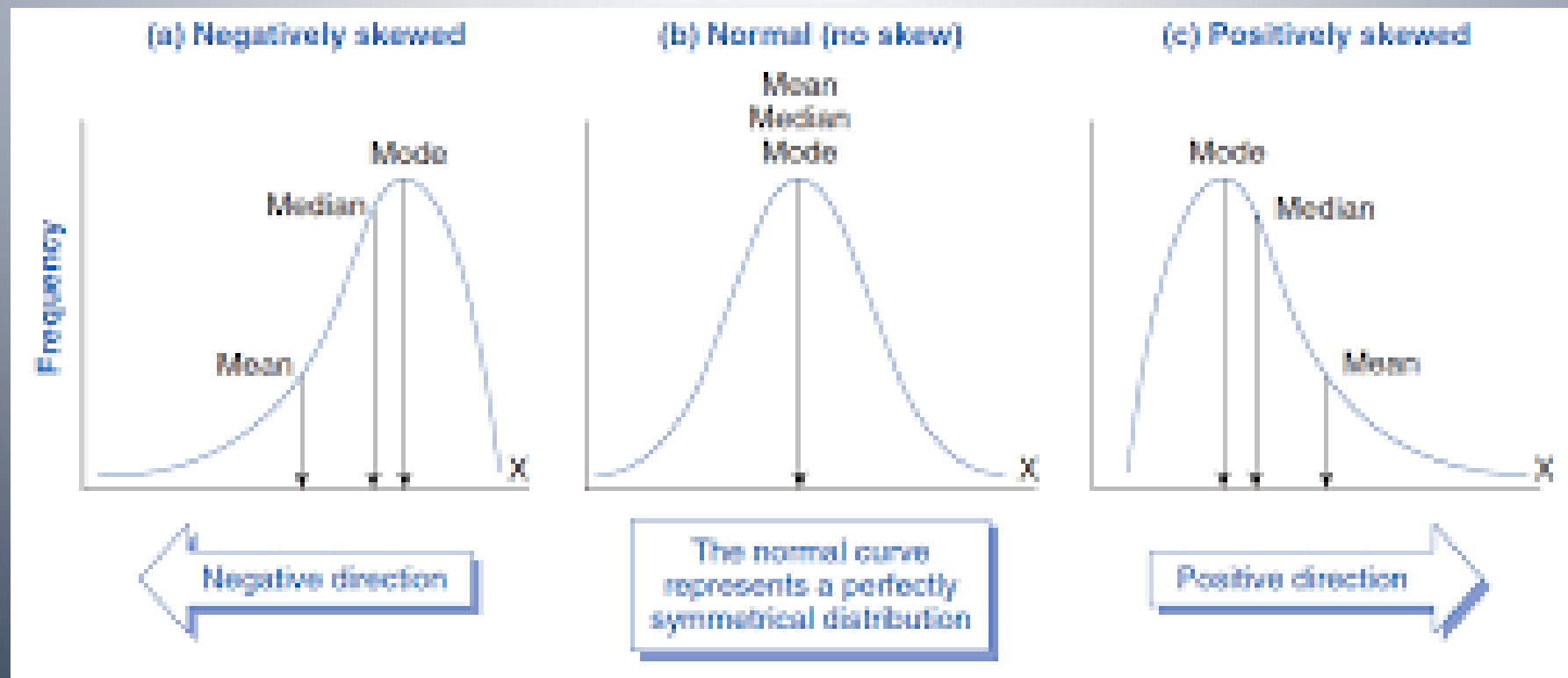


The background is a dark blue gradient with numerous realistic water droplets of various sizes scattered across the surface. A bright, circular light flare is positioned in the upper center of the image.

# Various Distributions

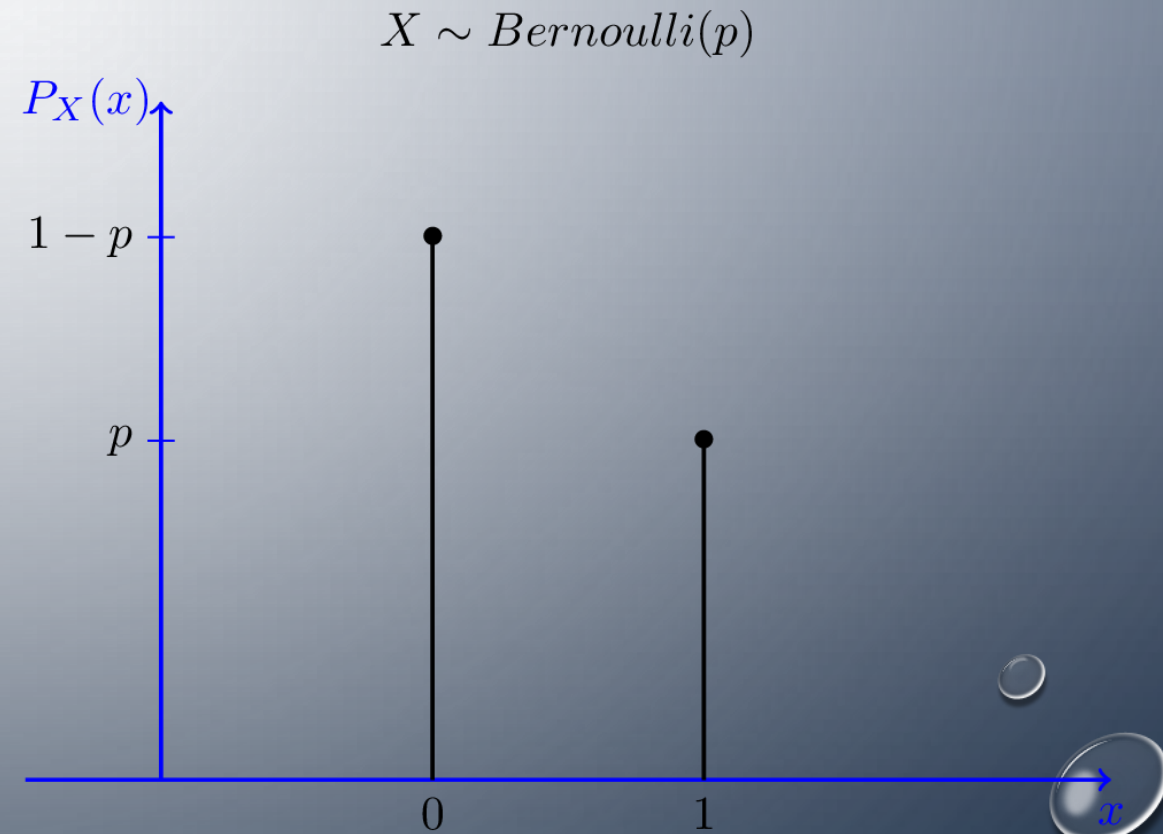
BY L VINAY RAJIV REDDY

# 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

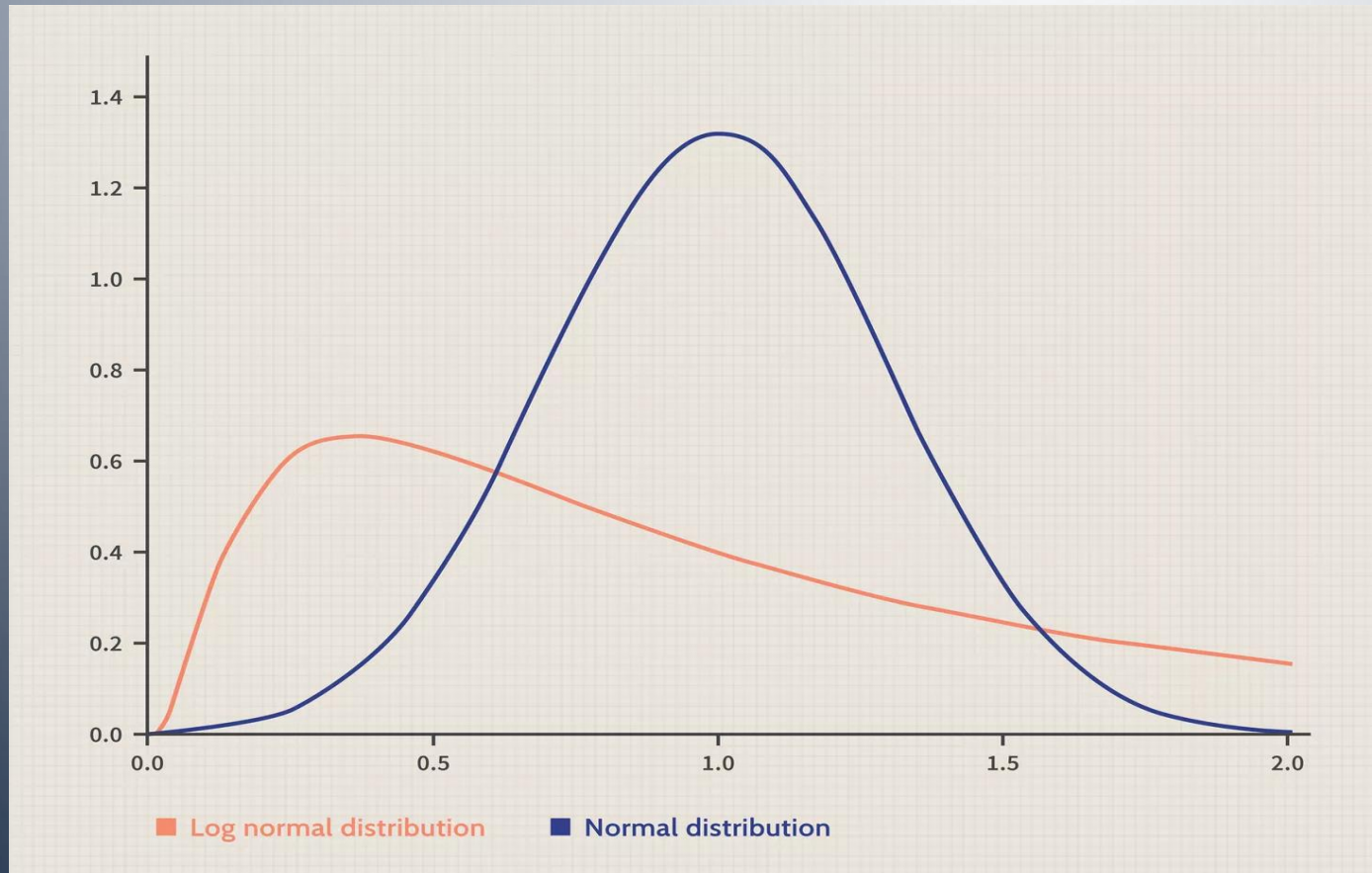
$n$  = the number of trials (or the number being sampled)

$x$  = 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

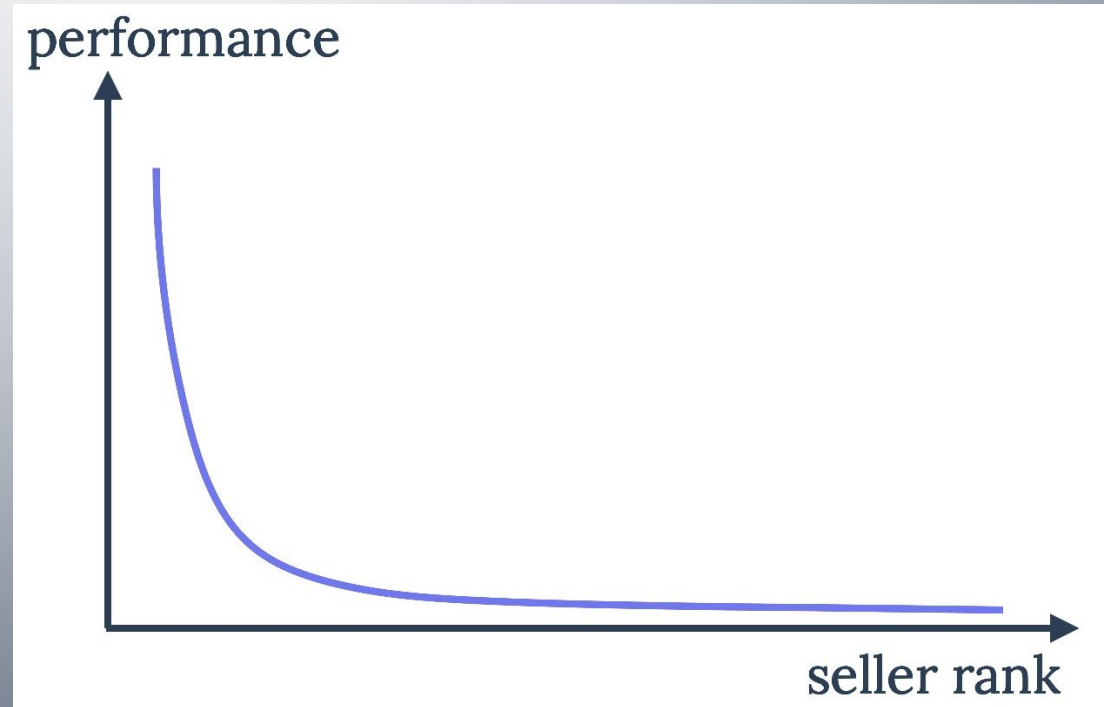
# Log normal distribution



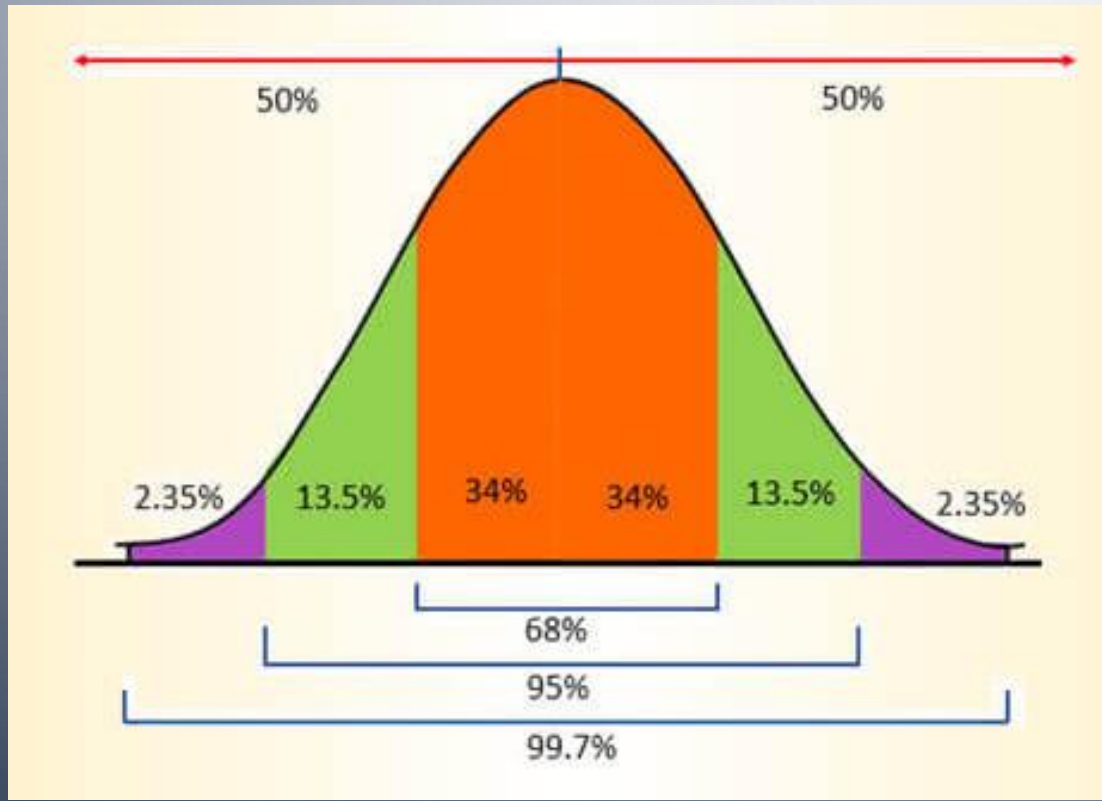


# Power law distribution

- 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 :

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



# Kernel density estimation

