**Summary**

There are two models selected. And then we can check the assumptions for them.

The first assumption is that the response variable has linear relationship with each covariate. We can use the partial residual plot to check this assumption for multiple linear regression. And if there is no clear curvature in the plots we can assume the linear relationship.

The second assumption is that the residuals are normally distributed. And we can check this assumption via Q-Q plot and shapiro test. For the Q-Q plot if the points are near the fitted line we can assume the normal distribution. And for the shapiro test, the null hypothesis is that they are normally distributed. So we can check through the p-value.

The third assumption is that the variance of the residuals is constant which is also called homoscedasticity. And we can use the ncvtest to check this assumption. The null hypothesis of this test is homoscedasticity. If the p-value>0.05 we can confirm this assumption.

The fourth assumption is that the residuals are independent. We can check this assumption through durbinwatson test and the null hypothesis for the assumption is that the residuals are independent. We can make judgement from the p-value.

The last assumption is no collinearity between covariates and we can check this assumption from vifs (variance inflation factor) . If the vifs are closed between 1 and 2 we can assume no collinearity.