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**University of Toronto**
**SOCIOLOGY 497H1S: New Topics in Sociology,**
**Advanced Quantitative Methods in Sociology**
**Department of Sociology**
**Winter, 2023**

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| **Class Time:** | Wednesdays 3:10PM-6:00PM |
| **Location:** | FE41 – 371 Bloor Street East, Basement |
| **Instructor:** | Cassandra Barber |
| **Office Hours:** | by appointment |
| **Email:** | cassandra.barber@utoronto.ca |

**Calendar Description:** *Prepares students to undertake advanced quantitative research methods in sociology. Students will learn to prepare data for analysis, carry out analyses, and interpret research results using a variety of advanced quantitative methods.*

**Prerequisites:** SOC202H1 or equivalent. Students without the prerequisites will be removed at any time discovered and without notice.

*Recommended Preparation*: SOC252H1

**Course Description**

In this course we will examine commonly used advanced quantitative methods in sociology – linear regression, logistic regression, multilevel modeling, survival analysis and factor analysis. We will discuss the application of these methods and how to interpret results. We will focus on practical aspects of sociological inquiry and spend time discussing how to select the best method in response to a research question.

There will also be an applied online lab portion of the class. We will conduct data analysis using Statistical Package for Social Sciences (SPSS), a statistical analysis software package. In the lab, we will work through a series of exercises using secondary data. Students will have an opportunity to conduct research in an area of interest using a method covered during the course.

**Course Objectives**

- To be exposed to a range of advanced quantitative methods
- To develop a research paper
- To demonstrate the ability to conduct analyses using SPSS statistical software, interpret results and communicate findings

**Required Text**

Course readings consists of both methodological and peer-reviewed research articles and texts. There are no required text for this course. However, I highly recommend that everyone have at least one basic methods textbook. If you do not have one from a previous course, I would recommend that you look at purchasing any edition of the following text:

- Tabachnick, Barbara G., and Linda S. Fidell. *Using multivariate statistics*. Boston, MA: Pearson.

Readings from the above textbook listed in the course schedule are optional (though recommended), the empirical readings are mandatory. We will spend a portion of most classes discussing how the methods are applied. The assigned empirical readings are provided below in the class schedule and are accessible online from the University of Toronto Library.

**Methods of Assessment**

Each assessment component is described below.

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| Participation | 15% | |
| Research Paper: | | |
| Research Proposal | 20% | (February 15 at 3:00PM) |
| Presentation | 25% | (April 5) |
| Final Research Paper | 40% | (April 5 at 3:00PM) |

Please try to submit your assignments in on time. Late assignments will be penalized except in cases of serious illness or emergencies. **You will lose 5% per day that an assignment is late, and it will not be accepted if it is more than one week late,** unless you have made special arrangements with me at least two weeks prior to the due date of the assignment or have an emergency.

*Participation:* Participation is worth 15% of your grade. Students are expected to come to class having read the assigned readings and prepared to actively participate in class discussions. During each class students will be expected to provide a summary of the text's methods and results section, share their thoughts, opinions on what was or was not useful and relate the material to your area of interest and/or projects. The more you participate, the more you will get from the class and the more interesting it will be for everyone.

*Research Paper*: The research paper will be completed in two stages over the course of the semester. The research paper can be on any topic but must employ one of the methods covered in the course.

Your paper must be between 1,500 and 2,000 words in length (not including title, abstract, references, or tables, charts and figures) using 12-point font Times New Roman, double-spaced, 1" margins and submitted as a word file. Abstract must be 250 words or less. Please post the word count on the front page for both the abstract and paper separately.

**Research papers must be submitted by 3:00PM on April 5 on Quercus.**

More details will be provided on Quercus and during lectures.

*Research Proposal:* In this assessment you will propose a research question, identify your dataset and outline the methods you will employ. This assignment will serve as the basis of your research paper and provides students with an opportunity to receive feedback. **Proposals must be submitted by 3:00PM on February 15 on Quercus.**

*Presentation:* During the last day of class (April 5), each student will present their research paper to the class. You may choose to create a poster presentation or a PowerPoint slide presentation. We will construct this day similar to an academic conference. Each student will be awarded 10-minutes to present their research paper, followed by a 5-minute question period. This exercise will help prepare students to present their research at an academic conference and/or future workplace meetings. I will provide guidance on how to make your posters or slide presentations later in the term.

**Selecting a Topic, Data, and Method**

- You are free to select any topic for the research paper. It can be part of a thesis, something you started for another course, a previous idea or topic of interest. However, this project cannot be based on a paper that you are currently working on with someone else. This must be your work.
- You will want to select data that is readily available and that will help you answer your question. Feel free to browse publicly available datasets from ICPSR (http://www.icpsr.umich.edu/icpsrweb/ICPSR/access/index.jsp). There are also several national and international publicly available datasets available from:
    - Statistics Canada (https://www150.statcan.gc.ca/n1/en/type/data?MM=1)
    - The Interuniversity Consortium for Political and Social Research (ICPSR) at the University of Michigan (http://www.icpsr.umich.edu/icpsrweb/)
    - The US General Social Survey (GSS) at the North American Opinion Research Centre at the University of Chicago (https://gssdataexplorer.norc.org/)
    - The World Values Survey (WVS; http://www.worldvaluessurvey.org)
    - The European Social Survey (ESS; https://www.europeansocialsurvey.org/data/)
    - The International Social Survey Program (ISSP; http://w.issp.org/menu-top/home/)
    - The Understanding America Study (UAS; https://uasdata.usc.edu/index.php)
- Lastly, your paper must employ one of the methods covered during the course.

**Class Schedule**

| Class | Date | Topics, Labs, Readings and Assignments |
|---|---|---|
| 1 | Jan 11 | Topic: Introduction to Advanced Quantitative Research |
| 2 | Jan 18 | Topic: Research Questions, Quantitative Methods & Power Calculations<br>Readings: Chapters 1 & 2<br>*Empirical Readings:* |

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| | | - Bryman, Alan. 2007. "The Research Question in Social Research: What is its Role?" *International Journal of Social Research Methodology* 10(1):5-20.<br>- Serdar, Ceyhan Ceran, Murat Cihan, Doğan Yücel, and Muhittin A. Serdar. 2021. "Sample size, power and effect size revisited: simplified and practical approaches in pre-clinical, clinical and laboratory studies." *Biochemia medica* 31(1):1-27. |
| 3 | Jan 25 | Topic: Correlation & Regression Analysis (**Lab**)<br>Readings: Chapters 3 & 4<br>*Empirical Readings*:<br>- Zou, Kelly H., Kermal Tuncali and Stuart G. Silverman. 2003. "Correlation and Simple Linear Regression." *Radiology* 227:617-628.<br>- Holland, P. W. 1986. "Statistics and causal inference." *Journal of the American Statistical Association* 81(396):945-960.<br>- Coutinho, Anastasia J., Kathleen Klink, Peter Wingrove, Stephen Petterson, Robert L. Phillips, and Andrew Bazemore. 2017. "Changes in Primary Care Graduate Medical Education Are Not Correlated With Indicators of Need: Are States Missing an Opportunity to Strengthen Their Primary Care Workforce?" *Academic Medicine* 92(9):1280-1286. |
| 4 | Feb 1 | Topic: Categorical Independent Variables and Interaction Effects (**Lab**)<br>*Empirical Readings*:<br>- Raley, R. Kelly, Michelle L. Frisco, and Elizabeth Wildsmith. 2005. "Maternal Cohabitation and Educational Success." *Sociology of Education* 78:155.<br>- McVeigh, Rory and Juliana M. Sobolewski. 2007. "Red Counties, Blue Counties, and Occupational Segregation by Sex and Race." *The American Journal of Sociology* 113(2):446–506.<br>- Willms, Douglas J., Mark S. Tremblay and Peter T. Katzmarzyk. 2003. "Geographic and Demographic Variation in the Prevalence of Overweight Canadian Children." *Obesity Research* 11(5):668-673. |
| 5 | Feb 8 | Topic: Multiple Regression (**Lab**)<br>Reading: Chapter 5<br>*Empirical Readings*:<br>- Eva Kevin W., Harold I. Reiter, Jack Rosenfeld, Kien Trinh, Timothy L. Wood, Geoffrey R. Norman. 2012. "Association Between a Medical School Admission Process Using the Multiple Mini-interview and National Licensing Examination Scores." *JAMA* 308(21):2233–2240.<br>- Margolis, Rachel and Myrskyla, Mikko. 2011. "A Global Perspective on Happiness and Fertility." *Population and Development Review* 37(1):29-56.<br>- Waite, Sean, and Nicole Denier. 2015. "Gay Pay for Straight Work: Mechanisms Generating Disadvantage." *Gender & Society* 29(4):561–88. |
| 6 | Feb 15 | Topic: Logistic Regression (**Lab**)<br>Reading: Chapter 10<br>*Empirical Readings*:<br>- Choi, Kate H., and Melissa L. Martinson. 2018. "The Relationship Between Low Birthweight and Childhood Health: Disparities by Race, Ethnicity, and National Origin." *Annals of Epidemiology* 28(10):704–709.e4.<br>- Smith, Michael S and Sean Waite. 2019. "Occulational Demand, Cumcultive Disadvantage and Gender: Differences in University |

| | | Graduates' Early Career Earnings." Canadian Journal of Sociology 44(2):165-194. |
| | | - Wright, Laura, Sarah Knudson, and Matthew Johnson. 2021. "Consequences of Teen Parenthood for Teen Mothers and Fathers in Canada." *Canadian Studies in Population* 48(4):441–68. |
| | | **Assignment: Research Proposal Due at 3:00PM** |
| - | Feb 22 | Reading Week |
| 7 | March 1 | Topic: Multinominal Regression (**Lab**)<br>*Empirical Readings*:<br>- Barber, Cassandra, Raquel Burgess, Margo Mountjoy, Rob Whyte, Meredith Vanstone, and Lawrence Grierson. 2022. "Associations between admissions factors and the need for remediation." *Advances in Health Sciences Education* 27(2):475-489.<br>- McGrail, Matthew R., Belinda G. O'Sullivan and Deborah J. Russell. 2018. "Rural training pathways: The return rate of doctors to work in the same region as their basic medical training." Human Resources for Health 16(56).<br>- Haan, Michael, Zhou Yu, and Elena Draghici. 2021. "Household Formation in Canada and the United States: Insights Into Differences by Race, Ethnicity, Immigrant Populations, and Country." *Housing Policy Debate* 1-22.<br>- Choi, Kate H, Rachel E. Goldberg. 2020. "The Social Significance of Interracial Cohabitation: Inferences Based on Fertility Behaviour." *Demography* 57:1727-1751. |
| 8 | March 8 | Topic: Survival Analysis (**Lab**)<br>Reading: Chapter 11<br>*Empirical Readings*:<br>- Choi, Kate H., Sagi Ramaj, and Michael Haan. 2020. "Age of the oldest child and internal migration of immigrant families: A study using administrative data from immigrant landing and tax files." *Population, Space and Place* 27(4):e2409.<br>- Margolis, Rachel and Mikko Myrskylä. 2015. "Parental Well-being Surrounding First Birth as a Determinant of Further Parity Progression." *Demography* 52(4):1147-1166.<br>- Li, Xiaochen, Shuyun Xu, Muqing Yu, Ke Wang, Yu Tao, Ying Zhou, Jing Shi, et al. 2020. "Risk factors for severity and mortality in adult COVID-19 inpatients in Wuhan." *The Journal of Allergy and Clinical Immunology* 146(1):110–118. |
| 9 | March 15 | Topic: Multilevel Models (**Lab**)<br>Reading: Chapter 14<br>*Empirical Readings*:<br>- Cuddy, Monica M., Chunyan Liu, Wenli Ouyang, Michael Barone, Aaron Young, David Johnson. 2022. "An Examination of the Associations Among USMLE Step 3 Scores and the Likelihood of Disciplinary Action in Practice." *Academic Medicine* 97(10):1504-1510.<br>- Caro, Daniel H., James Ted McDonald, and J. Douglas Willms. 2009. "Socio-economic status and academic achievement trajectories from childhood to adolescence." *Canadian Journal of Education/Revue canadienne de l'éducation* 32(3):558-590. |

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| | | - Garner, Catherine L., and Stephen W. Raudenbush. 1991. "Neighborhood effects on educational attainment: A multilevel analysis." *Sociology of Education* 251-262. |
| 10 | March 22 | Topic: Survey Design, Relibaility and Vailidity<br>*Empirical Readings*:<br>- Artino, Anthony R. Jr., Jeffery S. La Rochelle, Kent J. Dezee and Hunter Gehlback. 2014. "Developing questionnaires for educational research: AMEE Guide No. 87." *Medical Teacher* 36(6):463-474.<br>- Kimberlin, Carole L., and Almut G. Winterstein. 2008. "Validity and reliability of measurement instruments used in research." *American Journal of Health-SystemPpharmacy* 65(23):2276-2284.<br>- Cangiarella, Joan, Colleen Gillespie, Judy A. Shea, Gail Morrison and Steven B. Abramson. 2016. "Accelerated medical education: A survey of deans and program directors." *Medical Education Online* 21:1. |
| 11 | March 29 | Topic: Factor Analysis & Structural Equation Modeling (**Lab**)<br>Reading: Chapter 13 & 14<br>Empirical Readings:<br>- Tavakol, S., Reg Dennick and Mohsen Tavakol. 2011. "Psychometric Properties and Confirmatory Factor Analysis of the Jefferson Scale of Physician Empathy." *BMC Med Educ* 11(54).<br>- Violato, Claudio, Jacqueline L. Gauer, Efrem M. Violato, Dimple MS. Patel. 2020. "A Study of the Validity of the New MCAT Exam." *Academic Medicine* 95(3):396-400.<br>- Barber, Cassandra, Saad Chahine, Jimmie Leppink and Cees van der Vleuten. 2022. "Global Perceptions on Social Accountability and Outcomes: A Survey of Medical Schools." *Teaching and Learning in Medicine* (ahead-of-print), 1–10. doi:10.1080/10401334.2022.2103815. |
| 12 | April 5 | Topic: Data Visualization & Student Presentations<br>**Assignment: Research Presentations and Paper Submission** |

Note: If there is no lab session, classes will be held in our regular class time from 3:10-6:00PM

*Labs:* Labs are held online from 5:00pm-6:00pm on the following dates:

- Jan 25
- Feb 1
- Feb 8
- Feb 15
- March 1
- March 8
- March 15
- March 29

If there is no lab session, classes will be held in our regular class time from 3:10-6:00PM

Lab are designed to provide students with applied experience conducting analysis. They are designed to complement the weeks methodological technique. Labs will be structured in two sections. The first section will be comprised of an exercise in which students will work through a series of questions using a dataset. The second half will be dedicated for students to work on their research paper.

**Class Format and Requirements**

Students are expected to regularly attend scheduled classes and labs on time. Classes will be comprised of a blend of lectures, group discussions, and labs. The first half of each class will be dedicated to new material, in lecture and group discussion format. During the second half of the class on dates where there is a lab session, we will learn how to analyze quantitative data using SPSS.

*Videotaping and recording classes* is strictly forbidden without written permission from the instructor.

*Office Hours:* by appointment.

*Communication:* cassandra.barber@utoronto.ca (I will respond to emails within 24 hours)

*Deadlines:* Any request for a deadline extension for assignments should be made at least two weeks prior to the due date of the assignment. Assignments that are handed in late without prior arrangement with the instructor will be penalized 5% per day and will not be accepted if it is more than one week late, unless you have made special arrangements with the instructor or have an emergency.

Students who are late in submitting an assignment <u>for medical reasons,</u> need to email the instructor (not the TA), and also declare their absence on the system (ACORN).

NOTE: Because of COVID-19, students do NOT need to submit the usual documentmetion, i.e., medical notes of the Verification of Illness forms.

Students who are late in submitting an assignment <u>for other reasons, such as family or other personal reasons,</u> should request their College Registrar to email the instructor.

**Important Policies**

*Academic Misconduct:* 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 University of Toronto 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. Cheating, misrepresentation, and plagiarism will not be tolerated. Students who commit an academic offence face serious penalties. Know where you stand by reading the "Code of Behaviour on Academic Matters" in the Calendar of the Faculty of Arts and Science.

*Grade Appeals:* Students who have concerns about the mark they receive are required to submit in writing their reasons for this, along with a copy of the marked work, no later than 2 weeks after assignments have been returned to the class.

*Electronic Communications and Quercus:* The University of Toronto Quercus system will contain the course syllabus, assignments, discussion board, and course announcements. Students are

responsible for the content of all course materials and for checking their official utoronto.ca email address regularly.

*Student Responsibility:* You are expected to know the contents of the syllabus. Please consult the syllabus before emailing the instructor. And you are responsible for all the material covered each week, as well as announcements posted on the course website (make sure to turn on the notifications of your choice on Quercus).

*Accessibility:* The University of Toronto is committed to accessibility. If you require accommodations or have any accessibility concerns, please visit http://studentlife.utoronto.ca/as as soon as possible. If you are registered with Accessibility Services, please forward your accommodations paperwork to the instructor within the first two weeks of the course so that arrangements can be made.

*Equity, Diversity, and Inclusion:* The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

**Resources**

*Writing Center*: Students can attend workshops and arrange one-on-one appointments to discuss their writing projects: www.writing.utoronto.ca.

*Crisis Lines*: Students can access a list of free crisis lines at https://www.toronto.ca/311/knowledgebase/kb/docs/articles/311-toronto/information-and-business-development/crisis-lines-suicide-depression-telephone-support-lines-non-crisis-mental-health-services.html. These include crisis lines specific for suicide, LGBT-issues, depression, anxiety, and sexual assault. Some lines are anonymous, and most are available 24-hours a day. The following is a list of phone numbers and websites that students may find useful:

- 24/7 Canada Suicide Prevention Service (CSPS) 1-833-456-4566
- 24/7 Crisis Text Line Canada: text CONNECT to 686868
- UofT Campus Community Police: 416-978-2222
- WalkSmart: 416-978-7233
- UofT Accessibility Services: 416-978-8060
- 24/7 Good2Talk (For depression, anxiety, resources): 1-866-925-5454
- LGBTIQ+ Community Trans Lifeline: 877-330-6366
- 24/7 Mental Health # for veterans and family members: 1800-268-7708
- Wounded Warriors (for vets): 1888-706-4808
- UofT Health and Wellness: 416-978-8030
- UofT Sexual Violence and Prevention Support Centre: 416-978-2266
- UofT Anti-Racism and Cultural Diversity Office: 416-978-1259
- UofT Sexual and Gender Diversity Office: 416-978-5624○24/7 General Distress HelpLine: 416-408-HELP (4357)

- Gerstein Centre (Mental Health Crisis): 416-929-5200
- 24/7 Assaulted Women's Helpline: 416-863-0511
- 24/7 Toronto Rape Crisis Centre: 416-597-8808
- Jewish Family and Child (Sliding Scale Therapy, Bereavement): 416-638-7800

*Registrar's Office*: Students are encouraged to contact their registrar promptly with any unexpected difficulties they may experience during the course.