Assignment 9

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June 6, 2022

Contents

Question : Ex. 8.11 , Papoulis

Q: In an exit poll of 900 voters questioned, 360 responded that they favor a particular proposition. On the basis, it was reported that 40% of the voters favor the proposition.(a) Find the margin of error if the confidence coefficient of the results is 0.95.(b) Find the confidence coefficient if the margin of error is $\pm 2\%$.

Solution

(a) For this problem, We know that $\bar{x} = 0.40$, $n = 900 and z_u \approx 2$: Hence, Margin of error:

$$\pm 100 z_u \sqrt{\frac{\bar{x}\,(1-\bar{x})}{n}} = \pm 3.27\% \tag{1}$$

(b) We wish to find z_u.

$$\pm 100 z_u \sqrt{\frac{\bar{x}\,(1-\bar{x})}{n}} = 2 z_u \qquad = 1.225 \tag{2}$$

Hence $u = 0.89$

This yields the confidence coefficient,

$$\gamma = 2 \times u \tag{3}$$

$$Hence, \gamma = 0.78 \tag{4}$$

Python Output

```
Number of voter: 900
Enter value of mean: 0.4
enter z_u: 2
Margin error is 3.27%
Enter margin error:2
The cofidence coefficient is: 0.78
```

Figure: python code output