PSY-6110: Quantitative Methods in Psychology - II
University of Toledo, Department of Psychology
Fall 2020; M 1:00 - 3:45, Blackboard Collaborate Ultra - Remote
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Course Goals: This course builds on PSY 6100, Quantitative Methods in Psychology I, and aims to solidify knowledge of exploratory data analysis, *t*-tests, effect sizes, power, and ANOVA, as well as provide an understanding of correlation, linear regression, multiple linear regression, factor analysis, and logistic regression. In addition, practical skills in computerized statistical analysis using SPSS will be emphasized, including using syntax for data management, data transformation, data analysis, and data modeling.

The University of Toledo abides by the Americans with Disabilities Act (equal and timely access) and Section 504 of the Rehabilitation Act of 1973 (non-discrimination on the basis of disability). If you have a disability and are in need of academic accommodations but have not yet registered with the Office of Accessibility (OA) (Rocket Hall 1820; 419-530-4981; officeofaccessibility@utoledo.edu) please contact the office as soon as possible for more information or to initiate the process for accessing academic accommodations. I also encourage students with disabilities receiving accommodations through OA to discuss these with me, after class or during my office hours, so that I may be better informed on how to assist you during the semester.

Prerequisites: PSY 6100/7100 or an equivalent course

Texts and Readings:
Primary
Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th Ed.). Thousand Oaks, CA: Sage. (ISBN: 9781526436566); https://www.discoveringstatistics.com/ https://edge.sagepub.com/field5e
Or: Field, A. (2013). *Discovering statistics using SPSS* (4th Ed.). Thousand Oaks, CA: Sage. (ISBN-10: 1412977525); http://www.statisticshell.com/ http://www.sagepub.com/field4e/main.htm
If using Field's 2013 text, chapter numbers differ
Howell, D. C. (2013). *Statistical Methods for Psychology* (8th Ed.). Belmont, CA: Wadsworth, Cengage Learning (ISBN-10: 1111835489).; http://www.uvm.edu/~dhowell/methods8/index.html
Secondary
Boslaugh, S. (2005). *An Intermediate Guide to SPSS Programming: Using Syntax for Data Management*. Thousand Oaks, CA: Sage. (ISBN-10: 0761931856)
Green, S. B., & Salkind, N. J. (2016). *Using SPSS for Windows and Macintosh: Analyzing and understanding data* (8th Ed.). Hoboken, NJ: Pearson. (ISBN-10: 0134319885)
Programming and Data Management for IBM SPSS Statistics 24. Book, data files, and syntax are available for download here: https://tinyurl.com/SPSS-DataManagement.
Other Helpful Supplies: Calculator, SPSS via UT; SPSS GradPack (12-month renewable license; $76 for standard [Base, Bootstrapping, Custom Tables, Advanced, Regression], $89 for Premium [everything but Amos, e.g., Categories, Missing Values, Neural Networks, Exact Tests])

Course Requirements:
1. Attend and participate in class.
2. Read the texts and other material when they are assigned.
3. Complete all homework assignments and turn them in by 5 pm Friday of that week.

4. Successfully complete the exams.
5. Use the computers during class just for stats; no email, shopping, Facebook, etc.

Grading: Relatively equal emphasis is placed on conceptual knowledge, as demonstrated on exams, and practical knowledge, as demonstrated on homework assignments. Class attendance is expected though no points are assigned. Lowest values for grades: A = 93% (525), A- = 90% (508), B+ = 87% (491), B = 83% (468), B- = 80% (452), C = 70% (396), D = 60% (339). I will assign grades based on how well you master the material but if the whole class does poorly on an exam or assignment, I will make adjustments. Late assignments lose 10% per day. Exam 1 = 30% Exam 2 = 30% Homework = 40%

Collaboration: It is often very helpful to discuss class or homework topics with classmates. However, you must prepare all the material submitted for a grade on your own. It is not permissible to submit any material prepared by another student. You also may not collaborate during an exam.

Schedule: A tentative schedule is below, though it may be adjusted depending on our pace. I anticipate 11 homework assignments, with one due almost every week. The schedule for the exams will be fixed.

Wk	Date	Topic	Reading	Due Friday at 5pm
1	8/17	Introduction, Orientation, and Review History and systems in data analysis; Data Transformations (Compute and recode), Data Functions (Split files, select and weight cases);	H: 1; F: 1 & 2	
2	8/24	Data Management (File import and export), Data Restructure (Add cases, add variables, aggregate, cases to variables, variables to cases); Output Management System (OMS; capturing and reprocessing output)	H: 2 & 3; F: 4 & 5 Behrens (1997) *EDA*	#1 SPSS Tutorial (if not in 6100)
3	8/31	Review - Sampling Error and Confidence Intervals Review - Sampling Error and Confidence Intervals	H: 4 & 7; F: 2, 3, 6, & 10	#2 Data Management, Transformations, and Functions
4	9/07	Labor Day; No Class		
5	9/14	Review – Effect Sizes and Power Review – Oneway ANOVA	H: 8, 9, 11; F: 8, 10, 12 Cohen (1992); McGrath & Meyer (2006)	#3 Sampling Distribution and the CLT
6	9/21	ANOVA Omnibus Stats vs. Focused Contrasts (linear vs. nonlinear, weights)	H: 11; F: 12	#4 Effect Size & Power
7	9/28	ANOVA - Multiple Comparisons and Type I Error Control via Bonferroni with Multistage Adjustment (Holm/Larzelere & Mulaik)	H: 12	#5 Oneway ANOVA
8	10/05	Type I Error Control Multifactor ANOVA	H: 13; F: 14	Exam 1
9	10/12	Repeated Measures ANOVA (Simple Effects Analysis) Correlation	H: 14, 9, & 10; F: 15 & 8	
10	10/19	Differences between correlations Linear Regression	H: 9; F: 9	#6 Multifactor & RM ANOVA
11	10/26	Linear Regression Multiple Regression	H: 9 & 15; F: 9	#7 Correlation
12	11/02	Multiple Regression Multiple Regression: Understanding Interactions (Moderation)	H: 9 & 15; F: 9 & 11	#8 Regression
13	11/09	Multiple Regression: Moderation; Centered vs. Uncentered Results Multiple Regression: Statistical Mediation	H: 9 & 15; F: 11; Hayes (2017)	#9 Multiple Reg.
14	11/16	Factor Analysis	F: 18	#10 Moderation & Mediation
15	11/23	Logistic Regression	F: 20; H: 15	#11 Factor Analysis
	12/04	**Exam 2 12:30 - 2:30 (per UT schedule)**		

H = Howell Chapter, F = Field Chapter.

Topic if extra time: Influences on Effect Sizes: Range Restriction and Enhancement