



Statistics for Business and Economics



Why Study Statistics?

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Dealing with Uncertainty




Everyday decisions are based on incomplete information

Consider:

- The price of IBM stock *will* be higher in six months than it is now.
- If the federal budget deficit is as high as predicted, interest rates *will* remain high for the rest of the year.

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Dealing with Uncertainty (continued)




Because of uncertainty, the statements should be modified:

- The price of IBM stock is *likely* to be higher in six months than it is now.
- If the federal budget deficit is as high as predicted, it is *probable* that interest rates will remain high for the rest of the year.

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Tools of Business Statistics


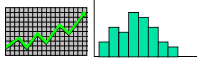


- **Descriptive statistics**
 - Collecting, presenting, and describing data
- **Inferential statistics**
 - Drawing conclusions and/or making decisions concerning a population based only on sample data

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Descriptive Statistics





- **Collect data**
 - e.g., Survey 
- **Present data**
 - e.g., Tables and graphs 
- **Summarize data**
 - e.g., Sample mean = $\frac{\sum X_i}{n}$

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Inferential Statistics



- **Estimation**
 - e.g., Estimate the population mean weight using the sample mean weight 
- **Hypothesis testing**
 - e.g., Test the claim that the population mean weight is 120 pounds 

Inference is the process of drawing conclusions or making decisions about a population based on sample results

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Populations and Samples

- A Population** is the set of all items or individuals of interest
 - Examples:** All likely voters in the next election
 All parts produced today
 All sales receipts for November
- A Sample** is a subset of the population
 - Examples:** 1000 voters selected at random for interview
 A few parts selected for destructive testing
 Every 100th receipt selected for audit

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Population vs. Sample

Population

Sample

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Data Types

Data

Qualitative (Categorical)

Examples:

- Marital Status
- Political Party
- Eye Color

(Defined categories)

Quantitative (Numerical)

Discrete

Examples:

- Number of Children
- Defects per hour

(Counted items)

Continuous

Examples:

- Weight
- Voltage

(Measured characteristics)

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Data Types

- Time Series Data**
 - Ordered data values observed over time
- Cross Section Data**
 - Data values observed at a fixed point in time

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Data Types

	Sales (in \$1000's)			
	2003	2004	2005	2006
Atlanta	435	460	475	490
Boston	320	345	375	395
Cleveland	405	390	410	395
Denver	260	270	285	280

Cross Section Data

Time Series Data

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Data Measurement Levels

Measurements

Ratio/Interval Data

Highest Level
Complete Analysis

↑

Rankings
Ordered Categories

Ordinal Data

Higher Level
Mid-level Analysis

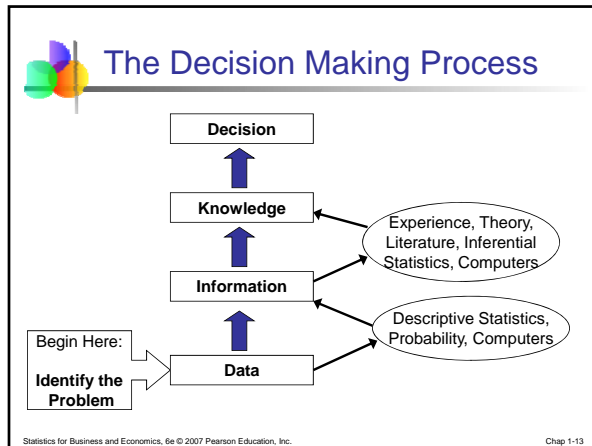
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Categorical Codes
ID Numbers
Category Names

Nominal Data

Lowest Level
Basic Analysis

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Task

- Make an article about **statistics roles in business research**. Article should be typed with font times new roman 12 or Arial 11, space 1.5, paper size A4, and minimum length 3 pages.
- Article must be submitted on second meeting.
- **Remember, lateness cannot be accepted!**

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