Car Price Analysis

Google Data Analytics Capstone

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Business Task

What is the goal of this project?

- Identify what influences car prices (MSRP)

- Help manufacturers and dealerships make data-driven pricing decisions

- Dataset from 11.000+ vehicles with specs and prize

Dataset Summary

What data did I use?

- Source: car_data.csv

- Key features:

  - Engine HP, Cylinders, Fuel Type

  - Driven Wheels, Popularity, MSRP

- Missing values cleaned and key variables engineered

|	Make	Model	Year	Engine Fuel Type new	Engine HP new	Engine Cylinders new	Transmission Type	Driven_Wheels	Number of Doors new	Market Category new	Vehicle Size	Vehicle Style	highway MPG	city mpg	Popularity	MSRP	Total MPG	Price per HP
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	22.5	137.72
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	23.5	135.50
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	24.0	121.17
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	23.0	128.04
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	23.0	150.00

Data Cleaning

How was the data cleaned?

- Filled Engine HP (median), Cylinders & Fuel Type (mode)

- Removed outliers (e.g., MRSP = 0)

- Created new column Engine HP new for cleaned values
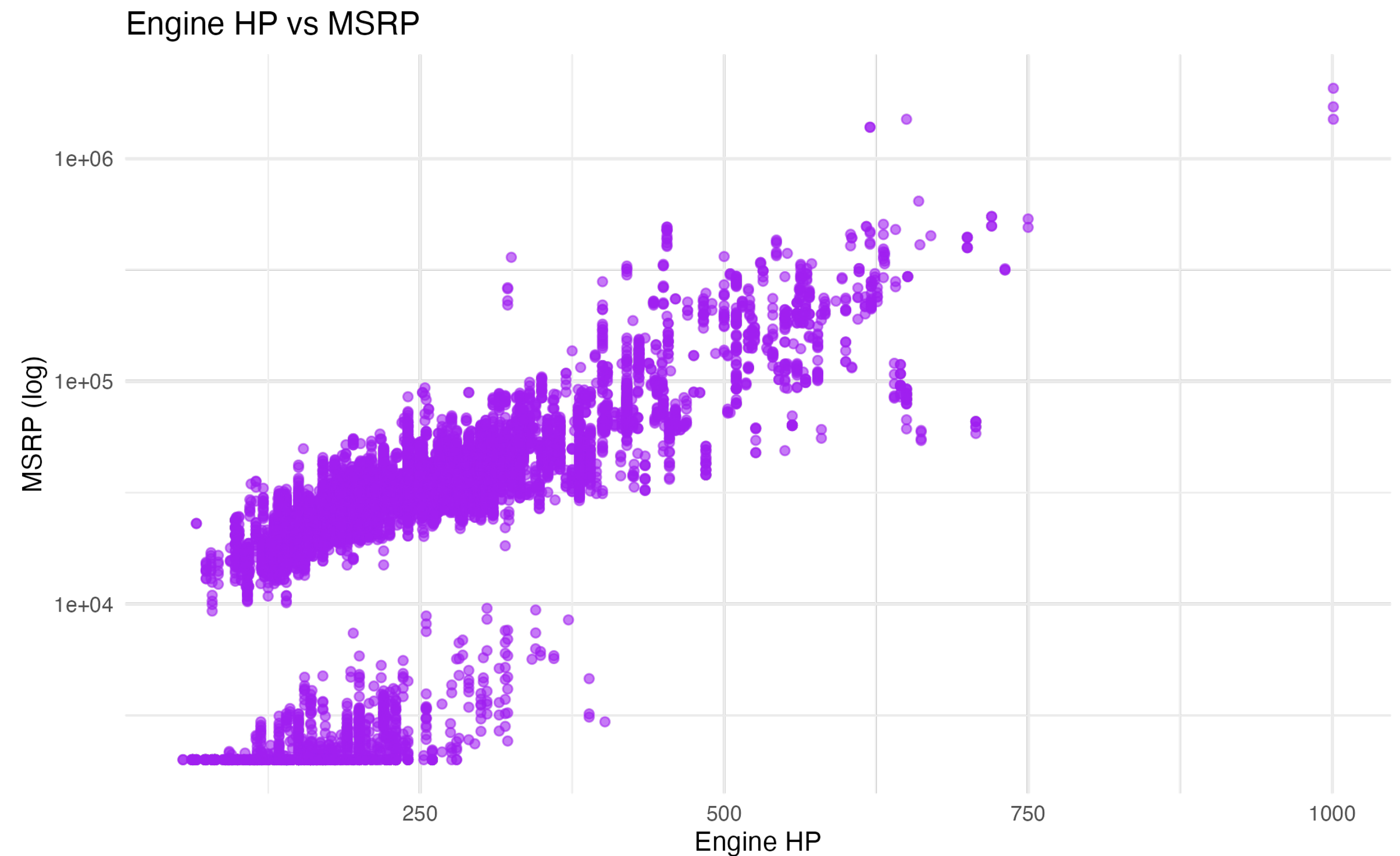
Price Distribution
What does MSRP look like?

- Most cars under $ 60,000

- Long tail toward luxury vehicles

- Highly skewed distribution

Distribution of City MPG
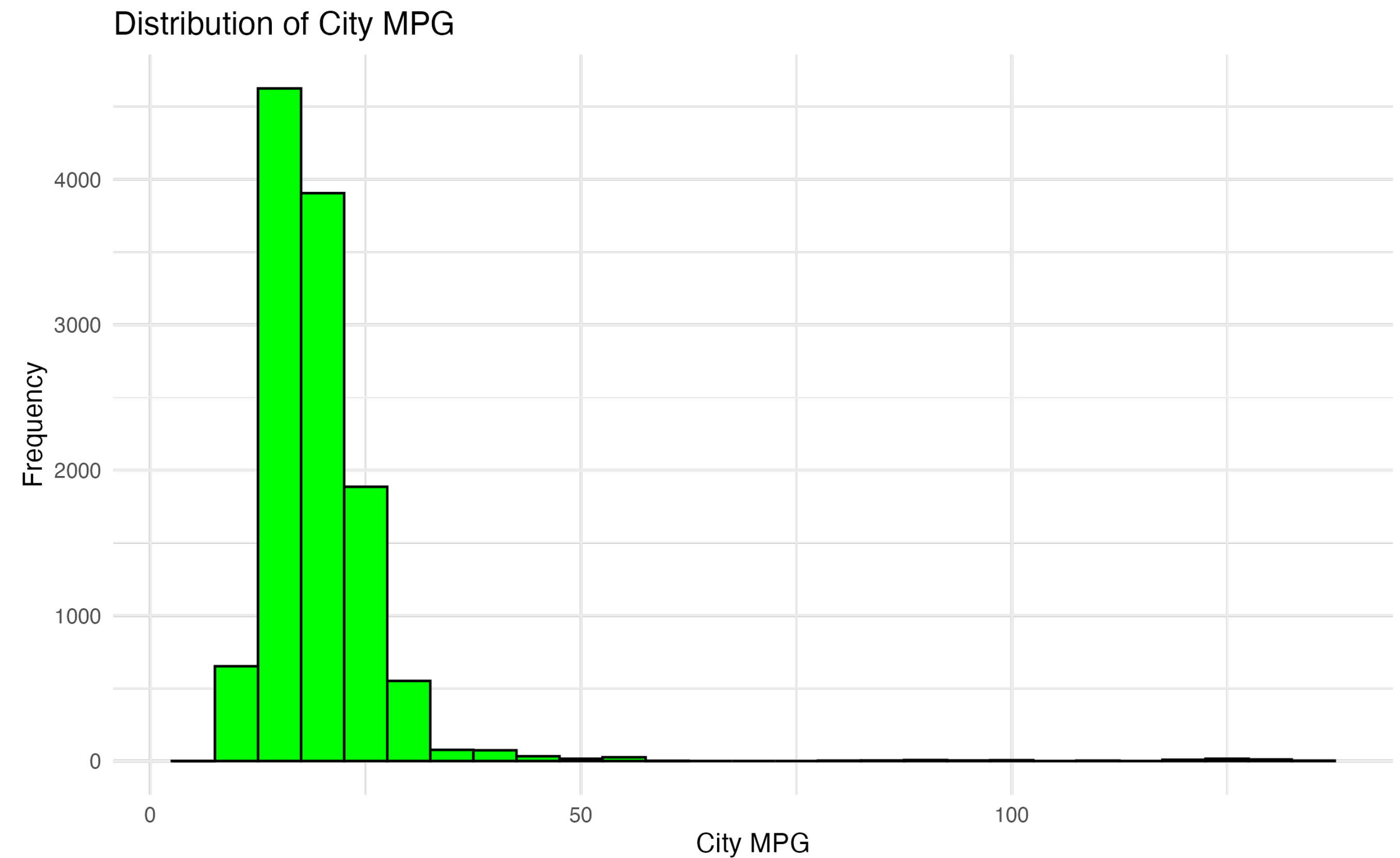
Price vs Engine HP
Does Engine HP affect price?

- Clear positive relationship

- Stronger at HP levels

- Linear trend on log scale

Engine HP vs MSRP

Vehicle Categories

Do car types matter?

- Compact cars = lower average MSRP

- Large vehicles = higher MSRP

- Possible sweet spot: midsize performance

Average MSRP by Vehicle Size
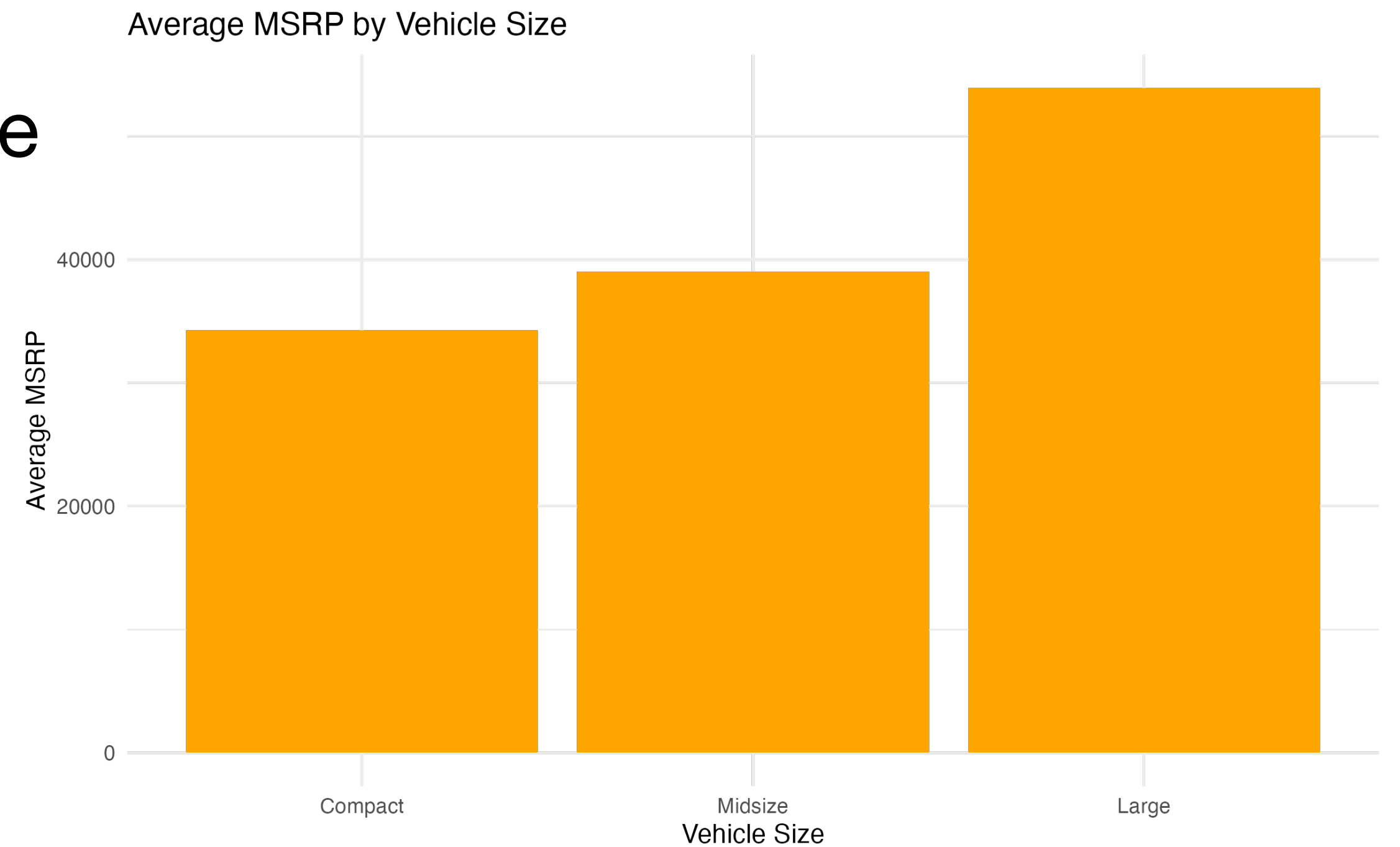
Correlation Insights

What else is correlated to MSRP

- Engine HP: strong positive

- Fuel efficiency: slight negative

- Popularity: varies, but less predictive

Correlation Matrix
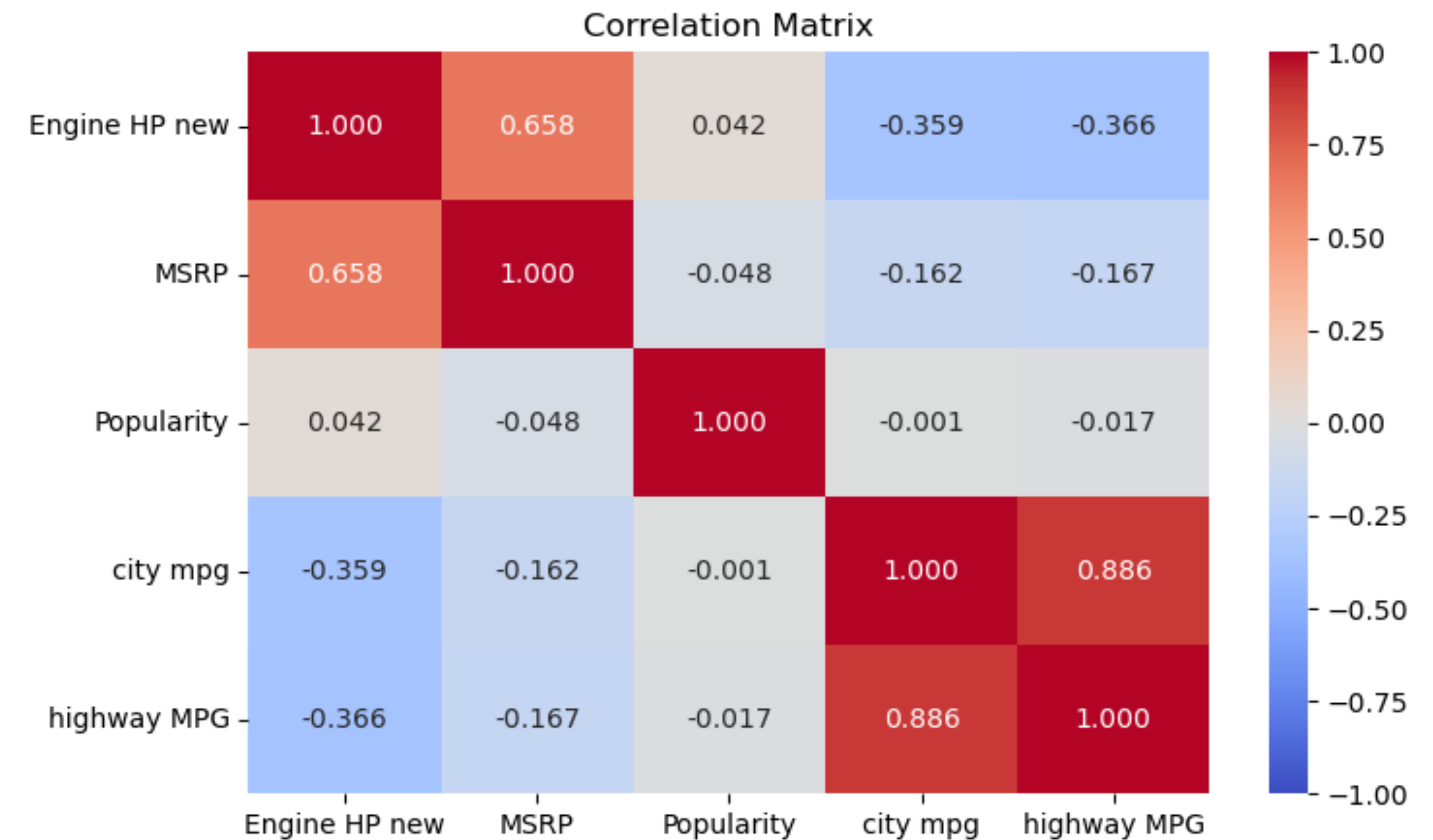
Recommendations

Key recommendations

- Focus on mid-range performance segments

- Use HP and drivetrain as key price signals

- Leverage vehicle popularity by market

Thank You
Questions?

- Sebastian Bangemann

- Connect with me on [LinkedIn](#)