PS 211: Exam 4 Review Sheet

Exam 4 will focus on content from Lectures 14 - 18, though may also refer to concepts from earlier in the course. Please note that this is not a comprehensive list of what may be on the exam, but is intended to help guide your studying. You may bring a single 8.5 x 11" piece of paper with hand-written notes (both sides). You will ***not*** need a calculator for the exam.

Important concepts from earlier in the course

Standard error: What it is and when we use it
Standard deviation vs. standard error
p values and alpha levels
Point estimates & interval estimates
Confidence intervals
Distributions of scores vs. distributions of means
Null vs. research/alternative hypotheses
Directional vs. non-directional hypotheses
One-tailed vs. two-tailed tests
Type I & Type II Errors
When to use each type of statistical test

Lecture 14: One-way between-groups ANOVA

Why use ANOVA instead of multiple *t* tests
F statistic: Understanding the numerator and denominator
Between- vs. within-groups variance
Degrees of freedom in *F* test
Interpreting source table and ANOVA results
Eta squared
Post-hoc tests: What are they and when to use

Lecture 15: Repeated-measures ANOVA; Factorial ANOVA

When to use repeated-measures ANOVA
Advantages / disadvantages of within-groups designs
How is the computation of the *F* statistic different for a repeated-measures ANOVA
When to use factorial ANOVA
Main effect vs. interaction: What are they and how to visualize
Computing multiple *F* statistics
Marginal means
Interpreting R output

Lecture 16: Correlation

When to use
Pearson's *r* - how to interpret magnitude and sign

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Covariance
Scatter plots
How do *r* and N affect significance of correlation
R^2
Partial correlations
Outliers: What are they and how to handle

Lecture 17: Regression

When to use
Association vs. prediction
Predictor and outcome variables
Interpreting slope & intercept
Ordinary least squares — general idea
Standard error of estimate: what is it?
Proportionate reduction in error
R^2
Standardized & unstandardized coefficients
Interpreting R output for models with one or multiple predictors

Lecture 18: Non-parametric statistics; P-hacking & Open Science

When to use non-parametric statistical tests
Advantages and disadvantages of non-parametric tests
When to use Chi Square Goodness of Fit
When to use Chi Square Test of Independence
What is *p*-hacking and why is it a problem?
What are researcher degrees of freedom and why can they be problematic?
What is the replication crisis in psychology?
Open science practices