

		Population proportion p	Population mean μ
Sampling distribution	Point estimate	$\hat{p}$ (sample proportion)	$\bar{x}$ (sample mean)
	Mean and Standard error of the Point estimate	$\mu_{\hat{p}} = p$ $\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{n}}$	$\mu_{\bar{x}} = \mu$ $\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$
	Normal approximation	If there at least 15 expected successes and 15 expected failures in the sample ($np \geq 15, n(1-p) \geq 15$), then $\hat{p} \sim N\left(p, \sqrt{\frac{p(1-p)}{n}}\right)$	- If the population is normal $N(\mu, \sigma)$, then $\bar{x} \sim N\left(\mu, \frac{\sigma}{\sqrt{n}}\right)$ - If the population has mean μ and standard deviation σ, then when the sample size is large ($n \geq 30$), $\bar{x} \sim N\left(\mu, \frac{\sigma}{\sqrt{n}}\right)$
100(1 - α)% Confidence interval	Assumptions	- Random sample from the population - At least 15 successes and 15 failures in the sample ($n\hat{p} \geq 15, n(1-\hat{p}) \geq 15$)	- Random sample from the population - Population is approximately normal, or sample size is large ($n \geq 30$)
	100(1 - α)% CI	$\hat{p} \pm z_{\alpha/2} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$	$\bar{x} \pm t_{\frac{\alpha}{2}, n-1} \frac{s}{\sqrt{n}}$
	Interpretation	We are 100(1 - α)% confident that the true proportion of ... is between ... and	We are 100(1 - α)% confident that the true mean of ... is between ... and
	Minimum sample size required such that $moe \leq m$	$n \approx \left\lceil p^*(1-p^*) \left(\frac{z_{\alpha/2}}{m}\right)^2 \right\rceil$ where p^* is an estimate of p based on other information or past experience, or $p^* = 0.5$ if no information about p is available.	$n \approx \left\lceil \left(\frac{z_{\alpha/2} s^*}{m}\right)^2 \right\rceil$ where s^* is an estimate of σ based on other information or past experience
Level α Hypothesis test	Assumptions	- Random sample from the population - At least 15 expected successes and 15 expected failures in the sample under H_0 ($np_0 \geq 15, n(1-p_0) \geq 15$)	- Random sample from the population - Population is approximately normal, or sample size is large ($n \geq 30$)
	Hypotheses	$H_0: p = p_0$ $H_a: p < p_0$ or $p > p_0$ or $p \neq p_0$	$H_0: \mu = \mu_0$ $H_a: \mu < \mu_0$ or $\mu > \mu_0$ or $\mu \neq \mu_0$
	Test statistic	$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$	$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$
	p -value	$P(Z < z)$ or $P(Z > z)$ or $2P(Z > z)$, where Z is the standard normal distribution	$P(T_{n-1} < t)$ or $P(T_{n-1} > t)$ or $2P(T_{n-1} > t)$, where T_{n-1} is the t -distribution with $(n-1)$ degrees of freedom
	Conclusion and Interpretation	- If p-value $< \alpha$: Reject H_0. We have strong evidence to conclude that the true (proportion/mean) of ... is (less than/greater than/different from) ... at the significance level of α. - If p-value $\geq \alpha$: Failed to reject H_0. We do not have enough evidence to conclude that the true (proportion/mean) of ... is (less than/greater than/different from) ... at the significance level of α.	