Stat 201: Statistics I
Midterm Review

Metropolitan State University

About the final exam

- Available on MyStatLab following class on 8/5
- Due on 8/12 by midnight
- 23 questions, 100 points
  - 5 questions, 18 points from chapters 3 - 6
  - 18 questions, 82 points from chapters 7 - 11
- Every question on exam has been a homework question, though the details will likely be different
- Time limit: 4 hours, must be completed in one sitting
- Can use any resource (book, notes, internet), except other people

Chapter 3

- From a set of data, find:
  - Mean
  - Median
  - Mode
  - Midrange
  - Range
  - Variance
  - Standard deviation

Chapter 4

- Calculate probabilities:
  - From proportions (3 in 12)
  - From a contingency table
  - Complements
  - **Addition rule**
  - **Multiplication rule**
  - Complex events ("At least one...")
  - Conditional events

Chapter 5

- Find probability of event from a binomial distribution

Chapter 6

- Find probability from standard normal, z, distribution
- Find z-score which corresponds to given probability
- Find probability of event from a non-standard normal distribution
- Find value from non-standard normal distribution which corresponds to given probability

Chapter 7

- Estimate a population proportion:
  - Find a confidence interval
  - Correctly interpret a confidence interval
  - Find sample size for desired margin of error
    - Known and unknown estimated proportion
- Estimate a population mean:
  - Find a confidence interval
  - Correctly interpret a confidence interval
  - Find sample size for desired margin of error

Chapter 8

- Hypothesis testing:
  - Identify the null and alternative hypotheses
  - Calculate a test statistic and p-value
  - Make a decision based on p-value and significance level
  - State conclusion in terms of research question
- Understand type I and type II errors
- Test a claim about population proportion
- Test a claim about population mean

Chapter 9

- Test a claim about two population proportions
- Test a claim about two population means using two independent samples
- Test a claim about the difference between populations using samples of paired data
- For all tests, construct the appropriate confidence interval to test claims

Chapter 10

- Correlation:
  - Identify linear correlation vs. non-linear correlation vs. no correlation
  - Estimate linear correlation from scatterplot
  - Calculate correlation coefficient of a sample
  - Test whether population correlation parameter ρ is zero or not
- Regression:
  - Calculate regression equation from sample
  - Make predictions for the response variable given a predictor value and regression results

Chapter 11

- Test the fit of a sample frequency distribution to an expected distribution
- Test independence of two factors using a sample contingency table