

Answer on Question #44661-Math-Statistics and Probability

The financial aid director of a large college reports that 32% of the students enrolled are receiving some sort of financial aid. A researcher claims the percentage is lower and finds (from sampling) 20 out of 80 students are receiving some sort of financial aid. At $\alpha = 0.10$, decide whether the financial aid director's report that 32% of the students are receiving some sort of financial aid holds up. For question #21 (multiple choice), choose the alternate hypothesis. For #22, fill in the space provided with your calculated value for \hat{p} . For question #23, fill in the space provided with your calculated Z value from the information provided. For #24, answer True or False with regard to rejecting the null hypothesis.

Solution

1. Define Null and Alternative Hypotheses

$$H_0: p = 0.32 \quad H_a: p \neq 0.32.$$

The alternate hypothesis: the percentage of the students are receiving some sort of financial aid is not equal 32%.

2. Set significance level

$$\alpha = 0.10.$$

3. State Decision Rule

If Z is less than -1.65, or greater than 1.65, reject the null hypothesis.

4. Calculated value for \hat{p}

$$\bar{p} = \frac{20}{80} = 0.25.$$

5. Calculate Test Statistic (Z value from the information provided)

$$z = \frac{\bar{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}} = \frac{0.25 - 0.32}{\sqrt{\frac{0.32(1-0.32)}{80}}} = -1.34.$$

6. State Results

$z = -1.34$.

Result: Don't reject the null hypothesis.