

UNIVERSITY OF NORTH TEXAS
Department of Sociology
SOC 6200.001: Multivariate Analysis
Chilton 270: Tues, 2:00-4:50
Spring, 2009

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I. Learning Objectives:

- A. To acquire the knowledge of both non-parametric and regression analyses needed to pass the Ph.D. statistics qualifying examination.
- B. To prepare and write a publishable quality paper that uses regression analysis.
- C. To be able to read and interpret intelligently and critically the results of studies using non-parametric and regression analyses.

II. Learning components

- A. **Readings:** To help meet the objectives, the following books are required and recommended reading:

REQUIRED: Meyers, L.S., Gamst, G., and Guarino, A.J. (2006). Applied Multivariate Research: Design and Interpretation, Thousand Oaks: SAGE Publications. (ISBN: 1-4129-0412-9).

Allison, P.D. (1999). Multiple Regression: A Primer. Thousand Oaks, CA: Belmont, CA: Thomas Learning. (ISBN: 0-7619-8533-6).

RECOMMENDED: Frankfort-Nachmias, C. & Leon-Guerrero, A. (2006 or 2009). Social Statistics for a Diverse Society (4th or 5th Edition). Thousand Oaks, CA: Pine Forge Press.

- B. **Class time**: Each weekly class typically will consist of a combination of reviewing specific statistical concepts and/or techniques and spending some time on the computer gaining experience with them. We will use SPSS for Windows, a popular statistical software package, and “real” data.

- C. **Pace/Level of Course**: Every student has different interests, needs, and abilities. Teaching this course at a pace and level that satisfactorily meets each of your interests, needs, and abilities is impossible. Thus, I will aim somewhere in the middle range. This means that some of you may be annoyed at times by the class's plodding pace and that others of you at times may be exasperated by its too-fast coverage. If you find yourself experiencing boredom and/or frustration, please come and talk with me about how we could better meet your learning requirements.

- D. **Data**: For most in-class and homework assignments, we will be using items from the Nursing Home Study funded by the Commonwealth Fund (\$360K) and conducted by Dr. Cynthia Cready and myself.

- E. **Calculator**: Bring a calculator with square root, natural logarithm, and exponential functions to each class/lab session.

III. Course Policies

- A. All students are expected to have completed Sociology 5210 Introduction to Social Statistics or its equivalent.

- B. **Reading Assignments**: You are responsible for reading the assigned materials before the class period indicated on the syllabus. In addition to selections from the required texts, you may occasionally be asked to read illustrative journal articles or book chapters. Copies of these additional assigned readings will be made available to you.

- C. **Class Attendance**: Because the course material is cumulative, it is essential that you attend all class sessions and keep up with the readings and homework assignments. Frequently coming into class late or leaving class early disrupts class and will reduce your final grade as will poor class attendance.
- D. **Academic integrity**: as the student guidebook points out, academic integrity is required. Plagiarism and cheating will result in failure and a report to the Dean.
- E. **Special Needs**: appropriate adjustments and auxiliary aid are available for persons with disabilities. If you require an accommodation, please see me and contact the Office of Disability Accommodation at 940-565-4323 (TDD access 1-800-735-2989).
- F. **Cell Phones**: please silence phones prior to coming to class. No cell phones may be used and must be put away during class and tests. Laptops are also discouraged.
- G. **Grading**: final grades will be based on the following:

| | |
|----------------------------------------------------------------------------------------|-----|
| 1. Homework Assignments | 20% |
| 2. First paper (March 24) and final paper (April 28) | 30% |
| 3. Two tests (March 3 rd , 2:00-4:30, and May 12 th , 1:30-3:30) | 50% |

The first test will be a mirror image of the non-parametric portion of the Ph.D. statistics qualifying exam. The questions on the test are taken directly from past qualifying exams. The second test will mirror the regression portion of the qualifying exam with all test questions taken directly from the statistics qualifying exam. There will also be two "practice" tests given, one prior to each of the two tests. This will give you a chance to become familiar with the test format, the types of questions asked, and the need to answer questions in a given amount of time with no supporting materials.

All cell phones should be turned off and put away during exams.

3. **Class Participation**: Those who attend all classes, pay attention in class, and do not disrupt class by coming to class late or leaving early will likely receive extra points added to their final grade if their final grade is close to the next higher grade. For example, an 88 would be raised to a 90.

H. Homework Assignments: There will occasionally be homework assignments. Late assignments will not be accepted. *E-mailed assignments will also not be accepted.* You are welcome to work with others in doing the assignments. However, you are responsible for the intellectual content of each homework assignment and so should submit your own write-up. Be sure to show your work and describe the steps you have taken so that you can obtain partial credit if your answer is not correct.

IV. Topics to be Covered/Reading Assignments

Week 1 (January 20): Introductions, review of data sets, codebooks, etc.
What and why of statistics

Week 2 (January 27): Frequency distributions, measures of central tendency, measures of variability

- F-L, Chapters 1, 2, 4, 5

Week 3 (February 3): The normal distribution, sampling and sampling distribution

- F-L, Chapters 6 and 7

Week 4 (February 10): Estimation, testing hypotheses

- F-L, Chapters 8 and 9

Week 5 (February 17): Cross-tabulations, chi-square test

- F-L, Chapters 10 and 11

Week 6 (February 24): Measures of association for nominal and ordinal variables

- F-L, Chapter 12
- Practice test second half of class

Week 7 (March 3): Test 1

Week 8 (March 10): multivariate design, research design concepts

- MGG, Chapters 1 and 2

Spring Break (March 17th)

Week 9 (March 24): Data screening

- MGG, Chapters 3A and 3B
- First paper due

Week 10 (March 31): Bivariate correlation and simple linear regression

- MGG, Chapters 4A and 4B

Week 11 (April 7): Multiple regression

- MGG, Chapters 5A and 5B

Week 12 (April 14): Multiple regression continued

- Allison, Chapters 1 - 4

Week 13 (April 21): Multiple regression continued

- Allison, Chapters 5 - 9

Week 14 (April 28): Logistic Regression

- MGG, Chapters 6A, 6B
- Final paper due

Week 15 (May 5): Logistic Regression continued

Week 16 (May 12): Second Test during exam week (meets 1:30 - 3:30)

OVERVIEW OF RESEARCH PAPER

Each student will write an empirical research paper using the Yeatts/Cready data set consisting of questionnaire responses from "certified nurse aides" (CNAs) working in 11 nursing homes in the metropolitan area (e.g., Fort Worth, Denton, Gunter, Weatherford, Flower Mound). CNAs are those persons who provide the "hands-on" care to nursing home (NH) residents, including dressing, grooming, helping residents get to NH activities, feeding, bathing, etc. Roughly 300 CNAs completed questionnaires asking about their attitudes toward their work.

Each student will choose a research topic from those provided in a handout. These topics were selected for student use because (1) they are testable using regression analysis, (2) they include concepts that are measured in the data set (e.g., CNA empowerment, job burnout, job satisfaction), and (3) they are topics of interest to journal editors and so have a reasonable chance of being published.

Once selecting (or being assigned) a research topic, the student will conduct a literature review of that topic. For example, if the student chose "Nurse Aide Empowerment: Effects on Employee Absenteeism" as his/her topic (not an actual choice available), the student would conduct a literature review to identify scientific articles that have examined factors affecting employee absenteeism among nurses in nursing homes with particular attention given to any articles that consider employee empowerment.

The next step is to determine which of the concepts found from the literature review are measured in the Yeatts/Cready data set. After studying the questions asked in the survey instrument (to be provided) the student will have a good idea

about the variety of concepts measured. Further, a handout will be provided that shows many of the concepts measured. Once it is clear which factors are identified in the literature and also measured in the data set, these are the factors that should be the focus of your research paper (see below for exactly how to write the paper).

Each student should turn in to the professor an article that appears to match closely the paper they plan on writing. For example, when considering the paper on absenteeism, the student might find a recent article examining a variety of factors believed to affect absenteeism with many of these factors available in the Yeatts/Cready data set (e.g., satisfaction with pay, job satisfaction, support of supervisor, etc.). In some senses the student may replicate this article but with added uniquenesses of the data set. For example, the student may find an article that identifies 7 factors important to absenteeism. The data set may include 5 of these 7. In addition, the student may want to include an additional factor, such as employee empowerment—a concept that would add uniqueness to the study and add a concept that is of interest to journal editors.

The next step is to conduct a regression analysis to determine whether the Yeatts/Cready data support the previous research found from the literature review and whether the unique concept added (e.g., empowerment) also affects the dependent variable (e.g., absenteeism). Class time will be used to help students conduct the regression analysis. The professor will also provide individual time to students as needed.

It's worth noting that the Yeatts/Cready data are very unique and have a reasonable chance of being published in a gerontology journal if (1) the topic is of interest (i.e., current journal articles are focusing on the topic), (2) the literature review is thorough, (3) the data analysis is sound, and (4) the paper is well written. Dr. Yeatts has designed the course and required papers to help the student develop data analysis skills and develop writing skills (e.g., you will have an opportunity to re-work your paper). In the past, some students have chosen to take an "independent study" course following this one with the purpose of further developing their paper for publication.

EMPIRICAL RESEARCH PAPERS

The student will write two research papers with the second being an extension of the first. Each will be graded with the first worth 10% and the second 20% (30% total). The grading of each paper will be based primarily on how much effort has been put into the papers along with the students' classification (MA or PHD). Indications of effort will be number of references used, improvements made from one paper to the next, presentation of tables, organization of paper and use of sub-headings, writing style, thought put into the implications, etc.

First Paper: The first paper will consist of (1) an introduction, (2) a review of the literature of the research topic you have selected, and (3) a methods section describing (a) how the data were collected (Dr. Yeatts will provide some of the information that goes in this section of your paper), (b) dependent and independent variables, (c) analysis techniques to be used, and (d) limitations of the study. The remaining parts of your paper (findings and implications sections) will not be included in this first paper.

Accompanying the first paper should be a copy of the "Notice to Contributors" taken from a journal that publishes articles similar to yours. Every journal has a one page "Notice to Contributors" that tells anyone interested in submitting a paper how the paper should be formatted for that specific journal (the journal may publish the "Notice to Contributors" in only one issue per year). You should select a journal that publishes articles on your topic, make a copy of its "Notice to Contributors", attach it at the back of your paper, and **turn it in with your paper.**

Papers for publication typically begin with an **introduction** that "grabs" the reader and explains why the topic of the research paper is important so you should do the same. The introduction is typically between 1 and 2 pages and ends by stating the purpose of the research paper and the major sections that are about to be presented in the remainder of the paper, e.g., review of the literature, methodology, results, and implications (of course the first paper will only cover the first parts of a complete paper—the intro., review of lit., and methods sections).

The introduction section is followed by a **literature review** to explain what social scientists have found so far, regarding the topic. **Sub-headings should be used liberally when writing the literature review.** For example, in your reading of the literature, you might conclude that there are 6 major independent variables (e.g., job satisfaction, supervisor support) believed to influence a particular dependent variable (e.g., absenteeism). You might organize these 6 into three groups and have a sub-heading in your paper for each of the three groups. Or, you might choose to have six sub-headings within your literature review, one for each independent variable. Then, below each sub-heading (i.e., independent variable) you would discuss what social scientists have found regarding the relationship between the specific independent variable and the dependent variable.

The literature review might end by stating the purpose of your research paper as it relates to the literature review. Typically, the purpose is to test whether the findings from previous research are supported by the data. Further, you may note that an additional variable of interest, e.g., employee empowerment, has not been extensively considered in previous research and will be included and considered in your analyses.

A **bibliography** that includes all the citations noted in the review of the literature and in the introduction should be attached at the end (same as found in published papers). You should use the same bibliographic format as that used by the journal from which you took the "Notice to Contributors."

Following the literature review should be the **methodology section**. This section should have the following sub-headings: Data Collection Methods (explains how the data were collected), Dependent and Independent variables, Analysis Techniques Used, and Limitations of the Study. Again, some of the data collection information will be provided by Dr. Yeatts since you were not involved in the data collection.

The paper should be typed using a computer wordprocessor, double spaced, with at least 1 inch margins (the SCS computer lab in Chilton Hall provides access to word-processing programs). No emailed papers will be accepted.

Final Paper: The final paper will begin with a re-write of your first paper, i.e. an introduction, review of the literature, and methods sections based on comments you receive from Dr. Yeatts on your first paper. The final paper will also include additional sections for **findings and implications**. Each of these parts should be included in the paper as a separate section with its own heading. In other words, the final paper will begin with the same **introduction, review of the literature, and methods sections** as the first paper, but with revisions to these as suggested from the feedback you receive on the first paper (if you don't agree with some of the feedback that you get on the first paper, please let Dr. Yeatts know—sometimes he is not clear or he makes mistakes). Thus, this first portion of the final paper will be a rewrite of your first paper after obtaining comments from Dr. Yeatts.

The **findings section**, which follows the methods section, should provide a discussion of the findings from the data analysis. The data analysis results should be presented within one or more tables. Typically, there is no interpretation of the data in this section, such as the implications of the findings. Instead, you simply provide a brief discussion of what has been found as shown in the tables. The tables presented should be neatly typed and look professional (just like a table you would see in a published paper). The table should **NOT** be a copy of some SPSS output!

The **implications section** follows. The implications section should be sub-divided into theoretical implications and applied implications. Theoretical implications should discuss whether and to what extent your findings support previous research you reviewed in the literature. Thus, this “theoretical implications” section is closely tied to your earlier review of the literature section. The applied implications section should examine what the findings mean for practitioners in the field. For example, if you have identified factors that reduce absenteeism, the applied implications would center around how managers might want to modify the variables found to be important (e.g., more supervisory support) in order to reduce absenteeism.

Again, the **grading of each paper** will be based primarily on how much effort has been put into the papers along with the student's classification (MA or PHD).

