Time, Location, Coverage

Test 2 will be given in class on Tuesday, October 31. The test is cumulative, but will emphasize the material in chapters 10, 11, 13, 14, 15, 16, and 17. You are responsible for material covered in the text, in the problem sets, and in class.

Format

Test questions will be designed to try to see how well you understand the material, not how well you can perform various procedures mindlessly. A variety of question formats may be used. Some items may be be tested using "short answers" (a couple sentences to a paragraph), multiple choice, or true/false.

Instructions

Read through these prior to coming to the test and follow them when you take your test.

1. Always show your work and explain your reasoning. Answers without work or reasoning will not receive full credit.
   - Use mathematical notation (especially the equals sign) correctly.
   - Don’t be afraid to use words in your explanations.
   - If you get an unreasonable answer, be sure to say so. Give a brief explanation about how you know your answer is wrong (for example, the mean I calculated is less than 10, but I can see from the data that it should be at least 20). Then go on to other problems and come back and try to fix the error if you have time at the end of the test period.
   - Even if you cannot do a problem completely, show me what you do know.

2. You may use your basic calculators (a basic calculator is one that can do basic arithmetic – add, subtract, multiply, divide, square roots – but has no statistical functions or any “fancy features”) and the tables I provide for Standard Normal Probabilities and the t distributions, but for each number you write on the exam, it must be clear where it came from. For example, if you got .25 by multiplying .5 by .5, I want to see .5 · .5 = .25 on your paper (or words indicating the same). When you get a value from a table, say so.

3. Short answer questions will be graded based on truth, accuracy, clarity, significance, and brevity. In short, I’m looking for high quality answers. (Example: If you are asked to give an example of something, pick the best example you can think of, one that makes the issue especially clear.)

4. Test restrictions.
   - The test is closed book. No notes are allowed. I will provide you with copies of Tables A and C for use during the exam.
   - Do not write in purple on the exam. (The exam will be graded in purple.)
Test 2 Information

Content

Here is a list of things you should be sure you know how to do. It is not intended to be an exhaustive list, but it is an important list.

You should be able to:

- Understand, use and explain the statistical vocabulary/terminology.

- Work with random variables. This includes:
  - Using the basic rules of probability to determine probabilities of events.
  - Computing the mean and standard deviation of a random variable and knowing what they tell you.
  - Interpreting area as probability in a graph of a distribution.
  - Recognizing situations that are described by binomial, normal and t distributions.
  - Being able to use rules for means and variances to determine the mean and variance of a more complicated random variable from means and variances of simpler random variables.

- Understand the issues involved in collecting good data and the design of studies, including
  - the distinctions between sample surveys, observational studies, and randomized experiments, and
  - matching study designs with appropriate analysis methods.

- Work with normal, and t distributions. This includes being able to use the 68-95-99.7 Rule and/or Tables to find percentages, z-scores, critical values, etc.

- Understand the basic framework for hypothesis testing and how to interpret P-values.

- Understand the basic framework for confidence intervals and how to interpret the confidence level.

- Perform and interpret all of the confidence intervals and hypothesis tests covered so far.

- Be aware of the assumptions that must be true to make use of various statistical procedures and the degree to which the procedures are robust.

- Understand how to make and interpret graphical representations of data (stemplot, histogram, boxplot, pie chart, bar graph) and when each might be appropriate or inappropriate to use.

Note that the test will be a sample from the possible topics, it will not be exhaustive.

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