

# How to Calculate Percentile Rank in Google Sheets Using PERCENTRANK.INC

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November 21, 2025

## RECOMMENDED CITATION

stats writer (2025). *How to Calculate Percentile Rank in Google Sheets Using PERCENTRANK.INC*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=98661>

The determination of a percentile rank is a fundamental operation in statistical analysis, providing insight into the relative position of a specific data point within a larger distribution. In the powerful environment of Google Sheets, the primary formula utilized for this calculation is the **PERCENTRANK.INC** function. This specialized function is designed to measure how a single value compares to all other values in a dataset, quantifying the proportion of scores that fall below or are equal to the score in question. Understanding this calculation is crucial for accurate data analysis, whether evaluating student performance, market trends, or scientific measurements.

The **PERCENTRANK.INC** function requires two mandatory arguments: the array or **range of cells** containing the numerical dataset, and the specific **value** within that range whose rank is being evaluated. The output of the function is a decimal number, ranging from 0 to 1, which represents the percentile rank. For instance, an output of 0.75 signifies that 75% of the values in the specified range are less than or equal to the evaluated value. This methodology aligns with the standard definition of an inclusive percentile calculation, ensuring that the smallest value receives a rank of 0 and the largest receives a rank of 1 (or 100%).

## Understanding the Core Percentile Rank Functionality

When initiating percentile calculations in Google Sheets, users often encounter the generic **PERCENTRANK** function. This function, while still operational, is generally considered a legacy function that defaults to the inclusive method (identical to **PERCENTRANK.INC**). It is used to quickly determine the relative position of a data point within the entire distribution, expressing that rank as a percentage of the total dataset size. Mastering the syntax of this function is the first step toward advanced statistical computation within the spreadsheet environment.

The basic structure of the PERCENTRANK function is highly intuitive, requiring only the dataset and the target value. The formula calculates the percentage of data points in the array that are less than or equal to the target value. It's important to note the structure carefully, particularly how cell ranges and specific cell references are designated, as accuracy is paramount in statistical reporting. The function also allows for an optional third argument, , which specifies the number of significant digits for the resulting percentile value, though it usually defaults to three significant digits if omitted.

This function uses the following basic syntax, which clearly distinguishes the dataset range from the specific value being tested for its rank:

**=PERCENTRANK(A2:A16, A2)**

This specific configuration calculates the percentile rank of the numerical value residing in cell **A2**, assessing its standing relative to the entire range defined by **A2:A16**. This provides a quantifiable

measure, ranging from 0 to 1, that summarizes the position of the individual score within the context of the larger data group.

## Detailed Comparison of Percentile Rank Functions

While the generic **PERCENTRANK** function provides a straightforward approach, Google Sheets offers two modern, statistically distinct functions that provide greater control over how endpoints (the minimum and maximum values) are handled in the calculation. These specialized functions are crucial when precision is required in academic or professional data analysis, as the method of interpolation and inclusion can subtly shift the resulting percentile value, especially in smaller datasets.

The distinction between these two functions centers on whether the calculation is **inclusive** or **exclusive**. The PERCENTRANK family of functions treats the data points as positions on a continuous distribution rather than simply discrete categories. The choice between the inclusive and exclusive methods impacts the range of possible percentile ranks that the function can return, affecting the interpretation of values at the extreme ends of the dataset.

There are three main percentile rank functions available in Google Sheets, each serving a slightly different statistical purpose:

**PERCENTRANK.INC:** This is the inclusive method. It calculates the percentile rank of a value, ensuring that the smallest value in the dataset receives a rank of 0 (0%) and the largest value receives a rank of 1 (100%). This method is typically preferred for standard descriptive statistics as it fully encompasses the range of the observed data.

**PERCENTRANK.EXC:** This is the exclusive method. It calculates the percentile rank of a value, but it fundamentally excludes the endpoints of the distribution from the possible results. Consequently, the smallest value in the dataset will return a percentile rank greater than 0, and the largest value will return a rank less than 1. This method is often used for inferential statistics or when comparing data to a theoretical population.

The following practical scenario will demonstrate how to implement these functions and analyze their outputs in a real-world setting, allowing for a clearer differentiation between the inclusive and exclusive calculated ranks.

## Practical Application: Calculating Student Exam Scores

To illustrate the utility of the **PERCENTRANK** function, consider a scenario involving student assessment. Suppose we possess a dataset recording the exam scores achieved by 15 students in a specific academic class. Analyzing these scores using percentile rank allows us to understand each student's relative performance position among their peers, which is far more informative than

simply looking at the raw score.

The dataset, which is typically organized in a single column representing the scores, serves as the array input for our percentile formulas. This arrangement ensures that the calculation accurately reflects the distribution of scores across the class.

	A	B	C	D	
1	<b>Exam Scores</b>				
2	2				
3	5				
4	5				
5	7				
6	9				
7	13				
8	15				
9	17				
10	22				
11	24				
12	30				
13	31				
14	38				
15	39				
16	42				
17					
18					
19					
20					

Our objective is to calculate the precise percentile rank corresponding to each individual student's score. This requires setting up a parallel column where the calculated percentile values will reside, providing a clear visual representation of the performance distribution.

### Step-by-Step Implementation of PERCENTRANK

The implementation begins by selecting the first cell adjacent to the data set where the rank output is desired, typically cell B2 in this example. Since we want to apply the same formula dynamically to every score in the list, careful use of absolute references (using dollar signs, \$) for the data range is essential. This ensures that when the formula is copied down the column, the comparison range remains fixed to the entire dataset, preventing calculation errors.

We utilize the generic **PERCENTRANK** function (which mirrors the behavior of

**PERCENTRANK.INC**) to calculate the rank of the first score. We type the following formula into cell B2, referencing the fixed range `$A$2:$A$16` and the relative cell `A2`:

**=PERCENTRANK(\$A\$2:\$A\$16, A2)**

The use of absolute references (`$A$2:$A$16`) is critical because it locks the dataset range. As the formula is dragged or copied down, the cell reference for the score being evaluated (`A2`, `A3`, `A4`, etc.) will change dynamically, while the comparative range remains constant across all calculations. This technical detail ensures that every score is ranked against the complete population of 15 student scores.

Once the initial formula is established in B2, the next step is to efficiently replicate this calculation across the entire column. This is achieved by clicking the fill handle (the small square at the bottom-right corner of cell B2) and dragging it down to the last corresponding score in the dataset (B16). This action automatically populates the percentile rank for every score:

	A	B	C	D
B2		<code>=PERCENTRANK(\$A\$2:\$A\$16, A2)</code>		
1	<b>Exam Scores</b>	<b>PERCENTRANK</b>		
2	2	0		
3	5	0.071		
4	5	0.071		
5	7	0.214		
6	9	0.286		
7	13	0.357		
8	15	0.429		
9	17	0.5		
10	22	0.571		
11	24	0.643		
12	30	0.714		
13	31	0.786		
14	38	0.857		
15	39	0.929		
16	42	1		
17				
18				
19				
20				

## Interpreting the Calculated Percentile Ranks

The resulting decimal values obtained in Column B require careful interpretation to translate them into meaningful insights about student performance. The rank represents the proportion of students who scored at or below that particular mark. It is often helpful to multiply the decimal rank by 100 to express the results as a familiar percentage, aiding stakeholders in understanding the performance metric.

Here is how to interpret a few key results from the calculated percentile rank values, providing context to the scores:

The student who achieved the lowest score, 2, ranked at percentile **0** (or 0%) in the class. This is consistent with the inclusive nature of the **PERCENTRANK** function, as no other score is lower than the minimum value.

The scores of 5 resulted in a rank of **.071**, meaning that approximately 7.1% of the class scored at or below 5. This indicates that these students performed better than a very small fraction of their peers, placing them near the bottom of the distribution.

The student who scored a 7 ranked at percentile **.214**, indicating that approximately 21.4% of the students scored 7 or less. As the score increases, the percentile rank grows, reflecting a higher relative standing within the dataset.

It is a defining characteristic of the **PERCENTRANK** and **PERCENTRANK.INC** functions that the smallest value observed within the dataset will invariably be assigned a percentile rank of 0, while the largest value in the dataset will consistently receive a percentile rank of 1 (or 100%). This strict adherence to the endpoints makes the inclusive method the preferred choice for applications where the boundaries of the observed data must be clearly defined.

## Comparing Inclusive (INC) versus Exclusive (EXC) Methods

To fully appreciate the nuances of percentile calculation, it is essential to compare the outputs of **PERCENTRANK.INC** and **PERCENTRANK.EXC** side-by-side. The choice between these two methods can significantly affect the statistical interpretation, particularly for datasets that are small or those where the endpoints are critical reference points. The visual comparison provided by Google Sheets clearly highlights the operational difference between these two forms of percentile calculation.

The screenshot below illustrates the results when applying **PERCENTRANK.INC** and **PERCENTRANK.EXC** to the same set of student scores. Notice the formulas used in columns C and D, respectively, demonstrating how both functions interact with the identical data range (A2:A16).

D2 fx =PERCENTRANK.EXC(\$A\$2:\$A\$16, A2)

	A	B	C	D
1	<b>Exam Scores</b>	<b>PERCENTRANK</b>	<b>PERCENTRANK.INC</b>	<b>PERCENTRANK.EXC</b>
2	2	0	0	0.063
3	5	0.071	0.071	0.125
4	5	0.071	0.071	0.125
5	7	0.214	0.214	0.25
6	9	0.286	0.286	0.313
7	13	0.357	0.357	0.375
8	15	0.429	0.429	0.438
9	17	0.5	0.5	0.5
10	22	0.571	0.571	0.563
11	24	0.643	0.643	0.625
12	30	0.714	0.714	0.688
13	31	0.786	0.786	0.75
14	38	0.857	0.857	0.813
15	39	0.929	0.929	0.875
16	42	1	1	0.938
17				
18				
19				
20				
21				

A close inspection of the output reveals two fundamental differences that define the behavior of these functions in PERCENTRANK calculations:

The **PERCENTRANK.INC** function produces results that are statistically identical to the generic **PERCENTRANK** function. Since **PERCENTRANK** is designed to be inclusive of the endpoints, the values in the INC column match the values generated in the previous examples, confirming their functional equivalence.

The **PERCENTRANK.EXC** function demonstrates its exclusive nature by modifying the percentile results at the extremes. Critically, it does not return a value of 0 and 1 for the smallest and largest values in the dataset, respectively. Instead, the minimum result is slightly greater than zero (0.0625), and the maximum result is slightly less than one (0.9375). This is because the exclusive method estimates the percentile based on the internal data points, conceptually excluding the actual minimum and maximum from being the 0th and 100th percentiles.

## Conclusion: Leveraging Percentile Functions in Google Sheets

Choosing the appropriate percentile function--whether **PERCENTRANK**, **PERCENTRANK.INC**, or

**PERCENTRANK.EXC**--depends entirely on the statistical methodology required for the data analysis project. For routine reporting and descriptive statistics where the goal is to show a score's rank relative to the observed maximum and minimum, the inclusive functions (**PERCENTRANK** and **PERCENTRANK.INC**) are recommended due to their clear definition of the 0% and 100% boundaries.

Conversely, if the analysis aims to compare the sample data to a hypothetical population distribution, or if strict adherence to exclusive interpolation methods is necessary, **PERCENTRANK.EXC** should be utilized. Regardless of the function chosen, the capability to calculate percentile rank efficiently within Google Sheets remains a powerful tool for transforming raw numerical data into actionable, relative performance metrics. Users are encouraged to consult the official documentation for the most precise details on implementation and potential statistical assumptions inherent in each function.

You can find the complete documentation for the **PERCENTRANK** function in Google Sheets [here](#).