PPD 502X
Statistical Foundations for Public Management and Policy

Fall 2017

University of Southern California
School of Policy, Planning and Development

Instructor: **Vi-Nhuan Le**
stats502usc@gmail.com

T.A.: **Nicole Enciso**
nenciso@usc.edu

Office: Online
Class Location: Online
Class Dates: August 24, 2017 – November 30, 2017
Class Hours: Presentations each week on Thursdays at 6:00 pm Pacific time. These sessions may be attended live or reviewed later in recorded format.
Office Hours: By appointment

COURSE DESCRIPTION

This class serves as a graduate level statistical prerequisite for students pursuing the MPP, MPA, or MHA in the School for Policy, Planning, and Development. The goal of the class is to prepare students with the statistical foundations required to intelligently work with numbers and data in managerial situations. Additionally, the course prepares students to take courses in quantitative analysis and policy or program evaluation. Students will review and understand selected statistical techniques for summarizing and analyzing data and for addressing public policy and management questions of interest using applied data analysis.

Credits received in the course cannot be applied to the unit requirement for the MPA, MHA, or MPP.

TEACHING METHOD
This course is taught in a distance format. Class sessions are held online and students need not reside in Los Angeles to take this course. To attend a session live, students can log onto http://uscprice.adobeconnect.com/ppd502xonline/. Course assignments will consist of a text book and online lectures.

Weekly online sessions will be conducted using web conferencing software. These sessions will focus on the applications of concepts to issues of public management and policy and review applications of the concepts introduced for that week. The sessions, however, do not directly introduce those concepts. Students are responsible for reviewing these concepts through the text and for coming to class having prepared to review the applications. There will be a traditional textbook that can be bought in web-based format.

There are 12 problem sets during the course session. All problem sets are required and graded. The problem sets will be available online. There are two exams, a midterm and a final. Both will be take home exams and will closely follow the lectures. See the course outline for these due dates.

COURSE OBJECTIVES

Students in this course will learn

1. To identify the sources of data most frequently used by managers, policy analysts and researchers in policy, planning and management;

2. To recognize the manner in which data are collected and the biases that may arise from different collection techniques;

3. To organize and arrange data in graphical forms that clearly conveys the essence of the data;

4. To apply basic numerical techniques to summarize data, including measures of central tendency, dispersion, and correlation, specifically as they tend to be applied within policy and management;

5. To analyze sample data to make inferences about broader populations, with particular emphasis on policy and management applications;

6. To understand and apply the "recurring themes" of basic statistics in problem solving and critical analysis in the field of policy and public administration;

7. To be able to use spreadsheet programs and/or statistical tools.

TEXTBOOKS & COURSE RESOURCES

- Sullivan, Michael, *Statistics: Informed Decisions Using Data, 5th Edition* Pearson.

- It is highly recommended that you purchase online access to the text. If you would like a hard copy of the text, make sure that the copy of the book allows you access to the Pearson course website. **In the vast majority of cases, purchases of the hard copy version of the textbook through third-party sites (such as Amazon or Chegg) do not come with access to the online Pearson course website.** Thus, we recommend that you purchase the text through the online registration only.

- Pearson CourseCompass Website. The Pearson site can be accessed at http://portal.coursecompass.com/portal/. Course lectures are available at Course Tools/Document Sharing. There will be a word document that lists the URL for each lecture. It will be updated weekly.

- The primary resource for this class is the lectures which will be supported by the text. Weekly online sessions will present applications of that week's material and will give students an opportunity to ask questions. **It will be assumed that students will have read the text prior to the weekly sessions.**

TECHNOLOGY REQUIREMENTS

Because of the distance learning format, all students must have access to some basic computer technology. They need a computer with at least a 1 GHz chip, at least 512 MB of RAM, and a current web browser (preferably Internet Explorer, Safari, or Firefox). It is assumed that students have a

broadband internet connection. **ALL STUDENTS MUST CONDUCT THE BROWSER CHECK PRIOR TO THE BEGINNING OF THE CLASS.**

COURSE REQUIREMENTS

Course Material

- Students must keep on the schedule of lecture modules and chapter reading. The course is divided into weekly sessions with 14 lectures.

- There are problem sets reviewing material every week. The problem sets must be completed by 11:59 pm Pacific Standard Time on the posted due date. Students will be locked out of the problem set if it is not completed on time.

- I can grant one-week extensions if needed, but you must contact me via email (stats502usc@gmail.com) by noon of the day of the lecture (Thursday). You do not have to provide me a reason as to why you need an extension (life happens!). However, students are limited to <u>three</u> extensions for the entire course.

Student interaction

This course requires a high degree of student commitment and initiative. The core material is presented in the lectures. Students are responsible for keeping up with the reading. Most importantly, you are responsible for reaching out for help to master material. You can consult the optional materials and ask the professor for help.

To facilitate student interaction and discussion all students are required to participate in class. To fulfill the participation requirement, students are required to engage in at least one of the following:

- Participate during the lectures. Participation requires that students engage in class discussion by asking or answering questions. **It is not sufficient to merely logon to the Adobe site.** Students must **actively participate** in at least 12 lectures to receive full participation credit. Participation credit for these sessions will be determined empirically as explained in class.

- Provide a critique of up to **three research reports/journal articles** that touches upon the material we have learned in class. An example is provided in Lecture 1. Report/article critiques should identify the statistics involved, provide competing explanations to the ones offered by the researchers, and give viable suggestions of designs for future research.

  - Critiques must be emailed to stats502usc@gmail by November 30 at 11:59 PM. Late critiques will not be accepted.

- Full credit for participation may be given in a mix-and-match fashion. Students who participate in fewer than 12 sessions can still receive full participation credit without submitting all three critiques. In this case, the number of critiques needed to be submitted for full participation will be determined by how many classes students have attended. One critique is equivalent to participation at four lectures.

- Students may suggest alternative methods for participation, but these other alternatives must be approved by me, and must be fulfilled by November 30 at 11:59 PM.

- Please contact me (stats502usc@gmail.com) if you have any questions about your status for participation credit.

Periodically, I will communicate with the entire class via email. This will be done via your USC NetID, which is also your USC email address. You are accountable for the information content of the messages I send to you.

Please note that I acknowledge and respond to every email I receive from students, most within 24 hours. To reach me, email me directly at stats502usc@gmail.com. Please do not use the "email" function under the Course Tools of the Pearson website, as these emails never reach me. The only time you should be trying to contact me via the Pearson website is when you are asking about a specific homework item. In that case, you will use the "Ask my instructor" button found in your problem set so that I can see the particular numbers assigned to your homework item. An example can be found in Lecture 1.

GRADING AND COURSE EVALUATION

30%   Midterm Exam
35%   Final Exam (Comprehensive)
29%   Homework/Problem Sets
6%   Participation

Please note that the exams will more closely resemble the lectures than the homework/problem sets. Thus, it is important to review the lectures, even if you cannot attend the lectures live.

Statement on Academic Conduct and Support Systems

Academic Conduct:
Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Support Systems:
Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations.
dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student
EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.
Provides overall safety to USC community. dps.usc.edu

<div align="center">

COURSE OUTLINE AND LECTURE SCHEDULE

</div>

NOTE: The schedule and due dates may be adjusted during the semester to account for unforeseen events.

Sullivan - Sullivan, *Statistics: Informed Decisions Using Data, 5th Edition*

Week	*Topics*	*Chapters / Readings*
Week 1 Class 8/24/17 6:00 pm Pacific Time	**Introduction to Statistics and Statistical Reasoning in the Policy Process** • Demonstrate the basics about collecting data and the implications for the inference that can be drawn based on that data. **Sullivan** Chapter 1 Data Collection **Due 8/30/2017: Problem Set #1**	
Week 2 Class 8/31/17 6:00 pm Pacific Time	**Using Data to Make Persuasive Policy Arguments** **Objectives:** • Recognize the importance of data graphs in analyzing and communicating data on management issues. • How to tell a valid and compelling story through the graphical display of data • Identify common methods used to misrepresent data graphically. **Sullivan** Chapter 2 Organizing and Summarizing Data **Due 9/06/2017: Problem Set #2**	

Week 3 Class 9/07/17 6:00 pm Pacific Time	**Using Data to Make Persuasive Policy Arguments (continued)** **Objectives:** • Recognize the importance basic summary statistics for analyzing and communicating management issues. • Calculate standard measures of central tendency and dispersion that are used to summarize data. • Differentiate between these measures and understand the situations in which they should be employed. • Calculate and interpret the correlation coefficient. • Recognize the uses and limitations of correlations. • Construct and interpret a contingency table **Sullivan** Chapter 3 Numerically Summarizing Data **Sullivan** Chapter 4.1 and 4.4 Describing the Relation between Two Variables **Due 9/13/2017: Problem Set #3**
Week 4 Class 9/14/17 6:00 pm Pacific Time	**Introduction to Probability** **Objectives:** • Identify management decisions that require probabilistic reasoning. • Compute and interpret probabilities. • Differentiate between these measures and understand the situations in which they should be employed. • Apply Bayes' Rule to calculate the probability that of some event given some evidence. **Sullivan** Chapter 5 Probability; Section 5.5 is optional **Due 9/20/2017: Problem Set #4**
Week 5 Class 9/21/17 6:00 pm Pacific Time	**Discrete Probability Distribution** **Objectives:** • Distinguish between discrete and continuous random variables • Use Binomial and Poisson to calculate probabilities that arise out of administrative decision-making situations. • Read and interpret a probability distribution. **Sullivan** Chapter 6 Discrete Probability Distributions; Section 6.4 is optional **Due 9/27/2017: Problem Set #5**

Week 6 Class 9/28/17 6:00 pm Pacific Time	**The Normal Probability Distribution** **Objectives:** • Examine properties of Normal Distribution • Interpret and apply Normal probability distribution. **Sullivan** Chapter 7 The Normal Probability Distribution (Section 7.3 is optional) **Due 10/04/2017: Problem Set #6**
Week 7 Class 10/05/17 6:00 pm Pacific Time	**Sampling Distributions** • Recognize the difference between a population distribution and a sampling distribution. • Define and explain a sampling distribution. • Understand why the sampling distribution of a sample mean has a normal distribution. **Sullivan** Chapter 8 Sampling Distributions **Due 10/11/2017: Problem Set #7**
Week 8 Class 10/12/17 6:00 pm Pacific Time	**Midterm Review** **Due 10/18/2017: Midterm due at 11:59 PM**
Week 9 Class 10/19/17 6:00 pm Pacific Time	**Introduction to Statistical Inference** **Objectives:** • Recognize how most management decisions are made based on sample information • Differentiate a sample and a population. • Define and interpret a Student's t distribution. • Calculate and interpret a confidence interval for a population mean, a proportion, and a population standard deviation. **Sullivan** Chapter 9 Estimating the Value of a Parameters Using Confidence Intervals; Section 9.5 is optional **Due 10/25/2017: Problem Set #8**

Week 10 Class 10/26/17 6:00 pm Pacific Time	**Hypotheses Concerning a Single Population** **Objectives:** • Understand the logic of hypothesis testing • Define a research hypothesis and a null hypothesis. • Explain Type I and Type II Errors. • Calculate and interpret test statistics **Sullivan** Chapter 10 Hypothesis Tests Regarding a Single Parameter; Section 10.6 is optional **Due 11/01/2017: Problem Set #9**
Week 11 Class 11/02/17 6:00 pm Pacific Time	**Hypotheses Comparing Two Populations** **Objectives:** • Identify how choices between politics or management practices involve comparisons between populations • Identify what statistical test to employ when comparing populations. • Calculate and interpret appropriate test statistics **Sullivan** Chapter 11 Inferences on Two Samples **Due 11/08/2017**: **Problem Set #10**
Week 12 Class 11/09/17 6:00 pm Pacific Time	**Additional Hypothesis Tests** **Objectives:** • Broaden the application of hypothesis testing to encompass new management decisions. • Identify what statistical test to employ when making these comparisons. • Calculate and interpret appropriate test statistics **Sullivan** Chapter 12 Inferences on Categorical Data **Due 11/15/2017 Problem Set #11**
Week 13 Class 11/16/17 6:00 pm Pacific Time	**Additional Hypothesis Tests (2)** **Objectives:** • Identify management decisions that entail comparisons between population proportions or between 3 or more groups. • Identify what statistical test to employ when making these comparisons. • Calculate and interpret appropriate test statistics **Sullivan** Chapter 13 Comparing Three or More Means **Due 11/29/2017: Problem Set #12**

Week 14 11/23/17	**No Lecture** **Happy Thanksgiving!**
Week 15 Class 11/30/17 6:00 pm Pacific Time	**Review Lecture**
Week 16	**EXAM WEEK** **Final will be available on 12/06/2017 at noon** **Comprehensive Take-Home Final will be due on 12/13/17 at noon**