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$X_1, X_2, \dots, X_n$  — independent, identically distributed random variables with common distribution  $F(x)$ . Let  $M = \mathbb{E}X$  and  $\sigma^2 = \text{Var} X$ . Define the sample mean  $\bar{X}_n = \frac{1}{n} \sum_{i=1}^n X_i$  and the standardized sample mean  $Z_n = \frac{\bar{X}_n - M}{\sigma/\sqrt{n}}$ . The Central Limit Theorem states that as  $n \rightarrow \infty$ , the distribution of  $Z_n$  converges to the standard normal distribution  $\Phi(x)$ .

1.  $\bar{X}_n \sim F(x)$ ;  
2.  $\bar{X}_n \sim \Phi(x)$ .

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(1/n) ,  $n \geq 30$ .

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$$\sqrt{n}((\frac{1}{n} \sum_{i=1}^n X_i) - \mu) \overset{d}{\rightarrow} N(0, \sigma^2)$$

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