ASYMMETRY AND KURTOSIS COEFFICIENTS

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ANNOTATION.

In the article asymmetry and ecstasy coefficients , data concepts analysis in making , precision in showing and distributions in comparison application has been studied.

Key words : asymmetry and ecstasy coefficients , distributions , median variational series .

ANNOTATION.

The article examines the use of asymmetry and skewness coefficients in data analysis, precision, and comparison of distributions.

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Asymmetry and excess coefficients , one in the collection data concepts statistics indicators in the calculation used variables . These are indicators , data of the collection how level symmetrical and how level sure changes to show lighting for is used . Asymmetry , data of the collection in the middle sure changes or asymmetry level in the calculation is used . Asymmetry , data of the collection which on the side (left or right) how much spread shows . Asymmetry value Minus if it is bad asymmetry (data collection right on the side spreads), if asymmetry value positive if it is good asymmetry (data set is on the left spreads) is called .

Ecstasy , information of the collection in the middle precision (of the set speed or softness degree) in the calculation is used . Ecstasy indicator , data of the collection which level pole that it was read shows . Ecstasy the value is 3 ha near if , the set is normally distributed closer is , if less than 3 if , it is " platicurtic " (set fast and soft) if more than 3 if , it is "leptokurtic" (set fast and thick) is called .

If the number of elements of the variational series is odd, the term located in the middle of the variational series is called the median and is denoted as Me. The median divides the variational series into two equal parts in terms of the number of terms. If the number of variances is even, then the median is half the sum of the two variances between the variance series. If the sample

$X_{(1)} \le X_{(2)} \le \ldots \le X_{(n)}$ is a variational series, then the following general formula for the median can be written:

$$Me = \begin{cases} X_{(k)}, \ агар\ n = 2k+1, \\ \dfrac{X_{(k)} + X_{(k+1)}}{2}, \ агар\ n = 2k. \end{cases}$$

If the size of the set is large, first it is divided into groups, then a series of accumulated repetitions is made, and the median is calculated by the following formula:

$$Me = x_0 + h\frac{s_1 - s_2}{f},$$

where x_0 - the lower limit of the group in which half of the results of observations are located, h - the value of the interval, s_1 - half of the total number of rows, s_2 - the cumulative repetition of the group before the group with the median, f - the repetition of the group with the median.

The most frequently occurring value of the character under study in a given variational series is called the mode and denoted as Mo. For example, when measuring the height of 10 children, the following results were obtained (in cm):

120, 125, 127, 125, 130, 125, 122, 120,125,121.

The most repeated in this row is 125. Therefore, Mo=125.

If the sample is divided into groups, then the mode is calculated using the following formula:

$$Mo = x_m + h\frac{n_m - n_{m-1}}{(n_m - n_{m-1}) + (n_m - n_{m+1})},$$

where x_m - the lower limit of the modal group, h - the value of the interval, n_m, n_{m-1}, n_{m+1} - repetitions of the modal group, the groups adjacent to it from the left and right, respectively.

Asymmetry coefficient count

$$As = \frac{\mu_3}{\sigma^3},$$

here $\mu_3 = \frac{1}{n}\sum_{i=1}^{n}(X_i - \overline{x}_T)^3$. Given frequency and relative frequency variation series, then

$$\mu_3 = \frac{1}{n}\sum_{i=1}^{k}(X_{(i)} - \overline{x})^3 n_i = \sum_{i=1}^{k}(X_{(i)} - \overline{x})^3 \omega_i.$$

μ_3 the following formula can also be used to calculate

$$\mu_3 = \alpha_3 - 3\alpha_1\alpha_2 + 2\alpha_1^3,$$

here $\alpha_m = \frac{1}{n}\sum_{i=1}^{n} X_i^m = \frac{1}{n}\sum_{i=1}^{k} X_{(i)}^m n_i = \sum_{i=1}^{k} X_{(i)}^m \omega_i$.

Calculation of the kurtosis coefficient

$$E_k = \frac{\mu_4}{\sigma^4} - 3,$$

here $\mu_4 = \frac{1}{N}\sum_{i=1}^{N}(X_i - \bar{x})^4$. Given frequency and relative frequency variation series, then

$$\mu_3 = \frac{1}{n}\sum_{i=1}^{k}(X_{(i)} - \bar{x})^4 n_i = \sum_{i=1}^{k}(X_{(i)} - \bar{x})^4 \omega_i.$$

μ_4 the following formula can also be used to calculate

$$\mu_3 = \alpha_4 - 4\alpha_3\alpha_1 - 6\alpha_2\alpha_1^2 - \alpha_1^4,$$

here $\alpha_m = \frac{1}{n}\sum_{i=1}^{n} X_i^m = \frac{1}{n}\sum_{i=1}^{k} X_{(i)}^m n_i = \sum_{i=1}^{k} X_{(i)}^m \omega_i$.

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