

Analyzing Decision Making using Regression Models

Instructors: K.M. Schmidt, X. Tong, & M.J. Meyer

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Guest speakers were invited to the class. Previous guest speakers include Dr. Steve West, Dr. Leona Aiken, and Dr. Kevin Grimm.

Week 1:		
<u>Day</u>	<u>Topic</u>	<u>Content</u>
1 Jan 4	Intro to COVID-19 Intro to R programming	Introductions; form groups Lecture: COVID-19 datasets: COVID Isolation on Sleep and Health in Healthcare Workers (SHHW) & Knowledge Aptitude and Practice (KAP) Readings and group discussions on Validity Lab: Intro to basic R code
2 Jan 5	Exploring Real Data	Lecture: Visualizing real SHHW data, scales of measurement Lecture: Analyzing SHHW data using regression models with continuous dependent variables Part 1 Lab: Exploring the KAP data using R
3 Jan 6	Modeling and analysis of COVID-19 data	Lecture: Analyzing SHHW data using regression models with continuous dependent variables Part 2 Lab: Fit multiple models to the KAP data
4 Jan 7	Modeling and analysis of COVID-19 data	Lecture: Fit more advanced models to SHHW data; interpret the analysis results (effect size and power) Lab: Practice advanced models with KAP data
5 Jan 8	Project Discussions	Group work for 5-6 groups; Hands-on help session Lab: Mini-Project report 10-min presentations for all 5-6 groups; give a 1-2 slides with an outline of required components; hypotheses, method, descriptives

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Week 2:		
<u>Day</u>	<u>Topic</u>	<u>Content</u>
6 Jan 11	Intro to advanced topics in multiple regression	Lecture: Advanced topics in multiple regression using SHHW data (logistic, generalized linear models; quantile regression, stepwise, ridge, lasso) Lab: Intro to R code using KAP data
7 Jan 12	More advanced topics	Lecture: Shiny Apps and other R packages for visualizing SHHW data Lab: Exploring various models of data using R Shiny using KAP data
8 Jan 13	Model diagnostics: Leverage points and outliers; influential observations and multicollinearity	Lecture: introducing leverage points and outliers in regression; introducing influential observations and multicollinearity problem Lab: Practice with real KAP data using R
9 Jan 14	Review	Lecture: multiple regression in practice Review regression topics and making decisions! Question and Answer session, Discussion Lab: Fit final project multiple models to the KAP data using R; final project help session
10 Jan 15	Project Discussions COVID-19 data	Group work Hands-on help sessions Final Project report submission by end of class period 3pm Eastern