I population: Tests for the mean:

Hypothesis: $\begin{cases} H_0: \mu = \mu_0 \\ H_1: \mu \neq \mu_0 \end{cases}$	Hypothesis: $\begin{cases} H_0: \mu \geq \mu_0 \\ H_1: \mu < \mu_0 \end{cases}$	Hypothesis: $\begin{cases} H_0: \mu \leq \mu_0 \\ H_1: \mu > \mu_0 \end{cases}$
1) σ known **Statistics: $z_0 = \frac{\bar{x}-\mu_0}{\sigma}\sqrt{n}$**		
Two-sided critical interval: $R = \left(-\infty;\ -z_{\frac{\alpha}{2}}\right) \cup \left(z_{\frac{\alpha}{2}}; \infty\right)$	Left-sided critical interval: $R = (-\infty;\ -z_\alpha)$	Right-sided critical interval: $R = (z_\alpha; \infty)$
2) σ unknown **Statistics: $t_0 = \frac{\bar{x}-\mu_0}{s}\sqrt{n}$**		
Two-sided critical interval: $R = \left(-\infty;\ -t_{\frac{\alpha}{2},n-1}\right) \cup \left(t_{\frac{\alpha}{2},n-1}; \infty\right)$	Left-sided critical interval: $R = \left(-\infty;\ -t_{\alpha,n-1}\right)$	Right-sided critical interval: $R = \left(t_{\alpha,n-1}; \infty\right)$
3) Big sample size n>30 **Statistics: $z_0 = \frac{\bar{x}-\mu_0}{s}\sqrt{n}$**		
Two-sided critical interval: $R = \left(-\infty;\ -z_{\frac{\alpha}{2}}\right) \cup \left(z_{\frac{\alpha}{2}}; \infty\right)$	Left-sided critical interval: $R = (-\infty;\ -z_\alpha)$	Right-sided critical interval: $R = (z_\alpha; \infty)$

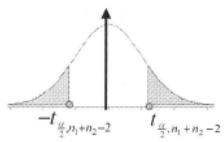
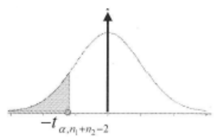
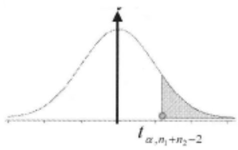
Test for variance:

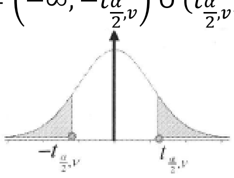
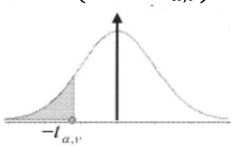
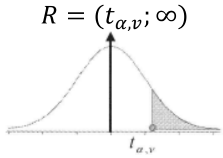
Hypothesis: $\begin{cases} H_0: \sigma^2 = \sigma_0^2 \\ H_1: \sigma^2 \neq \sigma_0^2 \end{cases}$	Hypothesis: $\begin{cases} H_0: \sigma^2 \geq \sigma_0^2 \\ H_1: \sigma^2 < \sigma_0^2 \end{cases}$	Hypothesis: $\begin{cases} H_0: \sigma^2 \leq \sigma_0^2 \\ H_1: \sigma^2 > \sigma_0^2 \end{cases}$
Statistics: $\chi_0^2 = \frac{(n-1)s^2}{\sigma_0^2}$		
Two-sided critical interval: $R = \left(0;\ \chi^2_{1-\frac{\alpha}{2},n-1}\right) \cup \left(\chi^2_{\frac{\alpha}{2},n-1}; \infty\right)$	Left-sided critical interval: $R = \left(0;\ \chi^2_{1-\alpha,n-1}\right)$	Right-sided critical interval: $R = \left(\chi^2_{\alpha,n-1}; \infty\right)$

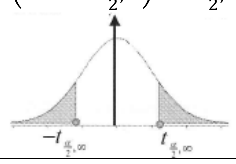
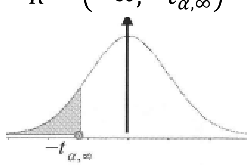
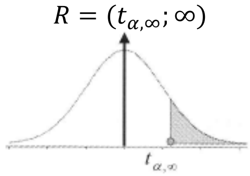
Test for the fraction:

Hypothesis: $\begin{cases} H_0: p = p_0 \\ H_1: p \neq p_0 \end{cases}$	Hypothesis: $\begin{cases} H_0: p \geq p_0 \\ H_1: p < p_0 \end{cases}$	Hypothesis: $\begin{cases} H_0: p \leq p_0 \\ H_1: p > p_0 \end{cases}$
Statistics: $z_0 = \frac{\hat{p}-p_0}{\sqrt{p_0(1-p_0)}}\sqrt{n},\ \hat{p} = \frac{T}{n}$		
Two-sided critical interval: $R = \left(-\infty;\ -z_{\frac{\alpha}{2}}\right) \cup \left(z_{\frac{\alpha}{2}}; \infty\right)$	Left-sided critical interval: $R = (-\infty;\ -z_\alpha)$	Right-sided critical interval: $R = (z_\alpha; \infty)$

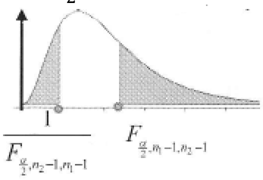
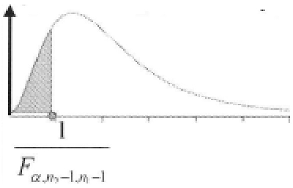
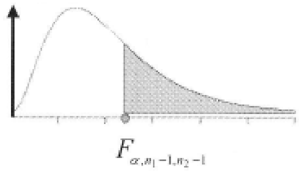
II populations: Tests for two means:

Assumption: homogeneity of variance ($\sigma_1^2 = \sigma_2^2$)		
$\begin{cases} H_0: \mu_1 = \mu_2 \\ H_1: \mu_1 \neq \mu_2 \end{cases}$	$\begin{cases} H_0: \mu_1 \geq \mu_2 \\ H_1: \mu_1 < \mu_2 \end{cases}$	$\begin{cases} H_0: \mu_1 \leq \mu_2 \\ H_1: \mu_1 > \mu_2 \end{cases}$
$Statistics\ t_0 = \dfrac{\overline{x_1} - \overline{x_2}}{\sqrt{\dfrac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2} \cdot \dfrac{n_1+n_2}{n_1 n_2}}}$		
Two-sided critical interval: $R = \left(-\infty; -t_{\frac{\alpha}{2},n_1+n_2-2}\right) \cup \left(t_{\frac{\alpha}{2},n_1+n_2-2}; \infty\right)$ 	Left-sided critical interval: $R = \left(-\infty; -t_{\alpha,n_1+n_2-2}\right)$ 	Right-sided critical interval: $R = \left(t_{\alpha,n_1+n_2-2}; \infty\right)$ 

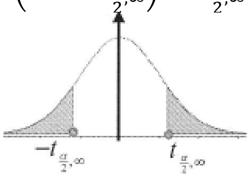
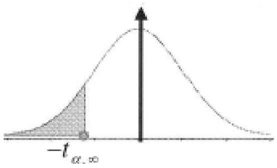
Assumption: no homogeneity of variance ($\sigma_1^2 \neq \sigma_2^2$)		
$\begin{cases} H_0: \mu_1 = \mu_2 \\ H_1: \mu_1 \neq \mu_2 \end{cases}$	$\begin{cases} H_0: \mu_1 \geq \mu_2 \\ H_1: \mu_1 < \mu_2 \end{cases}$	$\begin{cases} H_0: \mu_1 \leq \mu_2 \\ H_1: \mu_1 > \mu_2 \end{cases}$
$Statistics\ \widetilde{t_0} = \dfrac{\overline{x_1} - \overline{x_2}}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$		
Two-sided critical interval: $R = \left(-\infty; -t_{\frac{\alpha}{2},v}\right) \cup \left(t_{\frac{\alpha}{2},v}; \infty\right)$ 	Left-sided critical interval: $R = \left(-\infty; -t_{\alpha,v}\right)$ 	Right-sided critical interval: $R = \left(t_{\alpha,v}; \infty\right)$ 
$v = \dfrac{\left(\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}\right)^2}{\dfrac{(s_1^2/n_1)^2}{n_1-1} + \dfrac{(s_2^2/n_2)^2}{n_2-1}}$		

Assumption: big sample sizes $n_1, n_2 > 30$		
$\begin{cases} H_0: \mu_1 = \mu_2 \\ H_1: \mu_1 \neq \mu_2 \end{cases}$	$\begin{cases} H_0: \mu_1 \geq \mu_2 \\ H_1: \mu_1 < \mu_2 \end{cases}$	$\begin{cases} H_0: \mu_1 \leq \mu_2 \\ H_1: \mu_1 > \mu_2 \end{cases}$
$Statistics\ z_0 = \dfrac{\overline{x_1} - \overline{x_2}}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$		
Two-sided critical interval: $R = \left(-\infty; -t_{\frac{\alpha}{2},\infty}\right) \cup \left(t_{\frac{\alpha}{2},\infty}; \infty\right)$ 	Left-sided critical interval: $R = \left(-\infty; -t_{\alpha,\infty}\right)$ 	Right-sided critical interval: $R = \left(t_{\alpha,\infty}; \infty\right)$ 

Tests for two variances

$\begin{cases} H_0\colon \sigma_1^2 = \sigma_2^2 \\ H_1\colon \sigma_1^2 \neq \sigma_2^2 \end{cases}$	$\begin{cases} H_0\colon \sigma_1^2 \geq \sigma_2^2 \\ H_1\colon \sigma_1^2 < \sigma_2^2 \end{cases}$	$\begin{cases} H_0\colon \sigma_1^2 \leq \sigma_2^2 \\ H_1\colon \sigma_1^2 > \sigma_2^2 \end{cases}$
$Statistics\ F_0 = \frac{s_1^2}{s_2^2}$		
Two-sided critical interval: $R = \left(0; \frac{1}{F_{\frac{\alpha}{2},n_2-1,n_1-1}}\right) \cup (F_{\frac{\alpha}{2},n_1-1,n_2-1}; \infty)$ 	Left-sided critical interval: $R = \left(0; \frac{1}{F_{\alpha,n_2-1,n_1-1}}\right)$ 	Right-sided critical interval: $R = (F_{\alpha,n_1-1,n_2-1}; \infty)$ 

Tests for two fractions

$\begin{cases} H_0\colon p_1 = p_2 \\ H_1\colon p_1 \neq p_2 \end{cases}$	$\begin{cases} H_0\colon p_1 \geq p_2 \\ H_1\colon p_1 < p_2 \end{cases}$	$\begin{cases} H_0\colon p_1 \leq p_2 \\ H_1\colon p_1 > p_2 \end{cases}$
$Statistics\ z_0 = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{(1-\hat{p})\hat{p}} \cdot \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$		
$\hat{p} = \frac{T_1 + T_2}{n_1 + n_2};\ \hat{p}_1 = \frac{T_1}{n_1}; \hat{p}_2 = \frac{T_2}{n_2}$		
Two-sided critical interval: $R = \left(-\infty; -t_{\frac{\alpha}{2},\infty}\right) \cup (t_{\frac{\alpha}{2},\infty}; \infty)$ 	Left-sided critical interval: $R = \left(-\infty; -t_{\alpha,\infty}\right)$ 	Right-sided critical interval: $R = (t_{\alpha,\infty}; \infty)$