Beginners:Statistical concept - Mean and median

Statistics Explained

This page is part of Statistics 4 beginners , a section in Statistics Explained where statistical indicators and concepts are explained in a simple way to make the world of statistics a bit easier both for pupils and students as well as for all those with an interest in statistics.

An **average** can be described as a summary of a group of numbers as a single number. There are different types of averages; the most common used in official statistics are mean and median.

Mean

The **mean** (also called arithmetic mean), in everyday language called the **average** , is the sum of the values of a group of numbers divided by the amount of numbers in the group.

Example We have 9 numbers in a group: 10, 12, 11, 15, 13, 35, 41, 23, 20. The sum of these 9 numbers is 180. Then the sum of 180 is divided by 9 in order to get the average. The average is 180/9 = 20.

In official statistics, the most common type of average is the **weighted average** or **weighted mean** , as it is rare that all items have the same importance. In a weighted average, each item taken into account is multiplied by a number (weight), which reflects the item's relative importance, then the result is added up before being divided by the number of items.

Example The average of those not owning a car in these 3 countries is **NOT** calculated by adding 5% + 30% + 16%=51% and then 51%/3=17% since the different size of the 3 countries has to be taken into consideration. The weighting factor in this example is the population.

	Population	% not owning a car
Country A	20 million	5%
Country B	500 thousand	30%
Country C	1 million	16%
Total A+B+C	21.5 million	This is a weighted average – how is it calculated?

The way to calculate the weighted average is:

5 % of 20 million = 1 million

30 % of 500 thousand = 150 thousand

16 % of 1 million =160 thousand

Total: 1 million + 150 thousand + 160 thousand = 1.31 million

The weighted average is [(1.31 million/21.5 million) -1] x100 = 6 % (rounded)

Median

The **median** is the middle value in a group of numbers ranked by size. It is the number which is exactly in the middle so that 50% of the ranked numbers are above and 50% are below the median.

Example In order to find the median of the same 9 numbers: 10, 12, 11, 15, 13, 35, 41, 23, 20, first put them in ascending order, i.e. 10, 11, 12, 13, 15, 20, 23, 35, 41 - the middle number is 15: the median is 15 as 4 numbers are below 15 and 4 numbers are above 15.

If there is an even amount of numbers: 10, 11, 12, 13, 15, 20, 23, 35 - the two in the middle (13 and 15) are added together (13+15=28) and then divided by 2 (28/2= 14), which means the median in this case is 14.

Further information

- Video Croatian Bureau of Statistics Median and average
- Video CSO Ireland Median and average
- Tool Croatian Bureau of Statistics Mean
- Tool Croatian Bureau of Statistics Median

Back to Table of Contents Statistics 4 beginners - Statistical concepts

Back to Statistics 4 beginners Introduction