

Question #65437, Math / Statistics and Probability

Consider a random sample (WOR) of two industries from a population of 5 industries having yearly turnover as follows:

Industry Turnover (in lakhs)

1 2000

2 2400

3 1800

4 3000

5 2600

Enumerate all possible samples (WOR) of size two and show that the sample mean gives an unbiased estimate of population mean

Answer.

| Industries | Mean |
|------------|------|
| 1,2 | 2200 |
| 1,3 | 1900 |
| 1,4 | 2500 |
| 1,5 | 2300 |
| 2,3 | 2100 |
| 2,4 | 2700 |
| 2,5 | 2500 |
| 3,4 | 2400 |
| 3,5 | 2200 |
| 4,5 | 2800 |

Population mean $\mu = \frac{1}{5}(2000 + 2400 + 1800 + 3000 + 2600) = 2360$.

Mean of sample means: $\mu_{\bar{x}} = \frac{1}{10}(2200 + 1900 + 2500 + 2300 + 2100 + 2700 + 2500 + 2400 + 2200 + 2800) = 2360$.

So $\mu_{\bar{x}} = \mu$.

Answer provided by www.AssignmentExpert.com