

Isaac Goldin

Professor Imielinski

Data 101

28 Jan. 2025

### Unlocking Car Value Secrets: Mileage Trends and Price Patterns Revealed!

#### How Mileage and Fuel Choices Define Resale Value: Insights You Need to Know

In the world of car buying and selling, understanding the interplay between price, mileage, and fuel type can dramatically change how you assess vehicle value. My analysis of a comprehensive dataset from Kraggle sheds light on critical trends that every car enthusiast, buyer, or seller needs to know.

#### The Price Divide: Brand Matters

When I examined car prices by brand, we found striking differences in resale value. High-end brands like Mercedes and Audi tend to command significantly higher prices compared to economy brands like Kia or Chevrolet. This pattern shows the importance of brand reputation in maintaining car value over time. Our boxplot of price by brand highlights these disparities clearly, providing buyers with a reliable benchmark.

#### Mileage vs. Price: A Tipping Point

Our scatter plot revealed a predictable yet essential trend: cars with higher mileage almost always come with lower price tags. However, there are exceptions, well-maintained

high-mileage cars from luxury brands still hold surprising value. This insight is critical for budget conscious buyers looking to maximize their investment.

### Fuel Type Preferences: What's Hot?

Fuel type plays a pivotal role in car pricing. Hybrid and electric vehicles, while less common, show a narrower price range, reflecting their growing popularity and steady demand. A bar plot of car counts by fuel type shows a clear dominance of diesel and petrol vehicles, but the rise of greener alternatives signals an evolving market.

### Key Findings

1. Average Price by Brand: Luxury brands command premium resale values.
2. Mileage Impact: A sharp decline in price is noticeable beyond certain mileage thresholds.
3. Fuel Type Trends: Hybrids and electrics are carving out a niche, holding value more consistently.
4. Transmission & Mileage: Automatic cars tend to support higher maximum mileages, pointing to reliability for long-term use.
5. Price Bins by Transmission: The mosaic plot reveals that the higher the price bin, the ratio between the transmission type favors more automatic.

Understanding these patterns is more than just data exploration, it's an actionable guide to smarter car purchases and sales. Whether you're hunting for a bargain or aiming for top-dollar resale, let these insights steer you toward success.