Coefficient of Determination - R^2 & Adjusted R^2

R^2 is defined as the proportion of the variation in the dependent variable that is collectively explained by all of the independent variables / regression model.

$$R^2 = \frac{Explained\ Variation\ (RSS)}{Total\ Variation\ (TSS)}$$

But: R^2 may not be a reliable measure of the explanatory power of the multiple regression model.
R^2 almost always increases as variables are added to the model, even if the marginal contribution of the new variables is not significant.

> How well does the model fit the data & explain the dependent variable?

Solution: Using Adjusted R^2 → Adding new variables to the model increases or decreases Adjusted R^2 (depending on the new variable's marginal contribution).
Adjusted R^2 is always less than R^2.

$$Adj\ R^2 = 1 - \left[\left(\frac{n-1}{n-k-1}\right) * (1 - R^2)\right]$$

n = number of observations
k = number of independent variables