Final Exam Review
(100 points total)

Final: Tuesday, March 17 11:00 – 12:50

The final exam is not explicitly cumulative. However, you will need to have a solid understanding of significance testing, sampling distributions, Type I and II errors, and similar basic concepts. You will have one hour fifty minutes to complete the test (please return by 12:50 via email). There are no restrictions on use of notes or books or other sources, but you will not likely have enough time to look up all of the answers. You must complete this exam on your own.

Short Essay (40 points)

There will be 2 short essay questions, 20 points each. These are open-ended questions on definitions and concepts learned from the readings and lectures. Answers should be about 1 paragraph and **in your own words**. I will pick 2 questions from the following set:

1. Describe the type of ANOVA that can investigate whether there is a statistical interaction? Define the term "interaction" and give an example from your area of research (real or hypothetical) that illustrates one. For this example, describe the pattern or results that you would expect for each of the three types of significance tests obtained with this type of analysis. Use a figure to illustrate but also be sure to describe the results in words.

2. What study designs can be analyzed with "within-subjects" ANOVA? What distinguishes these situations from situations that require between-subjects ANOVA? Why does a within-subjects experiment have a statistical power advantage over a between-subjects experiment? In within-subjects ANOVA, there is a new source of variance computed that is not computed in between-subjects ANOVA. Describe in words how this new source of variance is computed and how it relates to the power advantage mentioned above.

3. What type of questions can be investigated with loglinear models? Illustrate with examples (briefly). What is the association effect and what question is answered by the test of the association effect? What are the two methods for testing the significance of an association effect and how do they relate to one another?

4. What is a nonparametric test and what does the term "nonparametric" refer to? What are the circumstances under which a researcher should consider using a nonparametric test (assume interest in comparing means across groups)? What is the relative efficiency of a test and when will parametric tests most likely have better relative efficiency than nonparametric tests?

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 Feb 17th through Mar 12th. The purpose of these questions is to make sure you have read the material and learned the concepts from the text and class lecture.

Computations (30 points)

There will be two short computational or printout interpretation problems (15 pts each). Please have a calculator handy and have ready access to any statistical tables you might need. Computations or interpretation of SPSS or R printouts will include one or more of the following. (In order to save time for some of these analyses, I may give you a partial printout or partially completed ANOVA table and ask you to compute the missing information). Examples will be similar to problems appearing on HW 2 and HW 3.

Calculations
z-proportions test & confidence limits, margin of error, contingency chi-square, correlation, simple regression, one-way ANOVA

Printout Interpretations
z-proportions test, chi-square, correlation, contingency chi-square, scatterplot, regression, reliability analysis, one-way ANOVA, factorial ANOVA, within-subjects ANOVA, mixed factorial ANOVA.