Introduction to Statistics (Psyc 274)

This syllabus is subject to change throughout the semester*

Bryan Shilowich, Ph.D.

Fall 2021

Lecture: TTh 3:30-4:50 PM, SGM 601

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Office hours: By appointment, please email me. Mon/Wed 10am-2pm is generally best. We can meet in person or on zoom

Lab sections: 4-5:50pm Monday; 4-5:50pm Wednesday **SGM 631**

TA: Bryan Shilowich :)

Statistics: Initial Comments

All fields of knowledgeable endeavor use the basic principles of science. They rely on a simple directive: formulate hypotheses that can be tested with observable data. Statistics are a necessary component of this effort; they provide a valid means to organize & summarize data, test hypotheses of interest, and interpret the results of those tests. In fact, analysts from any field of endeavor will use statistics to try to understand how real world events or variables may be related to each other. Statistics enable us to examine large, even overwhelming amounts of data to determine whether the data offers any meaningful, interpretable information or not.

Course Objectives

It is our goal in this course to begin to understand how and why statistics work. To realize this goal, Psyc 274 offers a series of introductory lectures, readings with representative statistical problems, and lab assignments; all of this is designed to help you become broadly familiar with *quantitative statistics* as they are calculated and interpreted in the social sciences. The important topics to be addressed will include such concepts as 1. scales of measurement and their central tendency, 2. variance, 3. hypothesis testing, 4. assumptions of analysis and ideas about distribution normality, 5. analysis of variance, 6. correlation, 7. regression, and 8. non-parametric tests. Our primary objective will be to understand these topics in a broad conceptual way while also learning how to execute specific statistical calculations. Our parallel objective will be to understand the purpose of the different statistical tests and the information that analysts hope to obtain when implementing such tests.

Recommended Preparation

"Introduction to Psychology" (Psyc 100) and "Foundations of Statistics" (Math 114) are recommended as coursework to prepare for Psyc 274.

Required Texts

Salkind & Frey. (2010). *Statistics for People Who (Think They) Hate Statistics – 7th Ed.* Thousand Oaks, CA: Sage Pub.

Evaluation Criteria

Grades for this course are based on five major components. The weighted importance for each component on your final total course grade will be as follows:

Mid-term examination I ..... 20 %
Mid-term examination II..... 20 %
Final Examination(comprehensive, heavier on the uncovered material)..... 25 %

Lab ..... 20 %
"Weekly" Quizzes……..... 15 %

Cut-Points for Letter Grades

In percentages your letter grade will be assigned as follows:
A = 93.5 (and above), A- = 89.5 to 93.4,
B+ = 86.5 to 89.4, B = 82.5 to 86.4, B- = 79.5 to 82.4,
C+ = 76.5 to 79.4, C = 72.5 to 76.4, C- = 69.5 to 72.4
D = 60 to 69.4, F = below 60.

Hybrid Classroom

Given the pandemic wildness, students may not be able to attend all lectures live. Thus, all live lectures will have an accompanying Zoom session.
Tune at this link: https://usc.zoom.us/j/95006312976?pwd=NGpKdURkcVF6SkE5MTFxQU1sYVdDdz09
With password: TSofyu0J3V

The Zoom will be recorded and accessible.

Furthermore, occasionally lectures may be released on recording alone. This will be announced on blackboard with a link to the recording.

The class **may** simply evolve into a "flipped classroom;" with *all* lectures released as recordings, and in-person time reserved for assistance and clarification. Time will tell; it's largely a function of how you, the students, show up or not to the live class, whether you prefer the flipped model or not, etc.

Blackboard and Email

I communicate almost exclusively through blackboard announcements. Each announcement is also sent immediately to your inbox. Please check your email and blackboard regularly!

Examinations

There will be two mid-term examinations and one final exam (see course schedule for dates). The examinations will test your understanding of the major concepts in the course and focus on both statistical calculations and the "big picture." All examinations are based on a combination of lecture material, class discussions, textbook information, assignments, and handouts. In general, first focus on the material covered in lectures and labs; use the other sources to supplement your understanding.

Attendance and Participation

Our understanding of statistics increases incrementally in a continuous step-wise fashion over time. You *must* come to lecture and take part in the discussions if you hope to realize this incremental growth. We cover a broad range of statistical concepts in Psyc 274. The content is not difficult to understand if you read the text and come to lecture prepared to take part in the discussions.

However, given the hybridized nature of this Fall 2021 pandemic semester, I will not have an Attendance or Participation grade per se. Just know that you get out of the course what you put in; students who rarely show up rarely do well, it's as simple as that.

Quizzes

In lieu of monitored participation, there will be (roughly) weekly quizzes. They are not on the schedule below, but there should be one, taken on blackboard, on the first lecture day of every week, covering the material since the last quiz. The quizzes will be short - about 15 minutes - and relatively easy; they will most often be multiple choice, with an occasional short answer. The quiz question format will be similar to the exams, and thus serve as a great study tool to make sure you're on track (as well as providing me with clues along the way as to areas that need refreshing in the lectures). Since they will be taken online, I'll announce that they are up via blackboard, and you'll have 24 hours to complete it.

Lab

The lab assignments have been designed to help you gain further experience with the statistical concepts that are discussed during lecture. The goals of the lab are: (1) to utilize a "hands-on" mode of learning, interacting with computer strategies, to reinforce basic statistical concepts; (2) to become knowledgeable about how to organize data and execute statistical analyses when using computer programs; and (3) to become multi-literate with respect to computer programs such as R, SPSS, and, to some extent, Excel.

The main focus will be SPSS. SPSS is available for you to download on your home computer, or you can use any on-campus computer. Your TA will help you get accustomed to using SPSS. The lab format consists of a weekly walkthrough with your TA, in which you apply some of the analysis techniques we learn about in lectures to some actual data. Every week there will be a lab assignment due, which will be similar to that week's lab.

Exams

At least the first two exams will be held on Blackboard. They will be held specifically at the time of lecture, but there will be no physical meeting that day. The final might be in person. TBD. Exams will be multiple choice and few short answer. Again, the question format will be familiar to you from the quizzes.

On the Issue of Excuses and Such

I do not have a very strict policy on lateness, medical excuses, family excuses, etc. In general I can and will be lenient. *Especially* if permission is asked and granted *before* something is due. Please do NOT miss a quiz, exam, etc., and ask to make it up two weeks later with no notice. The lab assignment lateness policy will be up to your TA.

Being timely and punctual - managing your time and attention to get everything done, regardless of how insurmountable it all seems - is a fundamental life skill that will benefit you in everything that you do. Since this course is linear, with each lesson adding to the prior lessons, take care not to fall behind. Any given lecture will not make full sense unless you're caught up.

Academic Dishonesty

Students are held to the highest standards of ethical conduct. All the materials presented for this course in lecture, lab, discussion, sent via email, or posted on Blackboard are "all rights reserved" by the course instructor. Some of it may be copyrighted and distributed by a publishing corporation for in-class use only. You should be aware that it is a violation of student ethics to store, post, distribute, sell, or purchase any course materials with the intent of offering that material to or receive it from any student who is not presently enrolled in this course (applicable to commercial Internet sources). You may not submit work for this class that you or anyone else has presented, even in part, for this or another class. You should be especially vigilant with regard to plagiarism (presenting someone else's ideas as your own, whether deliberately or accidentally – in whole or in part).

Disability Services and Programs

To receive accommodations in the academic environment, students with disabilities and/or special needs must be registered with the University DSP. A letter verifying approved accommodations can be obtained from DSP when adequate documentation supporting a need for accommodation is filed. DSP is open Monday-Friday, 8:30-5:00; their phone number is (213) 740-0776. Students with approved accommodations from DSP should meet with Dr. Breland as soon as possible after receiving their letter of approval. Requests for accommodations can be submitted at any time during the semester but may not be applied retroactively to work completed prior to approval.

Psyc 274 Course Schedule

Wk #	Dates	Lectures	Labs	Assigned Readings
1	8/24 8/26	[**online recordings]** Introduction to class Foundational Concepts	NO LAB	Reference: *Text* *Chptr. 1*
2	8/31 9/2	Descriptive Statistics of Sample Data Measures of Central Tendency & Variability	Lab 1: Introduction to the Lab and Lab computer software	Reference: *Text* *Chptrs 2, 3*
3	9/7 9/9	Constructing Visual Summaries of Distributions, Defining Normal, Non-normal, Skewed Distributions	Lab 2: Scales, Distributions, and Graphs	Reference: *Text* *Chptr 4*
4	9/14 9/16	Correlations and Reliability	Lab 3: Correlations and Reliability	Reference: *Text* *Chptr 5,6*
5	9/21 9/23	Probability, and Standard Scores Use of Statistics for Inference and Estimation	Lab 4: Measures of Central Tendency and Dispersion	Reference: *Text* *Chptr 7, 8*
6	9/28 9/30	***Mid-Term exam online 9/28*** Exam discussion Begin significance testing	Lab 5: Characteristics of Normal Distributions	Review Readings for Exam *Chptrs 1-8* For class: Start Chapter 9
7	10/5 10/7	Significance; null hypotheses, z-tests	Lab 6: Hypothesis Testing	Reference: *Text* *Chptrs 9, 10*
8	10/12 **(no class 10/14)**	Independent Samples and Paired Samples: Comparing two groups	**No Lab ("Fall Break")**	Reference: *Text* *Chptrs 11, 12*

Wk #	Date	Lectures	Labs	Assigned Readings
9	10/19 10/21	One Factor, Between Subject Analysis of Variance Designs	Lab 7: Testing Group Differences: Independent-Samples t-test vs. Paired-Samples t-test, One way ANOVA	Reference: *Text Chptrs 13*
10	10/26 10/28	Two-Factor Between Subjects ANOVA	Lab 8: Two-way Analysis of Variance	Reference: *Text Chptr 14*
11	11/2 11/4	Catch up/review 11/2 ***Mid-Term exam online 11/4***	Bonus lab: R Basics (earn bonus points towards the final)	Review Readings for Exam *Chptrs 9-14*
12	11/9 11/11	Covariance & Correlations Begin Regression	Lab 9: Correlations & Regressions	Reference: *Text Chptrs 15, 16*
13	11/16 11/18	Linear Regression Multiple Regression	Lab 10: Example of Multiple Regression –and Lab Wrap-Up	Reference: *Text Chptr 16*, 18
14	11/22 **(no class 11/14)**	Chi-squared	**No Lab (Thanksgiving)**	Review Readings for Exam *Chptrs 17*
15	11/30 12/2	Wrap up, catch up, etc. Review of the Course	Lab 11: Chi Squared	Reference: *Readings, Lectures, Homework, Mid-Terms, and Lab Work*

Wk #	Date	FINAL EXAM		Assigned Readings
Final Exam		***Final Exam Tues 12/14 2pm – 4pm***		Cumulative Exam