Variability of Variance

We can calculate the measures of variability, in other words how spread apart are the data values = dispersion of data.

Range = Max (i) - Min (i)

Range = 10 - 2 = 8

The most lemonade's sold on any day was 10, the least was 2 and the range is the difference between those to values.

Variance

for population:

$$\sigma^2 = \frac{\sum_{i=1}^{N}(x_i - \mu)^2}{N}$$

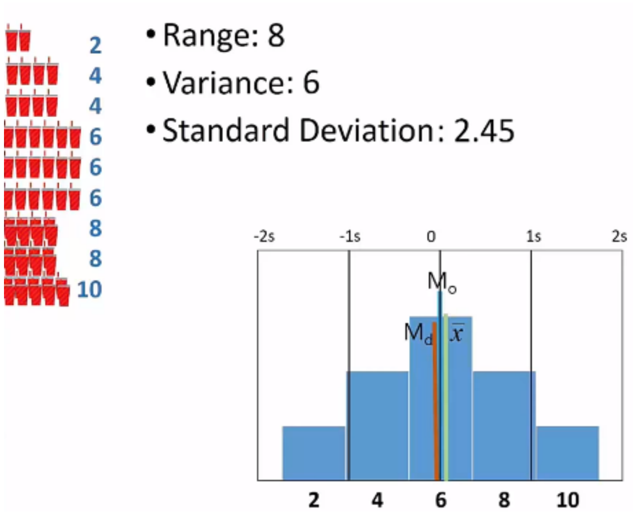
for sample:

$$s^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}$$

sample:	mean:	$(x_i-\bar{x})^2$
2	6	16
4		4
4		4
6		0
6		0
6		0
8		4
8		4
10		16
	$\Sigma(x_i-\bar{x})^2$:	**48**
	n-1:	**8**
	s^2:	**6**
	s:	**2,45**

Standard Deviation

$$\sigma = \sqrt{\sigma^2} \qquad s = \sqrt{s^2}$$



In case of normal distribution, standard deviation is from mean in the common metric, plus and minus 1 and plus and minus 2. In a normal distribution, a percent of the data that falls between plus 1 and minus 1 is actually 68,2%; the percent of the data that falls between plus 2 and minus 2 is 95,4% and then within plus 3 or minus 3 standard deviations is almost 99,7%.

Standard Error

$$SE = \frac{s}{\sqrt{n}}$$

the larger the n, the smaller SE is!

It is one of the sample parameters.

SE = 2,45 / 3 = 0,82

Standard error is a statistical term that measures the accuracy with which a sample represents a population.

In statistics, a sample mean deviates from the actual mean of a population; this deviation is the standard error.

The smaller the standard error, the more representative the sample will be of the overall population.