

# **THE NATURE OF STATISTICS**

(Weiss, Chapter 1)

## **1.1 Two kinds of statistics**

### **Statistics**

Body of principles and methods concerned with

Two basic areas:

#### **1. Descriptive Statistics**

Deals with methods of

Ex.

#### **2. Inferential Statistics**

Body of methods for drawing conclusions about a

## **Key Statistical Concepts**

- **Population**
- **Parameter**
- **Sample**
- **Statistics**

## **Example**

Population :

Parameters :

Sample :

Statistic :

## Classifying Statistical Studies

- **Descriptive**

Describes & summarizes data.  
( ).

Ex. The voting results for the

A bank manager determines the

- **Inferential**

Ex. A consumer group wants information  
about

Biologist interested on body size of

## 1.3 Simple Random Sampling (SRS)

Each item of a population is

Two types:

1. SRS with replacement

2. SRS without replacement

**Here:** *Assume SRS without replacement.*

**How large** should be a **sample**? Often surprisingly small.

Pre-election polls:

Population

Sample

Error

## 1.4 Other Sampling Designs

- Systematic Sampling
- Cluster Sampling
- Stratified Sampling
- Multistage Sampling

## 1.5 Experimental Design

- **Observational Studies**

characteristics and  
take measurements.

- **Design Experiment**

and then observe characteristics and take  
measurements.