**Project Report**

**Business Purpose:**

We are trying to analyze the fuel economy across the automobile industry and various manufacturers as well as sellers. Also, this analysis can be used in the following ways:

* For marketing purposes: This analysis can be used by marketing department to analyze the car sales by car type, location, type of commute, type of customers as well as helps them to promote the key selling points in terms of better mileage, power of the car in with respect to number of cylinders, displacement as well as eco-friendliness of the car. The analysis acts as a strong basis for selling the cars for any company with respect to their competition and where they can get an edge above other vendors.
* For Business improvement: This comparative analysis also provides the business unit with strong factors about where their improvement and focus areas can be in terms of more ROI by leveraging their best or by improving the areas where their competitors are doing well to have a strong hold in the market. The business can use these analytical dashboards not only to understand where they need to improve in terms of manufacturing, engineering or research and development.
* For Customers: This report also gives a clear insight to customers and gives them an upper hand to choose the best car with their own preferences of company, car type, fuel efficiency requirements, or any other combination of requirements they want to consider. They can also know what are the most prevalent types of car people in their type or area are preferring and which is the top company that would be the best according to their requirement. Also, they can compare other cars with the same features from various vendors or manufacturers.

**Analysis Types:**

* Average Fuel Consumption (In Barrels) per Cylinder by Company

This analysis works for the customers as well as for the marketing department in order to understand the fuel efficiency of the car with respect to its power in terms of number of cylinders. Here, according to automobile mechanics, the more the number of cylinders, more power the car will give. But at the same time, it will consume more fuel as fuel consumption increases by the number of cylinders.

Here, the analysis gives a fair idea as to what companies give each cylinder cars and what is their average fuel consumption in barrels. This is very useful from a customer point of view if he wants to compare few companies with same mechanical abilities over their average fuel consumption.

* Most Fuel Savvy Companies

This analysis gives a fair idea to the customers as well as acts a supporting data point for the marketing department in terms of fuel efficiencies. Here, the analysis gives a comparative idea in terms of that is the mileage of all the cars across our range and it is sorted company wise.

Also, we have arranged all the cars in an order that the customer can also see which company’s cars are most fuel savvy irrespective or type of car.

* Best Mileage Cars for Each Company

This is an interesting analysis from Business as well as Marketing point of view. Here, the company can dig into its own cars and know what would be a good option for them and how can they improve. This analysis also gives an insight to customer if he has a favorite car company and wants to buy the most fuel-efficient car. Business department can have a sneak peek into what is their most efficient car and can market it to fuel savvy customers as well as use as a bar to raise fuel efficiency of other cars.

Here, this analysis has found the best car for each company in terms of mileage and fuel efficiency as well as sorted that dataset in an order that we can also see which company’s most fuel-efficient car is the best in terms or mileage. This gives a clear hand to customer as well as business in terms of improvement areas.

* Car metrics according to number of cylinder and power

This is again an interesting analysis for the customers and business. Business can know their competition level and customer get to choose from a spectrum in terms of their requirements.

Here, the dashboard says that there are bubbles with number of cars for each cylinder type. This clearly shows the market trend as to what car type is the most preferred among people. Also, this gives a picture to the business department in terms of planning and budgeting and resource allocation for research and development as well as marketing.

* Cars sold of each type every year

This is a clear insight for marketing and business department. Here, it gives a performance picture of the company over years. Also, the company can use this analysis to compare its own products over years. Not only the same type, it can also see the market trend for other cars of the same company.

Talking about the dashboard, the dashboard has all the cars of the company by year. Hence, company can use this analysis to study its own products. Moreover, it can study a single product along the timeline. This is the much-needed thing in today’s competitive world.

* Company Car Count

This is a relative analysis to find the best sellers in the automobile market. This gives a clear insight to the customers to buy in the most trending car from the most trusted company. It’s just like seeing what others are buying.

Here, the dashboard gives a sorted list of cars with respect to number of cars sold. It also shows the company and model for customers to pick the car with their need and budget from their favorite company.

**Technologies Used:**

The technologies used are:

* Hive
* Pig
* Hadoop Clustering
* HDFS
* Tableau for Analytics
* Map Reduce

**Link to Dataset:**

[https://datasource.kapsarc.org/explore/dataset/us-vehicle-fuel-economy-data-1984-2017/information/](https://www.google.com/url?q=https%3A%2F%2Fdatasource.kapsarc.org%2Fexplore%2Fdataset%2Fus-vehicle-fuel-economy-data-1984-2017%2Finformation%2F&sa=D&sntz=1&usg=AFQjCNHHt51111fXucs_ap5WrIZPs_j6MQ)