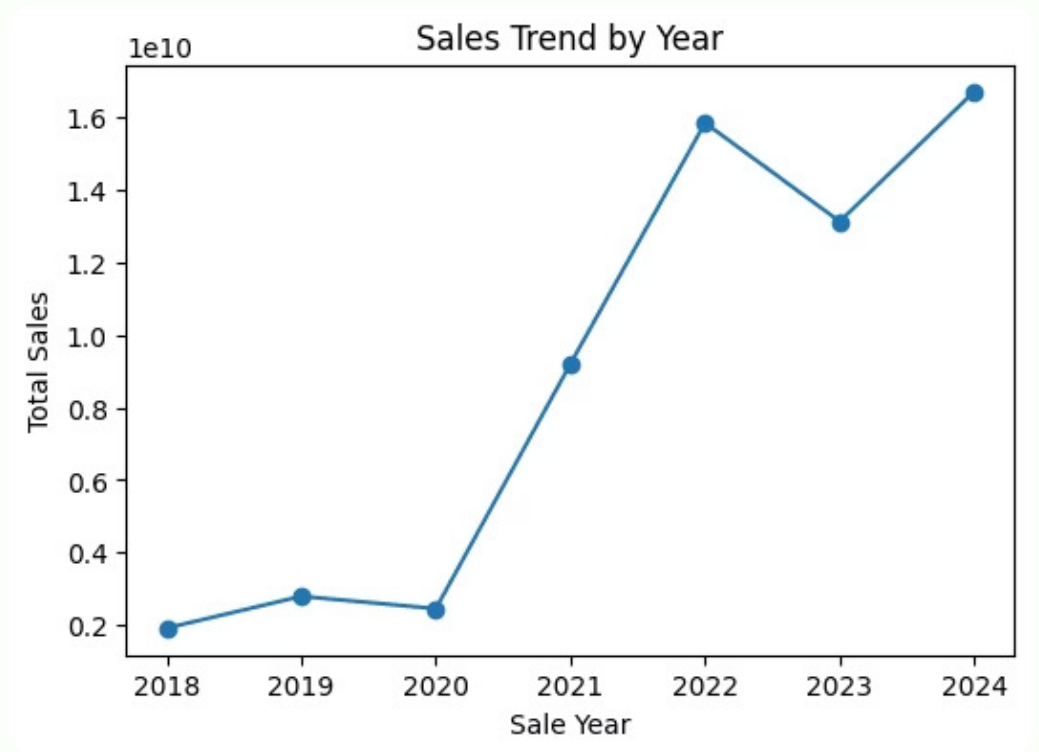


# **Sales Forecasting Project**

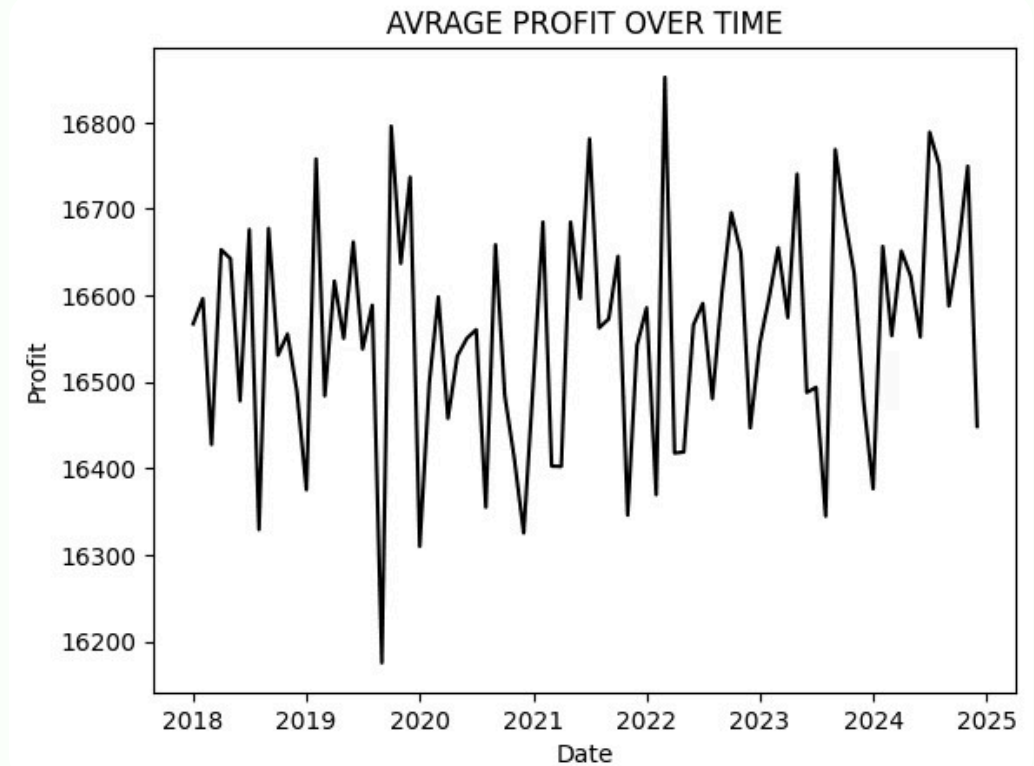
# Objectives

- Understand overall sales and profit performance.
- Explore trends and patterns in the data.
- Provide insights to support better decision-making.

- **Total sales** have shown a significant upward trend from 2018 to 2024.
- The most notable growth occurred between 2020 and 2022, with sales more than doubling during that period.
- There was a slight dip in sales in 2023, but they rebounded to their highest point in 2024.



- The **average profit** has remained relatively stable with a consistent level of volatility from 2018 to 2025.
- While there are fluctuations, the average profit generally hovers between \$16,400 and \$16,800.
- The chart does not show a clear long-term trend, indicating that average profit has not grown at the same rate as total sales.



## **Key Question: Why are sales growing rapidly while profits remain flat and volatile?**

### **Possible Causes:**

- Rising costs (cars sold, marketing, wages).
- Heavy discounting strategy reducing margins.
- Shift toward low-margin products.
- High scaling costs (infrastructure, staff, technology).

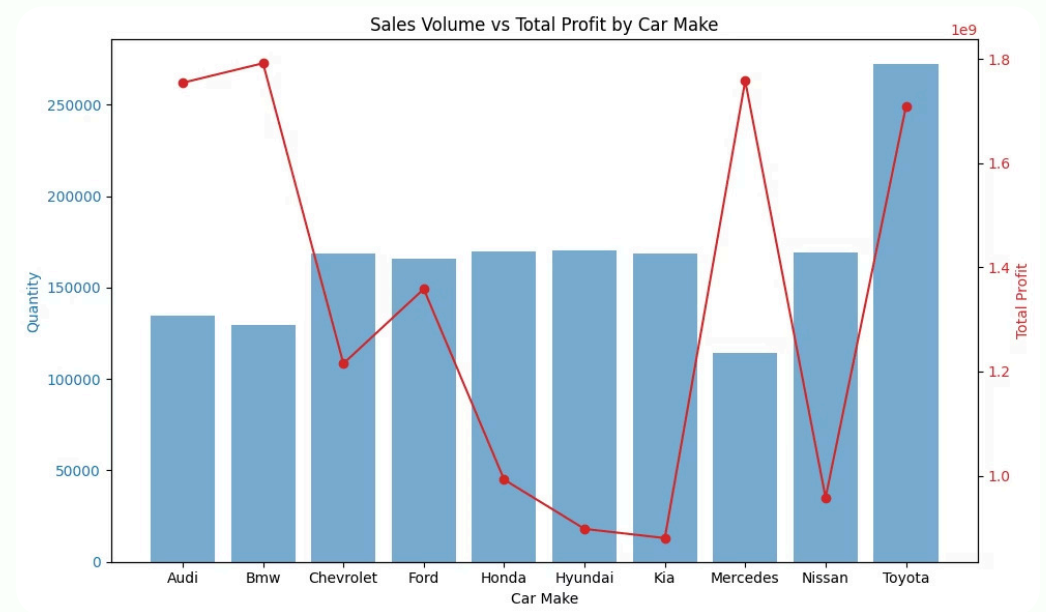
### **Proposed Solution:**

- Conduct full cost and profitability analysis.
- Optimize product mix toward high-margin items.
- Manage costs strategically (suppliers, operations, inventory).
- Refine pricing strategy (value-based, pricing tiers).

# Brand Performance: Sales vs. Profit

Toyota achieves the highest sales volume (252,164 cars sold) but lags behind premium brands like BMW, Audi, and Mercedes in total profit.

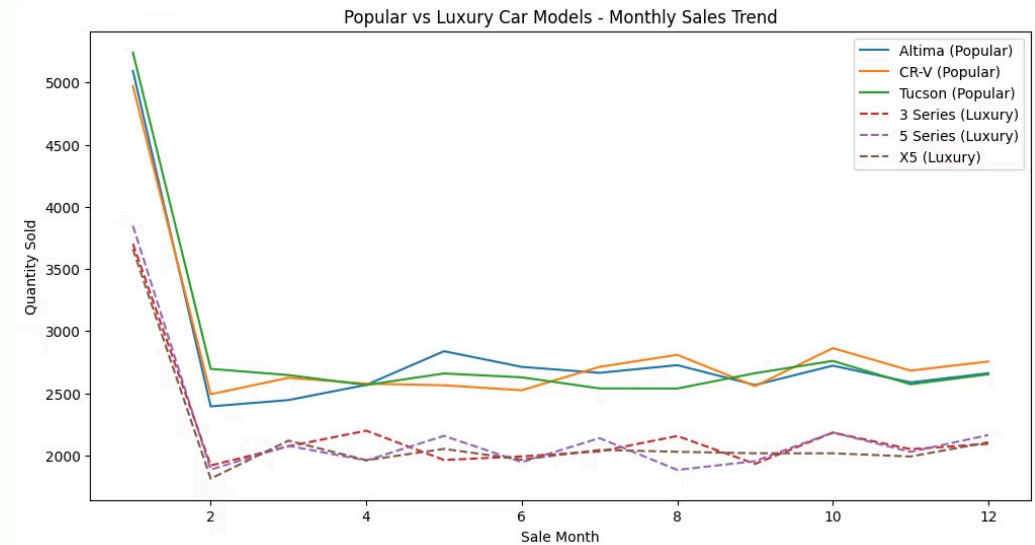
**This suggests that** Toyota relies on high-volume, lower-margin sales, while luxury brands generate higher profits per unit despite selling fewer cars.



# Monthly Model Popularity Trends

## When comparing popular models (Altima, CR-V, Tucson) with luxury models (3 Series, 5 Series, X5):

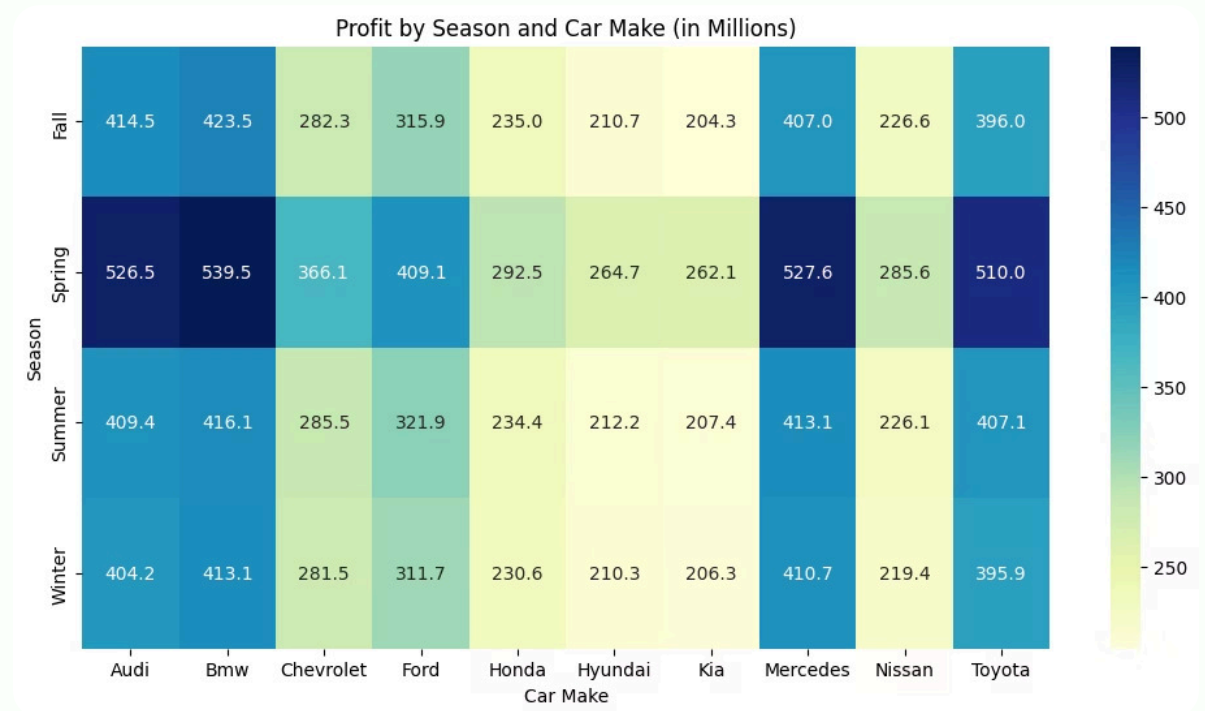
- Popular models consistently outsell luxury models across almost all months indicating that affordability and demand for practical vehicles drive higher sales volumes.
- Luxury models show more stable but lower sales, reflecting their niche market and higher pricing, which makes them less frequently purchased compared to mass-market cars.
- Seasonal fluctuations are more visible in popular models (larger spikes and dips in sales), while luxury models remain relatively flat, suggesting that popular cars are more influenced by consumer trends, promotions, or seasonal demand.



**This insight suggests** that dealerships should focus promotions and inventory planning more aggressively on popular models, while luxury models can be positioned with premium marketing strategies targeting a stable but smaller audience.

# Season & Car Make Profitability

- Spring is the peak season across almost all car brands, with significantly higher profits compared to other seasons.
- Premium brands like BMW, Audi, and Mercedes see strong seasonal gains in Spring, indicating higher demand for luxury vehicles during that time.
- Mass-market brands like Toyota, Ford, and Chevrolet also peak in Spring, but the increase is slightly less sharp than premium brands.
- Winter and Fall are the weakest seasons, where sales and profits drop consistently across all brands.

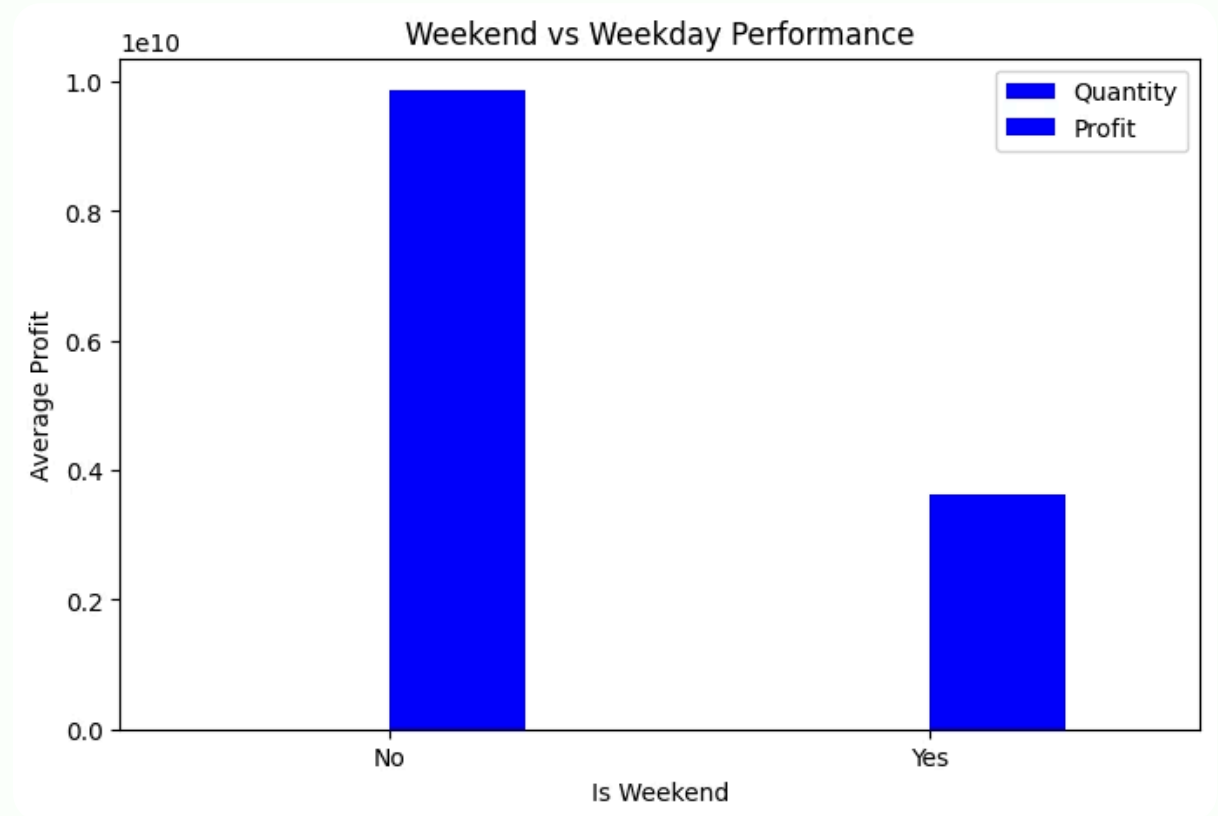


**Recommendation** for the dealership: Focus marketing campaigns and inventory buildup in Spring, especially for premium cars, while preparing promotions/discounts in Winter and Fall to stimulate demand.



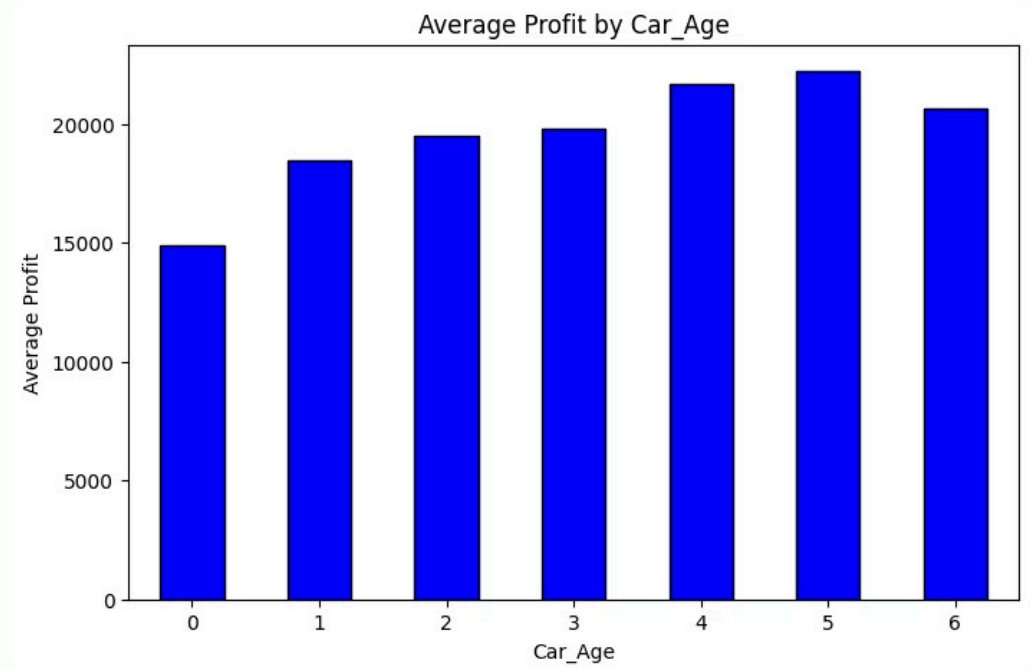
# Weekend vs Weekday Performance

Sales and profits are significantly higher during weekdays compared to weekends. This suggests that the dealership should focus on increasing weekend promotions or special offers to boost sales during low-traffic periods.



# Car Age vs Profitability Analysis

Used cars (especially 4 - 6 years old) generate higher profit margins than brand-new cars. This suggests the dealership could increase focus on sourcing and promoting slightly older used cars, as they offer better profitability compared to new cars.



# Key Insights Summary

- **Sales vs Profit:** Sales are growing rapidly, but profits remain flat due to rising costs, discounts, and product mix.
- **Brand Performance:** Toyota leads in sales volume, but luxury brands (BMW, Audi, Mercedes) deliver higher profit margins.
- **Seasonality:** Spring is the peak season for both premium and mass-market brands, while Winter/Fall are weakest.
- **Weekday Effect:** Sales and profits are significantly higher on weekdays than weekends.
- **Customer Trends:** Popular affordable models outsell luxury ones, but used cars (4 - 6 years old) generate the best profit margins.