PSY 652: Methods of Research in Psychology I – Fall 2017

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Office Hours: Monday 11-12, Friday 1-2, and by appointment

Lecture: Monday 8:00 – 10:30 in BSB 357
Lab: Friday 2:00 – 3:15 in BSB 357

Course description:
PSY 652 is an applied course in statistical modeling and data analysis. Students will develop a strong understanding of the general linear model and learn how to use this framework to answer substantive questions in their field of research. Much of the class time will be spent *doing* statistical analyses – first alongside the instructor(s), and then independently to ensure mastery of the techniques. The primary goal is that students will complete the course ready to properly and confidently run many different types of general linear models with their own data.

Students are required to take the corresponding lab. During the lab sessions students will have the opportunity to further practice the analyses learned in class, become proficient in R, and work on data analysis projects.

Prerequisite: undergraduate statistics

Textbook:
Field, A, Miles, J. & Field, Z. (2012). *Discovering statistics using R*. Los Angeles, CA: Sage Publications.

Additional readings will also be posted in the Course Dropbox Folder.

Course Content, Learning Objectives, and Associated Textbook Readings for each Unit:
Eight units are covered in PSY652. Chapters listed after each unit correspond to the textbook.

1. Introduction to R & RStudio (8/21)
   - Required readings: Field Chapter 3, Mair (2016)
2. Visualizing, Wrangling, and Describing Data (8/28, 9/11, 9/18)
   - Required readings: Field Chapters 1 and 4
3. Introduction to Probability & Statistical Inference (9/25)
   - Required readings: Field Chapter 2
4. Simple Linear Regression and Correlation (10/2)
   - Required readings: Field Chapter 6 and Chapter 7 through Section 7.5
5. Multiple Linear Regression (10/9, 10/16)
   - Required readings: Field Chapter 7, Sections 7.6-7.8, 7.11
6. Linear Regression with Categorical Predictors (10/23)
   - Required readings: Field Chapter 7, Section 7.12

7. Linear Regression with Interactions (Moderation) (10/30, 11/6)
    - Hayes (2011), McClelland & Whisman (2005)
8. Assumption Checking and Remediation for Linear Regression Models (11/13, 11/27)
    - Required readings: Field Chapter 5 & Chapter 7, Sections 7.9-7.10

Grading:
- Quizzes on Readings (equally weighted)   25%
    - Due dates posted on CANVAS
- Midterm Exam (in lab Friday, 10/27)   15%
- Final Exam (in lab Friday, 12/1)   15%
- R Notebooks (due Friday, 12/8)   15%
- Group Project   20%
    - Written proposal due 11/27
    - Presentation delivered on 12/4
- Participation   10%

90% - 100%=A; 80% - <90%=B; 70% - <80%=C; 60% - <70% D; <60% F

Quizzes
Each Unit has associated readings. Students are expected to thoroughly read each assigned reading and complete the corresponding quiz on CANVAS by the posted date. The quizzes must be completed independently.

Exams
Two exams will be given during lab. The exams will be open note, but time limited.

R Notebooks
Over the course of the semester, students will compile a R Notebook to replicate the findings of two published studies that have used the Midlife in the United States (MIDUS) data. The majority of the work to compile the notebooks will be completed in class and lab, but there will be a few additional tasks that students will need to complete independently. A list of the required contents of each R Notebook will be provided by 11/17.

Group Project
Over the course of PSY 652 & PSY 653, students will work in a group to produce a full length, empirical paper using the MIDUS public use data. For PSY 652, the expected products are a proposal and presentation (~ 20 minutes) of the proposal. Parts 1 through 7 of the proposal should not exceed 2000 words, and should include:
1. An introduction that includes:
    a. The research question(s)
    b. The importance of the research question(s)
2. The theoretical framework driving the research question(s)
3. A brief literature review of existing work on the topic
4. An explanation of the approach that will be taken to answer the research question(s)
5. The hypotheses
6. A description of the MIDUS study and the particular sub-studies that will be used

7. A description of the measures that will be used
8. Descriptive statistics of the sample and measures

The descriptive statistics should be completed via a R Notebook and submitted with the proposal. A corresponding presentation of Parts 1 to 8 will be compiled and delivered on the last day of lecture (December 4).

Participation
Active participation by students in lecture, lab and as a group member for the Group Project is essential. The participation grade will be the average of three scores:
1. A rating of the student's participation by the instructor (Kim Henry)
2. A rating of the student's participation by the graduate teaching assistant (Shane Kentopp)
3. A rating of the student's participation on the group project by fellow group members (confidentially reported and averaged across all members).