Hypothesis Tests for Proportions
Section 22.4
Lecture 42

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Outline

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Hypothesis Tests for Proportions

- Our procedure will follow the same 6 steps as before.
  1. State the hypotheses.
  2. Give the value of α.
  3. Write the formula for the test statistic.
  4. Calculate the value of the test statistic.
  5. Calculate the *p*-value.
  6. Draw a conclusion.

Hypothesis Tests for Proportions

1. The null hypothesis is

$$H_0 : p = p_0$$

The alternative hypothesis is one of

$$H_a : p \neq p_0$$
$$H_a : p < p_0$$
$$H_a : p > p_0$$

2. State the value of α.

Hypothesis Tests for Proportions

3. The formula for the test statistic is

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$

4. Substitute the values of $\hat{p}$, p_0, and n to calculate the value of z.
5. Use `invNorm` to find the p-value.
6. Draw the conclusion.

Example

Example (Hypothesis Tests for Proportions)

- A survey of 1000 registered Republicans shows that 476 of them support Donald Trump for president and 524 do not.
- Test the hypothesis, at the 0.05 level of significance, that Donald Trump has at least 50% support among registered Republicans.

Example

Example (Hypothesis Tests for Proportions)

- The same survey showed that John Kasich had the support of 138 registered Republicans.
- Test the hypothesis, at the 0.05 level of significance, that John Kasich has the support of no more than 12% of registered Republicans.

Outline

Assignment

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- Read Section 22.4.
- Apply Your Knowledge: 9, 10, 11.
- Check Your Skills: 22, 23.
- Exercises 35, 37, 38, 40, 41.