21/12/21

classmate
Date
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FORMULA

1) Anova :-

$df_{wit} = N - K$

$df_{bet} = K - 1$

$df_{tot} = N - 1$

$$SS_{tot} = \Sigma x^2_{tot} - \frac{(\Sigma x_{tot})^2}{N}$$

$$SS_{wit} = \Sigma \left[\Sigma x_t^2 - \frac{(\Sigma x_t)^2}{n_t} \right]$$

$$= \Sigma x_1^2 - \frac{(\Sigma x_1)^2}{n_1} + \Sigma x_2^2 - \frac{(\Sigma x_2)^2}{n_2} + \dots$$

$$SS_{Bet} = \Sigma \left[\frac{(\Sigma x_t)^2}{n_t} \right] - \frac{\Sigma x_{tot}}{N}$$

$$= \frac{(\Sigma x_1)^2}{n_1} + \frac{(\Sigma x_2)^2}{n_2} + \dots + \frac{\Sigma x_{tot}}{N}$$

Mean Square

$$MS_{bet} = \frac{SS_{bet}}{df_{betw}}$$

$$MS_{within} = \frac{SS_{with}}{df_{with}}$$

Summary

Source	SS	df	MS	F	P
					< 0.5

F-Statistic

$$F = \frac{MS_{bet}}{MS_{wit}}$$

* chi - square Test :-

$df = K - 1$

$df = 4$

$$x^2 obt = \Sigma \left(\frac{(fo - fe)^2}{fe} \right)$$

⇒ Kruskal :-

~~H = 12 / (N(N+1))~~

$$H = \frac{12}{(N(N+1)} \left(\frac{T_C^2}{n_C} - 3(N+1) \right)$$

* Confidence level on one sample t-test

$$LL = M - t(SM) \qquad UL = M + t(SM)$$

$$S_M = \sqrt{\frac{SS}{n-1}} \qquad S_m = \frac{s}{\sqrt{n}}$$

Two-sample t-test :

$$LL = M_1 - M_2 - t(SM_1 - M_2)$$

$$UL = M_1 - M_2 + t(SM_1 - M_2)$$

$$S_{M1-M2} = \sqrt{\left(\frac{SS_1+SS_2}{n_1+n_2-2}\right)\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}$$

&

* Mann - Whitney U Test :

$$U_1 = N_1N_2 + \frac{N_1(N_1+1)}{2} - T_1$$

$$U_2 = N_1N_2 + \frac{N_2(N_2+1)}{2} - T_2$$

Simple Linear Regression

$$Y = \beta_0 + \beta_1 x$$

β_0 - Slope

β_1 - Intercept

$\bar{x}$ ⇒ mean of x

$\bar{y}$ ⇒ mean of y

$$\beta_1 = \frac{\sum (x-\bar{x})(y-\bar{y})}{\sum (x-\bar{x})^2}$$

Residual ⇒ $e_i = y_i - \hat{y_i}$