Introduction to Quantitative Methods in Sociology

Instructor: Fedor A. Dokshin, PhD

E-mail: fedor.dokshin@utoronto.ca

Office: Room 372 at Sociology Dept.
725 Spadina Ave, 3rd floor

Office Hours: Tuesdays, 3:00-5:00pm

Teaching Assistants:

Lei Chai, MA
Email: lei.chai@mail.utoronto.ca

Lance Stewart, MA
Email: lance.stewart@mail.utoronto.ca

Dana Wray, MA
Email: dana.wray@mail.utoronto.ca

Catherine Yeh, MA
Email: catherine.yeh@mail.utoronto.ca

Class: LEC0101: Wed, 10am to 12pm
LEC5101: Wed, 6pm to 8pm
Location: WI 1016 (both lectures)

Tutorials: TUT0401 (WED:12:00-13:30);
TUT0501 (WED:13:30-15:00);
TUT05101 (WED:18:00-19:30);
TUT0101 (TH:9:00-10:30);
TUT0201 (TH:10:30-12:00);
TUT0301 (TH:12:30-14:00)

Location: FE36 (725 Spadina Ave, Basement)

Class website: https://q.utoronto.ca

Course Description and Aims

This course is designed to introduce statistical methods to students majoring in sociology. The class focuses on fundamental statistical concepts and on the *application* of basic statistical techniques. You are expected to be familiar with and apply algebraic operations, but the course will avoid advanced mathematical concepts and proofs. We will start by introducing the building blocks of statistics: variables, levels of measurement, and probability distributions. We will then learn how to use quantitative data from samples to estimate characteristics of populations, test whether the estimates differ across subpopulations, and make inferences about relationships between two or more observed variables.

After taking this course you should be able to:

1. *Describe* how researchers use samples to make inferences about populations.
2. *Identify* important assumptions that underlie basic statistical analyses reported in the scholarly literature and in the news.
3. *Use* basic statistical techniques to (a) describe key characteristics of populations, (b) infer population means and proportions from sample data, (c) compare means and proportions of two or more groups, (d) conduct a test of independence on a contingency table, (e) describe the association between two variables, and (d) estimate the linear relationship between two or more variables.
4. *Gain familiarity* with the SPSS statistical software package by practicing the techniques we cover in class.
5. *Begin to develop an intuition* about how the concepts and techniques you learn in this class would generalize to accommodate more sophisticated analyses.

Prerequisite

The prerequisite to take this course is SOC101Y1 or SOC102H1+SOC103H1 or SOC102H1+SOC150H1 or SOC103H1+SOC150H1 or SOC100H1+SOC150H. Students without this prerequisite will be removed at any time and without notice.

Learning Components and Course Requirements

Lectures:

Weekly lectures will cover the main topics from the assigned readings and highlight important concepts and techniques. We will place special emphasis on working through example problems in class. Attendance will not be recorded and is not part of your final grade, but responsibility of being aware of what the professor says in lectures (including administrative announcements) rests with the student. See "Keys to Success" below for additional reasons why you should attend lectures.

Text (*note the edition*):

Healey, Joseph F., Steven G. Prus, and Riva Lieflander. 2018. Statistics: A Tool for Social Research, **4th Canadian Ed**. Nelson Education Ltd.

The textbook is available in the U of T bookstore. **IMPORTANT**: with the purchase of the text ($126.95), you will receive a password for Aplia, the online system this class uses for homework assignments. Alternatively, you may purchase an online-only MindTap account, which comes bundled with an electronic book and Aplia ($59.95).

Calculator:

You will need a calculator to complete homework assignments and for use during exams. A scientific calculator capable of doing basic algebraic functions is sufficient (you do not need a graphing calculator). **IMPORTANT**: you will NOT be allowed to use a graphing calculator, or a calculator on your cellphone or computer during exams.

Tutorials:

Lab/tutorial sessions for this class will be held in the computer lab located in the basement of the Sociology Department building (FE36; 725 Spadina Ave).

The main purpose of these sessions is to introduce you to SPSS, a statistical software package widely used in academic research and in industry. Your teaching assistants will guide you through exercises to practice applying the statistical techniques we cover to actual data. The exercises are from your textbook, so **you will need to bring your textbook to lab**.

In addition, there will be three lab assignments during the course of the semester. You will have time to work on these assignments during tutorial sessions, and we encourage you to try to finish all lab work during this time. If you find yourself needing extra time to complete the lab assignments, however, you can use computers in the Robarts Map and Data Library (5th floor of Robarts) or during extra lab hours (see Computer Lab Access below).

The first two assignments are due in lab (on 27 September and on 1 November), while the third can be handed in during the optional final tutorial session (7 December), during the final class (6 December), or in the Sociology room 225 dropbox anytime before 5pm on 6 December. Students must hand in a hard copy of the lab assignment on or before its due date. **A penalty of 5% points per work day will be assessed for late work.**

Tutorials also provide an opportunity to dialogue with teaching assistants and with fellow classmates about concepts that are unclear to you. The lab/tutorial sessions immediately preceding mid-term tests and the final exam will be used exclusively as a review session; there will be no SPSS lab work during those weeks. Rather, students are encouraged to ask questions about concepts that will be featured on the tests. There will be no lab/tutorial during weeks in which a test is given.

Weekly homework assignments:

To reinforce course material, students will be required to complete weekly homework assignments. These assignments will be available at 12pm each Wednesday and can be completed until 11:45pm each Friday. That is, you will have a 60-hour window in which each assignment can be completed. No homework will be assigned during weeks in which mid-term tests are given. **To complete the homework, you must first create an online account through the course website at** https://login.nelsonbrain.com/course/MTPQ-88PN-8VFB. You must have an access code to register your account.

Each week a homework assignment is given, you will log in using the ID and password you created during online registration. The website will contain a short assignment that corresponds with the textbook reading. After answering most questions, you will receive immediate feedback on your performance—i.e., you will know which questions were correct and which ones were incorrect. Most questions allow a total of three takes. Your mark for the assignment will be based on the highest of the three attempts. Because there is such large window of time during which assignments can be taken (60 hours) and because assignments can be taken anywhere where an internet connection is available, **there are no opportunities for make-up assignments**. Each individual homework assignment is worth only a small fraction of your final mark (1.5%), so missing one or two homework assignments will not have a drastic impact on the overall mark calculation.

Mid-term tests and final exam:

Two mid-term tests will be given. The first, on 1 October, will consist of material from classes 1-3. The second test will be given on 12 November and will consist of content covered in classes 5-8.

Each test will consist of multiple choice questions and open-ended questions. You will have 1 hour and 50 minutes to complete the test. Simple calculators with a square root function will be needed on the test, but you may not use any type of phone as a calculator. Please bring your student identification. Also, make sure that you have several pencils and pens in case one or more of your writing instruments stops working.

A final exam will be given during the final exam period in December. The final exam is cumulative—it will cover material from classes 10-12, but also from the material covered earlier in the semester. The exam will have a similar format to the mid-term tests, consisting of multiple choice and open-ended questions. You will have 2 hours to complete the exam. Please bring a calculator and your student identification card.

Evaluation Components

	Number of occasions	Percent value	Total percent of final mark
Syllabus & start of semester quiz	1	1%	1%
Homework assignments	10	1.5% each	15%
Lab assignments	3	5% each	15%
Mid-term tests	2	22% each	44%
Final Exam	1	25%	25%
			100% (total)

Keys to Success

Reading and lectures:

It is the rule and not the exception to find new material confusing on first reading. The philosopher René Descartes wrote that one needs to read a book three times to understand it. The point is that every additional exposure to the material deepens your understanding of the content. After a first reading of a chapter you will have a broad sense of its contents. Having this exposure will enable you to get much more out of the lecture. The lecture will reinforce the content that you read and you will be able to anticipate the parts of the lecture that require a little extra attention and ask relevant questions. To be successful in this class, you should come to lecture having read the assigned chapters. Even a skim of the relevant pages is better than no exposure, if you are running short on time.

Practice, Practice, Practice:

Contrary to some popular beliefs, mathematical competence is not intrinsic, but, like any skill, it improves with practice. Do not be intimidated if the ideas in the textbook do not come naturally—they don't! In statistics, as in any other class, practice

makes perfect. Doing example problems distills the abstract concepts, so that you can more clearly see how they fit together. This is why the course will have weekly homework assignments designed to reinforce the content from the book and lectures. It is in your long-term interest to do these diligently and ask questions as they arise. The TAs are available for help during tutorials and I welcome your questions during my office hours.

Communication and Quercus

Email:

Please use your U of T email address to communicate with me about **personal matters**, or to communicate with the TAs. You can expect us to respond to your emails within 24 hours, M-F 9am-5pm. Here's a couple of important points about email communication:

- Please note that the instructor and TA will not respond to emails about issues that are clearly specified in the syllabus (e.g., due dates, office hours times).
- Address your questions about tutorials to your TA.
- Requests for make-up tests and other accommodations should be sent to the course instructor (Professor Dokshin), not the TA.
- All emails should include the course code SOC202 in the subject line, and be signed with the student's full name and student number.

Quercus website and discussion board:

The University of Toronto Quercus system will contain the course syllabus, assignments, discussion board, and course announcements. To clarify **questions** regarding the **syllabus, assignments**, as well as **substantive questions about the readings**, please use the designated discussion boards on the Quercus site. A TA will actively monitor the discussion board and will respond to any questions posted there.

Office hours:

Do not hesitate to come talk to me if you have questions or concerns about the class, or if you need assistance. You do not need to email me in advance, if you plan to stop by during office hours. My regular office hours are listed at the top of this syllabus.

Late Work and Make-up Tests

Lab assignments:

Lab assignments must be submitted (**in hard copy**) to your TA during the tutorial session. See the course schedule (below) for the due dates of the three lab assignments. Late submission will result in a 5% deduction for each day the assignment is late (starting with the day the assignment is due, up to a maximum of 50% of the grade) unless you have a legitimate, documented reason beyond your control. Notify the Professor and your TA promptly, if you intend to submit your assignment late to arrange for the submission of the lab assignment with the necessary documentation

Homework:

Homework assignments can be completed from anywhere with an internet connection and anytime between 12pm on Wednesdays and 11:45pm on Fridays, so there are no make-ups offered for these assignments.

Make-up tests:

Students who miss a test will receive a mark of zero for that test unless reasons beyond their control prevent them from taking it. **Within three days** of the missed test, students who wish to write the make-up test must give their TA or the Undergraduate Advisor in the Sociology Department a written request for special consideration which explains why the test was missed, accompanied by **proper documentation from a physician or college registrar** (see below). **Make-up tests will be held one week after the original date, during class time.** You should arrange to get lecture notes from a classmate. A student who misses a test and the subsequent make-up test for a valid reason will not have a third chance to take the test.

Documentation:

If you miss a test or assignment deadline, you must provide one of the following types of documentation can serve to verify a legitimate reason:

1. **Verification of Student Illness or Injury Form:**
   o In case of illness, you must supply a completed Verification of Student Illness or Injury form (available at www.illnessverification.utoronto.ca). A doctor's note is also acceptable, provided that the start and anticipated end date of the illness is included.
2. **College registrar's letter:**
   o If a **personal or family crisis** prevents you from meeting a deadline, you must get a letter from your college registrar (it is a good idea anyway to advise your college registrar if a crisis is interfering with your studies).
3. **Letter from Accessibility Services**
   o This documentation is useful for ongoing medical issues that require special accommodation.

Computer Lab Access

If you need more time to complete the lab assignments outside of the tutorial sessions, the FE-36 computer lab will be open outside of tutorial times during the semester (open lab schedule TBA).

SPSS is also available on computers in the Robarts Map and Data Library (5th floor of Robarts Library). This computer lab is open most hours during regular library hours. Please note: The lab may be booked for special events. Check the weekly schedule posted by the lab doors (not available online).

To check the availability of computers at the library online, go to: https://onesearch.library.utoronto.ca/wifi-and-computers.

Grade Appeals

The instructor and teaching assistants do their best to mark work fairly, consistently, and accurately. Nevertheless, one of us may unintentionally err in our marking duties. If you believe that your test or lab assignment has been mismarked, please adhere to the following rules

- For basic mathematical errors, simply alert one of the TAs about the error.
- In the case of more substantive appeals, **you must wait at least 24 hours** after receiving your mark. If you wish to appeal, please submit a thorough written explanation to Professor Dokshin of why you think your mark should be altered. If your appeal is deemed appropriate, the entirety of your test/assignment will be re-graded. Please note that upon re-grade your mark may go down, stay the same, or go up. **You have 30 days after receiving a mark to appeal it.**

Academic Integrity

Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the U of T degree that you earn will be valued as a true indication of your individual academic achievement, and will continue to receive the respect and recognition it deserves.

Familiarize yourself with the University of Toronto's Code of Behaviour on Academic Matters (http://www.governingcouncil.utoronto.ca/policies/behaveac.htm). It is the rule book for academic behaviour at the U of T, and you are expected to know the rules. Potential offences include, but are not limited to:

- Obtaining or providing unauthorized assistance on any assignment including:
  o working in groups on assignments that are supposed to be individual work;
  o having someone rewrite or add material to your work while "editing";
  o crowdsourcing assignment answers through Facebook or another forum.
- Lending your work to a classmate who submits it as his/her own without your permission.
- Using or possessing any unauthorized aid, including a cell phone.
- Looking at someone else's answers.

- Letting someone else look at your answers.
- Misrepresenting your identity.
- Submitting an altered test for re-grading.
- Falsifying or altering any documentation required by the University, including doctor's notes.
- Falsifying institutional documents or grades.

Accessibility Needs

If you require accommodations or have any accessibility concerns, please visit http://studentlife.utoronto.ca/accessibility as soon as possible.

Course Schedule

Week	Class	Tutorials	Topic & Reading	Assignments Due
1	10-Sep	11/12-Sep	Introduction, level of measurement, descriptive statistics Reading: Basic Mathematics Review; Chapters 1 & 2 up to section 2.5 (p. 49)	Syllabus/start of semester quiz due on Fri, 13-Sep, 11:45pm HW 1 due on Fri, 13-Sep, 11:45pm
2	17-Sep	18/19-Sep	More descriptive statistics, measures of central tendency and dispersion Reading: Rest of Chapter 2 & Chapter 3	HW 2 due on Fri, 20-Sep, 11:45pm
3	24-Sep	25/26-Sep	The normal curve, z-scores, estimating probabilities Reading: Chapter 4	HW 3 due on Fri, 27-Sep, 11:45pm Lab Assignment 1 Due in Tutorial
4	01-Oct	No tutorial	Midterm 1	No Homework
5	08-Oct	09/10-Oct	Sampling, sampling distributions, and confidence intervals Reading: Chapters 5 & 6	HW 4 due on Fri, 11-Oct, 11:45pm
6	15-Oct	16/17-Oct	Hypothesis testing and measures of association for nominal (and ordinal) variables Reading: Chapter 7 & 8	HW 5 due on Fri, 18-Oct, 11:45pm
7	22-Oct	23/24-Oct	Hypothesis testing for means and proportions Reading: Chapter 10	HW 6 due on Fri, 25-Oct, 11:45pm
8	29-Oct	30/31-Oct	Hypothesis testing with means and proportions (two-sample case) Reading: Chapter 11	HW 7 due on Fri, 01-Nov, 11:45pm Lab Assignment 2 Due in Tutorial
READING WEEK: NO CLASS OR TUTORIALS NOV-4 TO NOV-8				
9	12-Nov	No tutorial	Midterm 2	No Homework
10	19-Nov	20/21-Nov	Analysis of Variance (ANOVA) Reading: Chapter 12	HW 8 due on Fri, 22-Nov, 11:45pm
11	26-Nov	27/28-Nov	Hypothesis testing and measures of association for interval-ratio variables Reading: TBA	HW 9 due on Fri, 29-Nov, 11:45pm
12	03-Dec	05-Dec *(Optional review session)*	Introduction to multiple regression Reading: TBA	HW 10 due on Fri, 06-Dec, 11:45pm **Lab 3 Assignment Due** (submit in class on 6 Dec, in optional tutorial on 6 Dec, in the Sociology room 225 dropbox before 5pm on Friday, 7 Dec)
FINAL EXAM: DATE, TIME, AND LOCATION TBA **(Note: exam will cover material from entire course)**				