

Ryerson University – Sociology
SOC 483: Advanced Research and Statistics

Prerequisites: SOC 481

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Lecture: Thursdays, Noon to 2PM, SHE 660
Stats Labs: Fridays, 10AM or 11AM, POD 356 (Arts Lab)
Office Hour: Fridays Noon to 1PM, or by appointment

COURSE DESCRIPTION

This course is designed to build upon the student's existing research and analysis skills by focusing on more advanced topics in social data analysis. Our approach emphasizes statistics as tools for solving research problems associated with understanding urban life rather than as an end in itself. The course provides a hands-on approach to statistics through the use and analysis of actual census tract data. The city and urban issues remain our focus as we explore modern statistical applications.

TEXTBOOK:

Your text from last year: Levin and Fox, *Elementary Statistics in Social Research*, 2nd Ed. (Toronto: Pearson) AND online statistics seminars AND course handouts

Course Software and Datasets

SPSS 16.0 (available in computer labs or “virtual apps” on campus).
Various Statistics Canada public-use data samples, especially the Census of Canadian Population (2006 and earlier) and Survey of Household Spending (2004 and earlier)

COURSE INTRODUCTION

This course builds upon your knowledge of qualitative research, survey design, and introductory statistical techniques. In short, here we will learn how to analyze more than two variables at a time, isolating and “holding constant” supplementary factors “behind” or “parallel with” the initial bi-variate correlations and cross-tabulations you have learned already. As in any course, interpretation and analytic essays are central, but now you will include statistical results. You will analyze your own statistics, composing a major essay on a topic of your choice in relation to other research on the topic: theoretical, qualitative, and others' published prior results. The new skills allow you to confidently and critically think and write about quantitative data.

The topics, skills, and knowledge build cumulatively each week. Attending classes and computer labs will help you grasp the concepts needed to work toward the final assignment. The course is designed to ease your anxiety about the new language and skills involved in doing statistics.

REQUIRED WORK AND GRADING STRUCTURE:

Component	Format	Value	Dates
Interpreting Data (participation & attendance)	In-Class, written interpretations of data based on each weeks' lesson (done in groups of 4 people)	10%	Weeks 1 to 4; Weeks 6 to 11
Test	In-Class Test of baseline of required statistical techniques	15%	Week 5
Bi-weekly progress reports	Use Statistics Software in Computer Lab for raw data results, summarize your project's progress	4 x 10% = 40%	Weeks 4, 6, 8, & 12
Major Project Essay	16 to 20 pages writing, including tables of your chosen statistics	35%	Due in Exam period (TBA)

NOTE: 45% of grade is known by drop-date in Week 9.

The key assignment for the course is the major essay. All of the lectures, both tests, the computer lab work, and proposal, all of these are designed specifically to ensure you are ready for this final assignment.

- Data Interpretation** (in-class, almost-weekly, no make-up opportunities)**10%**
- Test** (short interpretive answers, 1 hour, in-class).....**15%**
- Bi-Weekly Progress Reports** 4 x 10% = **40%**
- Late Penalty: 1 mark deduction (out of 10) per day late.
- Major Project Essay** (16-20 pages, including tables of statistics)..... **35%**
- Late Penalty: 5 mark deduction (out of 35) per day late.

YOU MUST COMPLETE THE FINAL PROJECT TO PASS THE COURSE.

ACADEMIC INTEGRITY

As in all courses, you are expected to follow the Student Code of Conduct. Specifically for Research Methods, plagiarism includes inventing data or copying others' results. Read about the Code, issues around proper citation, cheating, and plagiarism, and consider your student rights and responsibilities at the following Ryerson website: www.ryerson.ca/academicintegrity

ACCESS CENTRE

Ryerson provides much support for students with physical & learning disabilities. Students requiring assistance and accommodations for their circumstances should introduce themselves immediately to discuss a plan for the course. Find out more at the following Ryerson website: www.ryerson.ca/accesscentre

WRITING CENTRE (Help in essay composition): www.ryerson.ca/writing-centre

STUDENT SERVICES (Various Counseling and Support): www.ryerson.ca/studentsservic

SERVICE LEARNING OPTION

The Faculty of Arts is launching Service Learning this semester as part of seven courses. This differs from volunteer work and internships because priorities are set by both community needs and course requirements equally.

You are all invited to apply to be part of a small group (3 or 4 students) doing volunteer research for St. Christopher's Neighbourhood House, a secular community centre promoting personal and social change. Key programs includes adult education, job and literacy training, poverty and immigration work, tax return clinics for the poor, and various other community services.

DEADLINE TO APPLY: Submit the completed form to Prof. Moore in Lab, Thursday, Jan. 15. Lia DePauw, Service Learning Coordinator, will recommend a short list. Students will be selected by Friday, Jan. 18.

St. Christopher's will provide a research question (not yet determined, but probably related to poverty, the elderly, and gentrification downtown). As a group (facilitated by Prof. Moore), the service learning students will co-author a report about that research problem, and offer to present the results to the Board of Directors' of St. Christopher's.

Instead of the Major Essay on a topic of your choice, Service Learning students will:

Co-Author a Research Report (Prof-, peer-, and self-evaluated participation).....**20%**

Sole-Author a Reflective Paper about the research results and process (7-8 pages)**15%**

The Reflective Paper will review how the group turned St. Christopher's initial question into a statistical analysis, and then translated the results into a report. One key aspect will be discussing how statistics and data analysis is important for non-profit, social service advocacy.

Who should apply? Anyone (not just those who participated in Fall SOC 481) who is keen to work in a group; willing to give up choosing your own your research topic; interested for career reasons or out of activism to apply your statistical skills to community service; and curious to write and research about why statistics are an important part of social advocacy.

The Service Learning option will involve about two extra hours per week above what is required of other students. You will need to visit St. Christopher's to learn about what they do, and later to present the results. Beginning in February, this group must meet weekly with Prof. Moore in addition to regular class and lab. You must attend an orientation session, where you will complete a Student Agreement Form, an Assumption of Risk and Indemnity Agreement, and an Emergency Contact form.

Service Learning students still do the bi-weekly progress reports. These will probably be related to the research done for St. Christopher's House, but one or two of them may have to be unrelated, simply to prove skills from the course have been learned.

Choosing a topic for your major project:

You may choose any topic. The most important factor is that you are genuinely interested in researching the topic, including prior, published theoretical, qualitative, and other statistical results about it.

Because you will need to research theoretical and qualitative publications about the topic, you are *encouraged* to choose themes related to readings in other courses (urban studies, diversity, media studies). Your statistical analysis and essay for this course may not end up useful for other courses, but it will obviously be helpful to have the background reading and research overlap.

If you choose the same topic as another course, especially Prof. Noack's Media Methods, you should let both professors know, to help us advise you best as you progress in the projects.

You should pay attention immediately to whether there are relevant, available Statistics Canada datasets and appropriate variables. In particular, your primary Dependent Variable (the phenomenon you are predicting) needs to be a continuous variable with a relatively wide range of values (income, spending, distances traveled, hours spent at an activity, etc.) At least one Independent Variable (one of the underlying causes) also needs to be a continuous variable. Keep this in mind from the very start of your research.

Here are three possible research topics:

- Start with the analysis of Barbara Ehrenreich's *Nickel and Dimed: On Not Getting By in America*. Develop a project describing the "underclass" job ghetto of low-paid service work (retail, waitressing, cleaning, childcare).
- Start with the analysis of Robert Putnam's lecture "E Pluribus Unum: Diversity and Community in the Twenty-First Century," *Scandinavian Political Studies* 30, no. 2 (2007): 137-174. Develop a project about the decline of communitarian values in an ethnically-diverse, multicultural society.
- Start with the analysis of Richard Florida's *Cities and the Creative Class*. Develop a project about cultural consumption, liberal values, and the new economic elite.

Clearly, any of these will involve the question of whether and how the theoretical arguments in the books or articles apply to Canada.

Notice how all three topics concern income and earnings, the balance of leisure/labour time, and consumer spending (as dependent variables), but in relation to gender, ethnicity, education, employment, age, and changes in contemporary global society (as independent variables). This type of set-up is ideal for incorporating the statistical skills of this course into the analysis of your final project.

Week 1

Class (Jan. 8): Why advanced stats? Interrelations among many variables

Lab (Jan. 9): Downloading Datasets, find at least two continuous variables in the dataset

Week 2

Class (Jan. 15): Review of Variable Distributions, Bi-Variate comparisons

Lab (Jan. 16): Running Cross-Tabs (chi-square tests), correlations, scatterplots, histograms, and means comparisons

Week 3

Class (Jan. 22): Review of Normal Distribution, z-scores, Confidence and Significance

Lab (Jan. 23): Running Confidence Intervals, Significance Tests

Week 4: DUE IN CLASS at 3PM: Research Progress Report 1 (3-4 pages)

Class (Jan. 29): Assumptions of Regression

Lab (Jan. 30): Running Bi-Variate Regressions and Residual Diagnostics

Progress Report 1: Conceptually map out the initial model for your data analysis. You are not yet interpreting data, but should be able to refer to specific datasets and variables in them. You begin the project with a review of the theoretical framework of your topic, including a preliminary research review of the book(s) and article(s) you are basing your initial framework on. As well as a theoretical overview, you must operationalize the topic into specific variables and relationships between them.

Week 5

Class (Feb. 5): TEST of minimal baseline, bi-variate statistics

Lab (Feb. 6): Individual trouble-shooting on Major Project descriptive statistics

Week 6: DUE IN CLASS at 3PM: Research Progress Report 2 (3-4 pages + data results)

Class (Feb. 12): Introduction to Multiple Regression, including Dummy Variables

Lab (Feb. 13): Re-coding Dummy Variables for Multiple Regression

Progress Report 2: Begin assessing descriptive results from the datasets. Review your conceptual model as you describe the details and distributions of the main variables (as well as any problems, outliers, missing values, etc.), and review the bi-variate relationships between variables and their statistical significance (and again, any problems, outliers, surprises).

Midterm Break (Feb. 16-20)

Week 7

Class (Feb. 26): Transformations and Residual Analysis in Multiple Regression

Lab (Feb. 27): Logarithmic transformations of non-Normal variables in Multiple Regression

Week 8: DUE IN CLASS at 3PM: Research Progress Report 3 (3-4 pages + data results)

Class (Mar. 5): Overall review of Multiple Regression

Lab (Mar. 6): Individual Trouble-shooting on Major Project regression statistics

Progress Report 3: Review your initial Multiple Regression model and preliminary results. Which dummy variables did you have to create? Which variables did you choose to re-code? Are there any non-normal continuous variables that will have to be transformed? Any

Week 9

Class (Mar. 12): Introduction to Factor Analysis

Lab (Mar. 13): Computing and Set-up of Factor Analysis

Week 10: Ungraded Continuation of Regression Results and Interpretation

Class (Mar. 19): More Factor Analysis and Intro to Logistic Regression

Lab (Mar. 20): Generating Logistic Regress Results

Ungraded Progress Report: Bring Progress to Review your up-dated Multiple Regression results in a small groups in class. Your final variables should be all re-coded and transformed. Compare your model and results with publications that use and analyze similar data.

Week 11

Class (Mar. 26): More Logistic Regression issues

Lab (Mar. 27): Interpreting

Week 12: DUE IN CLASS at 3PM: Research Progress Report 5 (3-4 pages + data results)

Class (Apr. 2): "Probit" Regression and the General Linear Model

Lab (Apr. 3): Using General Linear Model to generate your regression results

Progress Report 4: Interpret a Factor Analysis and a Logistic Regression related to your dataset. Assess how important and useful these are for interpreting the primary (ordinary) multiple regression you have been working on.

Week 13

Class (April 9): General Advice for writing up your major project. Individual questions.

NO LAB – Good Friday Holiday

EXAM PERIOD: Major Project Essay is Due.

EXACT DATE to be determined based on exam schedule and project deadlines in other courses. Logistic Regression and Factor Analysis are not required elements of the final essay, but students who incorporate them *properly* have a higher "degree of difficulty" when graded.