

# Types of data distribution

## Types of Data Distribution in Statistics

There are two main types of data distribution in statistics: **continuous and discrete**.

### Continuous data :

Continuous data is a type of information that can range from one extreme to another, usually measured on a scale such as temperature or weight. It can also be presented in the form of a histogram which allows for easier comparison and understanding between different sets of data. With Continuous Data, you are able to gain insights into trends and relationships that might not ordinarily be seen with other types of datasets.

### Discrete data :

Discrete data has a limited set of values and ranges, such as countable elements like the student population in a classroom or cars passing through an intersection. Representing this kind of information with bar graphs allows for quick understanding at-a-glance.

## Discrete Distribution Types :

### 1.Binomial Distribution

The binomial distribution is applied in binary outcomes events where the probability of success is equal to the probability of failure in all the successive trials. Its example includes tossing a biased/unbiased coin for a repeated number of times.

As input, the distribution considers two parameters, and is thus called as bi-parametric distribution. The two parameters are :

- The number of times an event occurs,  $n$ , and
- Assigned probability,  $p$ , to one of the two classes

## **2.Poisson Distribution**

Being a part of discrete probability distribution, poisson distribution outlines the probability for a given number of events that take place in a fixed time period or space, or particularized intervals such as distance, area, volume.

Poisson distribution considers following assumptions :

- The success probability for a short span is equal to success probability for a long period of time.
- The success probability in a duration equals to zero as the duration becomes smaller.
- A successful event can't impact the result of another successful event

## **3.Hypergeometric Distribution**

The hypergeometric distribution describes the probability of a certain number of successes (or failures) in a given number of draws from an urn or population when the draws are made without replacement. This type of data distribution is used in situations where an urn contains different items, such as colored balls, and you want to evaluate the probability that a certain number of those items will be drawn out with each draw being made without replacing the item that was just taken out

## **4.Geometric Distribution**

The geometric distribution describes the probability of a success occurring on any given trial in a series of independent trials when the probability of success for each trial is known. This type of data distribution can be used to model the number of failures that occur before a success in situations such as manufacturing processes, where there are multiple attempts at creating a product and each attempt has a given probability of success.

# Continuous Distribution Types :

## 1.Normal Distribution

Normal Distributions are one of the most commonly used data distributions. This distribution measures data points in a bell-shaped curve, with an equal number of data points to the left and right of the mean value. Normal Distributions can be used to predict future outcomes based on past trends.

## 2.Lognormal Distribution

Lognormal distributions measure data points in a curve shaped like a sigmoid function – a curved line beginning at zero and then increasing sharply to a peak and slowly decreasing. This data distribution is often used in financial data, allowing us to extrapolate potential future stock prices based on past data.

## 3.Exponential Distribution

Exponential distributions measure data points with an exponential curve – a curve beginning at zero and gradually increasing in value. This data distribution is often used when data points are expected to increase over time, such as population data or customer data in a given market.

## 4.Non-normal Distribution

Non-normal distributions include data distributions such as the Poisson Distribution, Gamma Distribution, Beta Distribution, Logistic Distribution and Cauchy Distribution. Non-normal data distributions are often used when data does not fit into the normal data distribution categories, such as highly non-linear or data with outliers.