

Assignment

Q A car company believes that the percentage of residents in city ABC that owns a vehicle is 60% or less. A sales manager disagrees with this. He conducts a hypothesis testing surveying 250 residents & found that 170 responded yes to owning a vehicle.

(a) State the null & Alternate Hypothesis

(b) At 10% significance level, is there enough evidence to support the idea that vehicle ownership in city ABC is 60% or less?

Solⁿ

Null Hypothesis

$$H_0: P_0 \leq 60$$

$$H_1: P_0 > 60$$

$$n = 250$$

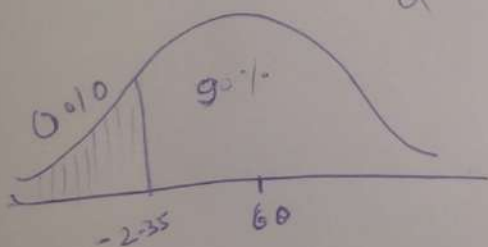
$$n = 170$$

P_0

$$q_0 = 1 - P_0 = 1 - 0.6 = 0.4$$

$$\hat{p} = \frac{n}{n} = \frac{170}{250} = 0.68$$

$$\alpha = 0.10$$



* z test with proportion

$$z_{test} = \frac{\hat{p} - P_0}{\sqrt{\frac{P_0 q_0}{n}}}$$

$$= \frac{0.68 - 0.60}{\sqrt{\frac{0.6 \times 0.4}{250}}} \Rightarrow \frac{0.08}{0.030} = 2.66$$

$$-2.35 < 2.66$$

Reject the null hypothesis