**: Types of distribution functions**

Based on the types of data we deal with, we have two types of distribution functions.

For discrete data, we have discrete distributions; and for continuous data, we have continuous distributions.

\*Discrete distributions:

### 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.

### 2-Bernoulli’s Distribution

This is one of the simplest distributions that can be used as an initial point to derive more complex distributions. Bernoulli’s distribution has possibly two outcomes (success or failure) and a single trial.

For example, tossing a coin, the success probability of an outcome to be heads is p, then the probability of having tail as outcome is (1-p). Bernoulli’s distribution is the special case of binomial distribution with a single trial.

### 3-****Poisson 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.

For example, anticipating the number of car accidents in a particular time interval and in a specific area.

### 4- ****Uniform distribution****

Uniform distribution can either be discrete or continuous where each event is equally likely to occur. It has a constant probability constructing a rectangular distribution.

In this type of distribution, an unlimited number of outcomes will be possible and all the events have the same probability, similar to Bernoulli’s distribution.

 For example, while rolling a dice, the outcomes are 1 to 6 that have equal probabilities of ⅙ and represent a uniform distribution.

**\*Continous distribution:**

### 1- ****Normal (Gaussian) Distribution****

Being a continuous distribution, the normal distribution is most commonly used in data science. A very common process of our day to day life belongs to this distribution- income distribution, average employees report, average weight of a population.

### 2- ****Exponential Distribution****

Like the poisson distribution, exponential distribution has the time element; it gives the probability of a time duration before an event takes place.

Exponential distribution is used for survival analysis, for example, life of an air conditioner, expected life of a machine,and length of time between metro arrivals.

### 3- ****Beta Distribution****

Beta distribution comes under continuous probability distributions having the interval [0,1] with two shape parameters that can be expressed by alpha (ɑ) and beta(ꞵ). These two parameters are the exponent of a random variable and control the shape of the distribution.

The distribution shows the family of probabilities and is a suitable model to depict random behaviour of percentages or proportions. It is used for the data models that hold uncertainties of the success probabilities in a random experiment.

**4- T- Distributions**

In statistics, t-distribution is the most important distribution, also known as student’s t-distribution. It is employed to estimate population parameters when the sample size is small, and the standard deviation is unknown.

It is widely used for hypothesis testing and built confidence intervals for mean values. The graph of t-distribution distribution is shown below