**R-squared (R²) and Adjusted R-squared (R²\_adj)**

In linear regression, both R-squared (R²) and adjusted R-squared (R²\_adj) are metrics used to evaluate the goodness of fit of the model. Here's the difference between the two:

1. **\*\*R-squared (R²)\*\*:**
   1. R-squared measures the proportion of the variance in the dependent variable (the variable being predicted) that is predictable from the independent variables (the predictors) in the model.
   2. It ranges from 0 to 1, where 0 indicates that the model does not explain any variability in the target variable, and 1 indicates that the model explains all the variability in the target variable.
   3. R-squared tends to increase as more independent variables are added to the model, regardless of whether they are actually improving the model's predictive power. Therefore, it's possible for R-squared to overestimate the goodness of fit of a model, especially when adding irrelevant variables.
2. **\*\*Adjusted R-squared (R²\_adj)\*\*:**
   1. Adjusted R-squared addresses the issue of R-squared by penalizing the addition of unnecessary variables to the model.
   2. It takes into account the number of predictors in the model, adjusting for the degrees of freedom. As more predictors are added, the adjusted R-squared will only increase if the new predictors improve the model's fit more than would be expected by chance.

In summary, while R-squared provides an overall measure of how well the model fits the data, adjusted R-squared adjusts for the number of predictors in the model and penalizes the addition of unnecessary variables, providing a more accurate assessment of the model's goodness of fit, especially in the context of model comparison with different numbers of predictors.

***Source: Chat GPT 3.5 04/18/2024***