysis program, and with three key sources of data: the General Social Survey, the Census, and the resources of the Inter-University Consortium for Political and Social Research.

This is a required course in sociology and is designed specifically to prepare junior sociology majors for the qual and senior thesis. Non-majors may take this course *provided* that they have taken Sociology 211, Introduction to Sociology.

Course assignments: There is reading, but the bulk of the assignments involve taking notes, building your own textbook for the course, and locating, downloading and analyzing data. You will complete 12 weekly memo/problem set exercises, and a 10-12 page (text) final paper based on a multivariate analysis of a data set of your choosing. Weekly memos are assigned on Thursdays, and unless otherwise noted, are due by 3pm on the following Mondays. *We will only accept **single document** docs posted on the course moodle* unless otherwise noted. We will not accept hard copies or assignments sent via email. *We do **not** accept late assignments for any reason.*

Books and materials: The assigned text is available for purchase at the bookstore and on reserve. It is expensive, but will be useful reference for this and other courses. The Agresti and Finlay and Berry and Sanders are useful supplemental texts.

Assigned Text: Rachel Gordon, *Applied Statistics for the Social and Health Sciences*, Routledge, 2012.

Recommended: Alan Agresti and Barbara Finlay, *Statistical Methods for the Social Sciences*, 4th edition.

W. Berry and M. Sanders, *Understanding Multivariate Research*

Software: Students are also required to purchase for their own use a copy of STATA 12 (IC grade or higher), the software we will be using for this course and a standard package used by social science departments at Reed. Student prices are available through STATA's grad plan set up for this course, which provide a variety of options. The least expensive option is \$65 for a six-month license of the IC version. (The small version of

STATA, “STATA small”, will not be enough your purposes). However, students would be best advised to purchase a perpetual license for IC at \$179 in the not unlikely event that they might use the software for other classes, project or the thesis.

Other resources: Students will be also able to take advantage of workshops and web-site resources developed by Dena Hutto, Andrew Rumbach and Marc Schneiberg as a part of the “Development of Research Competencies through Faculty-Library Collaboration” program funded by the Mellon Foundation. Information about web-site resources and their use will be presented in the library workshops listed below.

ASSIGNMENTS

GETTING STARTED

Week 1: (January 29, 31)

Framing the course: How do you know?
Conducting a literature review (Library workshop)

Memo #1: Literature review exercise

PART I: DESCRIPTIVE STATISTICS

Week 2: (February 5, 7)

Downloading and describing data: Univariate statistics, GSS and STATA

Gordon, Chapters 3-5

Optional: Agresti and Finlay, Chapter 3

Memo #2: Downloading and describing data

Week 3: (February 12, 14)

Bivariate Descriptive Statistics I: Chi-Square, ANOVA

Gordon, Chapter 7, pp. 196-222

Optional: Agresti and Finlay: Chapter 7, 183-4, 191-95 (Diff. of means);
Chapter 8, pp. 221-26, 229-35 (Chi-square); Chapter 12, pp.
369-76 (ANOVA)

Memo #3: Analyzing time trends and bivariate relations, Chi-square and anova

Week 4: (February 19, 21)

Bivariate Descriptive Statistics II: Simple Regression

Gordon, Chapter 7, pp. 222-227 (Pearson correlation)
Chapter 8, pp. 241-257 (Bivariate Regression)

Optional: Agresti and Finlay, Chapter 9, pp. 255-76;
Berry and Sanders, *Understanding Multivariate Research* (Chs. 1-2, ch. 3; 44-5)

Memo #4: Simple regression exercise

PART II: STATISTICAL INFERENCE

Week 5: (February 26, 28)

Statistical Inference I: Sampling Distributions

Gordon, Chapter 6, pp. 144-167

Optional: Agresti and Finlay, Chapter 4

Memo #5: Probability statements about sample means

Week 6: (March 5, 7)

Statistical Inference II: Sampling Distributions and Confidence Intervals

Gordon, Chapter 6, pp. 177-183

Optional: Agresti and Finlay, Chapter 5, pp. 107-129

Memo #6: Confidence intervals, **due Friday, March 8 by 6pm**

Week 7: (March 12)

Statistical Inference III: Hypothesis Testing, T-test for a Single Mean

Gordon, Chapter 6, pp. 167-176, 178-83

Optional: Agresti and Finlay, Chapter 6, pp. 143-56, 159-66; also 166-9;

Memo #7: Hypothesis tests (the t-test), **due Wednesday, March 13 by 6pm**

Week 7: (March 14)

Statistical Inference IV: Difference of Means, Chi-square, ANOVA, Regression

Gordon, Chapter 7, 197-222, Chapter 8, 241-281

Optional: Agresti and Finlay, Chapter 7, pp. 183-97 (Diff. of Means);
Chapter 8, pp. 221-29, esp 226-9 (Chi-square);
Chapter 12, pp. 372-76 (ANOVA)
Chapter 9, pp. 276-88 (Regression)

Memo #8: Bivariate hypothesis tests, **due Friday, March 15, 6pm**

FALL BREAK, MARCH 16-24, 2013

PART III: LOCATING AND DOWNLOADING DATA SETS

Week 8: (March 26, 28)

Locating and downloading data: Lexus/Nexus, Proquest, ICPSR

Library Workshops: No reading

Week 9: (April 2, 4)

Locating and Downloading Data Sets: Census

Review Gordon, Chapter 8

Memo #9: Research proposal: data set, dependent variables, descriptive stats

PART IV: MULTIVARIATE ANALYSIS

Week 10: (April 9, 11)

Multiple Regression I: Multivariate Analysis, Controls, F-tests, Model Building

Gordon, Chapter 9, 13, 14

Optional: Agresti and Finlay, Chapter 10, Chapter 11, pp. 321-40, 345-46,
351-55; Berry and Sanders, *Understanding Multivariate
Research* (Chs. 3, 5-6)

Memo #10: Multiple regression exercise

Week 11: (April 16, 18)

Multiple Regression II: Dummy Variables and Interaction Effects

Gordon, Chapters 10-11

Optional: Agresti and Finlay, Chapter 12, pp. 378-81; Chapter 11, pp. 340-44; Chapter 12, 386-90; Chapter 13, pp. 413-26; Berry and Sanders, *Understanding Multivariate Research* (Ch. 6)

Memo #11: Dummy Variables, Interactions, due **Thursday in class**

Week 12: (April 23, 25)

Multiple Regression III: Interactions, Non-linearity, Logistic Regression

Gordon, Chapter 12, 16, 17

Optional: Agresti and Finlay, Chapter 14, pp. 462-73; Chapter 15, 483-93

Memo #12: First stabs at a table of models, due **Thursday in class**

Week 13: (Monday, April 29 evening TBA, Tuesday April 30, no class May 2)

Final Paper Workshops

****** FINAL REPORT DUE SUNDAY, MAY 12 AT 10AM ******