Assignment-2 [10th July] | name:- Deraj. sabnis.

→ a car company believs that the percentage of residents in city ABC. that owns a vehicle is 60.1 or less. A sales manager disagrees with this. He conducts a hypothesis testing surveying 250 residents and found that 170 respended yes to owning a vehicle.

(a) State the null & Alternate hypothesis.

(b) At 10.1 significance level is there enough evidence to support the idea that vehicle ownership in ABC is 60.1 or less.

⇨

$n = 250 \qquad x = 170$

(i) Null hypothesis

$H_0 : p_0 = 60\%$

$H_i : p_0 \neq 60.1.$

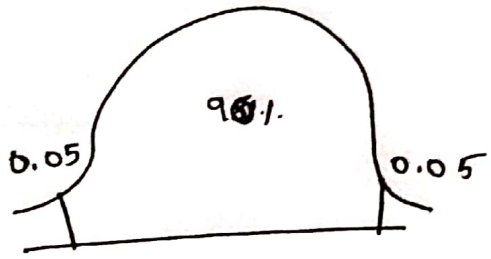
$\hat{p} = \frac{x}{n} = \frac{170}{250} = 0.68.$

$q_0 = 1 - p_0$

$q_0 = 1 - 0.6$

$= 0.4$ or 40%.

$p = 60.1. = \frac{60}{100} = 0.6.$



$\alpha = 0.1$

$1 - 0.05 = 0.95.$

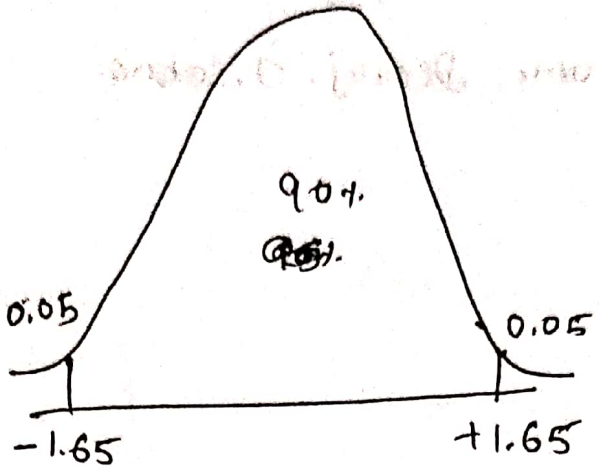
By referring z table we get.

z score = 1.65

~~$\mu = 250$~~

~~$\bar{x} = 170$~~

~~$n = 30$~~



Formula for z test

$$= \frac{\hat{p} - p_0}{\sqrt{\frac{p_0 \times q_0}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 \times 0.4}{250}}}$$

$$= \frac{0.08}{\sqrt{\frac{0.24}{250}}} = \frac{0.08}{0.03} = 2.6$$

hence the null hypothesis rejected.

$$2.58 > 1.65$$