



<b>Course title:</b>	Advanced Statistics	
<b>Course #/term:</b>	SW 673, Fall 2020	
<b>Time and place:</b>	Thursdays 2:00 to 5:00 pm, REMOTE Fridays 9:00 am to 12:00 pm, REMOTE	
<b>Credit hours:</b>	3	
<b>Prerequisites:</b>	None	
<b>Instructor:</b>	Professor Cristina Bares, Ph.D., M.S.W., M.S., M.B.A.	
<b>Pronouns:</b>	She, her, hers	
<b>Contact info:</b>	<b>Email:</b> cbb@umich.edu	<b>Phone:</b> (734) 615-2582
	Students may expect a response to email within 72 hours (not counting weekends).	
<b>Office:</b>	2736	
<b>Office hours:</b>	By appointment	

## 1. Course Statement

This course is designed to introduce students to statistics and statistical methods. It is intended and designed for students who already have some familiarity with statistics. Students in this course will acquire the skills to create and comprehend statistical reports related to program evaluation and research practice. Students will be able to assess the value and limitations of measures of central tendency (means, medians, and modes) rates, and statistical estimates such as correlations and regression parameters. This course will help students develop the ability to use advanced quantitative methods to describe and analyze real world situations in social work settings and to make ethical inferences and decisions based on the statistical results. Students will learn to choose methods of statistical analysis to improve social policy decisions, service delivery, and intervention programs. Students will learn to understand and use appropriate language with their statistical analyses to clarify meaning and to explain the inferences (e.g., causal inferences) that can be appropriately made from specific data.

### a. Course objectives and competencies

1. Analyze extant research for its use and abuse of outcomes and measures of social justice, social change, and diversity.

2. Construct rates, means, proportions and other simple statistics and interpret them appropriately.
3. Ethically use and ethically report on the results of statistical analyses.
4. Identify appropriate simple statistical methods to use in policy and program evaluation situations.
5. Conduct basic statistical analyses of common policy and program evaluation situations.
6. Use basic descriptive statistics and test simple hypotheses to help answer policy or evaluation questions.
7. Construct meaningful and readable charts, tables, and graphs of appropriate data.
8. Prepare written, oral and visual reports for different audiences using simple and appropriate statistical language.

b. Course design

This course will use textbook readings, journal articles, lectures, computer lab exercises, applied statistical exercises, case studies, and small group exercises to convey relevant content. Students should have access to a computer with internet access to retrieve online material (textbook and other readings) and to be able to use virtual sites to have access to statistical software.

c. Intensive focus on PODS

This course integrates PODS content and skills with a special emphasis on the identification of theories, practice and/or policies that promote social justice, illuminate injustices and are consistent with scientific and professional knowledge. Through the use of a variety of instructional methods, this course will support students developing a vision of social justice, learn to recognize and reduce mechanisms that support oppression and injustice, work toward social justice processes, apply intersectionality and intercultural frameworks and strengthen critical consciousness, self-knowledge and self-awareness to facilitate PODS learning.

## 2. Class Requirements

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a. Text and class materials

The textbook is freely available online (citation and url link below) and a pdf copy will be available on our Canvas site.

Illowsky & Dean, 2020. Introductory Statistics.  
<https://openstax.org/details/books/introductory-statistics>

We will use R to conduct statistical analyses. Students will be required to download R to their computers from this website:

[cran.r-project.org](https://cran.r-project.org)

- To fully engage in the course topic and become a competent and skilled social work practitioner, it is expected that students will complete all required readings.
- Required readings completed ahead of each class session will allow students to more fully understand and engage with the class material.
- All readings are available in Canvas under the relevant week.

b. Class schedule

We will follow the following class schedule. Each reading listed here should be completed prior to the relevant class. Assignments listed are due prior to the class meeting; exact due dates are available through Canvas. Changes to the schedule will be communicated through a Canvas announcement at least a week in advance.

Week	Topic & Reading	Assignment
1. (wk. of 8/31/20)	<b>Introduction to Course.</b> Read and think about statistical concepts.	Read syllabus
2. (wk. of 9/7/20)	<b>Introduction to Social Work Research.</b> Review examples of existing social work research, explore misuses, examine how widely the inclusion of social justice, social change, and diversity occurs in research. <ul style="list-style-type: none"><li>• <i>Awad et al., 2016</i></li><li>• <i>Soboçan et al., 2019</i></li><li>• <i>Munafó et al., 2017</i></li></ul>	Prepare readings
3. (wk. of 9/14/20)	<b>Assessing Research.</b> Review what makes for 'good' research. <ul style="list-style-type: none"><li>• <i>Wakefield et al., 1998</i></li><li>• <i>Marlow et al., 2005</i></li><li>• <i>Quantitative Research Assessment Tool</i></li></ul>	Prepare readings

4. (wk. of 9/21/20)	<b>Working with Statistics, Part I.</b> Accurate, valid interpretation of statistics. <ul style="list-style-type: none"> <li>• <i>Textbook, Ch. 1 and 2</i></li> </ul>	Prepare readings
5. (wk. of 9/28/20)	<b>Working with Statistics, Part II.</b> Hands-on application of simple statistics using R, including choosing appropriate statistical tests, using existing data.	Assignment 1
6. (wk. of 10/5/20)	<b>Reporting on Statistical Results.</b> Presentation and ethical statistical practice. <ul style="list-style-type: none"> <li>• <i>Morgan, Ch. 2 and 3</i></li> <li>• <i>Ethical Guidelines for Statistical practice, ASA 2018</i></li> </ul>	Quiz 1
7. (wk. of 10/12/20)	<b>Statistical Methods for Policy, Part I.</b> Review of appropriate methods, including but not limited to correlations, bivariate analyses, and regression analyses. <ul style="list-style-type: none"> <li>• <i>Textbook, Ch. 12</i></li> </ul>	Assignment 2
8. (wk. of 10/19/20)	<b>Statistical Methods for Policy, Part II.</b> Hands-on practice; conduct descriptive, univariate analyses, and correlations.	Assignment 3
9. (wk. of 10/26/20)	<b>Statistical Methods for Policy, Part III.</b> Interpretation and reporting of results. <ul style="list-style-type: none"> <li>• <i>Morgan, Ch. 5</i></li> <li>• <i>Morgan, Ch. 7, 8</i></li> <li>• <i>OWL reading on creating APA tables</i></li> </ul>	
10. (wk. of 11/2/20)	<b>Statistical Methods for Program Evaluation, Part I.</b> Review of appropriate methods, including but not limited to mean and group comparisons. <ul style="list-style-type: none"> <li>• <i>Textbook, Ch. 9, 10, and 13</i></li> </ul>	Assignment 4
11. (wk. of 11/9/20)	<b>Statistical Methods for Program Evaluation, Part II.</b> Hands-on practice; conduct descriptive and simple statistical analyses.	
12. (wk. of 11/16/20)	<b>Statistical Methods for Program Evaluation, Part III.</b> Interpretation of results	Quiz 2

13. **Reporting results.** Assignment 5  
 (wk. of 11/23/20) •
14. **Final presentations.** Students will present a written report Assignment 6  
 (wk. of 11/30/20) that they've worked on during the semester. A brief, in-class presentation will be part of this assignment.

### c. Assignments

Below is a brief description of each assignment for this course and the percentage value that each assignment contributes to students' overall grade. More detailed instructions and a rubric for each assignment are available on our Canvas site. Students are expected to read the description here and in Canvas. All assignments are to be submitted through Canvas. No emailed assignments are accepted. Due dates on syllabus.

**Assignment 1. Article Critiques (Course Objective 1)** 10% of final grade

In this assignment, students will find, read, and prepare a written critique of two published research articles on a research topic of their choice. Students will assess strengths and weaknesses in each article, assess the measures of social justice and social change, and suggest improvements they would make to future studies on the topic that consider diversity and social justice.

**Assignment 2. Research Ethics (Course Objective 1, 3)** 10% of final grade

In this assignment, students will examine the rules that govern the ethical conduct of research in their field. Students will turn in one written document.

**Assignment 3. Descriptive Statistics (Course Objectives 2, 3)** 10% of final grade

In this assignment, students will analyze data provided by the instructor and conduct descriptive analyses using R. Students will turn three documents for this assignment: their R script, a table with the results, and a write up of the results.

**Assignment 4. Univariate and multivariate analyses (Course Objective 2, 3)** 20% of final grade

In this assignment, students will analyze data provided by the instructor and asked to conduct and interpret univariate and multivariate analyses. Students will turn in three documents for this assignment: their R script, a table with the results, and a write up of the results.

**Assignment 5. Program evaluation analyses (Course Objective 2, 3)**

25% of final grade

In this assignment, students will analyze data that evaluates the effectiveness of a social service program using appropriate statistical methods and ethically report on the results. The data for this assignment will be provided by the instructor several weeks ahead of the assignment. Students will turn in three documents for this assignment: their R script, a table with the results, and a write up of the results.

**Assignment 6. Final presentation (Course Objective)**

15% of final grade

In this assignment, students will work on a novel research question with data provided by the instructor, analyze data to answer that question, and write up the results. A very brief in-class presentation will be part of this assignment.

**Quizzes.**

10% of final grade, each

There will be two, non-cumulative quizzes during the semester to test students' knowledge of concepts covered in class. Quizzes will be available in Canvas and will occur during our scheduled class times after a synchronous lecture. Questions and reviewing of content to be tested in the quiz will be entertained up to a week prior to the quiz but not on the day of the quiz.

**Participation. Class participation**

10% of final grade

All students will actively participate in class throughout the semester by asking and answering questions, by participating in class discussions, and by contributing to online discussion and activities.

d. Attendance and class participation

Attendance at each class meeting is expected. Class participation is part of student's final grade. All students are expected to be active participants in each class session and to contribute to class discussions and, due to the REMOTE nature of this course, to also contribute to online class activities. Any in-class assignments that students miss due to missing a class cannot be made up. When students miss class they will lose the chance to earn participation points.

Students who are absent for 2 or more classes will receive a full letter grade deduction at the end of the semester. If students miss a class, it is their responsibility to find missed material on our Canvas site and to make arrangements with a classmate to get the notes, handouts, or other materials. Students will find recorded synchronous class meetings, readings, handouts, and assignment instructions on our Canvas site for this

class. Individual meetings for missed classes will not be available. Alternate assignments (a maximum of 1 alternative assignment per semester) for missed classes due to illness will be available.

e. Grading

The total number of points that students earn is based on the successful completion of the above assignments and class participation. Students should pay careful attention to the rubric available on Canvas for each element used to grade each assignment. The number of total available points will be used to determine the letter grade students earn at the end of the semester. No make-up assignments or extra credit is available.

A 96-100%	A- 93-95%	B+ 90-92%
B 86-89%	B- 83-85%	C+ 80-82%
C 76-79%	C- 73-75%	D <72%

f. Class Recording and Course Materials

Audio and video recording of in-class lectures and discussions is prohibited without the advance written permission of the instructor. Students with an approved accommodation from the Office of Services for Students with Disabilities permitting the recording of class meetings must present documentation to the instructor in advance of any recording being done. The instructor reserves the right to disallow recording for a portion of any class time where privacy is a special concern. If the instructor chooses to record a class, they will decide which classes, if any, are recorded, what portion of each class is recorded, and whether a recording is made available on the course management website. On days when classes are recorded, students will be notified a recording is occurring. Class recordings and course materials may not be reproduced, sold, published or distributed to others, in whole or in part, without the written consent of the instructor.

g. COVID-19 Statement

For the safety of all students, faculty, and staff on campus, it is important for each of us to be mindful of safety measures that have been put in place for our protection. By returning to campus, you have acknowledged your responsibility for protecting the collective health of our community. Your participation in this course on an in-person/hybrid basis is conditional upon your adherence to all safety measures mandated by the state of Michigan and the University, including maintaining physical

distancing of six feet from others, and properly wearing a face covering in class. Other applicable safety measures may be described in the Wolverine Culture of Care and the University's Face Covering Policy for COVID-19. Your ability to participate in this course in-person/hybrid may be impacted by failure to comply with campus safety measures. Individuals seeking to request an accommodation related to the face covering requirement under the Americans with Disabilities Act should contact the Office for Institutional Equity. If you are unable or unwilling to adhere to these safety measures while in a face-to-face class setting, you will be required to participate on a remote basis. I also encourage you to review the Statement of Student Rights and Responsibilities and the COVID-related Addendum to the Statement of Student Rights and Responsibilities.

#### h. Health-Related Class Absences

Please evaluate your own health status regularly and refrain from attending class and coming to campus if you are ill. You are encouraged to seek appropriate medical attention for treatment. School of Social Work students who miss class due to illness of any kind will be given opportunities to access course materials online or provided with alternative learning opportunities. Please notify me by email about your absence as soon as practical, so that I can make accommodations. Please note that documentation (a doctor's note) for medical excuses is *not* required.

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Additional School and University policies, information and resources are available here: <https://ssw.umich.edu/standard-policies-information-resources>. They include:

- *Safety and emergency preparedness*
- *Mental health and well-being*
- *Teaching evaluations*
- *Proper use of names and pronouns*
- *Accommodations for students with disabilities*
- *Religious/spiritual observances*
- *Military deployment*
- *Writing skills and expectations*
- *Academic integrity and plagiarism*