

How to Calculate Percentile Rank in Pandas (With Examples)

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Pandas has a built-in method for calculating percentile ranks called `.rank()`. It takes a numerical column of data and returns the percentile rank of each value in the column, from 0 to 100. It is simple to use and can be applied to many different types of data. For example, you could use it to calculate the percentile rank of any given student's test score. You can also use it to compare the percentile ranks of different groups of data, such as comparing the scores of two different classes.

The **percentile rank** of a value tells us the percentage of values in a dataset that rank equal to or below a given value.

You can use the following methods to calculate percentile rank in pandas:

Method 1: Calculate Percentile Rank for Column

```
df = df.rank(pct=True)
```

Method 2: Calculate Percentile Rank by Group

```
df = df.groupby('group_var').transform('rank', pct=True)
```

The following examples show how to use each method in practice with the following pandas DataFrame:

```
import pandas as pd
```

```
#create DataFrame
```

```
df = pd.DataFrame({'team': ,  
'points': })
```

```
#view DataFrame
```

```
print(df)
```

```
team points
```

```
0 A 2
```

```
1 A 5
```

```
2 A 5
```

```
3 A 7
```

```
4 A 9
```

```
5 A 13
```

```
6 A 15
```

```
7 B 17
```

```
8 B 22
```

9 B 24
10 B 30
11 B 31
12 B 38
13 B 39

Example 1: Calculate Percentile Rank for Column

The following code shows how to calculate the percentile rank of each value in the points column:

```
#add new column that shows percentile rank of points
```

```
df = df.rank(pct=True)
```

```
#view updated DataFrame
```

```
print(df)
```

```
team points percent_rank
```

```
0 A 2 0.071429
```

```
1 A 5 0.178571
```

```
2 A 5 0.178571
```

```
3 A 7 0.285714
```

```
4 A 9 0.357143
```

```
5 A 13 0.428571
```

```
6 A 15 0.500000
```

```
7 B 17 0.571429
```

```
8 B 22 0.642857
```

```
9 B 24 0.714286
```

```
10 B 30 0.785714
```

```
11 B 31 0.857143
```

```
12 B 38 0.928571
```

```
13 B 39 1.000000
```

Here's how to interpret the values in the **percent_rank** column:

7.14% of the points values are equal to or less than 2.

17.86% of the points values are equal to or less than 5.

28.57% of the points values are equal to or less than 7.

And so on.

Example 2: Calculate Percentile Rank by Group

The following code shows how to calculate the percentile rank of each value in the points column, grouped by team:

```
#add new column that shows percentile rank of points, grouped by team
```

```
df = df.groupby('team').transform('rank', pct=True)
```

```
#view updated DataFrame
```

```
print(df)
```

```
team points percent_rank
```

```
0 A 2 0.142857
```

```
1 A 5 0.357143
```

```
2 A 5 0.357143
```

```
3 A 7 0.571429
```

```
4 A 9 0.714286
```

```
5 A 13 0.857143
```

```
6 A 15 1.000000
```

```
7 B 17 0.142857
```

```
8 B 22 0.285714
```

```
9 B 24 0.428571
```

```
10 B 30 0.571429
```

```
11 B 31 0.714286
```

```
12 B 38 0.857143
```

```
13 B 39 1.000000
```

14.3% of the points values for team A are equal to or less than 2.

35.7% of the points values for team A are equal to or less than 5.

57.1% of the points values for team A are equal to or less than 7.

And so on.