Spring 2021 Course Syllabus  
PSY 525/625 Categorical Data Analysis

Instructor  
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Meeting Times and Location  
Class: Tu-Th 10:00–11:50 AM, online via Zoom.

Text  

Recommended, Optional Texts  

Overview  
This course is intended to introduce students to categorical data analyses. The general goal is to provide a thorough background in the conceptual aspects, statistical underpinnings, and application of this method rather than a tutorial on a specific software package. By the end of the course, students should be able analyze use categorical data analysis methods to analyze real data using current statistical software, write about, critique applications of, and read methodological articles about categorical data analysis. Prerequisites: Students should have at least one graduate statistics course covering chi-square, ANOVA, regression, and logistic regression analysis, such as PSY 521/621 and PSY 522/622

Homeworks  
There will be three homework assignments consisting primarily of data analysis and reporting of categorical analyses using R, SPSS, or SAS. I will supply homework questions and data files (usually 10-12 questions) and you will be asked to analyze your own data for at least one question on each assignment. I can assist you in finding a data set if needed. You will be able to choose among the software programs for many questions, but some analyses may not be available or convenient in all software programs. Illustrations are available in the text or will be provided in class for all types of analyses on the homework assignment. Homework due dates are: Thurs 4/22, Thurs 5/13, Tues 6/6. Late assignments are not accepted without substantial penalty except for cases of illness or family emergencies. Please contact me ahead of time if you are going to miss the deadline for any reason. You are welcome to work with others when running the analyses or consult them on interpretation, but your assignment must be written in your own words.

Grades  
Grades are based on an average of the three homework assignments with total percentages assigned the following grades: > 90 = A, 85-89.9 = B+, 80-84.9 = B, 75-79.9 = C+, 70-74.9 = C.

Other Resources  
There are several useful electronic links on the class website.

Disabilities  
I am happy to make any necessary arrangements with students who have a disability and are in need of academic accommodations. If you have not done so already, please contact the Disability Resource Center, 116 Smith Memorial Student Union, http://www.pdx.edu/drc/, Email: drc@pdx.edu, for assistance and any testing arrangements. I would appreciate it if you would check with me as soon as possible to discuss any needed accommodations and to make sure that I have received a faculty notification letter. If any aspects of instruction or course design result in barriers to your inclusion or learning, please let me know.
Sexual Harassment, Sexual Violence, and Discrimination
As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. Please be aware that as a faculty member, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment, sexual violence or discrimination to a confidential employee who does not have this reporting responsibility, you can find a list of those individuals or contact a confidential advocate at 503-725-5672. For more information about Title IX please complete the required student module Creating a Safe Campus in your D2L.

Spring 2021 Course Readings

Azen & Walker is a required text. All other readings available online (password protected) at the class website: http://web.pdx.edu/~newsomj/cdaclass

4/1,4/6 Descriptive, Univariate Statistics, and Two Categorical Variables
Levels of scale/measurement, review of probability, descriptive statistics, distributions for binary and categorical variables, test of single proportion, univariate chi-square, estimation basics, contingency of 2 x 2 using Pearson and likelihood ratio chi-square comparing two proportions, 1 x J tables, measures of association, tetrachoric correlations, interrater agreement statistics


Azen & Walker, Chapter 4 “Association between Two Categorical Variables”


4/8,4/13 Three Categorical Variables, Matched Pairs and Repeated Measures
Mantel-Haenszel, Cochran-Mantel-Haenszel, McNemar’s chi-square and related conventional tests, measures analysis for categorical variables

Azen & Walker Chapter 5 “Association Between Three Categorical Variables”


4/15,4/20 Ordinal Analyses for Contingency Tables and Loglinear Models
Azen & Walker Chapter 7 “Log-Linear Models”


4/22 HW 1 Due

4/22,4/27 Regression Models for Noncontinuous Outcomes I: Logistic Regression Review and Diagnostics
Logistic regression (continuous and binary predictors), interactions with logistic regression, propensity scores, diagnostics for logistic regression

Azen & Walker Chapters 8 & 9 “Logistic Regression with Continuous Predictors” and “Logistic Regression with Categorical Predictors”


4/29, 5/4 Regression Models for Noncontinuous Outcomes II: Mediation and Longitudinal Applications
Mediation, lagged regression, conditional logistic models, GEE


5/6, 5/11 Regression Models for Noncontinuous Outcomes III: Review of Generalized Linear Models for Ordinal and Multicategory Outcomes, Survival Analysis
Generalized linear models, ordinal logistic and probit models, multinomial logistic, discrete choice, discrete survival analysis

Azen & Walker Chapter 6 “Generalized linear models”

Azen & Walker Chapter 10 “Logistic Regression for Multicategory Outcomes”


5/13 HW 2 Due
5/13, 5/18 Psychometric Analyses
Some basics of IRT, relationships between IRT and factor analysis


5/20, 5/25 Latent Class and Latent Transition Analysis
Introduction to latent class modeling concepts


5/27, 6/1 Sample Size, Estimation, and Practical Issues


6/6 HW 3 due (finals week)