

What is the range in statistics?

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The range in statistics refers to the difference between the highest and lowest values in a data set. It is a measure of the spread or variability of the data and is often used to understand the overall range of values within a given set. It is typically calculated by subtracting the lowest value from the highest value and can provide valuable insights into the distribution and range of a data set. The range is a simple and commonly used statistic that can help to summarize and interpret data in various fields such as economics, psychology, and business.

Statistics - Range

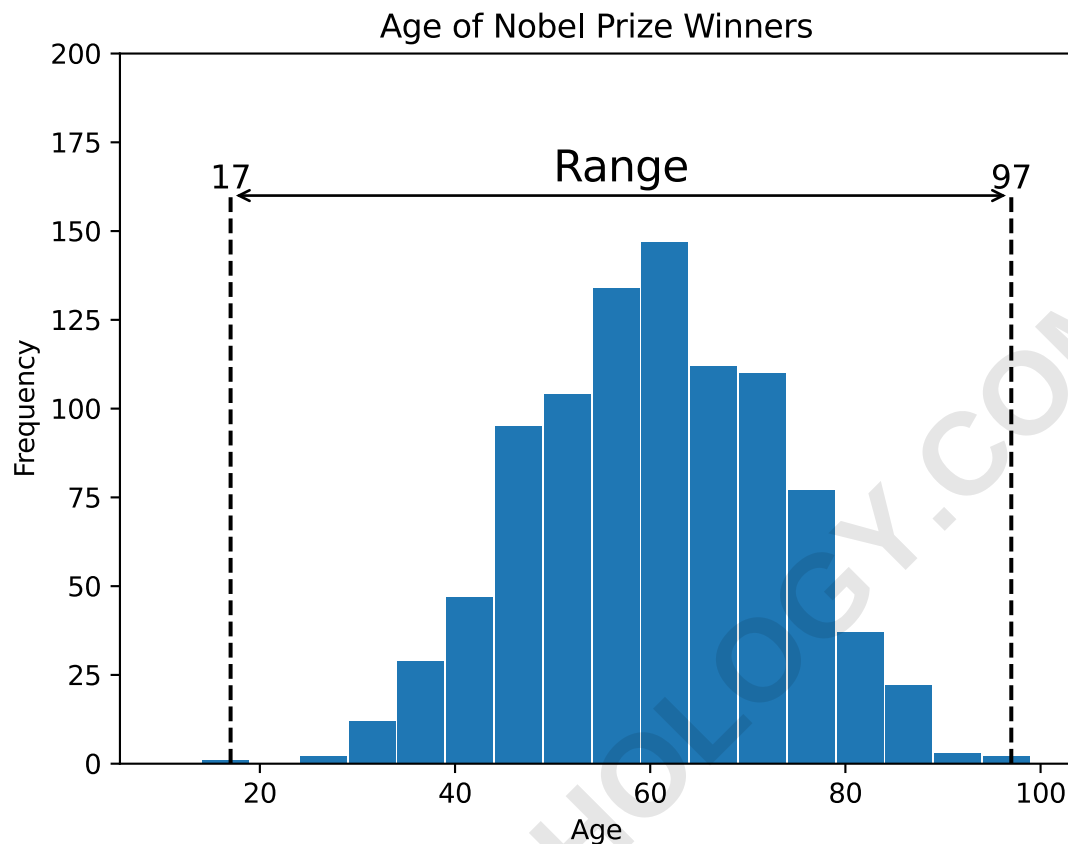
The range is a measure of variation, which describes how spread out the data is.

Range

The range is the difference between the smallest and the largest value of the data.

Range is the simplest measure of variation.

Here is a histogram of the age of all 934 Nobel Prize winners up to the year 2020, showing the **range**:



The youngest winner was 17 years and the oldest was 97 years. The range of ages for Nobel Prize winners is then 80 years.

Calculating the Range

The range can only be calculated for numerical data.

First, find the smallest and largest values of this example:

13, 21, 21, 40, 48, 55, 72

Calculate the difference by subtracting the smallest from the largest:

$$72 - 13 = 59$$

Calculating the Range with Programming

The range can easily be found with many programming languages.

Using software and programming to calculate statistics is more common for bigger sets of data, as finding it manually becomes difficult.

Example

With Python use the NumPy library `ptp()` method to find the range of the values 13, 21, 21, 40, 48, 55, 72:

```
import numpy

values =

x = numpy.ptp(values)

print(x)
```

Example

Use the R `min()` and `max()` functions to find the range of the values 13, 21, 21, 40, 48, 55, 72:

```
values <- c(13,21,21,40,48,55,72)

max(values) - min(values)
```

Note: The `range()` function in R returns the smallest and largest values.

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