

How to Calculate the Average in Power BI: A Step-by-Step Guide

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Power BI is a sophisticated business intelligence platform designed to transform raw data into insightful, actionable visualizations. Calculating central tendencies, such as the average, is fundamental to data analysis within this tool. Unlike simple spreadsheet calculations, Power BI leverages the power of Data Analysis Expressions (DAX) to define and calculate metrics consistently across various filters and contexts. To calculate the average of a column, you primarily utilize the standard AVERAGE function within a new measure. This approach ensures that the resulting average dynamically adjusts as users interact with the report, providing a robust and accurate single value summary for the entire dataset or specific filtered subsets.

Calculate Average in Power BI (With Example)

Understanding Averages in Power BI

Calculating the average value, or arithmetic mean, is a core requirement for almost any analytical task. In Power BI, this calculation is typically performed using a measure, which is a formula used in visualizations to aggregate data. Defining the average as a measure, rather than simply as a calculated column, is critical because measures react instantly to filters applied by the end-user on the report canvas. For instance, if you have sales data spanning multiple product lines, defining the average sales as a measure allows you to easily see the overall average, or the specific average sales for only a selected subset of products when a filter is applied.

The calculation itself involves summing all values and dividing by the count of those values. However, Power BI handles this complexity internally when you utilize the dedicated DAX function. It is important to note that the input for the average calculation must be a numerical column or an expression that returns a numerical value. Using the correct function ensures data integrity and consistency throughout your visualization efforts.

The Role of DAX and Measures

DAX is the specialized expression language used across Microsoft's analytics tools, including Power BI. When calculating averages, or any aggregate function, we define a calculated field called a measure. Measures are essential for defining complex calculations that do not consume memory until they are actively used within a report visualization. They operate on the fly, evaluating their formula in the current filter context dynamically.

The standard syntax involves naming the new measure, followed by the equal sign, and then the appropriate DAX function. When calculating an average, we utilize the AVERAGE function, which efficiently computes the arithmetic mean of a specified column. Understanding the distinction between measures and calculated columns is paramount in Power BI development, as measures provide the necessary flexibility for dynamic reporting required by advanced business intelligence

environments.

Core Syntax: Using the AVERAGE Function

To implement the average calculation, we must use the specific syntax required by DAX. The basic structure involves referencing the table name and then the column containing the numerical data you wish to analyze. This structure is universally applied whenever you define a simple aggregation measure in Power BI.

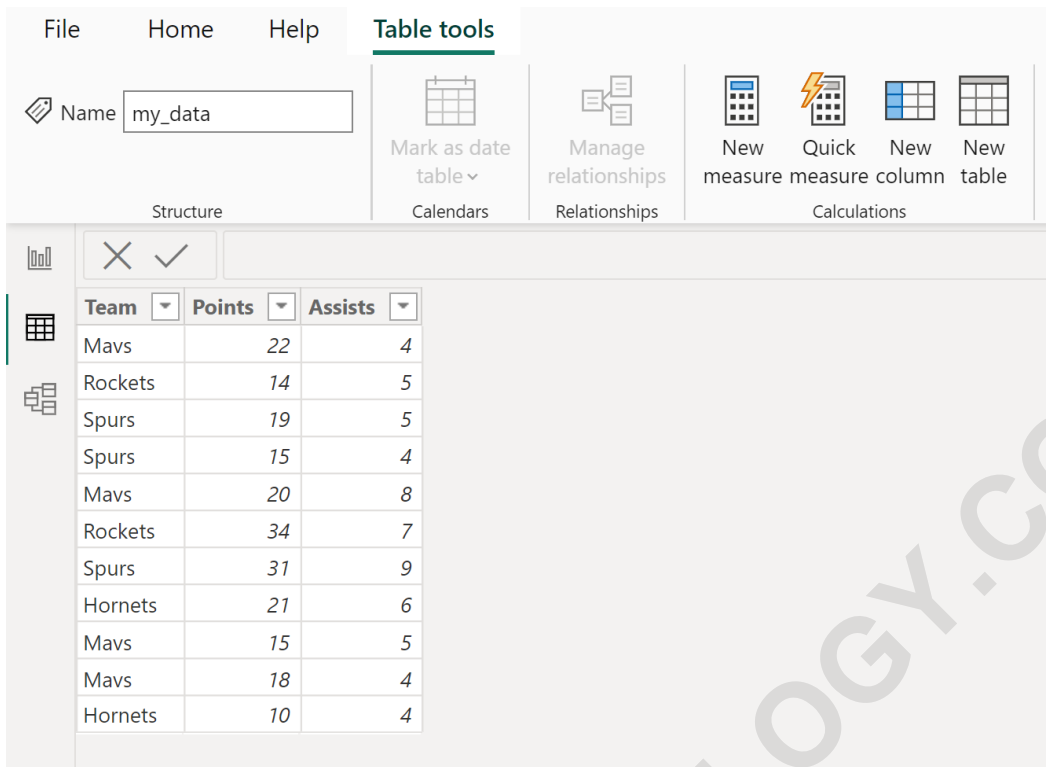
The following syntax demonstrates how to create a new measure that calculates the average value within a specified column:

Avg Points = AVERAGE('my_data')

This particular example creates a new measure named **Avg Points**. It calculates the average value in the **Points** column of the table named **my_data**. This resulting measure can then be dragged into various visual elements to display the calculated average across the entire dataset or based on interactive selections made by the user.

Practical Example: Calculating Player Points Average

Let us walk through a practical demonstration using a fictional dataset. Suppose we have the following table loaded into Power BI, named **my_data**, which contains information about points scored by basketball players across various teams:



Our objective is to calculate the average value found within the **Points** column. This calculation will provide a single, representative metric for performance across the entire population of players in the table.

Step-by-Step Guide to Creating the Measure

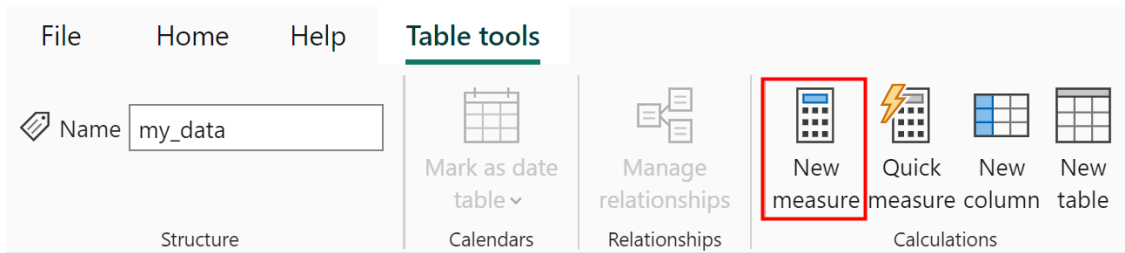
The procedure for creating a new measure is straightforward and involves using the modeling tools available in the Power BI interface. We will use an ordered list to clearly outline the required actions:

Ensure you are in the Power BI Desktop environment and have selected the table where the measure will reside (though measures are model-wide, it's good practice to select the related table).

Click the **Table tools** tab located along the top ribbon interface. This tab provides access to core data modeling functions.

Click the **New measure** icon within the ribbon. This action opens the formula bar, enabling the entry of the DAX expression.

The interface should visually confirm that you are ready to define the measure:



Implementing the Calculation and Reviewing the Result

Once the formula bar is visible, input the necessary DAX code to execute the average calculation on the target column. This formula precisely tells Power BI how to aggregate the data.

Type in the following formula into the formula bar and press Enter:

Avg Points = AVERAGE('my_data')

Successfully executing this command creates a new measure named **Avg Points**, which is now available in the Fields pane. This measure contains the calculated average of values within the **Points** column. We can verify its calculated value in the data view:

The screenshot shows the Power BI interface with the formula bar at the top containing the DAX formula: `1 Avg Points = AVERAGE('my_data'[Points])`. Below the formula bar is a table with three columns: Team, Points, and Assists. The table contains 12 rows of data.

Team	Points	Assists
Mavs	22	4
Rockets	14	5
Spurs	19	5
Spurs	15	4
Mavs	20	8
Rockets	34	7
Spurs	31	9
Hornets	21	6
Mavs	15	5
Mavs	18	4
Hornets	10	4

Displaying the Average Using a Card Visualization

To present this single calculated value to the report viewer, we use a Card visualization, which is ideal for displaying key performance indicators (KPIs) or aggregate statistics.

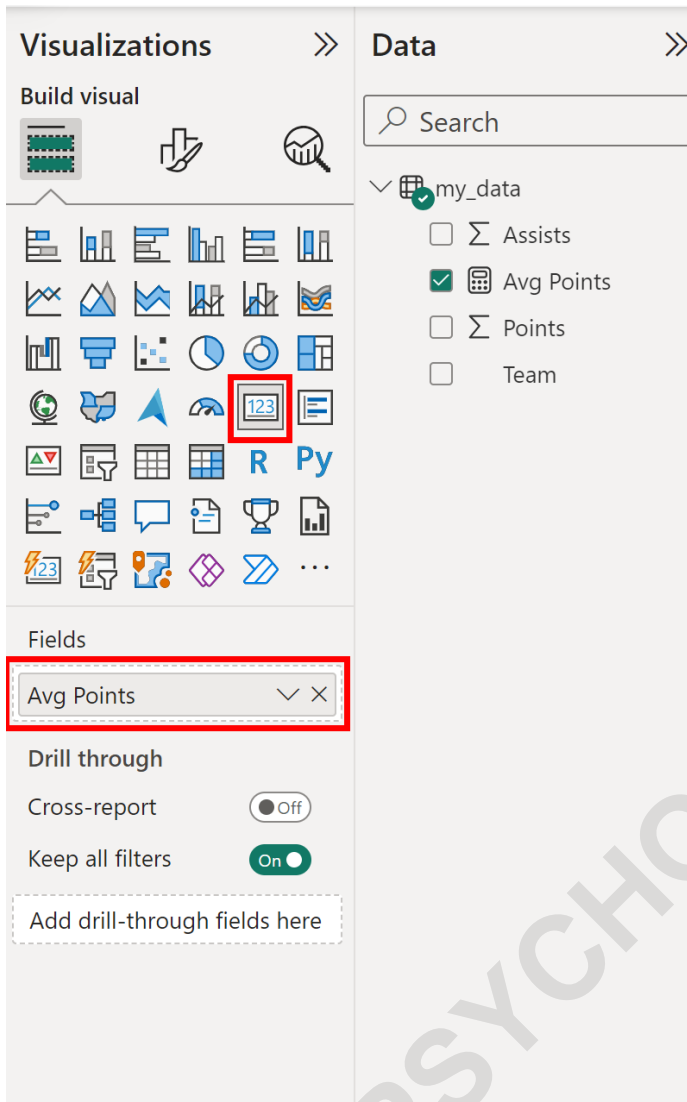
Follow these steps to visualize the result:

Navigate to the **Report View** canvas in Power BI.

Under the **Visualizations** tab, click the **Card** icon to place a new visual onto the canvas.

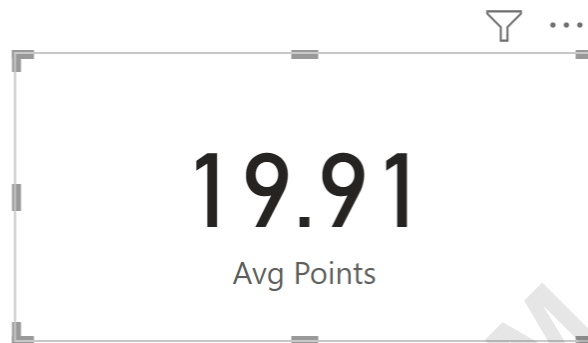
Drag the **Avg Points** measure from the Fields pane and drop it into the **Fields** well of the Card visualization.

This setup connects our dynamic measure to the visual output, ensuring the average is clearly displayed:



The final Card visualization clearly presents the calculated average score for all players included in the dataset, confirming that the overall average value is **19.91**.

Team	Sum of Points	Sum of Assists
Hornets	31	10
Mavs	75	21
Rockets	48	12
Spurs	65	18
Total	219	61



Dynamic Filtering and Context Transition

The primary advantage of using a DAX measure over a static calculation is its ability to handle dynamic filtering and context transition. If we interact with other visuals--such as a table or slicer--the **Avg Points** measure automatically recalculates based only on the filtered subset of data.

For example, if the report includes a table showing the individual player data and we click on the team name **Mavs**, the filter context shifts to include only data associated with that team. Notice how the selection affects the underlying data:

A table visualization showing the same data as the first table, but with the 'Mavs' row highlighted. The table has a filter icon, a refresh icon, and a menu icon in the top right corner.

Team	Sum of Points	Sum of Assists
Hornets	31	10
Mavs	75	21
Rockets	48	12
Spurs	65	18
Total	219	61

A card visualization displaying the average points scored by the Mavs team. The card shows a large number '18.75' and the text 'Avg Points' below it. The card has a filter icon and a menu icon in the top right corner.

Because the average was defined as a dynamic measure, the Card visualization immediately updates to reflect the average of points scored exclusively by the Mavs team. In this filtered context, the average value displayed by the card is **18.75**, successfully demonstrating the robust interactive capabilities of measures in Power BI reporting.

Next Steps in Power BI Analysis

Mastering the calculation of averages is a foundational skill in leveraging the full capacity of Power BI for sophisticated data analysis. Other common tasks that utilize similar DAX measure definitions include calculating totals, running sums, counts, and various conditional aggregations.

For users looking to expand their knowledge beyond the simple arithmetic mean, we highly recommend exploring tutorials that cover related analytical tasks, such as finding median values, calculating standard deviation, or implementing weighted averages using more advanced DAX functions like AVERAGEX.

The following tutorials explain how to perform other common tasks in Power BI:

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