**Poisson Distribution**

Suppose you work at a call center, approximately how many calls do you get in a day? It can be any number. Now, the entire number of calls at a call center in a day is modeled by Poisson distribution. The distribution is used to describe the behavior of rare events such as

1. The number of accidents on road
2. The number of printing errors at each page of the book.
3. The number of emergency calls recorded at a hospital in a day.
4. The number of thefts reported in an area on a day.
5. The number of customers arriving at a salon in an hour.
6. The number of suicides reported in a particular city.

You can now think of many examples following the same course. Poisson Distribution is applicable in situations where events occur at random points of time and space wherein our interest lies only in the number of occurrences of the event.

\*Poisson distribution is a discrete probability distribution and is very widely used in statistical work. It was developed by a French mathematician. Simeon Denis Poisson (1781-1840) in 1837. Poisson distribution may be expected in cases where the chance of any individual event being a success is small., and has been called “the law of improbable events”. In recent years the statisticians have had a renewed interest in the occurrence of comparatively rare evets. Such as serious floods, accidental release of radiation from a nuclear reactor, and the like.

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| The Poisson Distribution  Where r =0,1,2,3,4,……  e = 2.7183 (the base of natural Logarithms)  m = the mean of the Poisson distribution, i.e. np or the average number of occurrences of an event. |

A distribution is called **Poisson distribution** when the following assumptions are valid:

1. Any successful event should not influence the outcome of another successful event.  
2. The probability of success over a short interval must equal the probability of success over a longer interval.  
3. The probability of success in an interval approaches zero as the interval becomes smaller.