

The University of Western Ontario School  
of Health Studies

**Quantitative Analysis of Social Factors for  
Population Health**

**HS4091A**

Sep-Dec 2024

**Instructor:** Dr. Afshin Vafaei

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**Office Hours:**

**Location:**

**GTA:**

**Lecture Times:**

**Tutorials/group discussions:**

**Location:** TBD

**Course Website:**

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**Prerequisite Checking**

Minimum of 60% [mandatory] in each of Health Sciences 1001A/B and Health Sciences 1002A/B.

Minimum of 70% [mandatory] in each of Health Sciences 2801A and Health Sciences 3801A.

**Course Description**

The overarching aim of this course is to understand the process of applying quantitative methods to answer questions about the impact of social factors on the occurrence and trajectory of diseases in general and vulnerable populations. The course provides an overview of main social epidemiology concepts, basic inequity measures, and techniques of access and analysis of administrative social and health data.

**Learning Objectives**

By the end of the course, the students should be able to:

1. apply epidemiological quantitative research methods to understand how social factors influence the health of populations by scientific exploration of real-life research questions
2. understand key concepts of social epidemiology
3. list and describe social determinants of health following an evidence-based approach
4. recognize and apply main measurement and analytic methods in studying social determinants of health
5. assess and calculate health inequities in Canadian populations by analyzing representative data
6. access, import, and manipulate freely available (vis Western library) administrative health data

**Reading List**

There is no required textbook for this course. Readings (either in PDF format or through Western library links) will be posted in OWL.

Many of the readings are from these highly recommended textbooks:

Berkman (2014). Social Epidemiology.

Oakes (2017). Methods in Social Epidemiology.

*A main requirement is the arrangement for a strong internet connection for accessing online materials including the databases.*

## Class Schedule

DATE	TOPICS	READINGS	Evaluation Item
<b>Section 1: Understanding social epidemiology</b>			
Week 1: Sep 11 & 13	What is social epidemiology? A historical framework	Chapter 1 of the social epi book	
Week 2: Sep 18 & 20	A review of theories of social determinants of health	Public Health Agency of Canada document on Determinants of Health: <a href="https://www.canada.ca/en/public-health/services/health-promotion/population-health/what-determines-health.html#determinants">https://www.canada.ca/en/public-health/services/health-promotion/population-health/what-determines-health.html#determinants</a>	
Week 3 Sep 25 & 27	Pathways linking social determinants of health to health	Chapter 14 of the social epi book	<b>Quiz 1</b>
<b>Section 2: Methods of social Epidemiology</b>			
Week 4 Oct 2 & 4	Measurement of social factors	Chapter 2 of the Methods book	
Week 5 Oct 9 & 11	Calculation of social inequalities. There will be in-class workshop on how to access and download data from Western library databases. No software except Microsoft Excel is required	Keppel 2005. Methodological issues in measuring health disparities (p. 1 to 9). <a href="https://www.cdc.gov/nchs/data/series/sr_02/sr02_141.pdf">https://www.cdc.gov/nchs/data/series/sr_02/sr02_141.pdf</a>	Inequity assignment
<b>Oct. 14-18, 2024: Fall Term Reading Week</b>			
Week 6 Oct 23 & 25	Methodological issues in social epidemiology (structural confounding, clustering of populations/multilevel nature of data)	On OWL Brightspace	
Week 7 Oct 30 Nov 1	Intersections between different levels of social factors in generating health outcomes	TBD	<b>Quiz 2</b>
<b>Section 3: Applications in Population Health</b>			
Week 8 Nov 6 & 8	Individual level determinants (personal): sex/gender, income, education	TBD	Student presentations
Week 9 Nov 13 & 15	Individual level determinants (contextual): lifecourse exposures, working conditions	TBD	Student presentations
Week 10 Nov 20 & 27	Community level determinants: social relations, social capital	TBD	Student presentations
Week 11 Nov 27 & 29	Community level determinants: Neighbourhood environment, Transportation	TBD	Student presentations <b>Quiz 3</b>
Week 12 Dec 4 & 6	Macro level determinants: politics, governance	TBD	Student presentations

## Evaluation and Assignments

Assessment	Weight of Final Mark	Due Date
In-class quizzes	30% (10% each)	Sep 27, Nov 1, Nov 29
Inequity calculation assignment	20%	Oct 11
Participation	10%	Ongoing
<b>Group assignment</b>		
Presentation	15%	Varies
Final paper	25%	

### Participation: 10% of the overall grade

Students are encouraged to contribute to creating a dynamic learning environment in this course. There will be opportunities for constructive discussions and brief but structured in-class activities. Depending on the nature of the activity, students are expected to complete the activity in-class or submit their work to OWL BrightSpace.

### Inequity calculation assignment: 20% of the overall grade

The goal of this assignments is using the real data to calculate health disparities among different social groups. Students will access the administrative data and select a health inequity. Then, standard measures of inequity will be calculated and interpreted across selected social groups.

### In-class quizzes: 30% (10% each) of the overall grade

These individual assessments evaluate understanding of topics covered in each section. The quizzes include multiple choice, fill in the blank, and short answer questions and will be held during the

### Group assignment: Presentation 15%; research paper 25% of overall grade

By completing this assignment students will be able to address health inequities in vulnerable populations by exploring the most pertinent social determinants. **This provides practical experience for future research or professional career.** In groups of 5-6 students: 1) identify a vulnerable population who suffers from a health outcome disproportionately (a documented social inequity), 2) discuss (and back up by literature) social determinants that can explain these inequities, 3) suggest interventions to modify the health inequities based on identified determinants.

### Assignment components

#### *a) Grouping students*

All students **should** contact the instructor by Sep 27, 2024 with **three** vulnerable populations they are familiar with or interested in working on. Populations can be very general such as ‘indigenous people’, ‘rural residents’ or very specific such as ‘workers of a specific industry’. The instructor then groups students based on their order of interest.

#### *b) Group meetings to select the topic of the research (due Oct 11, 2024)*

Group members will meet and select a health inequity that exists in the population as well as potential social determinants. The health inequities and determinants should be very specific. For example, mortality is a very general health outcome and is very hard to explain by specific determinants. Also, the distinction between ‘determinant’ and ‘risk factor’ merits consideration. For instance, in exploration of higher rates of diabetes in indigenous populations, lower socio-economic status is a potential factor that *determines* levels of physical activity and bad nutrition (risk factors), which in turn results in diabetes. After the group reaches a consensus, the topic will be sent to the instructor for approval (no later than Oct 11, 2024, 11:59 pm).

c) *Presentation (weeks 8 to 12)*

In 7-8 minutes, each group will present **the outline** of their **proposed research paper** to the class and will receive feedback. The outline should include: a summary of the issue based on the literature review, a conceptual model that explains the determinant-health outcome relationship, a **plan** to access the data and assess the inequity quantitatively, and a very short description of clinical and public health importance of the issue. Groups will be assigned to present in a week in which the lecture topic aligns with their research questions.

d) *Final research paper (10 days after the presentation)*

After the outline is approved, the groups will write the final research paper (10-12 pages, double-spaced, font 12).

The paper will include the following sections:

Introduction: includes the background information about the specific health inequity and potential determinants, the purpose of the paper, and the relevance of the problem from a public health perspective.

Specific data and evidence: using the available data sources the existence of the inequity will be documented using the techniques learned in the *inequity assignment*.

Models that explain inequities: the students should critically think why the inequity exists in the selected vulnerable population and propose a model that best explains the studied inequity.

Intervention: built on the proposed model(s) and obtained data, following logical arguments students will propose feasible recommendations for intervention. Different policy/program alternatives will be presented and their feasibility in the population of interest will be compared.

Conclusion: in 1 or 2 paragraphs the main message of the paper and future direction will be summarized.

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**Note:** not a requirement for this course but if the groups are interested the instructor will supervise students to further develop their paper for a student conference presentation and/or a publishable article after the course.

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### **Missed Work**

Attendance in all classes is **mandatory**, if you missed a class and the associated class activity mark it is not possible to provide equal opportunity to make-up the missed classes.

### **Missed Exams**

If you are too ill to write a quiz or exam or there are other ‘extenuating circumstances beyond your control’ you **must** document this either with a medical certificate (if available) and then request academic consideration. If you are ill for an extended period of time, it is your responsibility to contact the instructor immediately on your return to campus. Only **one** make-up time will be scheduled for missed quizzes on the Tuesday after (Oct 2, 2024 for quiz 1, and Nov 6, 2024 for quiz 2, and Dec 4 for quiz 3) after the class at 12:00 pm for those with approved academic consideration.

## Course/University Policies

1. The website for Registrar Services is <http://www.registrar.uwo.ca>.

In accordance with [policy](#), the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

### 2. Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, in the [Academic Calendar \(westerncalendar.uwo.ca\)](#).

#### Plagiarism

Student work is expected to be original. Plagiarism is a serious academic offence and could lead to a zero on the assignment in question, a zero in this course, or your expulsion from the university. You are plagiarizing if you insert a phrase, sentence or paragraph taken directly from another author without acknowledging that the work belongs to him/her. Similarly, you are plagiarizing if you paraphrase or summarize another author's ideas without acknowledging that the ideas belong to someone else. All papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and Turnitin.com ([www.turnitin.com](http://www.turnitin.com)).

#### Re-submission of Previously Graded Material

Without the explicit written permission of the instructor, you may not submit any academic work for which credit has been obtained previously, or for which credit is being sought, in another course or program of study in the University or elsewhere.

#### Use of Statistical Pattern Recognition on Multiple Choice Exams

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

### 3. Use of Electronic Devices

**During Exams:** Unless you have medical accommodations that require you to do so, or explicit permission from the instructor of the course, you may not use any electronic devices during ANY tests, quizzes, midterms, examinations, or other in-class evaluations.

**During Lectures and Tutorials:** Although you are welcome to use a computer during lecture and tutorial periods, you are expected to use the computer for scholastic purposes only, and refrain from engaging in any activities that may distract other students from learning. From time to time, your professor may ask the class to turn off all computers, to facilitate learning or discussion of the material presented in a particular class.

**Unless explicitly noted otherwise, you may not make audio or video recordings of lectures – nor may you edit, re-use, distribute, or re-broadcast any of the material posted to the course website.**

**Personal Response Systems** (“clickers”) may be used in some classes. For those classes in which we use this technology, it is your responsibility to ensure that the device is activated and functional. You must speak with the course instructor immediately, if you have any concerns about whether or not your clicker is malfunctioning.

You must use only your own clicker. For all components of this course in which clicker records are used to compute a portion of the grade:

- The use of somebody else's clicker in class constitutes a scholastic offence;

- The possession of a clicker belonging to another student will be interpreted as an attempt to commit a scholastic offense

#### **4. Academic Considerations and Absences from Lectures and Assessments**

##### ***Religious Accommodation***

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request (in writing) any necessary academic considerations at least two weeks prior to the holiday to the academic counsellors in their Home Department. Additional information is provided in the [Western Multicultural Calendar](#).

##### ***Academic Accommodation***

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. Students with ongoing accommodation needs within this course are also encouraged to contact [Accessible Education](#), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found [here](#).

##### ***Academic Consideration***

The University recognizes that a student's ability to meet their academic responsibilities may, on occasion, be impaired by extenuating circumstances that are medical or compassionate in nature. These extenuating circumstances may be acute (short term), or it may be chronic (long term), or chronic with acute episodes. In all cases, students are advised to consult with the academic counsellors in their home units, at their earliest opportunity. Academic counsellors may refer students to [Accessible Education](#) for ongoing academic accommodations.

Most forms of academic consideration require documentation, and this documentation is to be submitted to academic counsellors within five (5) business days of their return to academic responsibilities. Any such documents will be retained in the student's file, and will be held in confidence in accordance with the University's [Official Student Record Information Privacy Policy](#). Once the petition and supporting documents have been received and assessed, appropriate academic considerations shall be determined by academic counseling, in consultation with the student's instructor(s). Academic considerations may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, arranging Special Exams or Incompletes, re-weighting course requirements, or granting late withdrawals without academic penalty. Academic considerations shall be granted only where the documentation indicates that the onset, duration and severity of the illness are such that the student could not reasonably be expected to complete their academic responsibilities. (Note – it will not be sufficient to provide documentation indicating simply that the student “was seen for a medical reason” or “was ill.”).

Whenever possible, students who require academic considerations should provide notification and documentation in advance of due dates, examinations, etc. Under no circumstances are students expected to submit rationales for (or documentation of) any absences, to course instructors. Students are, however, required to follow-up with course instructors, in a timely fashion, to identify the ways in which the academic consideration will be implemented.

##### **Examination Conflicts**

A student completing tests or examinations with flexible submission times (e.g., where one or more evaluation is a take-home assessment) cannot request alternative arrangements unless a conflict cannot be avoided by rescheduling writing the exam to a different time within the window specified by the instructor. This applies to direct conflicts as well as “heavy load” conflicts (e.g., three exams within a 23-hour period). The student should discuss any concerns about a potential conflict and/or request academic considerations with their academic counselling unit prior to the deadline to drop a course without academic penalty

In the case of online tests and examinations, use of a “Conflict Room,” wherein student can write two proctored exams concurrently, will be interpreted as arrangements for continuous proctoring.

### 5. Contingency Plan for an In-Person Class Pivoting to 100% Online Learning

In the event of a situation that requires this course to pivot to online content delivery, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

### 6. Online Proctoring

Tests and examinations in this course may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western’s Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

### 7. Grades

Where possible assignment objectives and rubrics will be posted on OWL.

Generally, students can expect some form of feedback on their performance in a course before the drop date.

A+	90-100	<i>One could scarcely expect better from a student at this level</i>
A	80-89	<i>Superior work that is clearly above average</i>
B	70-79	<i>Good work, meeting all requirements and eminently satisfactory</i> <i>satisfactory</i>
C	60-69	<i>Competent work, meeting requirements</i>
D	50-59	<i>Fair work, minimally acceptable.</i>
F	below 50	<i>Fail</i>

**Rounding of Grades** (for example, bumping a 79 to 80%):

This is a practice some students request. The final grade documented is the grade that you have achieved. There is no rounding to the next grade level, or ‘giving away’ of marks. Please don’t ask me to do this for you; the response will be “please review the course outline where this is presented”.

### Appealing a Grade Within this Course

You have the right to appeal any grade within this course. The grounds for a grade appeal may be one or more of: medical or compassionate circumstances, extenuating circumstances beyond the student’s control, bias, inaccuracy, or unfairness. All grounds advanced in a request for relief must be supported by a clear and detailed explanation of the reasons for the request together with all supporting documentation.

Appeals generally proceed in this order:

1. Course instructor (informal consultation)
2. Department Chair (submission of written request)
3. The Dean of the Faculty (submission of written request)

In the case of perceived procedural unfairness, steps 2 and 3 are carried out within the Department and

Faculty offering the course. In the case of extenuating medical or compassionate circumstances that impact on a grade, steps 2 and 3 are carried out within a student's Home Department and Faculty.

A request for relief against a mark or grade must be initiated with the instructor as soon as possible after the mark is issued. In the event that the instructor is not available to the student, or fails to act, or if the matter is not resolved satisfactorily with the instructor, a written request for relief must be submitted to the Chair of the Department within three weeks of the date that the mark was issued. In the case of a final grade in a course, the written request for relief must be submitted to the Chair of the department by January 31<sup>st</sup> (for first-term half courses) or June 30<sup>th</sup> (for second-term half courses or full-year courses)

## **8. Support Services**

### **Health and Wellness:**

Information regarding health and wellness-related services available to students may be found at <http://www.health.uwo.ca/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<http://www.health.uwo.ca/>) for a complete list of options about how to obtain help.

There are various support services around campus and these include, but are not limited to:

*Student Development Centre* -- <http://www.sdc.uwo.ca/ssd/>

*Ombudsperson Office* -- <http://www.uwo.ca/ombuds/>

## **9. Student Code of Conduct**

The purpose of the Code of Student Conduct is to define the general standard of conduct expected of students registered at Western University, provide examples of behaviour that constitutes a breach of this standard of conduct, provide examples of sanctions that may be imposed and set out the disciplinary procedures that the University will follow. For more information, visit <https://www.uwo.ca/univsec/pdf/board/code.pdf>