

7.4 Introduction to Sampling Distribution

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Recall Example*: Population: 2500 managers of companies

Population parameters: $\mu = \$51,800$
 (1) Population mean annual salary μ
 (2) Population proportion of managers who completed the company's training program p
 (3) Population st. deviation $\sigma = \$4000$.

Now • The sample mean \bar{x} is the point estimator of the population mean μ
 • The sample proportion \bar{p} is the point estimator of the population proportion p
 • If we select a simple random sample of size 30 from the population above 500 times, we obtain:

Sample #	Sample mean (\bar{x})	Sample proportion (\bar{p})
1	51,814	0.63
2	52,670	0.70
3	51,780	0.67
\vdots	\vdots	\vdots
500	51,752	0.50

Note that different values of \bar{x} and \bar{p} were obtained.

Thus, the sample mean \bar{x} is a random variable. Hence, \bar{x} has mean or expected value, standard deviation, and probability distribution.

STUDENTS HUB.com The probability distribution of \bar{x} is called the sampling distribution.
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Sampling distribution: A prob. distribution consisting of all possible values of a sample statistic.

