Section 8.2

Testing Claims about a Population Proportion

Parameter: Population Proportion, \( p \)

Hypothesis: 65% of C.C. students take a remedial course (math, reading, writing). You believe it is higher in Florida.

- \( H_0: p = 0.65 \quad vs. \quad H_1: p > 0.65 \)

Because it is a one-tailed test.

Gather:

\[ \hat{p} = \frac{x}{n} = \frac{201}{300} = 0.67, \quad n = 300, \quad \alpha = 0.06 \]

Requirements: Get \( p \) from \( H_0 \), \( p = 0.65 \), \( q = 1 - p = 0.35 \)

\[ np = 300(0.65) = 195 > 10, \quad nq = 300(0.35) = 105 > 10, \]

Test Statistic:

\[ Z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}} = \frac{0.67 - 0.65}{\sqrt{\frac{0.65 \cdot 0.35}{300}}} = 0.73 \]

Critical Value: (Right tailed test)

\[ df = \alpha = 0.06 \quad (one \ tail) \]

From Table A2, \( Z \) critical = 1.555

\[ p \)-value:

From Table A1, \( Z \) = 0.73

\[ p \)-value = 1 - 0.7673 = 0.2327 \]

Conclusion: \( p \)-value > \( \alpha \) so fail to reject \( H_0 \), don’t support \( H_1 \).

The data do not support the claim that more than 65% of Florida C.C. students take a remedial course.