Assignment - 5
Name - Aditi Mondal
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1) A car company belives that the percentage of recident in city ABC that owns a vechile is 60% or less. A sales manager disagrees with this. He conducts a hypothesis testing survey of 250 recident and found that 170 responded 'yes' to owning a vechicle.

a) State the null & alternate hypothesis.

b) At 10% significance level is the ~~evidence~~ enough evident to support the idea that vechile ownership in city ABC is 60% or less

Ans

a) (Null hypothesis) $H_0 : P_0 \leq 60\%$

(Alternate Hypothesis) $= H_1 : P_1 > 60\%$

$$q_0 = 1 - P_0 = 1 - 0.6$$
$$= 0.4 = 40\%$$

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

Z-test with proportion –

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

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

$$= \frac{.08}{\sqrt{\frac{0.6 \times 0.4}{250}}}$$

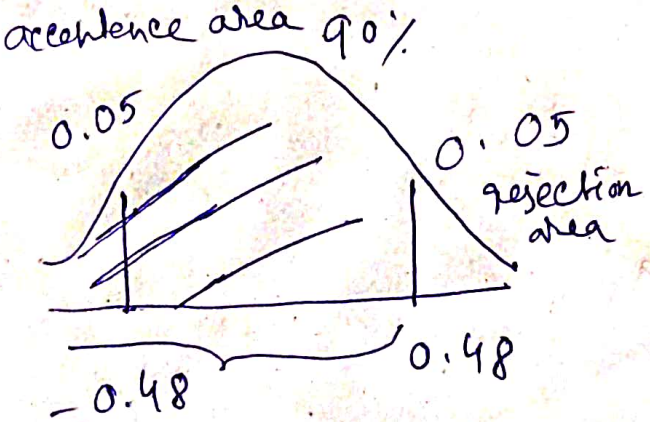
$$= \frac{.08}{\sqrt{0.00096}}$$

$$= \frac{.08}{0.030} = 2.66$$

Significance level = 10 %

C.I

So α = .9 $\quad$ 1 − .1 = .9



.1 / 2

Conclusion – ∵ 2.66 > 0.48 So we need to reject the null hypothesis.