

Calculating Averages in Excel: Excluding Outliers for Accurate Analysis

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The Imperative for Robust Averages

When undertaking rigorous data analysis, relying solely on the simple [average](#), or arithmetic mean, can frequently lead to inaccurate conclusions. This is particularly true when the dataset exhibits extreme fluctuations or contains isolated, high-impact data points. These unusual values, commonly known as [outliers](#), possess the capacity to significantly skew the resulting mean, thereby failing to accurately represent the true central tendency of the majority of observations. To generate a statistically sound and more reliable metric, analysts often turn to methods derived from [robust statistics](#), with the calculation of a trimmed mean being a primary solution.

The necessity for minimizing the influence of extremes is prevalent across numerous disciplines. This technique is routinely applied in academic grading systems, where judges exclude the highest and lowest scores to ensure fairness; in performance reviews, where single, exceptional incidents might distort long-term evaluation; and in financial analysis, where volatility caused by single market shocks must be mitigated. Fortunately, users of [Excel](#) have access to a powerful, native function specifically engineered to address this exact challenge: the **TRIMMEAN** function.

This comprehensive guide is designed to provide a detailed walkthrough of constructing an [Excel](#) formula that dynamically identifies and systematically excludes the single highest and single lowest values within any designated data range before proceeding with the final calculation. By implementing this method, you can ensure that your resulting statistic offers a more representative and stable measure of the core data set.

Implementing the Dynamic Excel Formula

The most efficient and scalable methodology for computing a modified average that consistently disregards the highest and lowest data points involves coupling the powerful **TRIMMEAN** function with the versatile **COUNT** function. This combination creates a dynamic formula structure that automatically adjusts the exclusion percentage based on the total number of cells in the selected range, guaranteeing precision regardless of the dataset's size.

The general structure required to calculate the average of a specified range (for instance, **A2:A11**) while dropping exactly one value from the upper extreme and one value from the lower extreme is shown below. This dynamic formulation is essential for obtaining a robust, trimmed mean where two specific outliers are precisely removed.

=TRIMMEAN(A2:A11,2/COUNT(A2:A11))

As demonstrated, this specific formulation instructs [Excel](#) to first determine the total count of values, then utilize that count to derive the percentage of data to be trimmed from the calculation.

This ensures that the single highest value and the single lowest value found within the range **A2:A11** are symmetrically discarded. Following this crucial exclusion step, the function proceeds to calculate the average of the remaining data points, providing the user with a centralized measure that is significantly less susceptible to skewing by extreme inputs.

To fully appreciate the efficiency and flexibility of this advanced approach, we will now proceed to examine a practical, step-by-step example demonstrating the application of this formula within a typical spreadsheet environment.

Step-by-Step Practical Example

Let us consider a scenario where we are analyzing a data set composed of 10 distinct scores, measurements, or recorded observations, which are situated in column A of our worksheet. These values have been selected to effectively illustrate the disruptive impact that outliers can have on traditional average calculations, highlighting the need for a trimmed mean.

Suppose our worksheet contains the following column of values, spanning the designated range **A2:A11**:

	A	B	C	D	E
1	Values				
2	14				
3	19				
4	22				
5	24				
6	30				
7	44				
8	28				
9	17				
10	14				
11	10				
12					
13					
14					
15					

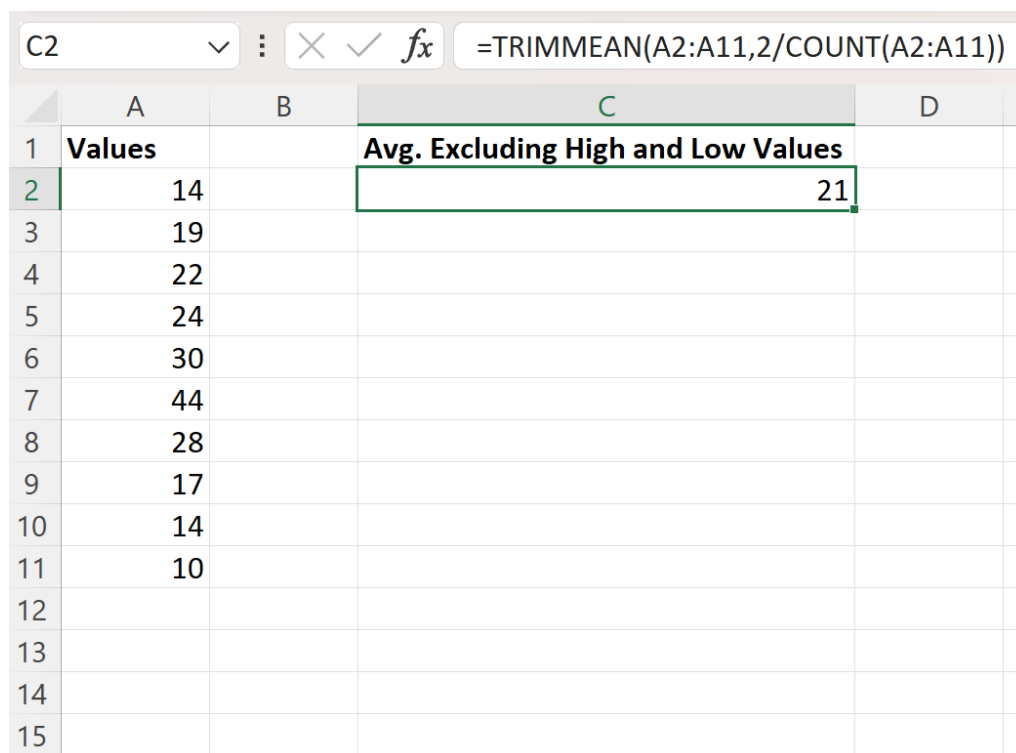
Our primary objective is to accurately compute the average of this range (**A2:A11**), but only after confidently ensuring that both the absolute highest score and the absolute lowest score have been successfully excluded from the calculation subset. This methodological guarantee ensures

statistical impartiality and consistency in data evaluation, regardless of the presence of extremes.

To execute this precise operation, we simply need to input the requisite formula into an accessible empty cell, such as cell **C2**, where the resulting trimmed average will be instantly displayed:

=TRIMMEAN(A2:A11,2/COUNT(A2:A11))

The immediate outcome of applying this robust formula is clearly visible in the following screenshot, which precisely indicates the computed trimmed average in the output cell:



The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D
1	Values		Avg. Excluding High and Low Values	
2	14		21	
3	19			
4	22			
5	24			
6	30			
7	44			
8	28			
9	17			
10	14			
11	10			
12				
13				
14				
15				

The formula bar at the top shows the formula: **=TRIMMEAN(A2:A11,2/COUNT(A2:A11))**. The result in cell C2 is **21**.

Based on the output presented in cell **C2**, we can definitively establish that the average value for the range **A2:A11**, subsequent to the systematic exclusion of the highest and lowest data points, is exactly **21**. This figure represents the calculated central tendency of the remaining eight values, offering a statistically cleaner measure.

Verification and Mathematical Proof

While the **TRIMMEAN** [function](#) is highly reliable, performing a manual verification step is crucial for building complete confidence in the result. This process necessitates two initial steps: first, identifying the exact minimum and maximum values in the dataset that are targeted for exclusion, and second, manually calculating the average of the remaining values.

Upon reviewing the raw data contained in column A (10, 14, 19, 22, 24, 30, 28, 17, 14, 44), we can easily pinpoint the two extreme values. The lowest value in the set is clearly **10**, and the highest value is **44**. These two specific values are precisely the ones that the **TRIMMEAN** function successfully removes from the calculation set, as visually illustrated in the graphic below:

	A	B	C	D
1	Values		Avg. Excluding High and Low Values	
2	14		21	
3	19			
4	22			
5	24			
6	30			
7	44 Highest			
8	28			
9	17			
10	14			
11	10 Lowest			
12				
13				
14				
15				
16				
17				
18				

Once the values 10 and 44 are accurately excluded, the remaining eight values intended for averaging are: 14, 19, 22, 24, 30, 28, 17, and 14. We can now proceed to manually compute the [average](#) of this remaining subset to confirm the output generated by Excel:

Calculation:

$$\text{Average} = (14 + 19 + 22 + 24 + 30 + 28 + 17 + 14) / 8$$

$$\text{Average} = 168 / 8 = \mathbf{21}$$

This manual calculation meticulously confirms the result obtained using the Excel formula. This verification step strongly underscores the reliability, accuracy, and statistical integrity of employing the **TRIMMEAN** [function](#) for robust and outlier-resistant data analysis.

Deconstructing the TRIMMEAN Function's Logic

A deep understanding of the mechanical processes underlying the formula is paramount for

applying it effectively across diverse datasets and scenarios. Let us closely re-examine the structural components used to calculate the trimmed average:

=TRIMMEAN(A2:A11,2/COUNT(A2:A11))

The **TRIMMEAN** function operates by accepting two required arguments, structured according to the following syntax definition:

TRIMMEAN(array, percent)

These two essential parameters are formally defined as follows:

array: This argument specifies the exact range of numerical values (e.g., **A2:A11**) from which the average is intended to be calculated. This is the source dataset containing all observations.

percent: This is the critical argument that dictates the fraction of data points to be symmetrically trimmed (removed) from the range before the average computation occurs. This percentage is always applied symmetrically: half of the percentage is removed from the lowest end of the data, and the other half is removed from the highest end.

In our specific practical scenario, the second argument is dynamically formulated as **2/COUNT(A2:A11)**. Since the **COUNT(A2:A11)** function successfully returns 10 (as there are 10 numerical values in the range), the calculation for the percentage argument simplifies to 2/10, which equates mathematically to 0.2, or 20%.

When the **TRIMMEAN** function receives this 20% trim instruction, it correctly interprets this as removing 10% of the values from the bottom of the array and 10% of the values from the top of the array. Given that the array contains 10 total values, 10% of 10 is exactly one value. Consequently, this dynamic construction ensures that the single lowest value and the single highest value are accurately and symmetrically trimmed, leaving the desired subset of eight values for the final, reliable average calculation.

Scaling the Formula to Variable Data Sizes

One of the most significant advantages inherent in using the dynamic structure **2/COUNT(range)** is its remarkable scalability and adaptability. This particular formula configuration guarantees that precisely two values--one minimum and one maximum--are removed from the dataset, regardless of the size of the data range, provided the data set size (N) is two or greater.

Consider an alternative scenario where your range, perhaps **A2:A21**, now contains 20 total values instead of the initial 10. The formula automatically adjusts its internal calculation. In this case, the **COUNT(A2:A21)** function would return 20, making the percentage argument 2/20, which is equal

to 0.1 (or 10%).

When **TRIMMEAN** processes a 10% trim: it removes 5% of the values from the lowest end and 5% of the values from the highest end. Given the 20 total values, 5% of 20 is exactly one value. Therefore, the formula successfully trims the lowest value (1) and the highest value (1), achieving the intended analytical goal of calculating the average of the central 18 values while maintaining statistical consistency across variable sample sizes.

It is important for analysts to recognize that the **TRIMMEAN** function is fundamentally designed to round the number of excluded data points down to the nearest even number if the resulting calculation yields a fractional value. However, by strategically utilizing the **2/COUNT(range)** method, we ensure that the formula calculates the minimum percentage required to eliminate exactly one value from the top and one value from the bottom, thereby flawlessly preserving the desired statistical integrity across all variable sample sizes ($N > 1$).

Additional Resources for Advanced Excel Operations

Mastering the effective use of robust statistical functions, such as the **TRIMMEAN** [function](#), significantly elevates data analysis capabilities within Excel. We strongly encourage further exploration into related functions and techniques that facilitate complex data manipulation and precise statistical measurement.

The following tutorials explain how to execute other crucial operations in [Excel](#), providing essential tools for filtering, conditional aggregation, and deriving deeper data insights:

Calculating Conditional Averages (e.g., using the **AVERAGEIF** function).

Analyzing Data Distributions using Frequency Functions for detailed summaries.

Techniques for Handling Missing Data Points and Errors gracefully within large datasets.