

MR4. Test for Significant Overall Regression (Global Test)

Part I	y	x ₁	x ₂	
	5	1	50	
	8	2	51	
	14	3	34	n=6
	23	4	22	
	45	5	15	
	48	6	10	

Part II C.I. U.T for individual parameters

Part III R^2 R_a^2

Now,

$$H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$$

H_a : At least one of the β 's is not zero

test statistic

$$F = \frac{\text{Mean square for the Regression Model}}{\text{Mean square for error}}$$

$$F = \frac{\frac{SS_{yy} - SSE}{k}}{\frac{SSE}{n - (k+1)}} = \frac{\frac{R^2}{k}}{\frac{1 - R^2}{n - (k+1)}}$$

$H_0: \beta_1 = \beta_2 = 0$

Step 1

H_a : At least one of the β 's is not zero

Step 2

$F = 18.504$

$\alpha = .05$

Step 3

p-value = .021

Step 4

Decision:

If $pval < \alpha$, reject H_0

$pval = .021 < \alpha = .05$ Reject H_0

Step 5

Conclusion: the data provide sufficient evidence to conclude that our model significantly contributes to the prediction of y (useful Model)

REGRESSION

/MISSING LISTWISE
 /STATISTICS COEFF OUTS R ANOVA
 /CRITERIA=PIN(.05) POUT(.10)
 /NOORIGIN
 /DEPENDENT y
 /METHOD=ENTER x1 x2.

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	x2, x1 ^b		Enter

- a. Dependent Variable: y
 b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.962 ^a	.925	.875	6.585

- a. Predictors: (Constant), x2, x1

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1604.746	2	802.373	18.504	.021 ^b
	Residual	130.088	3	43.363		
	Total	1734.833	5			

- a. Dependent Variable: y
 b. Predictors: (Constant), x2, x1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.173	45.611		-.026	.981
	x1	8.326	6.814	.836	1.222	.309
	x2	-.136	.725	-.129	-.188	.863

- a. Dependent Variable: y

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.961 ^a	.924	.905	5.736

a. Predictors: (Constant), x1

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1603.214	1	1603.214	48.723	.002 ^b
	Residual	131.619	4	32.905		
	Total	1734.833	5			

a. Dependent Variable: y

b. Predictors: (Constant), x1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9.667	5.340		-1.810	.145
	x1	9.571	1.371	.961	6.980	.002

a. Dependent Variable: y

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.942 ^a	.888	.860	6.979

a. Predictors: (Constant), x2

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1540.005	1	1540.005	31.618	.005 ^b
	Residual	194.829	4	48.707		
	Total	1734.833	5			

a. Dependent Variable: y

b. Predictors: (Constant), x2

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	54.114	6.093		8.882	.001
	x2	-.998	.178	-.942	-5.623	.005

a. Dependent Variable: y

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.962 ^a	.925	.875	6.585

a. Predictors: (Constant), x2, x1

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1604.746	2	802.373	18.504	.021 ^b
	Residual	130.088	3	43.363		
	Total	1734.833	5			

a. Dependent Variable: y

b. Predictors: (Constant), x2, x1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.173	45.611		-.026	.981
	x1	8.326	6.814	.836	1.222	.309
	x2	-.136	.725	-.129	-.188	.863

a. Dependent Variable: y