Statistics standard deviation in the form of

Science, Statistics

Statistics is highly important science that has a great impact on other fields all other fields need statistics because it helps in creating accurate results about any study. From branches of statistics is variability.

Variability is called dispersion as well and it shows how stretched or squeezed the set of data is. There are four major types of variability: variance, Range, interquartile Range, Standard deviation, Coefficient of variation and Tests of validity. Range: is difference between maximum value and minimum value in the set of data. It can be determined by this formula. Range= Xmax-Xmin.

Interquartile Range: is similar to Range the main difference is that it takes the value of the middle fifty and it determines where is the majority of data lies and it is calculated as follows IQR= 75thpercentile-25th percentile, where 75th percentile is called the upper hinge while 25th percentile is called the lower hinge and by using these terms we can refer to the Interquartile Range as the H-spread. Variance: is the mean deviation of the values from their mean ; moreover, variance value has important indications since if the value is high this means that data is stretched and if the value is small this means that data is squeezed. Variance can be calculated through this equation.

Variance =?(X? X)2 ÷(N? 1), where X is my value in data set, X is the arithmetic mean and N is the number of observations in the set of data. Standard deviation: is simply defined as square root of the variance and what's make standard deviation an excellent measure for variability is that doesn't ignore any value in the data set and this value in the same units of

the mean , thus we can add subtract from it. It can be calculated according to this equation SD=??(X? X)2 ÷(N? 1) where X is any value in series of observations, SD is standard deviation, N is number of observation and X is the mean.

Coefficient of variation: it is used to differentiate between the biological variabilty of two sets of data and it doesn't depend on the units of measurements (i. e it describes the standard deviation in the form of percenage). It can calculated according to this formula C.

V.=(SD/X)×100, where SD is the standard deviation and X is the arithmetic mean. Test of validity: the valid mean is dependable mean and the acquired results from any statistical study should be valid , or any other calculations will not be correct and Test of validity is calculated with respect to the standard deviation. If the mean is less than 2. 5 times the standard deviation, so the mean us considered valid, hence if the value of the mean isn't valid number of observations in data set should be increased to decrease the standaed deviation values as it dependent on the number of expirments.

It has been concluded that the significance of variability is it san express the behaviour of data set in numerical way, hence it shows us how data similar or vary from each other consequently this reduce the percentage of error in any study as it based on scientific and examined way.