

CPSE/IP&T 745

MULTIPLE REGRESSION

Winter 2015

Mondays, 1-4, 112 SWKT

Lane Fischer, 340-E MCKB, 422-8293

Tim Smith, 340-N, 422-1311

CPSE/IP&T 745 will provide a thorough exposure to multiple regression analysis which is the foundation for a wide variety of subsequent statistical procedures including path analysis, factor analysis, structural equation modeling, and hierarchical linear modeling.

Objectives: Students will:

- Demonstrate ability to design and interpret multiple regression models (including categorical and continuous variables and their interactions) and their coefficients including F , R , R^2 , a , b , β ; zero-order, partial & semi-partial correlations.
- Demonstrate ability to design and interpret path models with manifest variables.
- Demonstrate ability to design and interpret variations in regression models including logistic regression, discriminant function analysis, and exploratory factor analysis.

Required Textbook:

Multiple Regression & Beyond: An Introduction to Multiple Regression and Structural Equation Modeling, 2nd Edition. (2015) Timothy Z. Keith. Routledge ISBN 978-1-13-881195-9

Recommended Textbook:

Advanced and Multivariate Statistical Methods 5th Edition, (2013).
Craig Mertler and Rachel Vannatta, Pyrczak, ISBN 978-1-936523-09-2

Learning/Teaching Style:

My preferred style of learning and teaching statistics is to work in small groups. That approximates how good statistical analysis is accomplished. We work on a team to check each other's work, notice small syntax errors and help interpret the results. It is my preference to organize you into pods with at least one member in each pod that is (relatively) competent in statistics. This strategy is negotiable. I am a strong advocate of a conceptual approach to the teaching of statistics (I could have written Keith's preface.☺) and have found it to be effective in helping students love the beauty of statistics...even with all its laziness and vagaries.

Grading:

I prefer competency-based grading. You will re-do each assignment until it is correct.

Schedule:

| Date | Topic | Readings |
|-------------------------------------|--|-------------------------|
| As Soon As You Acquire Keith's Text | Pedagogical Approach Review | Preface Appendix B |
| 1/5 | Bivariate & Multiple Regression | K 1 & 2 LF |
| 1/12 | Multiple Regression Details | K 3; M&V 7 LF |
| 1/19 Holiday | | |
| 1/26 | Expanding Models & Types of Regression | K 4 & 5 LF |
| 2/2 | Categorical Variables and Dummy Coding | K 6 LF |
| 2/9 | Interactions with Categorical Variables | K 7 LF |
| 2/16 Holiday | | |
| 2/17 Monday Instruction | Interactions with Continuous Variables | K 8 & 9 LF |
| 2/23 | Midterm Experience | |
| 3/2 | Binary Logistic Regression | K 10; M&V 11 TS |
| 3/9 | Discriminant Function Analysis | M&V 10 TS |
| 3/16 | Exploratory Factor Analysis | M&V 9 TS |
| 3/23 | Path Analysis via SPSS | K 11, 12 M&V 8 TS |
| 3/30 | Introduction to Model Fit (Beyond Null Hypothesis Testing At Last) | K 13 TS |
| 4/6 | Error, CFA and SEM (The Measurement and Structural Components) | K 14, 15, 16 TS |
| 4/13 | TBD | |
| 4/18 2:30-5:30 | Pod Final Exam | |