Readings for Psy942

Like for Psyc941, there is no required textbook for the course, for *about* the same reasons. There are great texts about each of the topics in this course, and there are some that bridge the topics well. But, while the math and stats of the topics are pretty well established, again, the applications differ across disciplines and research areas – you will do well to read how "your kind" thinks about and refers to the models and their results

Quiz #1 – Multiple Regression & Friends

This portion of the course is about multiple regression, the model at the heart and soul of almost all classic multivariate models. Everything else we'll study together this year is a "variation", an "extension" or an "improvement" of multiple regression

- 1. Go to Amazon (or wherever you like to look for books) and search for "multiple regression for ?????", putting in your research area. Then:
 - a. Pick one out, buy a cheap used copy, and look through the chapter headings that go with the various topics of Quiz 1
 - b. Another approach is to purchase a "multivariate stats" textbook. Most have great chapters on multiple regression! Trade-off? The whole text on multiple regression obviously has more breadth and detail than the chapter from a multivariate text. But the chapter tends to cover and integrate the "high points" very well and to have examples of applications that are often (strangely) missing in a whole text on regression.
- 2. There are a couple of choices that have worked their way to the top over the decades:
 - a. Pedhazur (1997) great regression text. <u>https://www.amazon.com/J-Pedhazur-Multiple-Regression-</u> <u>Behavioral/dp/B008VR4WMG/ref=pd_lpo_sbs_14_img_0?_encoding=UTF8&psc=1&refRID=KN9T3X699E5S2</u> <u>AESX1XC</u>
 - b. Cohen, Cohen, West & Aiken (2003) a "standard" regression text. https://www.amazon.com/s?k=west+and+aiken&i=stripbooks&ref=nb_sb_noss_2
 - c. A great multivariate textbook with a really good multiple regression chapter is: <u>https://www.amazon.com/Using-Multivariate-Statistics-Fidell-</u> <u>Barbara/dp/9352861752/ref=pd_sbs_14_3/156-8779777-</u> <u>3524345? encoding=UTF8&pd_rd_i=9352861752&pd_rd_r=3918955e-a708-11e9-95ef-</u> <u>ff89da75d8b9&pd_rd_w=UkXCf&pd_rd_wg=TtIGx&pf_rd_p=588939de-d3f8-42f1-a3d8-</u> <u>d556eae5797d&pf_rd_r=TZVA11DPEPXKJ1ZSSNSV&psc=1&refRID=TZVA11DPEPXKJ1ZSSNSV</u>
- 3. Some classic "great stuff" we should all read early & often.
 - a. Power analysis is more complicated, and more important, with multivariate models. This is a solid introduction to those complexities and importances by Knofczynski & Mundfrom (2008)!! https://pdfs.semanticscholar.org/9b20/1d71e3cc1aab90f1b8512923bcd3f5afba9e.pdf
 - b. We will spend a little time with "path analysis" with the intend of using this model to better understand *regular* multiple regression modeling, and, hopefully, to become better multiple regression modelers, as a result. The mathematical and conceptual relationship between path analysis and multiple regression was beautifully pointed out by Sewell Wright. <u>https://www.jstor.org/stable/2527551?seq=1#page_scan_tab_contents</u>
- 4. Usually our "statistical behavior" is drawn from mathematical and statistical theory! Sometimes, however, we discover that "the right math" can lead to biased results in application! Here's an interesting example of that. This particular article does a nice job of explaining the problem faced by researchers, when the "best version of the model" changes!!

https://www.researchgate.net/publication/227622791_Using_the_Correct_Statistical_Test_for_Equality_of_Regres_ sion_Coefficients

Quiz #2 – Factorial Designs & Analyses

Perhaps the center piece of any "intermediate" stats course is the factorial design and the "interaction". Understanding the difference between "conditional" and "unconditional" statements of relationships (and appreciating the unlikely nature of the later) is a major step in your data analytic education. Here we go...

- 1. Go to Amazon (or wherever you like to look for books) and search for "factorial anova for ?????", putting in your research area. Then:
 - 1. Pick one out, buy a cheap used copy, and look through the chapter headings that go with the various topics of Quiz 2 & 3.
 - Here is one that many folks who have taken the class have reported particularly liking, by Maxwell & Delaney, 2018). <u>https://www.amazon.com/dp/1138892289/ref=rdr_ext_tmb</u>
 - We often get shown "the way" to do "the analysis" to understand our data. It is important to realize that often:
 1) "the way" has developed over time to the current "version" and 2) there is some dispute, even about some of our most basic "the way"s. Here's a great example!
 - There are a couple different ways to "think about" an interaction. One of the important ones was highlighted by Rosnow & Rosenthal (1989 & 1995). <u>https://psychology.okstate.edu/faculty/jgrice/psyc5314/RosnowRosenthal 1995 IntContrasts.pdf</u>
 - Of course there was dissent (Meyer, 1991). http://webcom.upmf-grenoble.fr/LIP/Perso/DMuller/M2R/ACM/articles/meyer_91_PB.pdf

Quiz #3 – General Linear Model

Everything we've worked with this semester (and most of last semester) can be fit into the over-arching umbrella of the "general linear model" – it is essentially the blendings and extensions of multiple regression and ANOVA! So why, you might reasonably ask, do we have to be able to discuss a multiple regression as if it were an ANOVA, a factorial ANOVA as if it were a multiple regression, a mediation model as if it were an ANCOVA, and a moderation model as just another ANCOVA with an interaction? Because the understanding of how they blend with and duplicate each other is the starting point for just about every other model you will likely want to learn. Hierarchical modeling, longitudinal modeling, latent modeling and their combinations (e.g., Structural Equation Modeling) are all cast in the language and formulations of the GLM (but with cooler estimators and error terms, allowing the testing of more and sometimes cooler models and hypotheses). So, buckle in!

In terms of reading, take a look through the multiple regression and/or multivariate texts you've been using for references to the "GLM" and give them a read.

Your most important reading about this topic will be in the results sections of the articles you are reading for your other classes and your programmatic research! Stop skipping over the parts where the authors describe (and sometimes defend) how they chose to analyze their data, and think about how else they might have chosen to do their analyses -- what other models they might have used!!!