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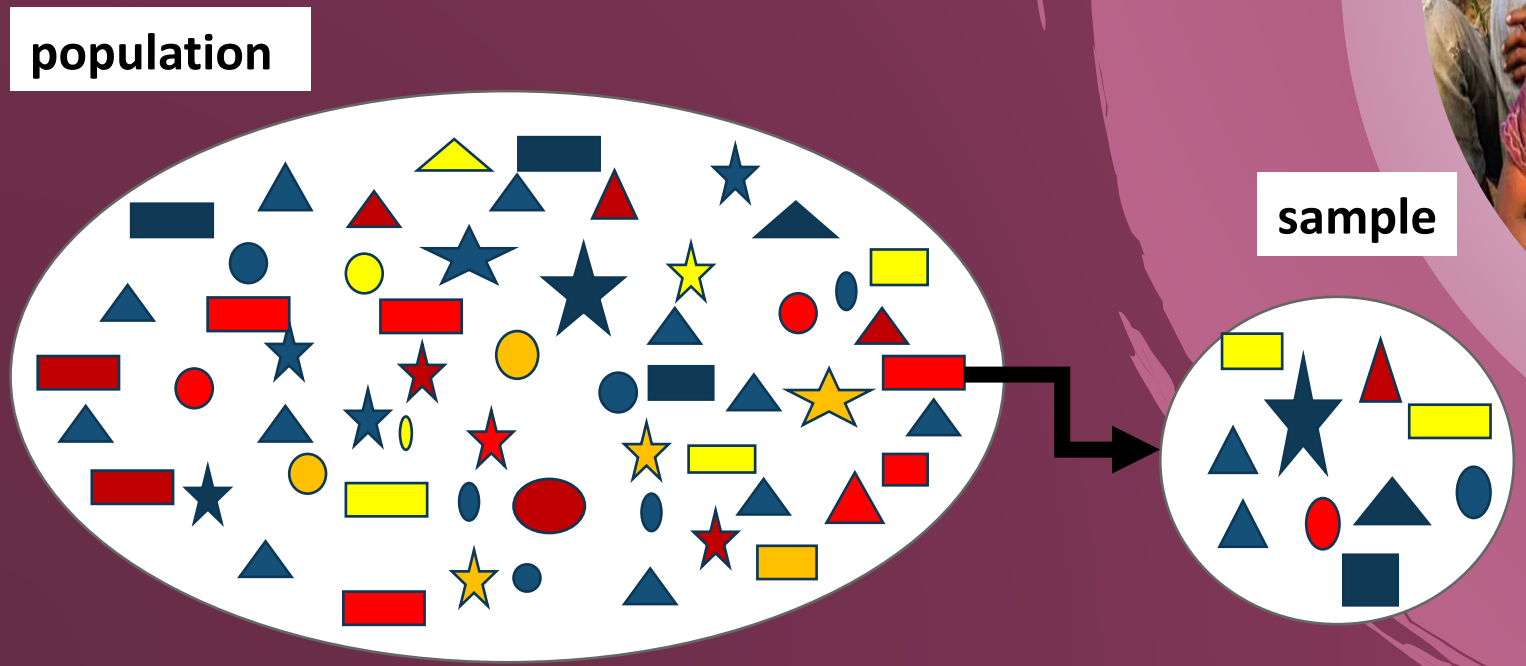
SAMPLING METHODS

Zulkarnain Lubis

Selecting Samples

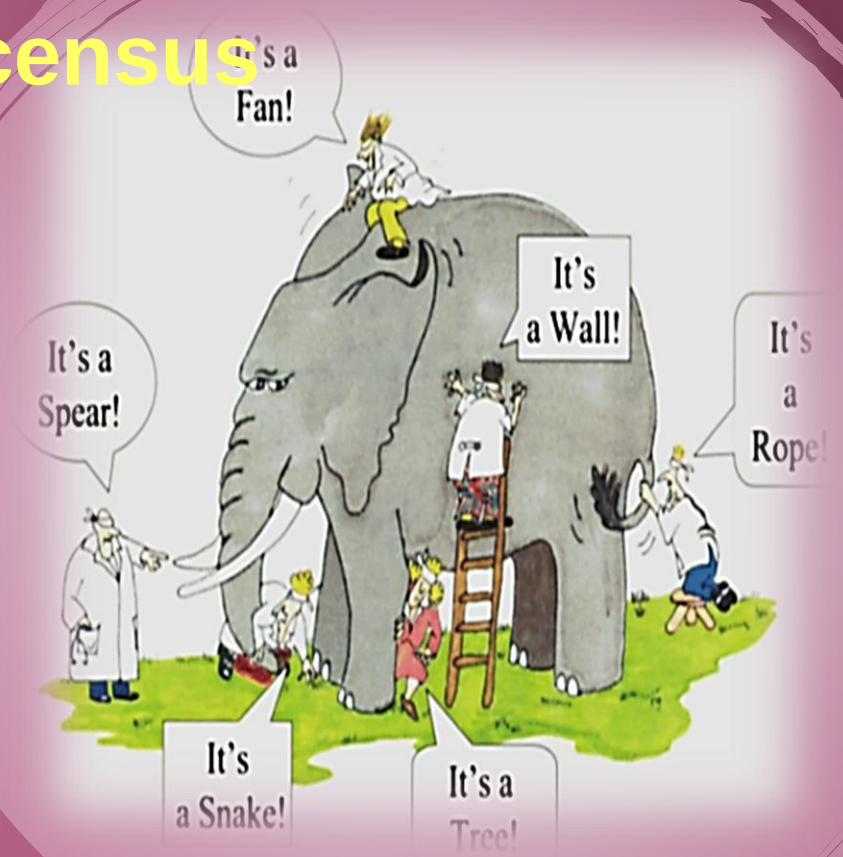
Population, Sample And Individual Cases



The Need To Sample

Sampling- a valid alternative to a census when

- A survey of the entire population is impracticable
- Budget constraints restrict data collection
- Time constraints restrict data collection
- Results from data collection are needed quickly



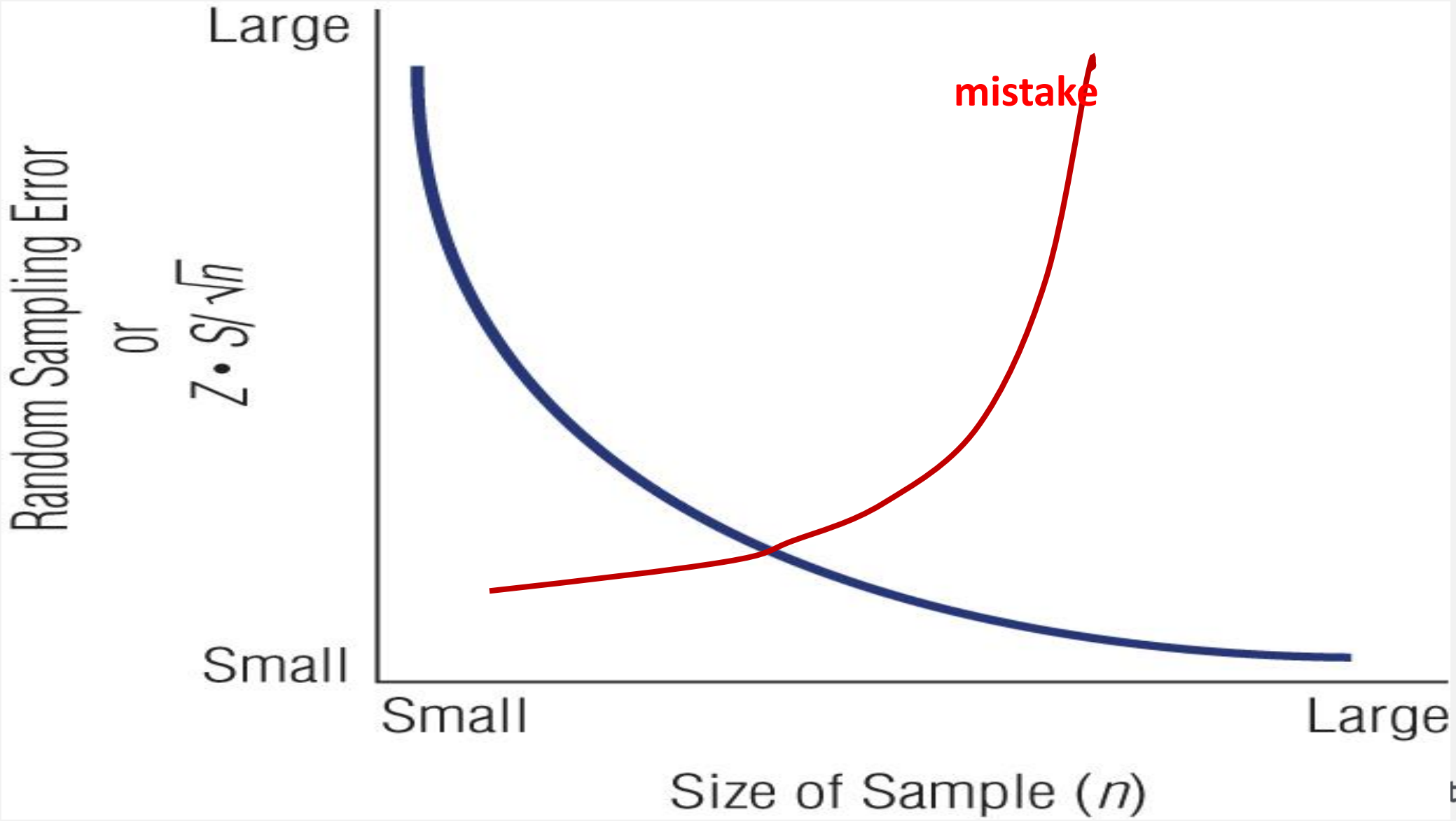
When the sample is representative ?

- The size of the sample
- The sampling methods

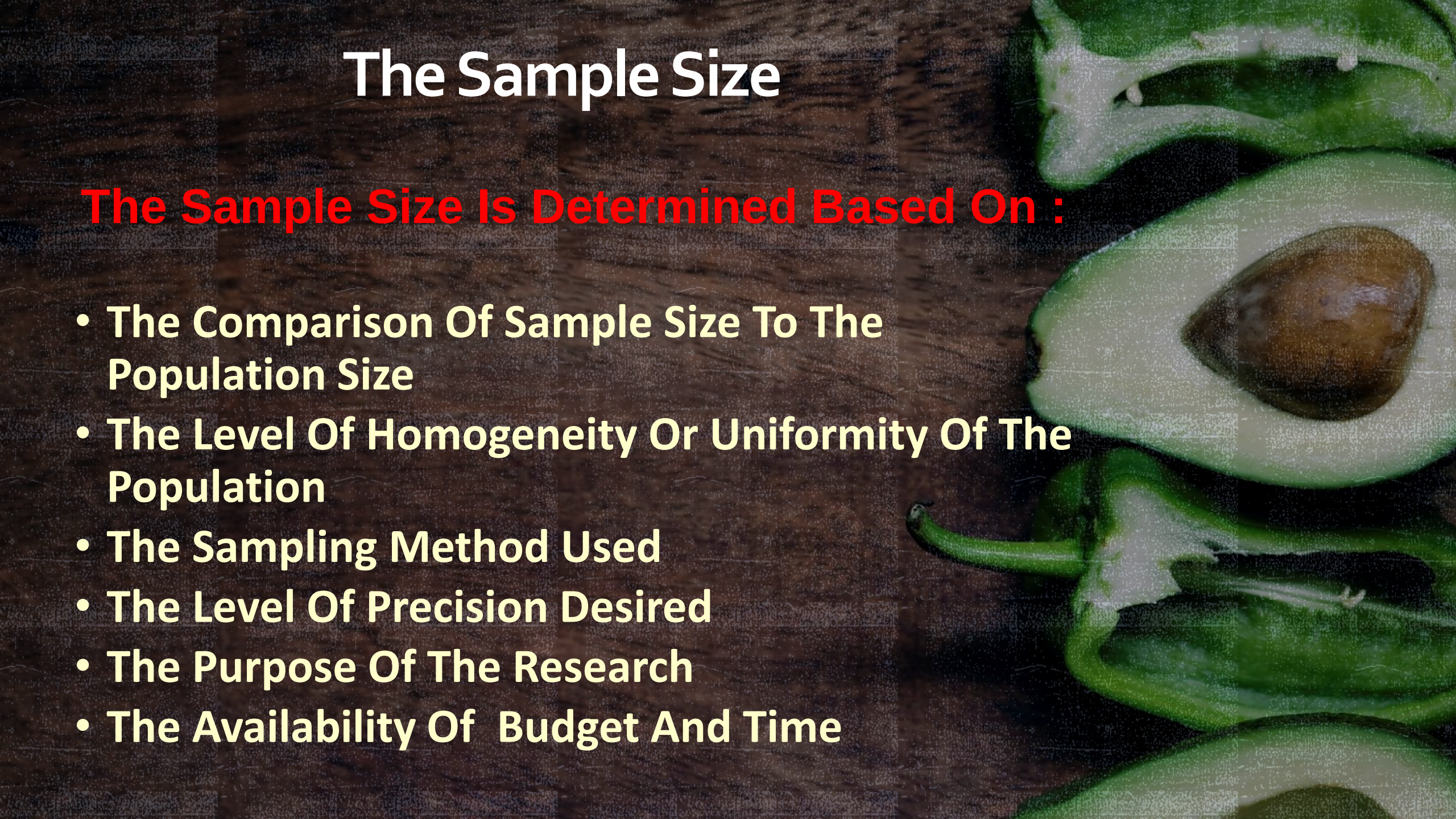
Sample Size

- **Random Error and Sample Size**
  - Random sampling error varies with samples of different sizes.
  - Increases in sample size reduce sampling error at a decreasing rate.
    - Diminishing returns - random sampling error is inversely proportional to the square root of *n*.

Relationship between Sample Size and Error



The Sample Size

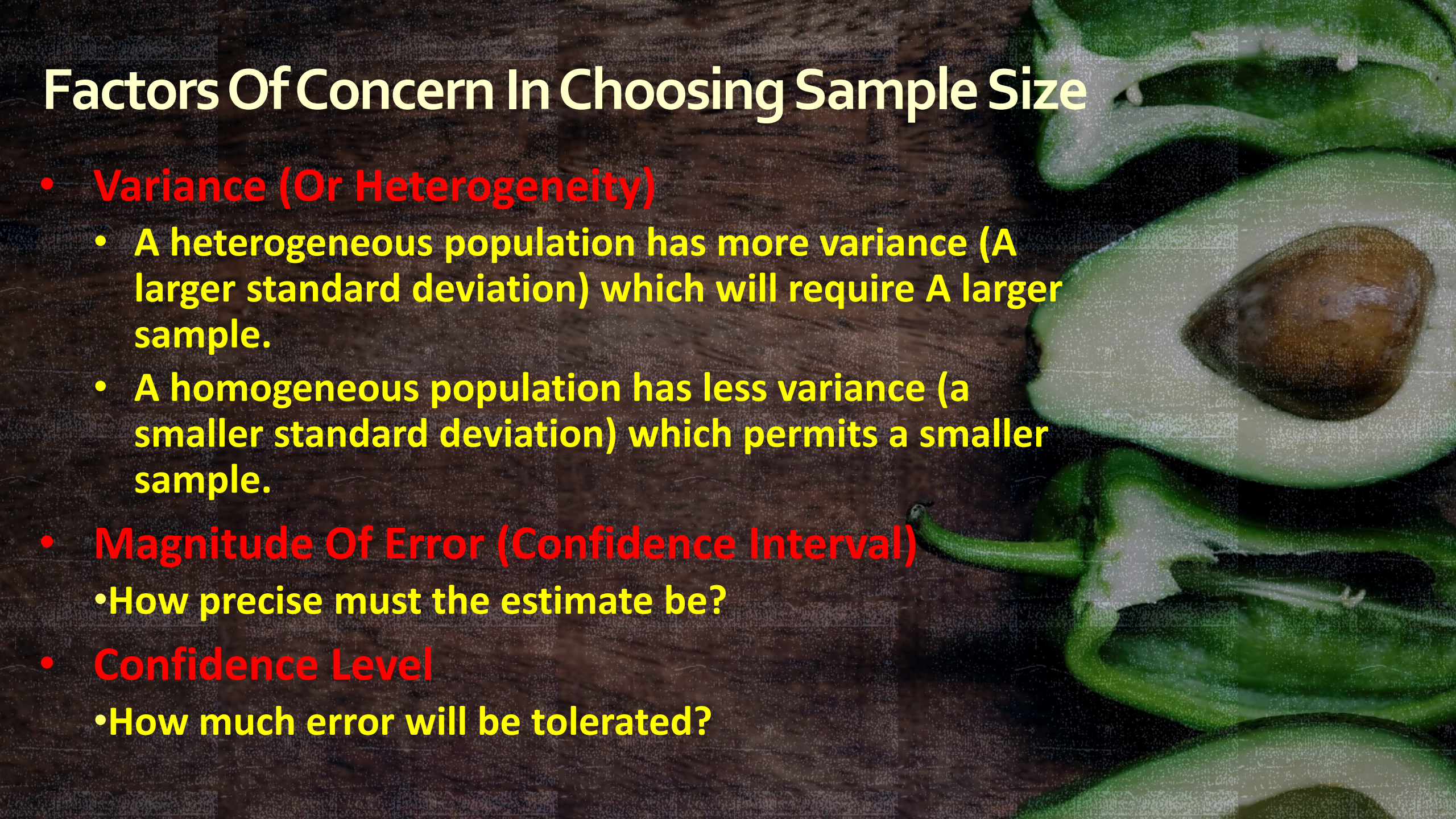


The Sample Size Is Determined Based On :

- The Comparison Of Sample Size To The Population Size
- The Level Of Homogeneity Or Uniformity Of The Population
- The Sampling Method Used
- The Level Of Precision Desired
- The Purpose Of The Research
- The Availability Of Budget And Time

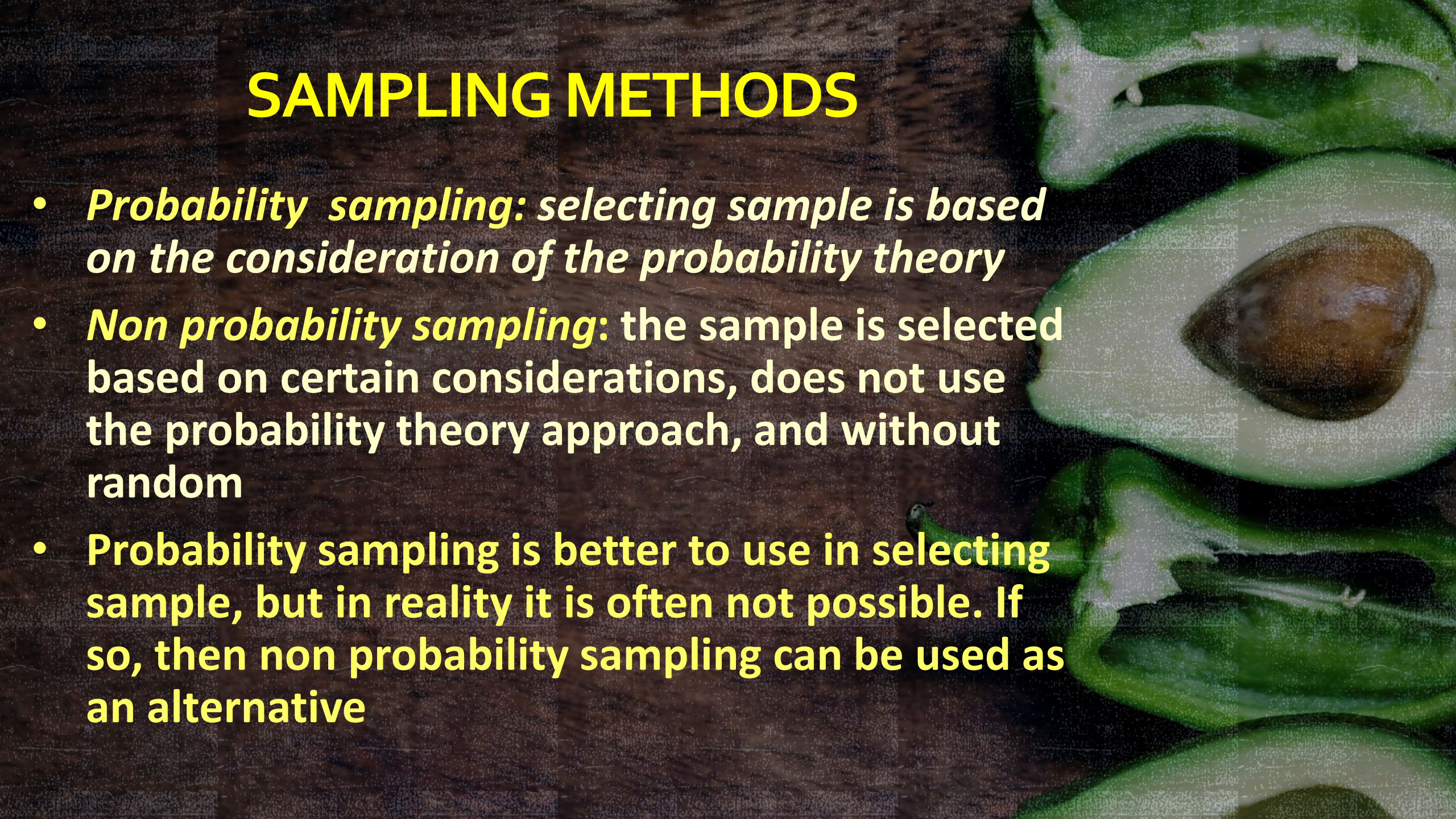
Factors Of Concern In Choosing Sample Size

- Variance (Or Heterogeneity)
  - A heterogeneous population has more variance (A larger standard deviation) which will require A larger sample.
  - A homogeneous population has less variance (a smaller standard deviation) which permits a smaller sample.
- Magnitude Of Error (Confidence Interval)
  - How precise must the estimate be?
- Confidence Level
  - How much error will be tolerated?



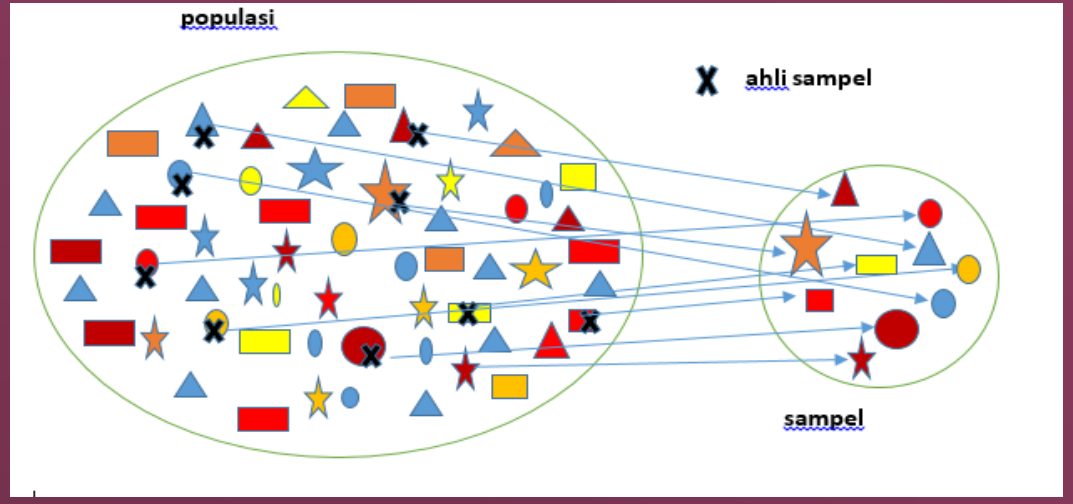
SAMPLING METHODS

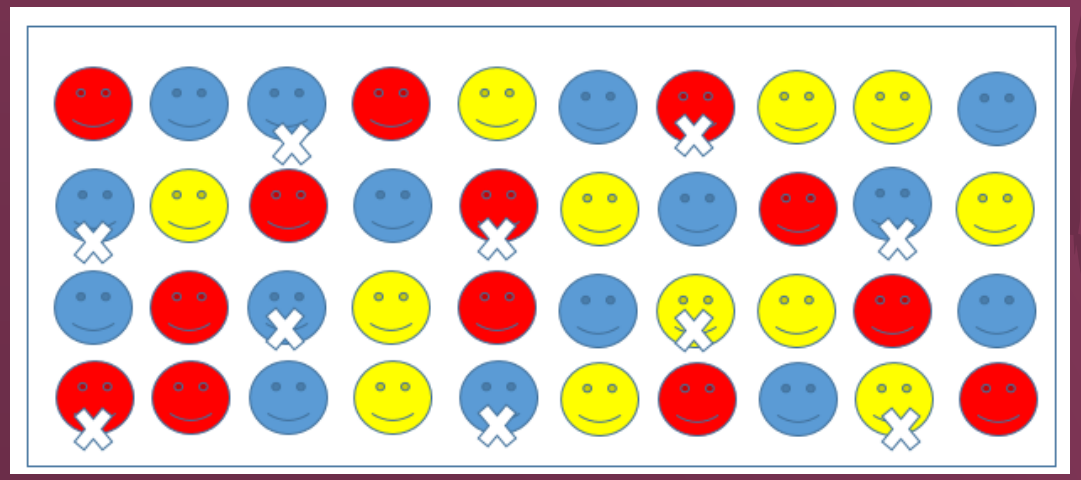
- *Probability sampling: selecting sample is based on the consideration of the probability theory*
- *Non probability sampling*: the sample is selected based on certain considerations, does not use the probability theory approach, and without random
- Probability sampling is better to use in selecting sample, but in reality it is often not possible. If so, then non probability sampling can be used as an alternative

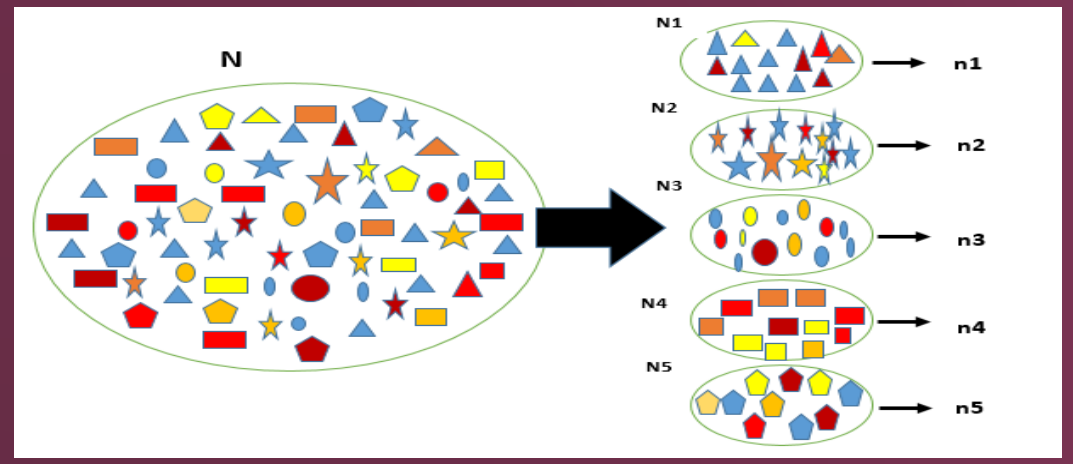


Probability Sampling

- ***Simple random***
- ***Systematic***
- ***Stratified random***
- ***Cluster***
- ***Multi-stage***







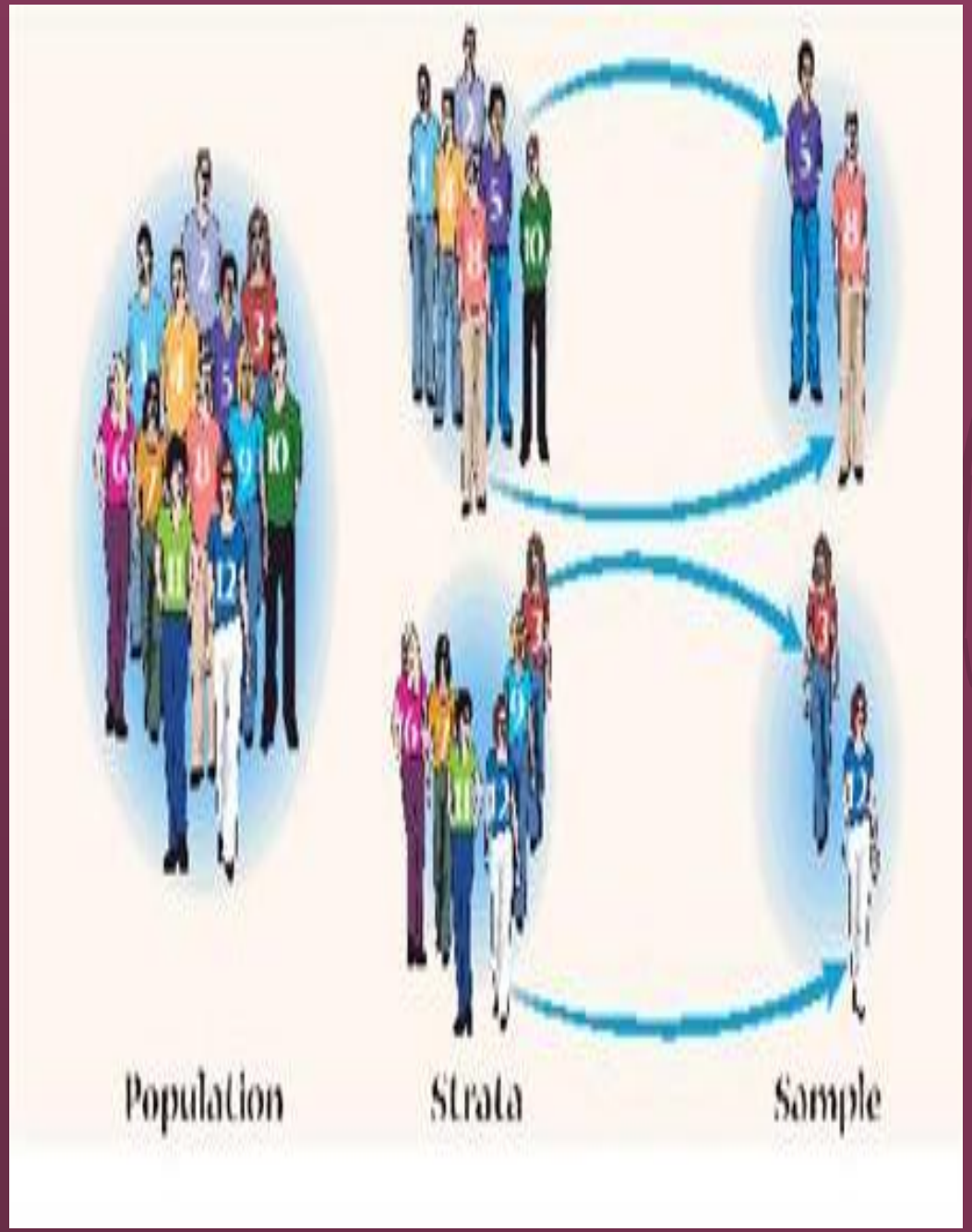
- **Simple Random Sampling**
  - Assures each element in the population of an equal chance of being included in the sample.

Systematic Sampling

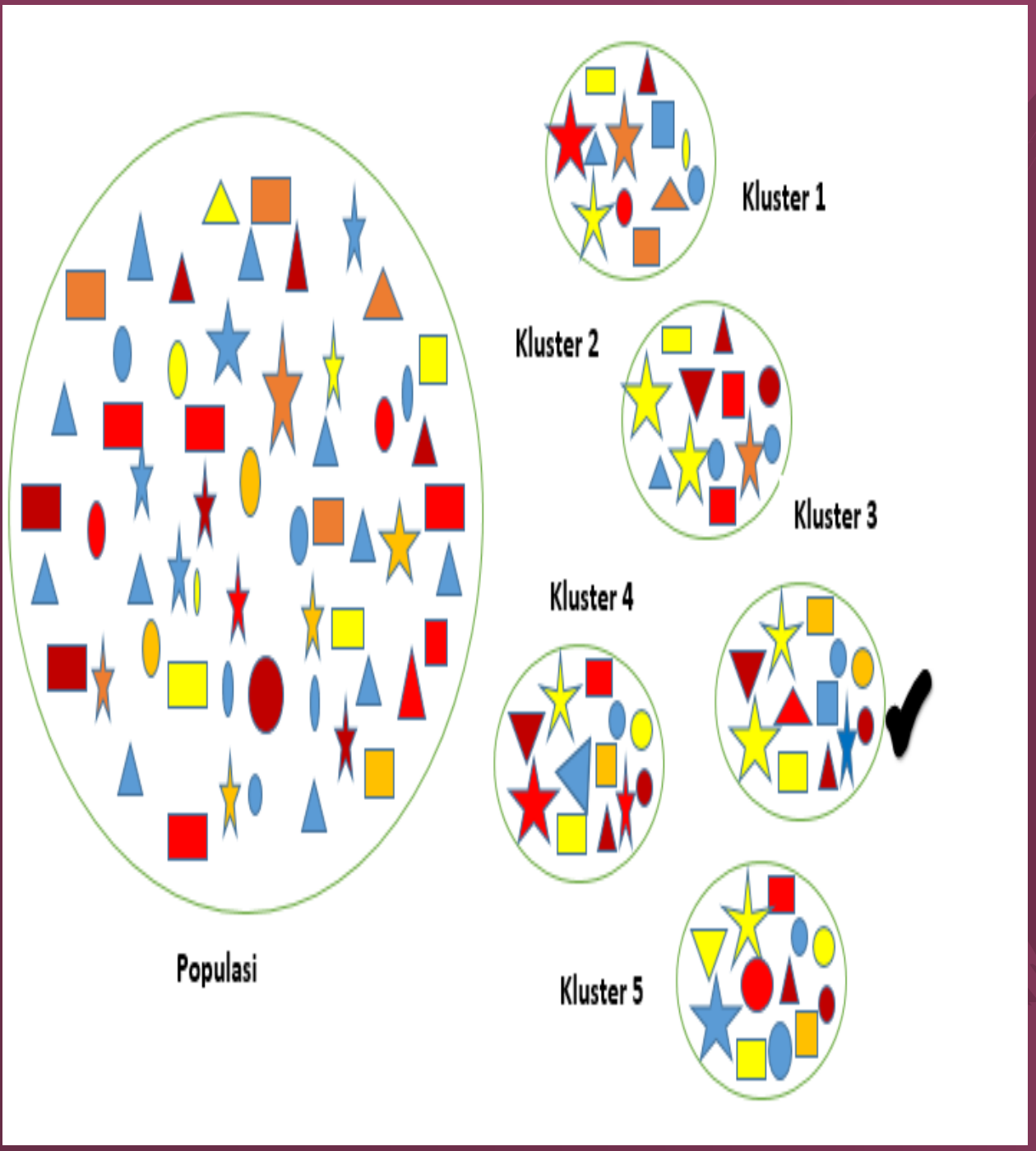
A starting point is selected by a random process and then every nth number on the list is selected.

Stratified Sampling

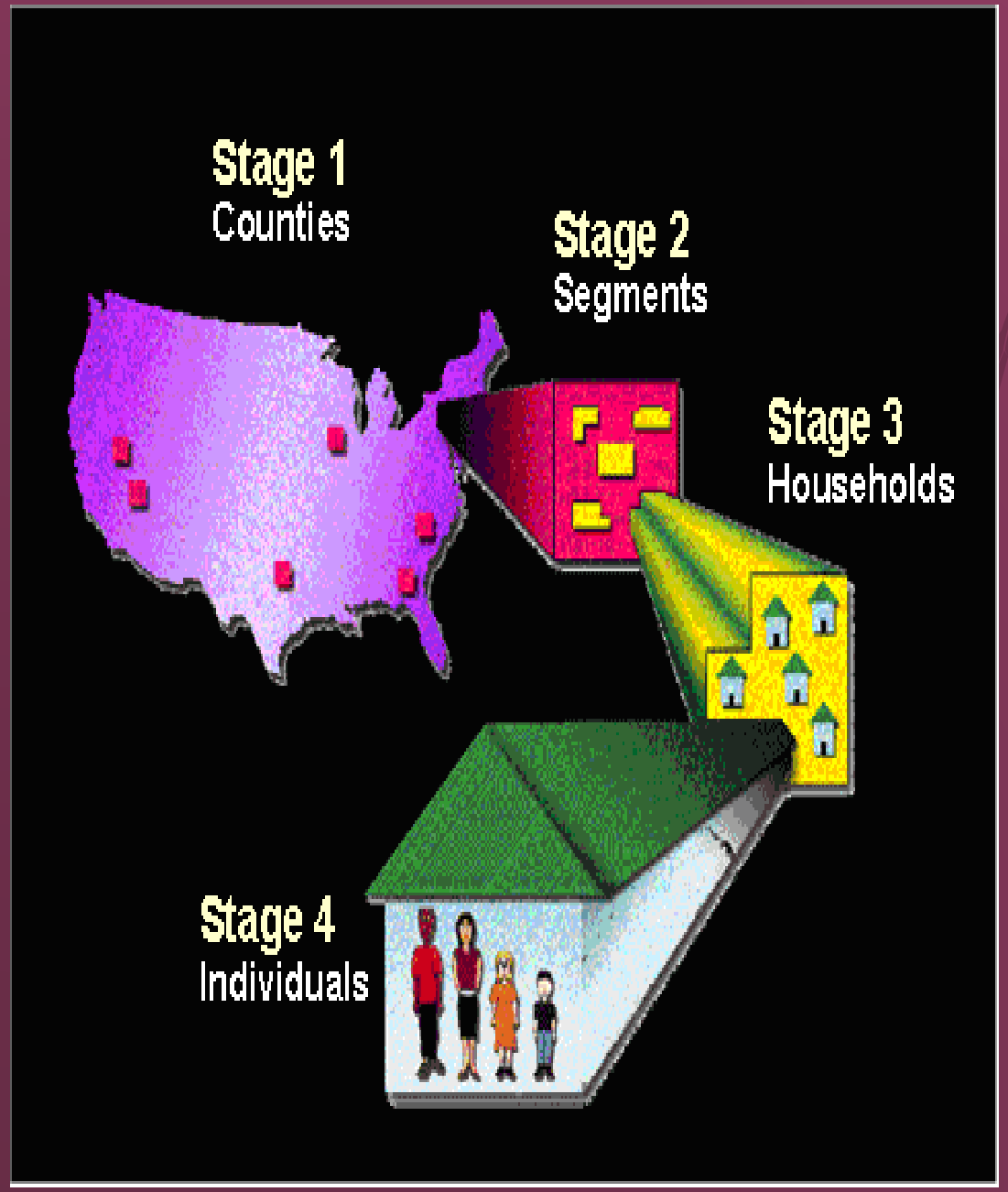
Simple random subsamples that are more or less equal on some characteristic are drawn from within each stratum of the population.



- **Proportional Stratified Sample**
  - The number of sampling units drawn from each stratum is in proportion to the population size of that stratum.
- **Disproportional Stratified Sample**
  - The sample size for each stratum is allocated according to analytical considerations.



- **Cluster Sampling**
  - An economically efficient sampling technique in which the primary sampling unit is not the individual element in the population but a large cluster of elements.
  - Clusters are selected randomly.

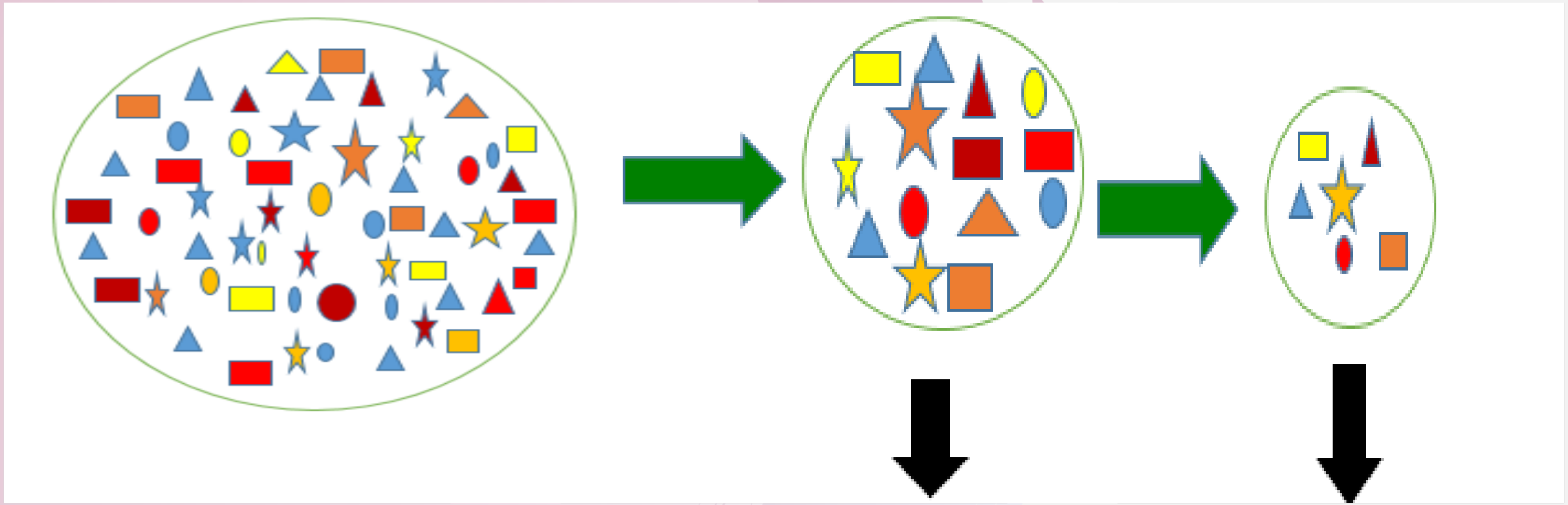


• Multistage Area Sampling

- Involves using a combination of two or more probability sampling techniques.
- Typically, geographic areas are randomly selected in progressively smaller (lower-population) units.
- Researchers may take as many steps as necessary to achieve a representative sample.
- Progressively smaller geographic areas are chosen until a single housing unit is selected for interviewing.

Contoso

Multiphase Sampling



Non Probability Sampling

- ***Accidental Sampling.*** **It is also called as *Convenience Sampling, Opportunity Sampling,* or *Haphazard Sampling***
- ***Purposive Sampling***
- ***Expert Sampling***
- ***Quota sampling: proportionate Quota Sampling, Non-proportionate Quota Sampling,*** **and *Snowball Sampling***
- ***Self-selection Sampling***

- **Convenience Sampling**
  - Obtaining those people or units that are most conveniently available.
- **Judgment (Purposive) Sampling**
  - An experienced individual selects the sample based on personal judgment about some appropriate characteristic of the sample member.
- **Quota Sampling**
  - Ensures that various subgroups of a population will be represented on pertinent characteristics to the exact extent that the investigator desires.

Expert Sampling

- **The data collected are the opinion or point of view of some people related to their knowledge, expertise, and experience in accordance to research topic.**
- **Sometime, used to accomplish the data taken by other sampling methods**
- **Needed to determine the categories of samples as expertise, knowledgeable, and experienced.**

Snowball Sampling

- A sampling procedure in which initial respondents are selected by probability methods and additional respondents are obtained from information provided by the initial respondents.

Thank You

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