Summary of Statistics for Significance Tests and Confidence Intervals [z and t distributions]

Situation	"known" parameters	unknown parameters	statistics (computed from data)	distributions (usually approximate)		SD or SE
1-Proportion Categorical percents	p $\sigma = \sqrt{p(1-p)}$		X = count $\hat{p} = \frac{X}{n}$	X $\hat{p}$ z	$B(n,p) \approx N(np, \sigma\sqrt{n})$ $N(p, \sigma_{\hat{p}})$ $N(0,1)$	$SD = \sigma_{\hat{p}} = \frac{\sigma}{\sqrt{n}} = \sqrt{\frac{p(1-p)}{n}}$
1-Proportion Categorical percents		p $\sigma = \sqrt{p(1-p)}$	$\hat{p}$ $s = \sqrt{\hat{p}(1-\hat{p})}$	z	$N(0,1)$	$SE = \frac{s}{\sqrt{n}} = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$
2-Proportion Categorical difference of two percents $(p_1 - p_2)$ [If $H_0 : p_1 = p_2$ then use pooled est. for p $(= p_1 = p_2)$]		p_1, p_2 (σ_1, σ_2)	X_1, X_2 (success counts) $\hat{p}_1 = \frac{X_1}{n_1}$, $\hat{p}_2 = \frac{X_2}{n_2}$, $s_1 = \sqrt{\hat{p}_1(1-\hat{p}_1)}$, $s_2 = \sqrt{\hat{p}_2(1-\hat{p}_2)}$ $[\hat{p} = \frac{X_1 + X_2}{n_1 + n_2}$ = pooled perc.]	$\hat{p}_1 - \hat{p}_2$ z	$N(p_1 - p_2, SE)$ $N(0,1)$	$SE = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$ $= \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$ $[SE = \sqrt{\hat{p}(1-\hat{p})(\frac{1}{n_1} + \frac{1}{n_2})}]$
1-Sample z Quantitative mean value	σ	(μ)	$\bar{x}$	$\bar{x}$ z	$N(\mu, \sigma_{\bar{x}})$ $N(0,1)$	$SD = \sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$
1-Sample t **[Paired** t**]** Quantitative mean value		σ, (μ)	$\bar{x}$, s, $df = n - 1$	t	$T(df)$	$SE = \frac{s}{\sqrt{n}}$
2-Sample t Quantitative difference of two means $(\mu_1 - \mu_2)$		σ_1, σ_2	$\bar{x}_1$, s_1, $\bar{x}_2$, s_2, $df \geq \min(n_1 - 1, n_2 - 1)$	t	$T(df)$	$SE = \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$
2-Sample t [equal variance] Quantitative two means pooled est. of st dev		σ $(\sigma_1 = \sigma_2)$	$\bar{x}_1$, s_1, $\bar{x}_2$, s_2 $s_{\text{pooled}} = \sqrt{\frac{(df_1)s_1^2 + (df_2)s_2^2}{df_1 + df_2}}$ $df_1 = n_1 - 1$, $df_2 = n_2 - 1$ $df = df_1 + df_2$	t	$T(df)$	$SE = s_{\text{pooled}}\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$