AGG3842
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INTRODUCTION TO STATISTICS

❖ **Methods of Sampling**

This is dependent on whether you want to carry out probability or non-probability sampling.

a) ***Probability sampling*** comprises of:
   I. Random sampling
   II. Systematic sampling
   III. Stratified sampling
   IV. Cluster sampling
b) ***Non- probability sampling*** comprises of:
   I. Quota sampling

Probability sampling

This is the most meaningful sampling because most distributions used for testing are assumed to be taken at random manner.

1) *Random sampling*

- Every element in a statistical population has an equal chance of being selected.
- This method is used when sampling units are homogenous with respect to all other attributes except the one under study.
- Draw a population and number all the sampling units
- Use a random number generator to select your sample. It is important to know your sample size. You pick the number being dictated by the random number generator.
- If you are measuring a trait like birth weight of males and females, females tend to weigh less than males and therefore you would have to split the two groups and carry out sampling in each group in order for the units to be homogenous. Other traits like eye color will not have an effect of gender causing a bias.

2) *Systematic sampling*

- The experimental units should be homogenous
- Sampling is done according to a predetermined pattern or interval e.g. picking every 3rd experimental unit.
- This is also dependent on sample size.

3) *Stratified sampling*

- The experimental units are not homogenous and therefore you make strata (groupings based on the levels of that factor which can bias your results).
- Then you randomly sample in each stratum.
- Example: Gender (factor which can bias)

4) *Cluster sampling*
   - Sometimes a population will have natural groupings or clusters.
   - Each cluster will considered an experimental or sampling unit.
   - The clusters will then be numbered and randomly selected.
   - The difference between this and random sampling is that in random sampling, each individual is numbered and has an equal chance of being selected while in cluster sampling you randomly select the clusters (which have individuals in them). Then all the elements in the randomly selected clusters are measured.
   - The sample size in this case is the number of clusters.

Non-probability sampling

- The sampling population is subdivided into mutually exclusive subgroups just like in stratified sampling.
- The researcher the uses his or her wisdom/judgement to select sampling units from each subgroup. This is called *quota* sampling.
- There is no random sampling at all.