TRINITY COLLEGE FOR WOMEN NAMAKKAL

Department of Mathematics

Advanced Business Statistics

19PCM07-EVEN Semester

Presented by

DR.B.MOHANA PRIYAA

Assistant Professor

Department of Mathematics

Probability Distribution:

It is a listing of the probabilities of all the possible outcomes that could occur if the experiment was done.

It can be described as :
1. A diagram (Probability tree)
2. A table
3. A mathematical formula.

Characteristics :

Probability distribution come in many shapes with different characteristics as defined by the mean, standard deviation, skewness & kurtosis.

Types of Probability Distribution :
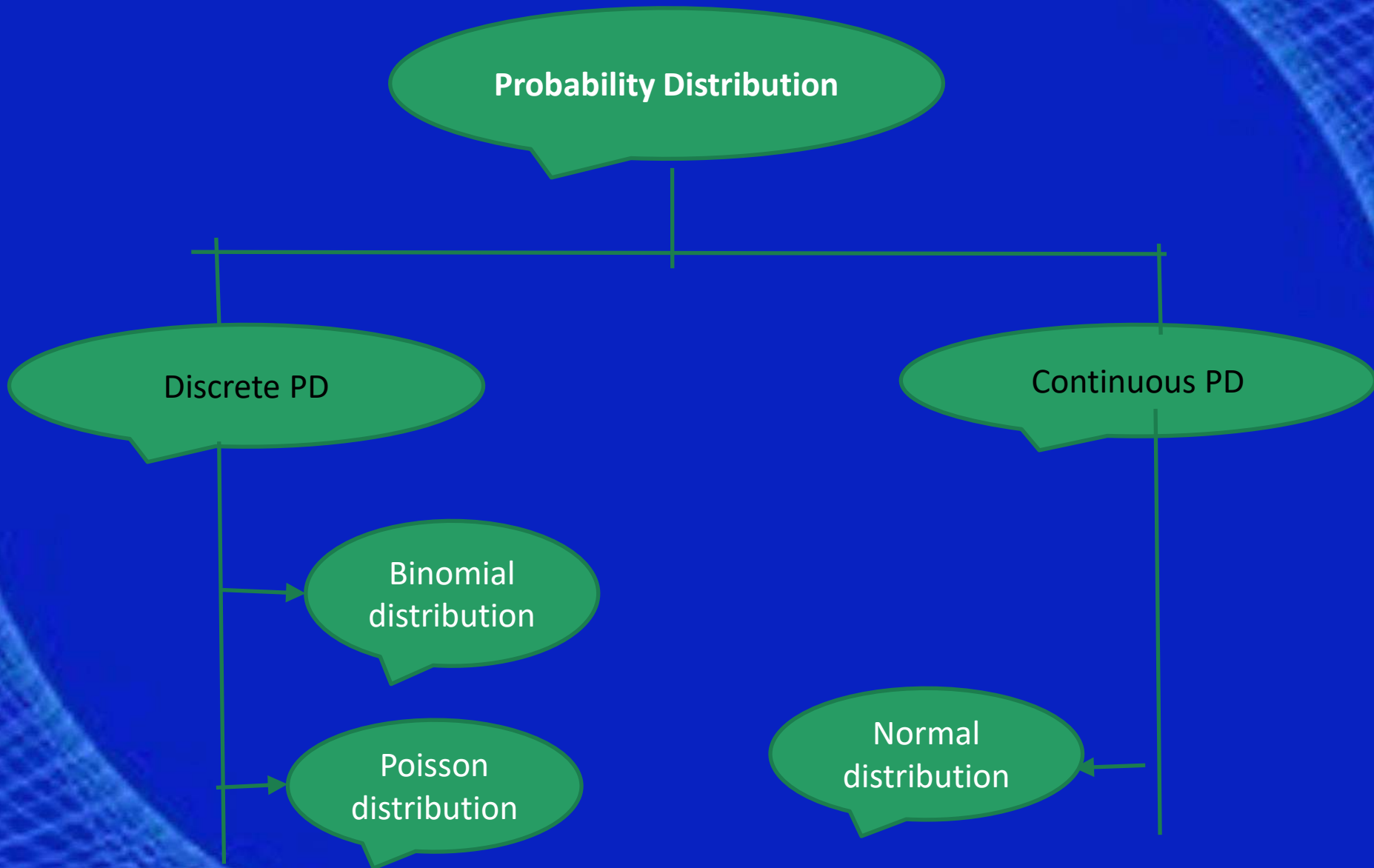
Discrete Probability Distribution :
Random variable can take only finite number of values.

Eg: No. Of heads in two tosses

Continuous Probability Distribution :
Random variable can take any value.

Eg: Height of students in the class.

Binomial Distribution :

The Binomial distribution that a value summarizes the number of trials will take one of two independent values under a given set of parameters.

Binomial distribution is a Discrete Probability Distribution which expresses the probability of one set of alternatives - success(P) & failure(q).

The Binomial distribution formula is calculated as P(x:n,p) = nCx x px(1-p)n-x.(Probability of r success in n trials)

n= no.of trials undertaken

x= no.of success desire

p= prob. of Success

q= prob. of failure

Poisson Distribution :

When there is a large number of trials, but a small probability of success, binomial calculation becomes impractical.

If λ = mean no.of occurrences of an event per unit interval of time/space, then probability that it will occur exactly 'x' times is given by

$$P(X=x) = (e^{-\lambda} \lambda^x)/x!$$

Where e is Napier constant
And e= 2.7182

Normal Distribution :

It is a Continuous Probability Distribution ie, random variable can take on any value within a given range. **Eg:** Height, weight, mark, etc.

Normal distribution also known as Gaussian distribution.

In normal distribution the mean is 0 & standard deviation is 1.

Normal distribution are symmetrical but not all symmetrical distribution are normal.

Mean = μ, Standard Deviation = σ

Only two parameters are considered:Mean &S.D.

1. Same mean, different S.D
2. Same S. D, Different mean
3. Different mean, different S.D.

Characteristics of Binomial Distribution :

1. Binomial distribution has two parameters n & p.

2. Mean of Binomial Distribution is np & variance of Binomial Distribution is npq.

3. S. D of Binomial Distribution i√npq.

4. Mean is alwgreaterthan than the variance.

Characteristics of Poisson distribution :

1. The probability that an event occurs in a given time, distance area, volume is the same.

2. Events in Poisson distribution are independent.

3. The value of λ is always greaterthan 0.

Characteristics of Normal Distribution :

Normal distribution are symmetric, unimodal & asymptotic, & the mean, median & mode are all equal.

The curve is symmetric at the center.

Applications of Binomial Distribution :

      1. This distribution is mainly applied in the problem concerning.

      2. Estimation of the reliability of the system.

      3. Radar detection.

Applications of Poisson Distribution :

      It is used to test if a statement regarding a population parameters is correct.

Applications of Normal Distribution :

      Used to determine the proportion of the values that fall within a specified number of standard deviation from the mean.

THANK YOU

http://www.trinitycollegenkl.edu.in/