

# CAR SALES ANALYSIS



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# **1. BUSINESS PROBLEM**

# BUSINESS PROBLEM

A leading car dealership is facing challenges in balancing inventory distribution and optimizing pricing strategies across new, used, and certified pre-owned cars. With fluctuating price trends and disproportionate inventory composition, the dealership seeks insights to improve inventory planning, price positioning, and ultimately boost profitability.

## **2. ANALYSIS & FINDINGS**

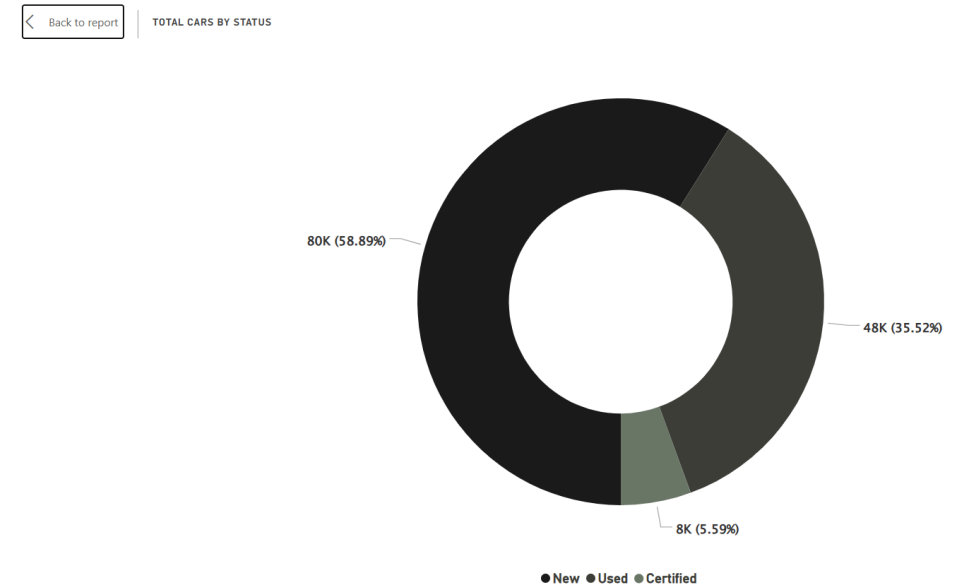
# **I. INVENTORY ANALYSIS**

# TOTAL CARS BY STATUS

- This **donut chart** gives a clear summary of **total cars by status**
- This donut chart visualizes the distribution of total vehicles across three categories: **New** (58.9%), **Used** (35.5%), and **Certified** (5.6%). The analysis highlights that new cars dominate the inventory with 80,000 units, followed by 48,000 used cars and 8,000 certified ones, helping dealerships prioritize stocking and marketing strategies accordingly.

## Breakdown of Inventory

- **New:** 80K vehicles, **58.89%** of total inventory
- **Used:** 48K vehicles, **35.52%**
- **Certified:** 8K vehicles , **5.59%**



# TOTAL CARS BY BRAND

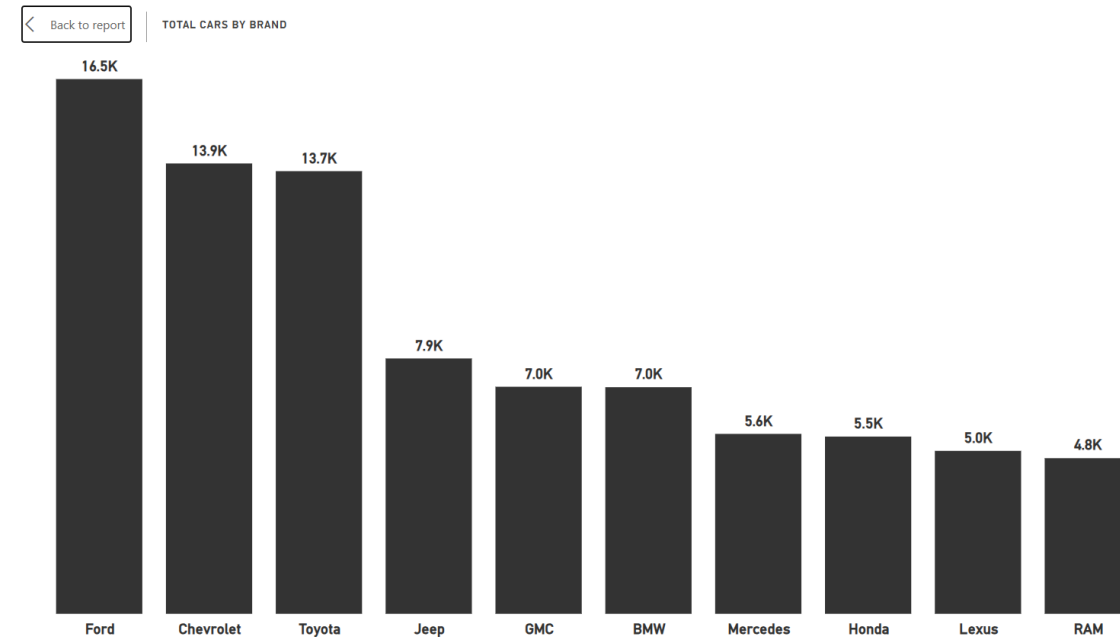
- The **bar chart** gives a clear summary of **total cars by brand**

## Insights:

- The inventory is heavily concentrated among three major brands: **Ford (16.5K)**, **Chevrolet (13.9K)**, and **Toyota (13.7K)**.
- These top 3 brands alone account for nearly **50%+** of the total stock.
- Other brands like **RAM**, **Lexus**, and **Honda** are underrepresented.

## Business Implication:

- The brand skew could indicate market preference, dealership partnerships, or demand assumptions.
- However, over-dependence on certain brands may lead to risks if market trends shift.





# DEALER WISE INVENTORY BREAKDOWN

- This **stacked bar chart** displays the total inventory value of each dealer.
- The **"Not Available"** category leads with \$21M, mostly in used cars.
- Knauz Auto Park and Auto Hub follow closely with significant shares across all categories.

## Key Insights

### 1. Highest Total Inventory:

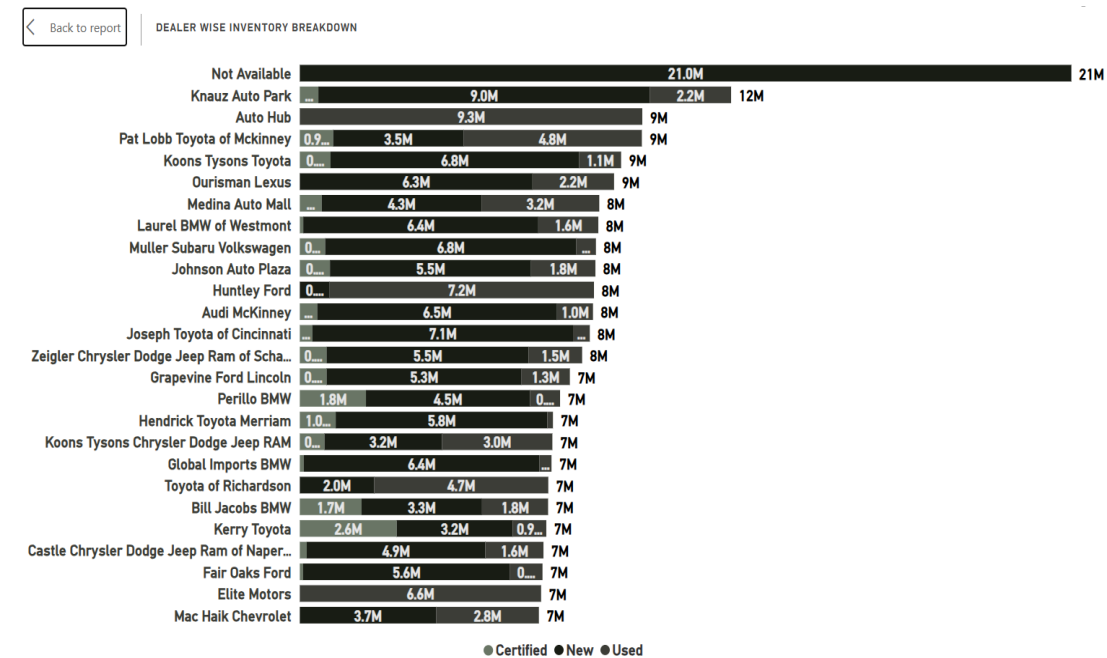
- **Not Available** tops the list with **\$21M** in inventory
- **Knauz Auto Park** has **\$12M**, with a balanced split across all categories.

### 2. High Inventory Dealers:

- Auto Hub, Pat Lobb Toyota of McKinney, Koons Tysons Toyota, and Ourisman Lexus all have **~\$9M** in inventory.

### 3. Lower Inventory Dealers:

Dealerships like **Elite Motors**, **Fair Oaks Ford**, and **Castle Chrysler Dodge** show around **\$7M** inventory, still substantial but below the top performers.



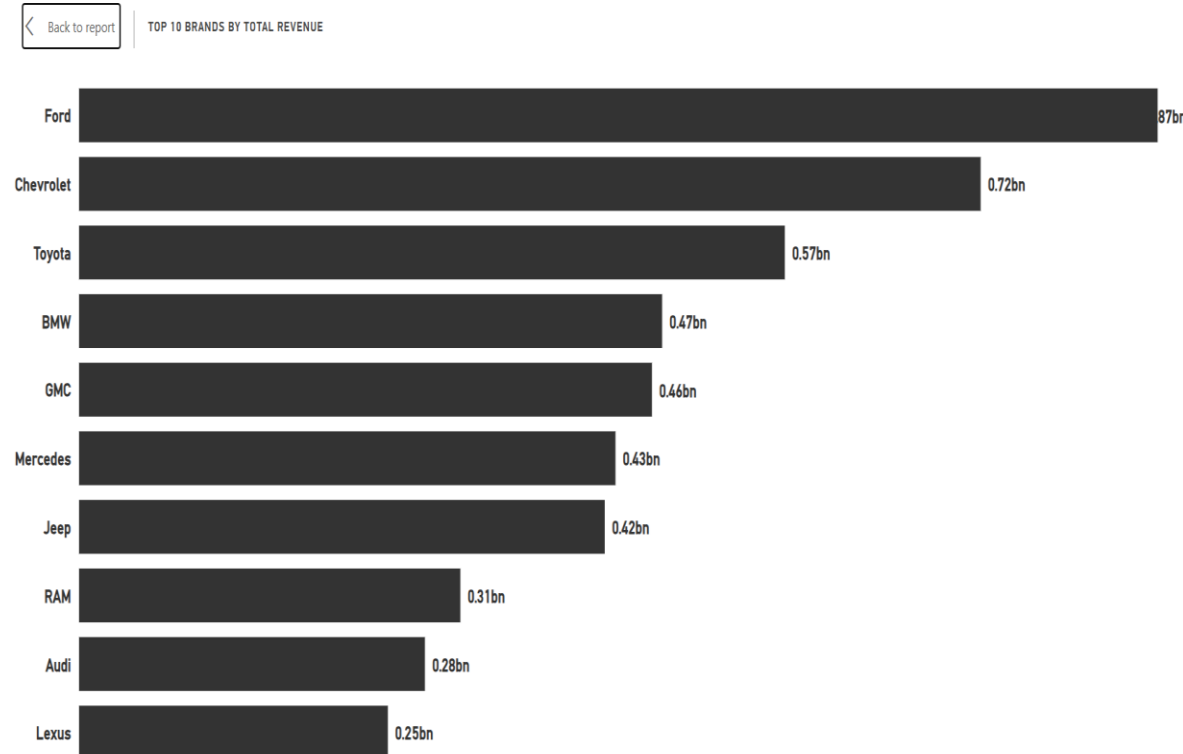
## **II. PRICE TREND ANALYSIS**

# TOP 10 BRANDS BY REVENUE

- This visualization ranks the top car brands based on total sales revenue.
- **Ford** leads the market with 0.87 billion, followed by **Chevrolet** (0.72bn) and **Toyota** (0.57bn). Premium and luxury brands like **BMW**, **Mercedes**, and **Audi** also appear in the top 10, highlighting their strong market presence despite premium pricing.

## Key Insights

- Ford dominates with a total revenue of 0.87 billion, significantly higher than all other brands.
- **Strong performers:** Chevrolet: 0.72bn , Toyota: 0.57bn
- **Mid-range brands:** BMW (0.47bn), GMC (0.46bn), Mercedes (0.43bn), and Jeep (0.42bn) are close competitors in the mid-range category.
- **Lower tier:** RAM (0.31bn), Audi (0.28bn), and Lexus (0.25bn) generate comparatively lower revenue but still rank among the top 10

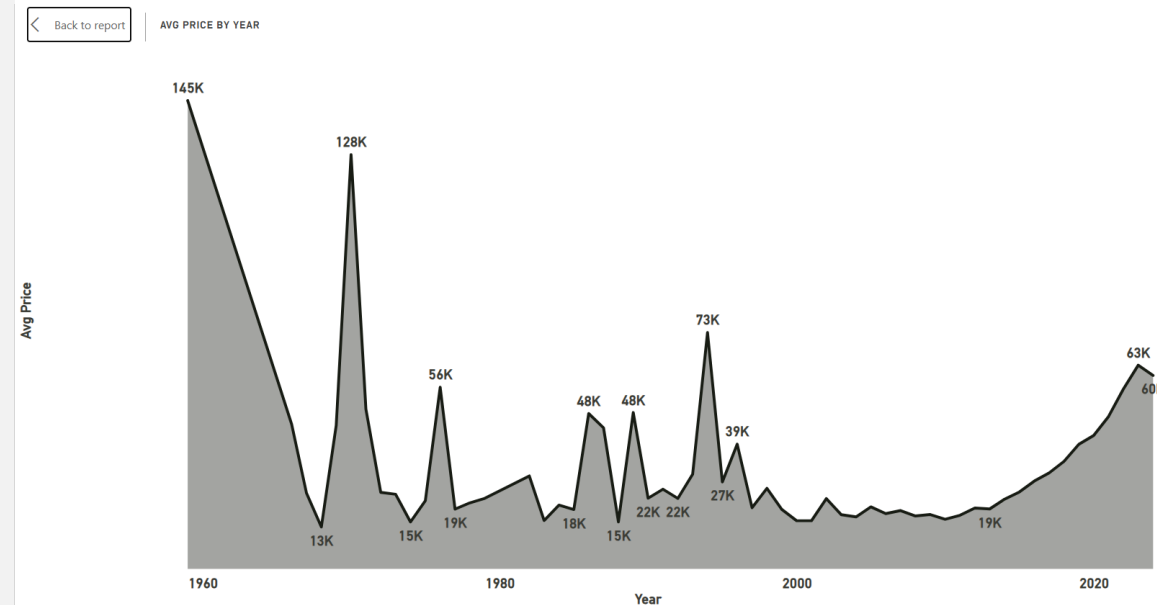


# AVERAGE PRICE BY YEAR

- This visualization highlights average car prices by year from 1960 to 2023.
- The chart reveals significant pricing spikes in the 1960s and 70s, likely due to data outliers or rare luxury vehicles.
- More consistent trends emerge post-1980, with a notable surge in prices after 2015. The recent increase reflects market inflation and growing demand for high-end or electric vehicles.

## Key Insights

- **Extreme Peaks in Early Decades**
  - 1960: Sharp spike to 145K, followed by a dramatic drop to 13K.
  - 1970: Another major jump to 128K, again followed by a steep fall.
  - These anomalies may be due to data outliers, limited entries, or luxury vehicles in those early years.
- **Stabilization After 1980**
  - From 1980 onward, prices became more consistent, with values mostly ranging between 15K and 48K.
  - Minor peaks seen in 1983, 1987, 1995, and 1999
- Since 2015, there's a steady upward trend in average car prices.
- From a low of 19K, prices rose sharply to 63K in 2022, indicating increased demand, inflation, and possibly EV or luxury model influence.



# AVERAGE PRICE BY BRAND & STATUS

- The analysis reveals premium pricing trends for brands like Mercedes and BMW, while also highlighting significant depreciation patterns from new to used vehicles.
- This helps understand brand value perception and pricing strategy across the market segments.

## Key Insights

### 1. Premium Brands Lead in Average Price

- **Mercedes** has the **highest average prices** across all statuses: Certified: 72K, New: 97K, Used: 50K
- **BMW** and **Lexus** follow closely, especially in Certified and New categories.

### 2. Price Drop from New to Used

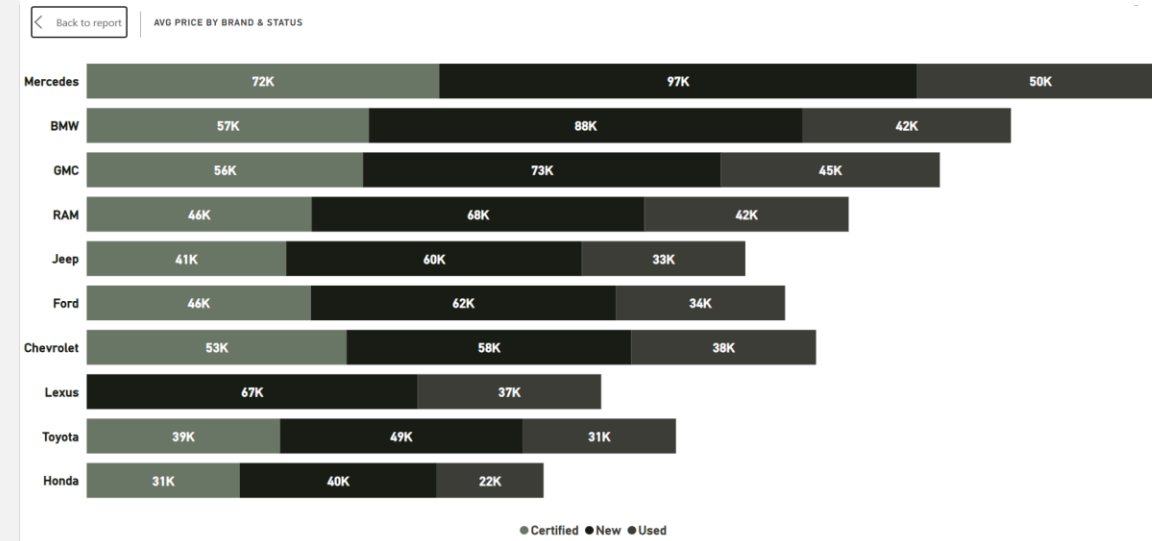
- All brands show a clear **price reduction trend** from **New** to **Used**, which is expected.

### 3. Lower Average Price Brands

- **Honda**, **Toyota**, and **Jeep** represent more **budget-friendly brands**, with average prices below 50K in all categories.

### 4. Certified Cars Generally Priced Between New and Used

- Certified prices often sit **between New and Used**, aligning with standard dealership pricing strategies.



### **3. INSIGHTS & RECOMMENDATIONS**

# INSIGHTS

## 1. Total Cars by Status

- **Used cars** dominate the inventory, indicating strong resale market activity.
- **New cars** follow next, while **Certified cars** make up the smallest portion.

## 2. Average Price by Status

- **New cars** have the highest average price, as expected.
- **Certified cars** are priced higher than used cars, reflecting added quality assurance and warranty.
- **Used cars** are the most affordable, catering to budget-conscious buyers.

## 3. Top Brands by Total Sales Price

- Brands like **Toyota**, **Ford**, and **Chevrolet** lead in total sales value.
- These brands likely balance volume with value, showing a wide consumer base.

## 4. Yearly Price Trend by Car Status

- A **dramatic spike in new car prices** (~1.9B) occurred around early 2020s, possibly due to **supply chain issues** or **pandemic-related shortages**.
- **Used car prices** steadily increased, reaching around 0.20B, highlighting strong demand in the second-hand market.
- **Certified car prices** remained consistently low, peaking only at 0.05B, suggesting limited market penetration.

# RECOMMENDATIONS

## 1. For Dealerships:

- Increase focus on **used car inventory**, as it holds the majority market share and steady price growth.
- Promote **certified cars** more aggressively—they offer better margins than used cars and attract trust-focused buyers.

## 2. For Buyers:

- If budget-conscious, the **used car segment** remains the best value proposition.
- Buyers seeking reliability and warranties at a lower price than new cars should consider **certified pre-owned** vehicles.

## 3. For Manufacturers:

- Monitor the volatility in **new car pricing**—ensure production and supply chain stability to avoid future price spikes.
- Develop more **certification programs** to boost the certified car market share and profitability.



**THANK YOU**