

		Difference between proportions of two independent population $p_1 - p_2$	Difference between two independent population means $\mu_1 - \mu_2$	Difference between two dependent population means (matched pairs) μ_D
Point estimate		$\hat{p}_1 - \hat{p}_2$	$\bar{x}_1 - \bar{x}_2$	$\bar{x}_D$
100(1 - α) % Confidence interval	Assumptions	2 independent random samples - At least 10 successes and 10 failures in each sample	2 independent random samples - Both populations are approximately normal, or sample sizes are large ($n_1, n_2 \geq 30$)	- Random sample - The distribution of the paired differences is approximately normal, or large sample size ($n_D \geq 30$)
	100(1 - α)% CI	$(\hat{p}_1 - \hat{p}_2) \pm z_{\alpha/2} \sqrt{\frac{\hat{p}_1(1 - \hat{p}_1)}{n_1} + \frac{\hat{p}_2(1 - \hat{p}_2)}{n_2}}$	$(\bar{x}_1 - \bar{x}_2) \pm t_{\alpha/2, \min(n_1-1, n_2-1)} \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$	$\bar{x}_D \pm t_{\alpha/2, n_D-1}^* \sqrt{\frac{s_D^2}{n_D}}$ where n_D is the number of pairs in the sample
	Interpretation	- If the CI does not contain 0: We are 100(1 - α)% confident that the true (proportion/mean) of ... is between ... and ... (less than/greater than) that of ... - If the CI contains 0: We are 100(1 - α)% confident that the difference between the true (proportions/means) of ... and ... is between ... and		
Level α Hypothesis test	Assumptions	2 independent random samples - At least 5 successes and 5 failures in each sample	2 independent random samples - Both populations are approximately normal, or sample sizes are large ($n_1, n_2 \geq 30$)	- Random sample - The distribution of the paired differences is approximately normal, or large sample size ($n_D \geq 30$)
	Hypotheses	$H_0: p_1 = p_2$ $H_a: p_1 < p_2$ or $p_1 > p_2$ or $p_1 \neq p_2$	$H_0: \mu_1 = \mu_2$ $H_a: \mu_1 < \mu_2$ or $\mu_1 > \mu_2$ or $\mu_1 \neq \mu_2$	$H_0: \mu_D = 0$ $H_a: \mu_D < 0$ or $\mu_D > 0$ or $\mu_D \neq 0$
	Test statistic	$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}(1 - \hat{p}) \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$ where $\hat{p} = \frac{\text{total successes in both samples}}{n_1 + n_2}$	$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$	$t = \frac{\bar{x}_D}{\sqrt{\frac{s_D^2}{n_D}}}$
	p-value	$P(Z < z)$ or $P(Z > z)$ or $2P(Z > z)$, where Z is the standard normal distribution	$P(T_{\min(n_1-1, n_2-1)} < t)$ or $P(T_{\min(n_1-1, n_2-1)} > t)$ or $2P(T_{\min(n_1-1, n_2-1)} > t)$, where $T_{\min(n_1-1, n_2-1)}$ is the t -distribution with $\min(n_1 - 1, n_2 - 1)$ degrees of freedom	$P(T_{n_D-1} < t)$ or $P(T_{n_D-1} > t)$ or $2P(T_{n_D-1} > t)$, where T_{n_D-1} is the t -distribution with $(n_D - 1)$ degrees of freedom
	Conclusion and Interpretation	- If p-value < α: Reject H_0. We have strong evidence to conclude that the true (proportion/mean) of ... is (less than/greater than/different from) that of ... 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) that of ... at the significance level of α.		