**Module 11: What Drives the Price of a Car?**

We aim to create a car pricing model that helps us to strategize our car selling business. For such purposes, we conducted an analysis of the car market to identify the main characteristics of the top-selling cars. Based on the car data, we suggest implementing the following company policies to trade high value cars.

**Business policies**

1. We only buy and sell Ford, Chevrolet, Toyota, Honda, or Nissan (the top five brands)

2. We only buy and sell cars in "like new" condition (neither excellent or good condition cars since they are not statistically significant)

3. We only buy and sell cars with clean titles

4. We only buy and sell cars type SUV, truck, sedan, pickup, or van

5. We only buy and sell cars with automatic transitions.

6. We only buy and sell cars with 8 and 4 cylinders (6 cylinder cars are not relevant - not statistically significant)

7. We only buy and sell cars with 4wd drives

8. We only buy and sell cars from Florida, Michigan, Wisconsin, Ohio, Pennsilvany, North Charlotte, and Oregon (California, New York, Texas, Iowa cars are not relevant - not statistically significant)

The policies described above will expose us to cars that are highly demanded by the market.

Additionally, we have developed and tested a model to estimate the car market price based on car technical characteristics.

Please refer to the model below to estimate a car fair value as a reference before deciding to purchase new vehicles for sale.

Model 4:

Car price = 0.391076 \* year + -0.286794 \* odometer + 0.299429 \* chevrolet + 0.464655 \* honda + 0.306706 \* ford + 0.100224 \* nissan + 0.541618 \* toyota + 0.113211 \* like new - 0.325709 \* 4 cylinders + 0.268954 \* 8 cylinders + 0.107208 \* 4wd - 0.100161 \* fwd - 0.394611 \* SUV + 0.124849 \* pickup - 0.627091 \* sedan + 0.122516 \* truck - 0.245086 \* van + 0.232995 \* clean + 0.284541 \* automatic - 0.346285 \* compact - 0.211594 \* mid-size + 0.601749 \* diesel - 0.302762 \* gas - 0.264048 \* fl + 0.009004 \* mi + 0.187235 \* nc - 0.083878 \* oh - 0.112694 \* pa - 0.026049 \* wi

The model was tested on new data (validation data) to predict the car prices and demonstrated a reasonable precision (MSE - 0.36).

**Car characteristics**

From the model, we observed that drivers prefer cars with the following characteristics:

1. Toyota, Honda, Ford, Chevrolet, or Nissan trucks/ pickups that consume diesel fuel.
2. The car year should be the most recent year possible, in great condition (like new), and with low mileage.
3. Additionally, the cars should have 8 cylinders, automatic transmission, and a clean title.
4. The trucks/pickups should be 4wd from North Charlotte/ Michigan.

Conversely, we observed that drivers dislike cars with the following characteristics:

1. SUV, sedan, or van cars
2. Cars with 4 cylinders, and front wheel drive that consumes gas.
3. Compact, or mid-size cars
4. Cars from Florida, Pennsilvany, Ohio, or Wisconsin.

If we follow the business policies proposed and prioritize the vehicle purchase with the characteristics suggested by the Model, we will be able to detect cars underpriced and then sell them on the market quickly by making good profit margins.

For further details, please refer to the program file below.

