1. **Equation of variance of population is as follows :**

$$\sigma^2 = \frac{1}{n}\sum_{i=0}^{n-1}(x_i - \mu)^2$$

Equation of variance of sample is as follows :

$$S_{n-1}^2 = \frac{1}{n-1}\sum_{i=0}^{n-1}(x_i - X)^2$$

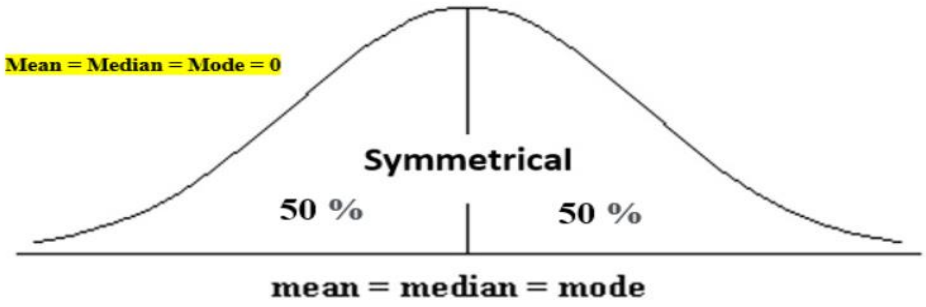
So, in population variance n is there in denominator, while in sample variance n-1 is present in denominator.

This is due to bessel correction, which is done to get rid of the problem that :

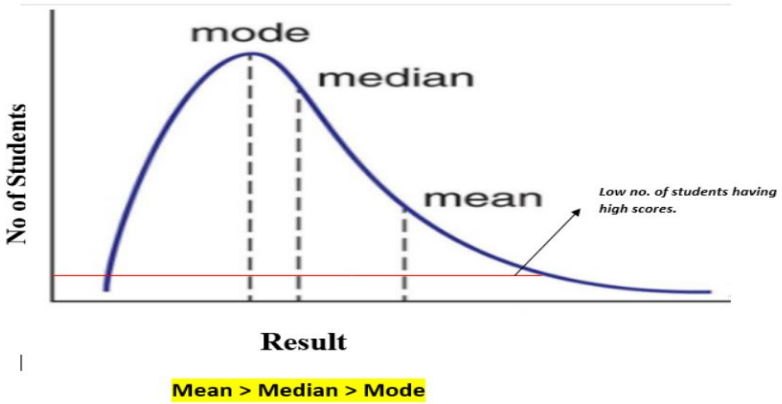
When we have a large sample, S^2 can be an adequate estimator of σ^2. For small samples, it tends to be too low.

2. **Relationship Between Mean Median and Mode of Different Types of Distributions**

Normal Distribution:

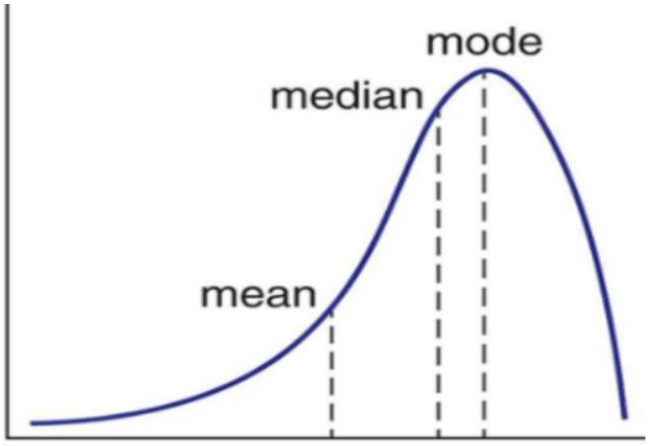


Right Skewed Distribution:



Mean > Median > Mode

Left Skewed Distribution:



Mode > Median > mean