GB6013

SAMPLING

DR. FARIZA KHALID

POPULATION

- The group of all items of interest to the researcher frequently very large; sometimes infinite E.g. All 180,000 primary school teachers in Malaysia.
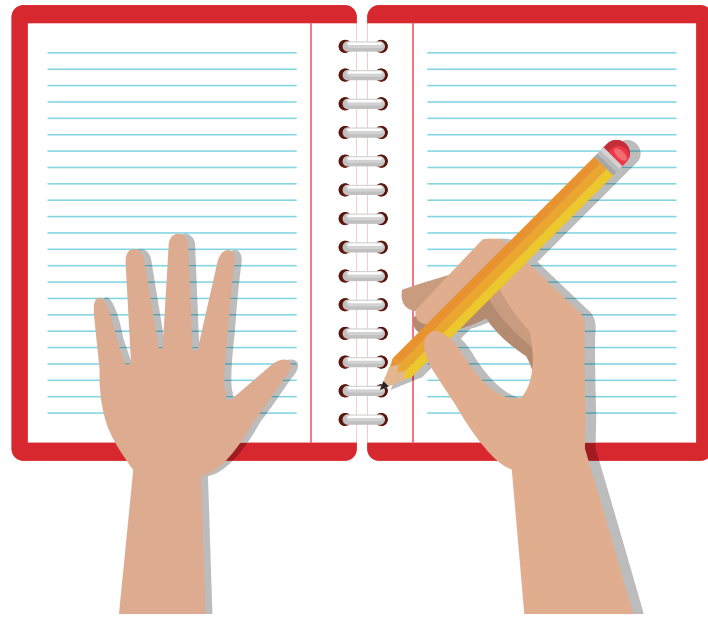
SAMPLE

- A sample is a set of data drawn from the population. [Part of a population]
- Potentiall very large, but less than the population.
- E.g. a sample of 1000 primary school teachers in Malaysia

PARAMETER

- A descriptive measure of a population.
- The true percent of primary schools teachers in Malaysia

STATISTICS

- A descriptive measure of a sample.
- Of the 1000 primary teachers, 400 are teaching Special Education (40%)

SAMPLING - WHY?

- Sampling is an important characteristic of inferential statistics
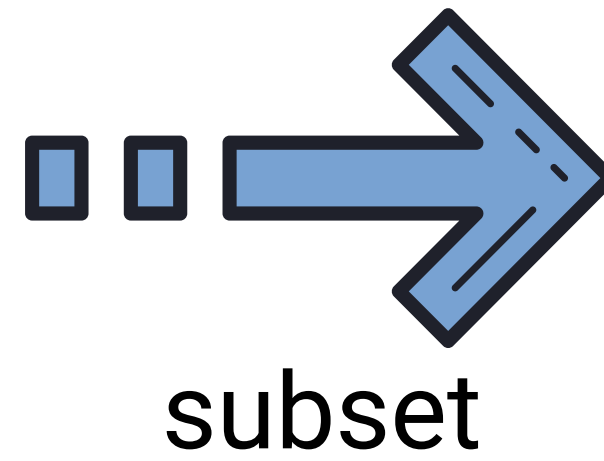- It is a process of going from the part to the whole (Ary et al., 2010)

SAMPLE

- the small group that is observed is called **sample**
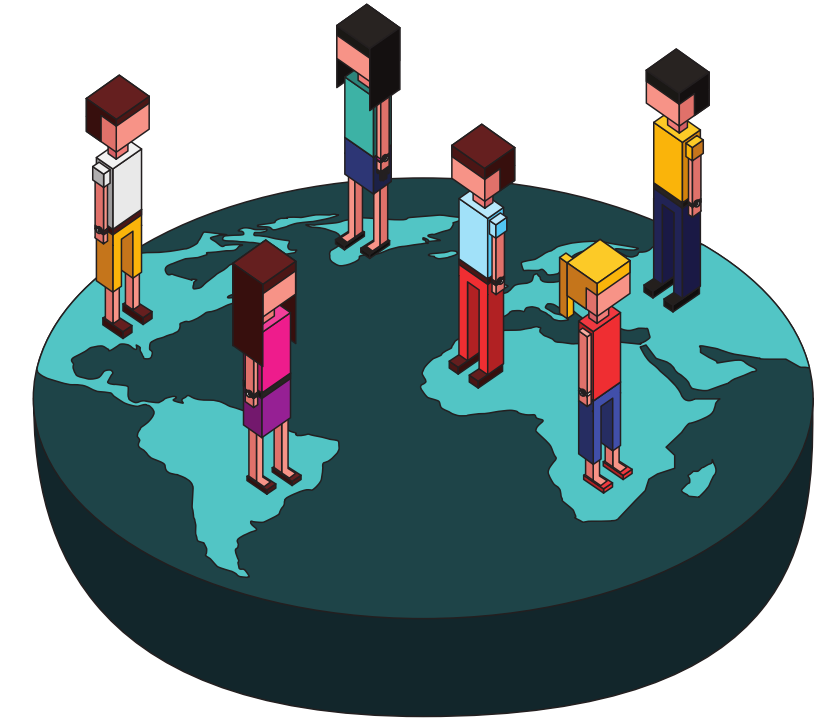- the larger group about which the generalization is made is called a **population**

POPULATION

SAMPLE

subset

STATISTICS

PARAMETER

STATISTICAL INFERENCE

- Is a procedure by means of which you estimate parameter (characteristics of populations) from statistics (characteristics of samples)
- Such estimations are based on the law of probability and are best estimates rather than absolute facts.

STATISTICAL INFERENCE

- In making such inferences, a certain degree of error is involved.
- Inferential statistics can be used to test hypotheses about the population on the basis of observation of a sample drawn from the population.

STATISTICAL INFERENCE

- Because the purpose of drawing a sample from a population is to obtain information concerning the population, it is important that the individuals included in a sample constitute a **representative** cross-section of individuals in the population.

STEPS IN SAMPLING

- The first step in sampling is to **identify the target population.**
- **I**n most research, we deal with an accessible population (the population of subjects accessible to the researcher for drawing a sample).
- It will be expensive and time-consuming to sample from the total population of the whole country for example, but we can draw a sample from one state.
- Then we can generalize the results to the whole population of the state, but not the whole country of course.

TYPE OF SAMPLING

PROBABILITY SAMPLING

- Every member of the population had a chance of "making it" into your sample

NON PROBABILITY SAMPLING

- Every member of the Non-probability sampling
- Not every member of the population had a chance of "making it" into your sample

TYPE OF SAMPLING

PROBABILITY SAMPLING

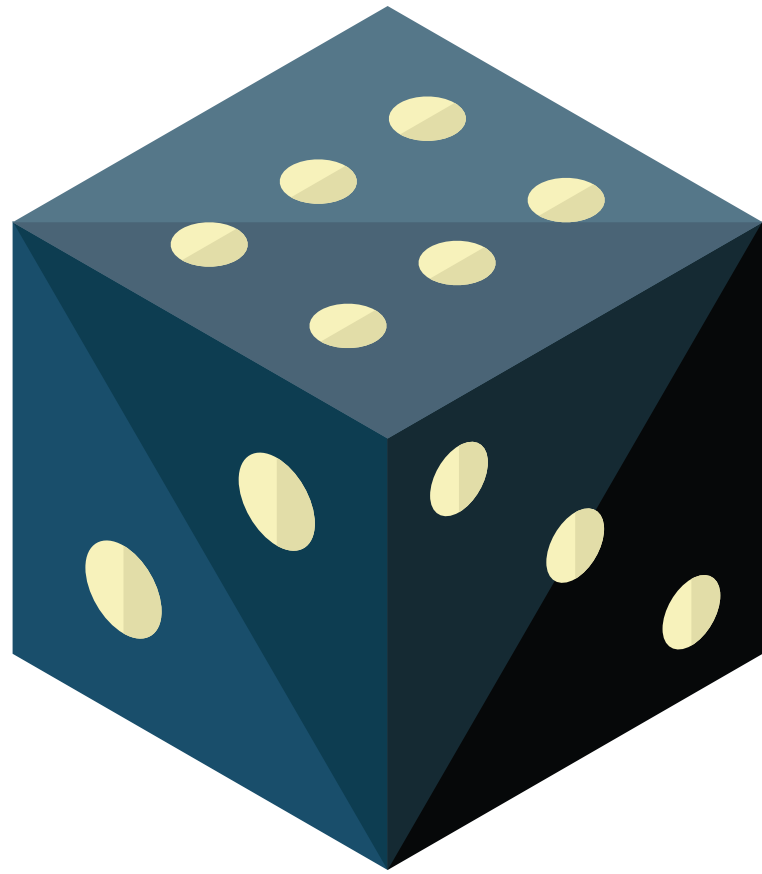|	
SIMPLE RANDOM SAMPLING	STRATIFIED RANDOM SAMPLING
SYSTEMATIC RANDOM SAMPLING	CLUSTER AMLPING

NON- PROBABILITY SAMPLING

CONVENIENCE SAMPLING	PURPOSIVE SAMPLING
SNOWBALL SAMPLING	

SIMPLE RANDOM SAMPLING

- All members of the population have an equal and independent chance of being included in the random sample

SIMPLE RANDOM SAMPLING

STEPS:

- Define the population
- List all members of the population
- Select the sample by employing a procedure where sheer chance determines which members on the list are drawn for the sample.

SIMPLE RANDOM SAMPLING

STEPS:

- Define the population
- List all members of the population (enumerate)
- Select the sample by employing a procedure where sheer chance determines which members on the list are drawn for the sample.

STRATIFIED SAMPLING

- When the population consists of a number of subgroups. or strata that may differ in characteristics, it is often desirable to use a stratified random sampling
- the basis of stratification may be geographic or involve characteristics of the population such as age, gender, income, occupation, teaching level etc.

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STRATIFIED SAMPLING

- Advantage - it enables the researcher to also study the differences that might exist between various subgroups of a population

CLUSTER SAMPLING

- The unit chosen is not an individual but rather a group of individuals who are naturally together.
- e.e., a researcher might choose a number of schools randomly from a list of schools and then include all the students in the schools in the sample.

CLUSTER SAMPLING

- Clusters should be chosen randomly
- Once the cluster all the members of the cluster must be included in the sample.

SYSTEMATIC SAMPLING
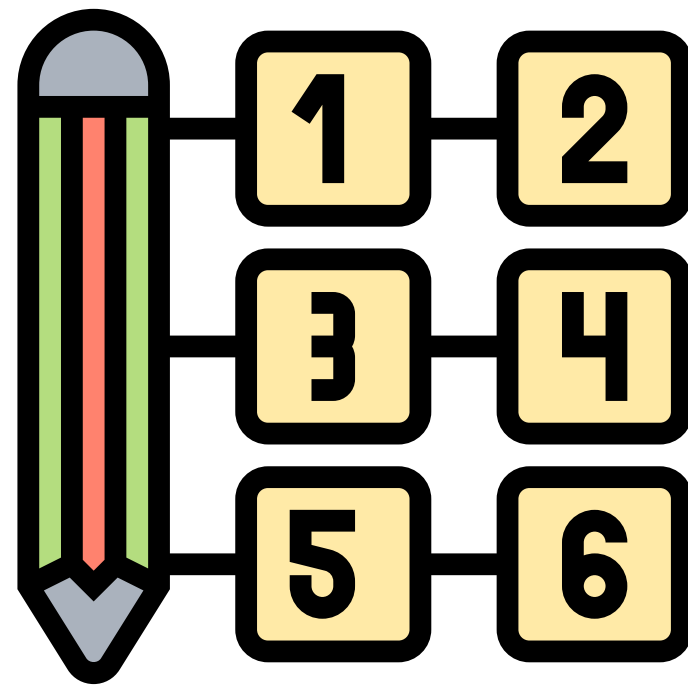
- Involves drawing a sample by taking every '*K*th' case from a list of the population

SYSTEMATIC SAMPLING

STEPS

- Decide the sample (n)
- Divide the number of population (N) by sample (n) and determine the sampling interval (K) to apply to the list.
- Select the first member randomly from the first K members of the list and the select the Kth member of the population for the sample.
- e.g., 500/50=10 so Kth = every 10th of the sample from the list
- start the near top of the list so that the first case can be randomly selected from the first 10 cases and then select every tenth case thereafter.

SYSTEMATIC SAMPLING
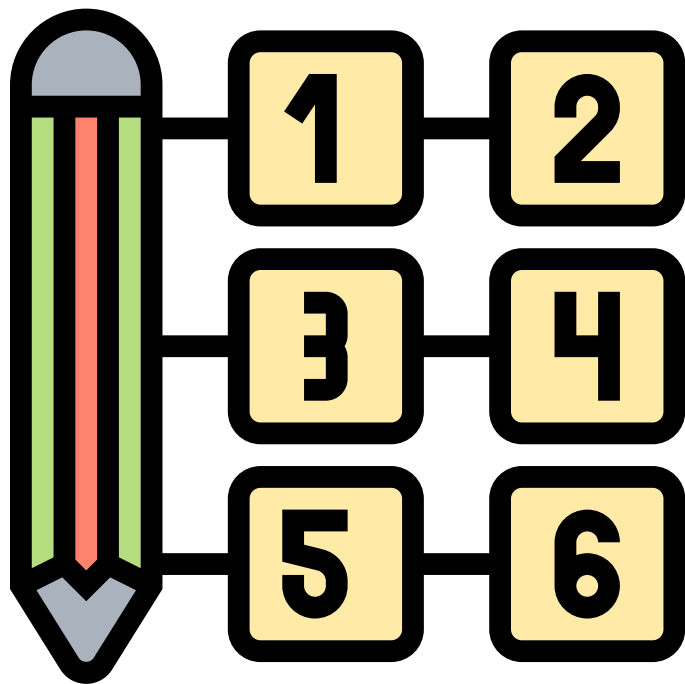
- it differs from a random sampling in that the various choices are not independent.
- Once the first case is chosen, all subsequent cases to be included in the sample are automatically determined.
- Using an alphabetical list for example, would not give a representative sample of various national group because certain national groups end to cluster under certain letters.

NON PROBABILITY SAMPLING

- Involves non-random procedures for selecting the members of the sample.
- there is no assurance that every element in the population has a chance of being included
- the results cannot be generalized to the population

CONVENIENCE SAMPLING

- involves the use of available cases for study.
- e.g, volunteered respondents

PURPOSIVE SAMPLING

- Samples are selected based on certain criteria to serve the purpose of the research
- also known as judgment, selective or subjective sampling - is a sampling technique in which researcher relies on his or her own judgment when choosing members of population to participate in the study

SNOWBALL SAMPLING
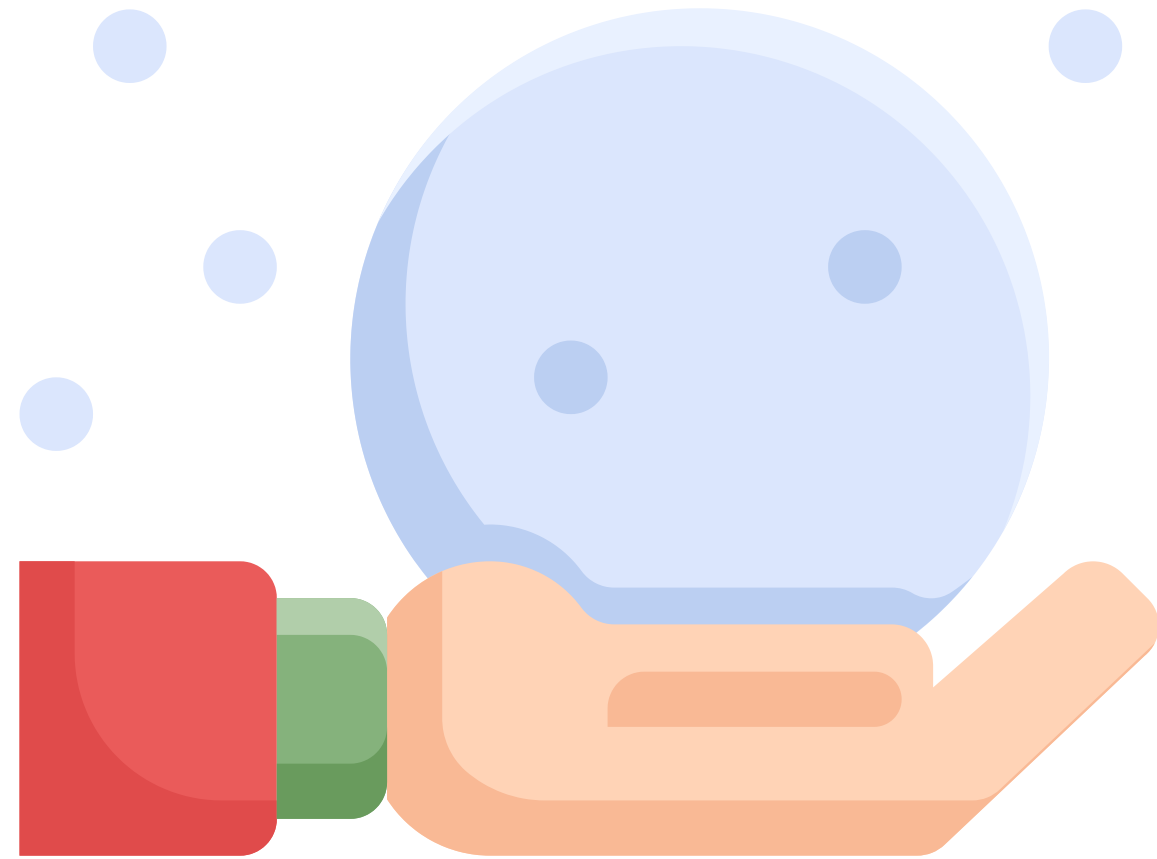
- selected based on the recommendation from the current subjects/respondents
- (or chain sampling, chain-referral sampling, referral sampling) is a non-probability sampling technique where existing study subjects recruit future subjects from among their acquaintances.

DETERMINE A SAMPLE SIZE

- Sample size determination is the act of choosing the number of observations or replicates to include in a statistical sample. The sample size is an important feature of any empirical study in which the goal is to make inferences about a population from a sample.

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DETERMINE A SAMPLE SIZE

- If your sample is too small, you may include a disproportionate number of individuals which are outliers and anomalies. These skew the results and you don't get a fair picture of the whole population.
- If the sample is too big, the whole study becomes complex, expensive and time-consuming to run, and although the results are more accurate, the benefits don't outweigh the costs.
- CALCULATE

SAMPLING ERROR

- When you only survey a small sample of the population, uncertainty creeps in to your statistics.
- If you can only survey a certain percentage of the true population, you can never be 100% sure that your statistics are a complete and accurate representation of the population.

SAMPLING ERROR

- This uncertainty is called sampling error and is usually measured by a confidence interval.
- For example, you might state that your results are at a 90% confidence level. That means if you were to repeat your survey over and over, 90% of the time your would get the same results.

DISCUSSION

- What are the differences in terms of sampling in quantitative and qualitative research?