Cluster	Subject Title	Instructor	Credit	Semester
K-P	Regression Analysis	Prof. Chen Chen	2	Winter 2023

Subject Description

Regression analyses are a set of statistical techniques that allow one to assess the relationship between DV(s) and a single IV or multiple IVs. The goal of this course is to give students a conceptual and practical understanding of the use of regression analysis in the psychological sciences and educational settings.

Objective

By the end of the course students should be able to:

1. understand the purpose of multiple regression regarding correlation and variance
2. know the situations in which various types of multiple regression are best applied
3. conduct effective statistical analyses predicting outcome variables from multiple predictors by using SPSS
4. write clear and concise reports of the results of regression analyses for use in presentations, dissertations and peer-reviewed publications.

Leaning Method

Lectures: to teach students basic concepts of multiple regression

Labs: to teach students the practical aspects of running regression analyses in SPSS and interpreting the results.

Due to COVID-19 pandemic, the course will be held online.

Content

Session 1: Simple (bivariate) regression and review of correlation
Session 2: Multiple regression: Introduction and building models with regression
Session 3: Three types of multiple regressions
Lab 1: Which MR strategy is selected?
Session 4: Categorical independent variables
Session 5: Mediation: Single mediator
Session 6: Mediation: Two or more mediators
Lab 2: Dummy variables and mediating effects
Session 7: Moderation with continuous and categorical independent variables
Session 8: Moderation with continuous independent variables
Session 9: Logistic regression with dichotomous categorical DV
Lab 3: Moderating effects and logistic regression
Session 10: Deal with missing data (Optional)

Requirement

Students have to attend both the lectures and labs and submit lab assignments.

Evaluation

Evaluation is composed of three parts: 30% attendance; 20% lab1; 20% lab2; and 30% lab3.
Grades are assigned as follows:
95%-100% = A
90%-94.99% = A-
85%-89.99% = B+
80%-84.99% = B
<80% = F

In general, grades would be in between B+ and A.

Note. The principles of the AELC evaluation regulation are that each subject's maximum score is 100, and the passing score is 80; lower than 80 is marked as "F".

Textbook and reference
(please indicate which are to be provided by instructor and which are to be obtained by students)

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences (3rd ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates. (Some chapters may be provided by instructor)

MacKinnon, D. P., & Fairchild, A. J. (2009). Current directions in mediation analysis. *Current Directions in Psychological Science*, 18, 16-20. (Obtained by students)

Melissa A. Hardy. (1993). Regression with Dummy Variables. (Ed). SAGE Publications.

John Fox. (1991). Regression Diagnostics: An Introduction. (Ed). Ontario: SAGE Publications.

Ann Aileen O'Connell. (2006). Logistic Regression Models for Ordinal Response Variables. (Ed). SAGE Publications.

(Note. Other references may be recommended later)

Pre-course reading and preparation (if any)

It would be better if students have certain basic knowledge on statistics for psychology and/or education.