

Keck School of Medicine of USC

PM 516a: Introduction to Biostatistical Consulting

Units: 1
Term: Fall 2023
Location: ONLINE
Instructor: Trevor A. Pickering (tpickeri@usc.edu)

Office hour times and locations will be posted on Blackboard.

Course Overview

Course Description

This course serves as an introduction to biostatistical consulting. It will help statisticians and data analysts develop the necessary skills for successfully interacting with non-statistician collaborators. We will focus on two main goals: 1) developing the qualities necessary for an effective statistical consultant and 2) working with an investigator on an actual analysis problem (determining research questions and scope, formulating and implementing our analysis, and conveying our findings).

Learning Objectives

Through this course, students will become familiar with the process of statistical consulting. Students will learn:

- To explain the importance of statistical consulting and its usefulness in the public health environment
- How to improve their understanding of an unfamiliar topic and translate researchers' questions into a statistically testable set of hypotheses
- To choose the best statistical approach for answering a collaborator's questions
- Ways of communicating effectively by clearly explaining statistical concepts
- To understand ethical considerations for statisticians
- To appropriately analyze and interpret analyses for dissemination materials, such as brief reports or results sections of manuscripts

Course Preparation

Prerequisites	PM510 or equivalent course.
Recommended Preparation	The course assumes a familiarity with basic statistics and regression analysis

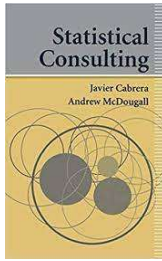
Course Requirements

Communication

Blackboard (slides, data sets, assignment submission), USC e-mail (communication)

Required Textbook

Note: Textbook may be available through the USC Libraries (libraries.usc.edu)



Cabrera J, McDougall A. Statistical consulting. Springer Science & Business Media; 2002 Jan 2.

Required Software

Students must have proficiency in at least one statistical program, but may choose which use for this course (e.g., R, SAS, Stata, SPSS)

Assessments

Grading Breakdown

Category	Points
Weekly Activities	5ea x 13
Final Project	35
Total	100

Each week's assignment will contain a variety of activities (see below).

Late Submission Policy

As many of the assignments pertain to preparation for in-class activities, late assignments are not accepted. However, there may be opportunities to make-up assignments in rare circumstances.

Description of Assessments

In-Class Activities	Weekly in-class activities will focus on developing skills for statistical consultations (e.g., client-consultation role-playing, group discussion, interacting with an investigator, presenting results, etc.). There will be a worksheet each week to accompany these activities.
Take-Home Activities	Weekly take-home activities may include readings, reflections, and data analysis for the project.
Participation	Class sessions will cover a variety of material, such as practice consultations and other skills development, and students must be present for this content.
Final Project	The final week's activity will be a final presentation to address the researcher's question from the consultation.

Alignment Grid

Learning Objective By the end of this course, students are expected to be able to:	Learning Activities The learning objective will be facilitated by:	Assignment/Assessment This learning objective skill is measured by:
Explain the importance of statistical consulting and its usefulness in the public health environment	Weekly activities emphasizing statistical consulting in public health	Weekly activity assessments and in-class discussion
Improve their understanding of an unfamiliar topic and translate researchers' questions into a statistically testable set of hypotheses	Weekly activities emphasizing translating research questions into statistical analyses	Weekly activity assessments
Choose the best statistical approach for answering a collaborator's questions	Weekly activities covering choosing the correct analytical method	Weekly activity assessments and group meetings
Communicate effectively by clearly explaining statistical concepts	Weekly activities outlining ways to communicate statistical concepts, investigator meetings	Weekly activity assessments, group meetings, and final presentation
Understand ethical considerations for statisticians	Weekly activities describing ethical considerations and scenarios	Weekly activity assessments and in-class discussion
Appropriately analyze and interpret analyses for dissemination materials, such as brief reports or results sections of manuscripts	Weekly activities and meetings regarding the final project	Weekly activity assessments and final project

Course Schedule

	Topic	Readings	In Class
Week 1 M 8/21	Communication	Relationships & Interactions Tips That'll Make Others Open Up To You Textbook 2.1, 2.2	Active Listening Activity
Week 2 M 8/28	Practice Consultations	Choosing the Right Statistical Test The PICOT Format	Practice Consultations
No Class M 9/4	Labor Day	Textbook 4.1-4.4	
Week 3 M 9/11	Exploratory Analysis		EDA Review Consultation Review
Week 4 M 9/18	Investigator Meeting	Ten Common Statistical Mistakes Guideline for Reporting Results	Investigator Meeting & Debriefing
Week 5 M 9/25	Statistical Mistakes	25 Analogies for Statistical Concepts Guideline for Reporting Results	Statistical Mistakes Game/Exercise
Week 6 M 10/2	Statistical Analogies	Personality Types	Statistical Analogies Game/Exercise
Week 7 M 10/9	Project Check-In	Statistical Data Presentation Making Data Meaningful (Part 2 Ch 2-4)	Presentations
Week 8 M 10/23	Practice Consultations II		Practice Consultations
Week 9 M 10/23	Presenting Statistical Information	Making Data Meaningful (Part 1) STROBE and CONSORT	Figures and Charts: Bad and Good
Week 10 M 10/30	Communicating Statistical Results	Consulting with Clients SCS Brochure	Communicating Results Video
Week 11 M 11/6	The Practice of Statistical Consulting	The Potti Case Chocolate Is Good	Consulting Videos
Week 12 M 11/13	Ethics		Ethics Discussion
Week 13 M 11/20	Project Check-In		Open Session
Week 14 M 11/27	Final Presentation		

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” <https://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. <https://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. <http://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. <https://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: <http://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. <https://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. <https://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. <http://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. <https://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. <https://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, <http://emergency.usc.edu>

USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime

Provides overall safety to USC community. <http://dps.usc.edu>