The Department of Sociology and Anthropology  
Sociology 5102F Multiple Regression Analysis  
Course Outline: Fall Term 2018

Instructor: Dr. Zhiqiu Lin  
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Office Hours: 10:15 -11:15 am Fridays or by appointment  

Class Time: 11:35 am - 1:25 pm Fridays  
Lab Hours: 1:35 pm - 2:25 pm Fridays  

(Please note that our first class is on September 7th and the last class is on November 30th; there is no class on October 26th) 

Location of Classroom and Computer Lab: 2308 River Building

Course Objectives and Description  
This course is designed to familiarize students with the basic properties of the general linear models, and to give students the detailed working knowledge of multiple regression analysis including both OLS and logistic regression analysis, as they are the very foundations for studying any other multivariate statistical methods. The course will concentrate on many practical issues concerning the applications of multiple regression analysis, such as regression assumptions, diagnostic procedures, modeling categorical independent and dependent variables (i.e. dummy/binary variables) and statistical interactions. 

This is a graduate course in applied quantitative research methods. Therefore, the course materials will be presented based on the assumption that the students who enroll in this course have already completed an undergraduate course in social statistics, such as SOCI 3002, or have good working knowledge of basic statistics. This implies that the students have a thorough understanding of basic statistical concepts such as variance, standard deviation, correlation, and statistical inferences, hypothesis testing, and good working knowledge of simple linear regression analysis. Students who are weak on descriptive or inferential statistics should independently review the related materials in an introductory social statistics textbook before and during the first two weeks of the term. Elifson’s Fundamentals of Social Statistics (third edition, available on Carleton library Reserves) provides useful discussions of these topics. 

Students are expected to learn the course material through lectures, readings, problem solving and participation in computer laboratory sessions. Computer labs are an important component of this course; they are designed to familiarize students with basic SAS programming and to give each student "hands-on" experience with SAS programming in analysis of sociological data using the general linear models and related statistical techniques. As this is a graduate course with a limited class meeting time, students are expected to spend a considerable amount of time independently in studying course materials and SAS program in order to complete course assignments and a final research project.
Course Requirements & Methods of Evaluation

(1) Assignments
(a) There will be three assignments. Each assignment will involve some calculations either by the student (in the first assignment only) or by the computer; and interpretations of the results of statistical analysis are also major components of each assignment.

(b) Value: 40% in total.
   Assignment #1 (10%) Due date: October 5th in class
   Assignment #2 (15%) Due date: November 9th in class
   Assignment #3 (15%) Due Date: December 7th in Departmental Drop Box (B750 Loeb)

(2) Presentation of the final research project proposal (5%)  
Presentation Date: November 16th
(In order for students to complete their research projects on time, it is important to start to work on the project early. For this purpose, students are required to give a 10 minute presentation on the topics of their research projects and the data they would use.)

(3) Take-home practice research project
(a) A guideline for the project will be posted on Carleton Course website

(b) Due day: December 17th
(c) Value: 55%.
(Please note that if anyone needs an extension after the due date, please contact the course instructor immediately so that we can contact the departmental graduate studies office to arrange for a final paper deferral).

Required Textbooks (all books are listed below have been ordered through Haven Books)


Recommended textbook:


Important Conventions for This Course

1. Except in the cases of documented illness or extenuating circumstances brought to instructor’s attention at least one day before the due date of an assignment including the final research project, there will be a penalty for a late assignment of 10% of the assigned grade per day.

2. All the assignments and the final research project report must be submitted in hard copy; and students must always retain a hard copy of all the assignments that are submitted.

3. All final grades are subject to the Dean’s approval.

Course Schedule
Note: The following schedule may be revised and some topics may be dropped or added; readings, class contents and lab activities will be posted on the course website on CUlearn weekly at least one day before each class. The students are expected to check the website regularly and be prepared before coming to each class.

Topics and Readings

(1) Description of the course and Introduction to the general linear model
Required readings: Ped. 3-11.

Note: the students are expected to review bivariate correlation and regression analysis before this lecture. You can read a chapter on regression analysis and correlation coefficient in Elifson’s Fundamentals of Social Statistics or similar materials in an introductory statistical textbook.

(2) Quick review of basic statistical concepts and methods
Required readings: chapters 1-5, Allison.

(3) The notion of statistical control and multiple regression analysis
Required readings: Ped. 95-99, 156-170.

Computer Lab: Introduction to SAS programing and Basic regression analysis with SAS.
(4) Regression assumptions

Required readings: chapter 6-8, Allison; Berry, *Understanding Regression Assumptions*.

(5) Regression analysis with categorical independent variables

Required readings: Hardy, *Regression with dummy variables*; and chapter 8.5, Allison;

Computer Lab: diagnostic tests and modeling dummy variables with SAS.

(6) Regression analysis with statistical interaction

Required readings: Jacard, Turrisi, and Wan; and Chapter 8 (8.6 and 8.7) Allison, and Baron and Kenny, “moderator versus mediator variable distinction”.

Computer Lab: using SAS to model categorical independent variables and statistical interaction.

(7) Logistic regression analysis

Required readings: Scott Menard, *Applied Logistic Regression Analysis*

Computer Lab: Logistic regression with SAS.

(8) Guest Lecture – 9th November from 1:30 – 2:25 p.m.
“Exploring the Social Determinants of Disability with Secondary Data” with Dr. Andrew Mackenzie, chief in the Centre for Surveillance and Applied Research, Public Health Agency of Canada

(9) Introduction to some advanced data analysis methods (optional pending upon the availability of time)

In accordance with the Carleton University Calendar Regulations, the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100 B+ = 77-79 C+ = 67-69 D+ = 57-59
A = 85-89 B = 73-76 C = 63-66 D = 53-56
A - = 80-84 B - = 70-72 C - = 60-62 D - = 50-52
F = Below 50 WDN = Withdrawn from the course
DEF = Deferred (See above)
Academic Regulations, Accommodations, Plagiarism, Etc.
University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university’s website, here:
www.calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

Academic Accommodations for Students with Disabilities
The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable).

*The deadline for contacting the Paul Menton Centre regarding accommodation for final exams for the Fall 2018 (December) exam period is November 9, 2018.

For Religious Obligations:
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website:

For Pregnancy:
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website:

For Survivors of Sexual Violence
As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit:
www.carleton.ca/sexual-violence-support

Accommodation for Student Activities
Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.


Plagiarism
Plagiarism is the passing off of someone else's work as your own and is a serious academic offence. For the details of what constitutes plagiarism, the potential penalties and the procedures refer to the section on Instructional Offences in the Undergraduate Calendar. Students are expected to familiarize themselves with and follow the Carleton University Student Academic Integrity Policy (See https://carleton.ca/registrar/academic-integrity/). The Policy is strictly enforced and is binding on all students. Academic dishonesty in any form will not be tolerated. Students who infringe the Policy may be subject to one of several penalties.

What are the Penalties for Plagiarism?
A student found to have plagiarized an assignment may be subject to one of several penalties including but not limited to: a grade of zero, a failure or a reduced grade for the piece of academic work; reduction of final grade in the course; completion of a remediation process; resubmission of academic work; withdrawal from course(s); suspension from a program of study; a letter of reprimand.

What are the Procedures?
All allegations of plagiarism are reported to the faculty of Dean of FASS and Management. Documentation is prepared by instructors and departmental chairs. The Dean writes to the student and the University Ombudsperson about the alleged plagiarism. The Dean reviews the allegation. If it is not resolved at this level then it is referred to a tribunal appointed by the Senate.

Plagiarism and cheating at the graduate level are viewed as being particularly serious and the sanctions imposed are accordingly severe.

Assistant for Students:
Academic and Career Development Services: http://carleton.ca/sacds/
Writing Services: http://www.carleton.ca/csas/writing-services/
Peer Assisted Study Sessions (PASS): https://carleton.ca/csas/group-support/pass/

Important Information:
- Student or professor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).
• Students must always retain a hard copy of all work that is submitted.
• Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.
• Carleton University is committed to protecting the privacy of those who study or work here (currently and formerly). To that end, Carleton’s Privacy Office seeks to encourage the implementation of the privacy provisions of Ontario’s *Freedom of Information and Protection of Privacy Act* (FIPPA) within the university.
• In accordance with FIPPA, please ensure all communication with staff/faculty is via your Carleton email account. To get your Carleton Email you will need to activate your MyCarletonOne account through Carleton Central. Once you have activated your MyCarletonOne account, log into the MyCarleton Portal.
• Please note that you will be able to link your MyCarletonOne account to other non-MyCarletonOne accounts and receive emails from us. However, for us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid MyCarletonOne address. Therefore, it would be easier to respond to your inquiries if you would send all email from your connect account. If you do not have or have yet to activate this account, you may wish to do so by visiting [https://students.carleton.ca/](https://students.carleton.ca/)