



# SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



## DEPARTMENT OF MECHANICAL ENGINEERING

### 19MEE304 – TOTAL QUALITY MANAGEMENT

#### IIIYEAR - V SEM

#### UNIT 3 – STATISTICAL PROCESS CONTROL

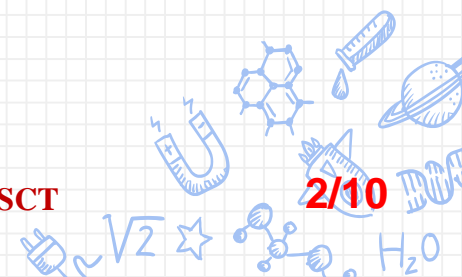
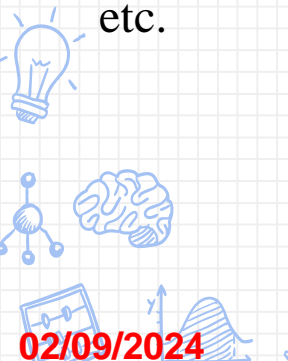
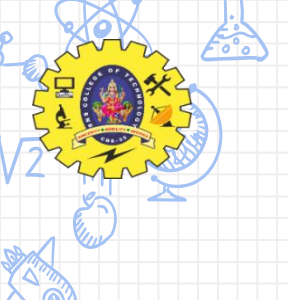
#### TOPIC – Population & Sample



# Population

Population means the aggregate of all elements under study having one or more common characteristic, for example, all people living in India constitutes the population.

The population is not confined to people only, but it may also include animals, events, objects, buildings, etc.



# Population

The different types of population are discussed as under:

**Finite Population:** When the number of elements of the population is fixed and thus making it possible to enumerate it in totality, the population is said to be finite.

**Infinite Population:** When the number of units in a population are uncountable, and so it is impossible to observe all the items of the universe, then the population is considered as infinite.

**Existent Population:** The population which comprises of objects that exist in reality is called existent population.

**Hypothetical Population:** Hypothetical or imaginary population is the population which exists hypothetically.

# Population

## Examples

The population of all workers working in the sugar factory.

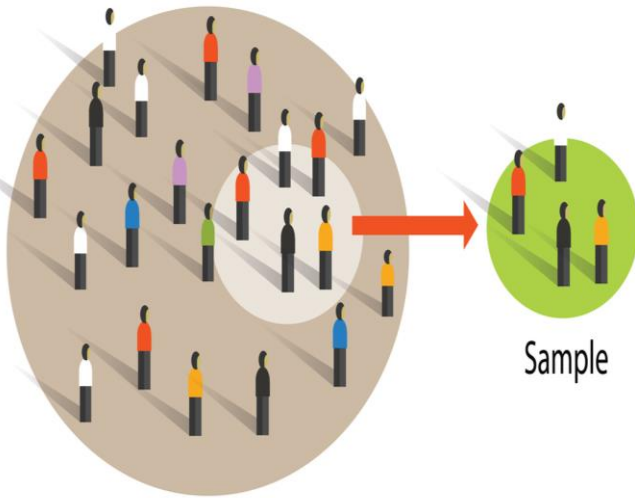
The population of motorcycles produced by a particular company.

The population of mosquitoes in a town.

The population of tax payers in India.

# Sample

Target Population



It means a part of population chosen at random for participation in the study.

The sample so selected should be such that it represents the population in all its characteristics, and it should be free from bias, so as to produce a miniature cross-section, as the sample observations are used to make generalizations about the population..

# Population Vs Sample

BASIS FOR COMPARISON	POPULATION	SAMPLE
Meaning	Population refers to the collection of all elements possessing common characteristics, that comprises universe.	Sample means a subgroup of the members of population chosen for participation in the study.
Includes	Each and every unit of the group.	Only a handful of units of population.
Characteristic	Parameter	Statistic
Data collection	Complete enumeration or census	Sample survey or sampling
Focus on	Identifying the characteristics.	Making inferences about population.

# Key Difference

The difference between population and sample can be drawn clearly on the following grounds **(5 Key Points)**

1. The collection of all elements possessing common characteristics that comprise universe is known as the population. A subgroup of the members of population chosen for participation in the study is called sample.
2. The population consists of each and every element of the entire group. On the other hand, only a handful of items of the population is included in a sample.

# Key Difference

3. The characteristic of population based on all units is called parameter while the measure of sample observation is called statistic.

4. When information is collected from all units of population, the process is known as census or complete enumeration. Conversely, the sample survey is conducted to gather information from the sample using sampling method.

5. With population, the focus is to identify the characteristics of the elements whereas in the case of the sample; the focus is made on making the generalization about the characteristics of the population, from which the sample came from.



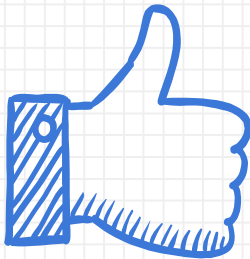
# Conclusion

In spite of the above differences, it is also true that sample and population are related to each other, i.e. sample is drawn from the population, so without population sample may not exist.

Further, the primary objective of the sample is to make statistical inferences about the population, and that too would be as accurate as possible.

The greater the size of the sample, the higher is the level of accuracy of generalisation.





# THANKS!

02/09/2024

POPULATION & SAMPLE/19MEE304 –TQM/GOWTHAM M/MECH/SNSCT

10/10