

Introduction to Statistics

Objective of the session

- At the end of the session the participants will be able appreciate the basic statistical concepts and its applicability in audit:
- Descriptive statistics
- Inferential statistics
- Statistical Sampling

What is Statistics ?

- Statistics is defined as collection , compilation ,analysis and interpretation of numerical data .
- Statistics is the science of data

Why Statistics?

- To develop an appreciation for variability and how it effect product ,process and system.
- It is estimating the present ; predicting the future
- Study methods that can be used to solve problems ,build knowledge.
- Statistics make data into information
- Develop an understanding of some basic ideas of statistical reliability , stochastic process (probability concepts) .
- Statistics is very important in every aspects of society (Govt., People or Business)

Basic terms

- Measurement :assignment of numbers to something
- Data: collection of measurements
- Sample: collected data
- Population : all possible data
- Variable : property with respect to which data from a sample differ in some measurable way

Types of statistics

- Descriptive statistics :use to organize and describe a sample /population
- Inferential statistics :use to extrapolate (estimate) from a sample to larger population

Probability Statistics

**Science of chance,
uncertainties**

what is possible ,
what is probable

mathematical formulas

Science of data

collecting, processing,
presentation, analysing
interpretation of data

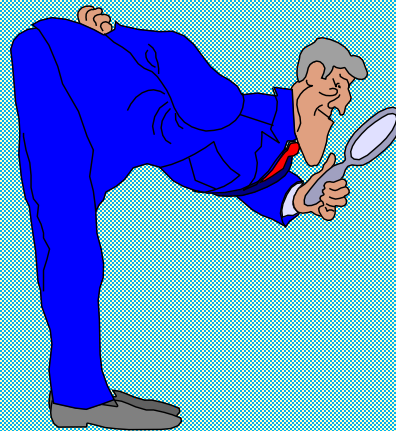
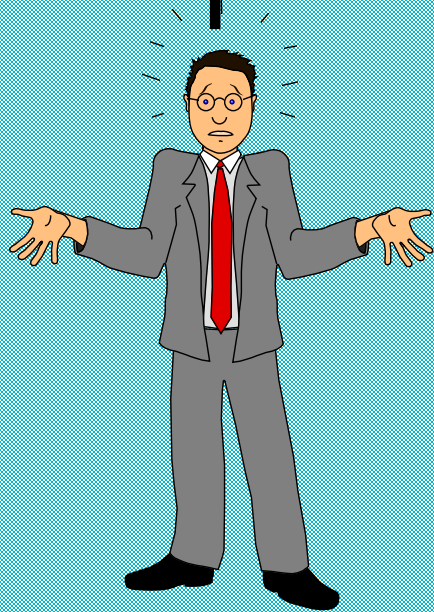
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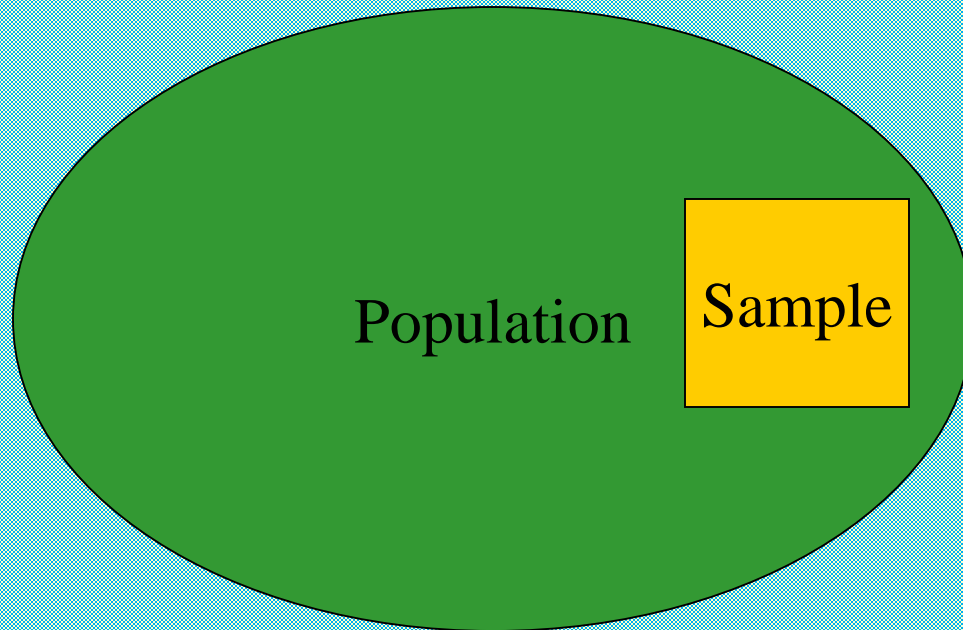
Data

Statistical
Tools

Information



Population & Sample



Population

The set of data (numerical or otherwise) corresponding to the **entire** collection of units about which information is sought

Samples

Sample Definition:

A Subset of a population.

Representative Sample

- **Has the characteristics of the population**

Census - A Sample that Contains all Items in the Population

Why Sampling?



In most studies, it is difficult to obtain information from the entire population because of various reasons. We rely on samples to make estimates or inferences related to the population.

Statistical Inference

Drawing Conclusions (Inferences) about a Population Based on an examination of a Sample taken from the population