Day - 5 Stats

Assignment Employee 100K. XL 300 L 200

Population $N = 100K$

Sample Size $n = 500$

$XL = 300$ $L = 200$

$C.I = 95\%$

$\Rightarrow \alpha = 1 - 0.95 = 0.05$

$\boxed{\alpha = 0.05}$

For XL,

$P_0 = \frac{300}{500} = 0.6$ $\boxed{P_0 = 0.6}$

$$C.I = P_0 \pm Z_{\frac{\alpha}{2}} \sqrt{\frac{P_0(1-P_0)}{n}}$$

$$= 0.6 \pm Z_{0.025} \sqrt{\frac{0.6(0.4)}{500}}$$

$$= 0.6 \pm 1.96 \sqrt{0.00048}$$

$$= 0.6 \pm 0.042924$$

Lower Fence $= 0.6 - 0.42924 = 0.557076$

$\approx 55.7\%$.

$\boxed{\text{Lower Fence} = 55.7\%}$ ~~of 100K~~

Higher Fence $= 0.6 + 0.42924 = 0.642924$

$\approx 64.3\%$.

$\boxed{\text{Higher Fence} = 64.3\% \text{ of } 100K}$

For L, $\hat{P} = \frac{200}{500} = 0.4$

$$C.I = \hat{P} \pm Z_{\alpha/2}\sqrt{\frac{\hat{P}(1-\hat{P})}{n}}$$

$$= 0.4 \pm Z_{0.025}\sqrt{\frac{0.4(0.6)}{500}}$$

$$= 0.4 \pm 1.96\sqrt{0.00048}$$

$$= 0.4 \pm 0.042924$$

Lower Fence $= 0.4 - 0.042924 = 0.357076$
$\Rightarrow 35.7\%$.

~~LOWER Fence = 35.7% of L from 100K~~

LOWER Fence = 35.7% of L size t-shirt of 100K.

Higher Fence $= 0.4 + 0.042924 = 0.442924$
$\Rightarrow 44.3\%$.

Higher Fence = 44.3% L size t-shirt

C.I of XL = 64,300 to 55,700 t-shirts

C.I of L = 35,700 to 44,300 t-shirts