

Trimmed mean

In between the mean and the median, the trimmed means have some of the advantages of both without some of the disadvantages.

The 10% trimmed mean is the mean computed by excluding the 10% largest and 10% smallest values from the sample and taking the arithmetic mean of the remaining 80% of the sample (other trimmed means are possible: 5%, 20%, etc.)

Example Consider the data (sample)

5, 4, 7, 6, 8, 10, 11, 0, 7, 18

whose order statistics (rearranged from smallest to largest) are

0, 4, 5, 6, 7, 7, 8, 10, 11, 18

The 10% trimmed mean omits 0 and 18 and yields

$$\bar{x}_{.10} = \frac{4+5+6+7+7+8+10+11}{8} = 7.25.$$

Note that $\bar{x} = 7.6$ and $\tilde{x} = 7$

Trimmed means are examples of robust statistics (resistant to gross error).

The 20% trimmed mean excludes the 2 smallest and 2 largest values in the sample above, and

$$\bar{x}_{.20} = \frac{5+6+7+7+8+10}{6} = 7.1667.$$