22S:002 STATISTICS AND SOCIETY Spring 2010

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Recommended Text: *Statistical Reasoning for everyday life*, 3rd edition by Bennett, Briggs, and Triola
ISBN -13 978-0-321-28706-9

Course Specific Information

Overview

In this course we will attempt to assess basic statistical evidence. The goal in statistics is to be able to reach conclusions when there is uncertainty. Some of the examples we might consider are:

- Do childhood vaccines cause autism?
- Who drives faster, men or women?
- When does it pay to play the lottery?
- How can we tell if there is such a thing as ESP?
- Which test should I take, the ACT or the SAT?

In each of these cases, there is uncertainty over the correct action, and we want to be able to take the appropriate action, based on objective evidence. To that end, we will discuss how data is collected, which ways are good and which ways are bad. We will look at some basic summaries of data that people use to describe the way things are, and how these are interpreted. Finally, we look at the way data is used to reach decisions about how things are related. At the end of this course, you should be able to look at a summary of issues where the evidence is statistical in nature, be able to understand what is being said, and to critique the value of the study in question.

This course satisfies the university's general education requirement in quantitative or formal reasoning. As such, we will spend a great deal of time on the reasoning used in statistics. The level of mathematics required is quite low, and for the most part it only occasionally requires simple arithmetic. There are some cases where some facility with very simple algebra is useful. No formulas need to be memorized.

Class Notes

Each day, an edited version of the lecture's slides are available to you on the ICON system. You are responsible for downloading the notes before class and bringing them with you. I will fill in the gaps as we go through each topic. Note that the font size is quite large (since you need to be able to see them in the lecture). You can print them as is, or reduce the font size and print them after doing so.

Homework solutions, quiz solutions and solutions to the exams will also be posted on the site.

Course Grades

Grades are based on the three tests, 5 in-class projects and a homework grade. Homework is passed out in your weekly discussion section meetings (either Tuesday or Thursday) and is due the following week in discussion, with the exception of weeks when there is an exam. No late homework will be accepted, no exceptions.

The in-class projects will be done in teams. At the beginning of these classes, each team will be given a worksheet and given the entire class period to work on their solutions. These solutions will be turned in at the end of class.

Exams are multiple-choice, and will be in the lecture room, unless otherwise specified. Each exam will cover all material in the weeks up to the exam date, with the exception of the final exam, which is cumulative. For each exam, you will be allowed one 8 ½ by11 sheet of paper on which anything may be written.

Grades will be calculated as

Homework	15%
In class projects	15%
Exams 1 and 2	20% each
Final exam	30%

For the final grade, there will be no curve, 90% or higher is an A, 80%-90% is a B, etc.

Course Schedule

The table below gives the topics we cover each week. We are following the textbook order, so the sections listed refer to the text. I do not require the text, but there is typically a good discussion of the topic we are covering, as well as some extra examples. Make sure you know the dates of the tests.

Week of	Topic	Readings
January 18	Intro and samples	Section 1.1
January 25	Sample surveys	Section 1.2
No class on Wednesday, January 27 or Friday, January 29		
February 1	Experiments and observational studies	Section 1.3
February 8	Properties of measures, percentage change	Sections 2.2 and 2.3
First class project is on Monday, February 8		
February 15	The CPI, data summaries –location and shape	Sections 2.4, 4.1, and 4.2
Second class project is on Friday, February 19		
February 22	Measuring spread	Section 4.3
Exam 1 is Wednesday, February 24 **No class on Friday, February 26**		
March 1	Simpson's paradox and normal probabilities	Sections 4.4 and 5.1
March 8	Normal probabilities and the CLT	Sections 5.2 and 5.3
Third class project is on Wednesday, March 10		
March 15	**Spring Break**	
March 22	Definition of probabilities and the law of averages	Sections 6.1 and 6.2
March 29	Correlation	Section 7.1
Fourth class project in on Friday, April 2		
April 5	Cause and effect with correlation	Sections 7.2 and 7.4
Exam 2 is Wednesday, April 7		
April 12	Regression and Sampling distributions	Sections 7.3 and 8.1
Fifth class project is on Friday, April 14		
April 19	Confidence Intervals	Sections 8.2 and 8.3
April 26	Hypothesis testing	Sections 9.1 and 9.2
May 3	Contingency tables and ANOVA	Sections 10.2 and 10.3
May 10	**Final Exam is Friday, May 14 at 2:15 PM** **(yes, I know that is the last day, and no, you cannot take the exam early)**	

Generic Information

Statistics Lab

There is a statistics tutorial lab in rooms 202 CC. Hours are still being finalized and will be announced. At these times, at least one of the TA's from this class will be in the lab and will be available to assist you. These are in addition to the regularly scheduled office hours for your TA.

There is also a list of tutors available on the Statistics and Actuarial Science Department website:
http://www.stat.uiowa.edu/courses/tutors.html

Special Needs

I would like to hear from any student who has special needs that might require a specific need as far as modification of the lecture room, alternative arrangements for testing or any other specific accommodation. Please contact me as soon as possible so that we can arrange to meet your needs.

The College of Liberal Arts and Sciences Policy and Procedures

Academic Fraud
Plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. Academic fraud is reported to the departmental DEO and then to the Associate Dean for Academic Programs and Services in the College of Liberal Arts and Sciences.
www.clas.uiowa.edu/students/academic_handbook/ix.shtml

Making a Suggestion or a Complaint
Students have the right to make suggestions or complaints and should first visit with the instructor, then with the course supervisor if appropriate, and next with the departmental DEO. All complaints must be made within six months of the incident. www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5

Accommodations for Disabilities
A student seeking academic accommodations first must register with Student Disability Services and then meet with a SDS counselor who determines eligibility for services. A student approved for accommodations should meet privately with the course instructor to arrange particular accommodations. www.uiowa.edu/~sds/

Understanding Sexual Harassment
Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. Visit www.sexualharassment.uiowa.edu/ for definitions, assistance, and the full policy.

Administrative Home of the Course
The administrative home of this course is the College of Liberal Arts and Sciences, which governs academic matters relating to the course such as the add / drop deadlines, the second-grade-only option, issues concerning academic fraud or academic probation, and how credits are applied for various CLAS requirements. Please keep in mind that different colleges might have different policies. If you have questions about these or other CLAS policies, visit your academic advisor or 120 Schaeffer Hall and speak with the staff. The CLAS Academic Handbook is another useful source of information on CLAS academic policy:
www.clas.uiowa.edu/students/academic_handbook/index.shtml

Reacting Safely to Severe Weather
The University of Iowa Operations Manual section 16.14 outlines appropriate responses to a tornado (i) or to a similar crisis. If a tornado or other severe weather is indicated by the UI outdoor warning system, members of the class should seek shelter in rooms and corridors in the innermost part of a building at the lowest level, staying clear of windows, corridors with windows, or large free-standing expanses such as auditoriums and cafeterias. The class will resume, if possible, after the UI outdoor warning system announces that the severe weather threat has ended.

Student Classroom Behavior
The ability to learn is lessened when students engage in inappropriate classroom behavior, distracting others; such behaviors are a violation of the Code of Student Life. When disruptive activity occurs, a University instructor has the authority to determine classroom seating patterns and to request that a student exit the classroom, laboratory, or other area used for instruction immediately for the remainder of the period. One-day suspensions are reported to appropriate departmental, collegiate, and Student Services personnel (Office of the Vice President for Student Services and Dean of Students).

Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their standard University of Iowa e-mail address (@uiowa.edu). Students should check this account frequently. (*Operations Manual*, III.15.2. Scroll down to k.11.)