Anthropology 770: Quantitative Methods in Anthropology

Spring 2022

Professor:

E-mail:

Office Hours:

Course Description

This class will examine the use of quantitative methods in anthropological research, through the use of both traditional statistical techniques and exploratory data analysis. During the first portion of the semester, we will review (or learn) some basic statistical tests that are commonly covered in introductory statistic classes. Emphasis will be placed on understanding the underlying assumptions of these tests, to enable students to select appropriate tests for their research questions(s). In the second half of the semester students will be introduced to some common multivariate statistics used by anthropologists. The SPSS statistical software package will be used extensively.

Required Materials

There are two required texts for the course. *Biostatistics: The Bare Essentials*, 4th edition, by Geoff R. Norman and David L. Streiner (available for online checkout through the UNLV library), and *Statistics for Archaeologist: A Commonsense Approach*, by Robert D. Drennan (also available for online checkout through the UNLV library). Additionally, you may want to purchase your check out a book to help you learn SPSS, such as SPSS Statistics for Dummies (available here for online checkout through Lied library).

Software

We will regular use SPSS, Version 28 in this class, and you will need access to this program to complete assignments. This program can be accessed remotely using your own computer (see UNLV Software for information); alternatively, you some of the labs may have it installed (note: Campus Computing Center).

Course Requirements and Grading

Grades will be based on problem sets (70%) and a research paper (30%).

Problem Sets

Excluding the last class of the semester, problem sets will be assigned every week. Completed problem sets are due at the start of class the following week. Late problem sets <u>will not be accepted</u> unless cleared with me in advance (and even then, you will need a compelling excuse). Write-ups should include:

- your reasoning why you selected the test(s) or steps that you did (if necessary)

- the steps undertaken in the analysis (if computed hand, include enough of the computations so I can see how you arrived at the final conclusion; if computed by SPSS, include the printout, or printouts if several steps were involved).

- a consideration of underlying assumptions, if appropriate.

- the statistical result

- appropriate graphics (be sure tables and figures are clearly labeled)

- interpretation of the results, both from a statistical and anthropological viewpoint.

Problem set grades will be based both on the quality of the statistical data (was an appropriate test selected? did you establish that the test's underlying assumptions were met?) and the quality of your interpretation of the results. You are welcome to discuss these homework assignments with one another and help each other understand the methods and issues involved. However, you will need to carry out the analyses yourself and complete the write-up independently. Access to SPSS will be required to complete the problem sets.

Research Project

Each student will produce a research report on an anthropological data set of his or her choice. You are encouraged to choose a research issue and data set for which you already have some interest and knowledge. I encourage you to start thinking early about your topic, and to discuss it with me if you have any questions concerning its appropriateness. I understand that it may be somewhat difficult to determine what statistical methods you should use before we have covered those methods in class; nonetheless, you should be able to choose your database and begin some background research early in the semester. Because of scheduling issues, I anticipate that few students will use the multivariate techniques covered in the last few weeks of the course. I also expect that most students will use the statistical methods covered in the class. If you do wish to use a quantitative technique not covered in this class, you should discuss it with me first. In this case, be sure you explain in your write-up the technique sufficiently well, and provide references as needed, for me to understand why you selected the method.

The body of the report should be between about 7-10 pages, double-spaced and typed. Appropriate tables and graphics should be included. The report will be graded on (a) the clarity of presentation (including ease of understanding the graphs and tables), (b) appropriateness of

the statistics used, and your ability to convey a clear understanding of the underlying assumptions and issues; (c) soundness of the interpretations derived from the statistical results (that is, have you made a clear and reasonable link between the statistical results and anthropological interpretation of those results), and (d) difficulty of the statistical methods used. The last criteria simply refers to the nature of the statistical tests conducted—while students are discouraged from trying to "work in" more difficult tests than are necessary to answer the research question(s), the project should be of a sufficient scope to demonstrate the student's skills in the use of quantitative methods in anthropology. In general, the papers should each include at least three different statistical tests and two graphs (ideally, box-and-whiskers and error bar), and a write-up that includes—for each statistical test or graph-- (a) what your test question is, (b) why you selected that test (i.e., why is this the appropriate test for the question, and indicate whether you have met the assumptions), and what the test results indicate, including a formal sentence showing how you might write up the results for a publication.

To ensure that the project you have selected is of a sufficient scope and meets the class requirements, an abstract of the term paper is due no later than Feb. 22. This abstract (anticipated to be approximately ½ page in length) should include the following: (1) what database you will be using, (b) what research questions you are asking, and (c) what statistical tests you intend to use. I will provide relatively immediate feedback to you as to whether the topic you have selected is appropriate. Although the actual abstract is due Feb. 22, you are encouraged not to wait until that time to select a database and be thinking about questions. Ideally, your topic should be something that you and I have discussed well before that time. The final report/term paper detailing the results of your research is due by the midnight on Wednesday, May 11.

Learning Outcomes

By the end of this course, students will be able to

- Identify the appropriate statistical technique to use for a given problem and data set

- Use the SPSS statistical program to produce summary statistics and graphical displays of data

- Understand the assumptions that underlay various parametric and nonparametric statistical methods

- Be able to apply statistical concepts to real-life research problems

UNLV Policies

Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility,

and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the [Student Conduct Code](https://www.unlv.edu/studentconduct/student-conduct), https://www.unlv.edu/studentconduct/student-conduct.

Auditing a Course

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of devices such as cellular phones and pagers, or other potentially disruptive activities are only permitted with the prior explicit consent of the instructor. Students are specifically prohibited to record classes without instructor authorization, including online/remote classes (either audio only, or video and audio). The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Since the COVID-19 pandemic forced some instruction to be delivered remotely starting in Spring 2020, numerous students have asked instructors to record their synchronous classes, so that they can access them at their convenience. Instructors who agree to record their classes (audio only, or video and audio) should inform students in advance. Recorded lectures may not be broadly released to anyone, but made available exclusively to those students enrolled in the class during the particular academic term. Recorded lectures must be stored securely, and are subject to the Nevada System of Higher Education's Records Retention Policy, meaning that the recordings can only be deleted 120 days after the end of class (i.e., after grades are posted). Once this requirement is met, the recordings should be deleted. Class recordings are protected from disclosure, as they are deemed part of an educational record under the Family Educational Rights and Privacy Act (FERPA).

Copyright

The University requires all members of the University Community to familiarize themselves with, and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for student or employee violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal

liability, as well as disciplinary action under University policies. Additional copyright policy information is available at https://www.unlv.edu/provost/copyright.

Disability Resource Center (DRC)

The UNLV Disability Resource Center (Student Services Complex, SSC-A, Room 143, https://www.unlv.edu/drc, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to a permanent disability, temporary or permanent medical need, or academic support due to pregnancy are encouraged to contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. Students who are already registered with the DRC should request their accommodations online each semester, and make an appointment to discuss their accommodations with their instructors.

Final Examinations

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the Final Exam Schedule, https://www.unlv.edu/registrar/calendars.

Identity Verification in Online Courses

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus-Canvas.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the Student Academic Misconduct Policy, https://www.unlv.edu/studentconduct/misconduct/policy, which states that "acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment" is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the Acceptable Use of Computing and Information Technology Resources Policy, https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy, which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

Incomplete Grades

The grade of "I" (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student's control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of "F" will be recorded, and the student's GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the "I" grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the Libraries' Research Consultation website, https://guides.library.unlv.edu/appointments/librarian. You can also ask the library staff questions via chat and text message at https://ask.library.unlv.edu/.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Classwork policy, under Registration Policies, on the Academic Policies webpage, https://catalog.unlv.edu/content.php?catoid=32&navoid=8271&hl=.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student submits official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a "Drop one" option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate's policy, and an infringement on the student's right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

Rebelmail

Rebelmail is UNLV's official email system for students and by University policy, instructors and staff should only send emails to students' Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Sending emails within WebCampus-Canvas is also acceptable.

Tutoring and Coaching

The Academic Success Center (ASC), at the Claude I. Howard Building, provides tutoring, academic success coaching, and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, please visit the ASC website, https://www.unlv.edu/asc, or call 702-895-3177. The ASC is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, https://writingcenter.unlv.edu/, located in the Central Desert Complex, Building 3, Room 301 (CDC 3–301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.

Diversity Statement

As an institution of higher learning, UNLV represents a rich diversity of human beings among its faculty, staff, and students, and is committed to aspiring to maintain a Campus environment that values that diversity. Accordingly, the University supports understanding and appreciation of all members of its community, regardless of race, sex, age, color, national origin, ethnicity, creed, religion, disability, sexual orientation, gender, gender identity, marital status, pregnancy, genetic information, veteran status, or political affiliation. Please see University Statements and Compliance, https://www.unlv.edu/about/statements-compliance.

A successful learning experience requires mutual respect and trust between the students and the instructor. Accordingly, the instructor asks that students be willing to listen to one another's points of view, acknowledging that there may be disagreements, keep discussion and comments on topic, and use first person, positive language when expressing their perspectives.

Class Schedule

Week	Date	Topic	Readings	Due?
1	Jan 18	Basic concepts *(Problem Set #1 assigned)*	Norman & Streiner Ch. 1 and 2; Drennan Ch. 1	
2	Jan 25	Central tendency & dispersion *(Problem Set #2 assigned)*	Norman and Streiner Ch. 3, 4 Drennan Ch. 2- 5	HW #1
3	Feb 1	Introduction to probability; binomial test *(Problem Set #3 assigned)*;	Norman and Streiner Ch. 5 *Optional: Madrigal Ch. 4*	HW #2
4	Feb 8	Hypothesis testing *(Problem Set # 4 assigned)*	Norman and Streiner Ch. 6 Drennan Ch. 7, 8 and 9 *Optional: Madrigal Ch. 5*	HW #3
5	Feb 15	Using the *t*-test to evaluate the difference between two means *(Problem Set #5 assigned)*	Norman & Streiner Ch. 10 Drennan Ch. 11-12 *Optional: Madrigal Ch. 6*	HW #4
6	Feb 22	Analysis of Variance *(Problem Set #6 assigned)*	Drennan Ch. 13 Norman & Streiner Ch. 8 *Optional: Madrigal Ch. 7*	HW #5
7	Mar 1	Nonparametric methods: ranked variables *(Problem Set #7 assigned)*	Norman & Streiner 23 and 24 *Optional: Madrigal Ch. 8*	HW #6
8	Mar 8	Nonparametric methods: categorical variables *(Problem Set #8 assigned)*	Drennan Ch. 6, 11, and 14 Norman & Streiner Ch. 21 & 22 *Optional: Madrigal Ch. 11*	HW #7
9	Mar 22	Correlation & Simple linear regression *(Problem Set #9 assigned)*	Drennan Ch. 15 and 16 Norman & Streiner Ch. 13 *Optional: Madrigal Ch. 9-10*	HW # 8
10	Mar 29	Multivariate Analysis and Cluster Analysis *(Problem Set # 10 assigned)*	Baxter 2003: Ch. 6; Baxter 1994: Ch. 7 and 8; Drennan Ch. 21-22, 25	HW #9
11	Apr 5	Principal components analysis *(Problem Set #11 assigned)*	Norman & Streiner Ch. 19 Drennan Ch. 24 Kachigan Ch. 7	HW #10
12	Apr 12	Discriminant analysis & Logistic regression *(Problem Set #12 assigned)*	Norman and Streiner Ch. 15 and 19; Drennan Ch. 24; Kachigan Ch. 7;	HW #11
13	Apr 19	GAUSS & Compositional studies *(Problem Set #13 assigned)*		HW #12
14	Apr 26	Bayesian statistics & Radiocarbon 14 dating		HW #13
15	Apr 3	To be determined		
Finals Week		Research reports due by midnight on May 11.		