

A.P. SHAH INSTITUTE OF TECHNOLOGY

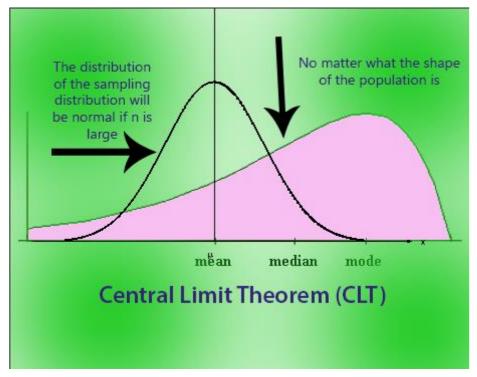
Department of Computer Science and Engineering Data Science



Semester : <u>V</u> Subject : Statistics for AI & DS Academic Year: 2023 – 2024

CENTRAL LIMIT THEOREM:

The central limit theorem (CLT) states that the distribution of a sample variable approximates a normal distribution (i.e., a "bell curve") as the sample size becomes larger, assuming that all samples are identical in size, and regardless of the population's actual distribution shape.



CLT is a statistical premise that, given a sufficiently large sample size from a population with a finite level of variance, the mean of all sampled variables from the same population will be approximately equal to the mean of the whole population. Furthermore, these samples approximate a normal distribution, with their variances being approximately equal to the variance of the population as the sample size gets larger, according to the law of large numbers.

The central limit theorem (CLT) states that the distribution of sample means approximates a normal distribution as the sample size gets larger, regardless of the

Department of CSE-Data Science | APSIT

PARSHWANATH CHARITABLE TRUST'S



A.P. SHAH INSTITUTE OF TECHNOLOGY

Department of Computer Science and Engineering Data Science



Semester : \underline{V} Subject : Statistics for AI & DS Academic Year: 2023 – 2024 population's distribution.

- Sample sizes equal to or greater than 30 are often considered sufficient for the CLT to hold.
- A key aspect of CLT is that the average of the sample means and standard deviations will equal the population mean and standard deviation.
- A sufficiently large sample size can predict the characteristics of a population more accurately.

Central Limit Theorem The averages of samples have approximately normal distributions Sample size _____ More NOTTAL and National Distribution of Averages -