FALL 2016

Statistics for Social Science
MEJO 704.001

This course emphasizes the application of statistical test to address hypotheses and research questions typical of quantitative social science research designs. Lessons include the calculation and interpretation of descriptive statistics, *t*-tests, analyses of variance, simple and multiple linear regression, and internal reliability analyses. Discussions include topics such as when a parametric versus nonparametric test should be used, when it is more appropriate to use a test of group differences as opposed to a correlation-based analysis, what mediator and moderator variables are, and strengths and limitations of typical assessments of measurement reliability.

This course is rooted in practice with real data sets using SPSS as the statistical platform, although some hand calculations involving basic algebra will be required. By the end, students will be equipped to review quantitative results sections of research articles, understand how to select the best type of test depending on the hypothesis, and be prepared to expand their current knowledge base in applied statistics.

Fall 2016 Semester Information

Professor: Francesca Dillman Carpentier
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Class Hours: TR 1:00pm-2:15pm
Classroom: 60 Carroll Hall

Suggested texts (there are no required textbooks):

Weber, R., & Fuller, R. (2013). Statistical Methods for Communication Researchers and Professionals. First Edition. Dubuque, IA: Kendall Hunt.

Kranzler, J.H. (2007). Statistics for the terrified, 4th edition. Upper Saddle River, NJ: Pearson Education, Inc. (great introductory primer in paperback, with SPSS examples)

Stockburger, D. Introductory Statistics: Concepts, Models, and Applications. (comprehensive, contains SPSS examples, available free at http://www.psychstat.missouristate.edu/introbook/sbk00.htm)

StatSoft Electronic Textbook (a bit advanced, available free at http://www.statsoft.com/textbook/)

HyperStat Online (simpler, goes through ANOVA and Chi-Square, available free at http://davidmlane.com/hyperstat/)

Hayes, A. F. (2005). Statistical methods for communication science. Mahwah, NJ: Erlbaum. (goes more into depth with mathematics)

Sign up for free at Code School to learn free statistics program R at http://www.codeschool.com/courses

Attendance Policy:

Attendance is not recorded nor is it factored into the final grade. Please use good judgment in your own attendance. There are also no make-ups or acceptance of late assignments, in-class exercises, or tests.

Late Tests/Assignments:

There will be no make-ups or acceptance of late assignments, in-class exercises, or tests.

Grading:

Students are graded according to the highest professional standards. Grades are calculated based on the percentage correct on individual assignments and tests. Percentages are converted into letter grades of H (high pass), P (pass), L (low pass) and F (fail). Below are the equivalencies for each grade:

F (fail) = 69% or less (a "D" or below)
L (low pass) = 70-79% (a "C" grade)
P (pass) = 80-89% (a "B" grade)
H (high pass) = 90-100% (an "A" grade)

Course Goals

The School of Media and Journalism's accrediting body outlines a number of values you should be aware of and competencies you should be able to demonstrate by the time you graduate from our program. Click here to learn more.

No single course could possibly give you all of these values and competencies, but collectively, our classes are designed to build your abilities in each area. In this class, the following values and competencies are specifically addressed:

- Understand concepts and apply theories in the use and presentation of images and information.
- Conduct research and evaluate information by methods appropriate to the communications professions in which they work.
- Critically evaluate their own work and that of others for accuracy and fairness, clarity, appropriate style and grammatical correctness.
- Apply basic numerical and statistical concepts.

Honor Code:

It is expected that each student in this class will conduct him/herself within the guidelines of the Honor System (http://honor.unc.edu). All academic work should be done with the high level of honesty and integrity that this University demands. If you have any questions about your responsibility or your instructor's responsibility as a faculty member under the Honor Code, please feel able to see the course instructor, speak with the senior associate dean of undergraduate studies in this school, and/or speak with a representative of the Student Attorney Office or the Office of the Dean of Students.

Seeking Help

If you need individual assistance, it is your responsibility to meet with the instructor. If you are serious about wanting to improve your performance in the course, the time to seek help is as soon as you are aware of the problem, whether the problem is difficulty with course material, a disability, or an illness. Please feel able to contact the course instructor as soon as you perceive any warning signs of things that might adversely affect your class performance or final grade.

Diversity

The University's policy on Prohibiting Harassment and Discrimination is outlined in the 2011-2012 Undergraduate Bulletin at http://www.unc.edu/ugradbulletin/. UNC is committed to providing an inclusive and welcoming environment for all members of our community and does not discriminate in offering access to its educational programs and activities on the basis of age, gender, race, color, national origin, religion, creed, disability, veteran's status, sexual orientation, gender identity, or gender expression.

In this course, you are encouraged to represent diverse populations, diverse viewpoints, and diversity of perspective in your own work. You are also asked to be sensitive to the various backgrounds, perspectives, origins, and situations represented by the students in the course, the students, faculty, and staff at this university, and the residents of this state.

Special Needs

The University of North Carolina – Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability or pregnancy complications resulting in difficulties with accessing learning opportunities.

All accommodations are coordinated through the Accessibility Resources and Service (ARS) Office. In the first instance please visit their website at http://accessibility.unc.edu, call the office at 919-962-8300, or email accessibility@unc.edu. A student is welcome to initiate the registration process at any time. However, the process can take time. ARS is particularly busy in the run-up to Finals and during Finals. Students submitting Self-ID forms at that time are unlikely to have accommodations set until the following semester.

Please contact ARS as early in the semester as possible.

Grading Criteria

Assignments (65%):

With one exception (see tentative course schedule below – factor analysis), assignments are graded for accuracy and thoroughness. Percentage correct is the basis for these grades, with additional adjustments reflecting completion and thoroughness.

There are 13 assignments in total. Thus, each assignment grade is worth 5% of the total grade for the course.

As many of these assignments require use of the SPSS statistical package on a computer, you will need to either use classroom computers or use a laptop with SPSS access (e.g., your own SPSS program copy or a wireless Internet connection to get to SPSS from Virtual Lab, https://virtuallab.unc.edu/).

Final Exam (Take-Home) (35%):

There is one comprehensive (Lessons 1 through 7) take-home exam with no make-up opportunity. This exam is worth 35% of the total course grade.

This exam and its supporting data set will be made available through the course Sakai site before the semester is over (please see tentative course schedule below) and will be due during the final exam period (please see end of tentative course schedule for details).

The exam is a combination of multiple choice, calculations, and data analysis/interpretation/presentation. Unless specified (e.g., the multiple choice section is closed-book, closed-notes), lecture material, homework, and print and online sources may be used as reference.

You are strongly encouraged to ask the instructor for help or clarification for any questions you might have on the final take-home exam.

Tentative Course Schedule (subject to change)

Readings listed correspond with lecture material for that day. Readings are meant as supplements to the lectures--examples of use of the analyses covered in class.

DAY	LESSON	TOPIC	TO DO
1	Lesson 1	Variables and Distributions *Types of data (e.g., nominal, ordinal, interval, ratio)* *Parametric versus nonparametric data*	
2	Lesson 1	Variables and Distributions *Frequency distributions, bar charts, pie charts;* *Histograms, stem plots;* *Mean, median, standard deviation, variance, range, inter-quartile range, box plots*	
3	Lesson 1	Variables and Distributions *Central Limit Theorem*	1. Start HW1a-Variables and Distributions *(please open all homework in Microsoft Word)*
4	Lesson 1	Variables and Distributions *z-scores, standardizing*	1. Turn in HW1a at beginning of class 2. Start HW1b-Standardizing
5	Lesson 2	Group Differences: The *t*-test *The t-test calculation*	1. Turn in HW1b at beginning of class
6	Lesson 2	Group Differences: The *t*-test *Hypothesis testing, inference* *Types of error*	1. Read Cooper & Tang and Haynes, Shoemaker, & Lacy articles for examples of use
7	Lesson 2	Group Differences: The *t*-test *Margin of error, confidence intervals, confidence levels*	1. Start HW2-*t*-test

8	Lesson 3	Group Differences - One-way ANOVA *One-way ANOVAs* *Calculation of F-statistic*	1. Turn in HW2 at beginning of class 2. Start HW3a-ANOVA calculation
9	Lesson 3	Group Differences - One-way ANOVA *Calculation of F-statistic* *appropriate kinds of variables*	1. Turn in HW3a at beginning of class 2. Read Etling & Young article for example of use
10	Lesson 3	Group Differences - One-way ANOVA *Post-hoc tests (pairwise comparisons)*	1. Start HW3b-ANOVA calculation and post-hoc
11	Lesson 4	Factorial ANOVAs I *Introduction* *Moderator variables* ** ANOVA WALKTHROUGH 1*	1. Turn in HW3b at beginning of class 2. Start HW4a-Factorial ANOVA concept
12	Lesson 4	Factorial ANOVAs *Interpreting interactions: post-hoc tests*	1. Turn in HW4a at beginning of class
13	Lesson 4	Factorial ANOVAs *Interpreting interactions: plots, presentation*	1. Start HW4b-Factorial ANOVA and post-hoc
14	Lesson 4	Factorial ANOVAs *ANOVA WALKTHROUGH 2 using "2000 Election Data for ANOVA review" file*	1. Turn in HW4b at beginning of class 2. Read Munyofu et al. and Punyanunt-Carter et al. articles for examples of use
15	Lesson 5	Association *Scatter plots* *Pearson Correlation Coefficient*	
16	Lesson 5	Association *Reliability*	1. Start HW5-Association

17	Lesson 5	Association *Effect Sizes*	1. Turn in HW5 at beginning of class
18	Lesson 6	Simple Linear Regression *Line estimation, interpreting results*	
19	Lesson 6	Simple Linear Regression *Types of hypotheses, appropriate variables*	1. Start HW6-Simple Regression
20	Lesson 7	Multiple Regression *Multiple linear regression* *Interpreting results*	1. Turn in HW6 at beginning of class
21	Lesson 7	Multiple Regression *Goodness of fit statistics*	1. Read Brubaker article for example in use
22	Lesson 7	Multiple Regression *Multicollinearity*	1. Start HW7a-Multiple Regression, Collinearity
23	Lesson 7	Multiple Regression *Different types of stepwise regressions* *Hierarchical linear regression*	1. Turn in HW7a at beginning of class 2. Start HW7b-Hierarchical Linear Regression
24	Lesson 7	Multiple Regression *Introduction to mediation*	1. Turn in HW7b at beginning of class 2. Read Nichols et al. and Grabe & Drew articles for examples of hierarchical regression
25	Review	Comprehensive review	1. Start take-home final exam, when ready
26	Lesson 8	Factor Analysis Crash Course *Testing validity with factor analyses*	

27	Lesson 8	Factor Analysis Crash Course *Orthogonal versus oblimin rotations* *Different types of extractions*	1. Start HW8 Factor Analysis (graded based on completion)
28	Lesson 9	Nonparametric tests *Chi-square tests*	1. Turn in HW8 at beginning of class 2. Start HW9- Chi-Square
29	Lesson 9	Nonparametric tests *Mann-Whitney U tests, Spearman Rho*	1. Turn in HW9 at beginning of class 2. Read Maynard & Taylor article for example of chi-square
Final	Final Exam	DUE MONDAY DEC. 12 BY 5:00PM	TURN IN ELECTRONICALLY AND/OR BY PAPER BY 5:00PM to Sakai classroom dropbox or instructor school mailbox