2025spring1601s34.neocities.org

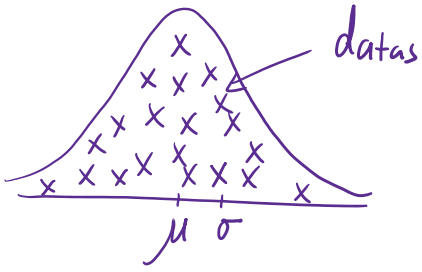
I. Data and Defn

Data - Collections of observations, such as measurements, genders, or survey responses.

eg 2, 3, 5, 7, 11, ... ← numerical

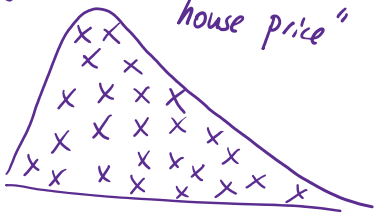
eg Survey as many people in a day in Turlock:
200 people ← 200 datas

eg "bell-shape" curve



eg "ages"

eg "house price"



Statistics - The science of planning studies and experiments, obtaining data, and organizing, summarizing, presenting, analyzing, and interpreting those data and then drawing conclusions based on them.

eg

subject	frequency
⋮	⋮

← table

Sigma: Σ σ

eg Grades for a curved class: $\mu = 72\%$ ← B-
$\sigma = 7\%$ ← each grade

$\sigma = 7\%$ ← each grade

A^-: $72\% + 1\cdot 7\% = 79\%$

C^-: $72\% - 1\cdot 7\% = 65\%$

eg many other stats we'll learn.

i. pool

Population - The complete collection of all measurements or data that are being considered. Typically, a population is the complete collection of data that we would like to make inferences about.

Sample - A subcollection of members selected from a population

(Note: Sample is a subset of the population.) ← not just "1 size"

* We usually focus on the sample datas. ← more specific

← Can compare

eg A survey conducts from 1028 out of 1520 people.

Sample is 1028; population is 1520.

Parameter - a numerical measurement describing some characteristic of a population.

Tool's names: mean, median, mode, std. dev. ...

Statistic - a numerical measurement describing some characteristic of a sample.

Tool's names: - - -

ii. Data (specific)

A. ***Qualitative Data*** (*Categorical*) - consists of numbers representing counts or measurements.

Not interest (no learning easy)

eg colors of objects ;

eg jersey's number

eg apartment number

B. ***Quantitative Data*** (*numerical*) - consists of numbers representing counts or measurements.

eg 24 students

eg 4 windows

eg lecture minutes ...

1. *Discrete data* result when the data values are quantitative and the number of values is finite, or "countable."

Countable : ← has to be finite, simple. (Not much learning values)

eg 30 chairs

eg 4 windows

eg 1 desk

2. *Continuous (numerical) data* - result from infinitely many possible quantitative values, where the collection of values is not countable.

We focus on learning! They are processed, and random variables. They may change and can't exactly measure.

eg height

eg weight ← random variables

eg temperature

⋮

Conclusively:

There are Two Types of Data

Qualitative Data

Classifies data by a **quality, attribute, or category.** Meaningful arithmetic operations **CANNOT** be performed with this type of data even if the data is numerical.

Examples:
Hair Color, Zip code, Area Code
Student ID and Social Security "numbers"
Gender
(even if we say Male =1 and Female = 2)

Quantitative Data

Numbers that represent **numerical measures** such as measurements or counts. Meaningful arithmetic operations such as averages **CAN** be performed with this type of data.

Examples:
Age, height, temperature,
time, volume
the number of desks in a class,
the number of units you are taking.

There are two types of **Quantitative Data**

Discrete Data:

The data is represented by numbers like 0, 1, 2,3 4, ,,,,. There are no numbers between any two discrete numbers.

Examples:
The number of desks in a class,
The number of kids in your family,
The number of cars in the parking lot.

Continuous Data:

The data is measured on a continuous scale. Between any two numbers there is an infinite numbers of values without any gaps.

Examples:
Height, Weight , Temperature,
Time, Volume,
Distance

More Levels of Measurements (Types of data)

← good to learn (not worried much)

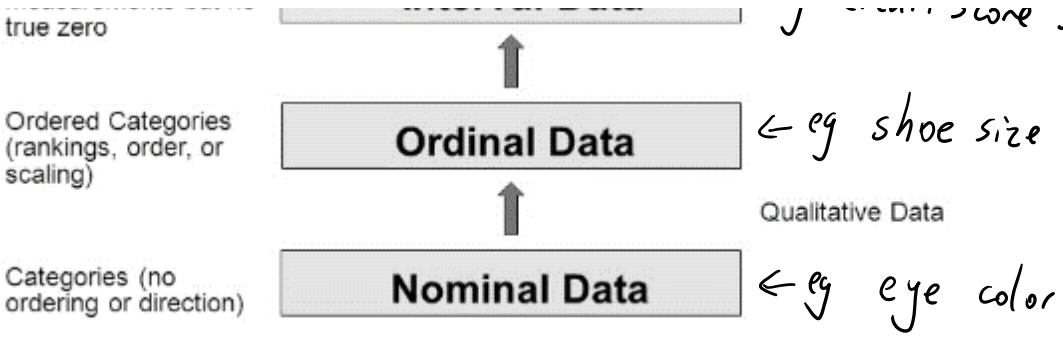
Differences between measurements, true zero exists

Ratio Data ← eg your income

Quantitative Data

Differences between measurements but no true zero

Interval Data ← eg credit score 300–850



eg shoe size

eg eye color

eg Work collaboratively to determine the correct data type (quantitative or qualitative). Indicate whether quantitative data are continuous or discrete. *Hint: Data that are discrete often start with the words "the number of."*

a. the number of pairs of shoes you own
b. the type of car you drive
c. the time travel from your home to the nearest grocery store
d. the number of classes you take per school year.
e. the type of calculator you use
f. weights of dogs at an animal shelter
g. number of correct answers on a quiz
h. IQ scores

S: a. discrete
b. qualitative
c. continuous
d. continuous
e. qualitative
f. continuous
g. discrete
h. continuous

eg

Classify each of the following measurements. If there is disagreement with your classmates,

Classify each of the following measurements. If there is disagreement with your classmates, explain why you think it fits into that category.

- Shoe size
- Medication dose
- Education level
- Income level
- Pay scale (hourly wage)
- Body temperature
- Blood type
- Gender Military rank
- Height
- Eye color
- GPA
- Credit score
- Zip Code
- Study time
- Letter Grade

Ratio	Interval	Ordinal	Nominal
GPA Education level Income level Study time	Boy Temp Med dose Credit score height Pay scale	Shoe size Letter Grade	Blood type Gender M r Zip code Eye color

II. Frequency Distribution

i. Defn

The frequency distribution is usually a table that organize and summarize the data among several classes (categories) by listing the number of datas values in each class. (category)

Frequency – the number of values fall into that class

IQ Score	Frequency
50-69	2
70-89	33
90-109	35
110-129	7
130-149	1

1st class →

2nd class →

3rd class →

4th class →

5th class →

← This is a Frequency Distribution