Final Exam Review
(100 points total)

Final Exam, Tuesday, March 17 10:15-12:05
As usual, before the exam I am happy to answer any questions you want to ask. You will have the full time to complete the test if you need it.

Short Essay (40 points)
There will be 2 short essay questions, 20 points each. These are open-ended questions on definitions and concepts. Answers should be about 1 paragraph. I will pick 2 questions from the following list:

- Explain the concept of fit in logistic regression. How is the effect of a set of variables tested in logistic regression? If a single predictor is added to the model, how does the change in fit related to the test of the significance of a single variable slope? Describe the logic behind how lack of fit is used to derive measures of variance accounted for?

- What is a link function? Describe how this concept is helpful for analyzing different types of dependent variables. Name three types of link functions and their associated error distributions and provide a hypothetical or real example from your area of research that illustrates when each would be used.

- When is multivariate analysis of variance (MANOVA) appropriate? Describe the logic of how MANOVA is computed. What are the purported advantages of multivariate analysis of variance? And what are some of the disadvantages mentioned in class or the readings?

- Give the purpose of principal components analysis (PCA) and explain in conceptual terms how PCA is computed. What is an eigenvalue? How is PCA similar and different from exploratory factor analysis (EFA)? Describe how PCA relates to two classic multivariate analyses.

Multiple Choice (30 points)
There will be 15 multiple choice questions worth 2 points each. These may be on any of the assigned reading or the lecture material from 2/18/20 (beginning with chi-square and simple logistic) through 3/12/20. The purpose of these questions is to make sure you have read the material and learned the concepts from the text and class lecture.

Interpretation of Results (30 points)
There will be two printout interpretation problems from HW 2 or HW 3 (15 pts each). These questions may include one or more of the following:

Compute:
Be able to compute an odds ratio from a 2 × 2 frequency table.

Interpret:
Simultaneous or hierarchical dummy coded multiple regression with covariates, ANCOVA, quadratic models, interactions, simple slopes, mediation, simple and multiple logistic regression (including odds ratios, confidence intervals for B or odds ratios, and significance tests of coefficients, likelihood ratio tests, pseudo-R-squared values), ordinal regression, and count regression models, including the overall fit (likelihood ratio “chi-square” test), MANOVA.