

$$\Rightarrow \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}} = \underline{\underline{2.581}}$$

$$2.581 > 1.29.$$

Reject the null hypothesis.

③ A car believes that the %ge of citizens in city ABC that owns a vehicle is 60%.

or less. A sales manager disagrees with this. He conducted a hypothesis testing surveying 250 residents & found that 170 residents responded yes to owning a vehicle.

(a) state the null & alternate hypothesis.

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

Soln: $H_0: P_0 \leq 60\%$

$n = 250$

$H_1: P_0 > 60\%$

$x = 170$

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

$\hat{p} = 0.68$

$q_0 \Rightarrow 1 - p_0 \Rightarrow 1 - 0.6 = 0.4$

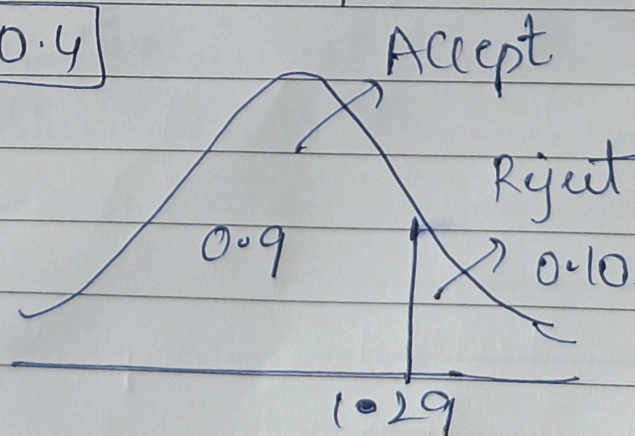
$q_0 = 0.4$

$\alpha = 0.10$

$1 - 0.1$

$\Rightarrow 0.9$

Z-score $\hat{=} 1.29$



Z-test with proportion

$$Z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}}$$