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Introduction to Biostatistics

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Assignment 2: Standard Deviation & Variance

The formula for standard deviation and variance is split into two, population and sample:

Sd🡪 σ = √Σ (xi- x̄)2 /n-1 [Sample] & σ = √Σ (X - ɥ)2/N [Population]

X- The value in the data distribution

ɥ / x̄ - The population mean/The sample mean

n/N- Total number of observations

V🡪 σ2 = √Σ (X - ɥ)2/N [Population] & s2 = √Σ (xi- x̄)2 /n-1[Sample]

σ2/s2=population/samplevariance

xi= value of ith element

ɥ/ x̄ =population/sample mean

N/n= population/sample size

Variance measures how spread out the data points are from the mean. It calculates the average of the squared differences from the mean. Standard deviation is the square root of the variance. It gives a more interpretable measure of spread because it is in the same units as the original data. The difference between population and sample formulas is that the sample variance and standard deviation use n-1 in the denominator instead of N. This correction called Bessel’s correction, compensates for the bias in estimating population variance from a sample.