

Exam 2 Review

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Midterm 2

Wednesday April 16th, 9:55-10:45am

1. Double-sided 8.5x11" sheet of hand-written notes
2. Calculator

Format of Exam

- Mostly short answer with calculations
- Some multiple choice, true/false, fill-in-the-blank
- Portions of distribution tables will be provided on the last page of the exam

Coverage Overview

- Chapter 4: Probability Plots (4.10) & CLT (4.11)
- Chapter 5: Confidence Intervals
 - CIs for 1 & 2 sample means & proportions (5.1-5.7)
 - PIs (5.8)
- Chapter 6: Hypothesis Testing
 - HTs for 1 & 2 sample means & proportions (6.1-6.8)
 - Distribution-free tests (6.9)
 - Generalized tests: Chi-square (6.10) & F test (6.11)
 - Properties of HTs & multiple testing (6.12-6.14)

Chapter 4 Specifics

- Probability Plots (4.10)
 - Be able to interpret (recall sample size condition)
- Central Limit Theorem (4.11)
 - Regular CLT: conditions and result
 - How to apply Normal approximation to the binomial

Chapter 5 Specifics

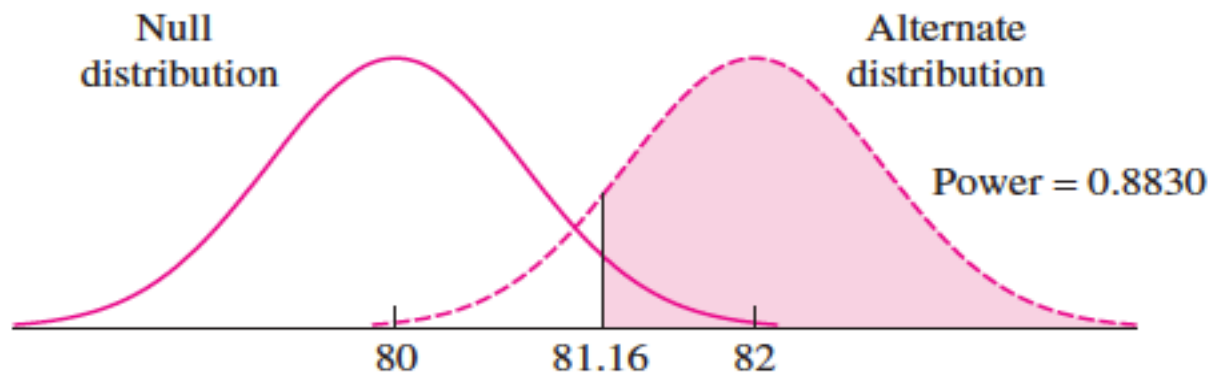
- Confidence Intervals (and bounds) for 1 & 2 sample means & proportions (5.1-5.7)
 - General form
 - Justify conditions under which each method can be used (e.g. large vs small sample, normality, paired vs independent, means vs proportions, equal vs unequal variance)
 - How to construct
 - How to interpret in words
 - Find sample size for a given width
- Prediction Intervals (and bounds) (5.8)
 - Conditions under which method can be applied
 - How to construct/interpret

Chapter 6 Specifics

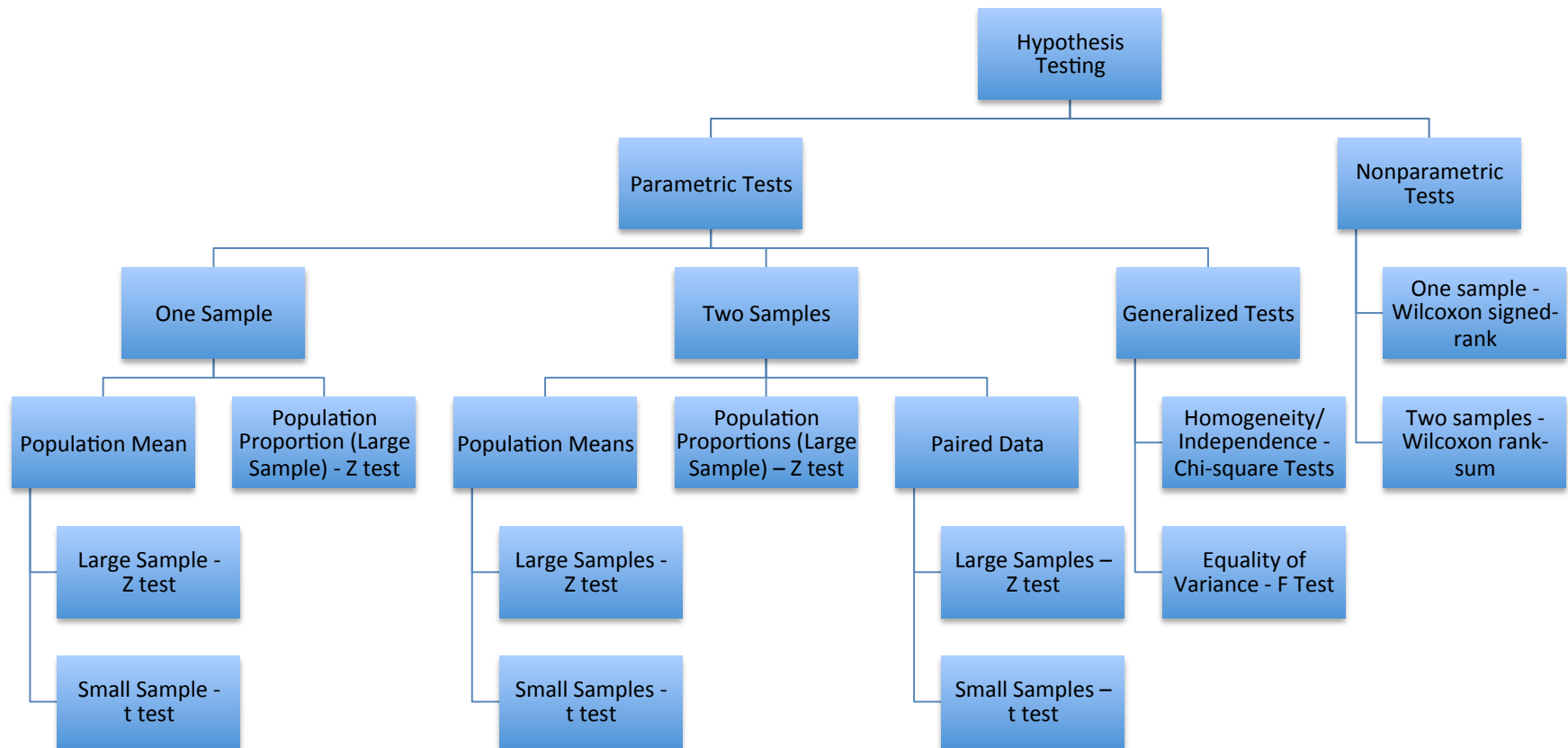
- For all HTs (6.1-6.11):
 - General form a test statistic
 - Justify conditions under which each method can be used (e.g. large vs small sample, normality, paired vs independent, means vs proportions, expected cell count, equal vs unequal variance, symmetry, skew)
 - How to determine the null and alternative hypotheses
 - How to perform (5-step format)
 - How to interpret the conclusion in words
 - What is a p-value?
 - How to relate to a CI (and which cases is it appropriate)

Chapter 6 Specifics Cont'd

- Properties of HTs & multiple testing (6.12-6.14)
 - How to find critical point(s) and rejection region(s)
 - Differences between 1 and 2-sided tests
 - Definition of type I/II error & their relationship
 - How to calculate power
 - How to calculate level
 - Sketch the null and alternative distributions to illustrate power and level



HT Toolbox



Pointers

- You will not be asked to construct a boxplot by hand
- Any contingency tables will have no more than 6 cells
- You will not be asked to calculate v by hand (the df for a 2-sample t statistic with unequal variances)
- You will not be asked to produce any R code