Value	Estimate	Formula	Estimated Variance	Test Statistic	Two-sided CI
$\boldsymbol{\beta}$	$\mathbf{b}$	$(\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'\mathbf{Y}$	$MSE * (\mathbf{X}'\mathbf{X})^{-1}$	$\frac{b_j - \beta_{j,0}}{s[b_j]} \sim t_{n-p}$	$b_j \pm t_{n-p;1-\alpha/2} s[b_j]$
E$(\mathbf{Y})$	$\hat{\mathbf{Y}}$	$\mathbf{Xb} = \mathbf{X}(\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}'\mathbf{Y} = \mathbf{HY}$	$MSE * \mathbf{H}$		
E(Y_h)	$\hat{Y}_h$	$\mathbf{X}_h'\mathbf{b}$	$MSE * \mathbf{X}_h'(\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}_h$	$\frac{\hat{Y}_h - \mathbf{X}_h'\boldsymbol{\beta}}{s[\hat{Y}_h]} \sim t_{n-p}$	$\hat{Y}_h \pm t_{n-p;1-\alpha/2} s[\hat{Y}_h]$
$Y_{h(new)}$	$\hat{Y}_h$	$\mathbf{X}_h'\mathbf{b}$	$MSE * [1 + \mathbf{X}_h'(\mathbf{X}'\mathbf{X})^{-1}\mathbf{X}_h]$	$\frac{Y_{h(new)} - \hat{Y}_h}{s[\hat{Y}_h]} \sim t_{n-p}$	$\hat{Y}_h \pm t_{n-p;1-\alpha/2} s[Y_{h(new)}]$
$\boldsymbol{\varepsilon}$	$\mathbf{e}$	$\mathbf{Y} - \hat{\mathbf{Y}} = (\mathbf{I}_n - \mathbf{H})\mathbf{Y}$	$MSE * (\mathbf{I}_n - \mathbf{H})$		

$$F = \frac{MSR}{MSE} \sim F_{p-1,n-p,\lambda}, \qquad \lambda = \frac{1}{\sigma^2}\boldsymbol{\beta}'\mathbf{X}'\left(\mathbf{H} - \frac{1}{n}\mathbf{J}_n\right)\mathbf{X}\boldsymbol{\beta}$$

Source of Variation	Degrees of Freedom	Sum of Squares	Mean Square	Expected Mean Square
Regression	rank $\left(\mathbf{H} - \frac{1}{n}\mathbf{J}_n\right) = p - 1$	$SSR = \mathbf{Y}'\left(\mathbf{H} - \frac{1}{n}\mathbf{J}_n\right)\mathbf{Y}$	$MSR = \frac{1}{p-1}\mathbf{Y}'\left(\mathbf{H} - \frac{1}{n}\mathbf{J}_n\right)\mathbf{Y}$	$\sigma^2 + \frac{1}{p-1}\boldsymbol{\beta}'\mathbf{X}'\left(\mathbf{H} - \frac{1}{n}\mathbf{J}_n\right)\mathbf{X}\boldsymbol{\beta}$
Error	rank$(\mathbf{I}_n - \mathbf{H}) = n - p$	$SSE = \mathbf{Y}'(\mathbf{I}_n - \mathbf{H})\mathbf{Y}$	$MSE = \frac{1}{n-p}\mathbf{Y}'(\mathbf{I}_n - \mathbf{H})\mathbf{Y}$	σ^2
Corrected Total	rank $\left(\mathbf{I}_n - \frac{1}{n}\mathbf{J}_n\right) = n - 1$	$SSTO = \mathbf{Y}'\left(\mathbf{I}_n - \frac{1}{n}\mathbf{J}_n\right)\mathbf{Y}$		

$$R^2 = \frac{SSR}{SSTO} = 1 - \frac{SSE}{SSTO} = 1 - \frac{\sum_{i=1}^n (Y_i - \hat{Y}_i)^2}{\sum_{i=1}^n (Y_i - \bar{Y})^2} \qquad R_a^2 = 1 - \frac{SSE/(n-p)}{SSTO/(n-1)} = 1 - \left(\frac{n-1}{n-p}\right)\frac{SSE}{SSTO} = 1 - \left(\frac{n-1}{n-p}\right)\frac{\sum_{i=1}^n (Y_i - \hat{Y}_i)^2}{\sum_{i=1}^n (Y_i - \bar{Y})^2}$$