Car Price Prediction Project

A comprehensive overview detailing the development of a robust model designed to predict car sale prices from various vehicle attributes. This project aims to enhance pricing strategies, optimize market competitiveness, and improve decision-making within automotive sales.

Project Overview

A data-driven approach to accurately predict car sale prices and enhance strategic pricing decisions.

- **Objective: Predict car sale prices**

  Develop a robust model to estimate vehicle prices based on key attributes with high accuracy.

- **Benefits of Accurate Prediction**

  Supports informed pricing strategies, optimizes market competitiveness, and improves sales decisions.

- **Revenue Impact**

  Enhances profitability by enabling competitive yet fair price setting in automotive sales.

- **Improved Market Insights**

  Identifies key factors influencing car prices for better strategic planning and valuation.

Key Steps in Car Price Prediction Project

An Overview of Critical Phases in Project Execution

01

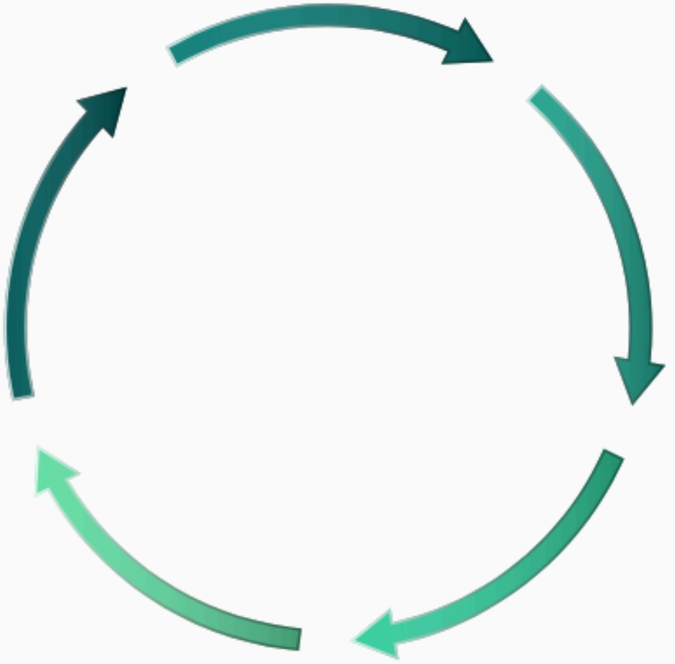
Data Analysis Techniques

Exploring historical car data to identify patterns influencing prices.

02

Data Preprocessing Tasks

Cleaning and transforming raw data for model readiness.



03

Model Development Process

Training regression models to predict car prices accurately.

04

Model Performance Evaluation

Assessing model accuracy using performance metrics.

05

Model Deployment Strategy

Integrating the model for real-world price prediction.

Overview of Car Price Data

Detailed analysis of car attributes and pricing distribution in dataset

Total Records in Dataset

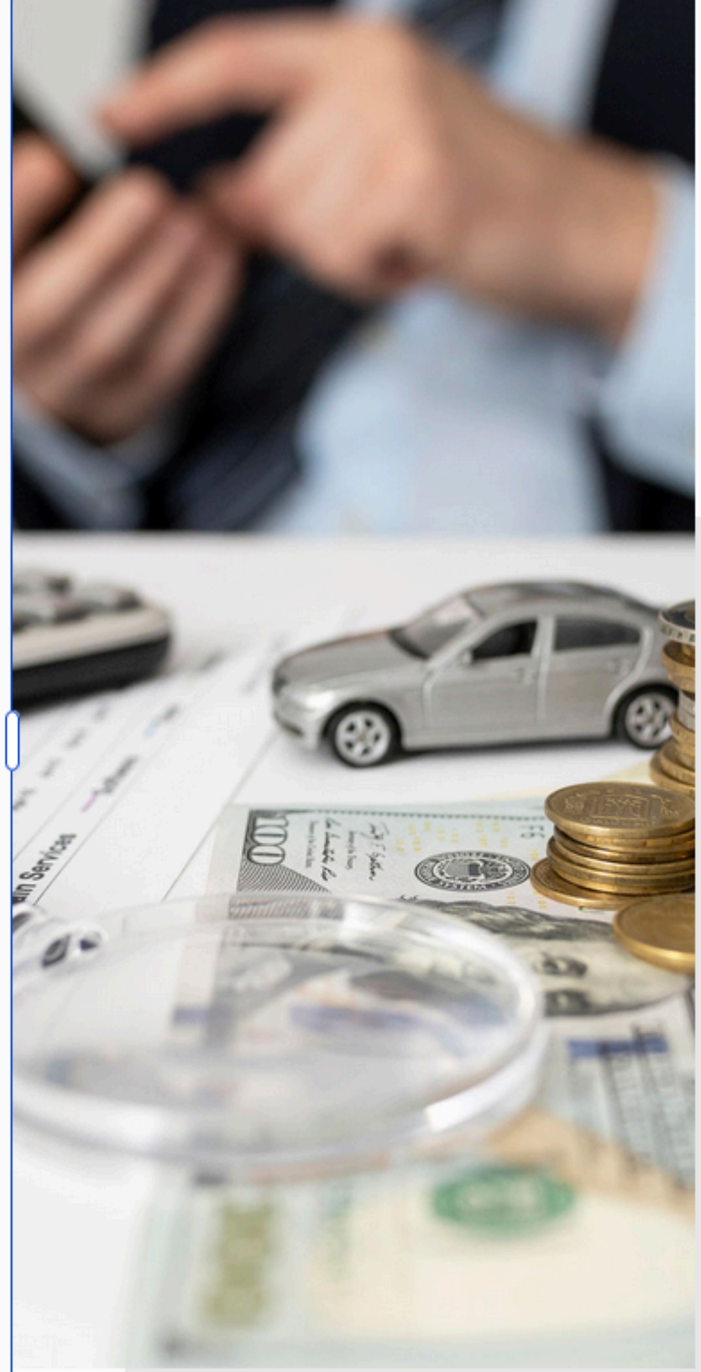
The dataset contains 205 records covering various car attributes and prices.

Key Features Included

26 variables such as enginesize, horsepower, fueltype, carbody, and price are analyzed.

Price Distribution Insights

Distribution is right-skewed, mostly lower-priced cars with few luxury models at higher prices.



Key Insights from Data Analysis

Factors Influencing Car Prices

Strong positive

Engine size & HP

Larger engines and higher power increase price

Positive correlation

Curbweight

Heavier cars tend to be more expensive

Negative correlation

Citympg & Hwympg

Fuel efficient cars generally cheaper

40% higher

Diesel Fueltype

Diesel cars priced higher than gasoline ones

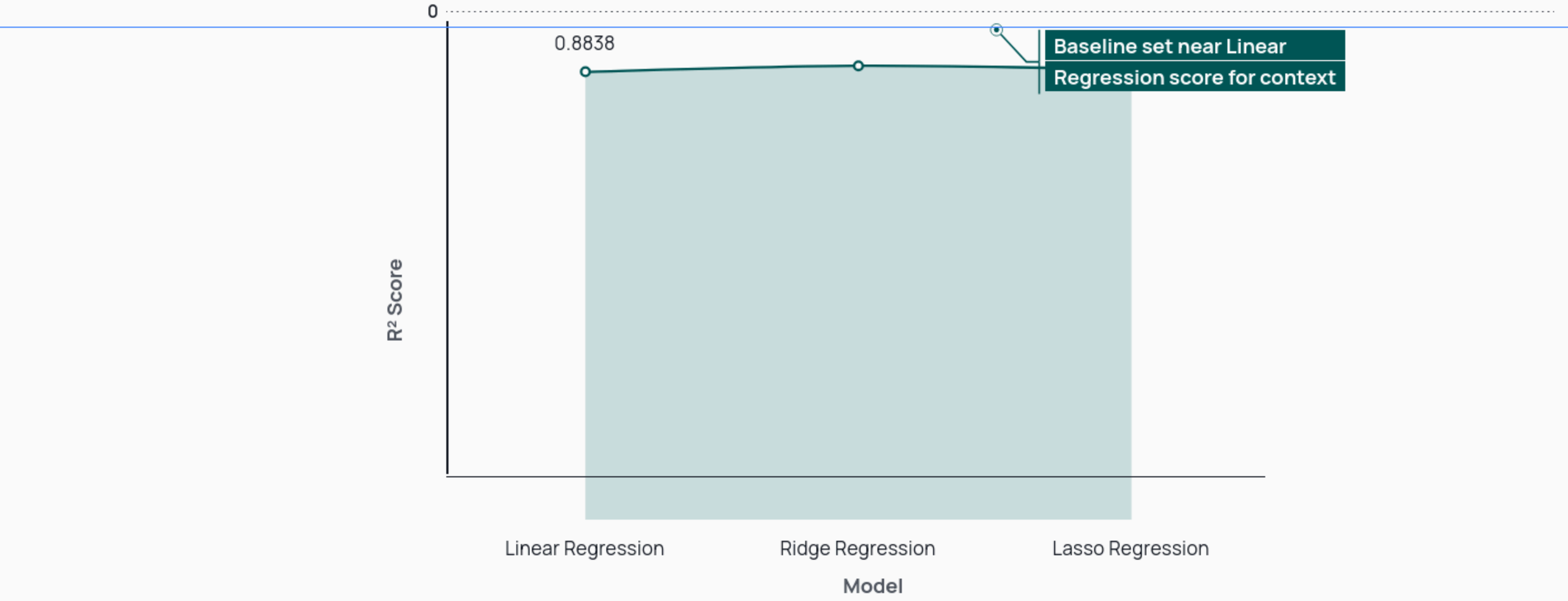
Premium pricing

Convertible Carbody

Convertible models linked to higher prices

Model Development and Evaluation

Building and Assessing Predictive Models Performance Metrics



Model Deployment

Integrating Ridge Regression for efficient production use and scalability

Model saving using joblib

Ridge regression model is saved with joblib for efficient reuse and easy loading in production systems.

Deployment benefits

Enables real-time car price predictions and supports scalable pricing strategies on sales platforms.

Future enhancements planned

Plans include API integration for seamless application and ongoing monitoring of model performance with new data.