# METHODS OF CALCULATING AVERAGE VALUES   IN STATISTICS AND THEIR ROLE IN ECONOMIC ANALYSIS

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**Abstract:** The article talks about types of statistical indicators and their use.  The role of indicators in the economy and how important they are  widely covered.  The advantages and disadvantages of absolute, relative and average quantities are explained in detail.  Current problems and some solutions to them are presented.


**Keywords:** Statistical indicators, absolute values, relative values, mean values, simple arithmetic mean, weighted arithmetic mean.

Any analysis in the economy is based on certain indicators and is done with the help of accurate data.  Such indicators are obtained using statistics and are called statistical indicators.  As we cannot imagine our life without calculations, statistics also play an important role in it.  Financial analysis, which has gained great attention and is developing today, is also based on statistical data.  The state or different organizations make decisions based on such indicators when planning for the future.  All this means that the more complete and error-free the statistical data is, the more perfect the analysis and the plan will be.  So, statistics are very important in our life.  But one of the biggest problems is related to the lack of accurate and complete information.

Indicators in statistics represent the quantitative and qualitative aspects of the studied phenomena.  They describe the number, size, level, proportion, etc. of the processes being studied.  It is known that, in practice, indicators are considered related to various aspects of economic life.

Depending on the method of determination, statistical indicators are divided into aggregate and derivative indicators.  Aggregate indicators are calculated by summing event units, and derivative indicators are divided into absolute, relative and average indicators.

Absolute quantities compare the observer with the amount, size, proportion, etc. of phenomena and processes, they have the power of generalization, but they cannot characterize the level of development of phenomena and processes, the intensity of change.  For example, suppose the population of a certain city reaches 4.5 million people by the beginning of 2021.  This absolute amount cannot tell us anything about whether the population of this city has increased or decreased in comparison to previous years.  Relative quantities do this.  The result obtained by comparing two comparable absolute quantities is called a relative quantity.

When calculating the relative amounts, the rate of the fraction is necessarily placed on the studied indicator. This indicator is also called a comparable indicator. In the denominator of the fraction there is a comparable indicator. Depending on what unit this denominator is equated to, the relative amounts are expressed in coefficients, percentages, and parts per thousand ($\div 1000$).

The disadvantage of absolute and relative quantities is that they cannot give a general description of the studied phenomena and processes. Average quantities perform this task in statistics.

Average quantities are quantities that characterize and describe phenomena of the same type based on their changing characteristics. They are one of the main tools of socio-economic knowledge.

The value of the average gives a generalizing quantitative characteristic of the entire population and characterizes it in relation to this trait.

So, for example, the average wage gives a generalizing quantitative characteristic of the state of remuneration of the considered set of workers. In addition, using average values, it is possible to compare different information sets. So, for example, you can compare different organizations in terms of labor productivity, as well as in terms of capital productivity, material efficiency, and other indicators.

The average quantity is an abstract quantity because it characterizes the essence of a nonexistent unit. This means that none of the units in the set may equal the average amount. Because averages are abstract quantities, there is no reason not to investigate and study them scientifically. Because, abstraction is an important step in any scientific investigation.

The most common type of average is the arithmetic average. It, in turn, is divided into a simple and weighted.

The simple arithmetic mean is determined using the following formula:

$$\overline{x} = \frac{x_1 + x_2 + x_3 + ... + x_n}{f} = \frac{\Sigma x}{f}$$

The weighted arithmetic mean is calculated using the following formula:

$$\overline{x} = \frac{x_1 f_1 + x_2 f_2 + x_3 f_3 + ... + x_n f_n}{f_1 + f_2 + f_3 + ... + f_n} = \frac{\Sigma xf}{\Sigma f}$$

Both of these formulas are used to find the average, but what is the difference? We will answer this question using the following problem:

The monthly income of 20 citizens living in a certain area is 500 000, 30 is 700 000, and 10 is 1 000 000. Find the average monthly income for residents of this area.

According to the formula, this problem can be solved as follows:

$$\frac{500\ 000 + \mathbf{700\ 000} + 1\ 000\ 000}{3} \approx 733\ 000$$

Clearly, the problem was calculated using the simple arithmetic mean formula. Now, after clarifying the issue a little, we will try using the weighted average arithmetic formula.

$$\frac{500\ 000 * 20 + 700\ 000 * 30 + 1\ 000\ 000 * 10}{10 + 30 + 20} \approx 683\ 000$$

As we can see, when using average amounts, it is necessary to pay attention to the nature of the issue. When we tried to solve the same problem in 2 different ways, we got 2 different values, and the difference between them is noticeable. In many cases, statistical data is determined using the first method, and therefore, in general, the problem is often not obvious, but later has its negative impact. Therefore, when conducting statistical analysis, it is advisable to work based on more accurate and complete data.

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