Used Cars Predictions

used car dealership in the UK

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Agenda

- Identify the problem
- Analysis Plan
- Discover Data
- Introducing Findings
- Make recommendations

Objectives

A used car dealership in U.K has received used cars, but the sales team have been having problems with pricing used cars that arrive at the dealership

The sales team wants to know whether you can make predictions within this range.

Considerations

- There is a huge demand for used cars in the U.K Market today. As sales of new cars have slowed down in the recent past, the pre-owned car market has continued to grow over the past years and is larger than the new car market now.

- There are a variety of features of a car (i.e. the age of the car, its model, its mileage. Due to rising fuel prices, fuel economy is also of prime importance, other factors, so that the prediction of used cars is not an easy task It and is known that cars that are more than £1500 above the estimated price will not sell

Questions

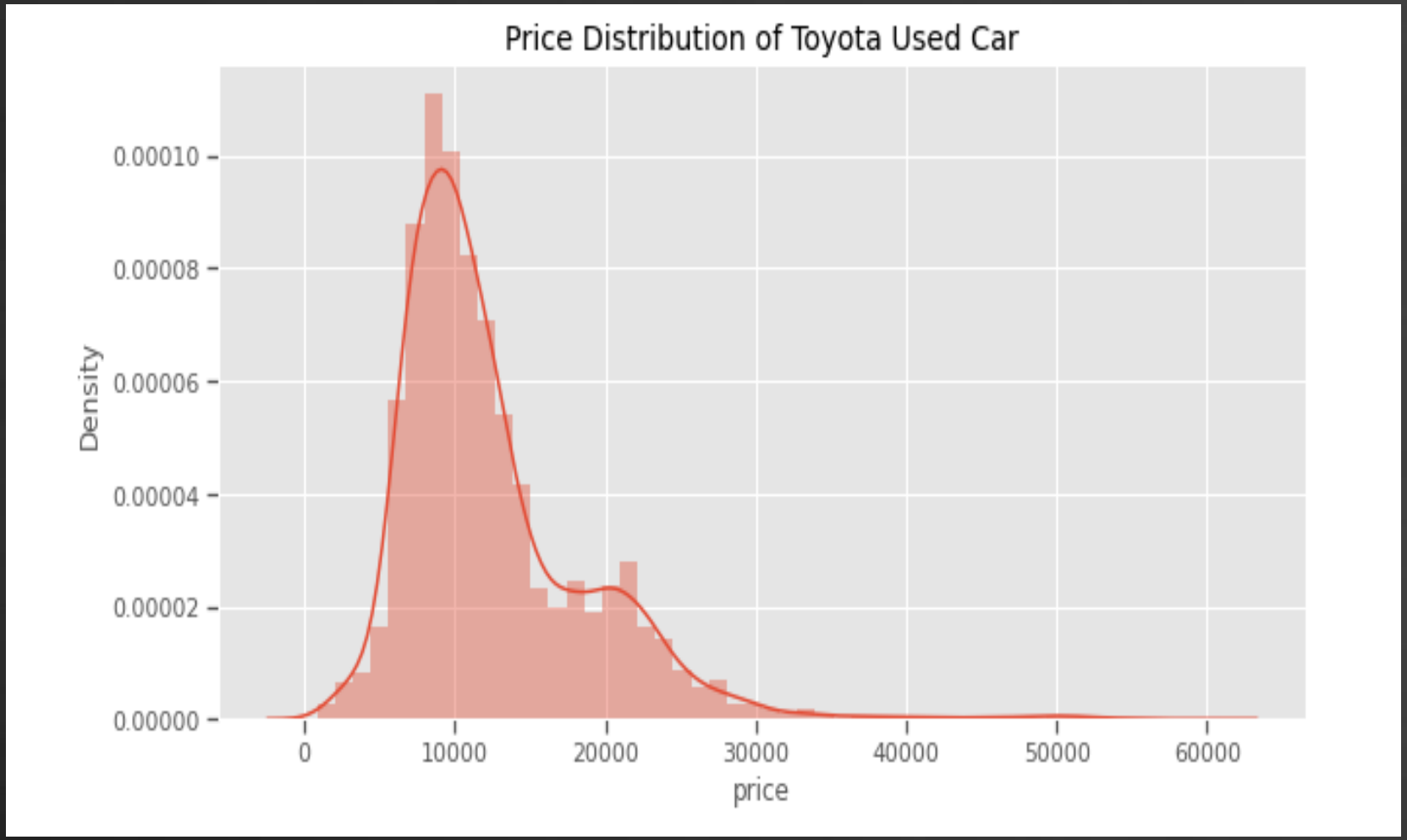
1. what various factors effect the price of the used car?

2. among all factors, which effects most

Data: Toyota Cars

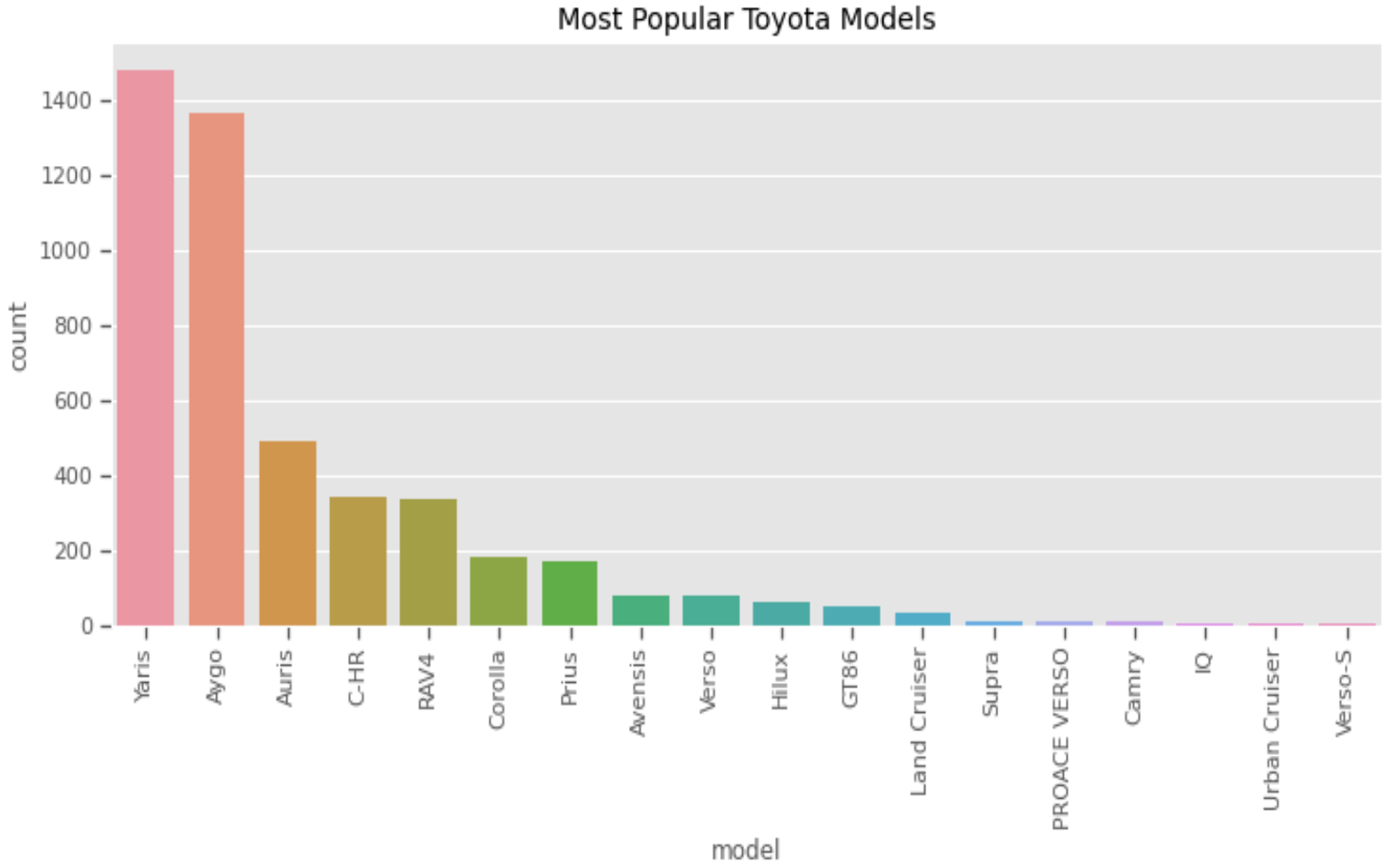
	model	year	price	transmission	mileage	fuelType	tax	mpg	engineSize
1744	Yaris	2019	12933	Manual	3693	Petrol	145	47.9	1.5
5241	Aygo	2017	8000	Manual	12527	Petrol	145	68.9	1.0
2054	Yaris	2016	10795	Automatic	26599	Petrol	30	55.0	1.3
32	GT86	2018	20695	Manual	5260	Petrol	145	36.2	2.0
3996	Aygo	2019	10695	Manual	50	Petrol	150	57.7	1.0

Price Distribution

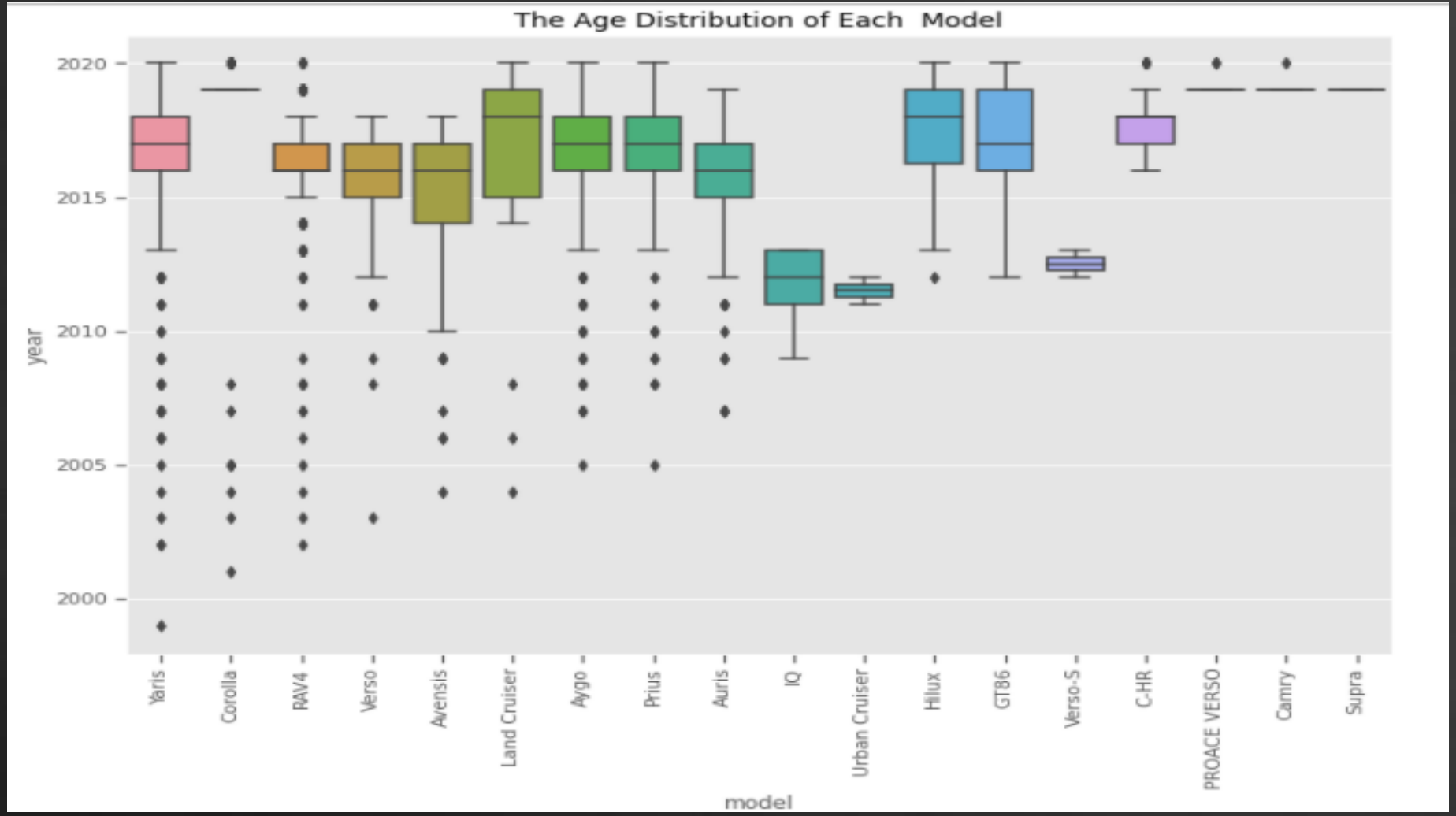


We could notice the distribution of price for each model and the year produced. the most expensive car is one of the Toyota famous sports car, Supra. Moreover, year seems to be a good predictor of the price since it could distinguish the price.

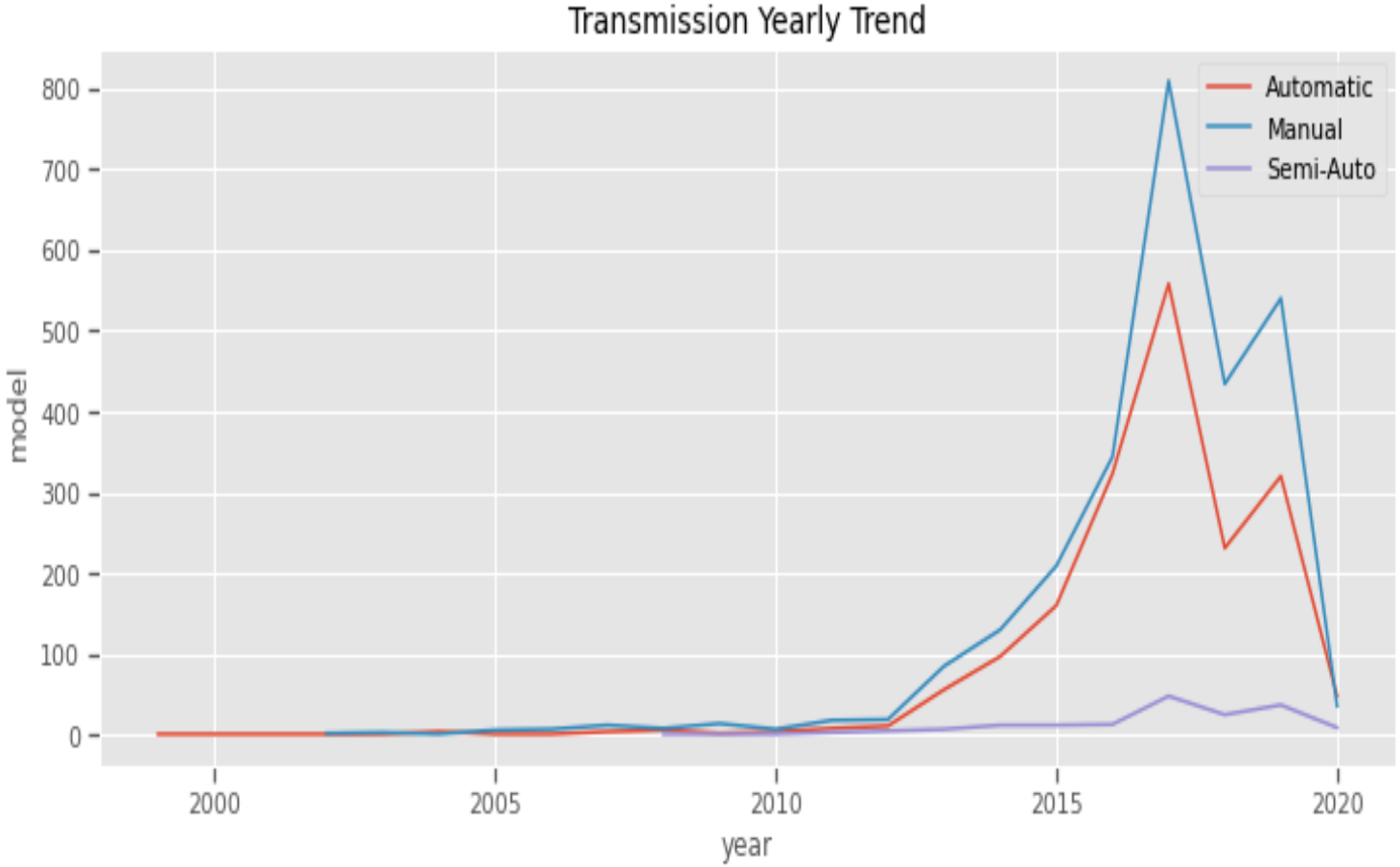
Yaris and Aygo are by far the most popular Toyota brand cars in the UK. Considering the price from the previous chart, the price of both models are positioned in the lower group.



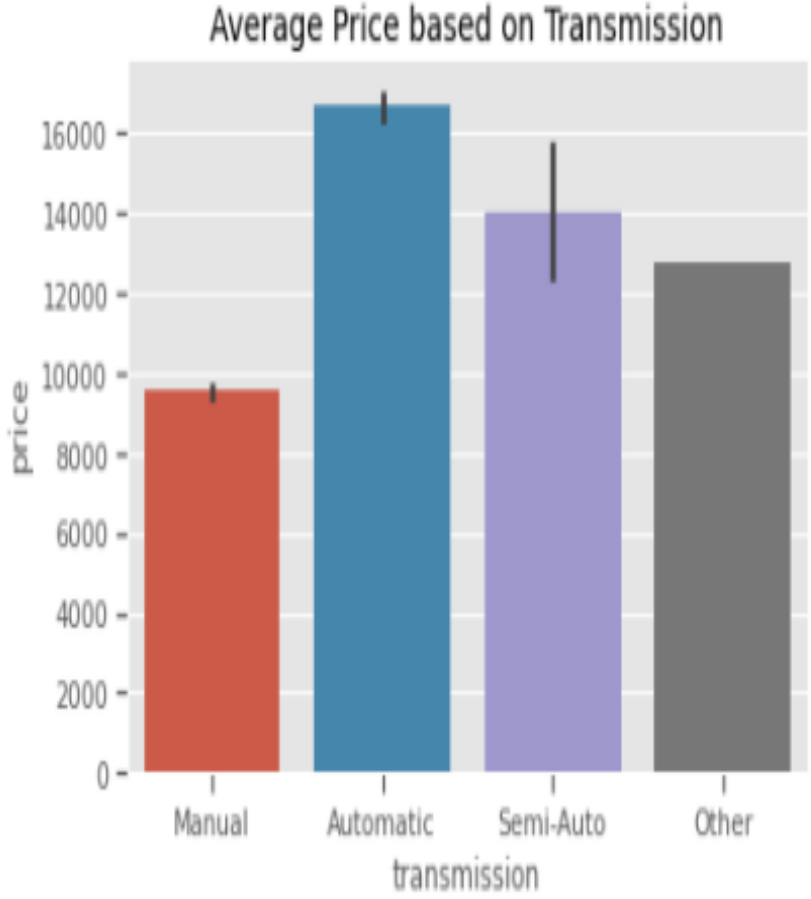
The chart shows that Yaris has wide-range of ages than the other model. Even though the price is relatively low, its old cars are still tradeable which means that the price does not affect the durability.

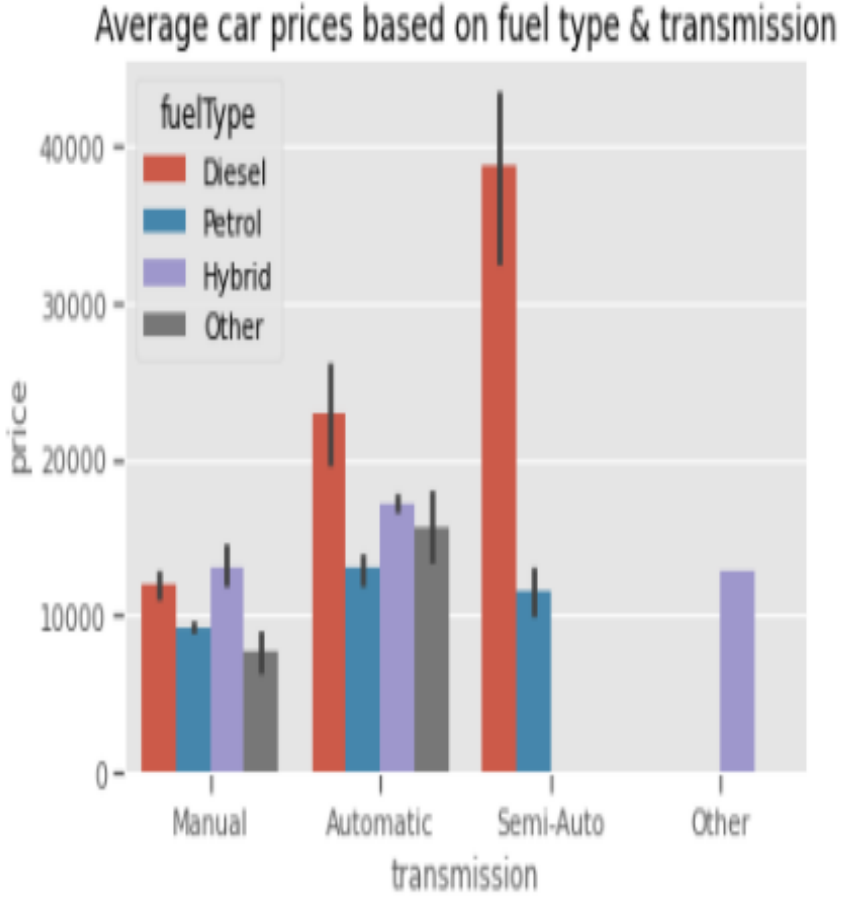


The automatic and manual transmission appears to have similar annual trends with the manual dominated the UK used car market of Toyota brand.

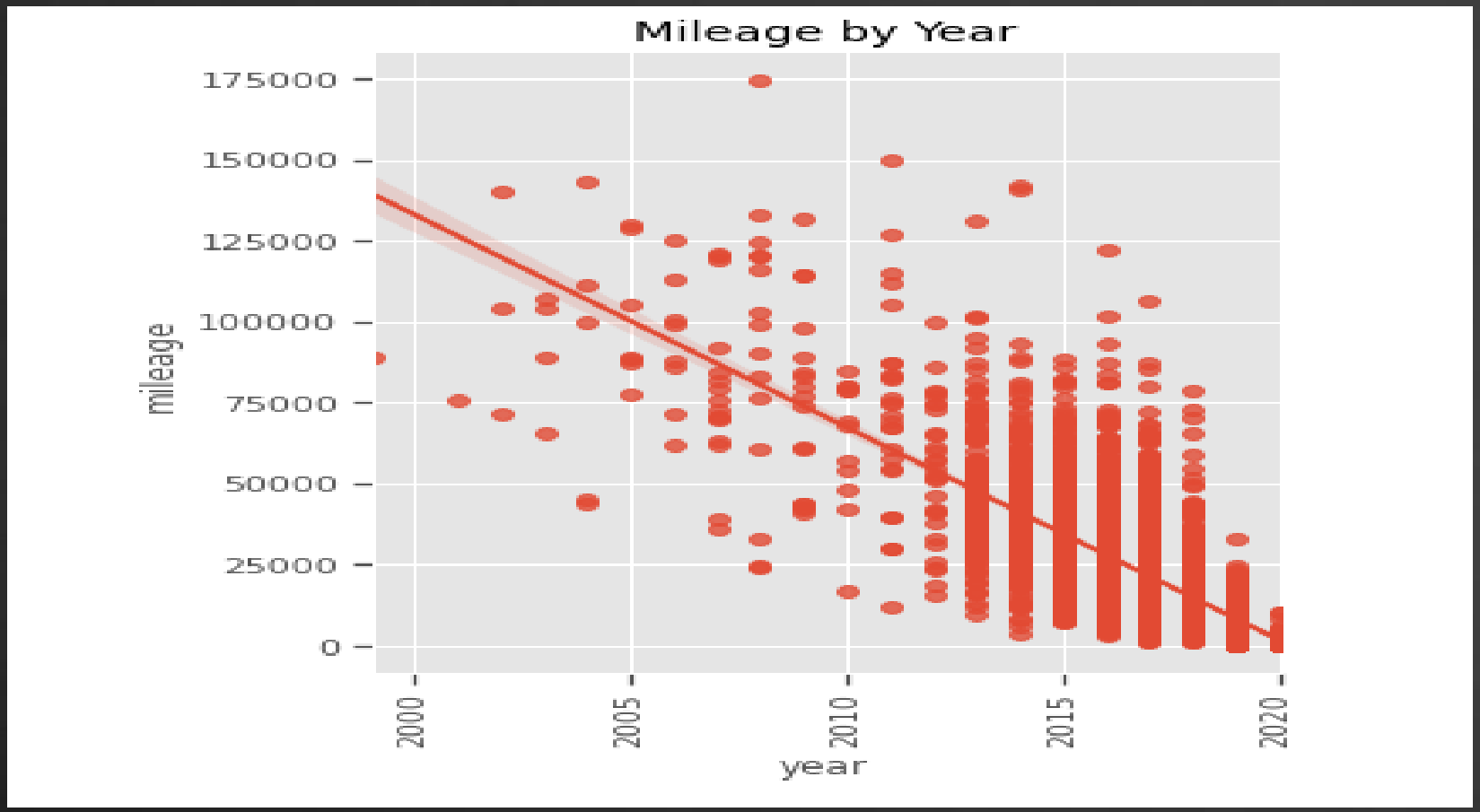


high rate of automotive technological advancements drive, makes cars more expensive for manual & automatic cars they use any fuel type, However it seems diesel is the most expensive.

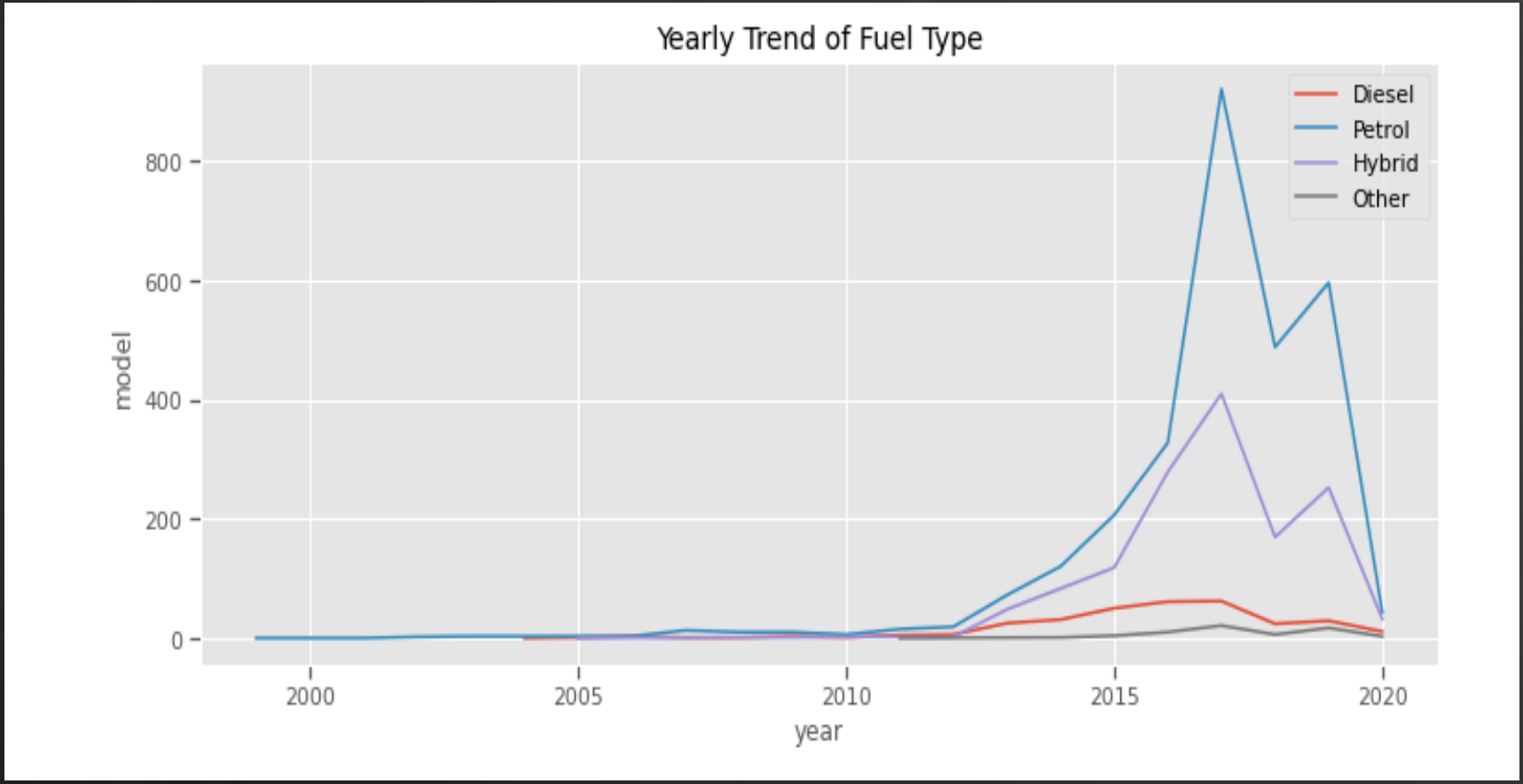




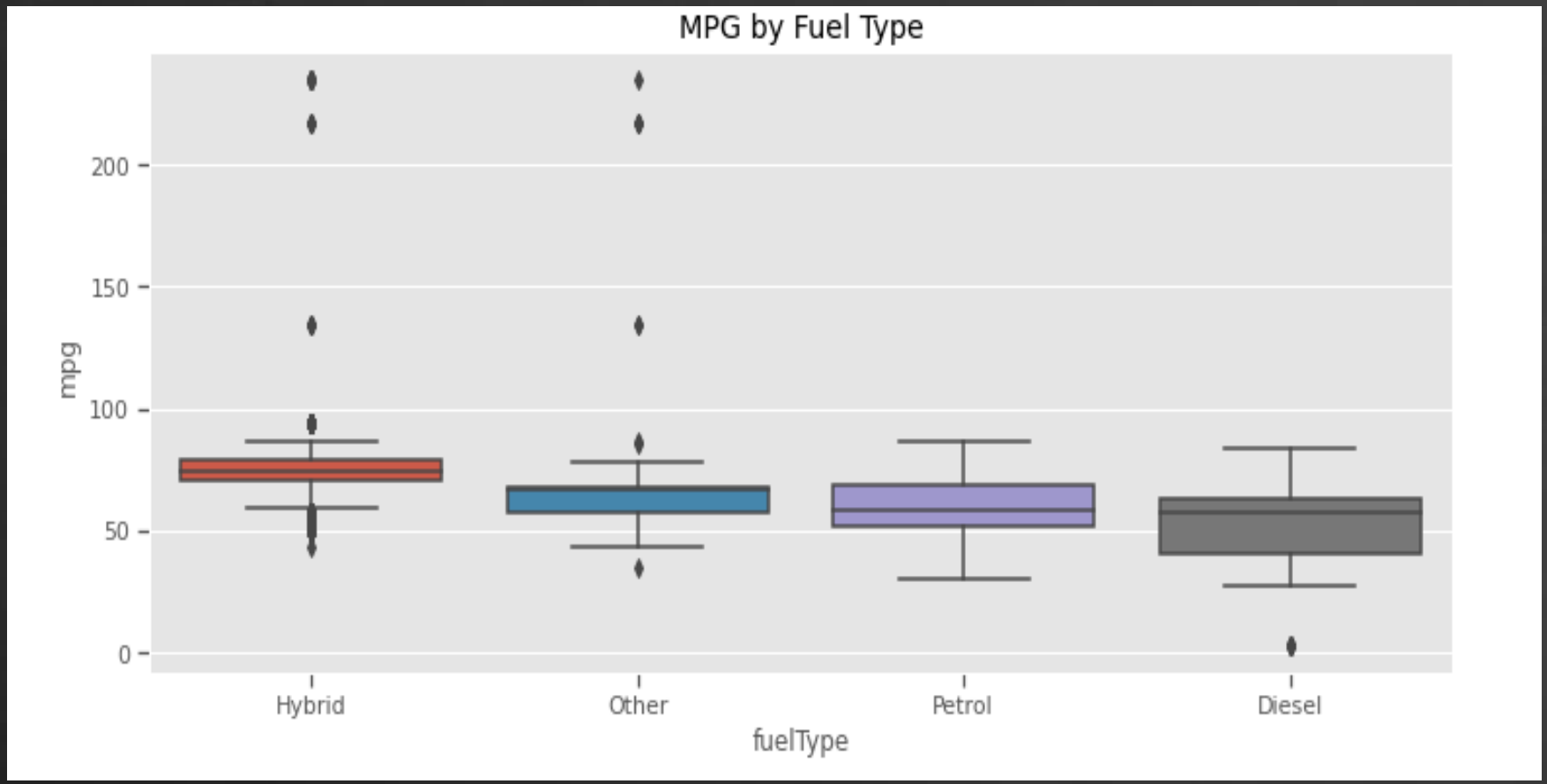
Obviously, the older the car the higher the mileage is. However, the chart indicates that some old cars were used less frequent by the owners.



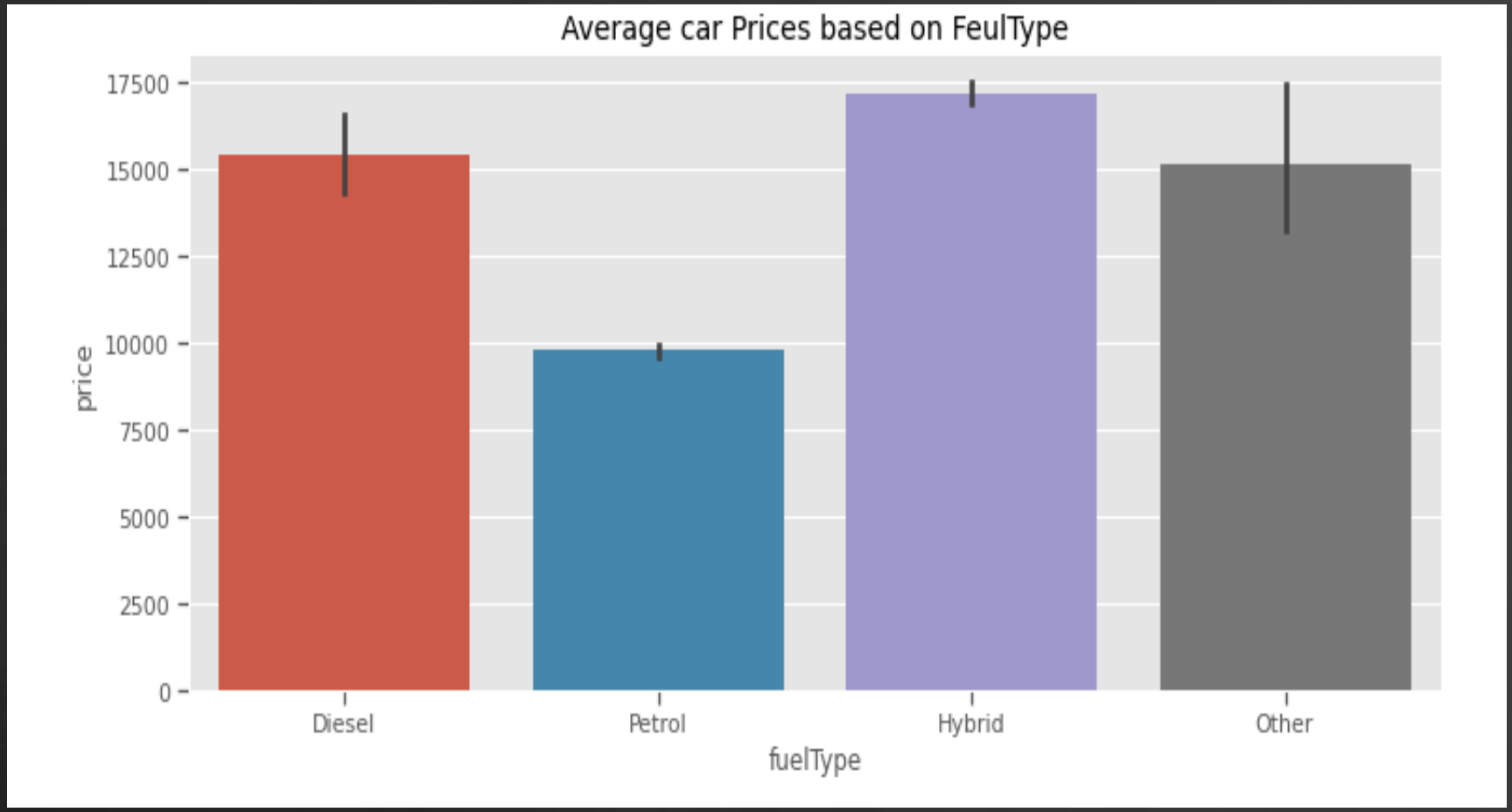
The trend of the fuel type of the cars seems to experience insignificant change where the petrol cars are always the most popular.



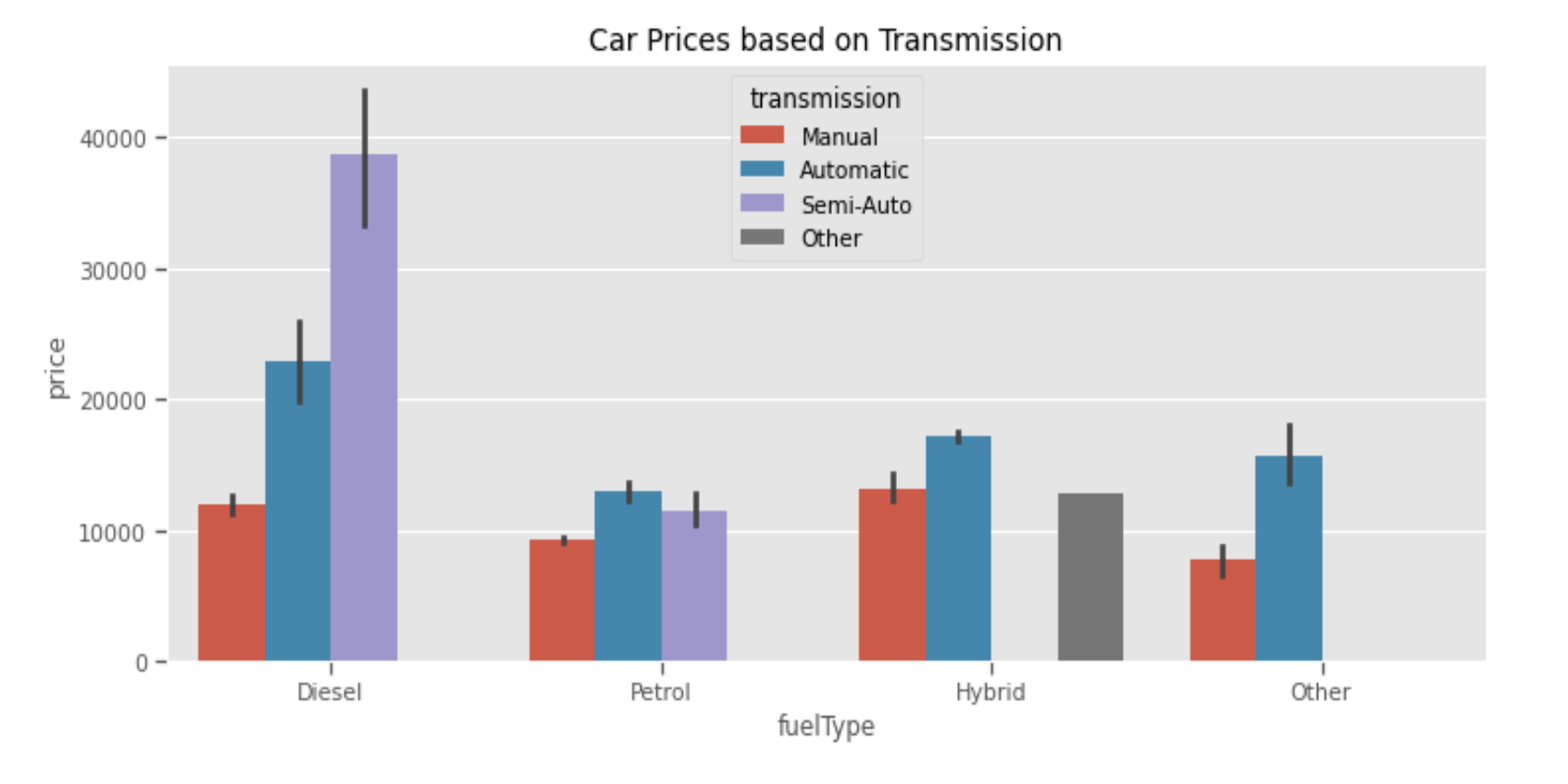
Hybrid cars are clearly the most efficient, while the diesel cars are the opposite.



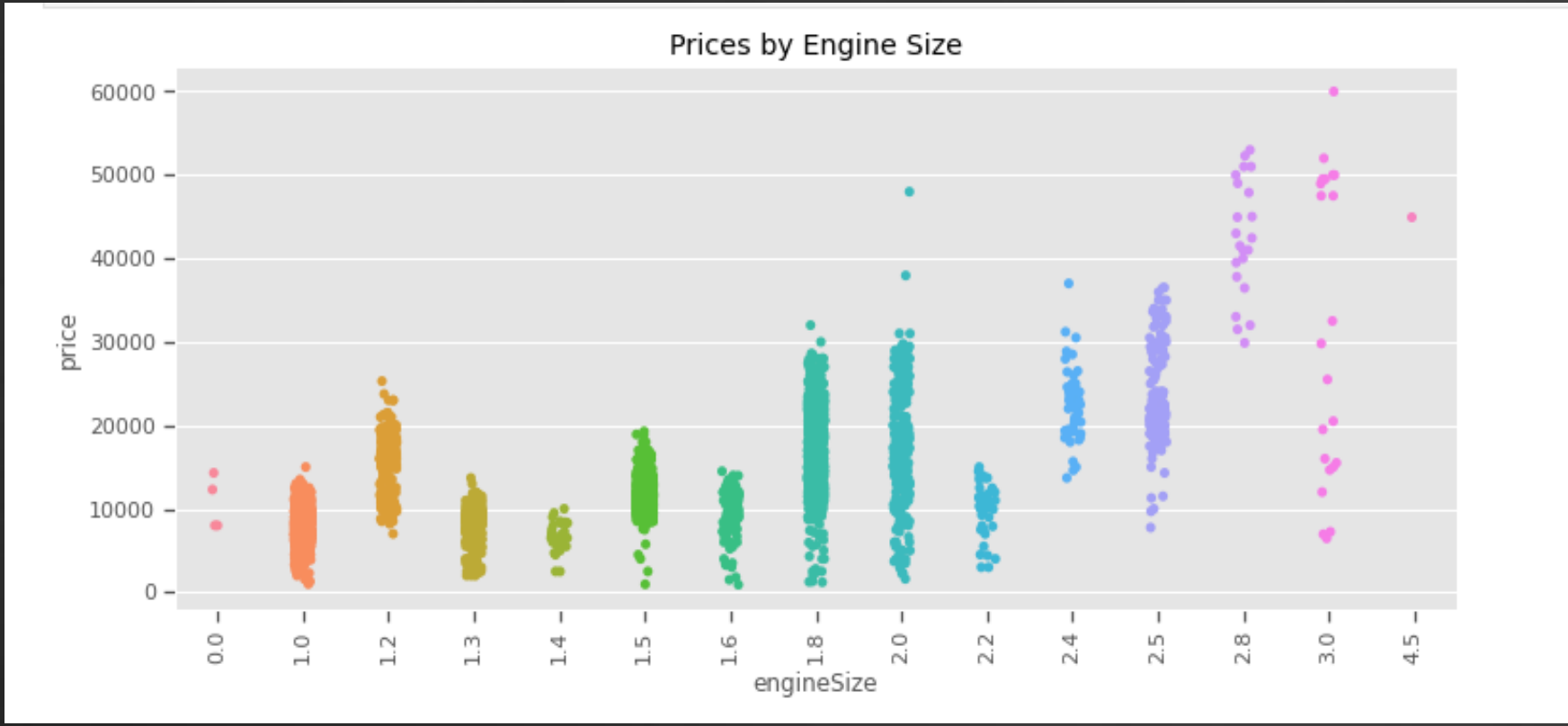
Hyper Cars is more expensive than others



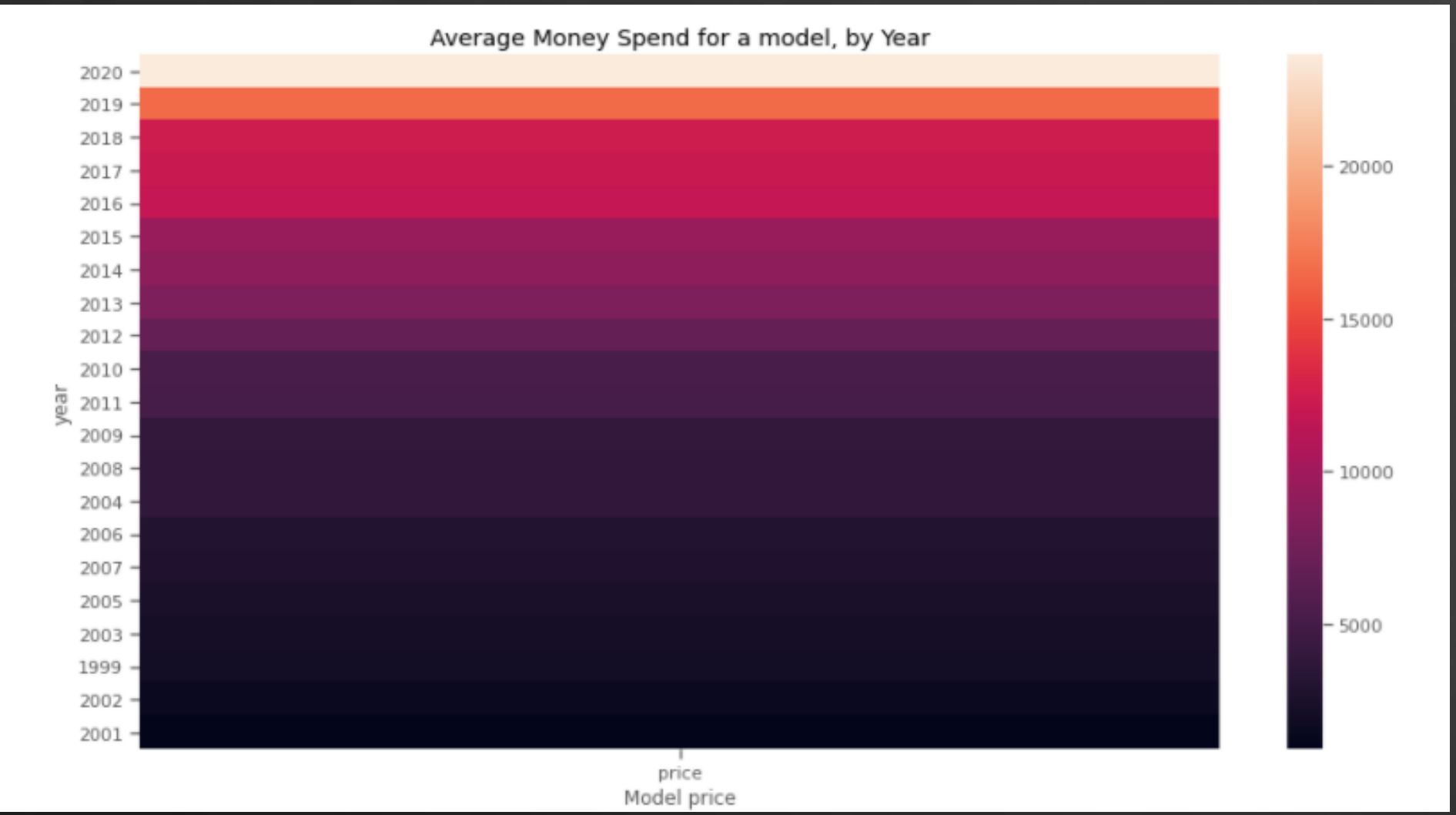
for all fuel Type Manual cars it the cheapest



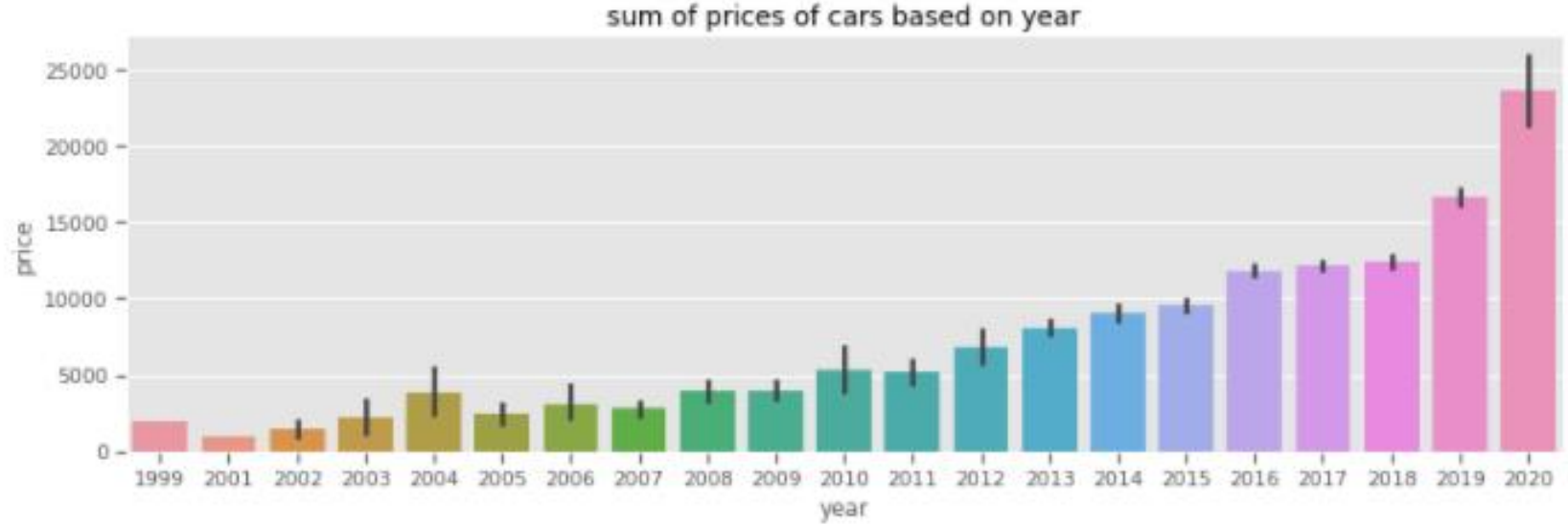
A general look Vehicles with more engine capacity have higher prices.

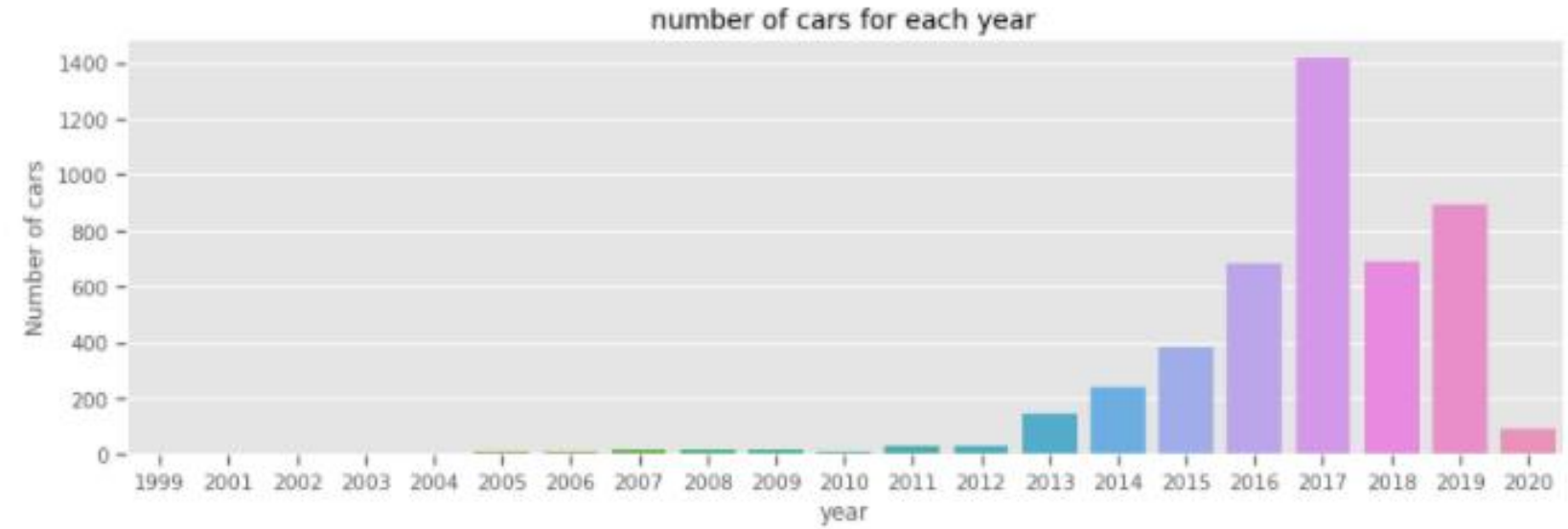


As we could be sure that the newer cars prices would be the most expensive.



The shortage of new vehicles has added pricing pressure in the used car market. People rather buy cars that are from the last 3, or 4 years than a brand new vehicle

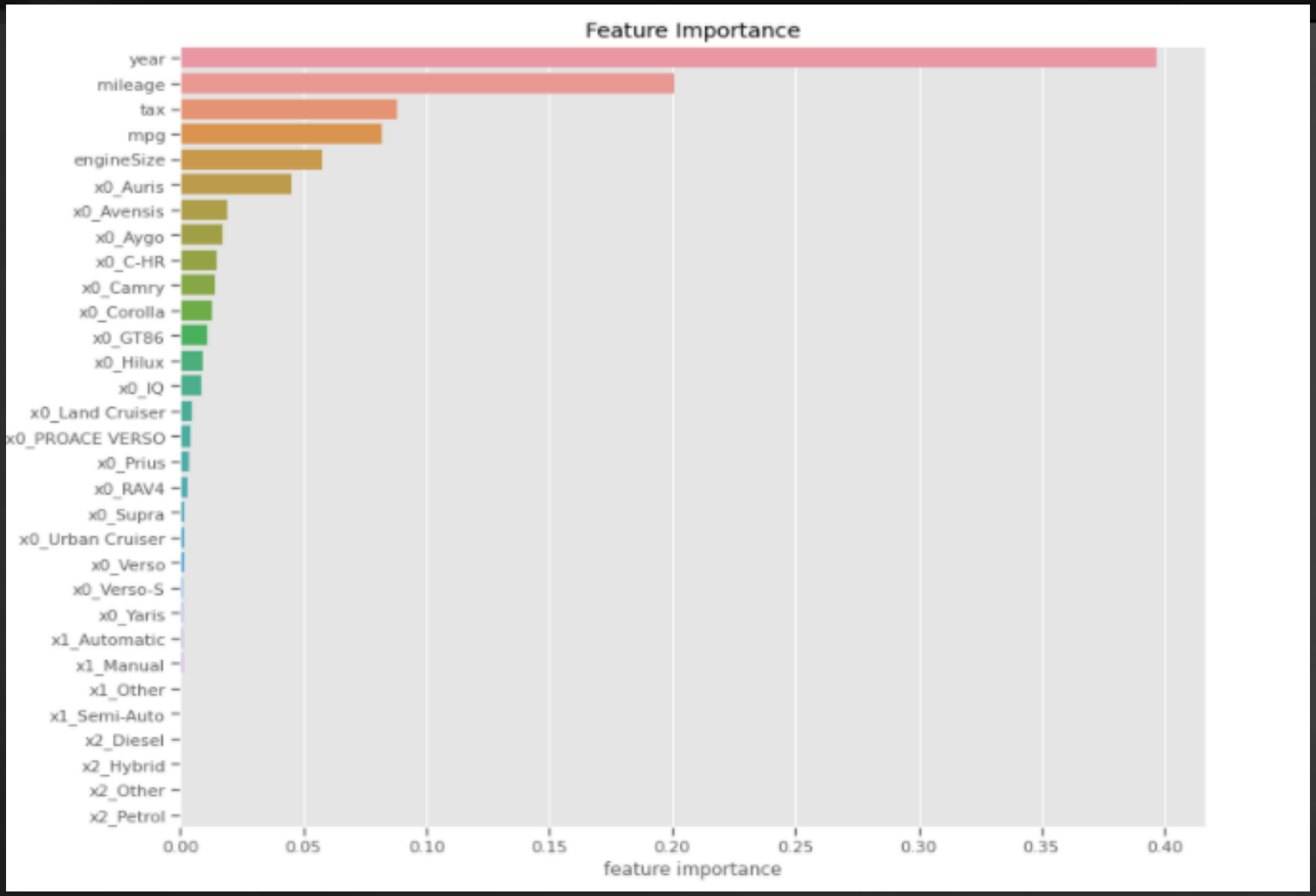




Findings

- Most of the cars have manual gearbox.
- Petrol is the most popular fuel type, However Hyper Cars is more efficient.
- The highest price is also for the smallest amount of mpg but we need to include that it is also connected with the engine size
- Smaller amount of mileage also makes the price bigger
- Diesel Fuel type car are more expensive compared to other fuel type.
- Vehicles with more engine capacity have higher prices.
- I have checked the tax amount and the clear correlation is not visible with the year, MPG or engine size. This is happening because the amount regards the carbon emissions of the car in UK.

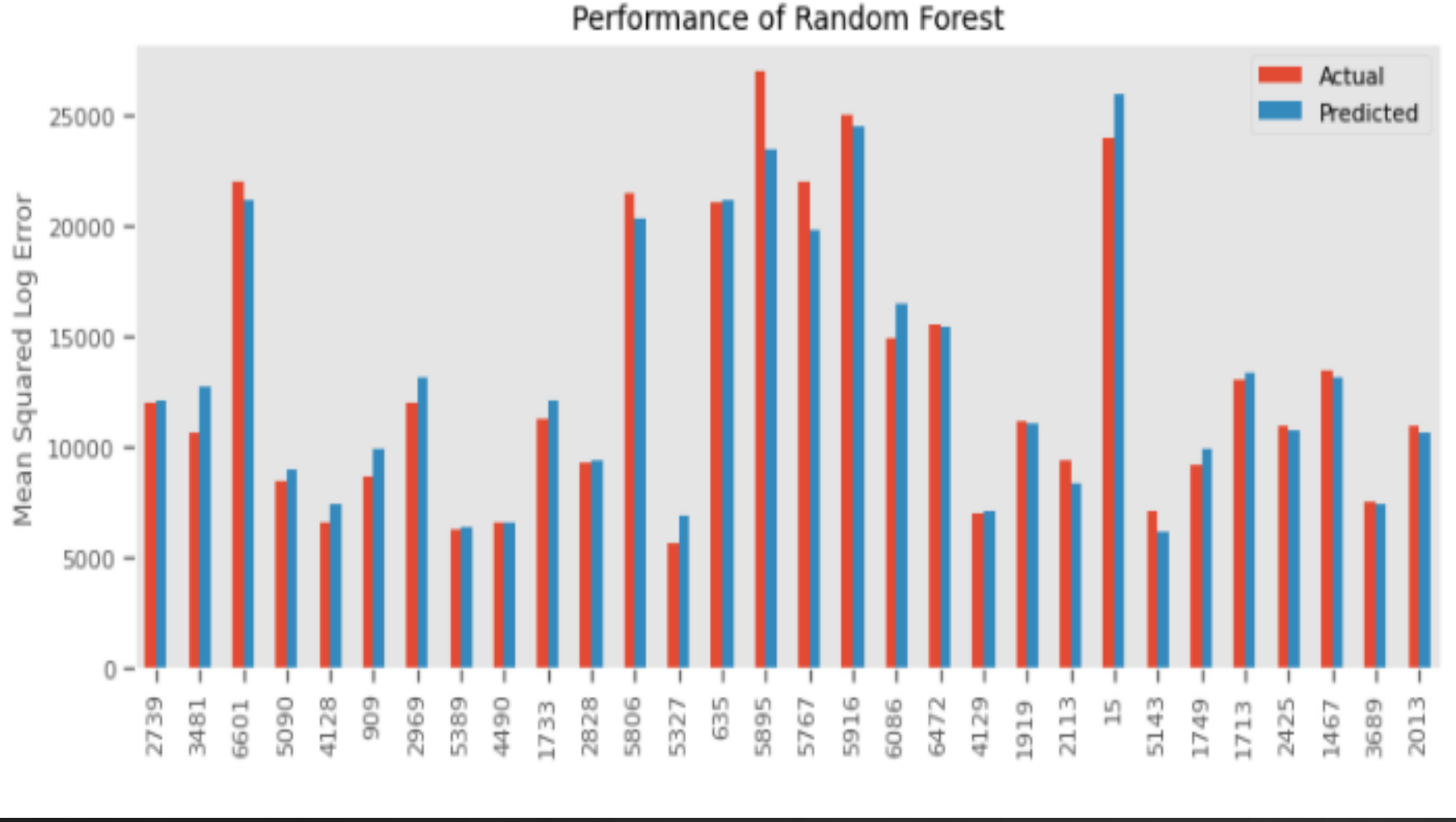
The price depends on so many things . Year is by far the most important predictor of the price. Besides, mileage rank in the second which might be caused by its correlation with year.



Best model

	Model	R2 Score
0	LinearRegression	-9.947452e+17
1	Ridge	9.264393e-01
2	Lasso	9.264416e-01
3	RandomForestRegressor	9.564528e-01
4	DecisionTreeRegressor	9.327236e-01

The Random Forest Regressor generate 96.63% R2 score on the test set



Recommendations

The price depends on so many things to clarify the biggest price change reason I recommend to:

- Compare with other types of cars
- Compare with other market
- Deeper analysis with more data
- Target specify model of cars

Based on Analysis, we can to divide our cars into 3 segment Low, Medium and High budget

There are more soft parameters which also should be considered when buying a car (i.e.. If the car as already been in some kind of accident that would also effect the price, Car model that are too old will depreciate a lot can impact the demand .

The end