

TITLE SLIDE



**Title: Car Price
Prediction for Geely
Auto in the US Market**

INTRODUCTION



Company Overview: Geely Auto, a leading Chinese automobile company, plans to enter the US market



Objective: The project aims to model the price of cars based on various attributes, providing insights to help Geely Auto optimize its car designs and business strategies for the American market



BUSINESS PROBLEM

Key Questions

- Which variables are significant in predicting car prices?
- How can these insights help Geely Auto adjust their business strategy?
- What can Geely learn about pricing dynamics in the new market?

Goal: Develop a model to predict car prices based on a variety of features and provide actionable insights for Geely's management

DATASET OVERVIEW



Dataset Details

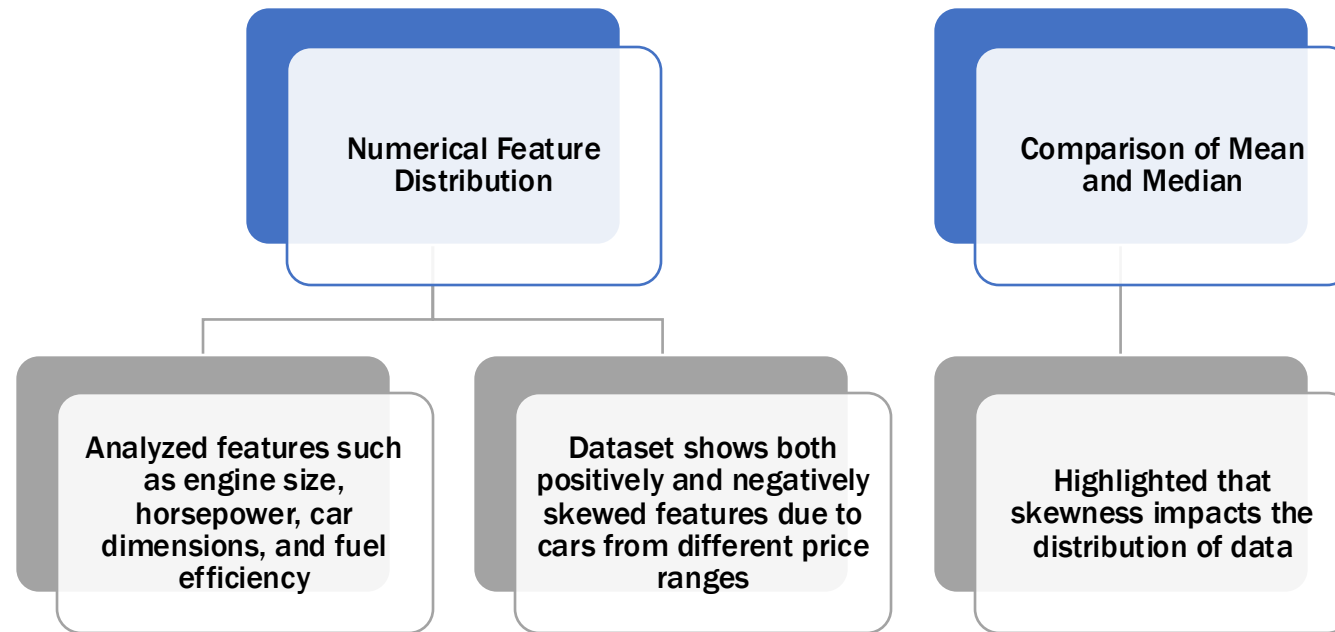
Variables:
Manufacturer,
model, vehicle
type, engine
size,
horsepower,
fuel efficiency,
etc

Dependent
Variable: Price
in thousands



Target: Use these variables
to predict the price of a car
and determine the factors
that most influence pricing

DATA EXPLORATION





KEY INSIGHTS FROM EDA

Correlation Analysis

- **Positive Correlations:** Price increases with higher engine size and horsepower
- **Negative Correlation:** Fuel efficiency decreases as price increases

Linear Regression Insights

- Visualized relationships using scatter plots and linear regression lines to better understand pricing patterns

MANUFACTURER INSIGHTS



Manufacturer Distribution

Dodge and Ford have the highest number of car models in the dataset



Most Expensive Model

Mercedes-Benz CL500 is the priciest model at \$85



Top Manufacturer by Average Price

Porsche has the highest average price, followed by Mercedes-Benz

VEHICLE TYPE DISTRIBUTION



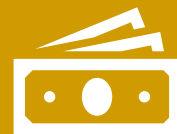
Breakdown

Vehicle Types:
The dataset
includes 116
passenger
vehicles and
40 cars



Common Types

Passenger
vehicles are the
most common,
followed by
cars



Price Comparison

The average
price of
passenger
vehicles is
slightly higher
than cars

ENGINE SIZE & HORSEPOWER



Largest Engine

Dodge Viper leads with the largest engine size at 8.0 liters



Highest Horsepower

The Dodge Viper also has the highest horsepower



Engine Size vs. Fuel Efficiency

A scatter plot reveals an inverse relationship between engine size and fuel efficiency, where larger engines generally result in lower fuel efficiency



MODEL SELECTION

Models Used

- Linear Regression, Lasso Regression, Ridge Regression, GridSearchCV for Lasso and Ridge

Metrics for Evaluation

- Root Mean Squared Error and R-squared were used to evaluate the models
- Cross-validation was performed to fine-tune the models

MODEL PERFORMANCE



Best Performing Model

GridSearchCV
with Lasso
Regression had
the best
performance



Key Results

Test RMSE:
0.0501
Train RMSE:
3.2774
Test R-squared:
0.9434
Train R-squared:
0.9325



Conclusion: The GridSearchCV
Lasso model had the lowest error
and highest R-squared, making it
the most reliable for price
prediction

A detailed black and white photograph of an engine's internal components, specifically the timing belt and its associated pulleys. The image shows the intricate mechanical structure, with the timing belt running across several pulleys. The lighting highlights the metallic surfaces and the complex arrangement of the engine parts.

CONCLUSION

Key Takeaways

- Engine size, horsepower, and fuel efficiency are significant factors influencing car prices
- Fuel efficiency negatively correlates with price, while engine size and horsepower positively correlate
- The Lasso Regression model with GridSearchCV provided the best predictive results