



Start-Tech Academy

Multiple Linear Regression

In Multiple linear regression more than one predictor variables are used to predict the response variable

Multiple Linear Regression

Relationship for Multiple linear regression can be written as

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p + \epsilon,$$

β_0 is known as Intercept
p is the number of predictors
 ϵ is an error term

For our Model,
The equation is

$$\text{Price} = \beta_0 + \beta_1 \text{Crime_rate} + \beta_2 \text{poor_pop} \dots \dots \beta_{16} \text{avg_dist}$$



Multiple Linear Regression

Estimating Regression Coefficients

$$RSS = \sum_{i=1}^n (y_i - \hat{y}_i)^2$$

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-6.498625	5.264076	-1.235	0.2176	
crime_rate	0.009710	0.348185	0.028	0.9778	
resid_area	-0.040875	0.057585	-0.710	0.4782	
air_qual	-15.897400	4.003793	-3.971	8.24e-05	***
room_num	4.019017	0.426606	9.421	< 2e-16	***
age	-0.005715	0.013606	-0.420	0.6747	
teachers	1.007001	0.122098	8.247	1.50e-15	***
poor_prop	-0.577271	0.052695	-10.955	< 2e-16	***
airportYES	1.131516	0.454266	2.491	0.0131	*
n_hos_beds	0.329221	0.152239	2.163	0.0311	*
n_hot_rooms	0.091868	0.082174	1.118	0.2641	
waterbodyLake	0.264086	0.641963	0.411	0.6810	
`waterbodyLake and River`	-0.687556	0.714023	-0.963	0.3361	
waterbodyRiver	-0.291319	0.546656	-0.533	0.5943	
rainfall	0.016119	0.017839	0.904	0.3667	
avg_dist	-1.218640	0.188933	-6.450	2.68e-10	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 4.925 on 490 degrees of freedom
Multiple R-squared: 0.7208, Adjusted R-squared: 0.7123
F-statistic: 84.34 on 15 and 490 DF, p-value: < 2.2e-16

