

Types of Data

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- Categorical data
- Measurement data

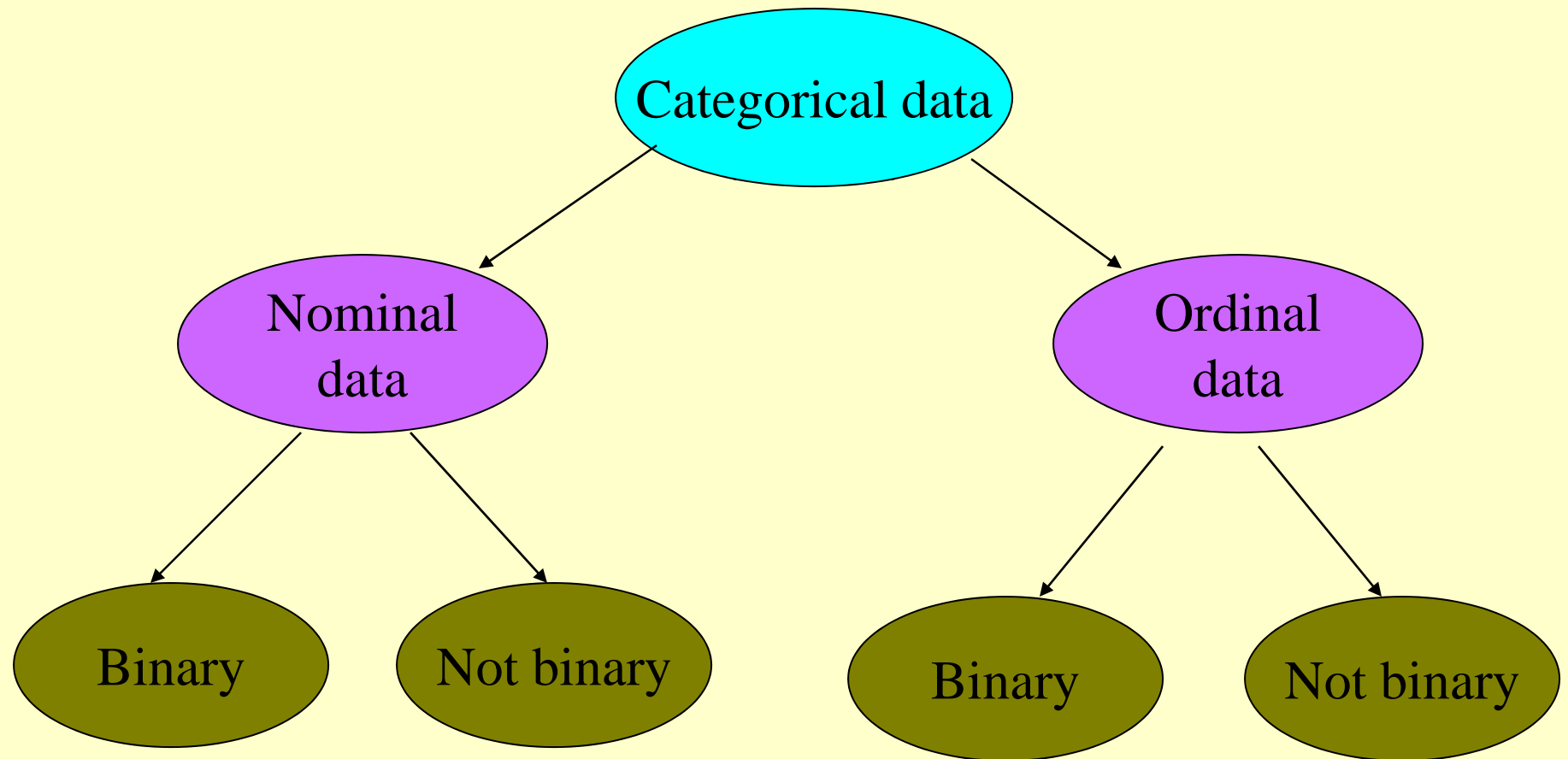
Categorical Data

- The objects being studied are grouped into categories based on some **qualitative** trait.
- The resulting data are merely labels or categories.

Examples: Categorical Data

- Hair color
 - blonde, brown, red, black, etc.
- Opinion of students about riots
 - ticked off, neutral, happy
- Smoking status
 - smoker, non-smoker

Categorical data classified as Nominal, Ordinal, and/or Binary



Nominal Data

- A type of categorical data in which objects fall into *unordered* categories.

Examples: Nominal Data

- Hair color
 - blonde, brown, red, black, etc.
- Race
 - Caucasian, African-American, Asian, etc.
- Smoking status
 - smoker, non-smoker

Ordinal Data

- A type of categorical data in which *order* is important.

Examples: Ordinal Data

- Class
 - fresh, sophomore, junior, senior, super senior
- Degree of illness
 - none, mild, moderate, severe, ..., going, going, gone
- Opinion of students about riots
 - ticked off, neutral, happy

Binary Data

- A type of categorical data in which there are *only two categories*.
- Binary data can either be nominal or ordinal.

Examples: Binary Data

- Smoking status
 - smoker, non-smoker
- Attendance
 - present, absent
- Class
 - lower classman, upper classman

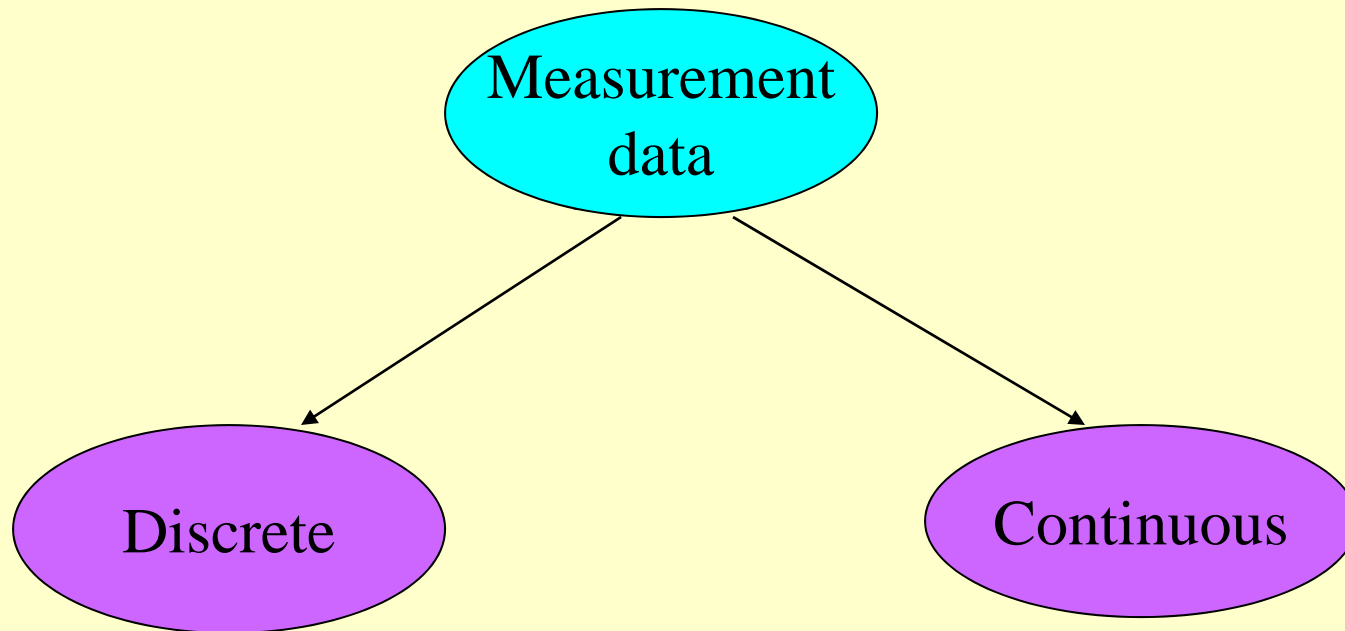
Measurement Data

- The objects being studied are “measured” based on some **quantitative** trait.
- The resulting data are set of numbers.

Examples: Measurement Data

- Cholesterol level
- Height
- Age
- SAT score
- Number of students late for class
- Time to complete a homework assignment

Measurement data classified as Discrete or Continuous



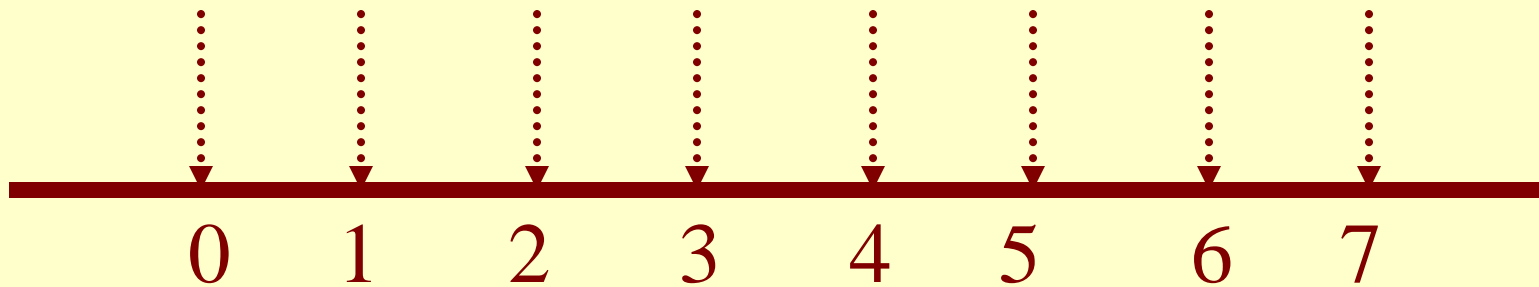
Discrete Measurement Data

Only certain values are possible (there are gaps between the possible values).

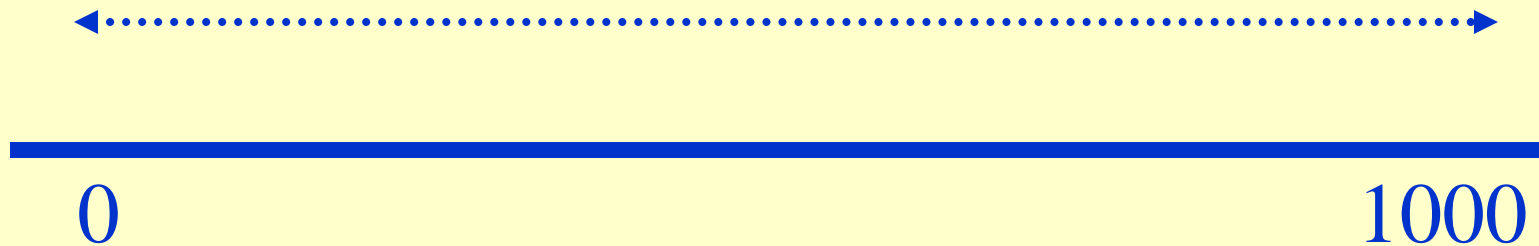
Continuous Measurement Data

Theoretically, any value within an interval is possible with a fine enough measuring device.

Discrete data -- Gaps between possible values



Continuous data -- *Theoretically,*
no gaps between possible values



Examples:

Discrete Measurement Data

- SAT scores
- Number of students late for class
- Number of crimes reported to SC police
- Number of times the word number is used

Generally, discrete data are counts.

Examples:

Continuous Measurement Data

- Cholesterol level
- Height
- Age
- Time to complete a homework assignment

Generally, continuous data come from measurements.

Who Cares?



The type(s) of data collected in a study determine the type of statistical analysis used.

For example ...

- Categorical data are commonly summarized using “**percentages**” (or “**proportions**”).
 - 11% of students have a tattoo
 - 2%, 33%, 39%, and 26% of the students in class are, respectively, freshmen, sophomores, juniors, and seniors

And for example ...

- Measurement data are typically summarized using “**averages**” (or “**means**”).
 - Average number of siblings Fall 1998 Stat 250 students have is 1.9.
 - Average weight of male Fall 1998 Stat 250 students is 173 pounds.
 - Average weight of female Fall 1998 Stat 250 students is 138 pounds.