Point Estimation

two Parts

- methods for finding Estimator's
- evaluating these (and other) Estimators.

definition 7.1.1 :-

A point estimator is any function $W(X_1, X_2, \ldots, X_n)$ of a sample, that is, any statistic is a point estimator

* A statistic is any function of the sample $X_1, X_2, \ldots, X_n$ that does not depend on unknown parameter's. it can be used for summarization, inference, or other purposes.

A point Estimator is a statistic specifically used to estimate an unknown population parameter (Ex: mean, variance)

The key difference in one sentence:

All point estimators are statistics, but not all statistics are point estimators.

Ex:

	Statistic	Point Estimator
Sample mean	✓	✓
Sample variance	✓	✓
Sample median	✓	✓
Range (max-min)	✓	✗
interquartile range (IQR)	✓	✗

Point Estimators are a subset of statistics.

Estimator: A statistic (function of sample data) used to estimate a population parameter. it is a random variable because it depends on the sample.

Estimate: The specific value obtained by applying the estimator to a sample. It is the realization of the estimator.