

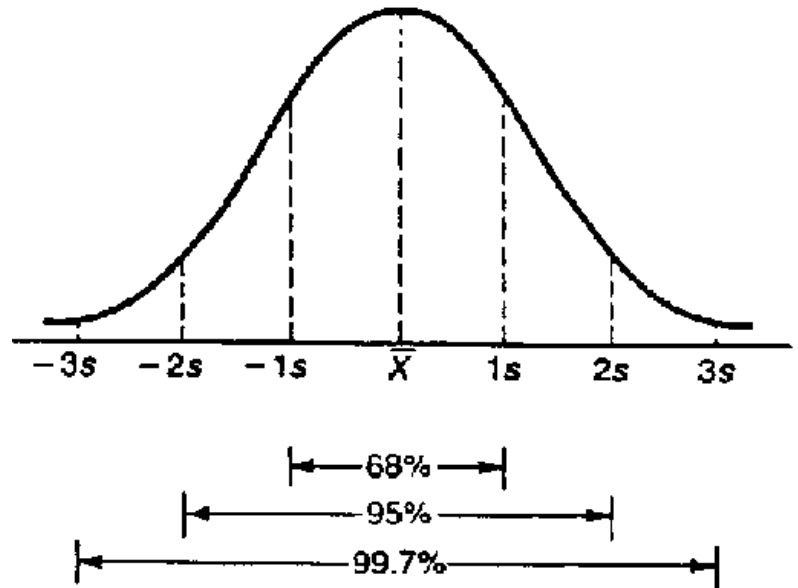
## Introduction to Standard Deviation

Supplement to 2011 Ranking Policies Proposal, which was developed by the  
Ranking Policies Task Group of the Chicago Planning Council on Homelessness

### What is Standard Deviation?

The standard deviation is a statistical measure of dispersion of a set of data, or in other words, it is a way of showing how values are spread out compared to the mean (average). A standard deviation of 0 means that all the values are equal; a low standard deviation number indicates all the values are close to the average while a higher standard deviation indicates that the data is spread out over a large range of numbers.

In a normal distribution of data, also known as a bell curve, the majority of the data in the distribution — approximately 68% — will fall within plus or minus one standard deviation of the mean. For example, if the standard deviation of a data set is 2, the majority of data in the set will fall within 2 more or 2 less than the mean. Roughly 95% of normally distributed data is within two standard deviations of the mean, and over 99% are within three.



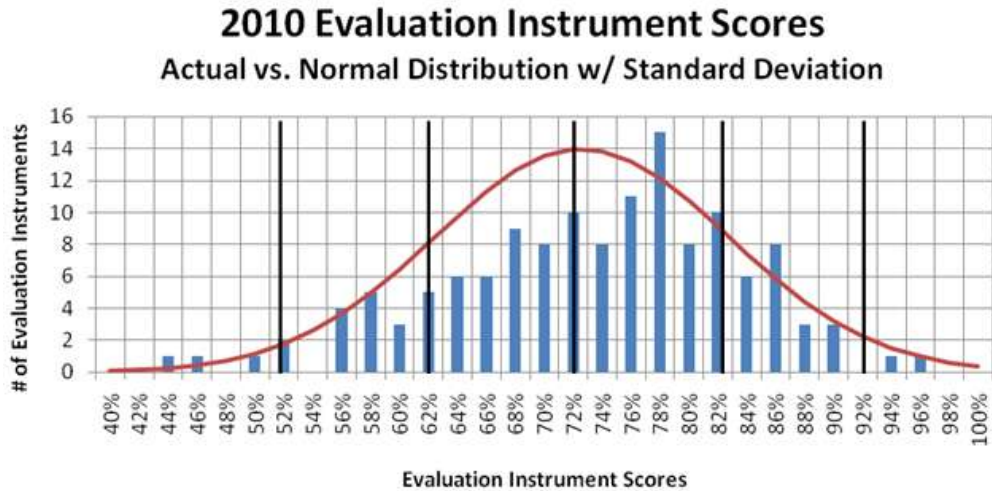
### How is it Calculated?

Calculation	Basic Example
1. Calculate the mean value (average) of all the data points.	Consider a population consisting of the following eight values: $2, 4, 4, 4, 5, 5, 7, 9$
2. Calculate the deviation of each data point from the average by subtracting its value from the mean value.	These eight data points have the mean (average) of 5: $\frac{2 + 4 + 4 + 4 + 5 + 5 + 7 + 9}{8} = 5$
3. Square each point's deviation, and average the individual squared deviations together. The resulting value is known as the variance.	To calculate the population standard deviation, first compute the difference of each data point from the mean, and square the result of each: $(2 - 5)^2 = (-3)^2 = 9$ $(5 - 5)^2 = 0^2 = 0$ $(4 - 5)^2 = (-1)^2 = 1$ $(5 - 5)^2 = 0^2 = 0$ $(4 - 5)^2 = (-1)^2 = 1$ $(7 - 5)^2 = 2^2 = 4$ $(4 - 5)^2 = (-1)^2 = 1$ $(9 - 5)^2 = 4^2 = 16$
4. Standard deviation is the square root of the variance.	Next compute the average of these values, and take the square root: $\sqrt{\frac{(9 + 1 + 1 + 1 + 0 + 0 + 4 + 16)}{8}} = 2$

## Previous Evaluation Instrument Scores and Standard Deviation

### 2010 Evaluation Instrument Scores with Standard Deviation

- Mean: 72.55%
- Standard Deviation: 10.14%
- Mean minus 2 Standard Deviations: 52.28%



### 2009 Evaluation Instrument Scores with Standard deviation

- Mean: 70.41%
- Standard Deviation: 9.77%
- Mean minus 2 Standard Deviations: 50.86%

