Chapter 20: Testing Hypotheses About Proportions

Key Vocabulary:

- hypothesis
- null hypothesis
- reject (the null hypothesis)
- fail to reject (the null hypothesis)
- alternative hypothesis

Calculator Skills:

- 1-Prop ZTest
- 1. What is a *hypothesis*?
- 2. After analyzing a set of data, if the results support a *hypothesis*, does that prove the *hypothesis* is true? Explain.
- 3. After analyzing a set of data, if the results are inconsistent with a *hypothesis*, does that prove the *hypothesis* is false? Explain.
- 4. What does it mean to reject a hypothesis?
- 5. When testing *hypotheses*, always start by assuming that the *null hypothesis* is true. What is meant by a *null hypothesis*?

6. Given a *null hypothesis* $H_0: p = p_0$, what are the parameters of the Normal sampling distribution model? Under what conditions is this model appropriate?

7. How would you determine whether a particular value of \hat{p} is so unlikely to have occurred (assuming $p = p_0$) that you would *reject* the *null hypothesis*?

- 8. Why do we say we "*fail to reject*" the *null hypothesis* rather than "accept" the *null hypothesis*?
- 9. What is meant by an *alternative hypothesis*?
- 10. What is meant by a P-value?
- 11. Explain the difference between a two-sided alternative hypothesis and a one-sided alternative hypothesis. Draw a sketch



Chapter 20: Testing Hypotheses About Proportions

Chapter 21: More About Tests

Key Vocabulary:

- P-value
- statistically significant
- Type I Error Type II Error

alpha level

- power

- significance level
- 1. Explain what the *p*-value represents.
- 2. What is meant by an *alpha level*?
- 3. What does it mean for a result to be *statistically significant*?
- 4. A 95% confidence interval corresponds to a two-sided hypothesis test at what *alpha level*?
- 5. A 90% confidence interval corresponds to a one-sided hypothesis test at what *alpha level*?
- 6. Explain the difference between a *Type I* and *Type II Error*.
- 7. What is the probability of a *Type I Error*?
- 8. What is meant by the *power* of a test?
- 9. How do you calculate the *power* of a test?



Chapter 22: Comparing Two Proportions

Key Vocabulary:

pooling

Calculator Skills:

2-Prop Z-Int 2-Prop Z-Test

1. What conditions and assumptions are necessary for the sampling model of $\hat{p}_1 - \hat{p}_2$ to be approximately Normal?

- 2. If the above conditions and assumptions are met, what is the mean and standard deviation of the sampling model?
- 3. Describe how to construct a level C confidence interval for the difference between two proportions, $p_1 p_2$.
- 4. Explain what is meant by pooling two samples. When is it appropriate to pool samples?
- 5. For a two-sample hypothesis test where $H_0: p_1 p_2 = 0$, show how to calculate the z test statistic?