REDEFINING THE MEASURE OF DISPERSION WITH MEAN DEVIATION

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Independent Research Paper
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Abstract

Measures of statistical dispersion are being used frequently used to analyze how spread data is. Today, the most common measure of data is standard deviation. Some other measures of statistical dispersion are interquartile range, mean absolute deviation, and variance. This research paper redefines the measure of dispersion used by comparing and contrasting these different methods and understanding the benefits of mean absolute deviation over standard deviation.

1.Introduction

Standard deviation is one of the most common measures of dispersion used today by summing all the squared values of the differences between the data points and the mean value divided by n, and taking the square root.

Mean deviation is another measure of central tendency, which is not as commonly used as standard deviation. As the name suggests, it is calculated by computing the difference between each number and the mean.

2. Procedure of Statistical Analyses

To determine whether mean absolute deviation is more accurate than standard deviation in different scenarios, I will be implementing the following studies, where I note the population parameters, and after taking the sample parameters, see which method of dispersion is more accurate. Furthermore, I will be comparing the difference in error between the sample parameter and population parameter for mean deviation and standard deviation with several to see which measure of dispersion is accurate in different distributions. (Note that these abbreviations will be used - MD = Mean Deviation and SD = Standard. I will also ensure that the size of data for each sample is large enough.

1) Normal distribution
2) Right skewed
3) Left skewed
4) Uniform distribution
5) Binomial distribution
6) Poisson distribution
7) Random sample - No clear distribution