How can I calculate the average excluding outliers in Excel?

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Calculating the average excluding outliers in Excel involves using a statistical function called AVERAGEIF to exclude certain data points from the calculation. This function allows you to specify a criteria for selecting the data to be included in the average calculation, thereby excluding any outliers that do not meet the criteria. By carefully selecting the criteria, you can accurately calculate the average of a dataset while disregarding any extreme values that may skew the result. This method is useful for obtaining a more representative and accurate average in situations where outliers may significantly impact the overall result.

Excel: Calculate Average Excluding Outliers

There are two ways to calculate an average while excluding outliers in Excel:

1. Calculate Average and Use TRIMMEAN to Exclude Outliers

2. Calculate Average and Use Interquartile Range to Exclude Outliers

We will use the following dataset in Excel to illustrate how to use both methods:

	A	B	C	D	E
1	**data**				
2	18				
3	24				
4	26				
5	34				
6	38				
7	45				
8	48				
9	54				
10	60				
11	73				
12	79				
13	85				
14	94				
15	98				
16	164				
17					
18					
19					
20					
21					

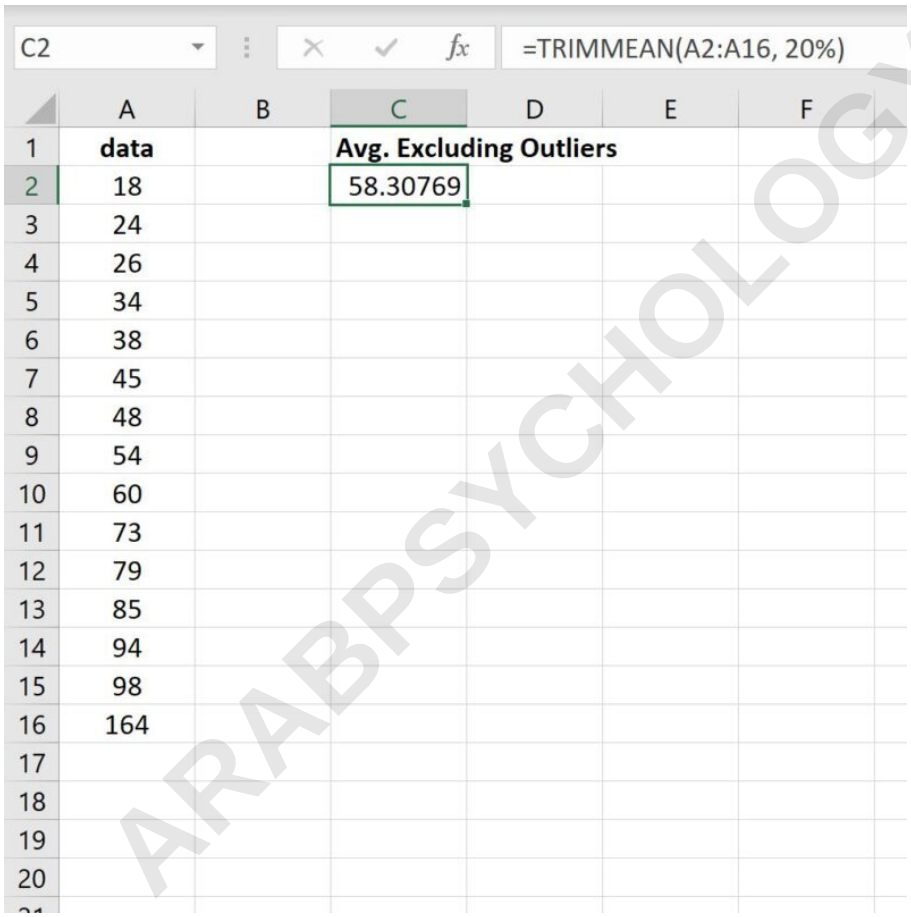
Method 1: Calculate Average and Use TRIMMEAN to Exclude Outliers

The TRIMMEAN function in Excel can be used to calculate the average of a range of values while excluding a certain percentage of observations from the top and bottom of the dataset.

For example, we can use the following formula to calculate the average value in column A while excluding a total of 20% of observations (10% from the top and 10% from the bottom):

=TRIMMEAN(A2:A16, 20%)

Since we have 15 values in our dataset 10% is 1.5, which is rounded down to 1. Thus, this formula will calculate the average of the values in the range while excluding the smallest value and the largest value:



The average with outliers excluded turns out to be 58.30769.

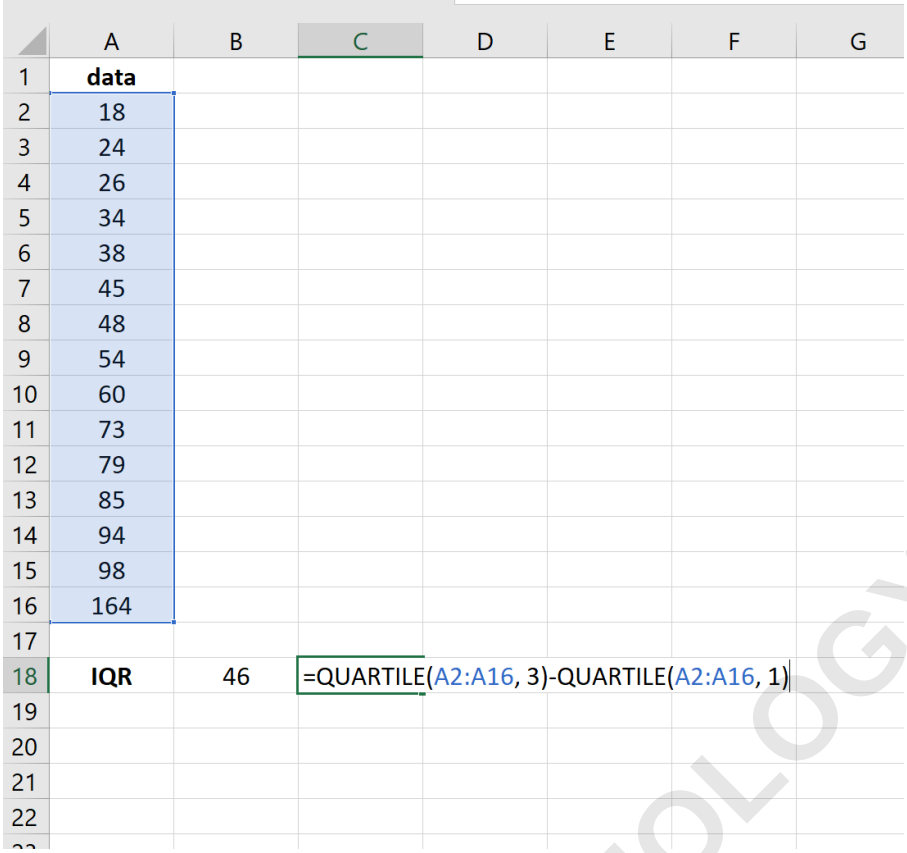
Method 2: Calculate Average and Use Interquartile Range to Exclude Outliers

The (IQR) is the difference between the 75th percentile (Q3) and the 25th percentile (Q1) in a dataset. It measures the spread of the middle 50% of values.

We can define an observation to be an outlier if it is 1.5 times the interquartile range greater than the third quartile (Q3) or 1.5 times the interquartile range less than the first quartile (Q1).

We can use the following formula to calculate the interquartile range for our dataset in Excel:

=QUARTILE(A2:A16,3)-QUARTILE(A2:A16,1)



	A	B	C	D	E	F	G
1	**data**						
2	18						
3	24						
4	26						
5	34						
6	38						
7	45						
8	48						
9	54						
10	60						
11	73						
12	79						
13	85						
14	94						
15	98						
16	164						
17							
18	**IQR**	46	=QUARTILE(A2:A16, 3)-QUARTILE(A2:A16, 1)				
19							
20							
21							
22							

Next, we can use the following formula to use the IQR to identify outlier values and assign a "1" to any value that is an outlier in the dataset:

=IF(OR(A2<QUARTILE($A$2:$A$16,1)-1.5*$B$18,A2>QUARTILE($A$2:$A$16,3)+1.5*$B$18),1,0)

The following screenshot shows how to use this formula:

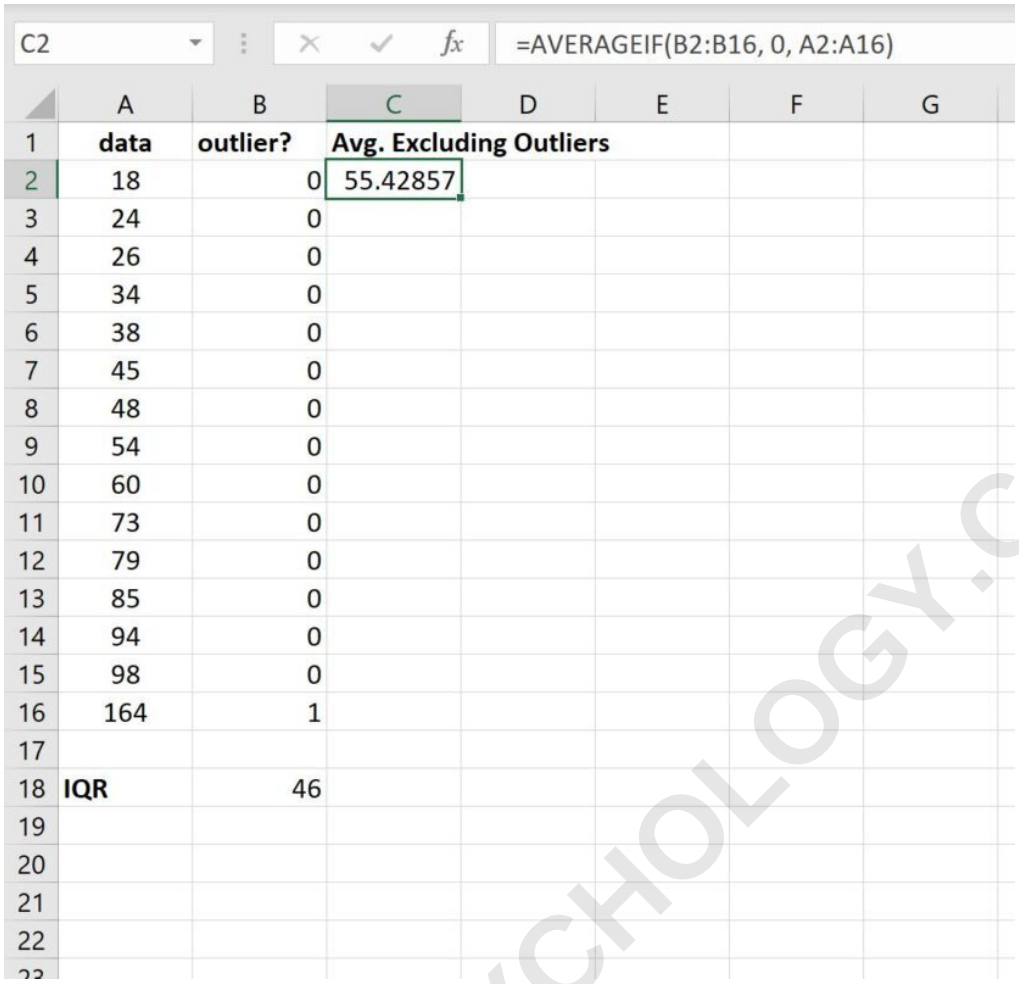
	A	B	C	D	E	F	G	H	I	J
1	**data**	**outlier?**								
2	18	=IF(OR(A2<QUARTILE($A$2:$A$16, 1)-1.5*$B$18, A2>QUARTILE($A$2:$A$16, 3)+1.5*$B$18), 1, 0)								
3	24	0								
4	26	0								
5	34	0								
6	38	0								
7	45	0								
8	48	0								
9	54	0								
10	60	0								
11	73	0								
12	79	0								
13	85	0								
14	94	0								
15	98	0								
16	164	1								
17										
18	**IQR**	46								
19										
20										
21										
22										
23										

We see that only one value - 164 - turns out to be an outlier in this dataset.

Lastly, we can use the following formula to calculate the average of all values in the dataset that are not outliers:

=AVERAGEIF(B2:B16, 0, A2:A16)

The following screenshot shows how to use this formula:



	A	B	C	D	E	F	G
1	data	outlier?	Avg. Excluding Outliers				
2	18	0	55.42857				
3	24	0					
4	26	0					
5	34	0					
6	38	0					
7	45	0					
8	48	0					
9	54	0					
10	60	0					
11	73	0					
12	79	0					
13	85	0					
14	94	0					
15	98	0					
16	164	1					
17							
18	IQR	46					
19							
20							
21							
22							

The average with outliers excluded turns out to be 55.42857.

Additional Resources

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