

Introduction

Data

Data

Collection

Errors

Statistical
Thinking

Chapter 1: Introduction to Statistics

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Statistical Thinking

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*.

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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

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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**.

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Type of data

Qualitative Data

Major



Place of birth

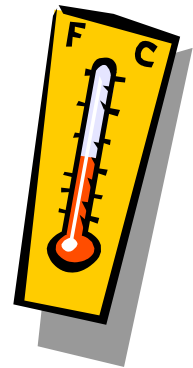


Quantitative data

Age



Temperature



Discrete

Continuous

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(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.

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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).