The Central Limit Theorem

Definition

In probability theory, the central limit theorem (CLT) establishes that, **in many situations**, when independent random variables are summed up, **their properly normalized sum** (mean) tends toward **a normal distribution even if the original variables themselves are not normally distributed**.

In mathematical denotation, if $X_1, X_2, \dots, X_n$ are n random samples drawn from a population with overall mean μ and finite variance σ^2, and if $\overline{X_n}$ is the sample mean, then the limiting form of the distribution, $\boldsymbol{Z = \lim_{n\to\infty} \sqrt{n}(\frac{\overline{X_n}-\mu}{\sigma})}$