Assignment

* Bus company believes that the % 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 and found that 170 responded yes to owning a vehicle.

(a) State the H0 & H1

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

Solution

Step 1 : $H_0 = P_0 = 60\%$

$H_1 = P_0 < 60\%$

Step 2 : $P_0 = 60\%$

$q_0 = 40\%$

$n = 250$, $x = 170$

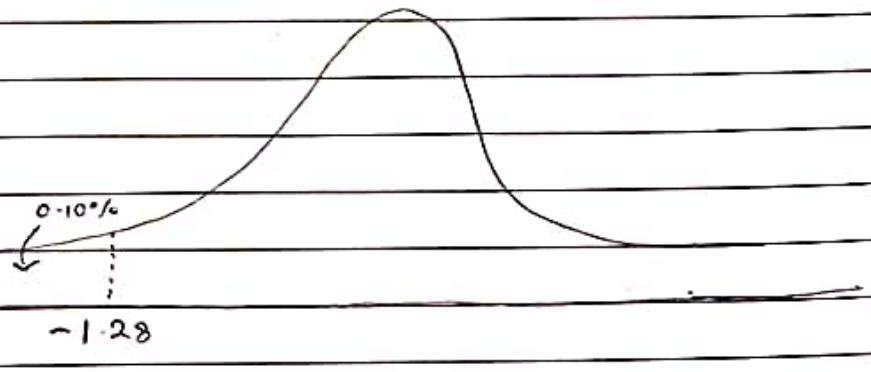
$\hat{p} = 0.68$

Step 3 : $\alpha = 0.10$

C.I = 90%

Step 4 : Decision Boundary

Since this is a one tail test



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step 5 : Using formula

$$z\ Test = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}}$$

$$= \frac{0.68 - 0.60}{\sqrt{\frac{(0.60 \times 0.40)}{250}}}$$

$$= \frac{0.08}{0.0309}$$

$$z\ Test = 2.589$$

Step 6 : Since $2.589 > -1.28$, we conclude that the Null Hypothesis is accepted and the % of residents in city ABC that owns a vehicle is 60 %.

Step 7 : Pvalue = $Z_{2.59} = 0.99520$

$\because$ Pvalue > α, therefore accept H_0