

Variables

Variables in algebra vs stats

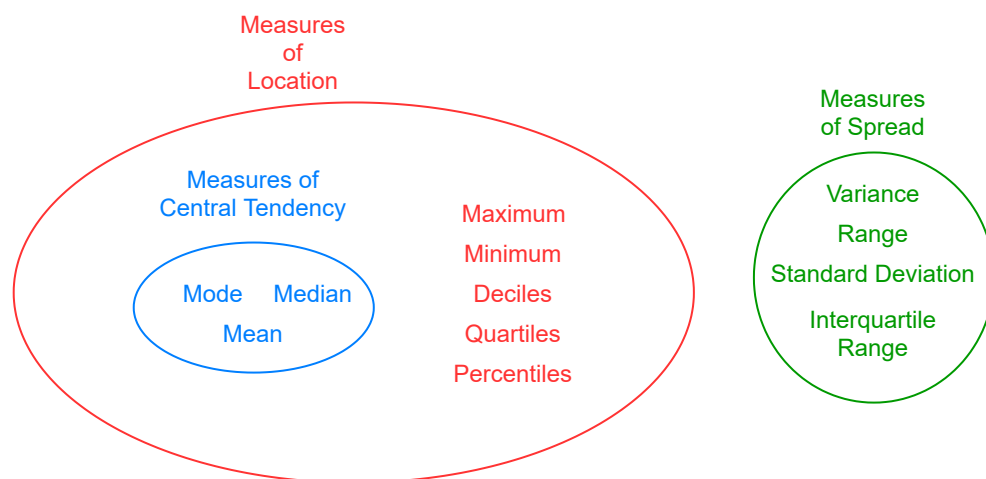
Similarities

- Just like in algebra, variables in stats represent the value of some quantity, eg. shoe size, height, colour
- As we saw in the previous chapter, variables can be discrete or continuous
- Can be part of further calculations, eg. if x represents a height, then $2x$ represents twice people's height. In stats this is known as '**coding**'

Differences

- Unlike algebra, a variable in stats represents the value of **multiple objects** (ie. it's a bit like a set).
- Because of this, we can do **operations** on it as if it were a **collection of values**:
 - if x represents people's heights, $\sum x$ gives the sum of everyone's heights. In algebra this would be meaningless: if $x = 4$, then $\sum x$ makes no sense!
 - \bar{x} is the mean of x . Notice x is a collection of values, whereas \bar{x} is a single value.
- To each value of the value of the variable, **we could attach an associated probability**. This is known as a random variable.

Measures



Measures of location

Single values which describe a position in a dataset. Of these, measures of **central tendency** are to do with the **centre of the data**, ie. a notion of 'average'.

Measures of spread

To do with **how data is spread out**