How can I extract the regression coefficients from the lm() function in R?

Authored by

stats writer

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The "lm()" function in R is used for performing linear regression analysis on a given dataset. It provides several useful outputs, including the regression coefficients that represent the relationship between the independent and dependent variables. To extract these coefficients, one can use the "coef()" function which takes the "lm()" object as its argument and returns a vector of the regression coefficients. This allows for further analysis and interpretation of the linear regression model.

Extract Regression Coefficients from lm() Function in R

You can use the following methods to extract regression coefficients from the in R:

Method 1: Extract Regression Coefficients Only

model$coefficients

Method 2: Extract Regression Coefficients with Standard Error, T-Statistic, & P-values

summary(model)$coefficients

The following example shows how to use these methods in practice.

Example: Extract Regression Coefficients from lm() in R

Suppose we fit the following multiple linear regression model in R:

```
#create data frame
df <- data.frame(rating=c(67, 75, 79, 85, 90, 96, 97),
points=c(8, 12, 16, 15, 22, 28, 24),
assists=c(4, 6, 6, 5, 3, 8, 7),
rebounds=c(1, 4, 3, 3, 2, 6, 7))

#fit multiple linear regression model
model <- lm(rating ~ points + assists + rebounds,
data=df)
```

We can use the summary() function to view the entire summary of the regression model:

```
#view model summary
summary(model)

Call:
lm(formula = rating ~ points + assists + rebounds, data
= df)

Residuals:
1 2 3 4 5 6 7
-1.5902 -1.7181 0.2413 4.8597 -1.0201 -0.6082 -0.1644

Coefficients:
```

Estimate Std. Error t value Pr(>|t|)
(Intercept) 66.4355 6.6932 9.926 0.00218 **
points 1.2152 0.2788 4.359 0.02232 *
assists -2.5968 1.6263 -1.597 0.20860
rebounds 2.8202 1.6118 1.750 0.17847

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

Residual standard error: 3.193 on 3 degrees of freedom
Multiple R-squared: 0.9589, Adjusted R-squared: 0.9179
F-statistic: 23.35 on 3 and 3 DF, p-value: 0.01396

To view the regression coefficients only, we can use model$coefficients as follows:

#view only regression coefficients of model
model$coefficients

(Intercept) points assists rebounds
66.435519 1.215203 -2.596789 2.820224

We can use these coefficients to write the following fitted regression equation:

Rating = 66.43551 + 1.21520(points) - 2.59678(assists) +

2.82022(rebounds)

To view the regression coefficients along with their standard errors, t-statistics, and p-values, we can use summary(model)$coefficients as follows:

#view regression coefficients with standard errors, t-statistics, and p-values
summary(model)$coefficients

Estimate Std. Error t value Pr(>|t|)
(Intercept) 66.435519 6.6931808 9.925852 0.002175313
points 1.215203 0.2787838 4.358942 0.022315418
assists -2.596789 1.6262899 -1.596757 0.208600183
rebounds 2.820224 1.6117911 1.749745 0.178471275

For example, we can use the following code to access the p-value for the points variable:

#view p-value for points variable
summary(model)$coefficients

0.02231542

Or we could use the following code to access the p-

value for each of the regression coefficients:

#view p-value for all variables
summary(model)$coefficients

(Intercept) points assists rebounds
0.002175313 0.022315418 0.208600183 0.178471275

The p-values are shown for each regression coefficient in the model.

You can use similar syntax to access any of the values in the regression output.

Additional Resources

The following tutorials explain how to perform other common tasks in R: