

---

---

**Quantitative** data takes on numeric values that allow us to perform mathematical operations (like the number of dogs).

---

**Categorical** are used to label a group or set of items (like dog breeds - Collies, Labs, Poodles, etc.).

Categorical Ordinal data take on a ranked ordering (like a ranked interaction on a scale from Very Poor to Very Good with the dogs).  
Categorical Nominal data do not have an order or ranking (like the breeds of the dog, Yes and No).

---

**Continuous** data can be split into smaller and smaller units, and still a smaller unit exists.

**Discrete** data only takes on countable values.

---

## Mean

The mean is often called the average or the **expected value** in mathematics

---

## Median

The **median** splits our data so that 50% of our values are lower and 50% are higher

---

## Mode

The **mode** is the most frequently observed value in our dataset.

If all observations in our dataset are observed with the same frequency, there is **no mode**.

If two (or more) numbers share the maximum value, then there is **more than one mode**.

---

# Random variable

A **random variable** is a placeholder for the possible values of some process

**Random variables** are represented by capital letters. Once we observe an outcome of these random variables, we notate it as a lower case of the same letter.

The capital **X** is associated with this idea of a **random variable**, while the observations of the random variable take on lowercase **x** values.

---

## Aggregations

An **aggregation** is a way to turn multiple numbers into fewer numbers

**Summation** is a common aggregation.