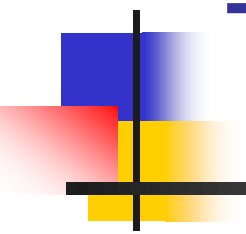
Business Statistics: Quantitative Methods and Techniques



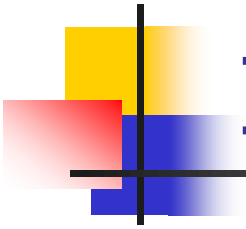
Lecture 2: Introduction to Business Statistics

Overview of Business Statistics

- Business statistics is a broad topic.
  - Statistics
  - Computer Science
- Business statistics is widely applied.
  - Marketing
  - Human resource management
  - Economics
  - Finance
  - Health, sports, and politics
- Business statistics combines qualitative reasoning with quantitative tools.
  - Identify key business problems
  - Translate data analysis into decisions
  - Improve business performance

Overview of Business Statistics

- Business statistics begins with understating the business context.
  - Ask the right questions
  - Identify the appropriate analysis
  - Communicate information
- Numerical results are not very useful unless they are accompanied with clearly stated actionable business insights.
- There are three different types of analytics techniques.
  - Descriptive analytics: what has happened?
  - Predictive analytics: what could happen in the future?
  - Prescriptive analytics: what should we do?



Introduction to statistics

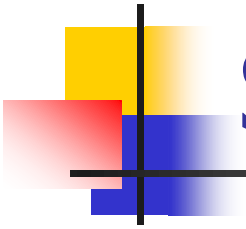
- What is statistics?
  - aim: making statements about real world phenomena
  - "statistics is a way to get information from data"
  - collecting, analyzing and interpreting data…
    - …in order to get insight into phenomena…
    - …to assist in decision making processes

Intuition check: Purchase history

Some Basic Concepts

- **Population**: The entire set of things of interest.
  - Parameter: A property descriptive of the population
    - Population mean

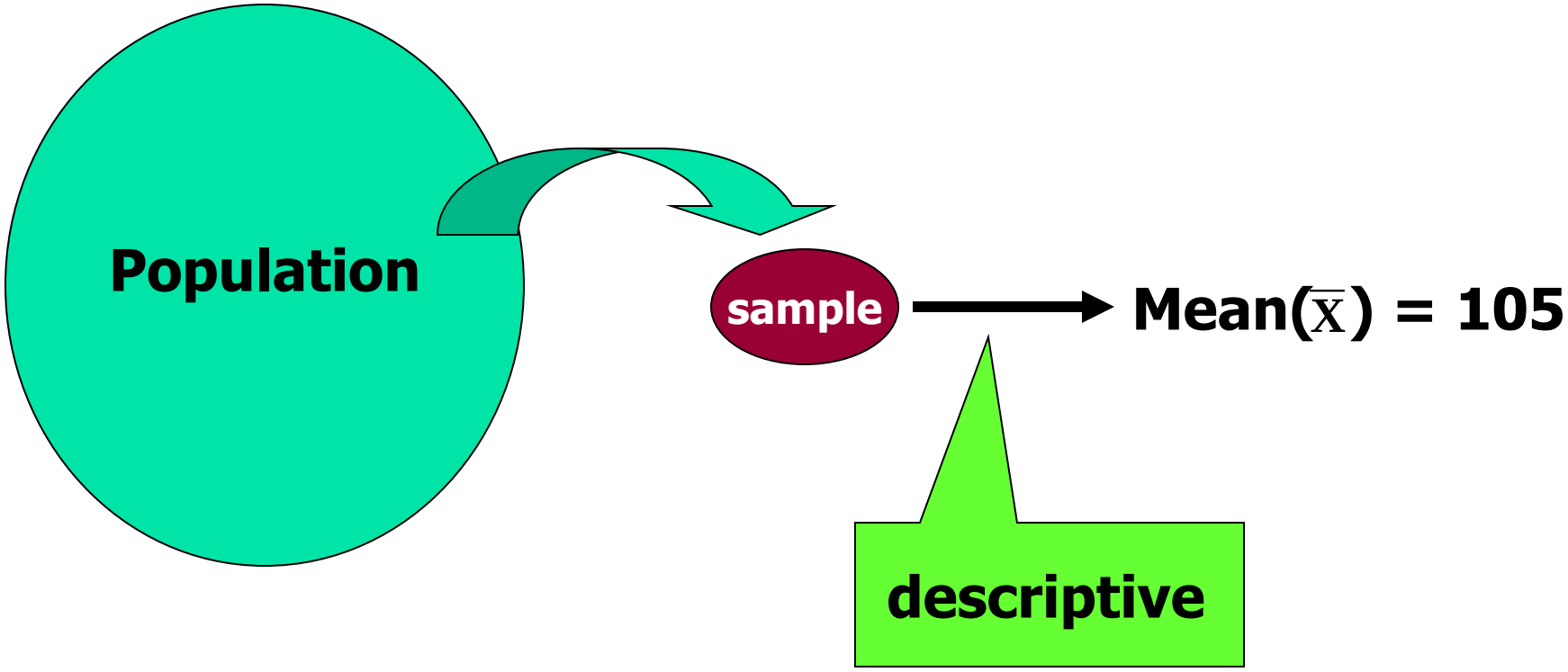
- **Sample**: The part of the population. Typically this provides the data we will look at.
  - Estimate: A property of a sample
    - Sample mean



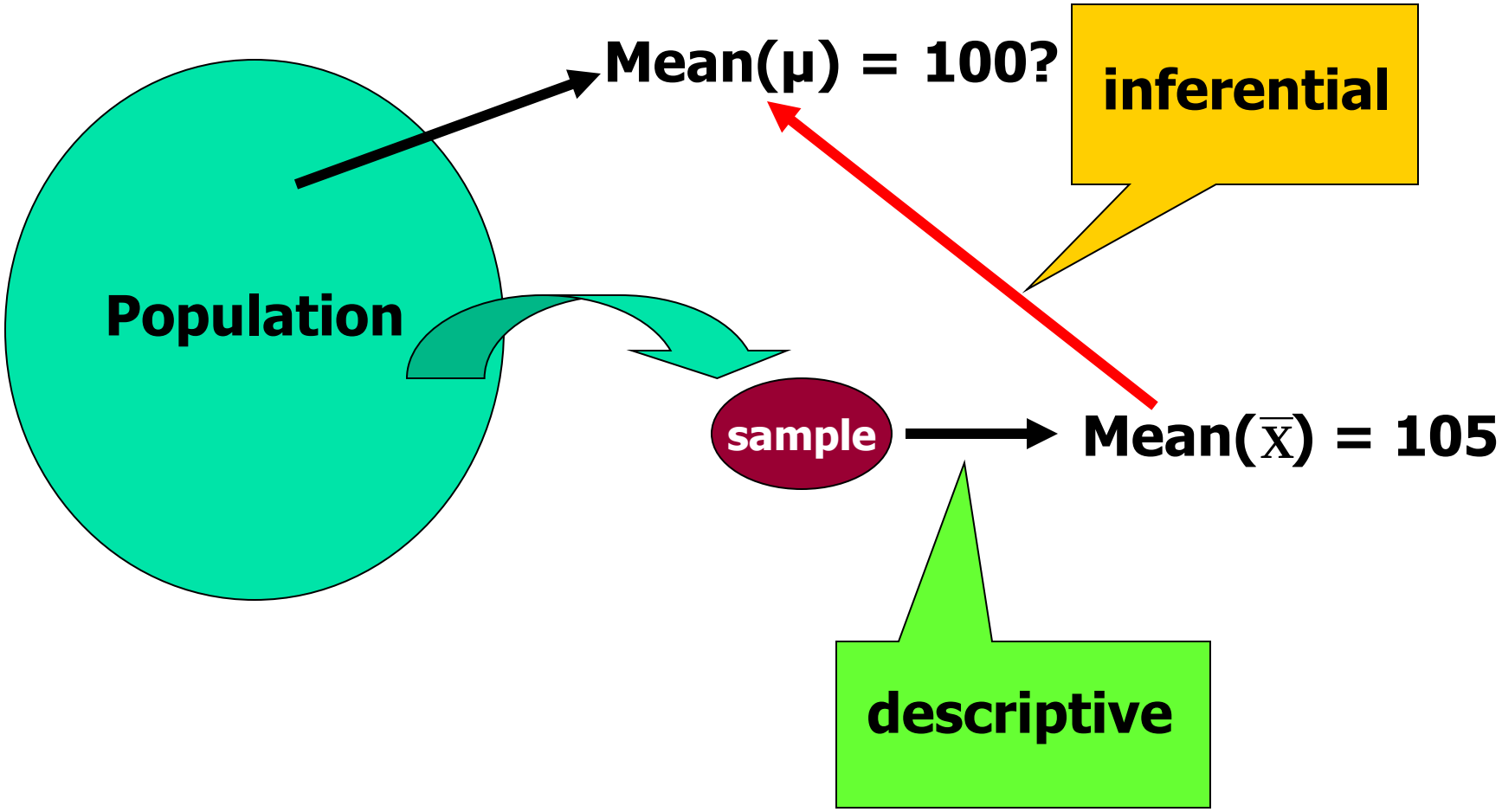
Some Basic Concepts

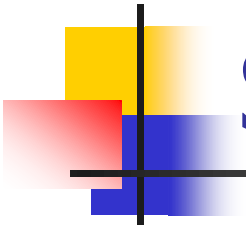
- Descriptive Statistics:
  - Summarize/describe the properties of samples (or populations when they are completely known)
- Inferential Statistics:
  - Draw conclusions/make inferences about the properties of populations from sample data

Descriptive vs. Inferential Statistics



Descriptive vs. Inferential Statistics





Some Basic Concepts

- **Variable**:
  - Something that varies
  - A condition or characteristic that can have different values
  - Constant

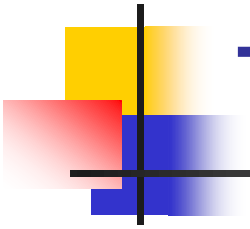
Types of Variables

- Nominal
- Ordinal

Categorical var. (범주형 변수)
(Qualitative 정성)

- Interval
- Ratio

Numerical var. (수치형 변수)
(Quantitative정량)



Types of Variables

- Dependent variables (Y):
  - Outcomes/Responses
  - Predicted variables
- Independent variables (X):
  - Aka *factors* in experimental designs
  - Aka predictors/covariates


Pramer
Pramer
어떤 상황에서도 절대
흔들리지 않는다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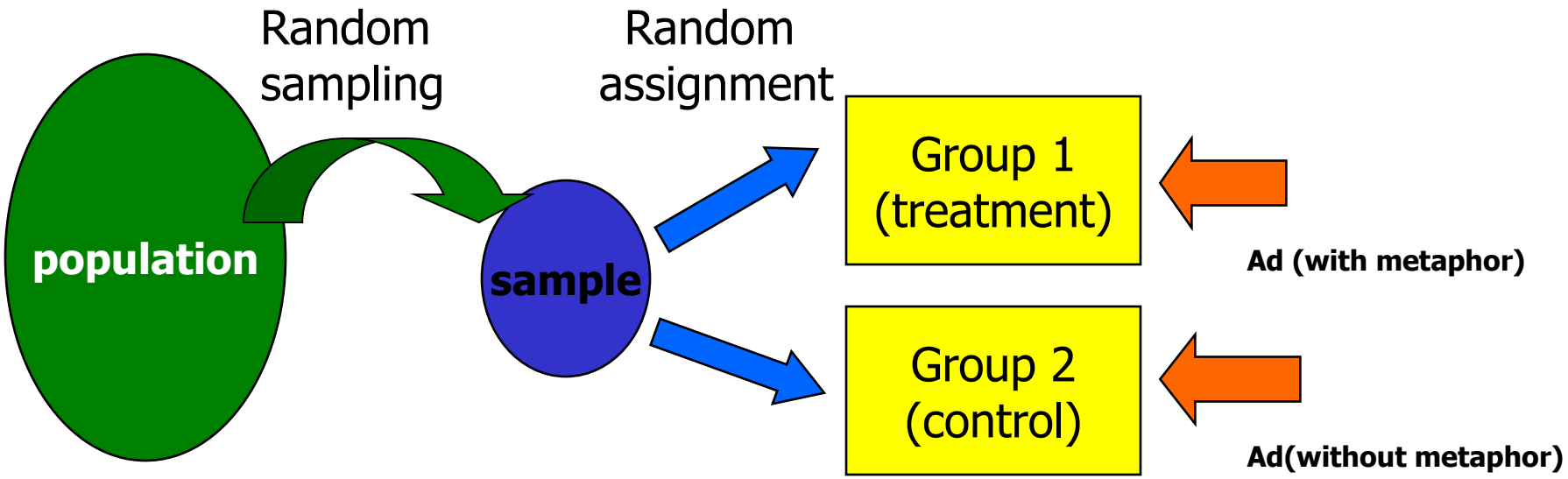
We want to test the effect of visual metaphor on consumers' advertising response.



Y = Consumer preference (1-10)

X = Ad (0 = no, 1 = yes)

Univariate vs. Multivariate

- Univariate
  - Only one DV, can have multiple IVs
- Multivariate
  - Multiple DVs, regardless of number of IVs