

Soc. 350  
Spring, 2019  
Social Statistics  
MW: 4-5:15  
Teaching Assistant

*Rebecca Hooper*

Email: [rebecca.hooper001@umb.edu](mailto:rebecca.hooper001@umb.edu)

Office: Wheatley 4/150C

Hours: Monday 12-1 & by appointment

Prof. Russell K. Schutt  
Office: W/4/004, (617)287-6253  
Hours: M 2:30-3:30, 5-6; W 1-2  
& by appointment

Email: [Russell.schutt@umb.edu](mailto:Russell.schutt@umb.edu)

## SOCIAL STATISTICS

**Text:** *Leon-Guerrero, Anna & Chava Frankfort-Nachmias. 2018. Essentials of Social Statistics for a Diverse Society, 3<sup>rd</sup> ed. Thousand Oaks, CA: SAGE Publications.*

<https://us.sagepub.com/en-us/nam/essentials-of-social-statistics-for-a-diverse-society/book255550>

**Software:** *Blackboard course software (UMB).*

*Virtual Lab (UMB lab access from off campus).*

*SPSS (Statistical package in UMB PC labs).*

*SAGE study site for the text: <https://edge.sagepub.com/ssdsess3e>*

Statistics: What are they good for? You know they involve numbers and mathematical formulas and that they can seem hard to understand. But you also know that statistics are all around us. We see them in news articles, in advertisements, in crime reports, in drug studies, and of course in many, many social science articles and books. So if we don't understand statistics, we miss out on a lot. And it's important stuff that we're missing, because statistics in the social sciences are used to understand people and how and why they do the things they do. So the effort you put into learning statistics in this course will pay off in improved ability to evaluate information about the social world, in better performance in your other courses, and even in improved job prospects.

In this course, you will study the statistics used in research by criminologists and sociologists and other social scientists and learn how to generate the numbers and what they mean. A variety of class activities will help you to develop your statistical skills: reviewing social science articles that use statistics, analyzing data from real social science research projects, reviewing course material on the text study site, and reading and discussing the core text.

Specific course objectives are to learn how to:

1. Select suitable statistics for specific research questions and types of data;
2. Understand the meaning of general concepts in statistics;
3. Calculate basic statistics;
4. Interpret statistics reported in social science research;
5. Enjoy your newfound ability to discuss statistics in news stories and research articles

The substantive issues that keep us all interested in social science are never far away when we use social statistics. The reason for using social statistics is to learn about something, after all, not just to convert real life issues into dry numbers. So I will also try not to lose sight of the interesting issues that brought all of us to social science. The assignments in the course and many in-class examples will focus on topics that you'll be interesting on their own terms. I think

you will leave the course knowing more about crime and justice and other social issues, as well as about statistics.

The next syllabus section describes course requirements and grading policies. This course requires hard work, but it will also help you to make substantial advances in understanding the social world and preparing for careers or graduate school. Keep in mind that the course is designed for you, so that you should do fine if you keep up with the reading, come to class—on time, complete assignments, complete the exercises, and ask questions in class, on Blackboard, or come to office hours when you need to have something clarified.

### COURSE ACTIVITIES

Every class involves a mixture of listening, talking, reading, and doing, and you'll need to be prepared to do each in this class. Your success in the class will be determined to a considerable extent by the “doing” part—if you focus attention on assignments and other class projects, you should do fine—but in order to complete these graded activities you'll also have to read the text carefully and **attend every class** so that you can listen to explanations of the course material, work through in-class exercises, and ask questions about material that you find difficult. You will also need to spend some time analyzing data with the statistics that you are learning about in a computer lab on campus or using the university's “virtual lab” off campus. Just be sure to follow the syllabus and complete required work when it is due.

Readings. Read each assigned chapter before it is covered in class—and then review it after the class discussion. Also take advantage of the review materials in the text, in Blackboard, and on the text study site (<https://edge.sagepub.com/ssdsess3e>). Try to develop the habit of reviewing the **learning objectives** and **key terms** in the text before you read each assigned chapter and then after you finish the chapter. Use the self-guided quizzes and flash cards on the study site to review terms and objectives, and also check yourself by completing practice problems at the end of each chapter (answers are on the web site). The time you spend on end-of-chapter and quiz questions should pay off: *much of the content of exams will be based on these questions.*

Computer and web resources. ***We will work on the computers in our TEAL classroom (UH 1/1350) each day.*** Please plan to be there promptly at 4:00 for each class. On most Mondays, I will introduce a new statistic and you will use some online resources to learn more about it. On most Wednesdays, we will focus on analyzing data with SPSS (Statistical Package for the Social Sciences).

Outside of class, you can complete statistical analyses for the course in a public lab on campus (Red Lab: Healey Library, Upper Level, Room 015) or at other campus locations [https://www.umb.edu/it/labs/student\\_info](https://www.umb.edu/it/labs/student_info). You can also do the computer work for the class from anywhere you have access to the internet, using the Virtual Lab (see posted handout for details). You also have 24x7 access to the text study site, with its flash cards, quizzes, web resources, and other tools to help you learn the course material.

Blackboard. The course Blackboard site provides all the materials you need for the course, including the syllabus and assignments (2 weeks prior to their due date) and review materials. A discussion thread on Blackboard allows you to ask questions about any course material at any time (with response guaranteed in 24 hours). Post questions about assignments, etc. on Blackboard (not by email to me or Rebecca), so that clarifications will be available for the whole class. All assignments and other materials must be submitted through the Blackboard site and all course grades will be posted there. Handouts, graded assignments and exams, etc. will NOT be distributed on paper!

Assistance. Rebecca Hooper, my course teaching assistant and I will be available to help you throughout the course. Seek Rebecca out whenever you need help, by email or in person. You can also post your questions on the course website (and I encourage you to do so, since then other students can benefit from the question and response). You also are always welcome to come to my office or Rebecca's office during our office hours (see above) or by appointment at another time. We are eager to help you with course material, but you must take the initiative and ask for assistance. Support for students who need extra help is also available at the Office of Academic Support: CC-1-1300, 617-287-6550, or: [https://www.umb.edu/academics/vpass/academic\\_support](https://www.umb.edu/academics/vpass/academic_support).

## ASSIGNMENTS, EXAMS, GRADING

ATTENDANCE IS MANDATORY and will be recorded in each class! Although your attendance record counts for just 5% of the final grade, what is important is that you participate in each class and thereby engage fully in the learning process. (Attendance points will not be deducted if you request and receive an excused absence—which must be for a real hardship—or if you bring in documentation of an unexpected emergency after-the-fact.)

Article Presentations. In the list of resources for each chapter on the text study site, there are PDFs of articles that use some of the statistics discussed in that chapter. Several questions are posted for each article. Each Monday (after Week 1), a student will make a 5 minute presentation that will give an overview of one of these articles and answer the questions. (In some weeks, there will be two student article presentations.) You will be able to sign up for an article presentation by Week 2 (first come, first served). You must upload your article presentation to the Blackboard site prior to the class in which you present it.

Assignments. There are three assignments, each focusing on a different type of statistic. Each assignment will involve analysis of one of the datasets available for the course (accessible from the computer labs or on the text study site). For each assignment, you will formulate a research question that can be analyzed with the class dataset, list the variables (and their level of measurement) that you will use in your assignment, and analyze using the data using techniques on which the assignment focuses (descriptive, inferential, or explanatory statistics). It will be easier to prepare your final presentation if you select a similar research question for each of the three assignments.

### *Assignment 1: Descriptive Statistics (Week 4)*

Pose a descriptive question involving variables in the dataset you have chosen. Your question should cover three hypotheses concerning the association between any pairs of these variables (in each pair, one variable must be independent and the other dependent). Present frequency distributions for at least 5 variables, graphs for at least 3, appropriate measures of central tendency for each of them, and describe the variation in each and the shape of each distribution (using a verbal description if none of the statistics we have studied is appropriate). Present and discuss the crosstabulations of the variables for the three hypotheses. Discuss your findings and answer your research question. Note any limitations of your analysis.

### *Assignment 2: Inferential Statistics (Week 10)*

Pose research questions requiring inferential tests with variables in the dataset you have chosen. It will often make sense to use some or all of the variables you used in Assignment 1, but be sure that you can present crosstabulations involving 2 pairs of these variables (one dependent and one independent in each pair). Calculate standard 95% confidence intervals for the means of at least 4 variables and present statements describing the confidence you have in each of the point estimates. Now repeat this process using 99% confidence intervals for 2 of these variables.

Graph the distribution of one variable and compare it to a normal distribution. Conduct a chi-square test for the two crosstabulations. Discuss your findings and answer your research questions. Note any limitations of your analysis.

*Assignment 3: Explanatory Statistics (both descriptive and inferential) (Week 14)*

Pose two hypotheses that can be tested with correlation and regression analysis. Use appropriate statistical tests, summarize your findings, and evaluate the support for both hypotheses.

Exams. The final exam will not cover much material prior to the midterm—but bear in mind that the course material is cumulative, so you need to develop your understanding of the material in the first half of the course in order to do well in the second half.

The midterm and final exams will be in the PC lab (administered online) and will contain a mixture of multiple choice and short answer questions and questions involving calculation. I will give you a list of key terms (without definitions) and statistical formulas from the preceding chapters for use during the tests.

Final Presentation. Your final presentation will reflect your work on Assignment 3. Powerpoint file for your presentation and upload that file to Blackboard before your talk.

Course grades will be computed as follows:

Assignments 1-3	30%
Article presentation	5
Attendance	5
Final presentation	5
Midterm	25
Final	<u>30</u>
	100%

Your three assignments, your article review, and your final presentation must be uploaded in Blackboard on time. Work that is one session late will suffer a 10% penalty (one grade) and work that is any later will not be accepted without written documentation of an unforeseen problem. I will not give a grade of "incomplete" in other than the most extreme circumstances.

### **ACADEMIC DISHONESTY**

Plagiarism occurs when someone claims someone else's work or ideas as their own. UMass Boston's policies about such academic dishonesty are spelled out at in the Student Code of Conduct: [https://www.umb.edu/life\\_on\\_campus/dean\\_of\\_students/students/student\\_conduct](https://www.umb.edu/life_on_campus/dean_of_students/students/student_conduct) (see Student Code of Conduct Appendix B).

### **ACCOMMODATIONS**

Section 504 of the Rehabilitation Act of 1990 offers guidelines and support for curriculum modifications and adaptations for students with documented disabilities. If applicable, students may obtain adaptation recommendations from the Ross Center for Disability Services, CC-UL-0211, 617-287-7430, or: <https://www.umb.edu/academics/vpass/disability/students>. If this applies to you, be sure to present these recommendations and discuss them with me within a reasonable period, presumably during the Drop/Add period.

## COURSE OUTLINE

<u>Week</u>	<u>Topic/Reading/Activity</u>
<b>1 (1/28, 1/31)</b>	<p><b>THE WHAT AND WHY OF STATISTICS</b>            Overview of basic social research concepts; levels of measurement, variables and hypotheses, descriptive and inferential statistics</p> <p>Leon-Guerrero and Frankfort-Nachmias: Chapter 1</p> <p>ADD/DROP ENDS 2/4</p>
<i><b>DESCRIPTIVE STATISTICS</b></i>	
<b>2 (2/4, 2/6)</b>	<p><b>FREQUENCY DISTRIBUTIONS AND GRAPHS</b>            Frequencies, proportions, and percents; frequency distributions, relative frequency distributions, grouped values and recoding, rates, bar charts and histograms</p> <p>Leon-Guerrero and Frankfort-Nachmias: Chapter 2 (skip pp. 38-42)</p> <p>ASSIGNMENT 1: DESCRIPTIVE STATISTICS (available 2/6)</p>
<b>3 (2/11, 2/13)</b>	<p><b>CROSTABULATION</b>            Preparing and reading percentage tables</p> <p>Leon-Guerrero and Frankfort-Nachmias: Chapter 2 (pp. 38-42)</p>
<b>4-5 (2/20, 2/25, 2/27)</b>	<p><b>MEASURES OF CENTRAL TENDENCY</b>            Mode, median, median, advantages and disadvantages, distribution shape</p> <p>Leon-Guerrero and Frankfort-Nachmias: Chapter 3</p>
<b>6 (3/4, 3/6)</b>	<p><b>MEASURES OF DISPERSION</b>            The range, the variance and standard deviation</p> <p>Leon-Guerrero and Frankfort-Nachmias: Chapter 4</p>
3/11-3/15	<p><b>SPRING BREAK</b></p> <p>ASSIGNMENT 1 DUE (3/15)</p>
<b>7 (3/18, 3/20)</b>	<p><b>MIDTERM WEEK</b>            Midterm review, midterm</p> <p><b>MIDTERM EXAM (3/20)</b></p>

***INFERENCEAL STATISTICS***

- 8 (3/25, 3/27) THE NORMAL DISTRIBUTION**  
Properties of the normal curve, Z scores, standard normal distributions  
  
Leon-Guerrero and Frankfort-Nachmias: Chapter 5  
  
ASSIGNMENT 2: INFERENCEAL STATISTICS (available 3/27)
- 9 (4/1, 4/3) SAMPLING AND SAMPLING DISTRIBUTIONS**  
Sampling concepts, probability, sampling distribution, central limit theorem, standard error, sample size  
  
Leon-Guerrero and Frankfort-Nachmias: Chapter 6
- 10 (4/8, 4/10) POINT ESTIMATION AND CONFIDENCE INTERVALS**  
Point estimates, confidence intervals, standard error  
  
Leon-Guerrero and Frankfort-Nachmias: Chapter 7
- 11 (4/17) HYPOTHESIS TESTING**  
Null hypothesis, directional and non-directional, alpha, one- and two-sample tests, degrees of freedom, t-test  
  
Leon-Guerrero and Frankfort-Nachmias: Chapter 8
- 12 (4/22, 4/24) HYPOTHESIS TESTING WITH CATEGORICAL DATA**  
Statistical independence, expected values, chi-square; PRE measures of association, lambda, gamma  
  
Leon-Guerrero and Frankfort-Nachmias: Chapter 9  
  
ASSIGNMENT 2 DUE (4/19)  
  
WITHDRAWAL, P/F DEADLINE (4/19)
- EXPLANATORY (MULTIVARIATE) STATISTICS***
- 13 (4/29, 5/1) BIVARIATE CORRELATION AND REGRESSION**  
Scatterplots, correlation coefficient (r), least squares regression, b coefficient, residuals,  $r^2$ ,  
  
Leon-Guerrero and Frankfort-Nachmias: Chapter 11 (pp. 295-317)  
  
ASSIGNMENT 3: EXPLANATORY STATISTICS (available 5/1)
- 14 (5/6, 5/8) MULTIVARIATE REGRESSION (cont.), FINAL PRESENTATION**  
Multiple regression, beta coefficients, statistical independence  
  
Leon-Guerrero and Frankfort-Nachmias: Chapter 11 (pp. 318-325)

**15 (5/13, 5/15)      FINAL PRESENTATIONS (cont.) & REVIEW**

ASSIGNMENT 3 DUE (5/16)

FINAL EXAM WEEK (5/20-24)