

# How should I analyze percentile rank data?

Authored by  
**stats writer**

July 1, 2024

## RECOMMENDED CITATION

stats writer (2024). *How should I analyze percentile rank data?*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=164866>

Percentile rank data refers to a statistical measure that represents the percentage of values in a given dataset that are equal to or lower than a specific value. To analyze this type of data, one should first determine the range and distribution of the dataset. This can be done by sorting the data in ascending order and calculating the total number of values. Next, one can calculate the percentile rank for a specific value by dividing its rank by the total number of values and multiplying by 100. This will provide a percentage that can be used to compare the relative position of the value within the dataset. Additionally, graphing the data in a percentile plot can help visualize the distribution and identify any outliers. It is important to note that analyzing percentile rank data should be done carefully, taking into consideration the context and potential limitations of the dataset.

## How should I analyze percentile rank data? | Stata FAQ

**I have to do an analysis of variance on some test scores that were given to me as percentile scores. My question is, How should I analyze percentile rank data?**

**The problem, of course, is that percentile rank data are not normally distributed. Percentile ranks are ordinal and usually form a rectangular (uniform) distribution. The easiest solution is to transform the percentile rank scores into z-scores (standard normal scores) using an inverse normal function. The z-scores will be normally distributed with mean equal to zero and a standard deviation of one. The range of the z-scores will be between  $\pm 2.33$ . In Stata, the**

**transformation would look like this:**

**generate zscore = invnorm(pctrank/100)**

**Specialists in testing often transform percentile ranks into NCE (normal curve equivalence) scores.**

**NCEs are a type of standardized score with a mean of 50 and a standard deviation of 21.06. NCEs have a range of**

**one to 99 and in many ways look a lot like percentile ranks. Here is how the**

**NCE transformation would look in Stata:**

**generate nce = invnorm(pctrank/100)\*21.06 + 50**

**Here is a table that gives a rank of percentile rank scores and their equivalent**

**z-scores and NCE scores:**

**pctrank zscore nce**

**1. 1 -2.326348 1.007114**

**2. 2 -2.053749 6.748048**

**3. 3 -1.880794 10.39049**

**4. 4 -1.750686 13.13055**

**5. 5 -1.644854 15.35938**

6. 10 -1.281552 23.01052
7. 20 -.8416212 32.27546
8. 25 -.6744897 35.79525
9. 30 -.5244005 38.95612
10. 40 -.2533471 44.66451
11. 50 0 50
12. 60 .2533471 55.33549
13. 70 .5244005 61.04388
14. 75 .6744897 64.20476
15. 80 .8416212 67.72454
16. 90 1.281552 76.98948
17. 95 1.644854 84.64062
18. 96 1.750686 86.86945
19. 97 1.880794 89.60951
20. 98 2.053749 93.25195
21. 99 2.326348 98.99289