Final Exam Preparation

- **Logistical details**
  - Thur Dec 11, 7:10-10pm, usual classroom
  - 170 minutes
    - But exam will be less than twice as long as a midterm
  - Open-book, open-notes
  - Calculator needed
- **Coverage**
  - Roughly two-thirds on material since previous midterm
    - Handouts 20 – 24
    - Quizzes 20 – 24
    - HW 8 – 9
  - Roughly one-third on earlier material
    - Focusing on big ideas
- **Resources available online**
  - This preparation sheet
  - Handouts
  - Quizzes and solutions
  - HW assignments and solutions
  - Practice exam and solutions (on more recent material)
  - Preparation sheets for midterm exams
  - Solutions for midterm exams
- **Types of questions to expect**
  - Short answer
  - Calculations
  - Interpretations and explanations
  - Similar to examples, quizzes, HWs, previous exams
- **Advice for preparing**
  - Prepare and organize your notes carefully
  - Don’t study less because it’s open-notes/book
  - Plan not to rely on your notes/book too much
  - Re-read, work through handouts
  - Focus on understanding, not memorization
  - Review and make sure that you can answer example, quiz, HW questions
  - Ask questions during class, office hours
- **Advice during the exam**
  - Show up on time!
  - Read carefully
  - Relate conclusions to context
  - Write and explain clearly
  - Show details of calculations
  - Do not elaborate excessively
Outline (of most important topics since previous midterm)

- Chi-square test for two-way tables
  - Test of independence
  - Expected counts, test statistic, *p*-value
  - Drawing conclusions
  - Largest contribution to test statistic
- Analysis of Variance (ANOVA)
  - Purpose, need
  - Big idea: compare variation between groups to variation within groups
  - ANOVA table
  - *F*-test
  - Multiple comparisons: Tukey procedure
- Simple linear regression
  - Association
    - Scatterplot
    - Form, direction, strength
    - Correlation coefficient
      - Properties
  - Least squares (regression) lines
    - Least squares criterion
      - Calculating coefficients from summary statistics
    - Residuals
      - Residual plots
    - Prediction
      - Extrapolation
    - Interpretation of slope coefficient
    - Coefficient of determination (*r*²)
  - Inference for slope coefficient
    - Standard error
    - *t*-test
    - Confidence interval
  - Test for correlation coefficient
  - Confidence interval for mean value
  - Prediction interval
    - Similarities, differences between CI and PI
- Multiple regression
  - Interpretation of coefficients
  - Interpretation of *R*²
  - Model utility test (*F*)
  - Tests for individual coefficients (*t*)