CRIM 250
Statistics for the Social Sciences
University of Pennsylvania
Fall 2019

Lecture
Tuesday & Thursday, 1:30pm-2:50pm
285 McNeil Building

Instructor
Aaron Chalfin
Office: 565 McNeil Building
Office Hours: Thursday 10:00am-11:30am and by appointment
achalfin@sas.upenn.edu
https://crim.sas.upenn.edu/people/faculty/aaron-j-chalfin

Teaching Assistant
Jacob Kaplan
Office: 539 McNeil Building
Office Hours: Friday 10:00am-11:30am
jacobkap@sas.upenn.edu

Course Description
This course provides an introduction to statistical techniques in the social sciences and is appropriate for students pursuing a bachelor's degree in Criminology or another discipline in the social sciences. It is taught as a basic course in statistics and presumes minimal mathematical or statistical background. The course is very applied and hands-on and isn't appropriate for students seeking to develop a detailed understanding of statistical theory.

We'll begin with a brief introduction to the research process. We'll then cover the computation, interpretation and understanding of basic descriptive statistics, distributions, hypothesis testing, measures of association and finally regression analysis. Depending on how much time we have, I may cover some slightly more advanced topics in regression analysis at the end of the semester.

More than anything, I would like for this course to be both useful and fun! I truly believe that judicious use of data is critical to getting criminal justice policy right and I expect that each of you will have a distinguished career in criminal justice policy (or a related field), a career in which you will have the opportunity to use data to improve public policy. It is my privilege to play a part in your statistics training.

Lecture Notes
There is no textbook for the course. In lieu of a textbook, I will hand out lecture notes during the semester that will closely mirror the material we will cover in lecture. I have written the lecture notes myself specifically for this class. The notes aren't long – each chapter is approximately 15 pages in length – but the material is dense. I encourage you to read the notes really carefully and to follow along with numerical examples. If there is something that doesn't make sense, please

feel free to shoot me an e-mail.

Statistical Software
This will be a "hands on" class. During weekly lectures, you will have the opportunity to apply concepts in the classroom using MS Excel. The goal is to make sure that you understand how to actually compute and interpret the statistics we are learning about. Accordingly, I will ask that you please bring a laptop computer to class.

Evaluation
Your course grade will be determined on the basis of three exams and eight problem sets that you can start working on in weekly lab sessions.

Exams (75 points – 25 points each): Each exam will consist of a mix of short answer questions and computer exercises. As of now, these are the dates of the three exams, though I reserve the right to move exams as needed:
- Exam #1: In class, Thursday, September 26th
- Exam #2: In class, Thursday, October 31st
- Exam #3: In class, Thursday, December 5th

Problem Sets (24 points — 3 points each): During the semester, I will hand out eight problem sets which you will begin working on during the weekly lab session. Each of the problem sets is designed to allow you to apply the material you have learned using MS Excel. You are welcome and even encouraged to collaborate with one another as you complete the problem sets. All I ask that each of you hand in your own copy of the problem set to be graded and that you write up answers in your own words.

Personal Statement (1 point): I'd love to get to know each of you a little better. I will ask you to send me a brief personal statement describing your academic background, career ambitions and anything else you would like for me to know about you. This is not intended to be onerous – please write as little (or as much) as you would like to share.

Your course grade will be determined on the basis of 100 possible points. Your letter grade will be assigned according to the following rubric where the points listed correspond to the minimum number of points needed to earn a particular grade.

98-100 points = A+	93-97.9 points = A	90-92.9 points = A-
87-89.9 points = B+	83-86.9 points = B	80-82.9 points = B-
77-79.9 points = C+	73-76.9 points = C	70-72.9 points = C-
67-69.9 points = D+	63-66.9 points = D	60-62.9 points = D-

Students who compile fewer than 60 points are subject to failing the course.

Note: I reserve the right to lower these cutoffs as needed (e.g., Depending on the class' performance, I might decide that 85 points will earn an "A-" and 80 points will earn a B).

Course Policies
The following policies govern our shared experience this semester.

Class Attendance
I will not take attendance and, with the exception of missed exams, you do not need to provide documentation when you do not come to class. That being said, please do come to class every day. Exams will draw heavily on material presented in lecture and, more important, attending class regularly is the best way to get the most out of your college career.

Late or Missed Work
Students will not be excused from exams or to make up work except in the following circumstances: a medical problem, a death in the immediate family, a religious holiday, participation in university activities at the request of university authorities, or other compelling circumstances beyond the students' control. If you know you will be absent on the day of an exam you must notify me via email as soon as possible but no later than one week prior to the scheduled assignment. Failure to do so will result in a "zero" grade for the exam. In the event of an emergency, please notify me via email as soon as possible and be prepared to provide some documentation of your circumstance. Please note that there are no make-up exams – In the event that you miss an exam for an approved reason, I will assign greater weight to the remaining two exams.

Grade Disputes
If you have questions or concerns about your grade(s) and believe that we should review them; you must submit a written request via email that describes your concern in detail. This request must be submitted within one week of the day that the grades for the relevant assignment were disseminated. Be advised that requests for a grade dispute review may result in the raising or lowering of the grade in question.

E-mail and Technology
I will generally respond quickly to your emails, but there may be times when I am unable to do so. If you have not heard back from me for 24 hours, please re-send your e-mail. I ask that you try to save substantive questions for class or office hours.

I welcome the use of technology (laptops, iPads, etc.) in the classroom so long as your use of these tools does not become a distraction to your fellow students. I reserve the right to restrict technology use during class if this becomes a problem.

Guidelines for Class Discussion
An over-arching objective for our class meetings is to have a classroom environment wherein a wide variety of opinions can be freely voiced and where constructive dialogue flourishes. In order to have fruitful, informative discussions you should come to class having read, listened to, or watched, as well as thought about the assigned course materials for the day. Discussing and engaging with the assigned course material is an essential component of your learning in this course.

Your fellow students are a key resource in the learning process. This is an excellent opportunity for us to learn from each other and broaden our perspectives. In order to achieve a comfortable discussion environment for all, I ask you to abide by the following guidelines:

- **Treat everyone with respect.** Name-calling, excessive interrupting and domination of the class discussion are not appropriate.
- **Support free speech.** Everyone in the classroom is free to express opinions and ask questions without fear of censure from classmates. You can disagree with an opinion without insulting the opinion holder. You should express your opinions, as long as they are well-founded and respectfully communicated, even if (perhaps, *especially* if) you think that none of your classmates will agree. Class will likely be boring and unrewarding if we all agree with each other all of the time.

Academic Integrity

Students are expected to abide by the University of Pennsylvania Code of Academic Integrity, which is contained below. Additional information about expected standards of intellectual honesty can be found here: http://www.upenn.edu/academicintegrity/index.html

Since the University is an academic community, its fundamental purpose is the pursuit of knowledge. Essential to the success of this educational mission is a commitment to the principles of academic integrity. Every member of the University community is responsible for upholding the highest standards of honesty at all times. Students, as members of the community, are also responsible for adhering to the principles and spirit of the following Code of Academic Integrity.

Academic Dishonesty Definitions

Activities that have the effect or intention of interfering with education, pursuit of knowledge, or fair evaluation of a student's performance are prohibited. Examples of such activities include but are not limited to the following definitions:

A. Cheating: Using or attempting to use unauthorized assistance, material, or study aids in examinations or other academic work or preventing, or attempting to prevent, another from using authorized assistance, material, or study aids. Example: using a cheat sheet in a quiz or exam, altering a graded exam and resubmitting it for a better grade, etc.

B. Plagiarism: Using the ideas, data, or language of another without specific or proper acknowledgment. Example: copying another person's paper, article, or computer work and submitting it for an assignment, cloning someone else's ideas without attribution, failing to use quotation marks where appropriate, etc.

C. Fabrication: Submitting contrived or altered information in any academic exercise. Example: making up data for an experiment, fudging data, citing nonexistent articles, contriving sources, etc.

D. Multiple submissions: submitting, without prior permission, any work submitted to fulfill another academic requirement.

E. Misrepresentation of academic records: Misrepresentation of academic records: misrepresenting or tampering with or attempting to tamper with any portion of a student's transcripts or academic record, either before or after coming to the University of Pennsylvania. Example: forging a change of grade slip, tampering with computer records, falsifying academic

information on one's resume, etc.

F. Facilitating Academic Dishonesty: Knowingly helping or attempting to help another violate any provision of the Code. Example: working together on a take-home exam, etc.

G. Unfair Advantage: Attempting to gain unauthorized advantage over fellow students in an academic exercise. Example: gaining or providing unauthorized access to examination materials, obstructing or interfering with another student's efforts in an academic exercise, lying about a need for an extension for an exam or paper, continuing to write even when time is up during an exam, destroying or keeping library materials for one's own use., etc.

* If a student is unsure whether his action(s) constitute a violation of the Code of Academic Integrity, then it is that student's responsibility to consult with the instructor to clarify any ambiguities.

Preliminary Schedule – Subject to Change

Class #	Date	Topic(s)	Lecture Notes
1	Tuesday, August 27	Course introduction	Chapter 1
2	Thursday, August 29	Types of data and variables	Chapter 2
3	Tuesday, September 3	Measures of central tendency and dispersion	Chapter 3
4	Thursday September 5	*Z*-scores	
5	Tuesday, September 10	Density and distribution functions	Chapter 4
6	Thursday, September 12	The binomial and normal distributions	
7	Tuesday, September 17	Sampling distributions and the Central Limit Theorem	Chapter 5
8	Thursday, September 19	Confidence intervals	
9	Tuesday, September 24	*Review for Exam #1*	
10	Thursday, September 26	**EXAM #1**	
11	Tuesday, October 1	Introduction to hypothesis testing	Chapter 6
12	Thursday, October 3	One sample mean comparison tests	
13	Tuesday, October 8	Two sample mean comparison tests	Chapter 7
	Thursday, October 10	**NO CLASS [FALL BREAK]**	
14	Tuesday, October 15	Statistical Power	--
15	Thursday, October 17	Analysis of Variance	Chapter 8
16	Tuesday, October 22	F-Tests	
17	Thursday, October 24	Measures of association: covariance and correlation	Chapter 9
18	Tuesday, October 29	*Review for Exam #2*	
19	Thursday, October 31	**EXAM #2**	
20	Tuesday, November 5	Introduction to linear regression	Chapter 10
	Thursday, November 7	**NO CLASS [CONFERENCE]**	
21	Tuesday, November 12	Linear regression with a single predictor: estimation	Chapter 10
	Thursday, November 14	**NO CLASS [CONFERENCE]**	
22	Tuesday, November 19	Linear regression with a single predictor: inference	Chapter 10
23	Thursday, November 21	Linear regression with multiple predictors: estimation	Chapter 11
	Tuesday, November 26	**NO CLASS [THURSDAY-FRIDAY SCHEDULE]**	
	Thursday, November 28	**NO CLASS [THANKSGIVING BREAK]**	
24	Tuesday, December 3	Linear regression with multiple predictors: inference	Chapter 11
25	Thursday, December 5	**EXAM #3**	