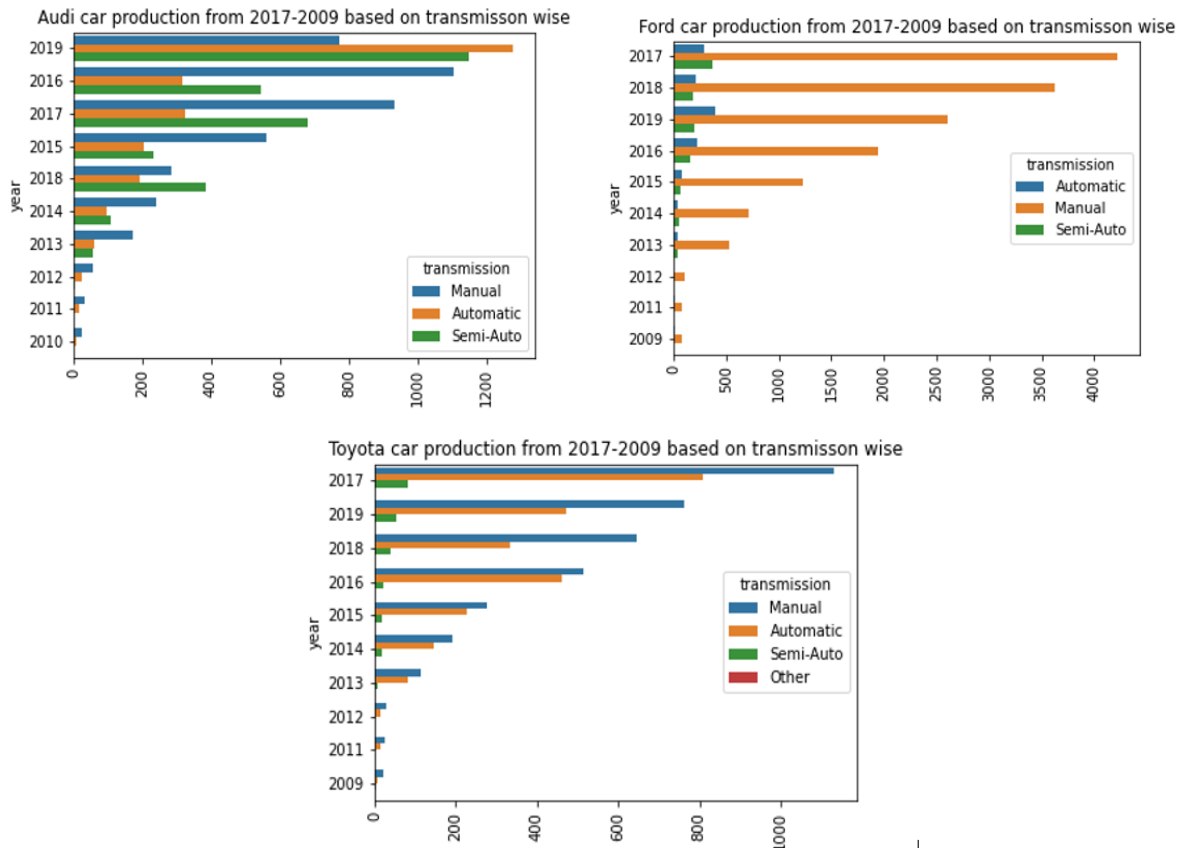


Date: 23-11-2022

This report is to analyse the data given for Audi, Ford, And Toyota with columns: model, year, price, transmission, mileage, fuel type, tax, mpg, and engineSize.

1. To begin, we will examine the annual transmission output of the three businesses and the overall number of vehicles they manufactured.



According to the three graphs above, production of Audi's automated and semi-automated vehicles climbed dramatically in 2019 while production of manual vehicles decreased. Toyota's manual vehicle production has been expanding year after year, and their auto cars are also being produced in large numbers, but their manual transmission is always at the top. Ford produces about 90% of its vehicles with manual gearbox. Only 10% of Ford vehicles are equipped with gearboxes other than the manual. Ford and Toyota have showed little interest in semi-autonomous vehicles. Audi's Semi-Auto production has increased year after year, and in 2019 it surpassed the Manual Transmission.

Based on the foregoing, we believe that Audi outperforms Ford and Toyota in auto and semi-auto transmission vehicles. On the other hand, Toyota and Ford are competing in the manual gearbox market.

2. Our second topic of investigation is how much a car's resale value differs from its original retail price.

The market value has been calculated on this formula:

$$\text{Current market value} = \text{Release Price} * (1 - \text{depreciation rate}) ^ (\text{2022-release year}).$$

- The depreciation rate for all cars and companies has been assumed as **12.5%** every year.
- The 2022-release year is the current age of the car.

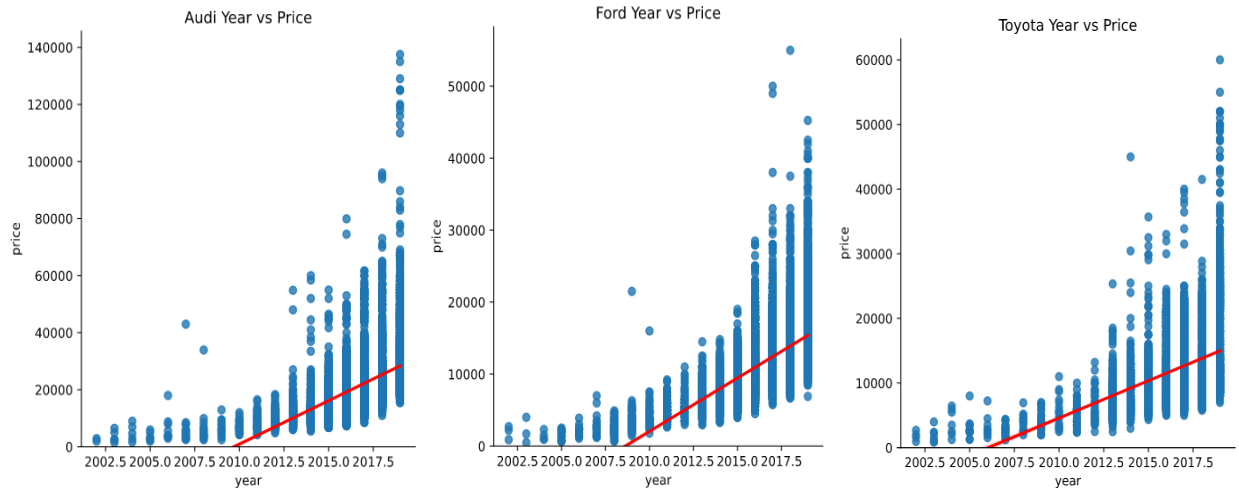


According to the formula that was shown before, the link between pricing and current market value may be seen in the three graphs that have been presented above for Audi, Ford, and Toyota.

Based on the findings, we are able to draw the conclusion that there is a positively strong linear relationship between price and market value across all of the firms. This relationship indicates that if a price is high, the pace at which its market value drops will be slower.

3. Another analysis we have conducted reveals that prices have increased annually.

We will see that the company's prices have been increasing linearly or exponentially for all of their vehicles.



The prices have climbed linearly every year at a positive rate for all three businesses, as seen by the red line in each of the three graphs that have been presented above. For Audi, the price rise did not begin until after the year 2010, for Ford it was somewhere between 2007 and 2010, while for Toyota, the price increase did not begin until after the year 2005.