EDA and PREDICTION OF CAR PRICE

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DATA 603 FINAL PROJECT

SPRING ‘22

DATA ACQUISITION

- Data is gathered from Kaggle(https://www.kaggle.com/CooperUnion/cardataset).
- It has data about the model, make, year of make, Horsepower, type of vehicle, mpg, popularity , and price of the vehicle.
- Data has 11914 records with 16 parameters.
- Data ranges from the year 1990 – 2017
- Software used: Google Colab

Understanding dataset

```
df.head()
```

	Make	Model	Year	Engine Fuel Type	Engine HP	Engine Cylinders	Transmission Type	Driven_Wheels	Number of Doors	Market Category	Vehicle Size	Vehicle Style	highway MPG	city mpg	Popularity	MSRP
0	BMW	1 Series M	2011	premium unleaded (required)	335.0	6.0	MANUAL	rear wheel drive	2.0	Factory Tuner,Luxury,High-Performance	Compact	Coupe	26	19	3916	46135
1	BMW	1 Series	2011	premium unleaded (required)	300.0	6.0	MANUAL	rear wheel drive	2.0	Luxury,Performance	Compact	Convertible	28	19	3916	40650
2	BMW	1 Series	2011	premium unleaded (required)	300.0	6.0	MANUAL	rear wheel drive	2.0	Luxury,High-Performance	Compact	Coupe	28	20	3916	36350
3	BMW	1 Series	2011	premium unleaded (required)	230.0	6.0	MANUAL	rear wheel drive	2.0	Luxury,Performance	Compact	Coupe	28	18	3916	29450
4	BMW	1 Series	2011	premium unleaded (required)	230.0	6.0	MANUAL	rear wheel drive	2.0	Luxury	Compact	Convertible	28	18	3916	34500

Understanding dataset

```
[ ]  df.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11914 entries, 0 to 11913
Data columns (total 16 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   Make                 11914 non-null  object
 1   Model                11914 non-null  object
 2   Year                 11914 non-null  int64
 3   Engine Fuel Type     11911 non-null  object
 4   Engine HP            11845 non-null  float64
 5   Engine Cylinders     11884 non-null  float64
 6   Transmission Type    11914 non-null  object
 7   Driven_Wheels        11914 non-null  object
 8   Number of Doors      11908 non-null  float64
 9   Market Category      8172 non-null   object
 10  Vehicle Size         11914 non-null  object
 11  Vehicle Style        11914 non-null  object
 12  highway MPG          11914 non-null  int64
 13  city mpg             11914 non-null  int64
 14  Popularity           11914 non-null  int64
 15  MSRP                 11914 non-null  int64
```

Cleaning dataset

```
Make                  0
Model                 0
Year                  0
Engine Fuel Type      3
Engine HP            69
Engine Cylinders     30
Transmission Type     0
Driven_Wheels         0
Number of Doors       6
Vehicle Size          0
Vehicle Style         0
highway MPG           0
city mpg              0
Popularity            0
MSRP                  0
dtype: int64
```

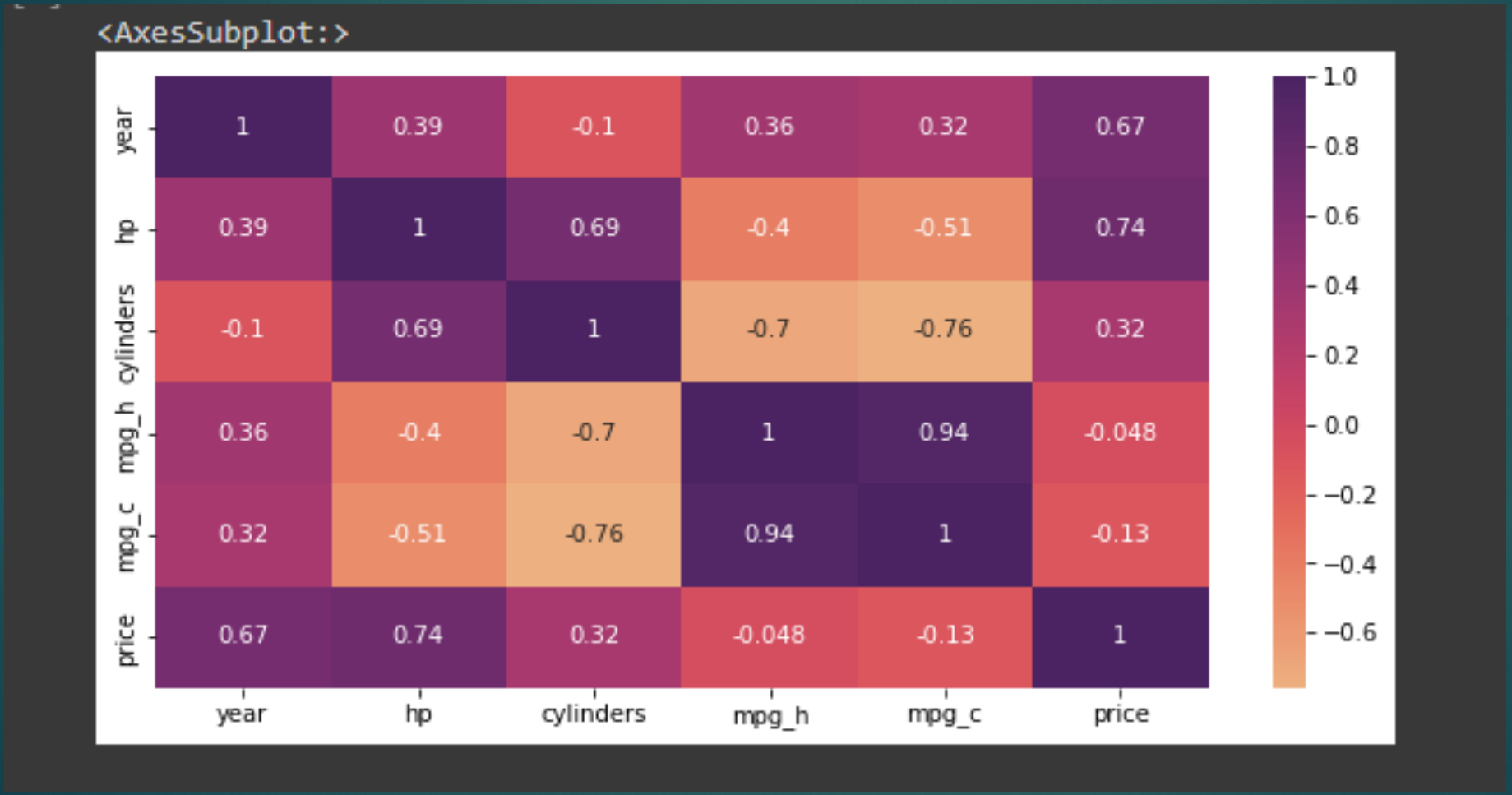
```
df2 = df1.dropna()
df2.isnull().sum()
```

```
Make                  0
Model                 0
Year                  0
Engine Fuel Type      0
Engine HP             0
Engine Cylinders      0
Transmission Type     0
Driven_Wheels         0
Number of Doors       0
Vehicle Size          0
Vehicle Style         0
highway MPG           0
city mpg              0
Popularity            0
MSRP                  0
dtype: int64
```

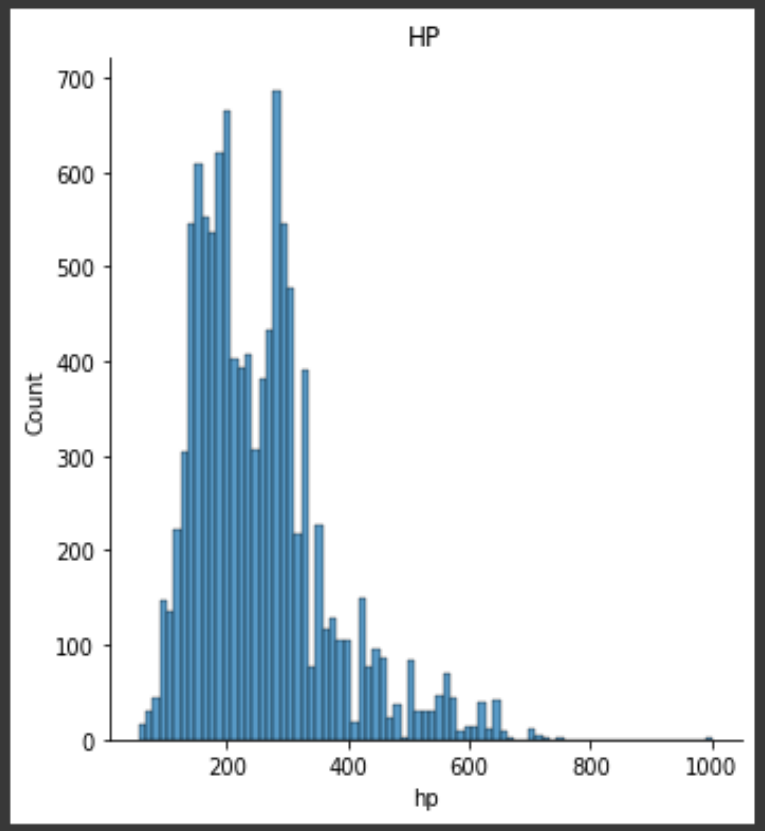
(11914, 15)

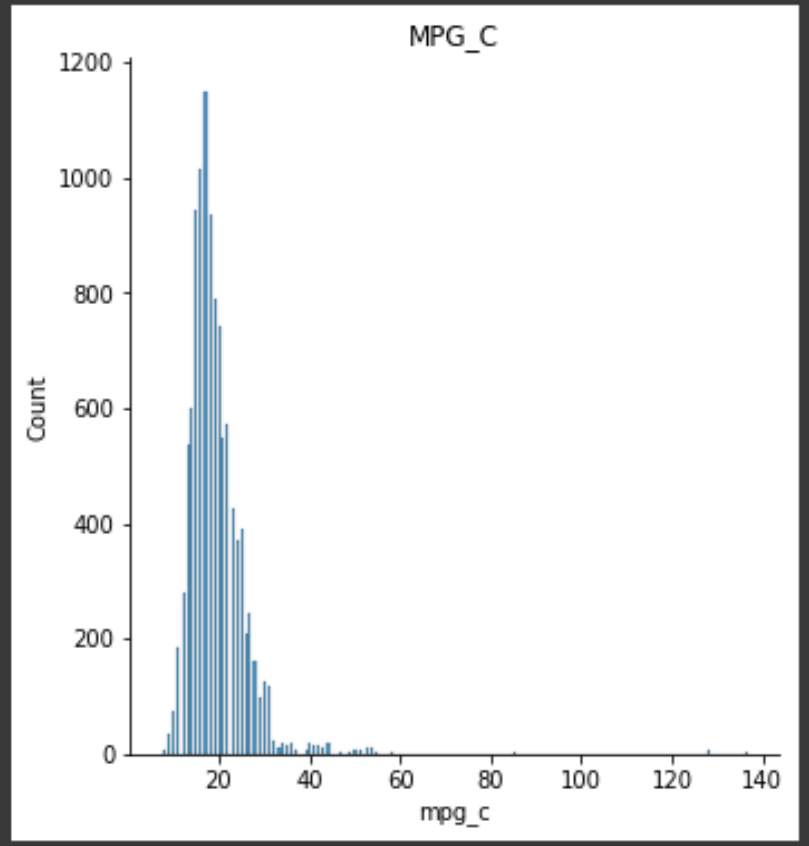
	Make	Model	Year	Engine Fuel Type	Engine HP	Engine Cylinders	Transmission Type	Driven_Wheels	Number of Doors	Vehicle Size	Vehicle Style	highway MPG
0	BMW	1 Series M	2011	premium unleaded (required)	335.0	6.0	MANUAL	rear wheel drive	2.0	Compact	Coupe	26
1	BMW	1 Series	2011	premium unleaded (required)	300.0	6.0	MANUAL	rear wheel drive	2.0	Compact	Convertible	28
2	BMW	1 Series	2011	premium unleaded (required)	300.0	6.0	MANUAL	rear wheel drive	2.0	Compact	Coupe	28
3	BMW	1 Series	2011	premium unleaded (required)	230.0	6.0	MANUAL	rear wheel drive	2.0	Compact	Coupe	28
4	BMW	1 Series	2011	premium unleaded (required)	230.0	6.0	MANUAL	rear wheel drive	2.0	Compact	Convertible	28

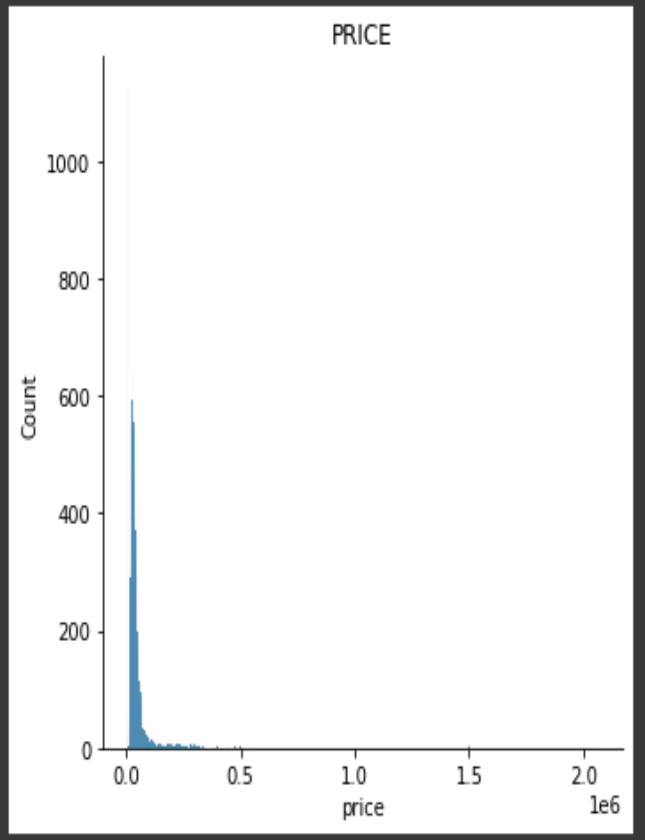
Heatmap – Correlation analysis



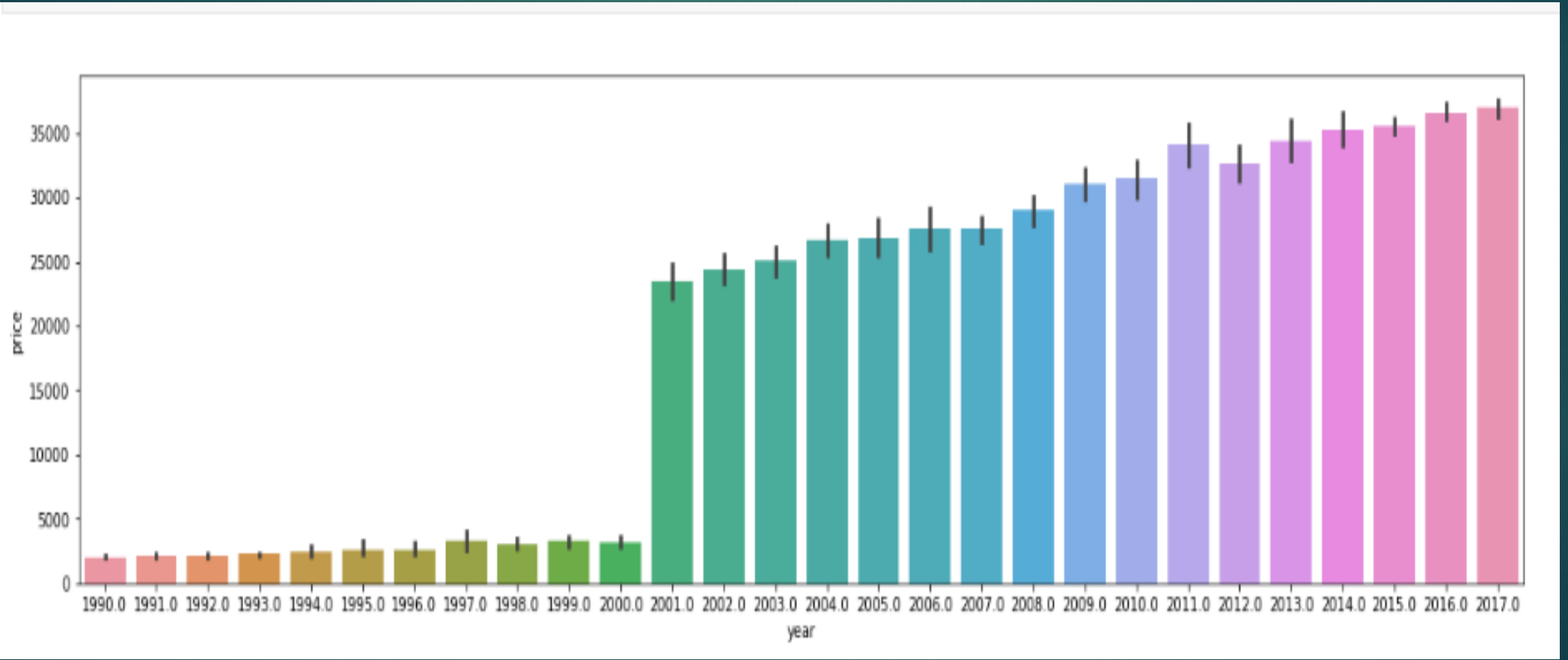
Correlating data distribution



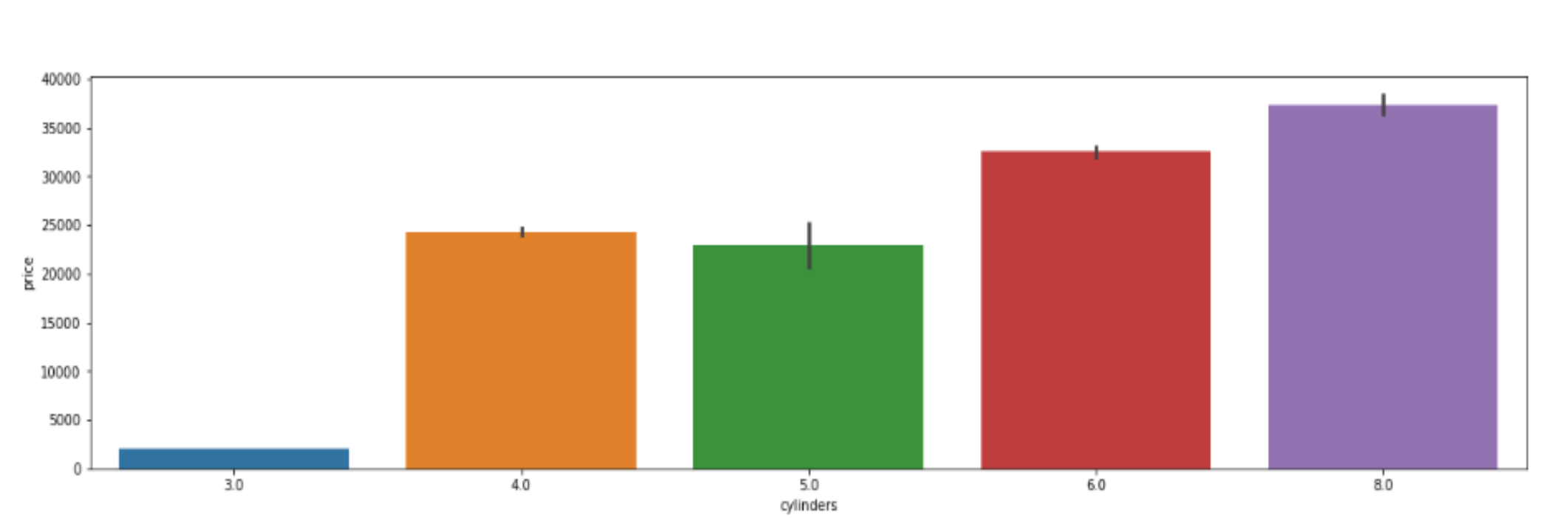




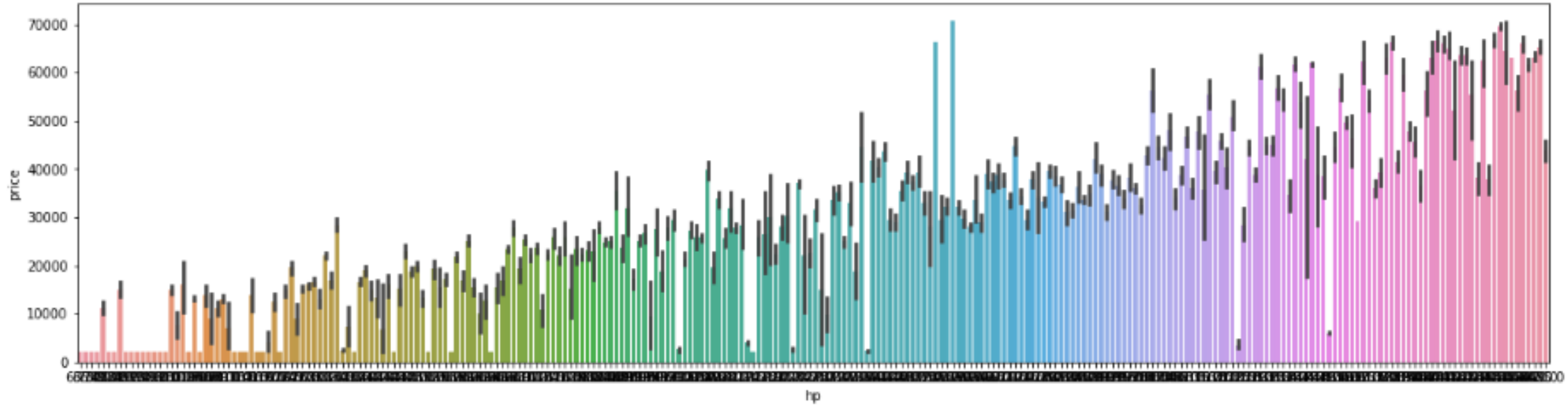
Year of Make Vs Price



Cylinder vs Price



Hp Vs Price



Work in progress

- Linear regression model to identify whether to be able to identify price of the car in correspondence with the Year, Cylinder, and MPG