

Question-3 → A Car Company believes that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A Sales manager ~~has~~ disagrees with this. He conducted a hypothesis testing 250 residents & found that 170 residents responded yes to owning a vehicle.

- State the null & Alternate Hypothesis
- At a 10% significance level, is there enough evidence to support the idea that vehicle owner in ABC city is 60% or less.

Answer → Z-test with proportion

a Null Hypothesis ( $H_0$ )  $\Rightarrow P_0 \leq 60\%$

Alternate Hypothesis ( $H_1$ )  $\Rightarrow P_0 > 60\%$

$$\hat{P} = \frac{170}{250} = 0.68$$

$$q_0 = 1 - 0.6 = 0.4, \quad \alpha = 0.1$$

$$Z = \frac{\hat{P} - P_0}{\sqrt{P_0 q_0 / n}} = \frac{0.68 - 0.6}{\sqrt{0.6 \times 0.4 / 250}} = 2.58$$

One tailed Test

