
percentile

syntax: `percentile(data, fraction)`

purpose: Computes a value that is equal to or larger than the indicated fraction of the values in the data. If a list of fractions is specified, the percentile is computed separately for each element in the list.

examples: `>> x = [1 2 3 4 5 6 7];`

`>> percentile(x, .5) ⇒ ans: 4`

Sometimes the returned value will not be one of the value in the data set.

`>> x = [1 2 3 4 5 6];`

`>> percentile(x, .5) ⇒ ans: 3.5`

In this case, the answer 3.5 is somewhat arbitrary; any value in the range 3 to 4 could have been chosen. In such situations `PERCENTILE` computes the mean of the two values that bracket the appropriate range.

Note that if you have a small number of samples, the percentile may not be very precise. To illustrate, we'll generate 10 samples from a standard normal distribution.

`>> x = normal(10, 0, 1);`

The 5% and 95% percentiles are at the extremes of the data:

`>> percentile(x, [.05, .95])`

`ans: -1.4060 1.1900`

Going even more extreme, to 2.5% and 97.5% gives the same result:

`>> percentile(x, [.025, .975])`

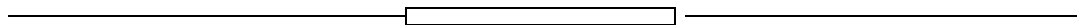
`ans: -1.4060 1.1900`

When the data set is large, the extreme percentiles are much more meaningful.

`>> x = normal(10000, 0, 1);`

`>> percentile(x, [.05, .95]) ⇒ ans: -1.66 1.67`

`>> percentile(x, [.025, .975]) ⇒ ans: -1.96 2.02`



This document is an excerpt from

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