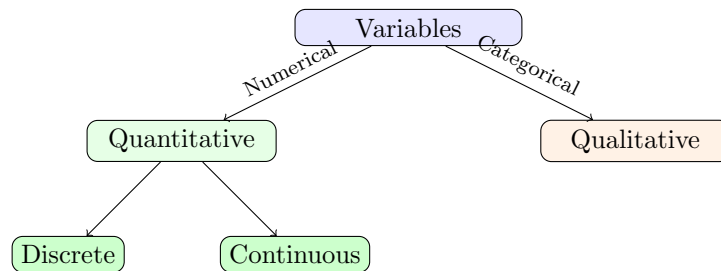# 08. Types of Variables

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## Definition of a Variable

- A **variable** is a property that can take different values

- Represents characteristics or attributes that can vary

- Examples: Age, height, number of children, gender

## Types of Variables



### 1. Quantitative Variables

Represent numerical measurements. Further divided into:



- Whole numbers only

- Countable quantities

- **Examples:**
  - Number of children
  - Bank accounts
  - Students in class

- Any numerical value

- Measurable quantities

- **Examples:**
  - Height (175.5 cm)
  - Weight (72.3 kg)
  - Age (25.7 years)

### 2. Qualitative (Categorical) Variables

- Represent categories or qualities

- Non-numerical values

- No subdivisions

- **Examples:**
  - Gender: Male, Female
  - Colors: Red, Green, Blue
  - States: California, Texas

## Key Differences

| Feature | Discrete | Continuous |
|---|---|---|
| Values | Whole numbers only | Any real number |
| Examples | Number of houses (5 houses) | Height (175.5 cm) |
| Fractions | Impossible (no 2.5 children) | Possible (72.5 kg) |
| Measurement | Counting | Measuring |

## Why Classification Matters

- Determines appropriate statistical methods

- Influences data visualization choices

- Critical for accurate analysis

- Common interview/assessment topic

Variable = Property with varying values

Analysis depends on type