

# **Introduction to Statistics**

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# Outline

## 1 Introduction

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# What is Statistics?

- Collecting data
- Gaining insights from data
- Making decisions based on the insights gained from the data

# Definition

Statistics can be defined as the art and science of:

- collecting, cleaning and organizing data
- summarizing and analyzing data
- presenting the summary or the analysis
- interpreting the analysis results
- gaining insights through analysis of data
- and finally, drawing valid conclusions and making sound decisions through the use of data.

# Why Statistics is Necessary

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# Popuation and Sample

- **Population** is the collection/set of all items or individuals of interest in a given study
- **Sample** is a *representative* portion of the population

For example:

- A study may target all the people in Bangladesh. However, it is unfeasible to collect information of everyone in the country in a timely or cost-effective way
- Therefore, data is collected from only a small portion of people from *all over the country*