Computational Public Health Statistics (HS267)

Spring 2009 **(Distance)**
San Jose State University
Department of Health Science

Description:	Methods of public health and biostatistical data collection, management, analysis and reporting using microcomputers, including the detection and control of confounding factors.
Prerequisite:	HS 167 or instructor consent.
my.sjsu no.	29659
Website:	www.sjsu.edu/faculty/gerstman/hs267
Lectures:	Tuesdays starting at 7 pm Pacific on Elluminate
Labs:	Should be completed as soon as possible (and no later than 7:30 that Thursday)
Office hours:	Saturdays from 11:00am – noon on Elluminate.
Final Exam:	Due 3/19/09 midnight
Professor:	Bud Gerstman. *Class correspondence should come through the Bb e-mail tool, when feasible.* When this is not feasible, use B.B.Gerstman@sjsu.edu.
Text:	Gerstman, B.B. (2008). *Basic Biostatistics: Statistics for Public Health Practice.* Jones & Bartlett: Boston.
Calculator:	TI-30XIIS or 83
Software:	SPSS (any version) and WinPepi (public domain).

> The course schedule and assignments are posted on the course website.

Learning objectives

We cover inference for a proportion (Ch 16), two sample inferences for proportions including measures of effect based on cohort and case-control samples (Ch 17 & Ch 18), stratified analysis, including the consideration of confounding and interaction (Ch 19), correlation and regression, including multiple regression (Ch 14 & Ch 15), and reporting standards for lay and professional audiences (several sources).

General objectives

The following objectives meet CEPH accreditation expectations. Asterisks (*) indicate content introduced in pre-req course or biostat tutorial:

1. Describe the roles biostatistics serves in public health.*
2. Identify principles of measurement and study design, with application to public health research.*
3. Apply descriptive and inferential statistical techniques according to the type of study design, for answering particular research questions.*
4. Describe basic concepts of probability, random variation, and commonly used statistical probability distributions.*
5. Distinguish different measurement scales, and implications for selection of statistical methods.

6. Demonstrate reliable data management using EpiData, SPSS, and other statistical software. [Apply basics techniques with vital statistics and public health records in the description of public health characteristics and public health research and evaluation.]
7. Apply descriptive techniques to summarize public health data. Explore and describe data using summary statistics, frequency tables, and exploratory plots.
8. Apply common statistical methods of inference. Calculate and interpret confidence intervals and significance tests for comparing means, variances, risks, correlation coefficients, and regression coefficients.
9. Identify appropriateness of statistical methods based on validity and distributional assumptions. Describe methodological alternatives to commonly used statistical methods when assumptions are not met.
10. Interpret results of statistical analyses found in public health studies.
11. Apply statistical methods in examples dawn from public health practice. Develop written and oral presentations based on statistical analyses for public health professionals and educated lay audiences.

Course Organization

- A class of this type typically involves 30 hours of lecture time, 30 hours of lab, and 60 hours of homework (120 hours total). We have about 7½ weeks to fit this in.
- Units begin on Monday and end on Sunday at midnight. It is essential to stay current and to not fall behind, not even one iota.
- Elluminate sessions begin at 7pm sharp. Please do you own equipment and audio checks 15 minutes before class begins. The study of biostatistics requires a high level of awareness and careful attention to detail. Late not sessions compromise this ideal. Therefore, class sessions will be limited, and will not go past 9pm.
- Labs must be completed within 2 days of assignment (Thursday by midnight).
- You are expected to check the Blackboard site daily and keep current on items posted to the discussion board. You are expected to seek clarification using discussion threads as soon as an issue arises.

Rules for independent work[*]

Unless stated otherwise, graded work in this course is to be entirely your own. In some instances in the past, students have gone beyond permissible collaboration and suffered serious consequences. When anyone breaks these rules, the entire class suffers. The belief that others are not obeying the rules erodes confidence and introduces anxieties that those who do follow the rules will be disadvantaged. Having to investigate possible cheating incidents takes instructor time away from helping students learn the material and erodes confidence.

Unless stated otherwise in writing, the rules for independent work and collaboration are:

1. *Exams and quizzes:* You may *not* use published (print or web) materials other than those items expressly permitted in written form when working on exams and quizzes. Many not communicate about the examination materials, even indirectly, with anyone other than an instructor.
2. *Labs.* You may collaborate freely on labs.

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[*] Based partially on materials provided by UNC Professor Vic Schoenbach.

3. *Homework exercises:* You may use published (print or web) materials but may *not* communicate about homework exercises *EXCEPT* via public discussion boards under the instructor's supervision and open to all students.
4. *Reports (if any):* You may use published (print or web) materials when working on reports. You may consult with experts on specific issues but you must write your report entirely by yourself. Information received from any expert must be properly cited and must constitute no more the 25% of the paper's content.

Why do we devote so much attention to the rules and ethics for collaborating on course work? Despite the fact that intellectual honesty is essential to learning, cheating, plagiarism, and other forms of academic dishonesty are widespread in schools and universities. For example, a recent article ("Fuqua students may face expulsion", Durham Herald-Sun, 4/28/2007, A1,A4) reported on 37 Duke business students accused of cheating on a take-home exam. The article also mentioned a Center for Academic Integrity 2002-2004 survey of American MBA students in which 56% reported having cheated. As unpleasant as this seems, plagiarism and cheating are common in higher education.

Academic Integrity[†]

"Your own commitment to learning, as evidenced by your enrollment at San Jose State University, and the University's Academic Integrity Policy requires you to be honest in all your academic courses. Faculty are required to report all infractions to the office of Judicial Affairs." The SJSU policy on academic integrity can be found at www2.sjsu.edu/senate/S04-12.htm

Disability

If you need course adaptations or accommodations because of disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability.

University Drop Policy

Please see the program director to if you are unable to want to drop the course.

Grades

Your course grade is based on your average homework, midterm, and final exam score, with grade cutoffs as follows:

100–97% A+	89–87% B+	79–77% C+	69–67% D+	Below 60% F
96–93% A	86–83% B	76–73% C	66–63% D	
92–90% A−	82–80% B−	72–70% C−	62–60% D−	

[†] From the Office of Student Conduct & Ethical Development / Judicial Affairs.