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Probability & Statistics

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**Assignment**

Write a page report explaining differences between standard deviation and variance. Explain how 2 formulas differ from one another. Save your document and upload it to your GitHub repository to get full points.

**Standard Deviation and Variance**

The **standard deviation** is a measure of the amount of variation or dispersion in a set of values. In statistics, it quantifies how spread out the data points in a data set are around the mean (average). **Variance** is a related measure to standard deviation; it measures how far a set of numbers are spread out from their average value.

The standard deviation **formula** is the **root of the sum of squared deviations**. There are **two different formulas** to calculate standard deviation. In one case we divide by *n* (the number of values), and in the other case we divide by *n-1*. When using a sample to estimate the deviation of the entire population we use the equation with *n-1*.

The variance now is the squared standard deviation. The only difference between the standard deviation and variance equations is in order to calculate the standard deviation we take the root, but in order to calculate the variance, we do not.

In summary, standard deviation and variance are both measures of the spread or dispersion of data points in a dataset. Standard deviation is the square root of variance and is often more interpretable because it is in the same units as the data.