
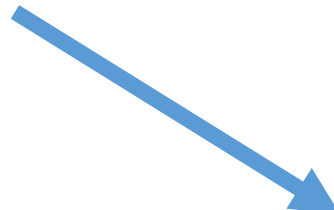
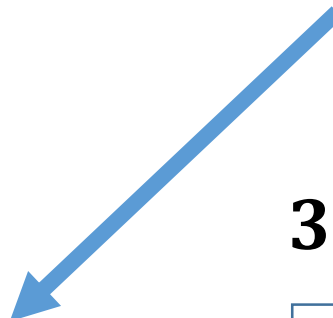


Important formulas

Variance: step by step

1)
 implies a list of every observation
 $Y_1, Y_2, Y_3, \dots, Y_n$, 
where n is the total sample size


$$s^2 = \frac{\sum (Y_i - \bar{Y})^2}{n - 1}$$


2) The mean
 called & is the mean of
the observations (all the “ Y_i s”).
It is often written

3) The ‘’

implies a list of
 (Y_i) from which the

These are the “ of each
 Y_i from the mean \bar{Y} .
This is the “deviation” in

Variance 5)

is the Greek letter "" and stands for .

The operation means ".

Note that b/c of how the rules of algebra work, we actually square everything in the parentheses 1st, then sum it up

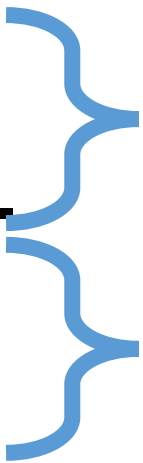
6) The ""
Because we are **summing** up a set of s^2 = $\frac{\sum(Y_i - \bar{Y})^2}{n - 1}$ **deviations** (point 3) that have been **squared** (point 4) what we get is called a "" or just "" for short.

The **SSD** is the numerator of this equation for the variance.

$$s^2 = \frac{\sum(Y_i - \bar{Y})^2}{n - 1}$$

7) **Divide by df**
To complete the calculation of the variance we divide the **sums of squares** (SS) by $n-1$. This is called the

The (s^2) looks complicate but it is actually a bit like the **mean**. It involves a **summation** as the numerator and has the **sample size (n)** on the denominator (minus 1 to get the).

$$s^2 = \frac{\sum (Y_i - \bar{Y})^2}{n - 1}$$


aka

The (SD or just **S**) is just the **square root** of the The SD is “**standardized**” relative to the mean because taking the square root of the variance undoes the “”.

$$s = \sqrt{\frac{\sum (Y_i - \bar{Y})^2}{n - 1}} \left. \vphantom{\frac{\sum (Y_i - \bar{Y})^2}{n - 1}} \right\} \text{ }$$