Número de variables	Número de poblaciones	Número de "tratamientos"	Suposiciones	Hipótesis nula	Estadístico	Intervalos de confianza
Univariado	1 población	-	Población normal	$H_0: \mu = \mu_0$ μ_0 constante	$n(\bar{x}-\mu_0)(s^2)^{-1}(\bar{x}-\mu_0) \approx t_{n-1}^2(\alpha/2)$	$\bar{x} \pm t_{n-1}\left(\frac{\alpha}{2}\right) s/\sqrt{n}$
Multivariado	1 población	-	Población normal	$H_0: \boldsymbol{\mu} = \boldsymbol{\mu_0}$ $\boldsymbol{\mu_0}$ vector de medias	$n(\overline{\boldsymbol{X}}-\boldsymbol{\mu_0})'(S)^{-1}(\overline{\boldsymbol{X}}-\boldsymbol{\mu_0}) \approx \frac{(n-1)p}{(n-p)} F_{p,n-p}(\alpha)$	$a'\overline{\boldsymbol{X}} \pm \sqrt{\frac{(n-1)p}{(n-p)} F_{p,n-p}(\alpha)} \sqrt{\boldsymbol{a'Sa}/n}$
Univariado	1 población	2 "tratamientos"	Población normal	$H_0: \delta = \mu_1 - \mu_2 = \delta_0$	$\frac{\overline{D}-\delta_0}{s_d/\sqrt{n}} \approx t_{n-1}(\alpha/2)$	$\bar{d} \pm t_{n-1}\left(\frac{\alpha}{2}\right) s_d/\sqrt{n}$
Multivariado	1 población	2 "tratamientos"	Población normal	$H_0: \boldsymbol{\delta} = \boldsymbol{\mu_1} - \boldsymbol{\mu_2} = \boldsymbol{\delta_0}$	$n\left(\overline{\boldsymbol{d}}-\boldsymbol{\delta_0}\right)' S_d^{-1}\left(\overline{\boldsymbol{d}}-\boldsymbol{\delta_0}\right) \approx \frac{(n-1)p}{(n-p)} F_{p,n-p}(\alpha)$	$\boldsymbol{a'\overline{d}} \pm \sqrt{\frac{(n-1)p}{(n-p)} F_{p,n-p}(\alpha)} \sqrt{\boldsymbol{a'}S_d\boldsymbol{a}/n}$
Univariado	1 población	q "tratamientos"	Población normal	$H_0: C\boldsymbol{\mu} = 0$ C matriz de contraste	$n(C\overline{\boldsymbol{X}})'(CSC')^{-1}(C\overline{\boldsymbol{X}}) \approx \frac{(n-1)(q-1)}{(n-q+1)} F_{q-1,n-q+1}(\alpha)$	$C\overline{\boldsymbol{X}} \pm \sqrt{\frac{(n-1)(q-1)}{(n-q+1)} F_{q-1,n-q+1}(\alpha)} \sqrt{C'SC/n}$
Multivariado	2 poblaciones	-	Poblaciones normales y $\Sigma_1 = \Sigma_2$	$H_0: \boldsymbol{\mu_1} - \boldsymbol{\mu_2} = \boldsymbol{\delta_0}$	$(\overline{\boldsymbol{X}}_1 - \overline{\boldsymbol{X}}_2 - \boldsymbol{\delta_0})' \left(\left(\frac{1}{n_1}+\frac{1}{n_2}\right) S_{pooled}\right)^{-1} (\overline{\boldsymbol{X}}_1 - \overline{\boldsymbol{X}}_2 - \boldsymbol{\delta_0}) \approx \frac{(n_1+n_2-2)p}{(n_1+n_2-p-1)} F_{p,n_1+n_2-p-1}(\alpha)$	$a'\overline{(\boldsymbol{X}_1 - \boldsymbol{X}_2)} \pm \sqrt{\frac{(n_1+n_2-2)p}{(n_1+n_2-p-1)} F_{p,n_1+n_2-p-1}(\alpha)} \sqrt{\boldsymbol{a}'\left(\frac{1}{n_1}+\frac{1}{n_2}\right) S_{pooled}\boldsymbol{a}}$
Multivariado	2 poblaciones	-	n-p grande	$H_0: \boldsymbol{\mu_1} - \boldsymbol{\mu_2} = \boldsymbol{\delta_0}$	$(\overline{\boldsymbol{X}}_1 - \overline{\boldsymbol{X}}_2 - \boldsymbol{\delta_0})' \left(\frac{1}{n_1} S_1 + \frac{1}{n_2} S_2\right)^{-1} (\overline{\boldsymbol{X}}_1 - \overline{\boldsymbol{X}}_2 - \boldsymbol{\delta_0}) \approx \chi_p^2(\alpha)$	$a'\overline{(\boldsymbol{X}_1 - \boldsymbol{X}_2)} \pm \sqrt{\chi_p^2(\alpha)} \sqrt{\boldsymbol{a}'\left(\frac{1}{n_1} S_1 + \frac{1}{n_2} S_2\right)\boldsymbol{a}}$
Univariado	g poblaciones	-	- Poblaciones indeps. - Poblaciones normales - Poblaciones mismas Σ	ANOVA $H_0: \mu_1 = \cdots = \mu_g$ $H_0: \tau_1 = \cdots = \tau_g = 0$	$F = \frac{SS_{treatment}/(g-1)}{SS_{res}/(n-g)} \approx F_{g-1,n-g}$	-
Multivariado	g poblaciones	-	- Poblaciones indeps. - Poblaciones normales - Poblaciones mismas Σ	MANOVA $H_0: \boldsymbol{\mu_1} = \cdots = \boldsymbol{\mu_g}$ $H_0: \boldsymbol{\tau_1} = \cdots = \boldsymbol{\tau_g} = \boldsymbol{0}$	(**)	-

Recordad que $a = (1, 0, \ldots, 0), (0, 1, 0, \ldots, 0), \ldots, (0, 0, \ldots, 0, 1)$

Recordad que $S_{pooled} = \frac{(n_1-1)S_1 + (n_2-1)S_2}{n_1+n_2-2}$

ANOVA (*)

ANOVA TABLE FOR COMPARING UNIVARIATE POPULATION MEANS

Source of variation	Sum of squares (SS)	Degrees of freedom (d.f.)
Treatments	$SS_{tr} = \sum_{\ell=1}^{g} n_\ell (\bar{x}_\ell - \bar{x})^2$	$g - 1$
Residual (Error)	$SS_{res} = \sum_{\ell=1}^{g} \sum_{j=1}^{n_\ell} (x_{\ell j} - \bar{x}_\ell)^2$	$\sum_{\ell=1}^{g} n_\ell - g$
Total (corrected for the mean)	$SS_{cor} = \sum_{\ell=1}^{g} \sum_{j=1}^{n_\ell} (x_{\ell j} - \bar{x})^2$	$\sum_{\ell=1}^{g} n_\ell - 1$

MANOVA (**)

MANOVA TABLE FOR COMPARING POPULATION MEAN VECTORS

Source of variation	Matrix of sum of squares and cross products (SSP)	Degrees of freedom (d.f.)
Treatment	$\mathbf{B} = \sum_{\ell=1}^{g} n_\ell (\bar{\mathbf{x}}_\ell - \bar{\mathbf{x}})(\bar{\mathbf{x}}_\ell - \bar{\mathbf{x}})'$	$g - 1$
Residual (Error)	$\mathbf{W} = \sum_{\ell=1}^{g} \sum_{j=1}^{n_\ell} (\mathbf{x}_{\ell j} - \bar{\mathbf{x}}_\ell)(\mathbf{x}_{\ell j} - \bar{\mathbf{x}}_\ell)'$	$\sum_{\ell=1}^{g} n_\ell - g$
Total (corrected for the mean)	$\mathbf{B} + \mathbf{W} = \sum_{\ell=1}^{g} \sum_{j=1}^{n_\ell} (\mathbf{x}_{\ell j} - \bar{\mathbf{x}})(\mathbf{x}_{\ell j} - \bar{\mathbf{x}})'$	$\sum_{\ell=1}^{g} n_\ell - 1$

DISTRIBUTION OF WILKS' LAMBDA, $\Lambda^* = |\mathbf{W}|/|\mathbf{B} + \mathbf{W}|$

No. of variables	No. of groups	Sampling distribution for multivariate normal data
$p = 1$	$g \geq 2$	$\left(\frac{\Sigma n_\ell - g}{g - 1}\right)\left(\frac{1 - \Lambda^*}{\Lambda^*}\right) \sim F_{g-1, \Sigma n_\ell - g}$
$p = 2$	$g \geq 2$	$\left(\frac{\Sigma n_\ell - g - 1}{g - 1}\right)\left(\frac{1 - \sqrt{\Lambda^*}}{\sqrt{\Lambda^*}}\right) \sim F_{2(g-1), 2(\Sigma n_\ell - g - 1)}$
$p \geq 1$	$g = 2$	$\left(\frac{\Sigma n_\ell - p - 1}{p}\right)\left(\frac{1 - \Lambda^*}{\Lambda^*}\right) \sim F_{p, \Sigma n_\ell - p - 1}$
$p \geq 1$	$g = 3$	$\left(\frac{\Sigma n_\ell - p - 2}{p}\right)\left(\frac{1 - \sqrt{\Lambda^*}}{\sqrt{\Lambda^*}}\right) \sim F_{2p, 2(\Sigma n_\ell - p - 2)}$