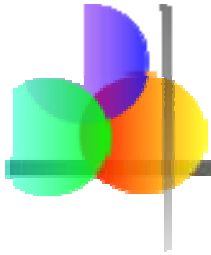


# Statistics for Business and Economics



## Why Study Statistics?



# Dealing with Uncertainty

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**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.



# 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.



# Tools of Business Statistics

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- **Descriptive statistics**

- Collecting, presenting, and describing data

- **Inferential statistics**

- Drawing conclusions and/or making decisions concerning a population based only on sample data



# Descriptive Statistics

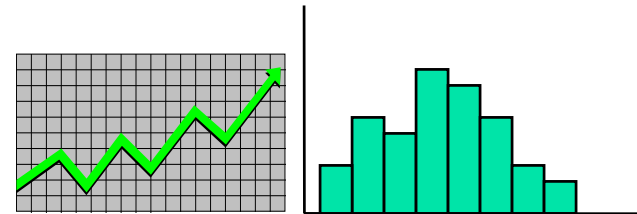
- Collect data

- e.g., Survey



- Present data

- e.g., Tables and graphs



- Summarize data

- e.g., Sample mean =  $\frac{\sum X_i}{n}$



# 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**



# Populations and Samples

- A **Population** is the set of all items or individuals of interest

■ <b>Examples:</b>	All likely voters in the next election All parts produced today All sales receipts for November
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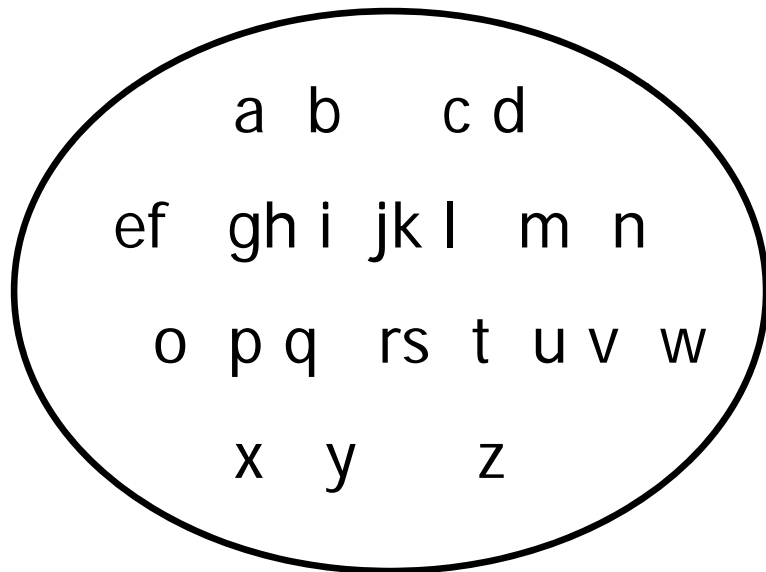
- A **Sample** is a subset of the population

■ <b>Examples:</b>	1000 voters selected at random for interview A few parts selected for destructive testing Every 100 <sup>th</sup> receipt selected for audit
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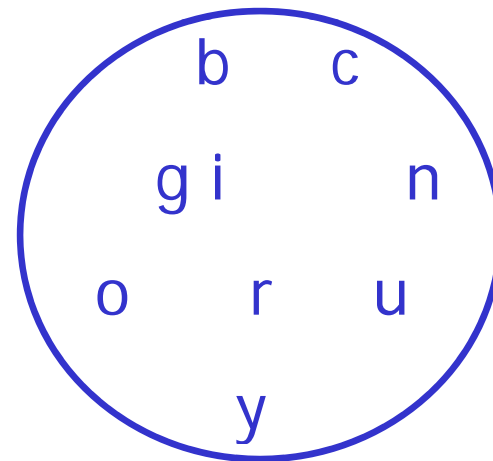


# Population vs. Sample

## Population



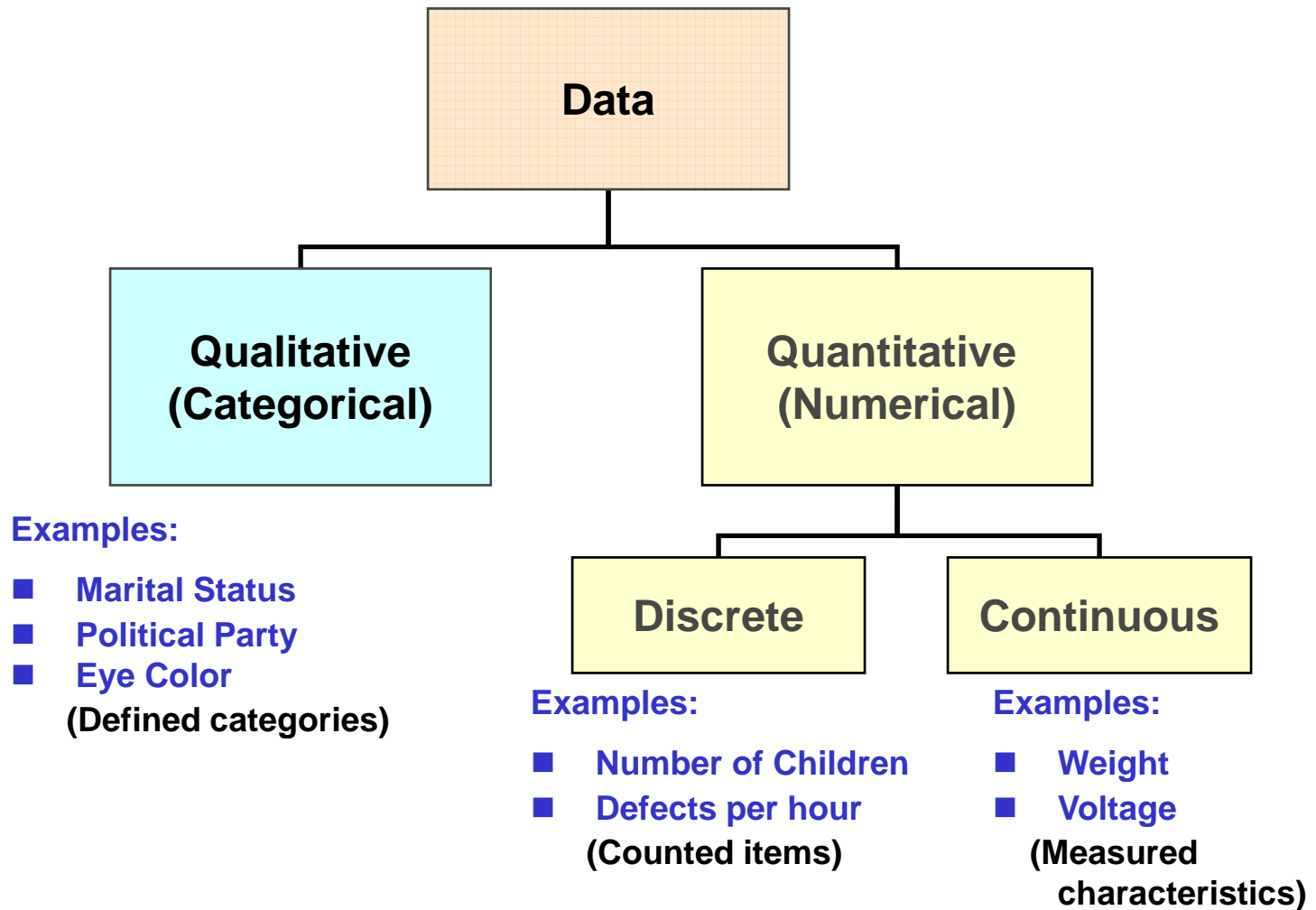
## Sample







# Data Types





# Data Types

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



# Data Types

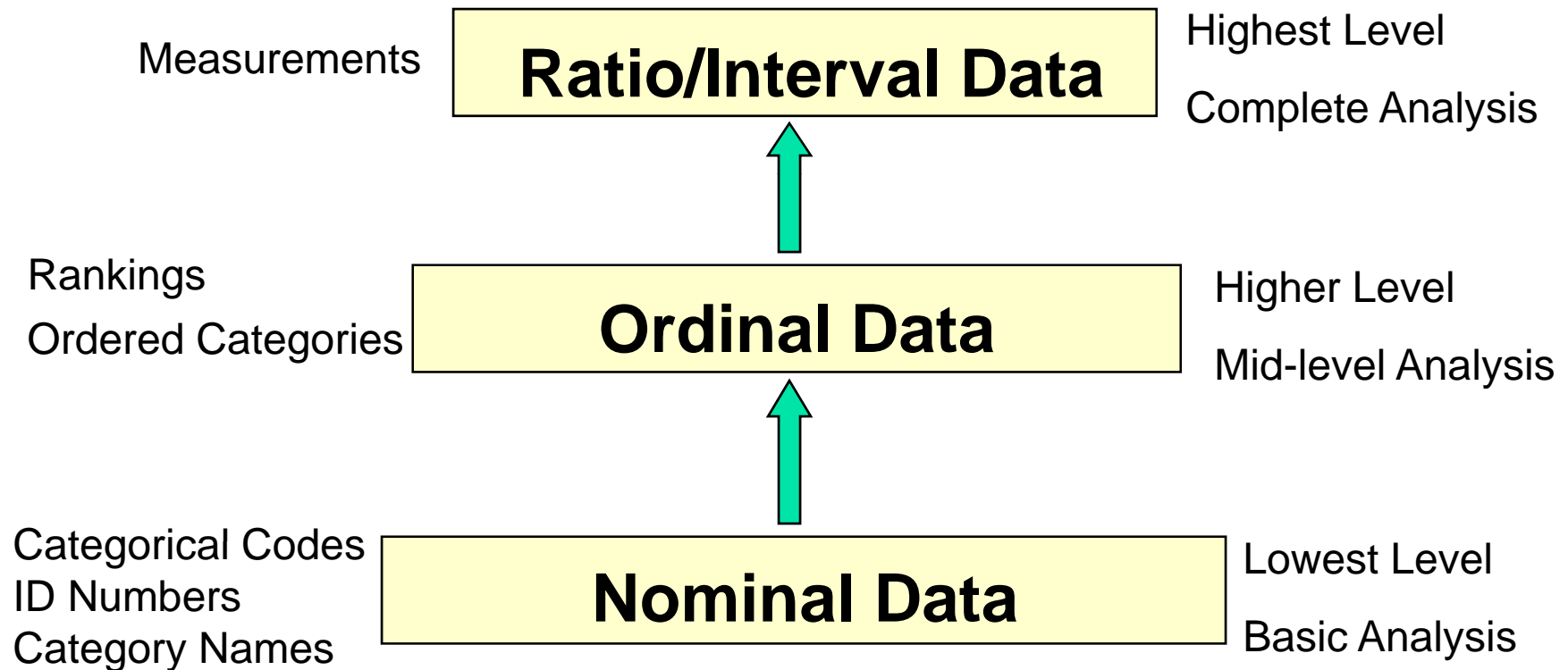
	Sales (in \$1000's)			
	2003	2004	2005	2006
Atlanta	435	460	475	490
Boston	320	345	375	395
Cleveland	405	390	410	395
Denver	260	270	285	280

**Time  
Series  
Data**

**Cross Section  
Data**

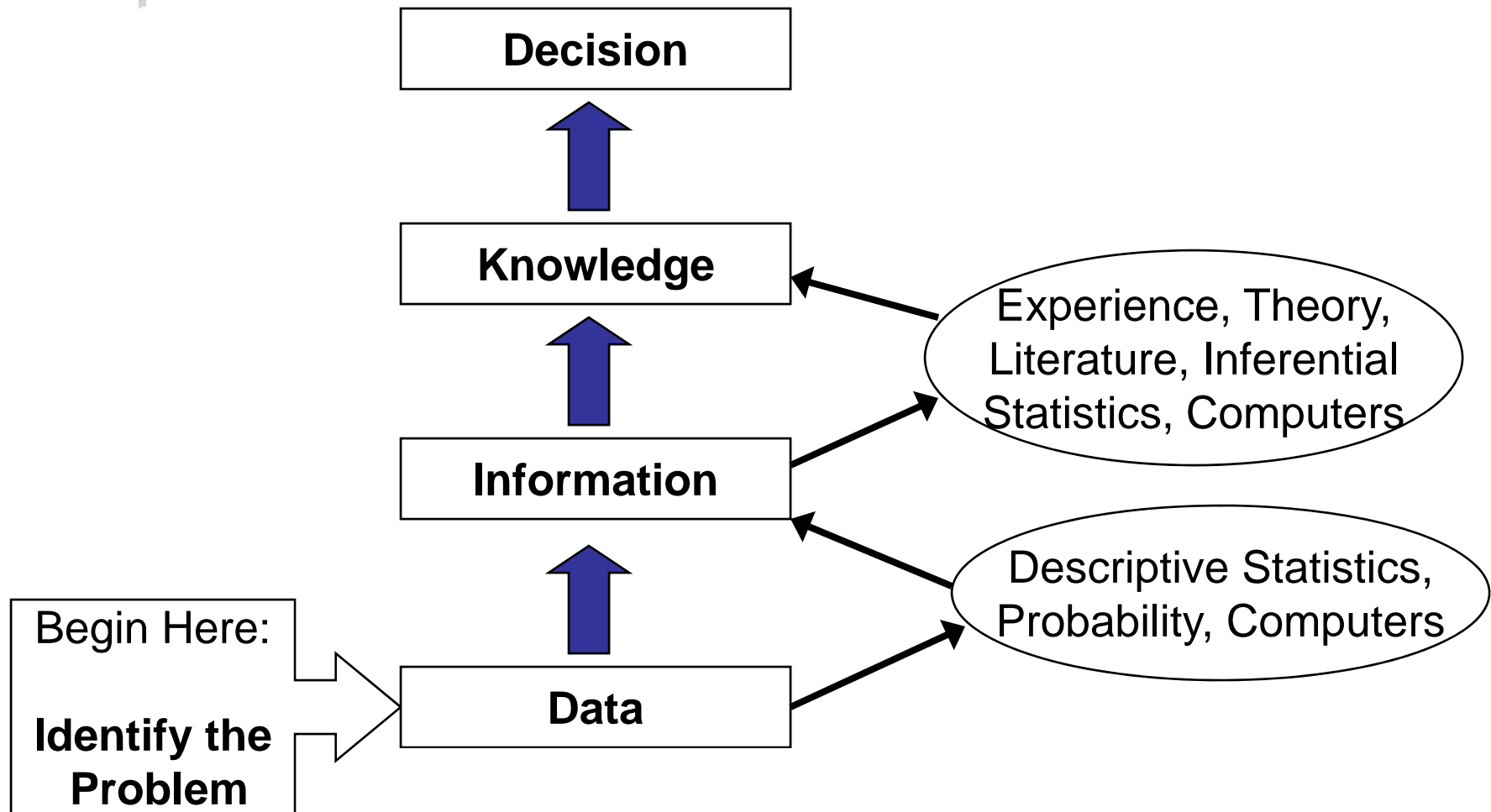


# Data Measurement Levels





# The Decision Making Process





# Task

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- 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!**