

# **Data collection Techniques and Tools**

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# Talk Plan

- **Introduction**
- **Constituents of data collection**
- **Sampling techniques-types & stages**
- **Data collection tools**
- **Conclusions**

# Introduction

- Data collection technique is the one of the core components of research planning
- It depends on the types of study & research design
- It must be clearly mentioned in the methodology with reasons
- It must be well described in the procedure

# Constituents of data collection technique

## 4 major constituents

- Ascertainment technique or sampling
- Selection &/or development of data collection tools
- Fixing data collection procedure
- Organizing data collection team- who will do what

# Sampling

## Definition

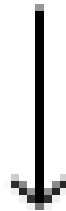
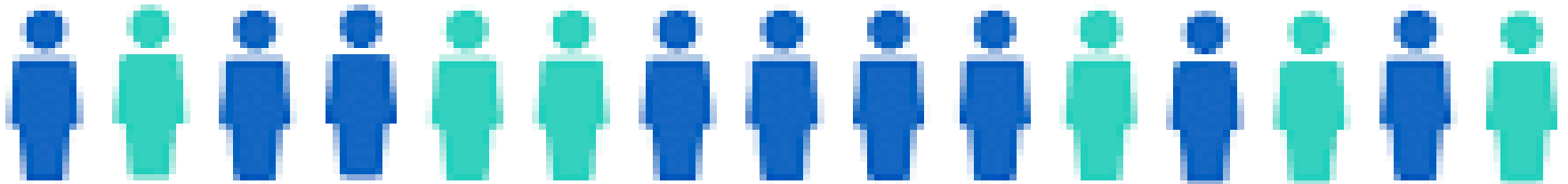
Sampling is the process of selecting a subset of population for the purpose of drawing conclusion

## Purpose of sampling

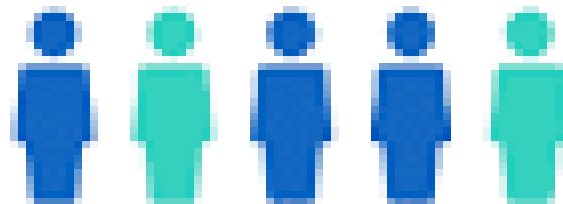
to achieve maximum reliability within a given source

Here, the term “representative” of the whole population is the key factor whatever the sampling technique is chosen

# Population



# Sample



# Sampling

**For sampling defining the following is necessary:**

- Population-N
- Sample-n
- Sampling unit-individual
- Sampling frame-Source/list of sample units
- Sampling fraction-  $n/N$
- Sample size- large sample vs power
- Participation rate

# Sampling

## Common Sampling techniques are:

- **Probability Sampling**- Sampling frame required, representative, generalizable results , time-consuming, expensive, useful for epidemiological research, hypothesis testing
- **Non-probability Sampling**- No sampling frame required, non-representative, non-generalizable, more convenient, cheaper, useful for exploratory research and hypothesis generation



# Sampling

## Probability Sampling

- Simple Random- Random table
- Systemic Random-Regular interval- $x/n$ th
- Stratified Random- for subgroup representation
- Cluster- subgroup/cluster as unit
- Multistage-

# Sampling

## **Non-probability Sampling**

- Purposive/ Deliberate/ Convenience/ Judgmental
- Consecutive
- Quota/Proportionate
- Snow ball

# Sampling

- Can the population and the sample be the same ?

# Qualitative VS Quantitative sampling

Qualitative sampling	Quantitative sampling
Selected elements are representative	Select elements according to research of target population focus
Generalize from sample to population	Generate detailed and subjective understanding
Make claims about the population	Answer research questions
Test theories within population	Build theories

# Stages of Sampling

- **Stage One:** Decide whether the study needs a sample, or whether it is possible to have the whole population
- **Stage Two:** Identify the population, its important features (the sampling frame) and its size

# Stages of Sampling

- **Stage Three:** Identify the kind of sampling strategy that is required (e. g. probability, non-probability, or mixed methods sample)
- **Stage Four:** Ensure that access to the sample is guaranteed. If not, be prepared to modify the sampling strategy

# Stages of Sampling

- **Stage Five:** For non-probability sampling, identify the people whom you require in the sample
- **Stage Six:** Calculate the numbers required in the sample, allowing for non-response, incomplete or spoiled responses and sample mortality
- **Stage Seven:** Decide how to gain and manage access and contact
- **Stage Eight:** Be prepared to adjust the data, once collected

# Sampling Bias

## Factors related to sampling bias

- Predetermined sampling techniques are deviated from
- Out dated sampling frame is used
- Difficult to reach population group are omitted
- Participation rate is low
- Response rate is low



# Data collection Tools

## Types

- Selecting from available tools
- Developing necessary tools

# Data collection Tools

## Selecting tools

- Adopted/validated
- Objective based- right tools for right task
- Reasons for selection

# Data collection Tools

## Developing tools

- Define the purpose
- Fix the variables- based on the objectives
- Define the variables
- Decide types- structured/semistructured
- Prepare contents
- Check the contents
- Test the contents

# Conclusions

- Perfect sampling is crucial for a research particularly establishing representativeness of the population
- Using appropriate tools only can ensure in achieving the objectives
- In other words, sound methodology is the firm base of the findings either in implication or generalization

***Let us open our inquisitive and analytical  
mind for evidence based findings***

**Thank you!**