Exam 3 Preparation

- Logistical details
  - Thur Nov 20
  - 65 minutes
  - Open-book, open-notes
  - Calculator needed
- Coverage
  - Handouts 14 – 19
  - Quizzes 14 – 19
  - HW 6 – 7
- Resources available online
  - This preparation sheet
  - Handouts
  - Quizzes and solutions
  - HW assignments and solutions
  - Practice exam and solutions
- Types of questions to expect
  - Short answer
  - Calculations
  - Interpretations and explanations
  - Similar to examples, quizzes, HWs, previous exam
- 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!
  - Be cognizant of time constraint
  - Read carefully
  - Relate conclusions to context
  - Write and explain clearly
  - Show details of calculations
  - Do not elaborate excessively
Outline (of most important topics)

- Inference for population mean $\mu$
  - Sampling distribution of sample mean $\bar{x}$
    - Mean $\mu$
    - Standard deviation $\sigma/\sqrt{n}$
    - Shape
      - Normal if population normal
      - Approximately normal when $n$ large
  - Confidence interval for population mean $\mu$
    - $\bar{x} \pm t^* \frac{s}{\sqrt{n}}$
    - Technical conditions
    - Interpretation
    - Not prediction interval
  - Hypothesis test for population mean $\mu$
    - Test statistic $t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$
    - P-value from $t$-distribution
    - Technical conditions
    - Conclusion

- Comparing two groups
  - Two-sample $z$-procedure for comparing proportions
    - Hypothesis test
    - Confidence interval
    - Technical conditions
  - Two-sample $t$-procedure for comparing means
    - Hypothesis test
    - Confidence interval
    - Technical conditions
  - Paired data
    - How to recognize
    - Advantages of paired design
    - Paired $t$-test
    - Paired $t$-interval