Chapter 1: **Introduction to Statistics**

What is Statistics

The science of collecting, organizing, analyzing, and interpreting **DATA** in order to make decisions.

Descriptive Statistics:
Involves organizing, summarizing, and displaying data.

e.g. Tables, charts, averages

Inferential Statistics
Involves using ***sample data*** to draw conclusions about a ***population.***

WHAT IS STATISTICS

Population

the complete collection of all individuals to be studied.
the collection is complete in the sense that it includes *all* of the individuals to be studied

Census

Collection of data from *every* member of a population

Sample

Sub-collection of members selected from a population

WHAT IS DATA

What is data

Consist of information coming from observations, counts, measurements, or responses.

Parameter

a numerical measurement describing some characteristic of a population.

Statistic

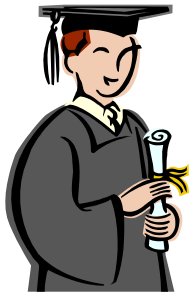
a numerical measurement describing some characteristic of a sample.

Type of data

Qualitative Data

Quantitative data

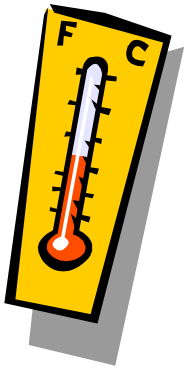
Major



Place of birth

Age

Temperature



Discrete

Continuous

DATA COLLECTION: THE BASIC METHODS

(1) Retrospective study using historical data

(2) Observational study

A researcher observes and measures characteristics of interest of part of a population.

(3) Experiment

A treatment is applied to part of a population and responses are observed.

Errors

Sampling error

the difference between a sample result and the true population result; such an error results from chance sample fluctuations.

Non-sampling error

sample data incorrectly collected, recorded, or analyzed (such as by selecting a biased sample, using a defective instrument, or copying the data incorrectly).