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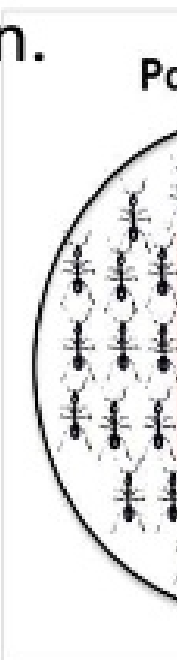# Sampling

Module 3

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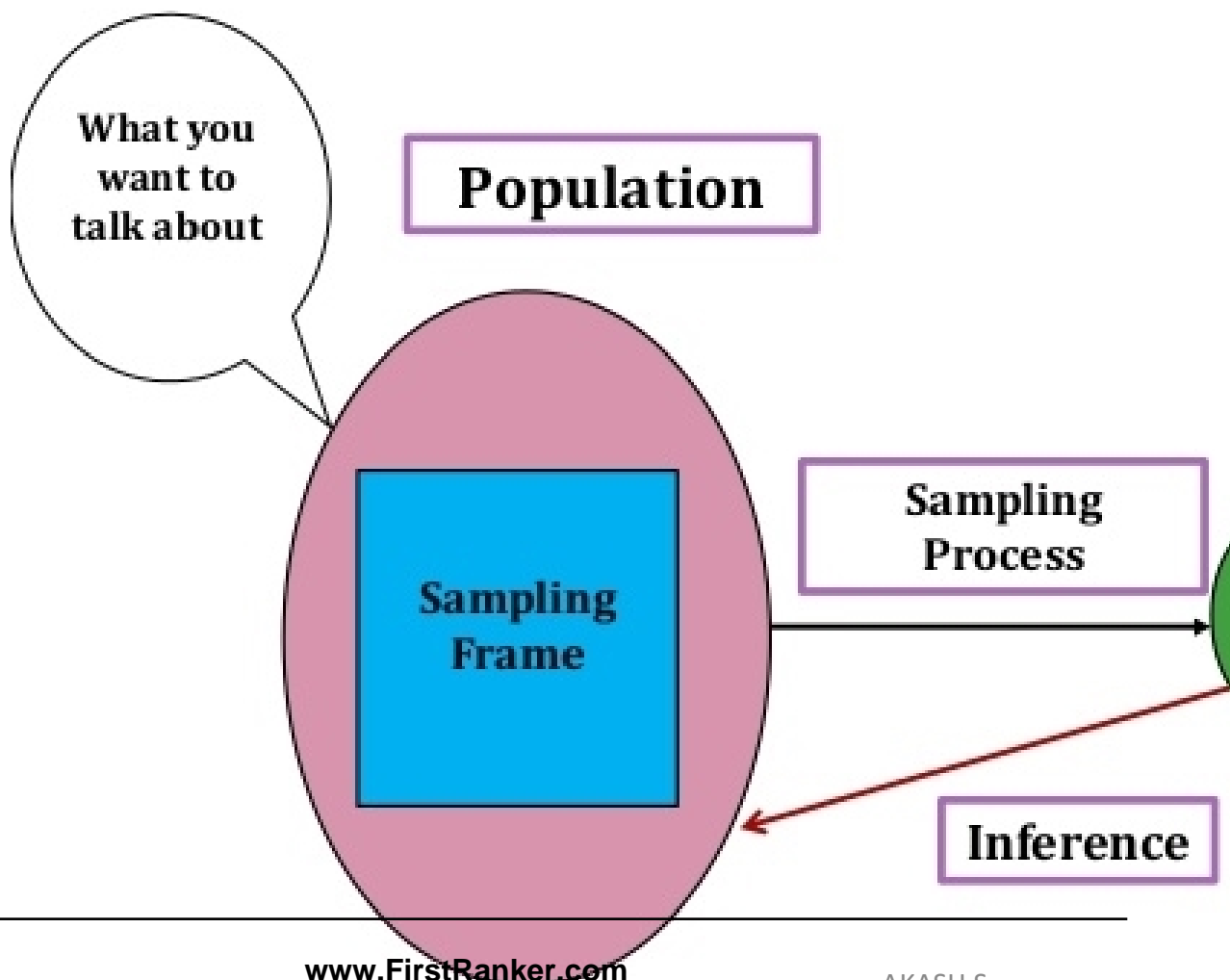# INTRODUCTION

Sampling is the process of selecting obs
(a sample) to provide an adequate de
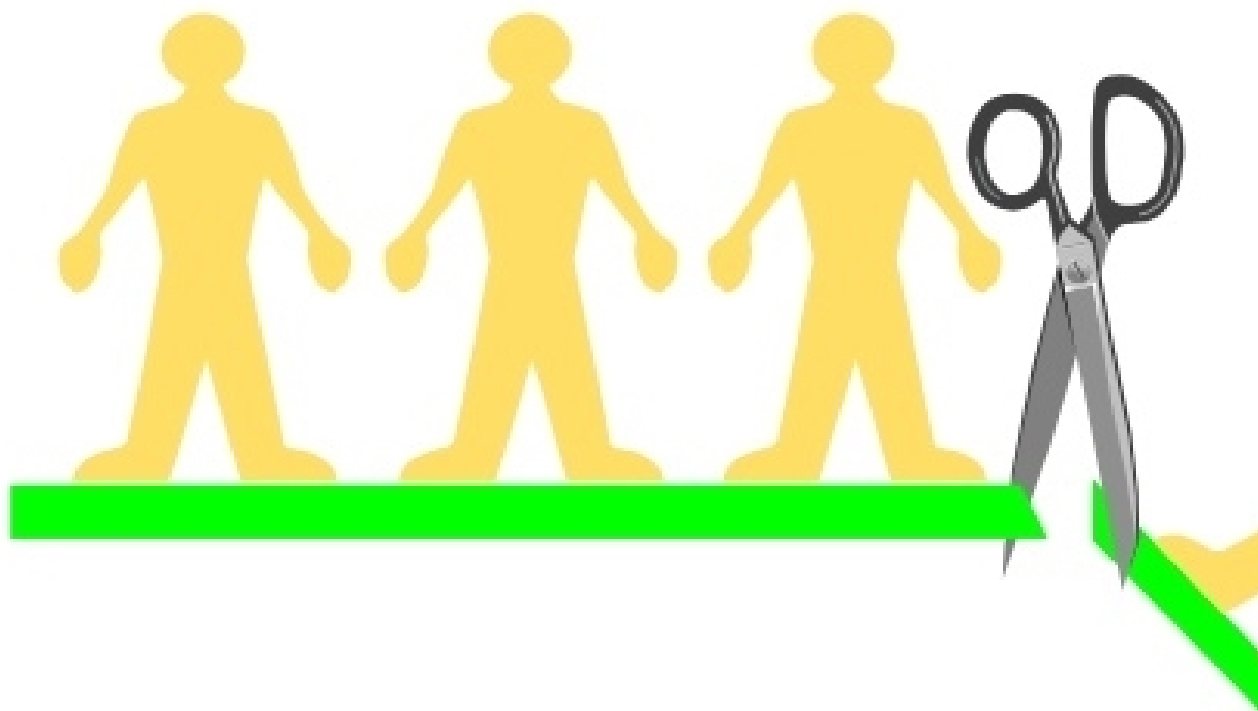and inferences of the population.

- Sample
  - ◉ It is a unit that is selected from population
  - ◉ Represents the whole population
  - ◉ Purpose to draw the inference
- Why Sample???
- Sampling Frame

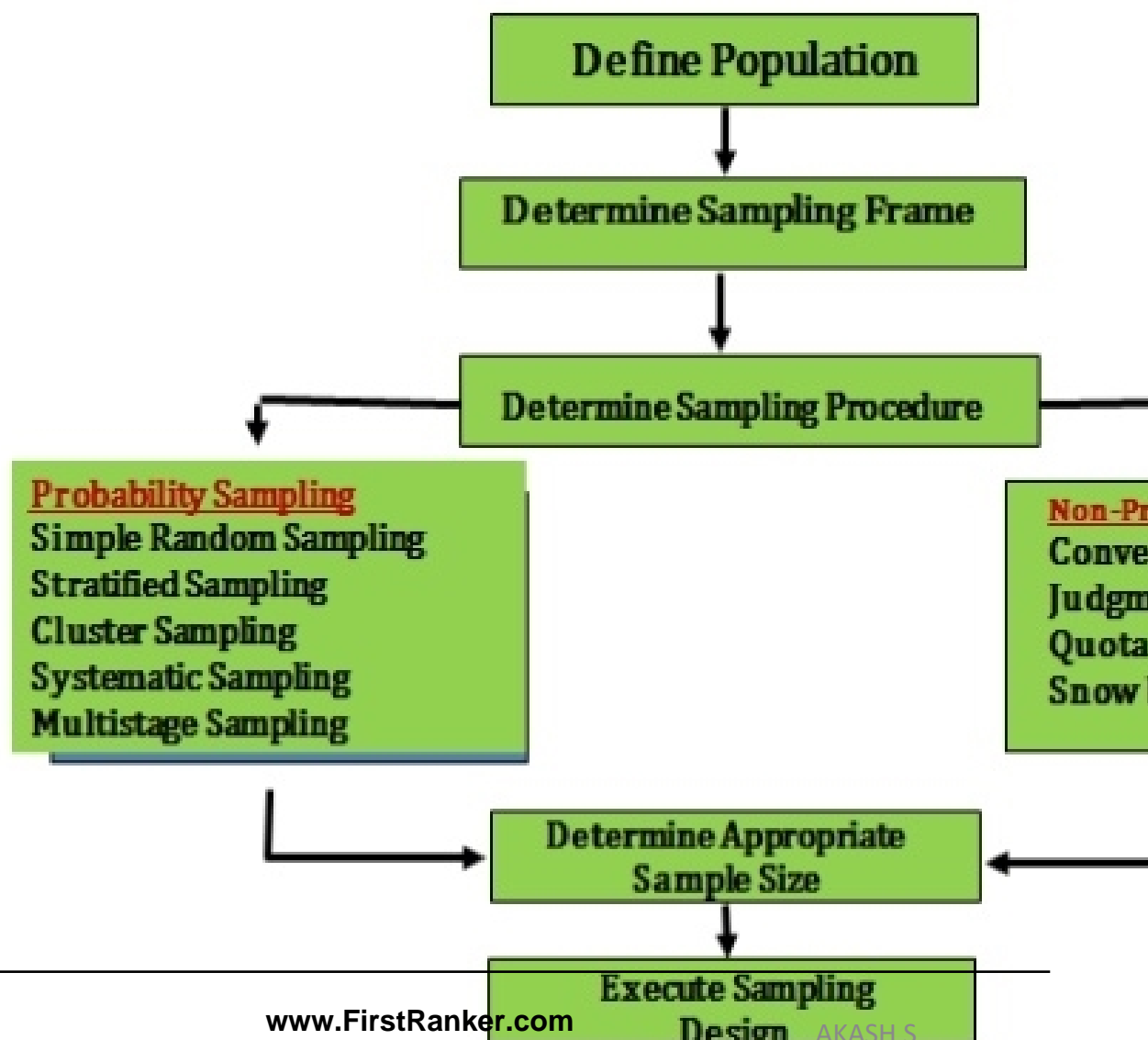Listing of population from which a sample

SAMPLING

What you want to talk about

Population

Sampling Frame

Sampling Process

Inference

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IF THE POPULATION HOMOGENEOUS

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IF THE POPULATIO
HETEROGENEOU

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SAMPLING DESIGN PR

Define Population

↓

Determine Sampling Frame

↓

Determine Sampling Procedure

Probability Sampling
Simple Random Sampling
Stratified Sampling
Cluster Sampling
Systematic Sampling
Multistage Sampling

Non-Pr
Conve
Judgm
Quota
Snow

Determine Appropriate Sample Size

↓

Execute Sampling Design   AKASH S

(i) Type of universe/Populatio

- **The first step in developing any sample design of objects, technically called the Universe, to b**

- **The universe can be finite or infinite.**

- **In finite universe the number of items is certai universe the number of items is infinite,**

The population of a city, the number of workers i examples of *finite universes*,

whereas the number of stars in the sky, listeners programme, throwing of a dice etc. are examples

2. Sampling frame

- 'Sampling Frame' is from which sample is to

- It contains the names of all items of a univer
  universe only).

- If source list is not available, researcher has t
  should be comprehensive, correct, reliable a
  extremely important for the source list to be
  population as possible.

- if you want to learn about scooter owners ir
  the frame..

(iii) Sampling unit:

- A decision has to be taken concerning selecting sample.

- Sampling unit may be a geographical one village, etc., or

- A construction unit such as house, flat, etc., such as family, club, school, etc., or it may be

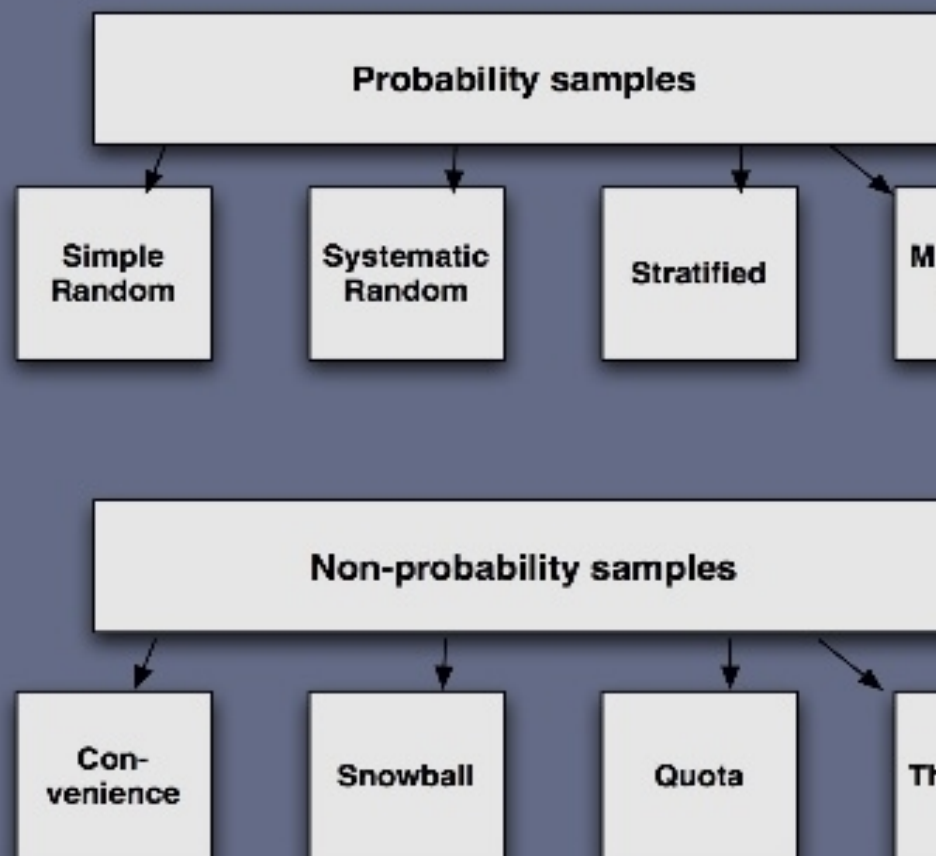- The researcher will have to decide one or m has to select for his study.

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(iv) Size of sample:

- This refers to the number of items to be sele
  constitute a sample. This a major problem be

- The size of sample should neither be excessi

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(vii) Sampling procedure:

- Finally, the researcher must decide the type

- i.e., he must decide about the technique to b
items for the sample.
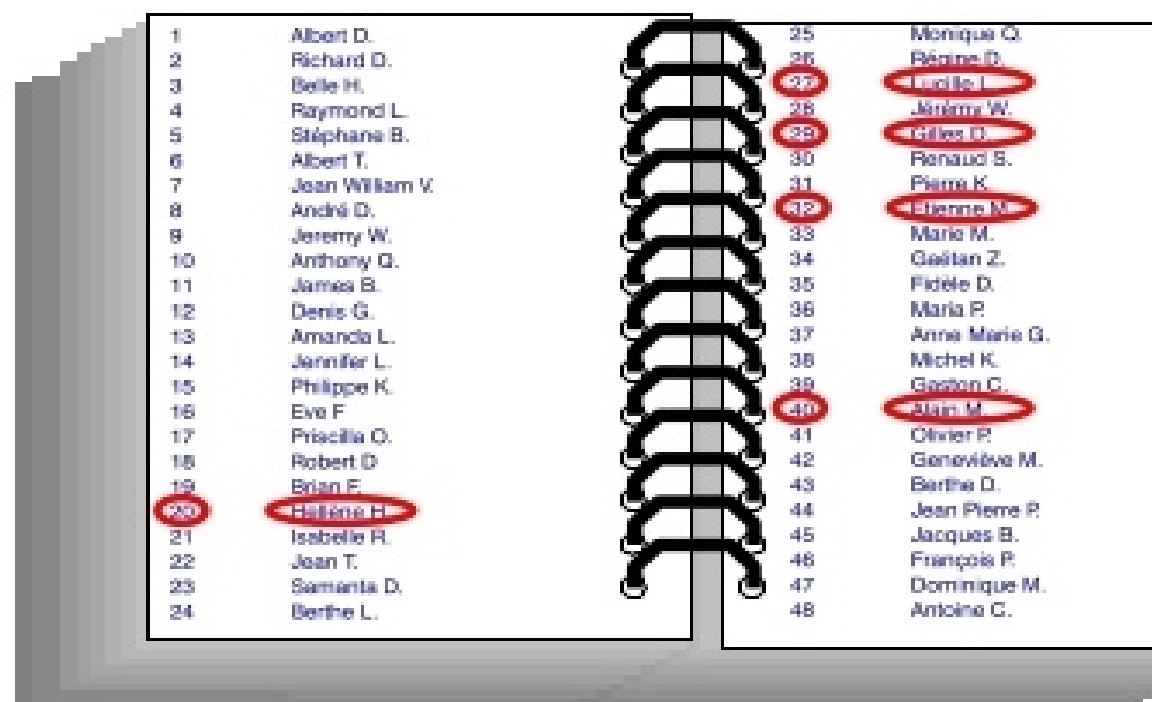

- Probability

- Non-Probability

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Types of samples

```
                    Probability samples
                    
    Simple      Systematic     Stratified        M
    Random       Random


                  Non-probability samples

    Con-         Snowball        Quota            Th
    venience
```

PROBABILI
SAMPLING

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SIMPLE RANDOM SA

- All subsets of the frame are given an probability.
- Random number generators
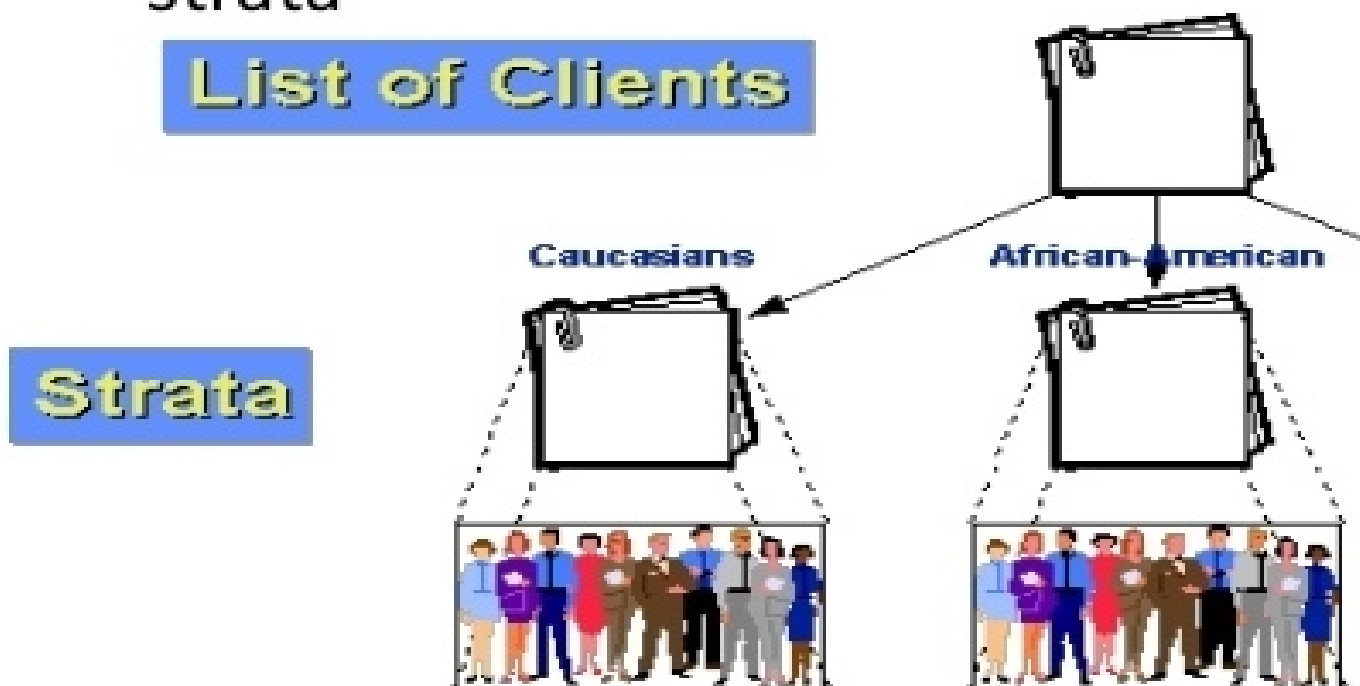
SIMPLE RANDO SAMPLING

Advantages:

- ◉ Minimal knowledge of population needed
- ◉ Easy to analyze data

Disadvantages:

- ◉ Low frequency of use
- ◉ Does not use researchers' expertise
- ◉ Larger risk of random error

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STRATIFIED RAN SAMPLING

- Population is divided into two or m called strata

- Subsamples are randomly selected strata

List of Clients

Strata

Caucasians   African-American

Random Subsamp

STRATIFIED RANDOM SAMPLING

Advantages:

- Assures representation of all group sample population

- Characteristics of each stratum can estimated and comparisons made

Disadvantages:

- Requires accurate information on proportions of each stratum

- Stratified lists costly to prepare

CLUSTER SAMPLI

- The population is divided into subgroup families.

- A simple random sample is taken from e

CLUSTER SAMPLI

Advantages:

- Can estimate characteristics of botl
  and population

Disadvantages:

- The cost to reach an element to sai
  very high
- Each stage in cluster sampling intro
  sampling error—the more stages th
  are, the more error there tends to l

SYSTEMATIC RAND SAMPLING

- Order all units in the sampling frame
- Then every nth number on the list is
- N= Sampling Interval

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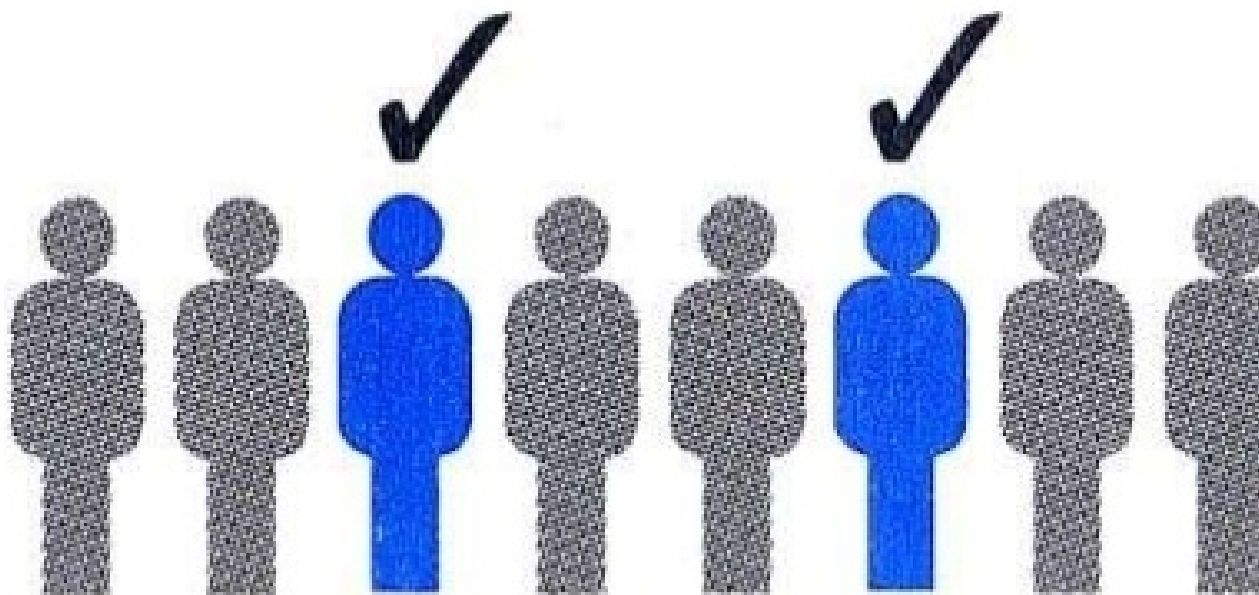
SYSTEMATIC RANDOM SAMPLING

Advantages:

- ⦿ Moderate cost; moderate usage
- ⦿ Simple to draw sample
- ⦿ Easy to verify

Disadvantages:

- ⦿ Periodic ordering required

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NONPROBABI
SAMPLES

NONPROBABILI
SAMPLES

- The probability of each case being se total population is not known.

- Units of the sample are chosen on th personal judgment or convenience.

- There are NO statistical techniques f random sampling error in a non-prob

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NONPROBABILITY S

- A. Convenience Sampling

- B. Quota Sampling

- C. Judgmental Sampling (Purposive

- D. Snowball sampling

- E. Self-selection sampling

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A. CONVENIENCE SAM

⦿ Convenience sampling involves choosin
   at the convenience of the researcher.

Advantages

⦿ Very low cost

⦿ Extensively used/understood

Disadvantages

⦿ Variability and bias cannot be measured

⦿ Projecting data beyond sample not justi

⦿ Restriction of Generalization.

B. QUOTA SAMP

⊙ The population is first segmented int
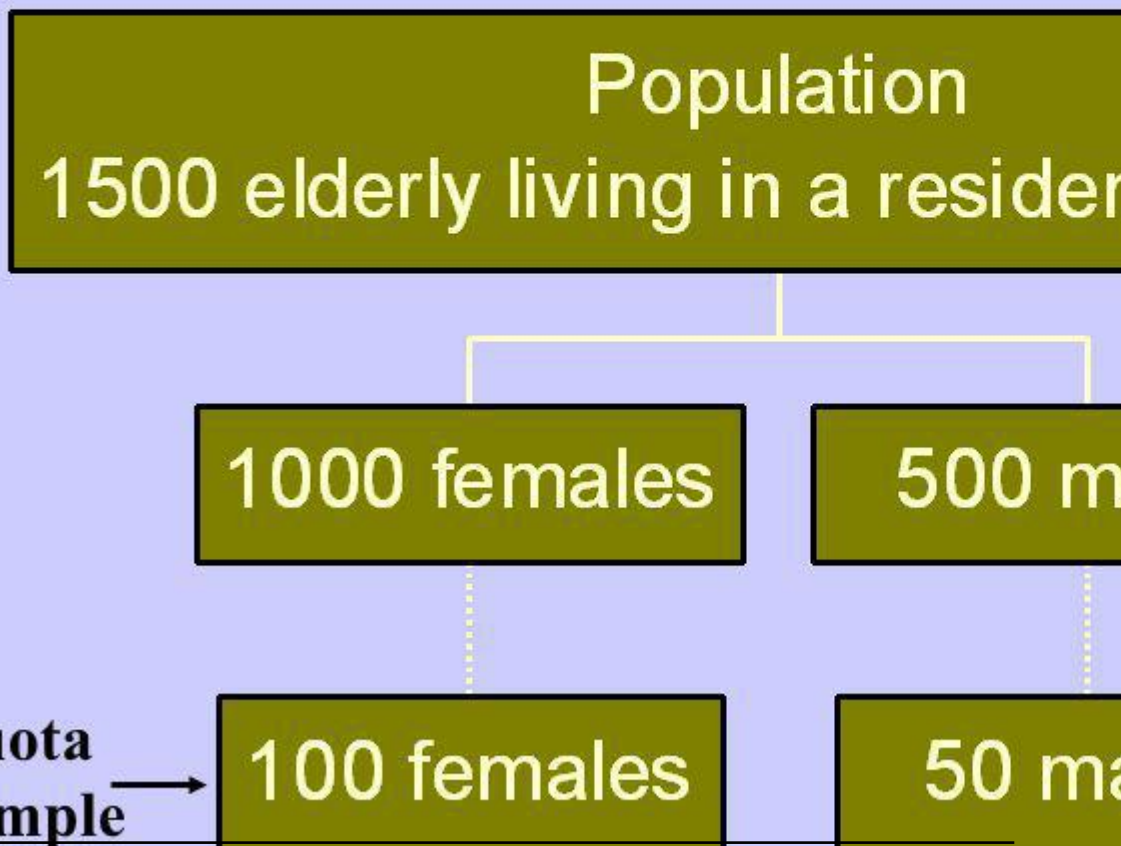exclusive sub-groups, just as in strati

Advantages

⊙ Used when research budget is limite

⊙ Very extensively used/understood

⊙ No need for list of population elemen

Disadvantages

⊙ Variability and bias cannot be measu

⊙ Time Consuming

⊙ Projecting data beyond sample not ju

Quota Sampling - E

Population
1500 elderly living in a residen

1000 females   **500 m**

Quota Sample → **100 females**   **50 ma**

Quota Vs Stratified Sam

QUOTA SAMPLING	STRATIFIE
In Quota Sampling, interviewer selects first available subject who meets criteria: is a convenience sample.	In Stratif selection random. used to get s

C. JUDGEMENTAL SA

- Researcher employs his or her own '
  judgment about.

Advantages

- There is a assurance of Quality respo
- Meet the specific objective.

Disadvantages

- Bias selection of sample may occur
- Time consuming process.

D. SNOWBALL SAM

A snowball sample is one in which the researcher c
few members of the target population he or she ca
those individuals to provide information needed to
members of that population whom they know.

Advantages

⊙ Low cost

⊙ Useful in specific circumstances & f
populations

Disadvantages

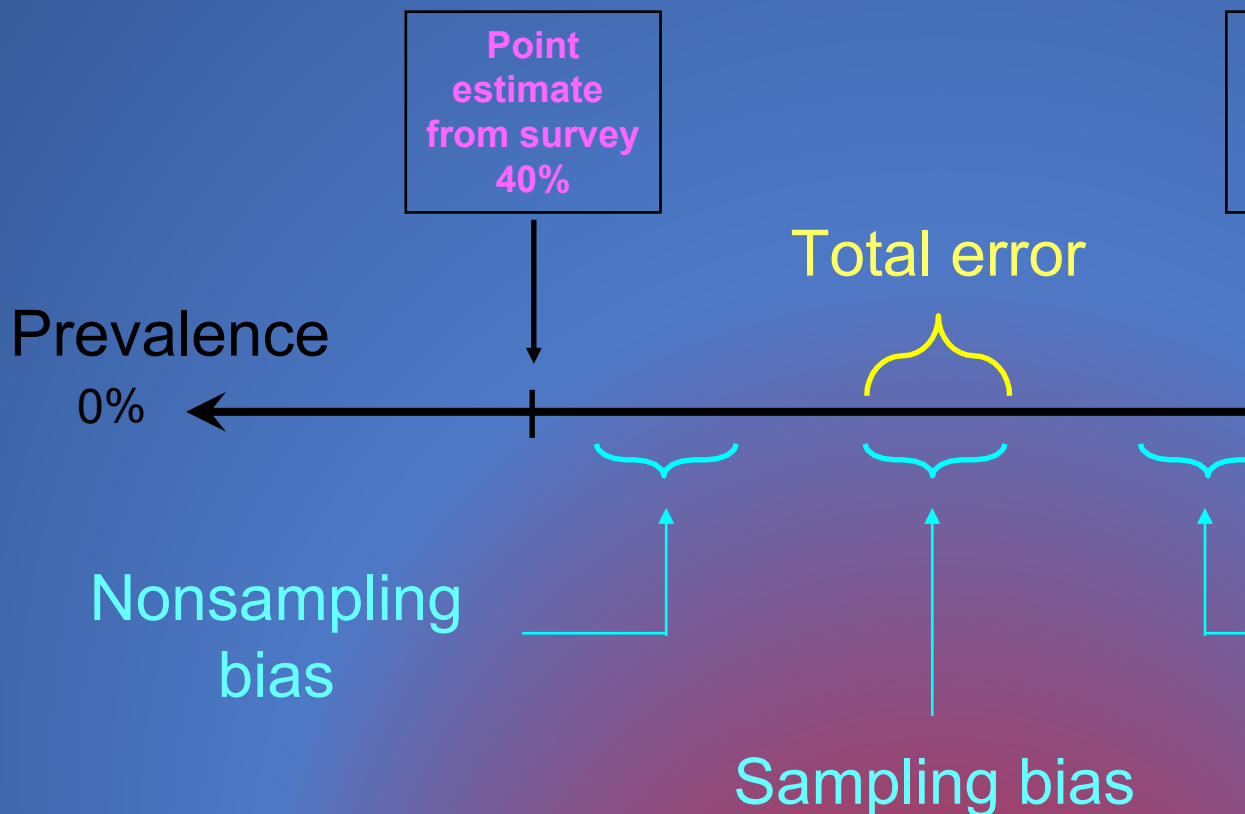⊙ Not independent

⊙ Projecting data beyond sample not

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SAMPLING ERR

Components of total error

Point estimate from survey 40%

Prevalence 0%

Total error

Nonsampling bias

Sampling bias

Types of Samplir

❖ **Sample Errors**

❖ **Non Sample Errors**

Sample Err

❖Error caused by the act of taking a

❖They cause sample results to be d
results of census

❖Differences between the sample ar
that exist only because of the c
happened to be selected for the samp

❖Statistical Errors are sample error

❖We have no control over

Non Sample Er

Not Control by Sample Si

❖ Non Response Er

❖ Response Error

Non Response

A non-response error
units selected as part of
procedure do not respe
or in part

Response Er

A response or data error is any
that occurs during data collect
interpretation

❖ Respondent error (e.g., lying, forg

❖ Interviewer bias

❖ Recording errors

❖ Poorly designed questionnaires

❖ Measurement error

Respondent

- ❖ respondent gives an incorrect answ
  or competence implications, or due
  undesirability of question

- ❖ respondent misunderstands the requ

- ❖ lack of motivation to give an accurat

- ❖ "lazy" respondent gives an "average"

- ❖ question requires memory/recall

- ❖ proxy respondents are used, i.e.
  someone other than the respondent

Interviewer

- ❖ Different interviewers administe
  ways

- ❖ Differences occur in reactions
  different interviewers, e.g. to
  own sex or own ethnic group

- ❖ Inadequate training of interviewe

- ❖ Inadequate attention to the selec

- ❖ There is too high a workload for

Measurement E

❖ The question is unclear, ambiguo
answer

❖ The list of possible answers suggest
instrument is incomplete

❖ Requested information assumes
unfamiliar to the respondent

❖ The definitions used by the survey
those used by the respondent (e.g. h
employees do you have? See next slid

METHODS OF RED...
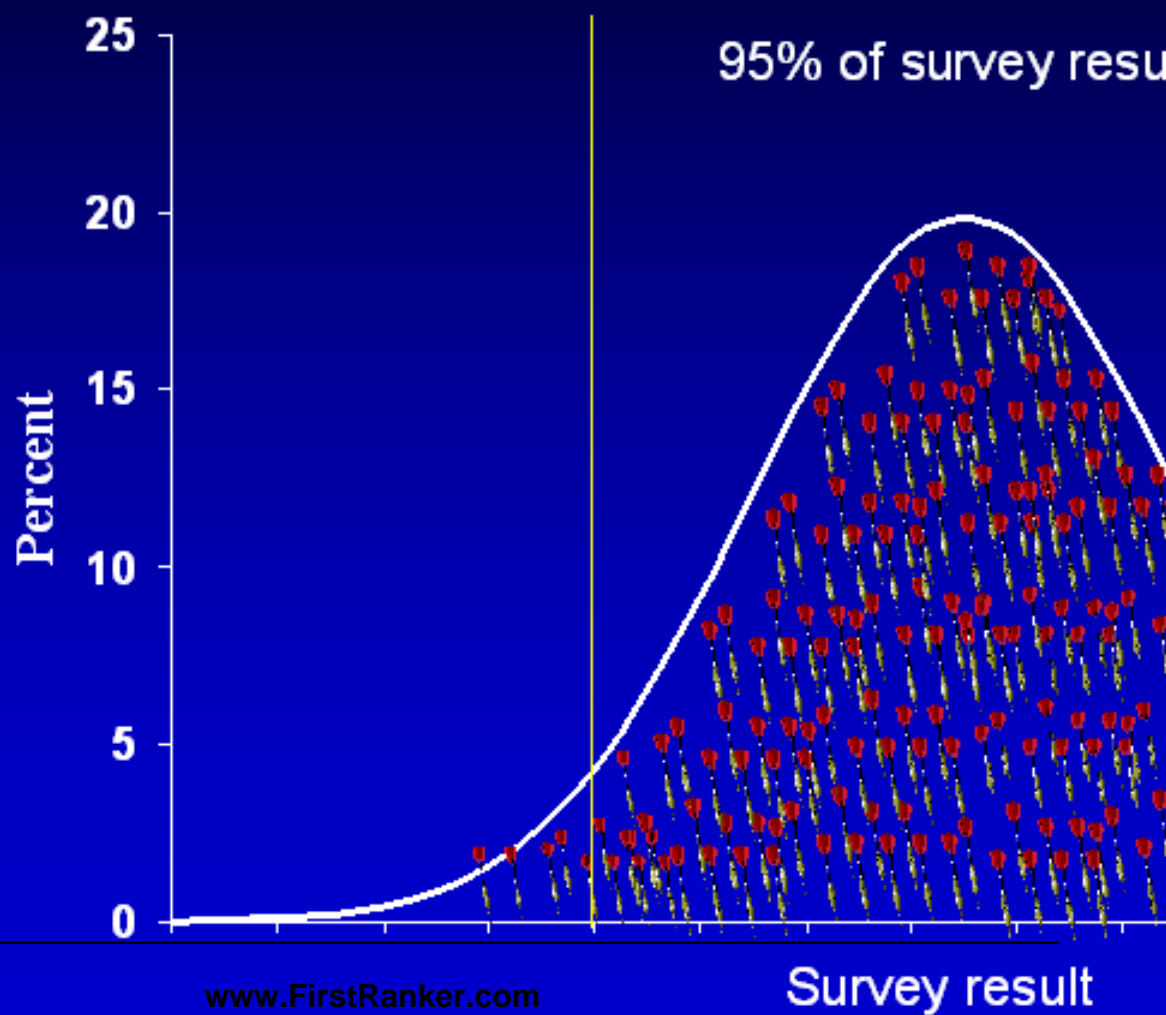## SAMPLING ERR...

◉ Specific problem selection.

◉ Systematic documentation of relate...

◉ Effective enumeration.

◉ Effective pre testing.

◉ Controlling methodological bias.

◉ Selection of appropriate sampling t...

NON-SAMPLING ERR

◉ Non-sampling errors refers to biases mistakes in selection of sample.

◉ **CAUSES FOR NON-SAMPLING ERROR**

➢ Sampling operations

➢ Inadequate of response

➢ Misunderstanding the concept

➢ Lack of knowledge

➢ Concealment of the truth.

➢ Loaded questions

➢ Processing errors

➢ Sample size

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