

## Topics to be covered:

- 1) Sampling Techniques
- 2) Covariance and Correlation
- 3) Probability distribution function
- 4) Probability density function
- 5) Probability Mass function
- 6) Cumulative Density function
- 7) Type of Distribution

{ you can apply multiple sampling techniques }

## 1) Sampling Techniques

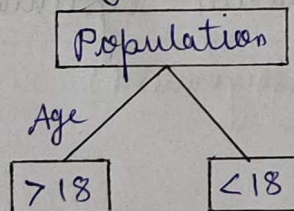
1. Random Sampling: simple random sampling gives each member of the population an equal chance of being chosen for the sample.

- ex:
- Vaccination test  $\rightarrow$  Given to 100 people  $\rightarrow$  Randomly select people.
  - Accidental Test  $\rightarrow$  1000 cars created  $\rightarrow$  A company  $\rightarrow$  select 2 cars and test.
  - Exit Poll
  - Average IQ of the school  $\rightarrow$  select 10 people  $\rightarrow$  avg. will be the answer.

2. Stratified Sampling: (Stratified means layers)

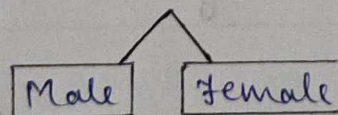
stratified sampling involves dividing the population into sub-population that may differ in important ways.

ex: 1) Exit poll

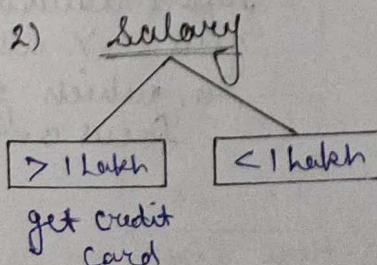


we only require this info?

Voting  $\rightarrow$  further we apply Random sampling



Further we can divide on basis of gender.



{ Here, based on single parameter we're grouping }



### 3) Systematic Sampling:

It is a statistical method involving the selection of elements from an ordered sampling frame.

ex: Airport

of credit card company

I  $\rightarrow$   $n^{\text{th}}$  individual  $\rightarrow$  let's say  $7^{\text{th}}$  person  
A person will go and ask every  $n^{\text{th}}$  individual to buy credit card.

Mall  $\rightarrow$  fill up a form for a cause they'll ask every  $n^{\text{th}}$  person to fill form, outside mall.

Note: Order doesn't matter here.

Example: In Mall, Beauty product is gonna launch for women which approach you'll apply?

Men Women First we apply stratified sampling.

$>15$   $\leq 15$  stratified sampling again.

Here Now, we can apply systematic sampling or random sampling.

If we just have 100 bottles systematic approach is better.

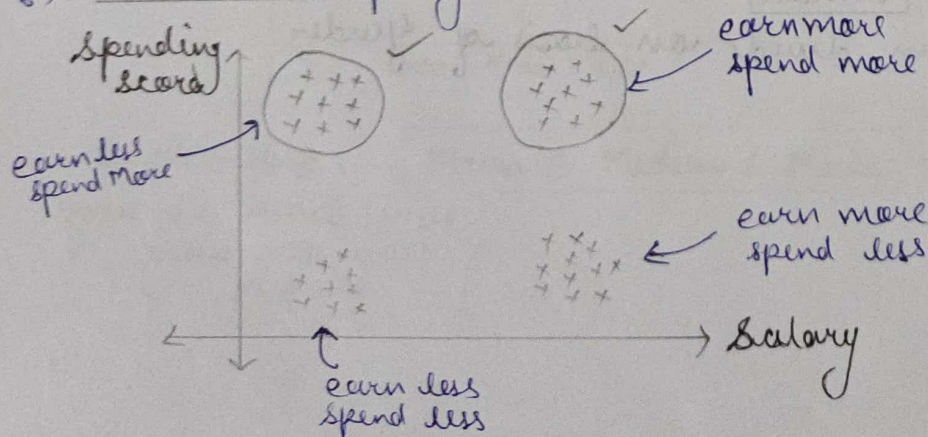
### 4) Convenience Sampling: (Assignment)

### 5) Purposive Sampling:

Judgemental Sampling is a method where researchers decides which members of the target population will be sampled.

ex: If person doing PhD in AI. then he'll send it to people knowing AI. for survey.

### 6) Cluster Sampling:



100 phones  
In Mall iPhone 28 coming in future. before launch they want give 20% discount. So, which group they'll focus on?

Here based on multiple parameters we are clustering it