

SOCIOLOGY 252 H1F:
INTERMEDIATE QUANTITATIVE METHODS IN SOCIOLOGY

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Web Site: Quercus

Time and Place:

Class: Thursday 12-2 SS2110

Tutorials: Friday 1-3 (NOT weekly) FE36, Sociology, 725 Spadina.

T.A. Dana Wray (dana.wray@@mail.utoronto.ca)

Calendar Description

Provides students with the opportunity to develop an understanding of the logic of multivariate analysis by applying various strategies for the analysis of complex multivariate data.

Prerequisites:

SOC202H1 or equivalent and one SOC course at the 200+ level. Students without this/these prerequisite/s will be removed at any time discovered and without notice."

Overview

This course is a follow-up to a first methods course that includes some introduction to descriptive and inferential statistics and the logic of multivariate analysis. We begin by going back to go forward, reviewing some material on the fundamental building blocks of statistical theory and statistical inference.

We will look at tables to establish the nature of association and the logic of controlling for variables, and then introduce regression and correlation, followed by multiple regression. Multiple regression is a universal technique used in most disciplines that apply quantitative data: it is very flexible, and accommodates most styles of thinking and theorizing.

Near the end of the course, we will consider the extensions of this model that reflect its flexibility, including interaction effects between variables (intersections), nonlinear relationships, and logistic regression for dichotomous outcomes.

Required Work

There will be two computer assignments, in which you will analyze data I provide. The first

assignment will be on cross-classification and tables; the second will use multiple regression. I will teach the use of SAS and describe the data you can analyze in scheduled tutorials. There will be some minimal programming your group will do, depending on your choice of variables from the data provided, but I will post very specific templates for what you need to do, so that you can just edit these template programs with the specifics of the variables you choose.

We will not hold tutorials every week. Tutorials will be held on scheduled weeks in the course; these weeks are listed in the class schedule below. In general tutorials are held on weeks prior to due assignments and before tests. The purpose of tutorials is to introduce you to the software to be used in this class (SAS), the data to be used in class and for assignments, and to review assignment questions and test questions in the weeks before required work is due.

Because tutorials are not held automatically, both the TA and I will be available for individual meetings you schedule by email. This is to ask questions about class material or assignments.

This year both assignments will be done in pairs. You will form pairs voluntarily. Grades will be given at the group level and will apply equally to both students.

The computer lab in Sociology (FE36, in the basement at 725 Spadina) will be open to students in this course at scheduled hours so that students can work on assignments independently. This location will also be available during tutorial hours each week. Public hours for FE36 will be published when they are finalized.

Assignments are written up as short papers meant to analyze a specific research question, following the requirements of the question(s) in the assignment. Results from your computer analyses *should* be embedded into your assignment as tables. SAS allows PDF output which you can embed in your Word document.

There will be an in-class term test, and a final exam during the scheduled exam period. The term test will focus on problems, including some calculation and/or interpretation, but will also include some conceptual questions. *This test will be held in the tutorial room.* The final is non-cumulative, and will include material only from the section on correlation and regression forward.

Software

This year, by special arrangement, this class will have free access to SAS, the largest statistical software package in use around the world.

You will be able to install SAS on your laptop, given the following conditions: 1) you have a 64-bit laptop; 2) you use Windows 7 or later; 3) you have either Boot Camp or Parallels installed on your Mac. If you cannot install SAS on your laptop, you will be able to use it in the lab. We will be using SAS version 9.4.

Data

This year we will use a specific data set for assignments ---the 2015 General Social Survey for Canada. This is a long-term survey run every year by Statistics Canada on a representative sample of Canadians 15 and over. The sample size is 27,695.

We will provide derived versions of these data with already constructed variables, but we will also include the raw variables used to create the constructed variables so that you can create your own variables as well. This will be a choice you make: if you don't want to learn programming on the second assignment, you can use already constructed variables.

Due Dates and Weights for Required Work:

Physical copies of assignments will be handed in on the due date before 5 pm at the Department of Sociology, at 725 Spadina. These assignments are not to be handed in to departmental staff, or by email, but should be handed in by deposit in appropriate boxes in Room 225 designated for course work, using the date/time stamp machine.

Provisional due dates for required work are as follows:

Work	Date	Weights
1. First Assignment	Friday, October 5	20%
2. Term Test	Friday, October 12	20%
3. Second Assignment	Friday, November 23	30%
4. Final Exam	exam period	30%

Please note: Late assignments will be given a 10% reduction in the grade immediately. This means that the assignment will be given a weight equal to .90 of the assigned weight. This increases to 20% if the assignment is late more than 3 school days. Assignments will not be accepted if they are more than a week late. Your grade will be zero on that part of the course.

Quercus

Quercus will be used in this course mainly for two purposes: 1) I will post data, assignments, SAS examples, and course readings there; and 2) I will post most lecture Power Point materials there – when they are presented in class.

Required Reading:

Class Notes

There is set of notes covering all topics in this class that will be sold through Three Cent Copy, on the west side of Spadina, in the block south of Bloor. These notes are assigned reading. The cost is usually around \$10 to \$12.

Texts:

As a student at the University of Toronto, you have online access through the library to this text:

Larry D. Shroeder et al. Understanding Regression Analysis: An Introductory Guide. Beverley Hills, CA: Sage Publications. 1980.

This is a free online text. It will be uploaded on Blackboard.

Barbara Illowsky and Susan Dean. Collaborative Statistics. 2008. Connexions: Online.

Readings:

Besides the notes and the short text on regression, the class schedule includes references to online sources and to posted articles which will supplement the notes used in class. You should especially read introductory articles for multiple regression and logistic regression. They are intended as basic introductions for audiences who know nothing about these topics.

Student Accommodations

Please see me if you have a disability or other need that requires accommodation or classroom modification. I will be glad to help you in whatever way I can.

Missed Deadlines or Tests

Medical Issues: Please note that requests for medically based exemptions for the assignment deadline must be accompanied by a U. of T. medical form, signed in legible handwriting and completely filled out with address and CPSO registration number. The original form must be given to me in person, within 7 business days, with the opportunity for me to make a Xerox copy. Forms that are scanned or xeroxed will not be accepted.

In case of ***illness***, you must supply a duly completed Verification of Student Illness or Injury form (available at www.illnessverification.utoronto.ca). A doctor's note is not acceptable. The form must be placed in a sealed envelope, addressed to the instructor, and submitted with your work at class or to your TA during their office hours. This should be submitted to me or a T.A. within 5 business days after the period of illness noted in the form.

If a ***personal or family crisis*** prevents you from meeting a deadline, you must get a letter from your college registrar. The letter must be placed in a sealed envelope, addressed to the instructor, and submitted with your work at class or to your TA during their office hours.

Term Test

If you miss the term test, you must follow one of the procedures above to qualify for a make-up test. The T.A. will ***not*** run a make-up test separately for each individual. There will be one sitting arranged for all qualified students for a make-up test.

Academic Integrity

Students are expected to know and adhere to the University's principles of academic integrity. Any act of plagiarism or other unethical behavior will be addressed in accordance with University guidelines. Students should be aware that turning in an old paper, or large parts thereof, for credit in a second course, is considered an academic offense. Please see the "Code of Behaviour on Academic Matters"

(<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) for specific information on academic integrity at the U of T.

Appointments

I encourage you to email or phone me using the number on the first page and arrange an appointment at any time. I am in my office on most days. But, in general, I will be in my office from 3-5 on Thursday after this class, if you want to stop by.

I will designate special office hours in the weeks before assignments are due – to be announced later.

Re-marking

We will use specific marking keys for both assignments and tests. Those keys define the universe of possible answers and possible variations in those answers. In a course such as this, the only issue that may come up is a mistake in applying the key to the answers in specific cases. If there is a mistake in an assignment or test you get back, you should see the T.A. *within two weeks of your receipt of the test or assignment*. In general, we will not consider work for re-grading after feedback on a later test or assignment, unless it is in this two week period.

Class Schedule and Readings

<i>Date</i>	<i>Day</i>	<i>Topic / Work</i>	<i>Readings</i>
September 6	Thursday	1. Overview Review of Descriptive Statistics	<p>Notes: Basic Statistics Review sections:</p> <ol style="list-style-type: none"> 1. Measurement 2. Sampling 3. Descriptive Statistics <p>Collaborative Statistics:</p> <ol style="list-style-type: none"> 1. Sampling and Data 1.1 to 1.10 2. Descriptive Statistics 2.1 to 2.4, 2.6 to 2.10
September 13	Thursday	2. Probability and Inference	<p>Notes: Review of Basic Statistics sections:</p> <ol style="list-style-type: none"> 4. Introduction to Probability 5. Probability and Sampling Distributions 6. More Sampling Distributions 7. Tests of Hypotheses <p>Collaborative Statistics:</p> <ol style="list-style-type: none"> 3. Probability 3.1 to 3.4 5. Continuous Random Variables 5.1 and 5.2 6. The Normal Distribution 6.1 to 6.6 7. The Central Limit Theorem 7.1 to 7.5 9. Hypothesis Testing 9.1 to 9.4, 9.7 to 9.10
September 20	Thursday	3. Cross-Classification: Studying Association in Tables	<p>Notes: Cross-Classification Sections:</p> <ol style="list-style-type: none"> 1. Bivariate Associations 2. Measures of Association in Tables <p>Collaborative Statistics:</p> <ol style="list-style-type: none"> 3.5 Contingency Tables
September 21	Friday	Tutorial: Intro to SAS	Notes
September 27	Thursday	4. Multivariate Tables	<p>Notes: Cross-Classification Section:</p> <ol style="list-style-type: none"> 3. Multivariate Tables <p>Online: https://onlinecourses.science.psu.edu/stat504/node/102 Lesson 5.1, 5.2, 5.3</p>

September 28	Friday	Tutorial: SAS Procedures, Class Data Assignment #1	Notes
October 4	Thursday	5. Introduction to Correlation and Regression	<p>Notes: Intro to Correlation and Regression Sections:</p> <ol style="list-style-type: none"> 1. Correlation 2. Bivariate Regression 3. Partitioning of Variance 4. Bivariate Regression in SAS <p>Text:</p> <p>Schroeder Understanding Regression Analysis: Chapter 1: Linear Regression</p> <p>Blackboard:</p> <p>Alan Sykes. An Introduction to Regression Analysis. Pp. 1-7.</p>
October 5	Friday	Assignment #1 Due Tutorial: Test Review	
October 11	Thursday	6. Multiple Regression	<p>Notes: Multiple Regression Sections:</p> <ol style="list-style-type: none"> 1. Covariance Equations 2. Multiple Regression Examples <p>Texts:</p> <p>Schroeder Understanding Regression Analysis Chapter 2: Multiple Regression</p> <p>Blackboard:</p> <p>Alan Sykes. An Introduction to Regression Analysis. Pp. 7-17.</p>
October 12	Friday	Term Test	
October 18	Thursday	7. An Introduction to Models	<p>Notes: Multiple Regression Sections:</p> <ol style="list-style-type: none"> 2. From Equations to Models 3. Causal Interpretation 4. Interpreting an Association using Controls and Mediators
October 25	Thursday	8. Dummy Variables in Regression	<p>Notes: Dummy Variables and the Analysis of Variance Sections:</p> <ol style="list-style-type: none"> 1. Understanding Dummy Variables 2. Two-Way Analysis of Variance (ANOVA). <p>Texts:</p>

			Schroeder Understanding Regression Analysis Chapter 4: Dummy Variables
November 1	Thursday	9. Regression Extensions: Interactions	Notes: Variations in Regression Section: 1. Interactions Blackboard: Thomas Brambor et al. 2005. Understanding Interaction Models. Political Analysis 13: Pp. 1-11.
November 2	Friday	Tutorial: Assignment 2	
November 5-9		Reading Week	
November 15	Thursday	10. Regression Extensions: Nonlinear Regression	Notes: Notes: Variations in Regression Sections: 2. Nonlinear Regression 3. Interpretation
November 16	Friday	Tutorial: Assignment 2	
November 22	Thursday	11. Intro to Logistic Regression I	Notes: Logistic Regression Section: 1. Logistic Regression Blackboard: Chao-Ying Peng et al. 2010. An Introduction to Logistic Regression Analysis. Journal of Educational Research 96: Pp. 1-9.
November 23	Friday	Assignment #2 due	
November 29	Thursday	12. Logistic Regression II	Notes: Logistic Regression Sections: 2. Logistic Regression in SAS 3. Logistic Regression Examples
November 30	Friday	Final Exam Review	