

Final Exam Review (100 points total)

Final: Tuesday, December 10 10:15-12:05, CH 307

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. The length and nature of the test are the same as the midterm exam. You will have the full one hour 50 minutes to complete the exam 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 learned from the readings and lectures. Answers should be about 1 paragraph. I will pick 2 questions from the following set:

1. Factorial designs have two advantages over single factor designs. Describe these advantages and give an example from your area of research (real or hypothetical) that illustrates these advantages. For this example, describe the pattern or results for each of the three sources of variance that are traditionally tested with (a two-way) analysis of variance. Use of a figure is acceptable, but you must also 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 with 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 does a test of the association effect answer? 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 Nov 7th through Dec 5th. 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 problems consisting of hand computation or printout interpretation (15 pts each). You may bring a single sheet of 8 1/2 X 11 paper, using both sides, hand written with any formulas that you think you may need. (Note: this sheet can only be used for the computation portion of the exam). Please bring a calculator to class. I will supply any statistical tables you might need. Computations or interpretation of SPSS 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

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

Printout Interpretations

Paired *t*-test, correlation, scatterplot, one-way and contingency chi-square, *z*-proportions test, reliability, one-way ANOVA, Tukey test, factorial ANOVA, simple effects tests, within-subjects ANOVA, mixed factorial ANOVA.