



SAMPLE

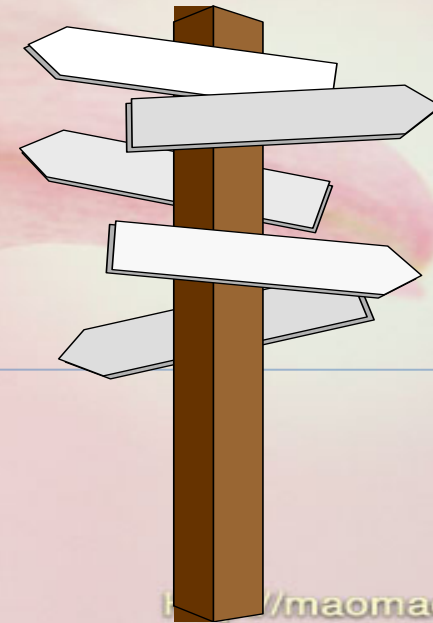
SAMPLE



- ❑ A sample is a fixed part of statistical population whose properties are studied to gain information about the whole. The sample has to be selected to be as representative as possible of the target population, and in enough numbers to provide valid answers.
- ❑ The term population refers to the material of the study, whether it is human subjects, animals or inanimate objects from the which the samples are taken .

SAMPLING METHODS

Sampling involve the selection of a No. of study units from a defined study population



TYPES OF SAMPLING METHODES

- A representative sample has all the important characteristics of population from which it is drawn which probability sample
- The type of sampling method selected depend on the sampling frame if available or not
- If the sample frame is not available, samples obtained by nonprobability method.
- Characteristic of population called parameter, and of sample called statistics. The differences between probability and non probability sampling, the results in probability can be generalized, and in non probability sampling can not.

A. PROBABILITY SAMPLING METHODS

- ❖ Involve random selection procedures to ensure that each unit of the sample is chosen on the basis of chance. All units of the study population should have an equal or at least a known chance of being included in the sample.
- ❖ **A.1. Simple random sampling:** Each member of population has an equal possibility of being chosen for the sample with chance alone responsible for selection of any member . Simple random sampling (not haphazard) selected by the following methods:
 1. Lottery method.
 2. computer generated random sampling.
 3. Using the random number table.

A.2. Systematically sample:

- Individuals are chosen at regular intervals from the sampling frame such as every fifth unit in the frame

e.g. 100 students are ranked by age then begin with 4th students and every 10th student chosen (4th, 14th, 24th,...).

A.3. Stratified sampling:

- The population is divided into sampling units that contain individuals and then a random sample of individuals proportionate to the size of the sampling units.

E.g. in your college four classes then chose 20% from each class.

A.4. Clustered sampling:

- The population is divided into unites (or groups) not individuals , then a random sample of these clusters will be chosen, clusters include e.g. schools, districts, hospitals, villages, clinics, factories...

A.5. Multistage sampling:

- This procedure is carried out in phases (stages) and can involve more than one of the above sampling methods. It is used or a very large number of population. E.g. as if we study Iraqi people so we divide them into governments, then districts, village, and so on.

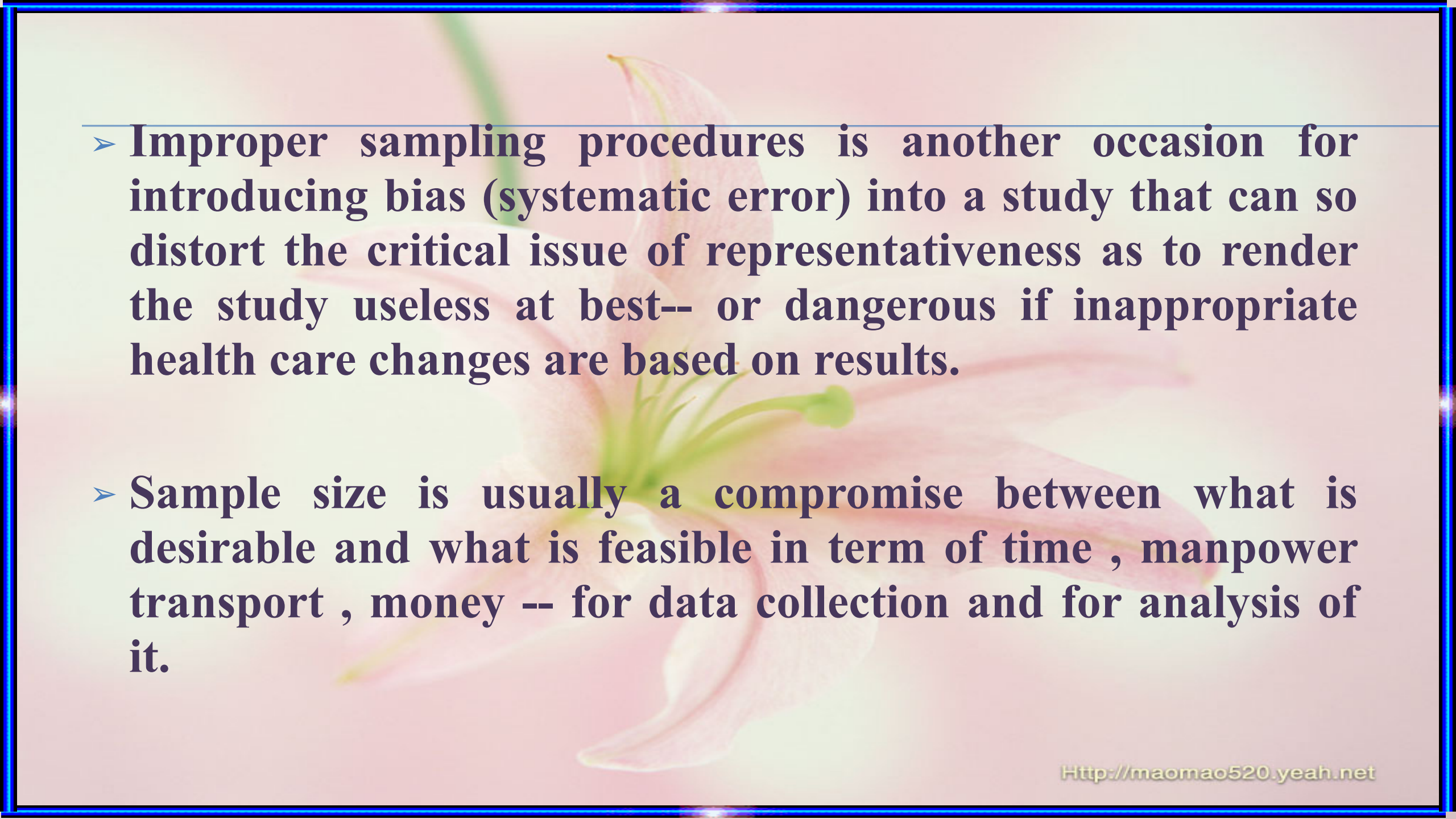
B. NON PROBABILITY SAMPLE:

B.1. Convenience sample:

- study units are selected because they happen to be available at the time of data collection

B.2. Quota sampling:

- The composition of the sample regarding certain characteristics is decided from the beginning, & the only requirement is to find the right number of people to fill these quotas.

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- Improper sampling procedures is another occasion for introducing bias (systematic error) into a study that can so distort the critical issue of representativeness as to render the study useless at best-- or dangerous if inappropriate health care changes are based on results.
 - Sample size is usually a compromise between what is desirable and what is feasible in term of time , manpower transport , money -- for data collection and for analysis of it.

Bias

It is a systematic error not random in an epidemiological studies that result in an incorrect estimate of association between exposure and outcome.

Sources of Bias:

1: **Selection bias**: selection of study group individuals.

2. **Observational bias** (information): This include:

2.a. **Recall bias**: case under study not remember information as in case-control study.

2.b. **Interviewer bias**: It occur in those collecting data.

2.c. **Loss to follow up**: Either by migration, death, or case refuse continuation in study this happened in cohort study.

2.d. **Misclassification**: It occurs when subjects are wrongly categorized with respect to either exposure or disease state.

Common Sources of Sampling Bias

- ☐ Nonresponse
- ☐ studying volunteers only
- ☐ sampling registered patients only
- ☐ missing cases of short duration
- ☐ seasonal bias



Ways To Deal With This Problem and Reduce The Possibility Of Bias

- ☐ Data collection tools
- ☐ If nonresponse is due to absence of the subjects, follow-up of non-respondents may be considered.
- ☐ If nonresponse is due to refusal to cooperate an extra separate study of non-respondents may be considered to discover to what extent they differ from respondents .
- ☐ To include additional people in the sample.