Assignment 10

Himanshu Kumar Gupta (AI21BTECH11012)

May 2022

Contents

1 Question

2 Solution

Question : Ex. 8.10 , Papoulis

Among 4000 newborns, 2080 are male. Find the 0.99 confidence interval of the probability p = P(*male*).

Solution

We know that

$$p_{1,2} \approx \bar{x} \pm z_u \sqrt{\frac{\bar{x}\,(1-\bar{x})}{n}} \tag{1}$$

$n =$ total newborns $= 4000$,
$\bar{x} = \frac{\text{no. of males}}{\text{total newborns}} = \frac{2080}{4000} = .52$,
$z_u \approx 2.326$
Putting values in equation (1)

$$p_{1,2} \approx .52 \pm 2.326 \sqrt{\frac{.52\,(1-.52)}{4000}}$$

$$\approx 52 \pm .018$$

Hence,

$$.502 < p < .538$$

```
E:\>python assign_10_AI1110.py
enter total no. of newborns:4000
enter no. of males:2080
enter z_u:2.326
0.501626072210874 5 <p< 0.5383739277891255
```

Figure: python code output