

How can I calculate the adjusted R-squared value in Excel?

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The process of determining the adjusted R-squared value in Excel involves using a formula that takes into account the number of independent variables in a regression model. This value is a statistical measure that represents the proportion of variation in the dependent variable that can be explained by the independent variables. By calculating the adjusted R-squared value, one can assess the effectiveness of the regression model and make necessary adjustments. This can be done by using the built-in function in Excel or by manually applying the formula. By accurately calculating the adjusted R-squared value, one can make informed decisions and draw meaningful conclusions from their data analysis.

Calculate Adjusted R-Squared in Excel

R-squared, often written R², is the proportion of the variance in the response variable that can be explained by the predictor variables in a linear regression model.

The value for R-squared can range from 0 to 1. A value of 0 indicates that the response variable cannot be explained by the predictor variable at all while a value of 1 indicates that the response variable can be perfectly explained without error by the predictor variables.

The adjusted R-squared is a modified version of R-squared that adjusts for the number of predictors in a regression model. It is calculated as:

Adjusted R² = 1 -

where:

R²: The R² of the model

n: The number of observations

k: The number of predictor variables

Because R² always increases as you add more predictors to a model, adjusted R² can serve as a metric that tells you how useful a model is, *adjusted for the number of predictors in a model*.

This tutorial provides a step-by-step example of how to calculate adjusted R² for a regression model in R.

Step 1: Create the Data

For this example, we'll create a dataset that contains the following variables for 12 different students:

Exam Score

Hours Spent Studying

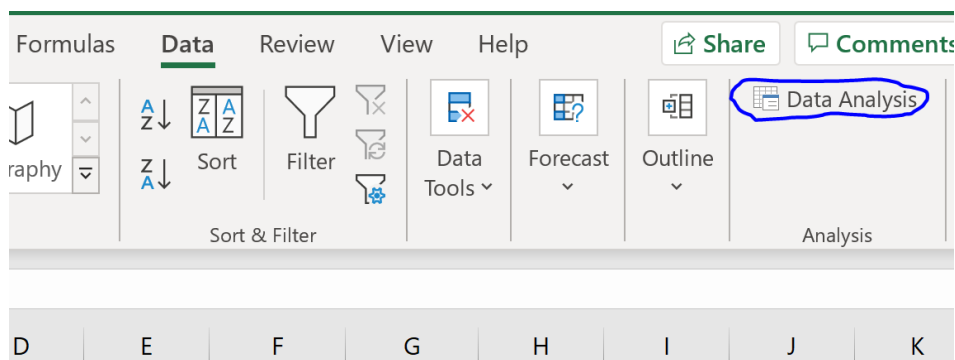
Current Grade

	A	B	C	D	E	F	G
1	Exam Score	Study Hours	Current Grade				
2	58	1	65				
3	61	1	78				
4	62	2	76				
5	65	2	76				
6	65	1	79				
7	68	2	80				
8	72	2	81				
9	74	3	84				
10	78	3	88				
11	85	4	85				
12	90	4	96				
13	95	5	90				
14							
15							
16							
17							
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26							

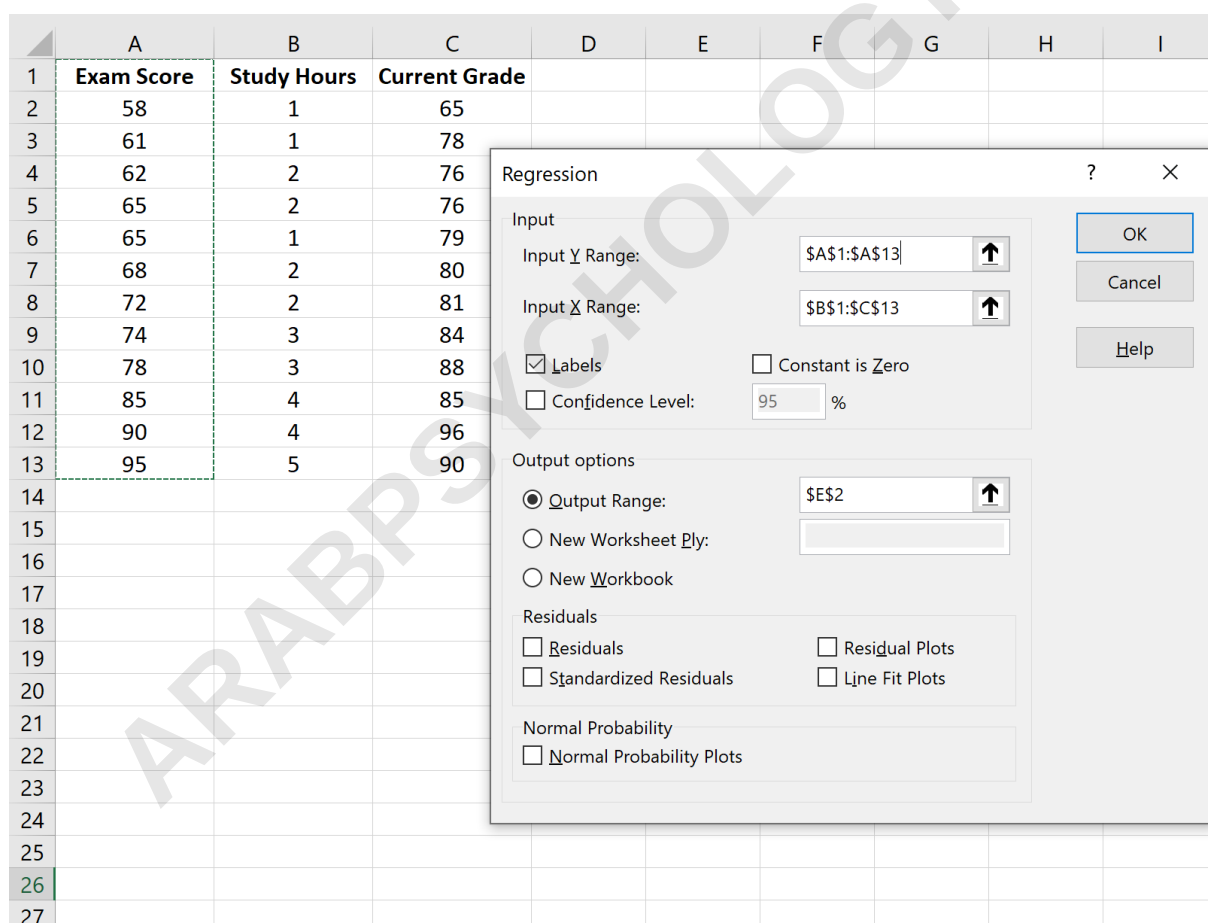
Step 2: Fit the Regression Model

Next, we'll fit a model using *Exam Score* as the and *Study Hours* and *Current Grade* as the predictor variables.

To fit this model, click the **Data** tab along the top ribbon and then click **Data Analysis**:



If you don't see this option available, you need to first .



Once you click OK, the output of the regression model will appear:

E	F	G	H	I	J	K	L	M
SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.977668							
R Square	0.955834							
Adjusted R Square	0.946019							
Standard Error	2.790029							
Observations	12							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	2	1516.192	758.0958	97.3883	8E-07			
Residual	9	70.05834	7.78426					
Total	11	1586.25						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	17.17545	12.5562	1.367886	0.204527	-11.2286	45.57954	-11.2286	45.57954
Study Hours	6.383979	1.08675	5.874378	0.000236	3.92558	8.842378	3.92558	8.842378
Current Grade	0.486069	0.179428	2.708992	0.024037	0.080175	0.891963	0.080175	0.891963

Step 3: Interpret the Adjusted R-Squared

The adjusted R-squared of the regression model is the number next to Adjusted R Square:

E	F	G	H	I	J	K	L	M
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Adjusted R Square	0.946019							
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Current Grade	0.486069	0.179428	2.708992	0.024037	0.080175	0.891963	0.080175	0.891963

The adjusted R-squared for this model turns out to be **0.946019**.

This value is extremely high, which indicates that the predictor variables *Study Hours* and *Current Grade* do a good job of predicting *Exam Score*.