STAT 217    Winter 2015

Exam 2 Preparation

Logistics:
- Thur Feb 19
  - 50 minutes
- Open-notes, open-handouts
  - You may bring anything that I have provided or that you produce yourself
- Bring calculator, normal probability table, $t$-table
  - No computer use
- Handouts 9 – 15, Quizzes 9 – 15, HW 5 – 8, Chapters 4 – 6

Overview:
- We have analyzed studies that involve comparing two groups, both with a binary
categorical response variable and with a quantitative response variable.
  - We have used both simulation methods and more conventional methods ($z$-test, $t$-
tests) for assessing the strength of evidence that the groups differ.
- We have considered issues of how studies are designed (observational vs. experimental)
  and how this affects the scope of conclusions that can be drawn (cause/effect).
- We have studied descriptive methods (graphs and statistics) for quantitative data.

Outline:
- Handout 9: Observational Studies
  - Observational study, confounding variable, (lack of) cause/effect conclusion
- Handout 10: Designing Experiments
  - Experiment, treatment, random assignment, cause/effect conclusion, blindness,
double blindness
- Handout 11: Statistical Significance for $2\times 2$ Tables
  - Segmented bar graph, conditional proportions, simulating randomization test for
    comparing two groups with binary categorical response variable
- Handout 12: Theory-Based Inference for $2\times 2$ Tables
  - Two-proportion $z$-test, two-proportion $z$-interval, impact of order of subtraction,
    impact of sample sizes
- Handout 13: Statistical Significance for Quantitative Response
  - Simulating randomization test for comparing two groups with quantitative
    response variable
- Handout 14: Two-Sample $t$-Test and $t$-Interval
  - Two-sample $t$-test, two-sample $t$-interval, impact of difference in sample means,
    impact of sample sizes, impact of within-sample variability, impact of confidence
    level
- Handout 15: Quantitative Response: Graphical and Numerical Summaries
  - Shape, center, variability, outliers, symmetry, skewness, mean, median, standard
deviation, inter-quartile range, five-number summary, boxplot, resistance
Resources available online:
- This preparation sheet
- Handouts
- Chapters (PolyLearn)
- 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, practice exam 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