### ****Interval Data****

Interval Data are measured and ordered with the nearest items but have no meaningful zero.

The central point of an Interval scale is that the word 'Interval' signifies 'space in between', which is the significant thing to recall, interval scales not only educate us about the order but additionally about the value between every item.

Interval data can be negative, though ratio data can't.

Even though interval data can show up fundamentally the same as ratio data, the thing that matters is in their characterized zero-points. If the zero-point of the scale has been picked subjectively, at that point the data can't be ratio data and should be interval data.

Hence, with interval data you can easily correlate the degrees of the data and also you can add or subtract the values.

There are some descriptive statistics that you can calculate for interval data are central point (mean, median, mode), range (minimum, maximum), and spread (percentiles, interquartile range, and standard deviation).

In addition to that, similar other [statistical data analysis techniques](https://www.analyticssteps.com/blogs/5-statistical-data-analysis-techniques-statistical-modelling-machine-learning) can be used for more analysis.

#### ****Examples of Interval data:****

#### Temperature (°C or F, but not Kelvin)

#### Dates (1066, 1492, 1776, etc.)

Time interval on a 12-hour clock (6 am, 6 pm)

Refer the following Data for more clarification: <https://www.intellspot.com/interval-data>

### Ratio Data are measured and ordered with equidistant items and a meaningful zero and never be negative like interval data.

An outstanding example of ratio data is the measurement of heights. It could be measured in centimeters, inches, meters, or feet and it is not practicable to have a negative height.

Ratio data enlightens us regarding the order for variables, the contrasts among them, and they have absolutely zero. It permits a wide range of estimations and surmising’s to be performed and drawn.

**Ratio data is fundamentally the same as interval data, aside from zero means none.**

The [descriptive statistics](https://www.analyticssteps.com/blogs/overview-descriptive-analysis) which you can calculate for ratio data are the same as interval data which are central point (mean, median, mode), range (minimum, maximum), and spread (percentiles, interquartile range, and standard deviation).

**Example of Ratio data:**

Age (from 0 years to 100+)

Temperature (in Kelvin, but not °C or F)

Distance (measured with a ruler or any other assessing device)

Time interval (measured with a stop-watch or similar)

Therefore, for these examples of ratio data, there is an actual, meaningful zero-point like the age of a person, absolute zero, distance calculated from a specified point or time all have real zeros.

**Central tendency Theorem:**

Central tendency is a descriptive summary of a dataset through a single value that reflects the centre of the data distribution. Along with the variability (dispersion) of a dataset, central tendency is a branch of descriptive statistics.

A **measure of central tendency**is a single value that represents the center point of a dataset. This value can also be referred to as “the central location” of a dataset. Although it does not provide information regarding the individual values in the dataset, it delivers a comprehensive summary of the whole dataset.

A measure of central tendency is useful because it provides us with a single value that describes the “center” of a dataset. This helps us understand a dataset much more quickly compared to simply looking at all of the individual values in the dataset.

Three common measures of central tendency:

* **The mean**
* **The median**
* **The mode**

Each of these measures finds the central location of a dataset using different methods. Depending on the type of data you’re analysing, one of these three measures may be better to use than the other two.

In statistics, **skewness**and **kurtosis**are two ways to measure the shape of a distribution.

**Skewness**is a measure of the asymmetry of a distribution. This value can be positive or negative.

* Negative skew indicates that the tail is on the left side of the distribution, which extends towards more negative values.
* Positive skew indicates that the tail is on the right side of the distribution, which extends towards more positive values.
* A value of zero indicates that there is no skewness in the distribution at all, meaning the distribution is perfectly [symmetrical](https://www.statology.org/symmetric-distribution/).

**Kurtosis**is a measure of whether or not a distribution is heavy-tailed or light-tailed relative to a [normal distribution](https://www.statology.org/the-normal-distribution/).

* The kurtosis of a normal distribution is 3.
* If a given distribution has a kurtosis less than 3, it is said to be *platykurtic*, which means it tends to produce fewer and less extreme outliers than the normal distribution.
* If a given distribution has a kurtosis greater than 3, it is said to be *leptokurtic*, which means it tends to produce more outliers than the normal distribution.

**Note:**Some formulas (Fisher’s definition) subtract 3 from the kurtosis to make it easier to compare with the normal distribution. Using this definition, a distribution would have kurtosis greater than a normal distribution if it had a kurtosis value greater than 0.

When reporting the skewness and kurtosis of a given distribution in a formal write-up, we generally use the following format:

The skewness of [variable name] was found to be -.89, indicating that the distribution was left-skewed.

The kurtosis of [variable name] was found to be 4.26, indicating that the distribution was more heavy-tailed compared to the normal distribution.

Keep in mind the following when reporting the results:

* Round the values for skewness and kurtosis to two decimal places.
* Drop the leading 0 when reporting the values (e.g. use .79, not 0.79)

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

**Example: Reporting Skewness & Kurtosis**

Suppose we’re analysing the distribution of exam scores among students at a certain university.

Using statistical software, we calculate the values for the skewness and kurtosis of the distribution to be:

* Skewness: **-1.391777**
* Kurtosis: **4.170865**

We would report these values as follows:

The skewness of the exam scores was found to be -1.39, indicating that the distribution was left-skewed.

The kurtosis of the exam scores was found to be 4.17, indicating that the distribution was more heavy-tailed compared to the normal distribution.

Along with reporting these values for skewness and kurtosis, we generally include some chart to visualize the distribution of values such as a histogram or boxplot so the reader can get a visual understanding of the distribution as well.