Significance Value

Eg A Car company believes that the percentage of residents in city ABC that owns a vehicles is 60% or less. A Sales manager disagree. With this he conducts a hypothesis testing surveying 250 residents and found that 170 responded yes to owing 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

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

$H_1 > 60\%$ (Alternate Hypothesis)

$n \Rightarrow 250$ $\quad \bar{x} \Rightarrow 170$ $\quad \alpha \Rightarrow 0.1$

$P_0 \Rightarrow 0.6$

$q_0 \Rightarrow 0.4$

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

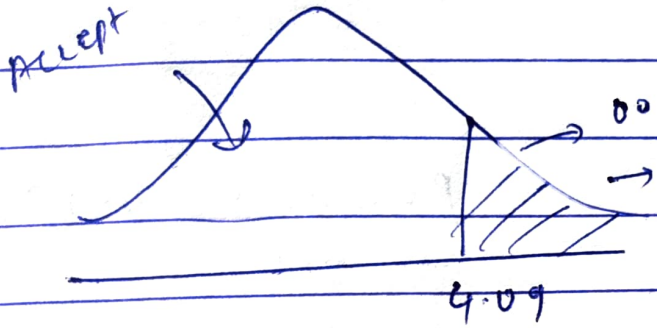
Z test with prop $\Rightarrow \frac{\hat{p} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} \Rightarrow \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}}$

$\Rightarrow \frac{0.08}{0.031} \Rightarrow \boxed{2.58}$ $\quad \Rightarrow \frac{0.08}{0.031}$.

$\Rightarrow$ 0.00494.

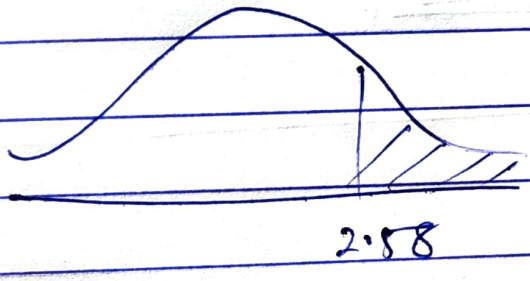
pvalue $< \alpha$

Reject the Null Hypothesis



2.58 < 4.09

Accept the hypothesis.



pvalue $\Rightarrow$ 0.99506

~~pvalue $> \alpha$~~

~~0.99506~~