Set up fun → pay attention → Fun Stuff
(do not study.)

I. Data and Defn

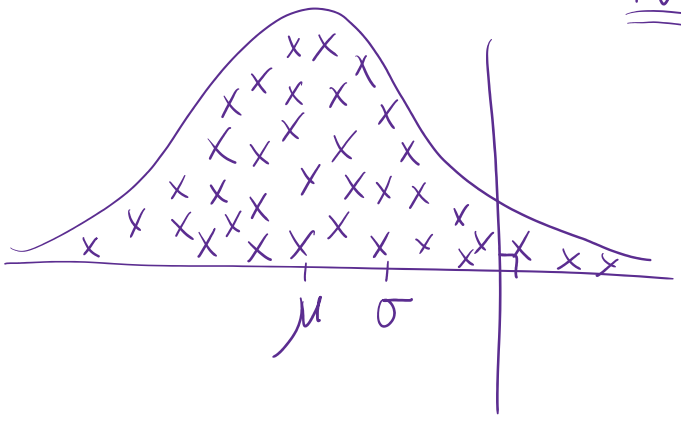
Data - Collections of observations, such as measurements, genders, or survey responses.

eg 2, 3, 5, 7, 11, 13, 17, ...

eg

Subject	Frequency
F	2
D	5
C	13
⋮	⋮

eg



Normal Distribution

← "bell-shape" curve

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.

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. ← N

Sample - A subcollection of members selected from a population. ← n (N−1)

← a subset of the population

Usually, we focus on the samples.

(If the problem doesn't specify population, then it is automatically a sample.)

Eg Take a survey from 1518 people, 1002 of them responded that they worried about identify theft.

Population – 1518

Sample – 1002

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

Tool's name : mean, median, mode, . . .

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

ii. Actual data

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

counts or measurements.

Not interested; no learning value.

eg color of object

eg apartment number

eg jersey number

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

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

It has to be countable. It is simple.

eg number of students in this class today.

eg number of computers you are having.

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

We focus on this! These are random variables. (In a process.)

eg The cards you draw from a deck of cards.

eg The height you will develop.

eg Ages

eg Probability

⋮

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