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## Unit - 6 Study Design

⇒ Statistical questions.: To answer these questions we need to collect data with variability.

⇒ Sampling and observation table :

Causality vs Correlations →

A causes B to happen

A & B happen together.

- correlation does not necessarily imply causation.

⇒ Sampling methods

Random (Good way)

- Simple random sample

- stratified

- clustered

Not Random (Bad way)

- voluntary bias

- convenience bias.

⇒ Observational studies vs Experiment :

i) Sample study → Trying to infer a population parameters from a ~~sa~~ randomly selected sample.

ii) Observational study :

- We measure or survey members of a sample without trying to affect them.
- ~~main aim~~ Finding causation is not the main aim

iii) Experiment :

We assign people or things to groups and apply some treatment to one of the groups, while the other group does not receive the treatment.

⇒ Experiments

- The condition should be similar for both sets of people.
- The experiment should be replicated
- matched pair.