

Mean

	mean	mode	median	Quartile3
Sachin	70	above	60	75
gangooly	70	above	61	74

in above case,

all positive dimensions of two player(variables) are at equal or closed state.

so we can not take decision .

then we need to compare with negative dimensions.

entire MCT --> is explaining positivity(goodness) of a variable.

Dispersions --> explain negativity of a variable.

Dispersion --> means spread (variability).

if more is spread indicates --> high risk

less spread indicates --> low risk.

3 Dispersions :

1. range
2. variance
3. standard deviation.

1. range:--> is a difference between maximum and minimum.

$$\max(x) = 100$$

$$\min(x) = 10$$

$$\text{range}(x) = 100 - 10 = 90$$

$$\text{sachin}(\text{range}) = 110 - 50 = 60 \text{ (less risk)}$$

$$\text{gangooly}(\text{range}) = 170 - 20 = 150 \text{ (high risk)}$$

problem with range:

Mean

case1:

sachin

50

90

60

110

100

70

$\max(\text{sachin}) = 110$

$\min(\text{sachin}) = 50$

$\text{range}(\text{sachin}) = 110 - 50 = 60$

case2:

sachin

0

50

90

60

110

100

70

$\max(\text{sachin}) = 110$

$\min(\text{sachin}) = 0$

$\text{range}(\text{sachin}) = 110 - 0 = 110$

its highlighting sachin as more risky.

problem with range:

if outliers existed in data,

range highlights a variable as high risk.

range gives good results --> if there are no outliers.

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solution : by Variance.

Mean

$$V_{pop} = \frac{\sum (x - \bar{x})^2}{n}$$

$$V_{samp} = \frac{\sum (x - \bar{x})^2}{n - 1}$$

problem with variance :

variance of sachin = 190

--> independently it can not explain variable's risk(spread).
always it needs, other variable's variance to be compared.

Solution : standard deviation.

--> is Square root of Variance.

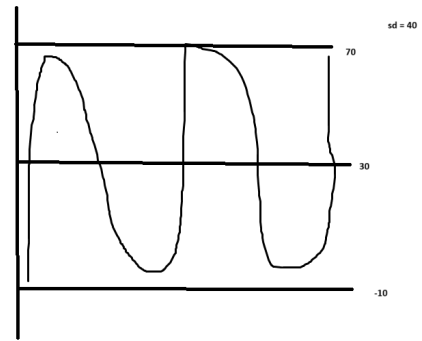
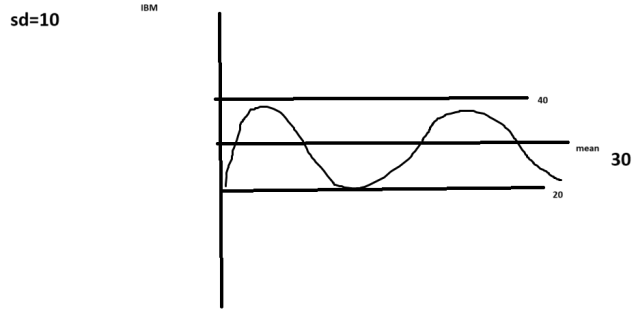
sd_population --> is sq root of variance of population.

sd_sample --> is sq root of variance of sample.

Below is code for variance and standard deviation.

https://colab.research.google.com/drive/1pip9vKvDh-pR1VztyErIX1znRAg_vX7Z?usp=sharing

Mean



	Mean	stddev
Sachin	70	10
Gangooly	69	40

Sachin fluctuating range → 60 to 80

Gangooly's fluctuating range → 29 to 109