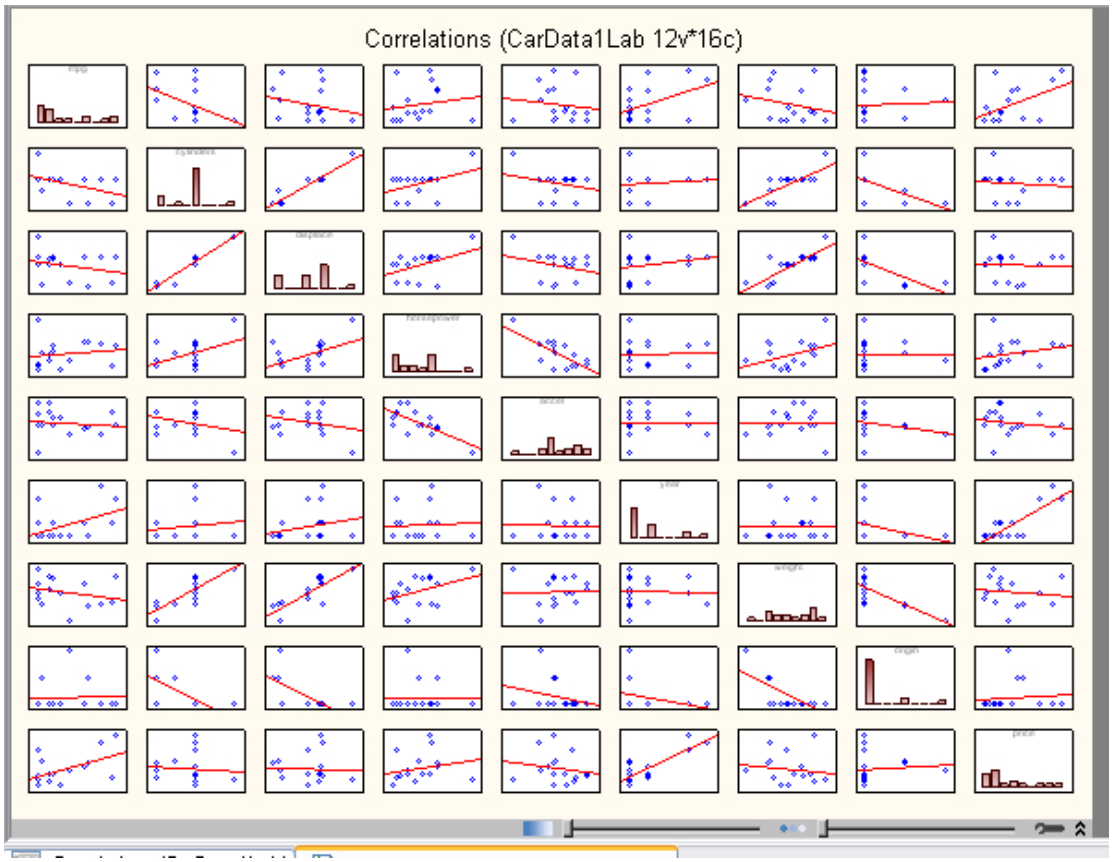
REGRESSION ANALYSIS

First, the dependence of the output (target) characteristic of the object on one of the input variables x_i (pair regression) is built, and then the linear model on all input variables x_1–x_n using the procedures of regression.

PAIR REGRESSION

Pairwise regression analysis is performed for the first sample - a car with mpg in the range of 20.1-22.5. A set of two-dimensional scattering diagrams is constructed. as the input variable I selected variable *cylinders* , since it has the greatest impact on the target variable – price.

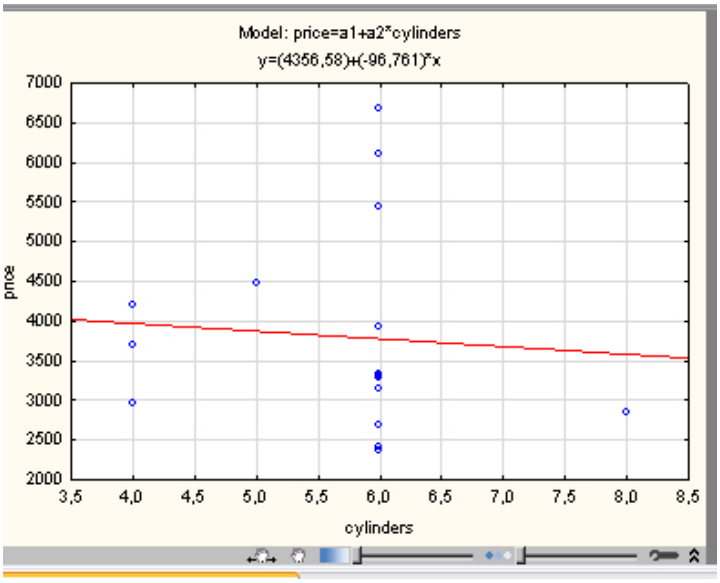


Picture 1. The set of two-dimensional scattering diagrams

Next, the following models were constructed using the least squares method:

Linear model

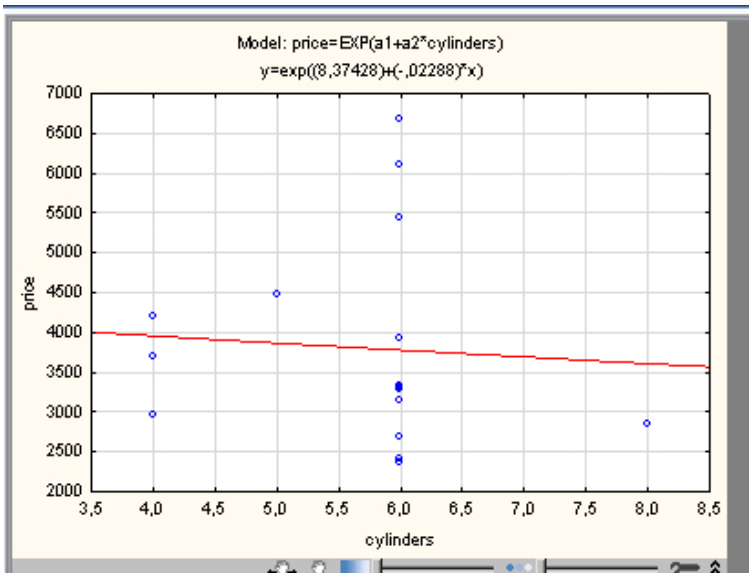
Model: price=a1+a2*cylinders and R^2=0,005826



Picture 2.. Linear regression model

Exponential model

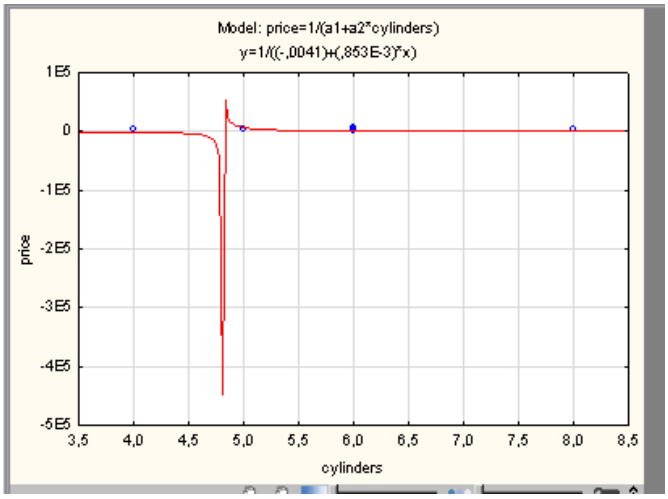
Model: price=EXP(a1+a2*cylinders) and R^2=0,005252



Picture 3. Exponential regression model

Inverse model

Model: price=1/((a1+a2*cylinders) and R^2=0



Picture 4. Inverse regression model

Coefficient of determination R^2 shows the discrepancies between the observed and estimated values of the output variable, the closer it is to unity, the more consistent the model with the data. The best is a linear model.