Statistic Assignment 1

Q.3)

A car believes that the percentage 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 enought evidence to support the idea that vehicle owner in ABC city is 60% or less.

Solution:-

$H_0 = p \leq 0.60$ $\quad n = 250$

$H_1 = p > 0.60$ $\quad x = 170$

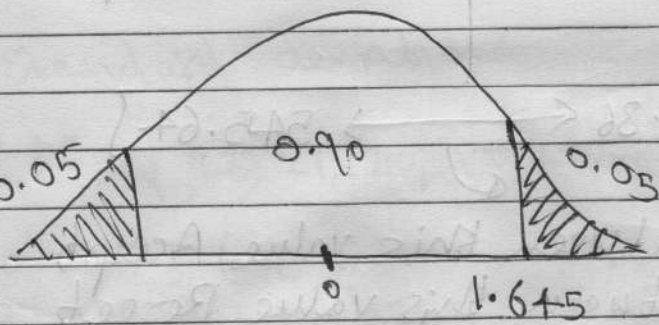
$$p^{\wedge} = \frac{170}{250} = 0.68$$

$p_0 = 0.60$ $\quad q_0 = 1 - p_0 = 0.40$

$\alpha = 0.10$ $\quad CI = 0.90$

$= 1 - 0.05$

$z = 0.95$



$$z_0 = \frac{p^{\wedge} - p_0}{\sqrt{\frac{p_0 q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.60(0.40)}{250}}} = \frac{0.08}{0.03984}$$

$= 2.58$

$1.645 < 2.58$

The reject the Null hypothesis and accepts the Alternative hypothesis.

At the 10% Significance level there is enough Evidence to Reject the idea that the Vehicle owner in City ABC is 60% or less so we have enough evidence belives more the 60%.