

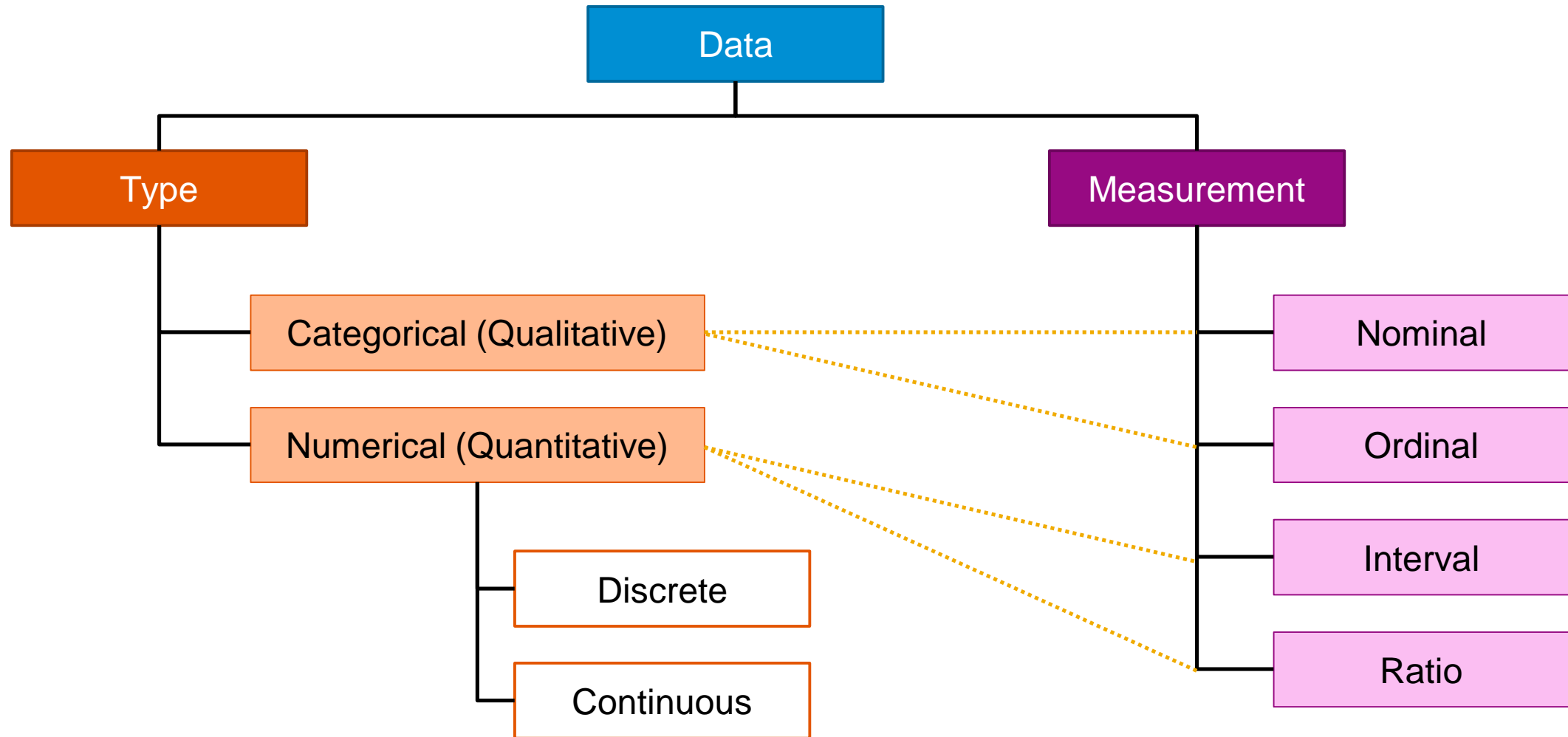


Week 2: Descriptive Statistics

## Unit 1: Data Types

# Data Types

## Introduction



### Quantitative or qualitative

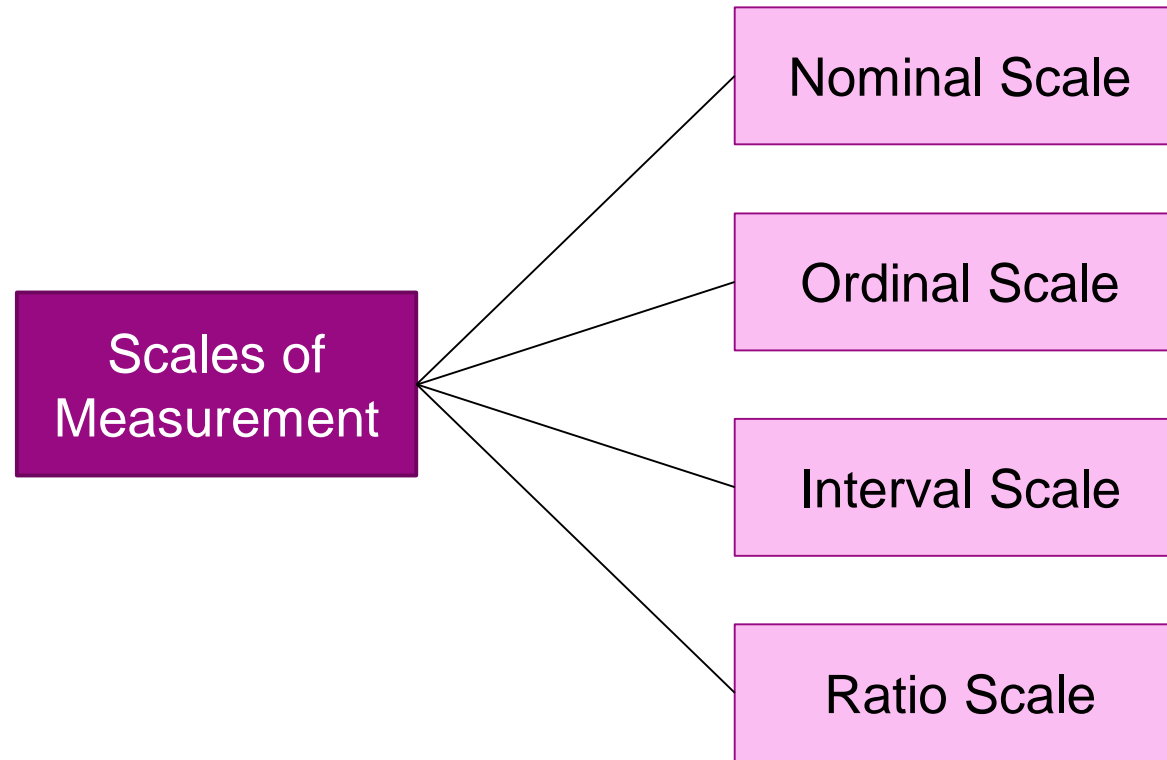
#### Quantitative or Numerical Data

- Age of a person (28 years)
- Height of a person (1m 72cm)
- Exam score (85%)
- Dollar amount of salary

#### Qualitative or Categorical Data

- Gender of a person
- Ethnicity of a person
- Grading system (A, B, C, D)
- Income level (low, medium, high)

## Scales of measurement



## Data Types

### Nominal scale

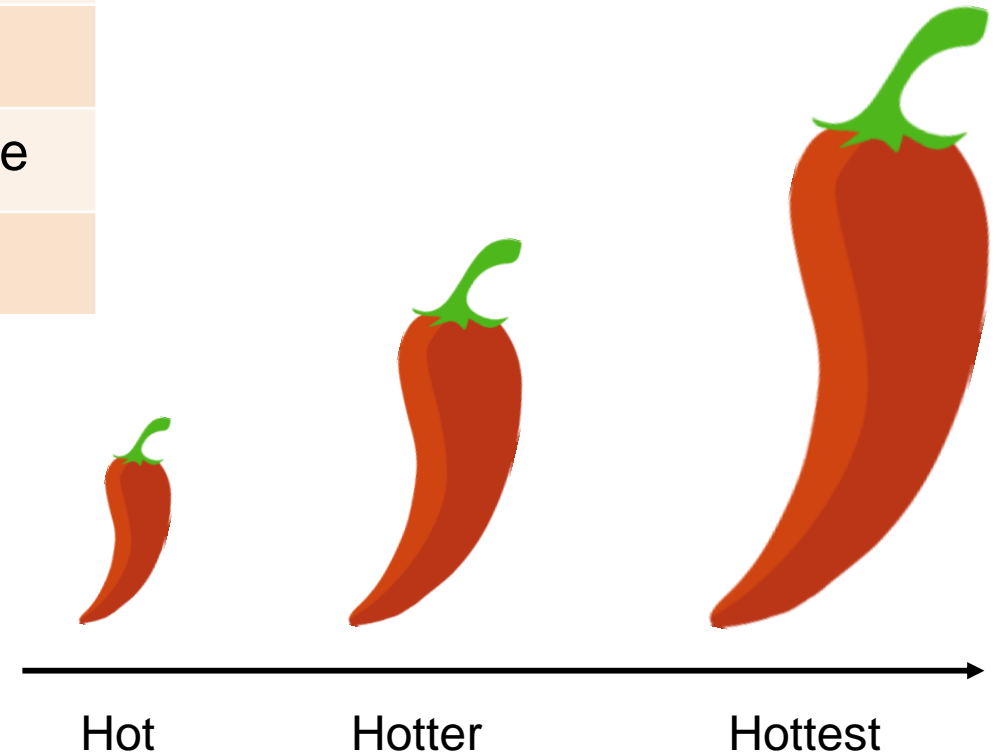
<b>Gender</b>	Male or Female
<b>Ethnicity</b>	Caucasian, African, Asian, or Latino
<b>Marital Status</b>	Married, Divorced, Separated, Single
<b>Payment</b>	Debit, Credit, or Cash

## Data Types

### Ordinal scale

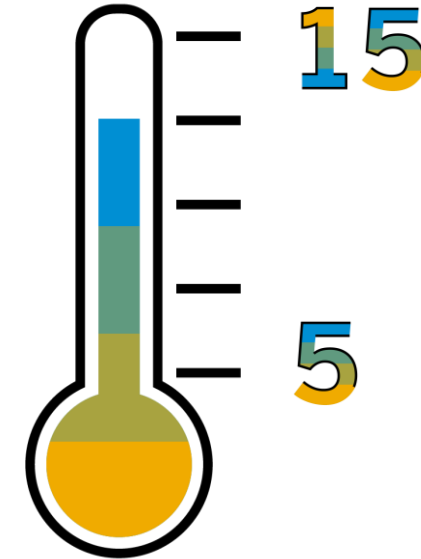
<b>Income Level</b>	Low Income, Middle Income, High Income
<b>Rating</b>	Excellent, Good, Average, Poor
<b>Pain Level</b>	Mild, Moderate, Severe
<b>Risk Level</b>	Strongly Agree, Agree, Neutral, Disagree
<b>Frequency</b>	Often, Sometimes, Seldom, Rare

**The “Hot” Scale**



### Interval scale

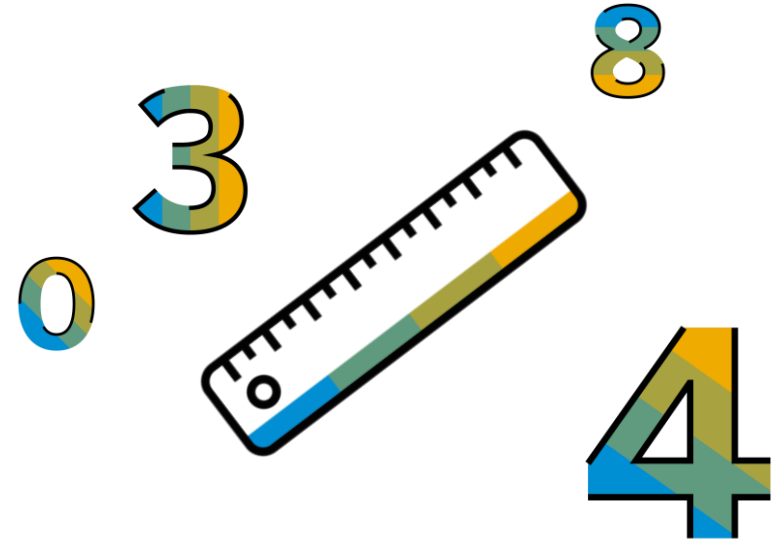
- Interval data is numbers and can be quantified.
- Data can be ranked from the lowest to the highest. Not only can you say one item is greater or smaller than the other item (example:  $15^{\circ}\text{C}$  is warmer than  $5^{\circ}\text{C}$ ), but you can also say by how much or by how much less (example:  $15^{\circ}\text{C}$  is warmer than  $5^{\circ}\text{C}$  by  $10^{\circ}\text{C}$ ).
- You can only apply limited mathematical operations such as addition and subtraction to manipulate interval data, but you **cannot** use division or multiplication.
- Examples: *Dress Size, Shoe Size, IQ Level, Temperature (Celsius or Fahrenheit)*



## Data Types

### Ratio scale

- Data are numbers and can be quantified.
- Data can be ranked from the lowest to the highest.
  - For example, a person who is 12 years of age is younger than a person who is 36 years of age.
- Examples: *Price (\$), Income (\$), Age (years), Weight (kg), Distance (miles or centimeters).*





## Data Types

### Summary

- The data type and measurement dictate how data should be summarized using mean, median, and mode.
- The inferences that can be drawn from a study can only be related to the data being used.
- Understanding data types is fundamental to your goal to ensure the proper use of statistical methods when analyzing data.



# Thank you.

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