How can I use the PEARSON function in Excel to calculate the correlation coefficient between two sets of data?

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The PEARSON function in Excel is a powerful tool that allows you to calculate the correlation coefficient, also known as Pearson's r, between two sets of data. This function is useful for determining the strength and direction of the relationship between two variables. By using the PEARSON function, you can quickly and accurately measure the degree of correlation between your data sets, providing valuable insights for data analysis and decision making. Simply input the two data sets into the function and it will automatically calculate the correlation coefficient, giving you a reliable measure of the relationship between your variables. This function is essential for anyone working with data in Excel and can greatly enhance the accuracy and efficiency of your analysis.

This article describes the formula syntax and usage of the **PEARSON** function in Microsoft Excel.

Description

Returns the Pearson product moment correlation coefficient, r, a dimensionless index that ranges from -1.0 to 1.0 inclusive and reflects the extent of a linear relationship between two data sets.

Syntax

PEARSON(array1, array2)

The PEARSON function syntax has the following arguments:

Array1 Required. A set of independent values.

Array2 Required. A set of dependent values.

Remarks

The arguments must be either numbers or names, array constants, or references that contain numbers.

If an array or reference argument contains text, logical values, or empty cells, those values are ignored; however, cells with the value zero are included.

If array1 and array2 are empty or have a different number of data points, PEARSON returns the #N/A error value.

The formula for the Pearson product moment correlation coefficient, r, is:

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

where x and y are the sample means AVERAGE(array1) and AVERAGE(array2).