

Stat 201: Introduction to Statistics

Standard 3: Types of Data

Chapter Two

Summaries

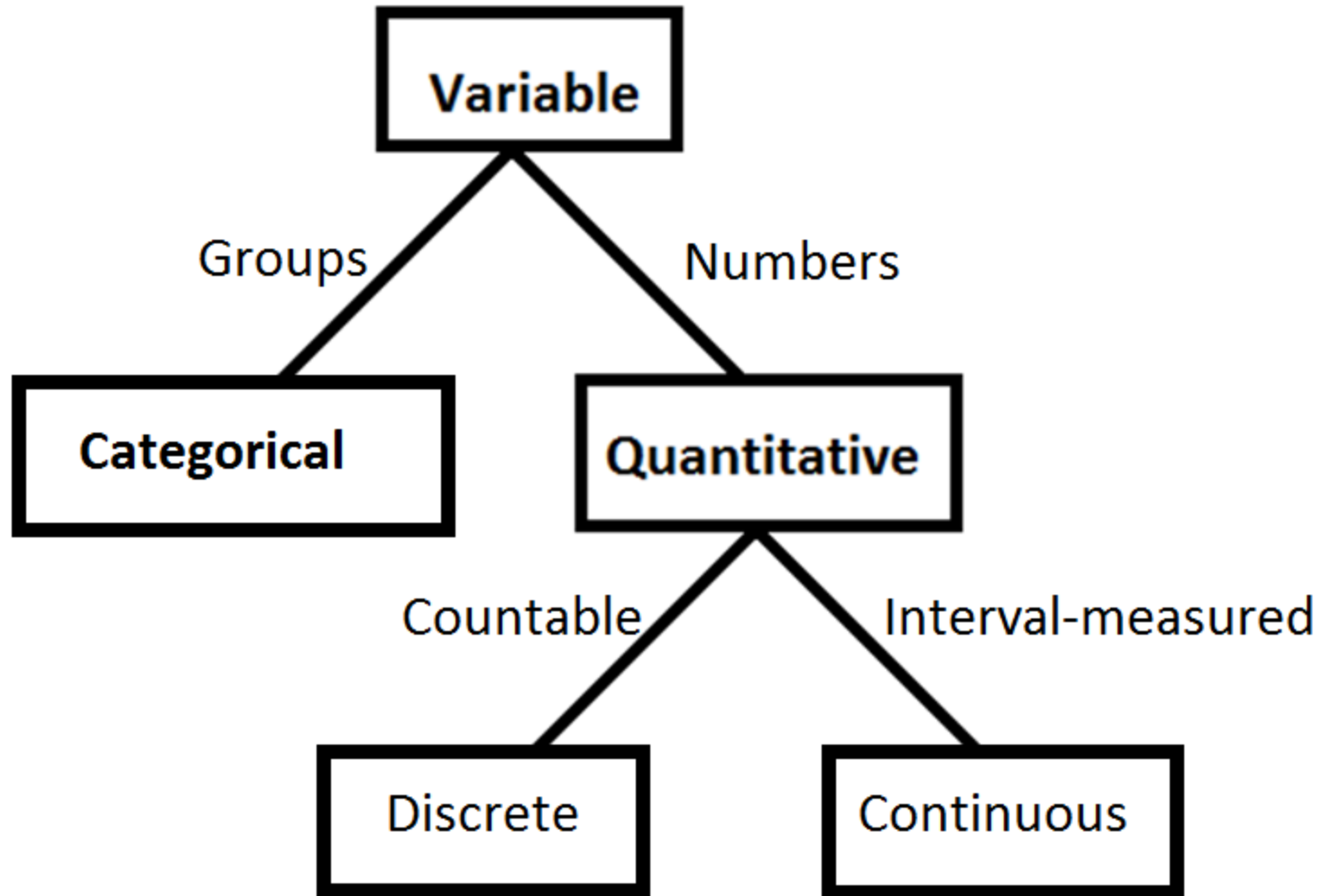
Types of Variables

- **Qualitative(Categorical):** Observations that belong to a set of categories
 - Examples: gender, hair color, eye color, ethnicity, origin, favorite color, major, etc.
- **Quantitative:** Observations that take on numerical values
 - Examples: Height, weight, age, GPA, etc.

Types of Variables

- **Quantitative:** Observations that take on numerical values
 - **Discrete:** measured by a whole number
 - Examples: Number of books, children, money, etc
 - **Continuous:** measured on an interval
 - Examples: Height, weight, age, GPA, etc.
 - Note: These are often measured as a discrete variable

Types of Variables



Walkthrough

How to Compare Discrete and Continuous: Continuous

- If you think about time: going from 1 minute to 2 minutes we have to hit all of the times between (seconds, jiffies, etc.)
- If you think of height: growing from 5' to 6' we have to be every height in between 5' and 6' and (inches, cm, mm, etc.)
- If you think of weight: going from 150lbs to 140lbs we have to be every weight between 140 and 150 (oz and g, etc)

How to Compare Discrete and Continuous: Continuous

- **Time:** hours, minutes, seconds, deci-second, jiffy, centi-second, millisecond, microsecond, nano second, planck time unit, etc.
- **Height:** meter, deci-meter, centi-meter, millimeter, micrometer, nanometer, picometer, femtometer, attometer, zeptometer, yoctometer, etc.
- **Weight:** gram, deci-gram, centi-gram, milligram, microgram, nanogram, picogram, femtogram, attogram, zeptogram, yoctogram, etc.

How to Compare Discrete and Continuous: Discrete

- If you think about the number of books, children, money, etc we jump from one number to the next.
 - We can't have half of a book we jump from 0 to 1
 - We can't have 1.5 children we jump from 1 to 2
 - We can't have half a cent we jump from \$0 to \$.01

How to Compare Discrete and Continuous: Discrete

- The big difference here is that we can keep coming up with smaller units for the **continuous** case and we stop at some point for the **discrete** case
 - With children we stop at whole numbers
 - With books we stop at whole numbers
 - With money we stop at pennies

How to Compare Discrete and Continuous

- It should be noted that when we talk about **continuous** variables, we stop somewhere so we are measuring them **discretely**
 - **Example discrete measurements of continuous variables**
 - **Time:** hours, minutes, seconds
 - **Height:** meter, deci-meter, centi-meter, millimeter
 - **Weight:** gram, deci-gram, centi-gram, milligram