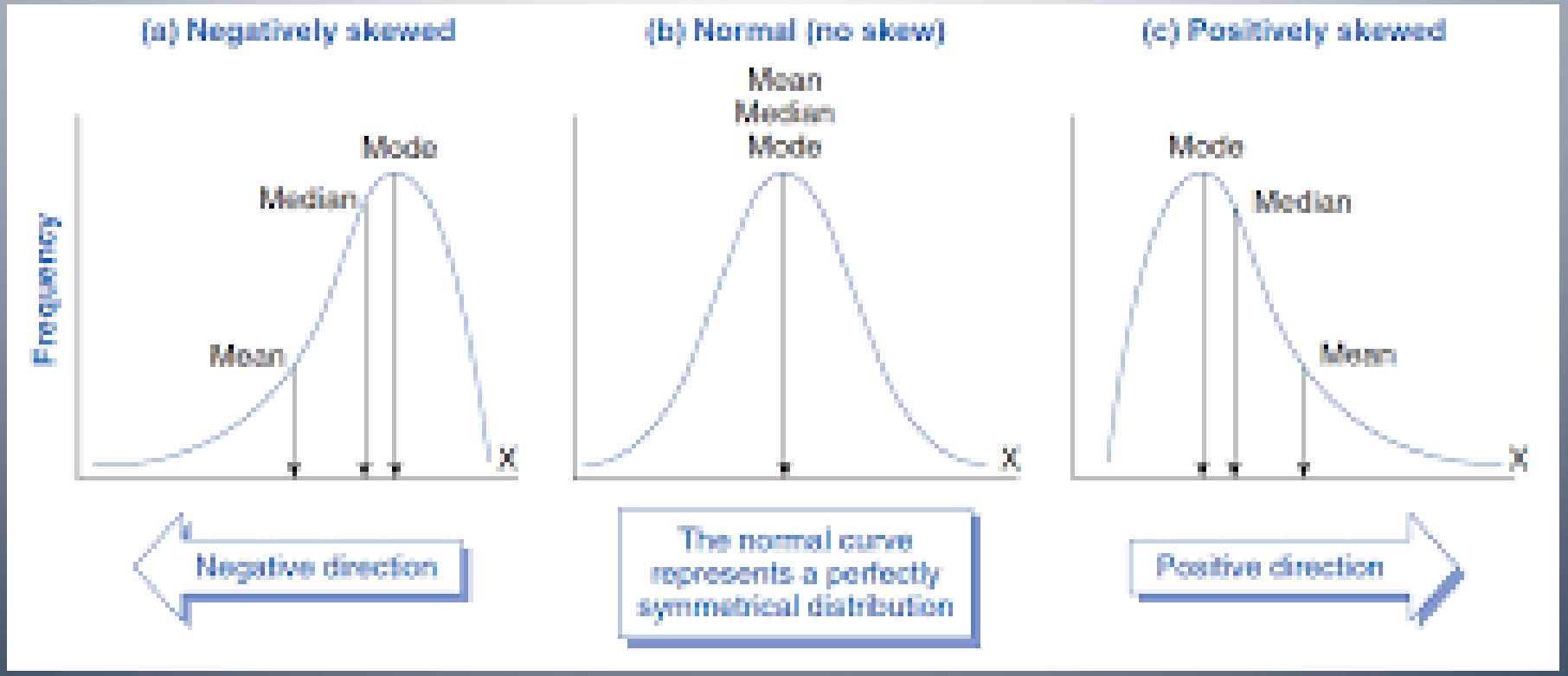
Various Distributions

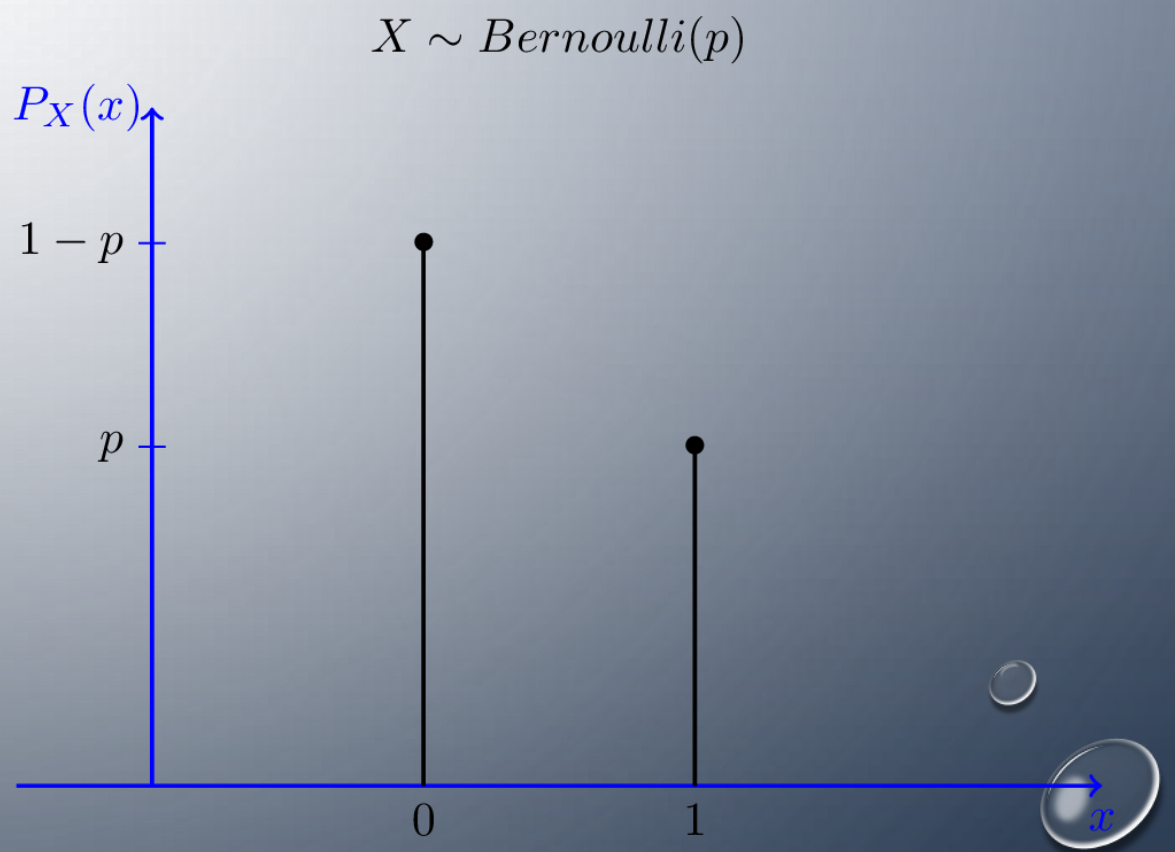
BY L VINAY RAJIV REDDY

Skewed Distribution



Bernoulli's Distribution

$$\Pr(X = x) = \begin{cases} p & x = 1 \\ 1 - p & x = 0 \end{cases}$$



Binomial Distribution Formula

$$P(x) = \binom{n}{x} p^x q^{n-x} = \frac{n!}{(n-x)!\,x!} p^x q^{n-x}$$

where

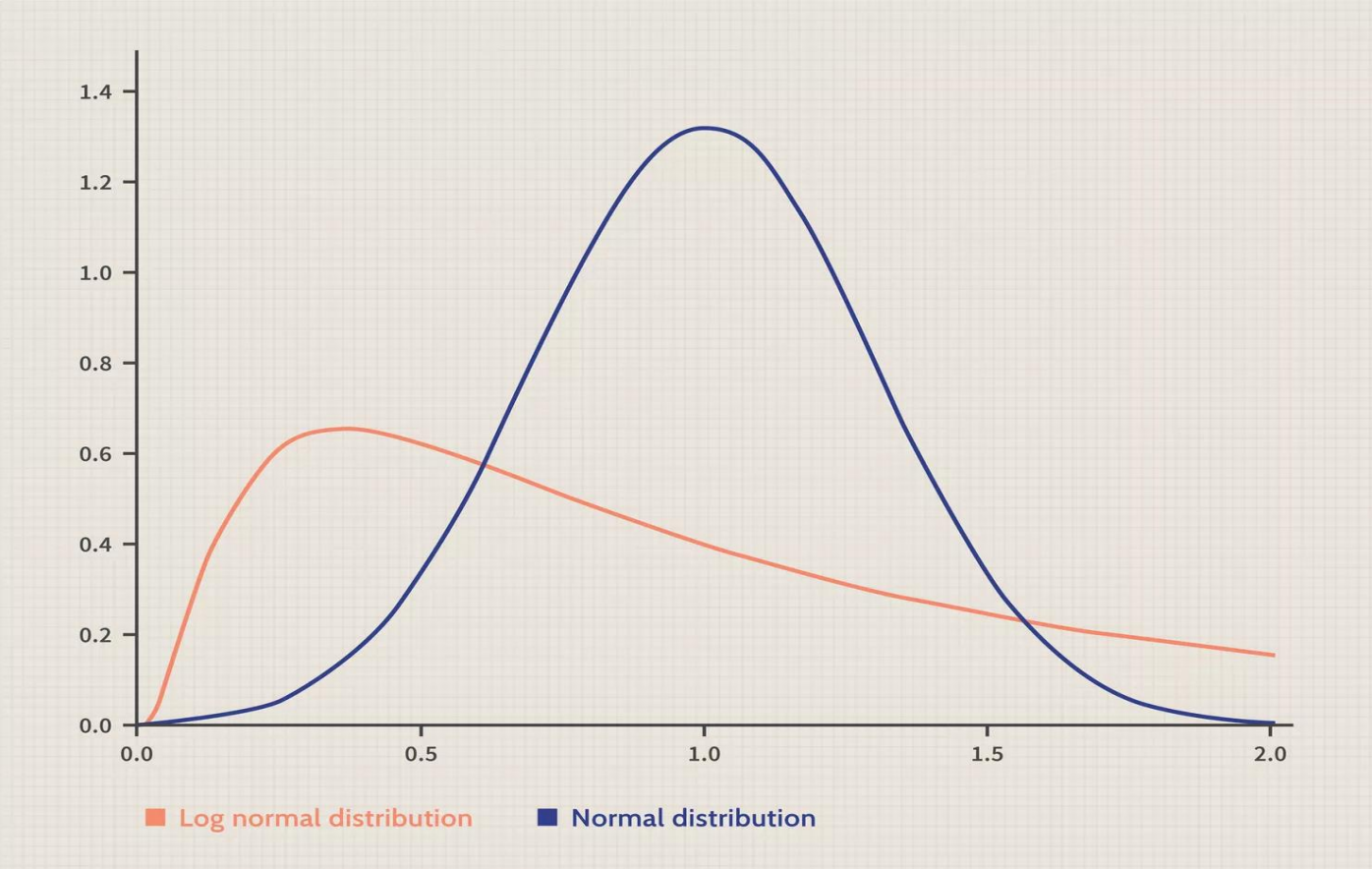
n = the number of trials (or the number being sampled)

x = the number of successes desired

p = probability of getting a success in one trial

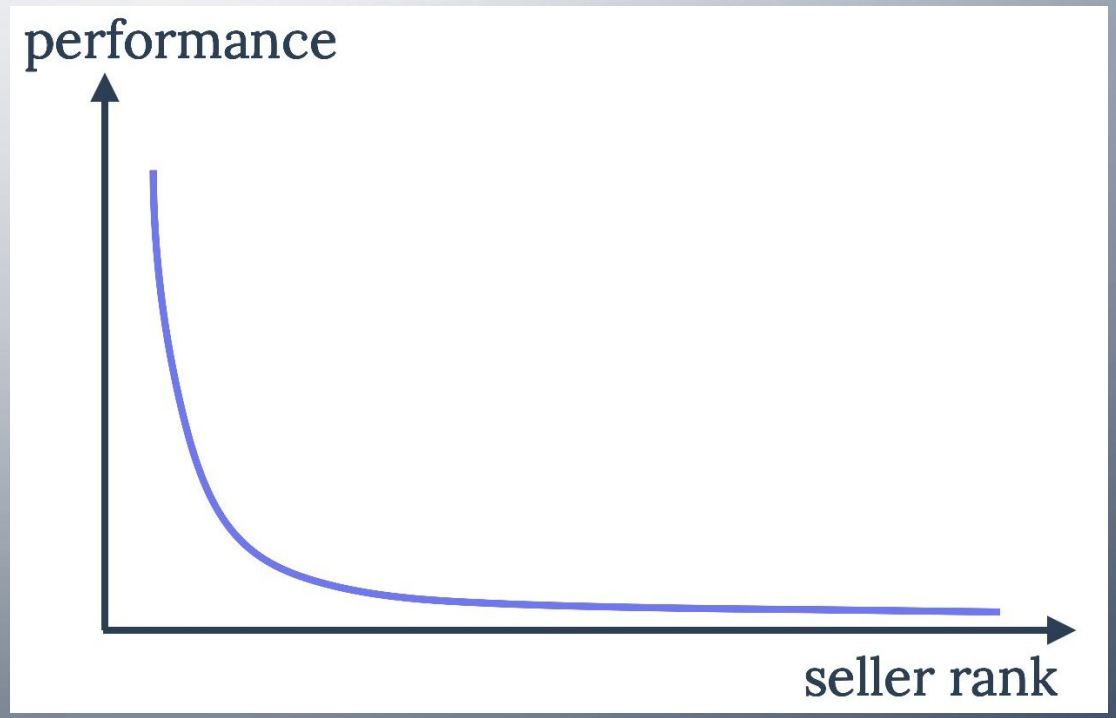
$q = 1 - p$ = the probability of getting a failure in one trial

Log normal distribution

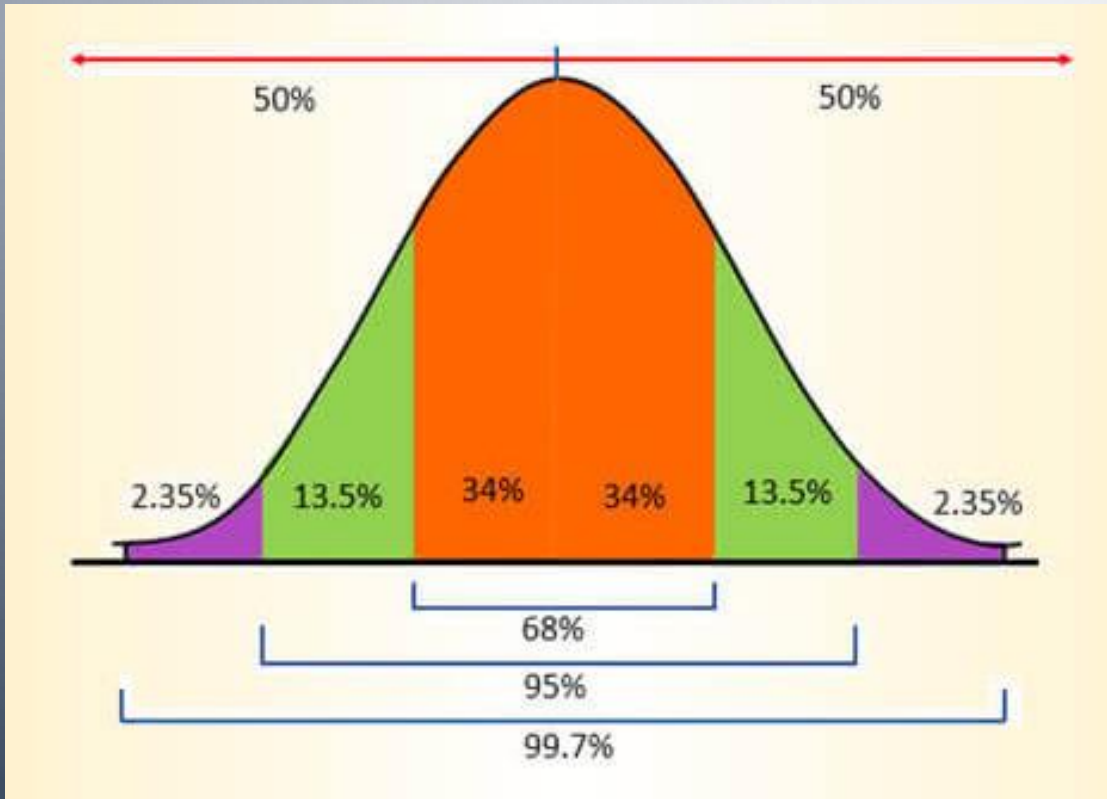


Power law distribution

- It follows 80-20 rule



Empirical Rule



Chebyshev's theorem

- It says that the min. proportion of data that can be found within k standard deviations from the mean is :

$$\text{Chebyshev's Theorem Resultant} = 1 - \frac{1}{k^2} \quad \text{for } k > 1$$

Kernel density estimation