

# How to Easily Calculate Deciles in R: A Step-by-Step Guide

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## RECOMMENDED CITATION

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In statistics, **deciles** are numbers that split a dataset into ten groups of equal frequency.

The first decile is the point where 10% of all data values lie below it. The second decile is the point where 20% of all data values lie below it, and so on.

We can use the following syntax to calculate the deciles for a dataset in R:

```
quantile(data, probs = seq(.1, .9, by = .1))
```

The following example shows how to use this function in practice.

### Example: Calculate Deciles in R

The following code shows how to create a fake dataset with 20 values and then calculate the values for the deciles of the dataset:

```
#create dataset  
data <- c(56, 58, 64, 67, 68, 73, 78, 83, 84, 88,  
89, 90, 91, 92, 93, 93, 94, 95, 97, 99)
```

```
#calculate deciles of dataset  
quantile(data, probs = seq(.1, .9, by = .1))
```

```
10% 20% 30% 40% 50% 60% 70% 80% 90%  
63.4 67.8 76.5 83.6 88.5 90.4 92.3 93.2 95.2
```

The way to interpret the deciles is as follows:

10% of all data values lie below **63.4**  
20% of all data values lie below **67.8**.  
30% of all data values lie below **76.5**.  
40% of all data values lie below **83.6**.  
50% of all data values lie below **88.5**.  
60% of all data values lie below **90.4**.  
70% of all data values lie below **92.3**.  
80% of all data values lie below **93.2**.  
90% of all data values lie below **95.2**.

It's worth noting that the value at the 50th percentile is equal to the median value of the dataset.

## Example: Place Values into Deciles in R

To place each data value into a decile, we can use the **ntile(x, ngroups)** function from the package in R.

Here's how to use this function for the dataset we created in the previous example:

```
library(dplyr)
```

```
#create dataset
```

```
data <- data.frame(values=c(56, 58, 64, 67, 68, 73, 78, 83, 84, 88,  
89, 90, 91, 92, 93, 93, 94, 95, 97, 99))
```

```
#place each value into a decile
```

```
data$decile <- ntile(data, 10)
```

```
#view data
```

```
data
```

```
values decile
```

```
1 56 1
```

```
2 58 1
```

```
3 64 2
```

```
4 67 2
```

```
5 68 3
```

```
6 73 3
```

```
7 78 4
```

```
8 83 4
```

```
9 84 5
```

```
10 88 5
```

```
11 89 6
```

```
12 90 6
```

```
13 91 7
```

```
14 92 7
```

```
15 93 8
```

```
16 93 8
```

```
17 94 9
```

```
18 95 9
```

```
19 97 10
```

```
20 99 10
```

The way to interpret the output is as follows:

The data value 56 falls between the percentile 0% and 10%, thus it falls in the first decile.

The data value 58 falls between the percentile 0% and 10%, thus it falls in the first decile.

The data value 64 falls between the percentile 10% and 20%, thus it falls in the second decile.

The data value 67 falls between the percentile 10% and 20%, thus it falls in the second decile.

The data value 68 falls between the percentile 20% and 30%, thus it falls in the third decile.

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