

Section 8.2

Testing a claim about a Population Proportion

I. Gather Sample Data

$\hat{p} = \frac{x}{n}$, n , $\alpha =$ level of significance = probability of what you consider to be a significant event, (.05 or .01 usually).

II. (Should do this first) $\rightarrow$ Determine the Hypotheses.

Null Hypothesis (Assumed value of a pop. proportion)
 $H_0: p = (\text{some value})$

Alternative Hypothesis (opposes the null)
 $H_1: \begin{cases} p < (\text{some value}) \\ p > (\text{some value}) \\ p \neq (\text{some value}) \end{cases}$

Check that $np \geq 10$ & $nq \geq 10$ ($q = 1 - p$).

Ex: An article claims that 25% of college students believe aliens have visited earth. You suspect the proportion is smaller, so you gather data. You survey 950 students randomly and 198 say they believe aliens have visited earth. Test your belief at a 5% level of significance.

I. $\hat{p} = \frac{x}{n} = \frac{198}{950} \approx 0.208$, $n = 950$, $\alpha = .05$

II. $H_0: p = 0.25$ ($q = 1 - p = .75$)

$H_1: p < 0.25$

Check $np = 950(.25) = 237.5 \geq 10$

$nq = 950(.75) = 712.5 \geq 10$ ✓