Course Description

Overview: Much of what we know about the world around us comes from statistics. We are inundated by the media with statistical claims about our society—what we believe and think, what we buy, how well we are doing financially, etc. But how do we evaluate what we read, hear, and see? How do we use statistics to make honest assessments of social processes, rather than to simply confirm our preconceived notions?

In this introductory course in statistics, we will cover the basics of descriptive and inferential statistics. Descriptive statistics involve organizing and summarizing key characteristics of data. The techniques of inferential statistics guide informed judgments about the unknown characteristics of a population based on the known characteristics of a sample. We will also measure and evaluate our uncertainty about those judgments.

Throughout, we will draw on real-world examples from social science, including public opinion polls, surveys, and economic data. In addition to learning the basics of statistical analysis, this course will also introduce students to the use of computing software (Stata) for data analysis.
The emphasis of this course will be on a combination of computation, understanding the process of analysis, and interpreting our results. No prior knowledge of statistics is assumed or required, although students should have working knowledge of algebra.

**Pre-requisites:** 1.0 Sociology course at the 1000 level.

**Anti-requisites:** Biology 2244A/B; Economics 2122A/B, 2222A/B; Geography 2210A/B; Health Sciences 3801A/B; MOS 2242A/B; Psychology 2810, 2820E, 2830A/B, 2850A/B, 2851A/B; Social Work 2207A/B; Statistical Sciences 2035, 2141A/B, 2143A/B, 2244A/B, 2858A/B.

**Learning Outcomes**

By the end of the term, students will be able to:
1. Recognize the terminology and techniques of basic statistical analysis.
2. Compute and interpret descriptive statistics by looking at summary measures (e.g., mean, median, mode, percentiles, standard deviation) and common graphical tools (e.g., tables, bar plots, histograms, etc.).
3. Decide on and carry out the appropriate statistical test to use in real-life research contexts.
4. Gain basic familiarity with the statistical software package Stata in order to explore and interpret relationships in social science survey data.
5. Be aware of and critically consume statistical information encountered in everyday life.
6. Read and evaluate empirical, quantitative sociological research.

**Textbook and Other Course Materials**

**Textbook:** We will rely primarily on the following textbook:


It is available for free at the following website: [https://openstax.org/details/books/introductory-statistics](https://openstax.org/details/books/introductory-statistics). You have the option of viewing the book’s chapters online or downloading a PDF version. Each chapter has a number of example and “try it” problems throughout, as well as practice questions at the end. You do *not* need to complete these, although you may find them helpful for reviewing the material and checking your understanding. You can also skip the “Using the TI-83 Calculator” sections.

Assigned readings from the textbook are labeled **IS** in the course schedule below.

**Statistical Software:** While the focus of this course is on helping you learn basic statistical concepts and tools, learning these concepts is often aided by analyzing real data using statistical analysis software. Throughout the term, we will gain basic familiarity with the software package called **Stata**. More information on using Stata will follow in the first few weeks of class.
Students have two choices for obtaining Stata on their personal computers:

1. You can purchase a 6-month license for $48 USD (or about $65 CAD). Be sure to purchase the Stata/IC version of the program (the SE or MP versions are only necessary for very large datasets, which we won’t be using in this class). You have the option of purchasing a license for a longer period of time (e.g., annual or perpetual), but these are more expensive, and 6 months will more than suffice for our class.

2. You may also use Stata for free through the MyVLab remote access interface. To set up MyVLab on your personal computer, visit https://myvlab.uwo.ca/. Please note that I must register our class for you to have access to Stata through MyVLab. So, if you don’t immediately see Stata on your MyVLab desktop, allow me and the Social Science Technology Services staff about a week after the start of classes to get everyone registered. If after that point, you still don’t see Stata, send me an email.

Note that the versions of Stata may differ between these two options (if you purchase Stata on your own, you’ll be using version 16, whereas MyVLab might have a slightly older version like version 15). The differences between these versions are very minor.

Calculator: You will need a calculator for this class. It should be able to take square roots and natural logs (\( \ln x \)). You won’t need anything fancier than that, and it shouldn’t run you more than about $20. (As this course is being offered virtually, you may use the calculator on your phones.)

Additional Materials: Additional readings and materials will be made available through the course website on OWL.

Course Evaluation

Summary of Course Components:

1. Weekly Activities on OWL 20%
2. Problem Sets 50%
3. Final Exam 30%

Weekly Activities on OWL (20%): Each week, I will post a module to our course site on OWL, which can be found by clicking on the Course Content tab on the left-hand side of the homepage. These modules will consist of short videos, text explanations of the material, and examples. Embedded throughout each week’s modules will be a set of questions and exercises designed to help you practice what we’re learning. You will not be evaluated based on whether you get the right answers, only that you answered all of them. If you complete the activities and answer all the questions, then you will obtain a full participation mark for that week.

Furthermore, because I understand that things come up over the course of a term, and because we are living through extraordinary circumstances, I will only count 10 of the 12 weekly activity modules toward your course mark. In other words, each student is permitted to miss or skip 2 of the weekly modules. This is intended to serve as a universal accommodation available to all students.

---

1 Part of the reason we’re using a free, open-source textbook this term is to help lessen the financial burden of the class, given the option to purchase Stata.
students, for any reason, and with no need for documentation. That said, once released, weekly modules will be available for the remainder of the term so that students who miss one can still access the material.

New modules will be released each Monday at 9:00am, beginning on September 14, 2020. Students will have one week to complete all of that week’s material at their own pace. All activities and practice questions must be completed by the next Monday (at 11:55pm).

**Problem Sets (50%)**: In statistics, as in life, practice makes habit. As such, there will be five (5) problem sets to provide you with the opportunity to practice what we learn—including what we do on Stata—in a relatively low-stakes, non-test environment. Problem sets will be made available through OWL’s Tests & Quizzes tool one week before their deadline.

Students are encouraged to work together on their problem sets, but each must turn in their own assignment. In order to facilitate this collaboration, I will divide the class into small groups (of about 5 students each). The goal is to provide students with a set of colleagues in the class who can act as a resource for more quickly answering clarification questions and working through difficult problems. If, after conferring as a group, students still have questions or if their questions cannot be answered amongst your group, then bring your questions to the TA or instructor as a group. We will be using Microsoft Teams to facilitate this kind of group interaction. You’ll get more information on how this will work in the first couple weeks of class.

**Final Exam (30%)**: There will also be a final exam scheduled for the regular end-of-term exam period. The format of this exam will be similar to the problem sets. It will be cumulative in nature, covering material from the entire term. Unlike the problem sets, students may not work together on the exam. The exam will be available to students for one week. Students are free to take the exam at any point during that week, but they will have 3 hours to complete it once they begin. The exam will be designed to take 1.5 hours; by offering 3 hours, all students will be provided with a universal accommodation.

**Additional Notes About Grading**: There will be no opportunities for extra credit. I encourage you to work consistently throughout the semester, and to reach out to other students in the class, the TA, or me as soon as you have trouble with the material. In keeping with departmental guidelines, it is expected that the class average for this course will be around 69-73%. Should the final overall grades yield a value significantly below this range, grades will be adjusted upward to ensure an appropriate mean for the class.

**How to Contact Me**

If you have course-related questions that may be relevant to the whole class, I encourage you to post them to the Course Café on OWL’s Forums. If you have a specific question for me, you may contact me through OWL Messages. If there is a problem with OWL, send me an email (pdenice@uwo.ca).

Students are also encouraged to meet with me individually or in small groups during my student drop-in hours. You can set up a 15-minute meeting during these hours through Calendly.
How to Get Important Information

You will find course content and announcements posted to our OWL course website. I will also announce any upcoming deadlines or changes to the course schedule in class. If you miss a class, check first with a classmate for any notes or other materials.

Important Policies

Assignment Deadlines:

Students must submit their assignments by the date and time stated in the course outline and on the OWL website. Late assignments without illness self-reports will be subject to a late penalty of 10% per day. Late assignments with illness self-reports should be submitted within 24 hours of submission of the self-report. An assignment cannot be submitted after it has been returned to the class (generally, within 5 days of the due date). For those with extended illness self-reports who cannot complete the assignment within this time frame, their final course mark will be reweighted without the assignment.

Assignment Evaluation:

As noted above, problem sets are assigned and turned in using OWL’s Tests & Quizzes tool. This tool allows OWL to automatically mark and provide feedback on some—but not all—of the questions in a problem set. Thus, the initial mark you receive on your problem set is likely not your final mark. The TA and instructor will go through and manually complete the marking of your problem sets over the week after they are submitted. After a finalized mark is returned, students should wait 24 hours to digest feedback before contacting the TA or instructor; to ensure a timely response, reach out with questions within 7 days.

Plagiarism:

Students must write their assignments in their own words. Whenever students take an idea from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major scholastic offense (the Scholastic Offense Policy can be viewed in the Western Academic Calendar).

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for detection of plagiarism. All papers submitted for such checking 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 The University of Western Ontario and Turnitin.com (www.turnitin.com).

Copyright of Lectures and Other Course Materials:

Any materials created by the instructor (e.g., videos, notes, hand-outs, summaries, slide decks, assignments, exams, etc.) are protected by copyright law and may not be copied or distributed in
any form without the explicit permission of the instructor. Any non-authorized use of these materials constitutes an academic offense.

**Scholastic Offenses:**

Scholastic offenses are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offense (www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

**Academic Consideration for Missed Work:**

Students who are seeking academic consideration for missed work during the semester may submit a self-reported absence form online provided that the absence is 48 hours or less and the other conditions specified in the Senate policy are met. There are two important exceptions to this rule: SRAs will not be allowed for final examinations or assessments worth more than 30% of a given course.

Students whose absences are expected to last longer than 48 hours, or where the other conditions detailed in the policy are not met (e.g., work is worth more than 30% of the final grade, the student has already used 2 self-reported absences, the absence is during the final exam period) may receive academic consideration by submitting a Student Medical Certificate (for illness) or other appropriate documentation (for compassionate grounds).

All students pursuing academic consideration, regardless of type, must contact their instructors no less than 24 hours following the end of the period of absence to clarify how they will be expected to fulfill the academic responsibilities missed during their absence. Students are reminded that they should consider carefully the implications of postponing exams or delaying submission of work, and are encouraged to make appropriate decisions based on their specific circumstances. For the full SRA policy, see here: https://counselling.ssc.uwo.ca/procedures/having_problems/Self_Reported_Absence.html.

**Accessibility Options:**

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 519-661-2111, x82147, for any specific question regarding an accommodation. Information regarding accommodation of exams is available on the Registrar’s website: www.registrar.uwo.ca/examinations/accommodated_exams.html.

**Mental Health:**

Students who are in emotional/mental distress should refer to Mental Health Wellbeing at Western (http://uwo.ca/health/mental_wellbeing/index.html) for a complete list of options for getting help.
Disputing a Grade:
Students who wish to dispute an assignment, exam, or course grade must write a one-page explanation justifying why their work should be re-evaluated. Work will not be re-evaluated on the basis that students were sick or feeling stressed when completing the assignment. Please be advised that a student’s mark may go up or down upon re-evaluation.

Rounding of Marks:
Final marks, irrespective of the number of decimal places used in marking individual assignments and exams, will be calculated to one decimal place and rounded to the nearest integer (e.g., 74.4 becomes 74, 74.5 becomes 75). Marks will not be bumped to the next grade or GPA (e.g., a 79 will not be bumped up to an 80). The mark attained is the mark you achieved; requests for mark “bumping” will be denied.

Extraordinary Circumstances:
The content and/or evaluation of this course is subject to change in the event of extraordinary circumstances beyond the University’s or instructor’s control.
Course Schedule

*Please note: This outline is subject to change over the course of the term in order to meet the needs of the class. Any changes will be announced through our OWL course website.*

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics</th>
<th>Readings and Deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part I: Descriptive statistics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Sept. 14</td>
<td>What is statistics? Data measurement</td>
<td>IS: Ch. 1 (intro + sections 1.1-1.3)</td>
</tr>
<tr>
<td>2</td>
<td>Sept. 21</td>
<td>Organizing our data Measures of central tendency</td>
<td>IS: Ch. 2 (intro + sections 2.1-2.6)</td>
</tr>
<tr>
<td>3</td>
<td>Sept. 28</td>
<td>Measures of variation</td>
<td>Problem Set 1 due IS: Ch. 2 (section 2.7)</td>
</tr>
<tr>
<td>4</td>
<td>Oct. 5</td>
<td>Probability Stata Lab 2: Describing data</td>
<td>IS: Ch. 3 (intro + sections 3.1-3.4), Ch. 4 (intro + sections 4.1-4.3), Ch. 5 (intro + section 5.1)</td>
</tr>
<tr>
<td>5</td>
<td>Oct. 13*</td>
<td>The Normal curve Calculating z-scores</td>
<td>Problem Set 2 due IS: Ch. 6 (intro + sections 6.1-6.2)</td>
</tr>
<tr>
<td>Part II: Inferential statistics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Oct. 19</td>
<td>Samples and populations</td>
<td>IS: Ch. 7 (intro + sections 7.1-7.3), Ch. 8 (intro + sections 8.1-8.3)</td>
</tr>
<tr>
<td>7</td>
<td>Oct. 26</td>
<td>Hypothesis testing: Differences in means</td>
<td>IS: Ch. 9 (intro + sections 9.1-9.6), Ch. 10 (intro + sections 10.1-10.4)</td>
</tr>
<tr>
<td></td>
<td>Nov. 2</td>
<td>Reading Week</td>
<td>Enjoy the break!</td>
</tr>
<tr>
<td>8</td>
<td>Nov. 9</td>
<td>Hypothesis testing: Proportions Stata Lab 3: Testing differences</td>
<td>Problem Set 3 due IS: Continue with Week 7’s readings</td>
</tr>
<tr>
<td>9</td>
<td>Nov. 16</td>
<td>Nonparametric test of significance Stata Lab 4: Chi-square</td>
<td>IS: Ch. 11 (intro + sections 11.1, 11.3, 11.4)</td>
</tr>
</tbody>
</table>
10 Nov. 23  Correlation  **Problem Set 4 due**  
**IS:** Ch. 12 (intro + sections 12.1-12.5)

11 Nov. 30  Regression  **Problem Set 5 due**  
**IS:** Continue with Week 10’s readings

12 Dec. 7  Review  
**Stata Lab 5:** Correlation & regression

*Material for this week will be posted on Tuesday (Oct. 13) due to Thanksgiving on Monday, Oct. 12. Activities should be completed by the following Tuesday.

Final Exam – Date & Time TBD (set by Registrar) – Students will have one week to complete their exam, which will be open-book and open-note.