PARAMETRIC HYPOTHESIS TESTS

Question	H_0 null hypothesis	Test	Observed value	Critical value	Accepted if
Is the mean of ξ a prescribed a_0 number, when σ standard deviation is known?	$M(\xi) = a_0$	U-test	$u_{obs} = \frac{\bar{x} - a_0}{\frac{\sigma}{\sqrt{n}}}$	$u_{crit} = \Phi^{-1}\left(\frac{p+1}{2}\right)$ **=NORM.S.INV((p+1)/2)**	$\lvert u_{obs}\rvert < u_{crit}$
Is the mean of ξ a prescribed a_0 number, when σ standard deviation is unknown?	$M(\xi) = a_0$	T-test	$t_{obs} = \frac{\bar{x} - a_0}{\frac{s^*}{\sqrt{n}}}$	t_{crit}**=T.INV.2T(1-p;n-1)**	$\lvert t_{obs}\rvert < t_{crit}$
Are the means of ξ and η independent random variables equal, when their standard deviations σ_ξ and σ_η are known?	$M(\xi) = M(\eta)$	Two-sample U-test	$u_{obs} = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{\sigma_x^2}{n_x} + \frac{\sigma_y^2}{n_y}}}$	$u_{crit} = \Phi^{-1}\left(\frac{p+1}{2}\right)$ **=NORM.S.INV((p+1)/2)**	$\lvert u_{obs}\rvert < u_{crit}$
Are the means of ξ and η independent random variables equal, when their standard deviation σ_ξ and σ_η are unknown?	$M(\xi) = M(\eta)$	Welch-test	$w_{obs} = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{s_x^{*2}}{n_x} + \frac{s_y^{*2}}{n_y}}}$	$f = \frac{\left(\frac{s_x^{*2}}{n_x} + \frac{s_y^{*2}}{n_y}\right)^2}{\frac{s_x^{*4}}{n_x^2(n_x-1)} + \frac{s_y^{*4}}{n_y^2(n_y-1)}}$ w_{crit}**= T.INV.2T(1-p;f)**	$\lvert w_{obs}\rvert < w_{crit}$
Are the standard deviations of ξ and η equal?	$D(\xi) = D(\eta)$	F-test	$f_{obs} = \max\left(\frac{s_x^{*2}}{s_y^{*2}}; \frac{s_y^{*2}}{s_x^{*2}}\right)$	f_{krit} $= \mathbf{F.INV.RT}\left(\frac{\mathbf{1-p}}{\mathbf{2}}; \mathbf{n_x - 1}; \mathbf{n_y - 1}\right)$ where $s_x^* > s_y^*$	$f_{obs} < f_{crit}$
Is the minimum/maximum element of the measurement belong to the distribution, or is it a measurement error?	The minimum/maximum element belongs to the distribution.	Grubbs test	$g_{obs,max} = \frac{max - \bar{x}}{s^*}$ $g_{obs,min} = \frac{\bar{x} - min}{s^*}$	g_{crit}: form table	$g_{obs} < g_{crit}$
Did the mean change through the measurement.	The mean did not change.	Abbé test	$q^2 = \frac{1}{2(n-1)}\sum_{I=1}^{n-1}(x_{i+1} - x_i)^2$ $r_{obs} = \frac{q^2}{s^{*2}}$	r_{crit}: form table	$r_{obs} > r_{crit}$

NON PARAMETRIC TESTS

Question	H_0 null hypothesis	Test	Observed value	Critical value	Accepted if
Is the ξ random variable follows a given F distribution?	ξ follows the given F distribution.	Goodness of fit test with χ^2- test	$\chi^2_{obs}=\sum_{i=1}^{r}\frac{(v_i-Np_i)^2}{Np_i}$	$\chi^2_{crit}=\boldsymbol{CHISQ.INV.RT}(\mathbf{1}-\boldsymbol{p};\boldsymbol{f})$ $f=r-1-k$ k is the number of estimated parameters	$\chi^2_{obs}<\chi^2_{crit}$
Are ξ and η independent random variables follow the same distribution?	ξ and η follow the same distribution.	Homogeneity test with χ^2- test	$\chi^2_{obs}=nm\sum_{i=1}^{r}\frac{\left(\frac{v_i}{n}-\frac{\mu_i}{m}\right)^2}{v_i+\mu_i}$	$\chi^2_{crit}=\boldsymbol{CHISQ.INV.RT}(\mathbf{1}-\boldsymbol{p};\boldsymbol{f})$ $f=r-1-k$ k is the number of estimated parameters	$\chi^2_{obs}<\chi^2_{crit}$