Why Study Statistics?

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Goals

- Explain how decisions are often based on incomplete information

- Explain key definitions:
    - ♦ Population vs. Sample
    - ♦ Parameter vs. Statistic
    - ♦ Descriptive vs. Inferential Statistics

Dealing with Uncertainty

Everyday decisions are based on incomplete information

Consider:

- The price of DSE stock *will* be higher in six months than it is now.
- An infectious disease *will* outbreak in summer.

Key Definitions

- A population is the collection of all items of interest or under investigation
    - N represents the population size

- A sample is an observed representative subset of the population
    - n represents the sample size

- A parameter is an unknown characteristic of a population

- A statistic is a known characteristic of a sample

Examples of Populations

- Names of all registered voters in Bangladesh

- Incomes of all families living in Dhaka city

- Grade point averages of all the students in the NSU university for any semester

Descriptive and Inferential Statistics

Two branches of statistics:

- ## Descriptive statistics
  - Collecting, summarizing, and processing data to transform data into information

- ## Inferential statistics
  - provide the bases for predictions, forecasts, and estimates that are used to transform information into knowledge