

Summary of Approaches

Recall that you first analyzed the **cars2** dataset using ordinary least squares regression with the response variable price. The model seemed to fit the data well, but you suspected that the variance might not be constant. Nonconstant variance violates one of the linear regression assumptions. This meant that the standard errors for the parameter estimates were compromised.

You tried two methods to address the issue of nonconstant variance. The gamma regression model is useful when the variance changes in proportion to the square of the mean. First, you fitted a gamma regression model using the log link function. Then you used the identity link function.

The table shown here compares the results of the three models built on the **cars2** data set. You can evaluate the models' goodness of fit by comparing the statistics shown here: mean squared error, R square, and adjusted R square. The table includes the values from the OLS regression model, since we started with that approach. Recall, however, that the OLS model violated the assumptions for linear regression, so these values should not be used for comparison.

To compare the statistics from the gamma regression models, both should be computed on the original scale rather than the transformed scale. When you use the identity link function, the parameter estimates are on the original scale and no back transformation is necessary. When you use other link functions, such as the log link, then the parameter estimates are on the linked scale. Applying the inverse link function provides the unbiased estimate of the mean on the original scale, but the parameter estimates are still on the transformed scale.

For more information on calculating these statistics, click the Information button.