SOC202H1F – L0201: Introduction to Quantitative Methods in Sociology

Fall 2025

Instructor: Momo Tanaka
Office Hours: Fridays 11:00-12:00; or by appointment
https://utoronto.zoom.us/my/momotanaka

TAs: Dorian DiTommaso and Kevin Park

Emails: See *Communications* below

Lectures: Wednesdays 9:10-11:00
Location: See ACORN

Tutorials: Mondays 11:30-13:00; 13:30-15:00; 15:30-17:00, or 17:30-19:00
Location: See ACORN

Course 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. We will learn 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 samples, (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 (f) estimate the linear relationship between two or more variables.
4. *Gain familiarity* with the programming language R in implementing class concepts on real data.
5. *Begin to develop an intuition* about how the concepts and techniques you learn in this class would generalize to accommodate more sophisticated analyses.

Course Requirements

Prerequisite course

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

Required textbook

Healey, Joseph F., Christopher Donoghue, and Steven G. Prus. 2023. *Statistics: A Tool for Social Research*, **5th Canadian Ed**. Nelson Education Ltd.

The textbook is available in the U of T bookstore. You do not need access to MindTap unless you wish to access the electronic version of the book or the online resources/homework exercises. You may use older editions of the textbook at your own risk. You are responsible for identifying and rectifying any discrepancies between editions.

Required software

The tutorials and lab assignments will require the use of a free statistical software called R and RStudio. You will be taught how to access this software through JupyterHub during your tutorials.

Calculator

You will need a calculator to complete homework assignments and for use during tests. A scientific calculator capable of doing basic functions (including square roots and exponents) is sufficient. You do not need a graphing calculator.

Course Components

Lecture

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.

Tutorial

Lab/tutorial sessions for this class will be led by a Teaching Assistant in the computer lab.

The main purpose of tutorial is to introduce you to R, a statistical language 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 real data. Tutorials also provide an opportunity to dialogue with Teaching Assistants and with fellow classmates about concepts that are unclear to you.

There will be five lab exercises due during the course of the semester. You will have time to work on these assignments during tutorial sessions, and we encourage you to complete as much work as possible during this time.

There will be no lab/tutorial in the week of the Midterm test.

Evaluation

Discussion board participation

We will keep an active class discussion board on Quercus. You will receive 1% per contribution to the discussion board, with a maximum of 1% earned per week and contributing up to 5% of your overall grade.

A contribution can be:

- A concept that you are confused about or struggling to understand
- An explanation, example, or approach helped you understand a new concept
- Comment on someone else's post to try to answer their confusion

You may contribute more than once a week but you can only earn 1% per week. That is, you must participate throughout the term and you cannot make up this participation by making multiple posts at the end of the term. Make-ups and extensions will not be granted for this portion of your grade, given the small allotment of your grade, the flexible time frame, and the value of staying up-to-date with lecture material.

Lab exercises

There will be five exercises over the course of the term. These exercises intended to be manageable opportunities to practice applying concepts and help you build confidence in R while contributing modestly to your overall grade.

The exercise instructions will be posted on Quercus, and you will also submit your answers through Quercus on the assigned due dates (see Course Schedule). A penalty of 5% points per day will be assessed for late work (see Late Work and Extensions).

Midterm test

A midterm will be given during lecture time on October 8, covering material from Weeks 1-5. Further details will be shared closer to the date of the exam.

Final exam

The final exam will be given during the Final Exam period in December, specific day and time TBA. The final exam will be cumulative but will have a greater focus on material from Weeks 6-13.

Item	% of final grade
Discussion board participation	5%
Exercise 1	5%
Exercise 2	10%
Exercise 3	10%
Exercise 4	10%
Exercise 5	10%
Midterm	20%
Final	30%
Total	**100%**

Communication

Quercus

The University of Toronto Quercus system will contain the course syllabus, assignments, discussion board, and course announcements.

Email

All emails should include the **course code SOC202 in the subject line**, and include a proper sign-off with the **your full name and student number**. Please use your U of T email address.

During the semester, you can expect us to respond to your emails within 24 hours, M-F 9am-5pm. If you email Friday evening, you are not guaranteed a response until the following Monday. 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).

- **For questions about course content**, consider using the Quercus discussion board or bringing up the question during tutorial or during office hours. You may email your TAs about any additional questions.
- **For questions about assignment expectations**, email your TAs.
- **For questions about enrollment**, email the course instructor.
- **For requests for make-up tests and other accommodations**, email the course instructor, *not* the TAs. See "Late Work and Extensions" below for more detail about what to include in your email.

Wait! Before you email, make sure you have read the remarks about email etiquette and usage above.

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Keys to Success

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 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.

Reading the textbook

Statistics is like an entire language of its own. Do not be discouraged if you find the textbook difficult at first! It might take several readings to fully understand the textbook content. It might be most useful to read the textbook *before and after* lecture. The lecture and the textbook will work in tandem: being familiar with the terms and concepts before the lecture will help you follow along in the lecture, and hearing the lecture material will help your comprehension of the textbook.

If you find yourself struggling with the textbook, seek out other sources like YouTube videos, online articles, podcasts, alternative textbooks, or the Quercus discussion board. You will often find that there is some magical phrase or way of thinking about a concept that just makes things "click." If my way of explaining things or the textbook's way of explaining things isn't doing it for you, try finding another voice that does.

One caveat to this piece of advice: there are often a lot of different mathematical approaches to similar concepts, particularly if you compare across disciplines or fields of research. Please use the textbook as your guide for the "right" formulas.

This is a marathon, not a sprint

It is in your long-term interest to keep up to date with course content, which means doing the readings each week and attending both tutorials and lectures. Giving yourself time to internalize the language and logic of statistics over time will be far more effective than cramming just before the midterm or the exam.

This is true for most of your classes, but especially for this course because statistics is cumulative. What you learn in Week 2 will be necessary for Week 5, and what you learn in Week 5 will be necessary for Week 9. Furthermore, the deeper your understanding of the material in Week 2, the easier Week 5 will be for you. Time spent at the beginning of the semester studying your notes, running over concepts in your head, and reading the textbook can save you a lot of time down the road.

Late Work and Extensions

Extensions and missed deadlines

What happens if you still need an extension? Sometimes, problems unexpectedly come up—for example, a family member falls severely ill and you are their caretaker. Other times, you fall ill and require others to take care of you. These problems typically do not only affect one course and typically need a more comprehensive response.

If you are unable to turn in an assignment at the designated time for medical reasons, you must email the course instructor (**not the TA**) and complete *one* of the following:

(1) Absence declaration via ACORN (can only be used once during the semester);
(2) U of T Verification of Illness or Injury Form;
(3) College Registrar's letter (e.g., in case of personal/family crisis or emergency); or
(4) An up-to-date Letter of Academic Accommodation from Accessibility Services.

For other reasons, such as family or other personal reasons, please contact your college registrar and have them email me. This is for your benefit, as your registrar will have resources that they can mobilize on your behalf.

Students who miss an assignment deadline or a test without permission of the instructor will receive a mark of zero for that evaluation. Within three days of missing a paper deadline or test, students must send the instructor a request for consideration.

To avoid unnecessary stress for yourself and our TAs, stay in touch with us. Do not wait until the last minute to tell us about any difficulties you are having, and please address personal issues with your registrar as they come up.

Late penalty

Be sure to start your lab exercises early. Technical, personal, and other issues can arise. Ultimately, you are responsible for completing your lab exercises on time.

Late lab exercise submissions will result in a 5% deduction for each day the exercise is late (starting with the day the exercise is due, up to a maximum of 50% of the grade) unless you have a legitimate, documented reason beyond your control (see above).

NOTE: It is your responsibility to ensure that submitted document files are not corrupted. **If the submitted file cannot be opened, the exercise will be treated as incomplete.**

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. If you believe that your test or lab assignment has been mismarked, please adhere to the following rules:

- **For basic mathematical errors or questions about feedback or grading**, politely email the TAs inquiring about the issue. Please be patient and respectful in your inquiry.

If after communicating with the TA, you remain unsatisfied with your grade, you can make a more substantive appeal.

- **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 the course instructor 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.

Accessibility

The University of Toronto is committed to accessibility. If you require accommodations or have any accessibility concerns, please visit http://studentlife.utoronto.ca/accessibility as soon as possible.

Artificial Intelligence

You *may not* use generative AI to generate answers (code, writing, or otherwise) for any course assessment, including assignments and exams. You are responsible for ensuring that you can accurately explain and justify any work that you submit.

You *may* use generative AI tools as a *supplementary resource* for learning. This may mean for troubleshooting or "spellchecking" code that you have written or that you have retrieved from tutorial material, or trying to interpret course material. However, please note that there are limitations to the usefulness of generative AI for this course. They are unreliable for mathematical problem-solving and they often produce code that is inefficient or uses nonexistent packages/deprecated functions.

I encourage you to be deliberate and conscientious in the use of generative AI throughout this course. Instead of relying on AI, make use of AI only as one of many tools at your disposal in learning course concepts. Other tools include attending lectures, engaging actively in tutorials, making use of online forums (such as the course Quercus discussion board or Stack Exchange), and searching for additional materials such as YouTube videos or different textbooks to gain understanding of course content.

Ultimately, a commitment to learning over a reliance on AI will not only improve your performance on the in-class midterm and final exam but also serve you when you inevitably encounter statistics in future coursework, in professional settings, and in everyday life.

Academic Integrity

In general, please read the University's principle of academic integrity carefully and thoroughly. Clarifying questions—as they pertain to this class—are welcome. Students are expected to know and adhere to these principles. Any act of unethical behavior will be addressed in accordance with university guidelines.

In general, you are expected to do your own work and not provide unauthorized help to other students. These include, but are not limited to:

- Sharing answers to assignments, including on social media, email, or in person
- Obtaining or providing unauthorized assistance on any assignment including:
    - Having someone re/write or add material to your work
    - Crowdsourcing assignment answers through Discord, Facebook, or another forum
    - Using AI beyond this course's acceptable uses (see above)
- Lending your work to a classmate who submits it as their own
- Letting someone else look at your answers on a test or assignment
- Submitting an altered assignment/test for re-grading
- Falsifying or altering any documentation required by the University, including doctor's notes
- Misrepresenting your identity

Resources regarding plagiarism can also be found here.

Weekly Schedule & Readings

Week	Topic	Lecture	Tutorial	Readings	Due dates
1	Introduction to Statistics	Sept 3	Sept 8	Chapter 1.1–1.4	
2	Levels of Measurement and Basic Descriptives	Sept 10	Sept 15	Chapter 1.5-1.6, Chapter 2.1-2.5, plus 2.6 **only** sections on bar charts and histograms	
3	Central Tendency and Dispersion	Sept 17	Sept 22	All of Chapter 3 but **skip** sections on Index of Qualitative Variation and Coefficient of Variation	Assignment 1 DUE **Friday Sept 19**, 11:59pm
4	The Normal Curve and Z-Scores	Sept 24	Sept 29	Chapter 4	
5	Sampling and Sampling Distribution	Oct 1	Oct 6	Chapter 5	Assignment 2 DUE **Friday Oct 3** 11:59pm
6		Oct 8	No tutorial	N/A	In-class Midterm Test
7	Estimation and Confidence	Oct 15	Oct 20	Chapter 6	
8	Hypothesis Testing with Chi-Square and PRE	Oct 22	Nov 3 Note: This is after Reading Week	Chapter 7 Chapter 8, but **skip** section 8.6	Assignment 3 DUE **Friday Oct 17**, 11:59pm
9	**Reading week**				
10	One- and Two-Sample Tests	Nov 5	Nov 10	Chapter 10 Chapter 11	
11	ANOVA	Nov 12	Nov 17	Chapter 12	Assignment 4 DUE **Friday Nov 14**, 11:59pm
12	Linear Regression	Nov 19	Nov 24	Chapter 13	
13	Intro to Multiple Regression	Nov 26	Dec 1	Chapter 14	Assignment 5 DUE **Friday Nov 28**, 11:59pm
Final Exam - TBD					