

A measure of central tendency

A measure of central tendency is a summary measure that attempts to describe a whole set of data with a single value that represents the middle or centre of its distribution.

For example: To work out the measures of central tendency of the retirement age of 11 people, follow the steps below.

Step 1: Gather the data

Observers:

Person 1: 54
Person 2: 54
Person 3: 58
Person 4: 60
Person 5: 55
Person 6: 54
Person 7: 57
Person 8: 60
Person 9: 56
Person 10: 57
Person 11: 58



Step 2: Work out the frequency

Age	Frequency
54	3 (3 people retired at 54 years old)
55	1
56	1
57	2
58	2
60	2

Step 3. Work out the Mode, Mean, Median, and Outlier.

Mode: The mode is the *most commonly occurring* value in a distribution.

In this example the **mode = 54** years old - as it occurs the most (3 times)

Mean: The mean is the sum of the value of each observation in a distribution divided by the number of observations.

Add together all the values

$$54+54+54+55+56+57+57+58+58+60+60 = 623$$

Divided by the number of observations (11)

In this example the **mean = 56.6** years old.

Median: The median is the *middle value in distribution* when the values are arranged in ascending or descending order.

In this example the **median = 57** years old - as there was an odd number of observers.

54, 54, 54, 55, 56, **57**, 57, 58, 58, 60, 60

NOTE

If you have an even number of observations the median value is the mean of the two middle values.

If you observed 12 people instead of 11, the middle values would be **56** and **57**.

53, 54, 54, 54, 55, **56**, **57**, 57, 58, 58, 60, 60

So the median = 56.5

Outlier: An outlier has a value which is very different from the rest of the distribution.

In this example the **outlier = 81** years old

54, 54, 54, 55, 56, 57, 57, 58, 58, 60, **81**

For more information please see:

<http://www.abs.gov.au/websitedbs/a3121120.nsf/home/statistical+language+-+frequency+distribution>

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