

### Statistics Assignment

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.

- State the null & alternate hypothesis.
- At a 10% significance level, is there enough evidence to support the idea that vehicle owner in ABC city is 60% or less.

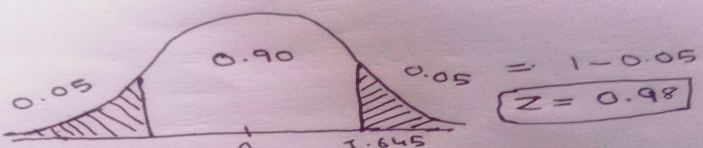
Solution:

Q(3):  
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$H_0: P \leq 0.60$        $n = 250$   
 $H_1: P > 0.60$        $x = 170$

$P^n = \frac{170}{250} = 0.68$

$P_0 = 0.60$        $q_0 = 1 - P_0 = 0.40$   
 $\alpha = 0.10$        $CI = 0.90$



$Z_0 = \frac{P^n - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.60}{\sqrt{\frac{0.60(0.40)}{250}}}$

$= \frac{0.08}{0.030984}$

$= 2.58$

$1.64 < 2.58$

that reject the null hypothesis and accept the alternate hypothesis.

At the 10% Significance level there is enough evidence to ~~reject~~ reject the idea that the vehicle owner in city ABC is 60% or less. so we have enough evidence believes more the 60%.