

$$\text{Covariance} = \frac{\sum (X_i - \bar{X})(Y_i - \bar{Y})}{N} \Rightarrow \text{Easy way to measure}$$

$$\text{Variance} = \frac{\sum_{i=1}^N (X_i - \bar{X})^2}{N}$$

the same movement pattern

Correlation:

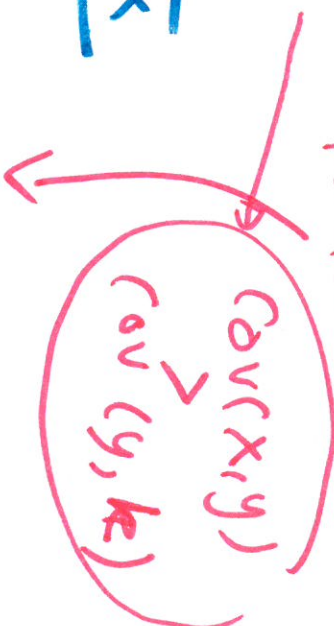
$$\frac{\text{Cov.}}{\text{SD}_X \text{SD}_Y}$$

Not comparable

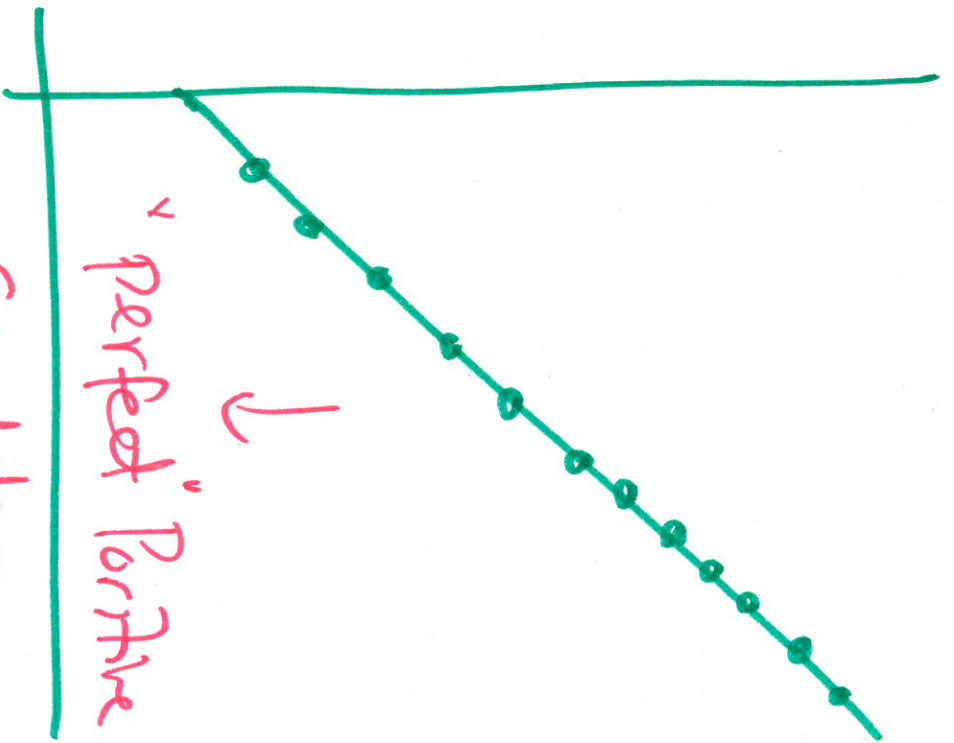
Not comparable

no for cov

Standardize data $\Rightarrow \frac{X_i - \bar{X}}{\text{SD}}$



Cor(x,y) \uparrow \rightarrow Higher value \rightarrow Higher correlation
 Cor(y,k) \downarrow decrease



Perfect Positive

Correlation

$$\text{Cor}(x, y) = 1$$



Positive Correlation

not perfect

"weak / strong"