

Chapter 20: Testing Hypotheses About Proportions



Key Vocabulary:

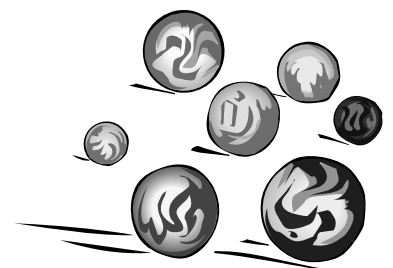
- hypothesis
- null hypothesis
- reject (the null hypothesis)
- fail to reject (the null hypothesis)
- alternative hypothesis

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*?

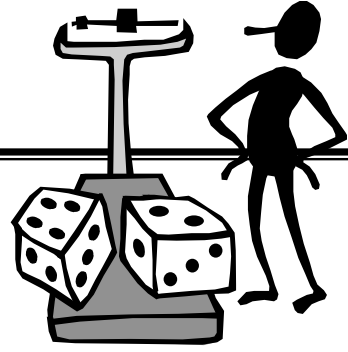
6. Given a *null hypothesis* $H_0 : p = p_0$, what are the parameters of the Normal sampling distribution model? Under what conditions is this model appropriate?
7. How would you determine whether a particular value of $\hat{p}$ is so unlikely to have occurred (assuming $p = p_0$) that you would *reject* 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 21: More About Tests

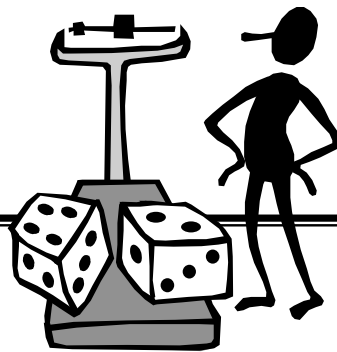
Key Vocabulary:

- P-value
- statistically significant
- alpha level
- significance level
- Type I Error
- Type II Error
- power



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?