DATA ANALYSIS OF AUTOMOBILE DATA

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Dataset Overview

- Rows:205vehicles Columns: 26 features Source: shop_info.csv Focus:
- Vehicle attributes like brand, fuel type, engine size, dimensions, and
- price
-

EXAMPLE ENTRY BREAKDOW

- BODY STYLE: CONVERTIBLE
- DRIVE: REAR WHEEL (RWD)
- MPG (CITY/HIGHWAY): 21 / 27
- PRICE: $13,495

INSIGHTS & OBSERVATION

- WIDE RANGE OF PRICES:$5,151 TO $45,400
- FUEL TYPES: MOSTLY GAS, FEW DIESEL MODELS
- DRIVE WHEELS: FWD, RWD, AND LIMITED 4WD MODELS
- TURBOCHARGED MODELS: FOUND ACROSS MULTIPLE MAKES (AUDI, B MITSUBISHI, ETC.)
- VARIATIONS IN DIMENSIONS: LENGTH RANGES FROM ~140 TO ~208 IN

INTRODUCTION

Thischartprovidesacomprehensive overview of 205 car models,
Eachvehicle isdescribed through a rich set of 26 attributes. It covers everything from basic manufacturer details like make and fuel type, to technical specifications such as engine size, horsepower, and compression ratio, along with design features including body style, drive wheels, and dimensions. Whether you're comparing hatchbacks to convertibles, exploring performance metrics like city/highway MPG, or analyzing how design correlates with price, this dataset offers a unique window into automotive diversity and engineering trends. It’s a treasure trove for analysts, engineers, and enthusiasts seeking data-driven insights into the automotive world

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PRICING TABLE

BASIC

$5,000 – $15,000

Chevrolet, Dodge, Honda, Nissan, Mazda

COUNT= 105

$15,001 – $30,000

Audi, BMW, Subaru, Toyota,Volkswagen

COUNT= 75

PREMIUM

ABOVE $30,000

Mercedes-Benz, Jaguar, Porsche, Volvo

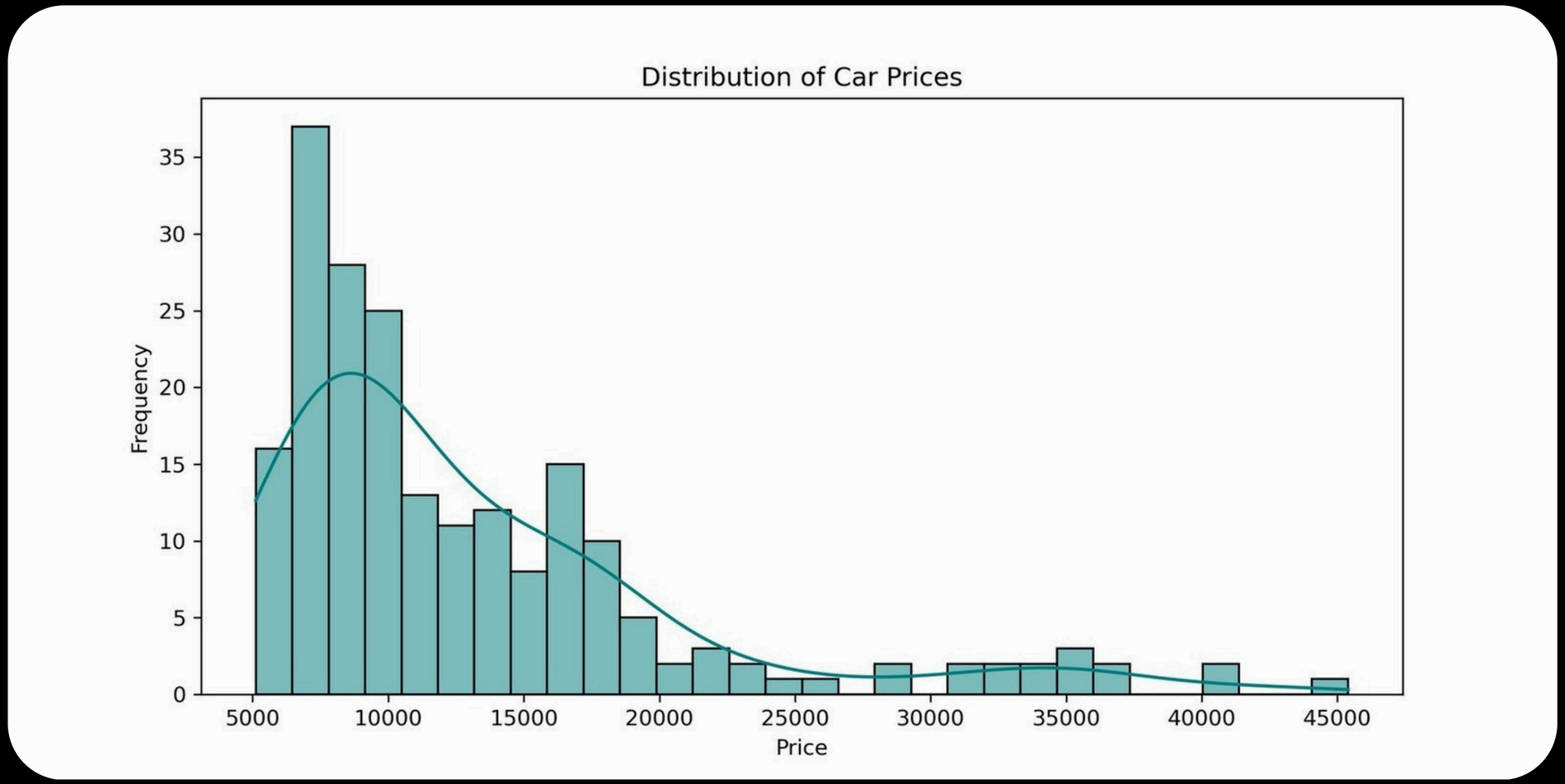
COUNT= 25

CHAT FOR DISTRIBUTION OF A NUMERICAL VARIABLE

Absolutely. Most carscluster around the lowerandmid-pricebrackets. When we group prices into three ranges—Basic ($5k–$15k), Regular ($15k–$30k), and Prem (above $30k)—here's what we see:

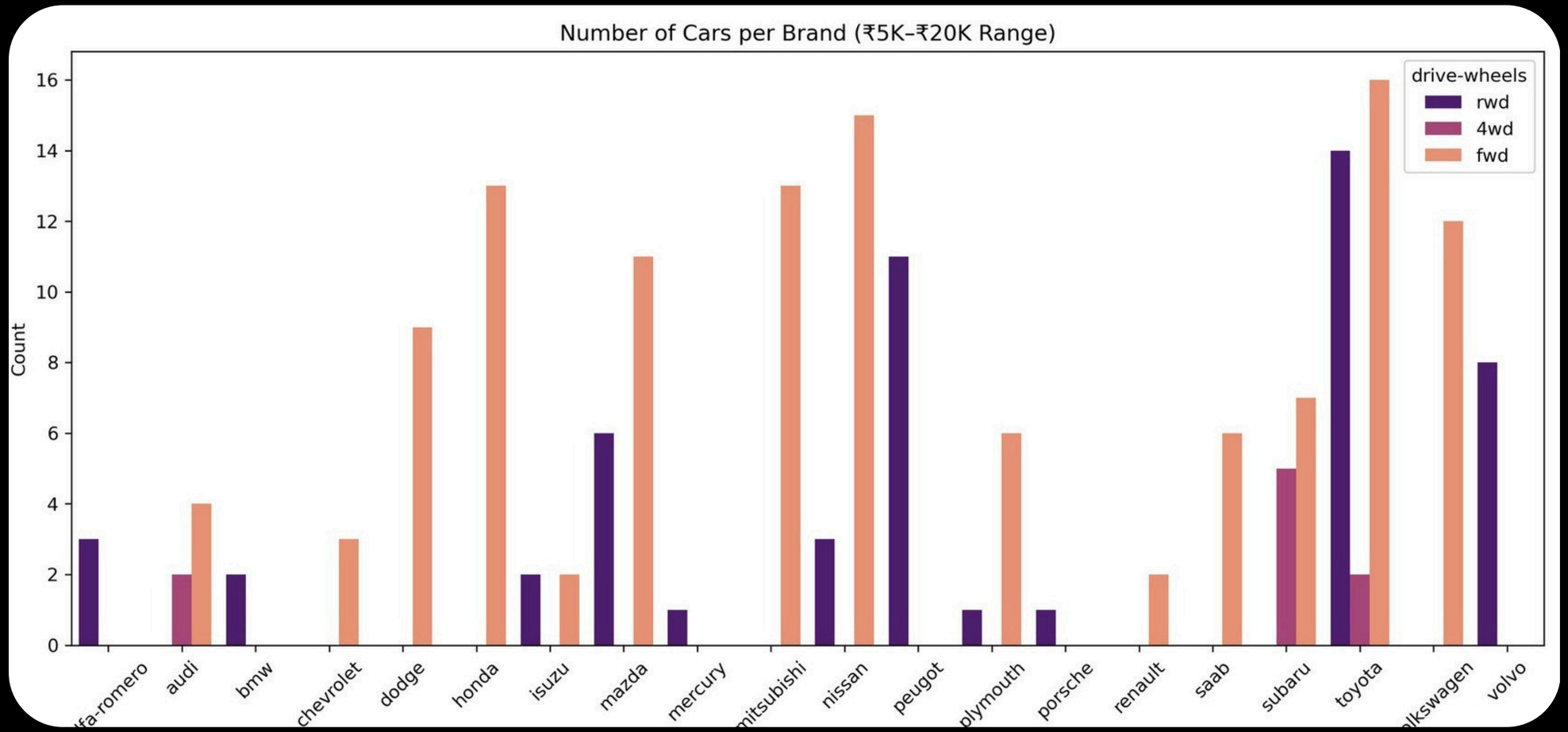
- 🟢 Basic: ~105 vehicles, dominated by Honda, Dodge, Mazda
- 🔵 Regular: ~75 vehicles, includes Audi, BMW, Toyota
- 🔴 Premium: ~25 vehicles, featuring Jaguar, Mercedes-Benz, Porsche

This distribution is clearly right-skewed—meaning fewer high-end cars push the tail of the chart to the right.



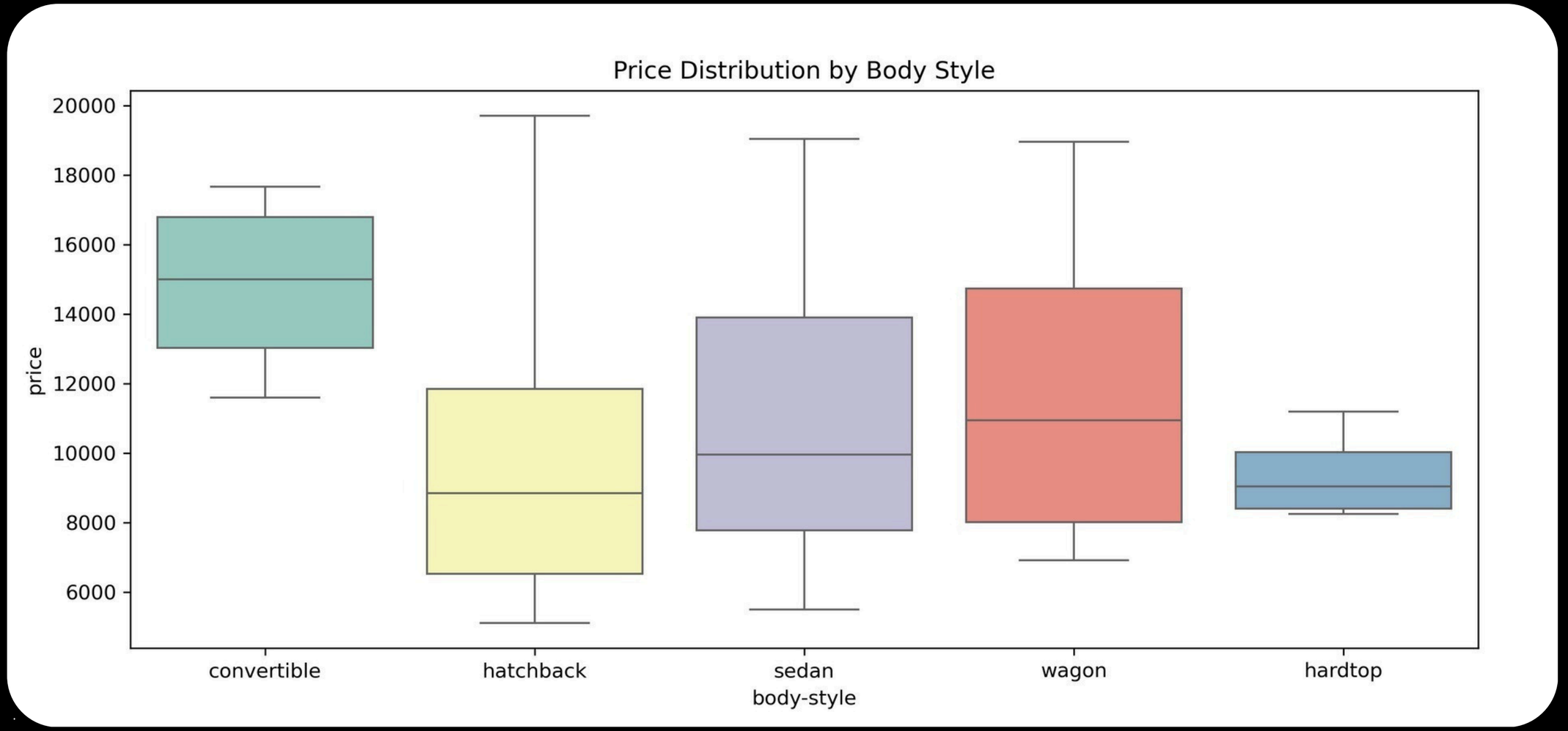
1MAJORITY OF CARS FALLS BETWEEN PRICE RANGE OF 5000 TO 20000

Inthe $5,000to $20,000 price range,theshop_info.csvdatasetshowcasesasubstantial majority of vehicles—roughly three-quarters of the total 205 models. The cars span from compact hatchbacks and fuel-efficient sedans to practical wagons, serving as the backbone of mainstream affordability and utility. Popular The minating this segment include Honda, Toyota, Chevrolet, Mazda, Nissan, Dodge, Subaru, and Volkswagen, all known for offering reliable models with modest engine capacities (mostly 90–130 CC) and horsepower between 48–115 HP. Most vehicles in this range run on gasoline, feature front- wheel drive (FWD), and deliver strong fuel economy, often achieving 30+ MPG in city and highway conditions. This bracket reflects everyday consumer preferences —combining practicality, cost-effectiveness, and efficiency—which makes it a focal point for buyers prioritizing functionality over luxury.



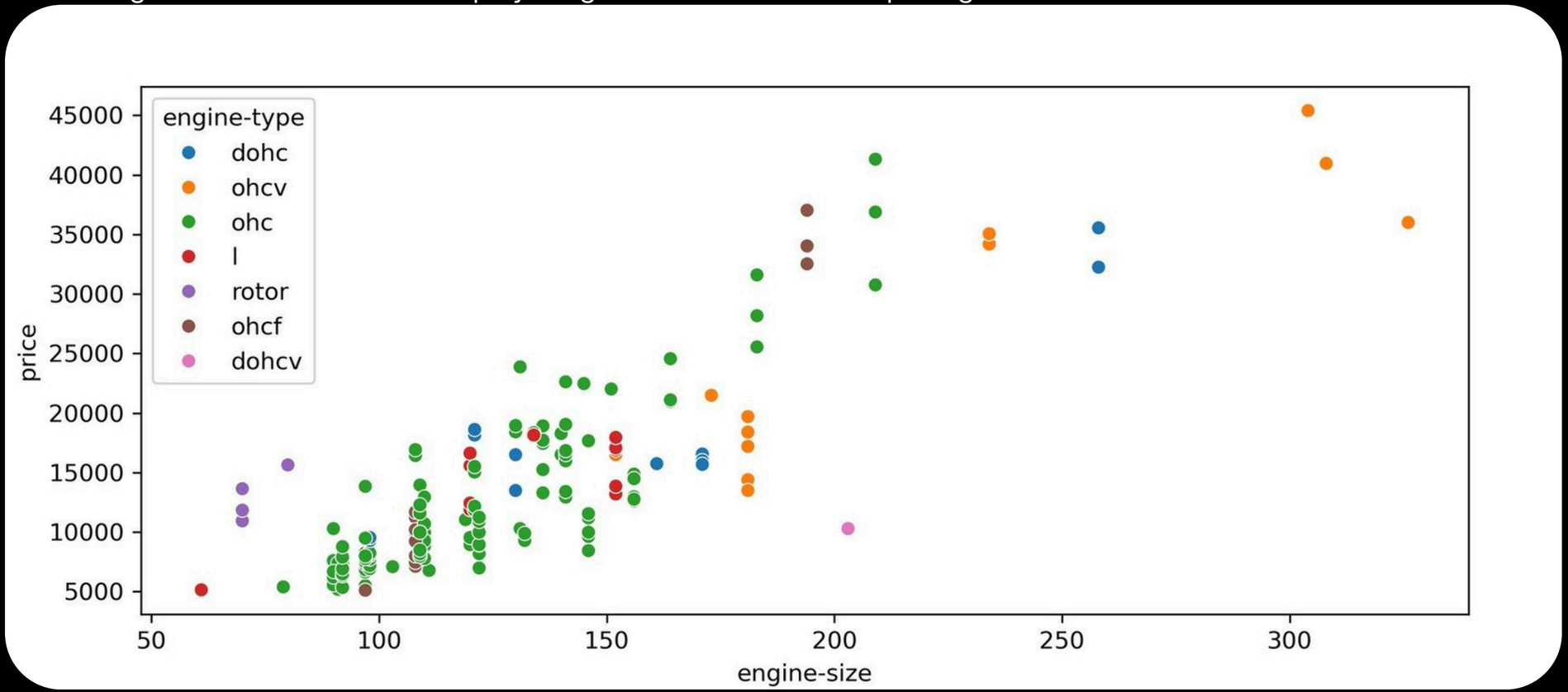
THE RELATIONSHIP BETWEEN BODY STYLE AND PRICE

- Sedansand wagons have wider price ranges,reflectingtheir presence in both budget and mid-tier categories.
- Hatchbacks consistently stay in the lower bracket—perfect for budget-conscious buyers.
- Convertibles clearly sit higher in value, often tied to design, performance, and brand.
- Hardtops seem niche, with tightly grouped prices suggesting fewer options or specialization.



RELATIONSHIP BETWEEN ENGINE SIZE AND PRICE, THE DATA POINTS BY ENGINE

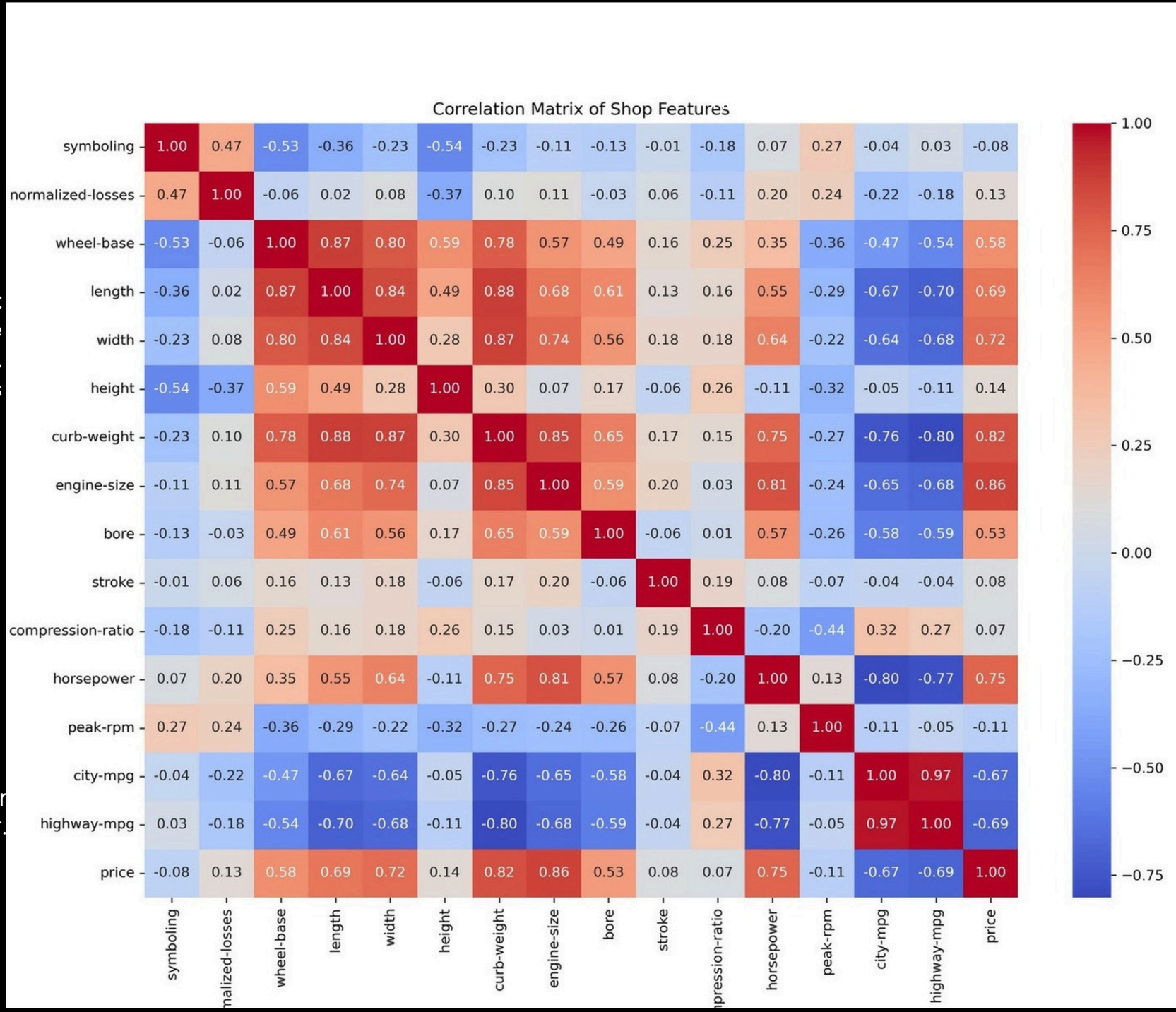
Thescatter plotillustrates the relationship between engine sizeandcarprice across various engine types. There is a noticeable positive correlation — as engine
increases, pricestendto rise. Vehicles with smaller engines (typically 90–130 CC) areconcentrated in the lower price range, often under $15,000, and are predominantly equipped with ohc engines, which are simpler and more common in economy cars. As engine size grows beyond 150 CC, the price climbs sharply, especially for cars with ohcv, dohc, or rotor engines. These types are associated with more complex engineering, greater performance, and brands that cater to premium segments. The scatter also reveals outliers — cars with large engines and exceptionally high prices, likely luxury or sports models. Overall, the chart reinforces that engine architecture and size play a significant role in vehicle pricing and market classification



THE CORRELATION MATRIX

- High Positive Correlation:
  - 🟥 Engine size vs. Horsepower and Price: Larger engines tend to have more horsepower and are priced higher. 🟥 Curb weight vs. Engine
  - size, Horsepower, and Price: Heavier cars are usually more powerful and costlier. 🟥 Length vs.
  - Wheelbase and Width: Bigger cars often share proportional design features.
- Negative Correlation:
  - City-mpg and Highway-mpg vs. Horsepower, Engine size, and Price: More powerful cars consume more fuel, resulting in lower mileage. 🟦
  - Compression ratio shows low or pnerigceat, ivseu ggceosrrteinlgat ioitn's nwoith a direct factor incost.
- Near Zero Correlation:

Features like symboling and stroke have weak associations with most other features, implying limited predictive power.



THANK YOU !

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