Car Price Predictions

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Business Problem

A new car manufacturer plans to enter the US market and wants to:

- Understand how car prices vary with different variables.

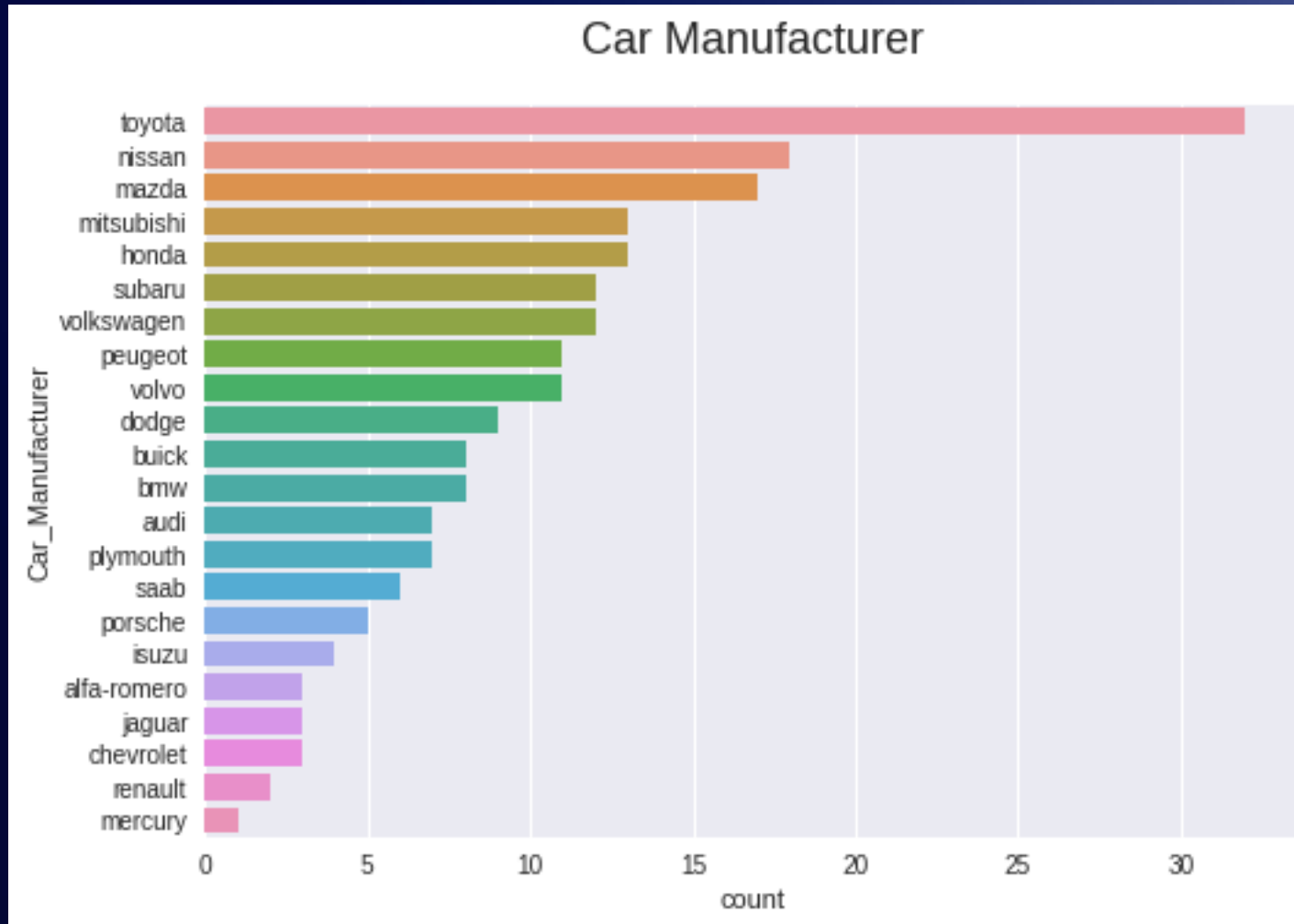- Design cars and implement strategies to meet certain price levels.

Dataset

Source:
https://www.kaggle.com/hellbuoy/car-price-prediction

Features: 26
Entries: 205

Description:
A large data set of different types of cars across the US

Data Sample Representation

Car Manufacturer
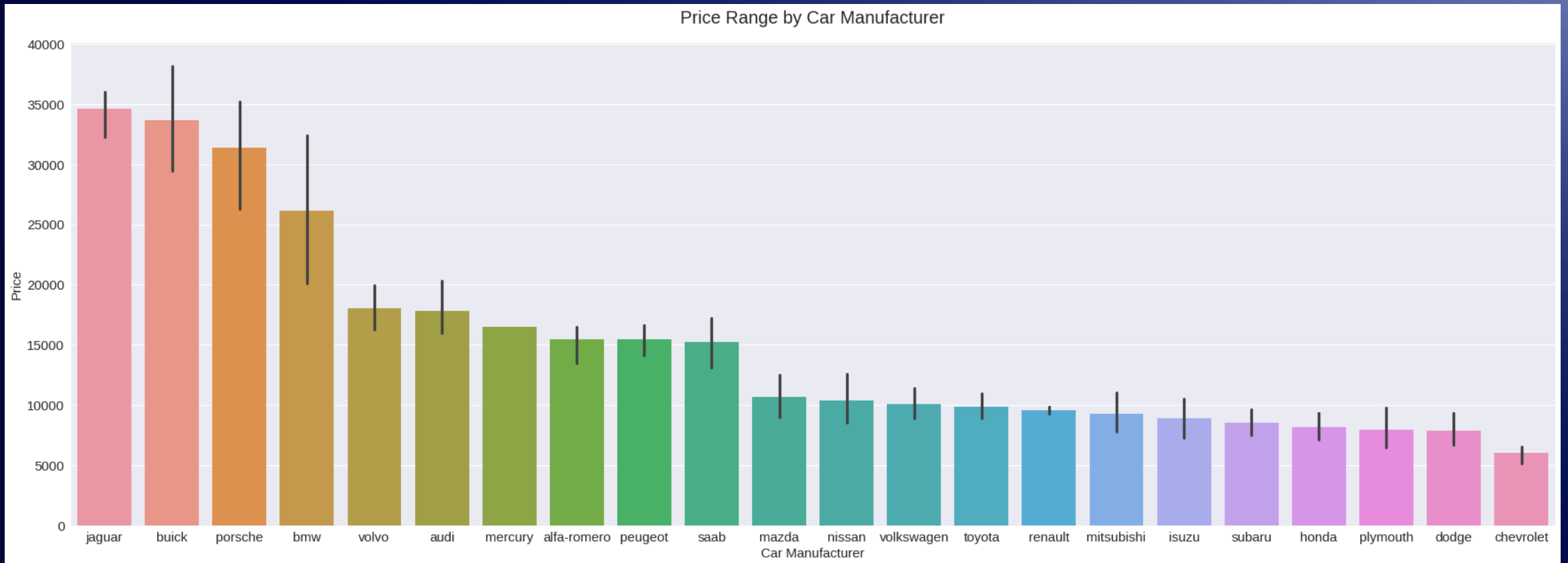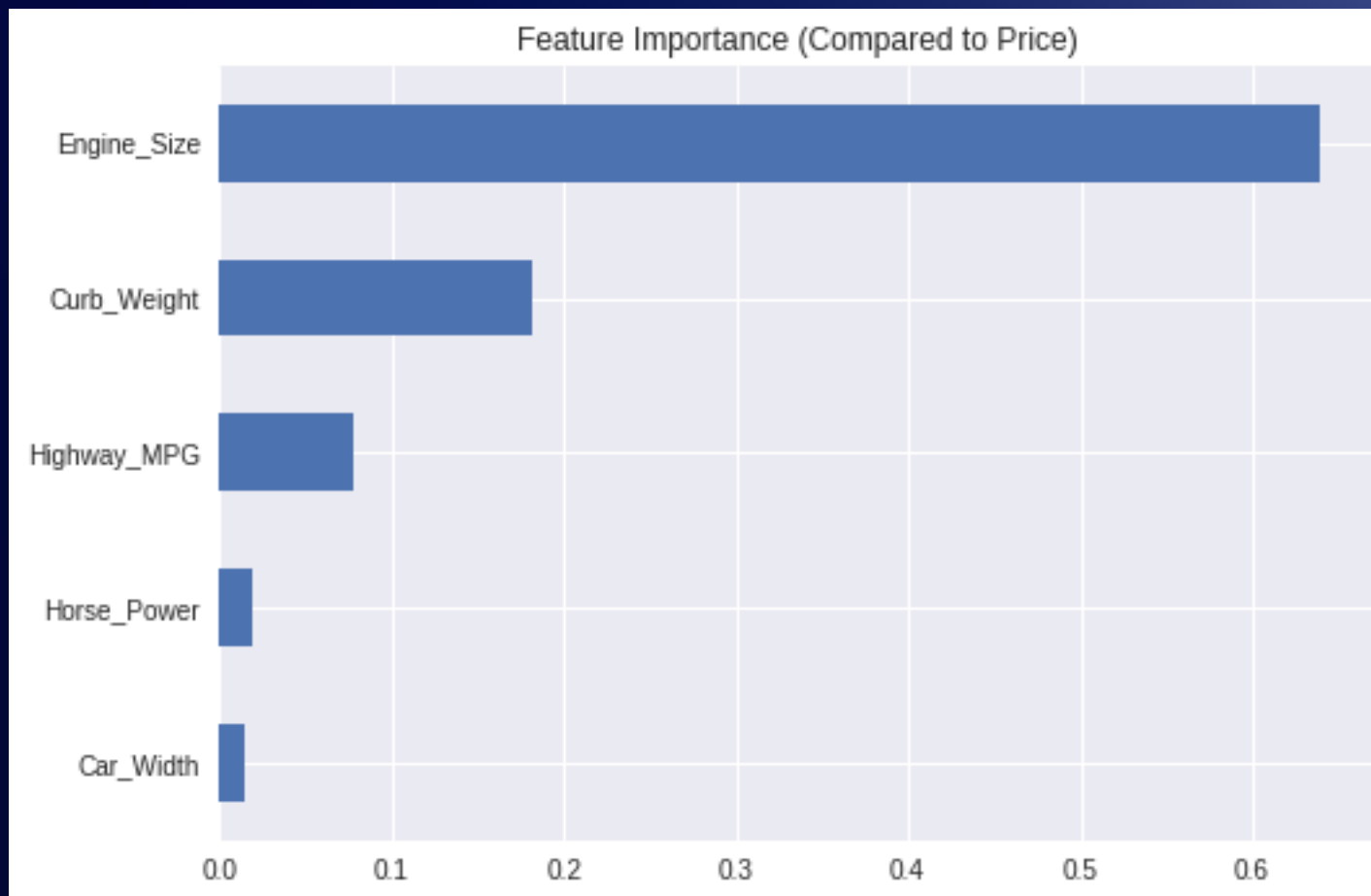
Japanese Car Manufacturers account for 50% of the dataset

Car Prices vs Manufacturers

- Jaguars, Buicks, Porsches, BMWs and Volvos are the most expensive.
- Subarus, Hondas, Plymouths, Dodges and Chevrolets are the least expensive.

Price Range by Car Manufacturer

Most Important Features in Determining Price

Feature Importance (Compared to Price)

The most important 5 features in determining car price are:

- Engine Size
- Curb Weight
- Highway MPG (-)
- Horse Power
- Car Width

Prediction Models

Six prediction models were used including linear regression, decision trees, bagging trees, random forest, gradient boosting and neural networks.

The best model was **Random Forest** and with Hypertuning, we were able to reduce the prediction error to less than $2,000.
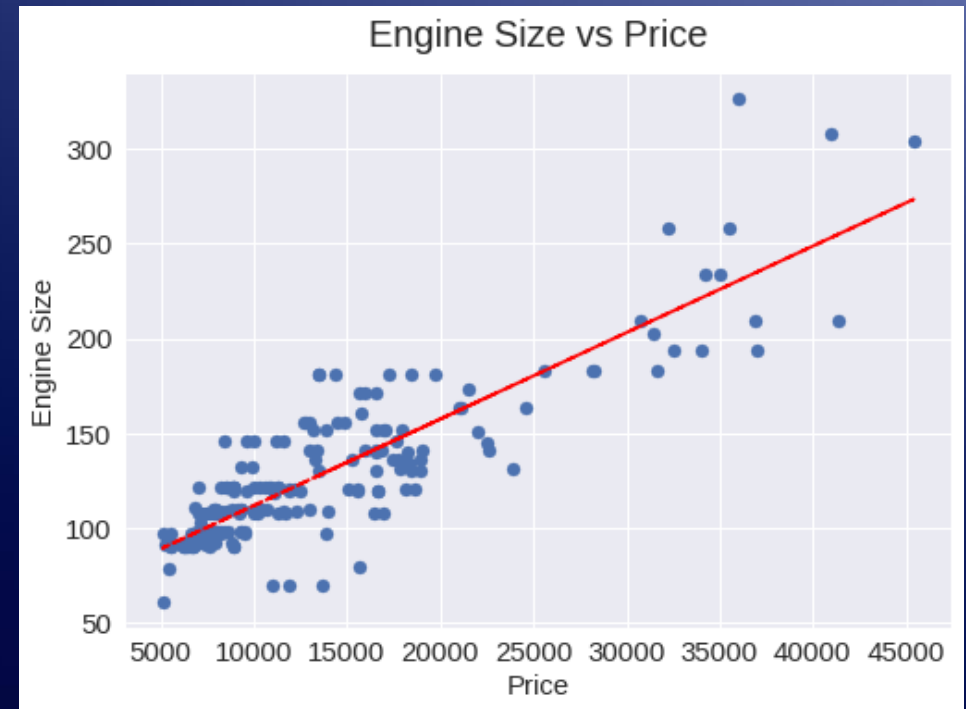
Model	R^2	RMSE
Baseline	-0.19%	8,233.30
Linear Regression	89.51%	2,664.28
Decision Tree	91.24%	2,434.82
Bagging Trees	93.73%	2,060.15
Random Forest	94.48%	1,931.93
Gradient Boosting	93.48%	2,099.93
Neural Networks		2,213.81

Recommendation

My recommendation is to focus on:

- Engine size
- Curb Weight
- Highway MPG

as the main factors in determining car price.

Engine Size vs Price

Thank you