Impact of Transmission Type on Car Features and Market Dynamics

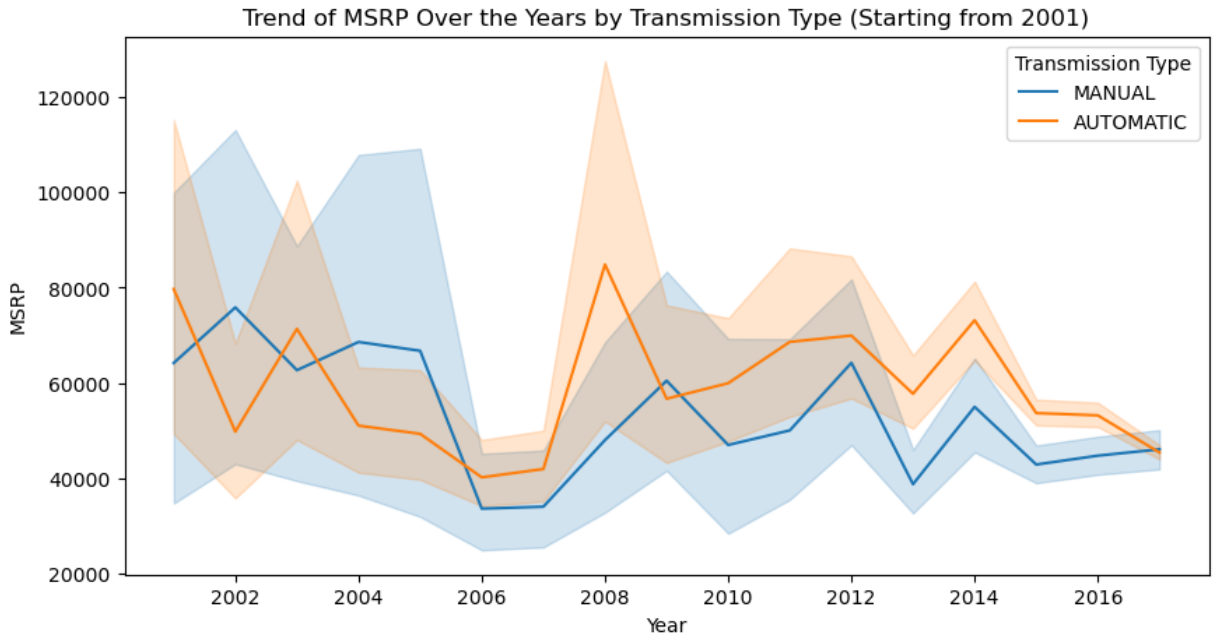
An in-depth analysis of car features from 1990 to 2017

Maxime Junca-Quintero

Student number: 22107517

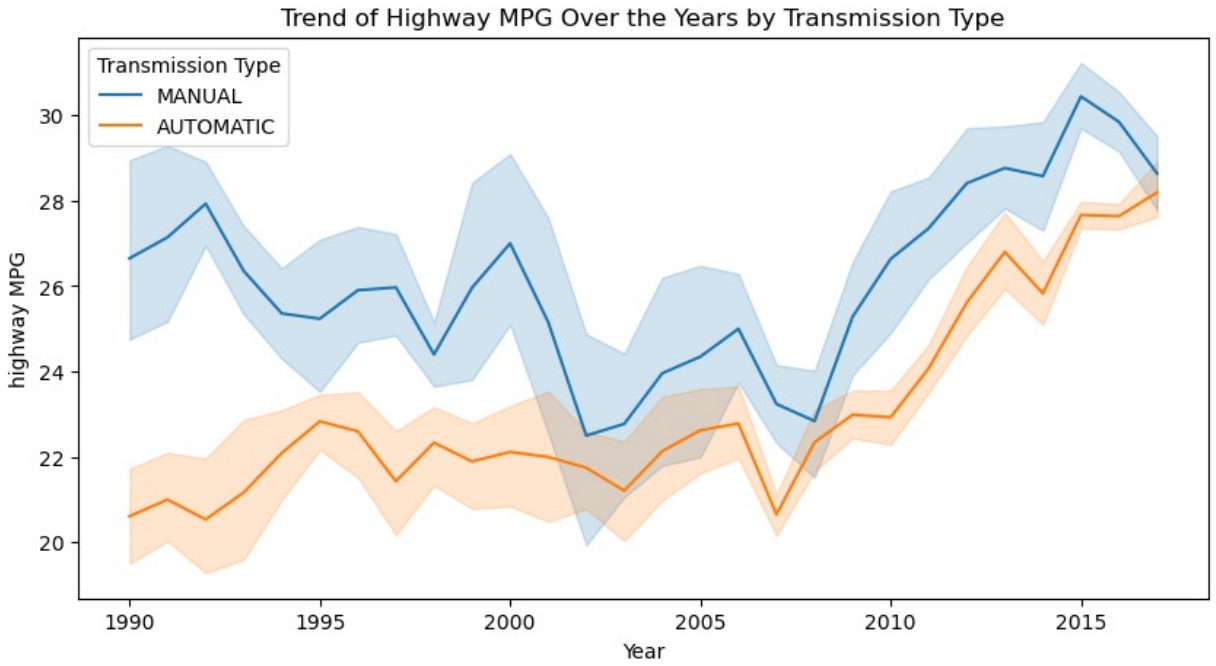
Manufacturer Suggested Retail Price Trend Analysis

- MSRP for manual cars fluctuated with a notable peak in 2005, suggesting a temporary increase in value or market demand.
- Automatic cars generally priced higher, with significant volatility around 2008, possibly linked to economic factors or tech advancements.
- Post-2008, both transmission types show parallel trends, indicating market-wide influences on car pricing.
- The overall trend implies industry response to economic conditions, with a shared pattern for both manual and automatic transmissions.



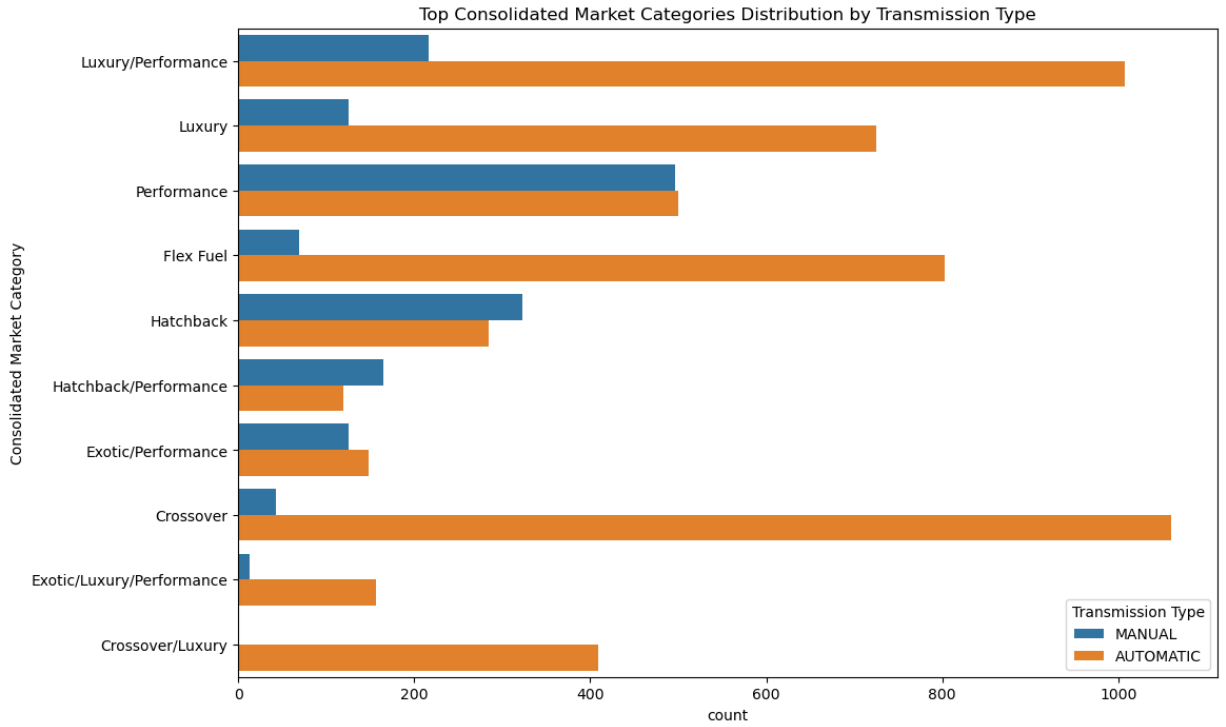
MPG Trend Analysis

- **Manual transmission** shows consistent improvement in highway MPG over time, indicating **advancements in efficiency.**
- Automatic vehicles exhibit a steeper increase in MPG **post-2000**, potentially reflecting **significant technological enhancements.**
- **Both transmission types reveal an overall positive trend** in fuel economy, with narrowing efficiency gaps in recent years.
- The converging MPG values since 2010 suggest **market shifts towards more fuel-efficient automatic transmissions.**



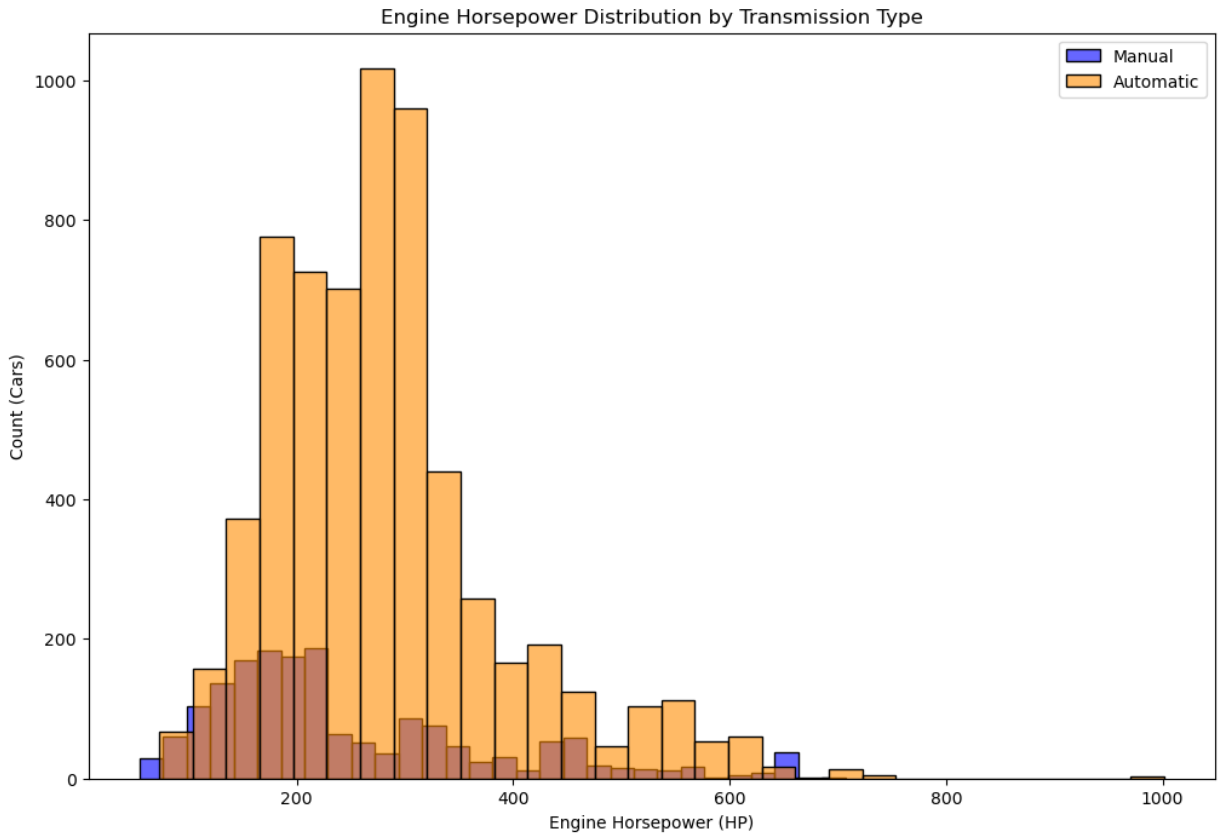
Market Category Influence

- Automatic transmissions dominate in **luxury/performance** categories, indicating a preference for **convenience in high-end vehicles.**
- Manual transmissions show a stronger presence in the **performance category**, **suggesting enthusiast-driven choices favoring control.**
- The crossover category leans towards automatics, reflecting the **general consumer trend for everyday driving comfort**.



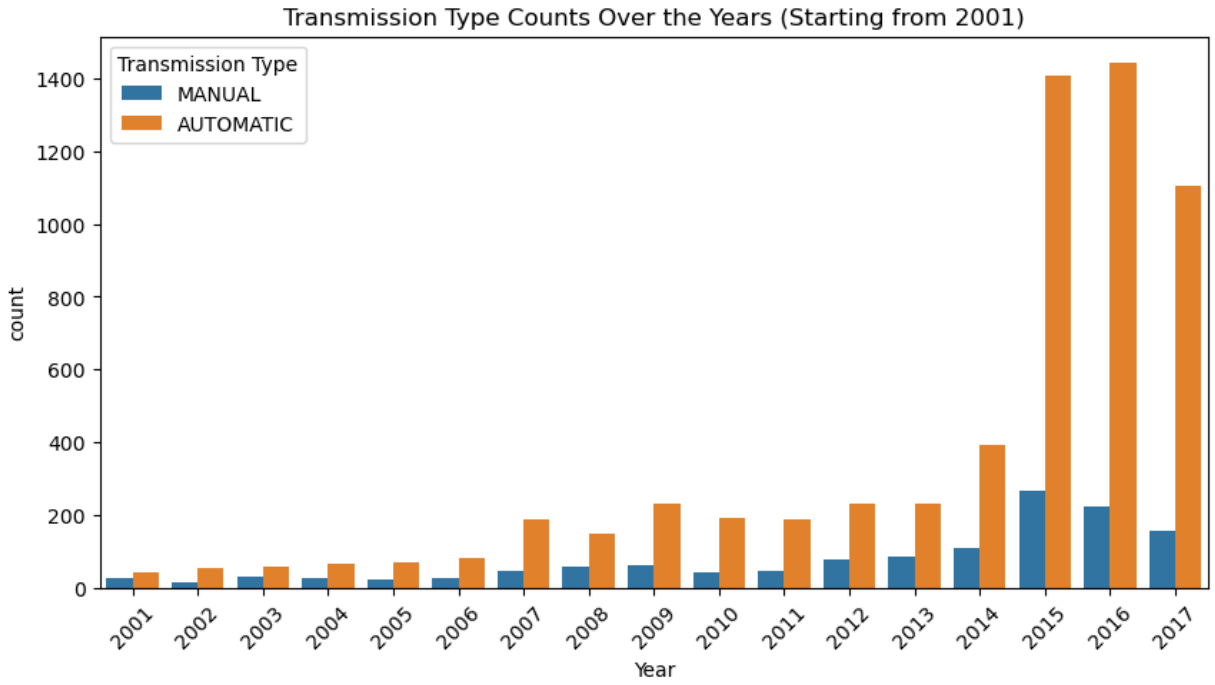
Engine Horsepower Analysis

- Majority of cars with manual transmission cluster under 200 HP, aligning with standard consumer models.
- Automatic transmissions are more prevalent across a wider range of engine horsepower, especially dominating above 400 HP.
- High horsepower extremes (>600 HP) are exclusively automatic, suggesting a market trend towards powerful, yet user-friendly vehicles.



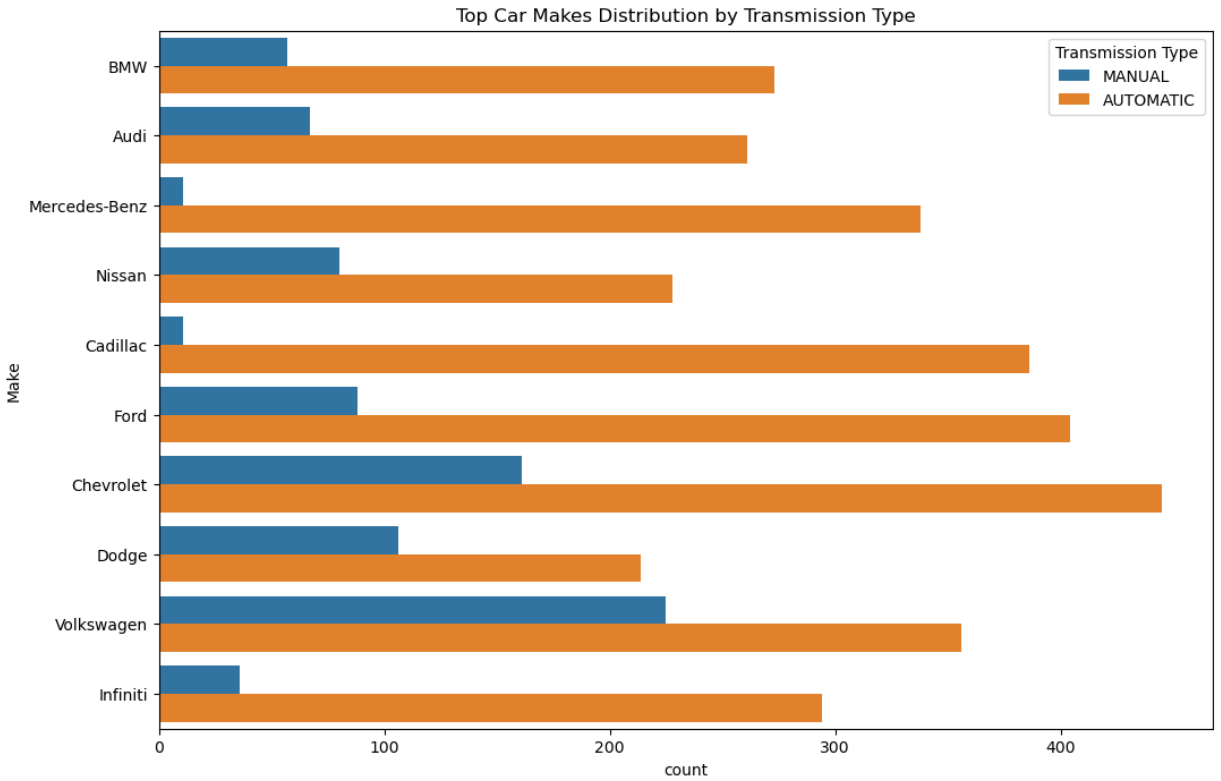
Yearly Distribution of Transmission Type

- Manual transmission counts have steadily decreased since 2001, reflecting a shift in consumer preference or manufacturing trends.
- Automatic transmissions have seen a marked increase, dominating the market particularly from 2013 onward.
- A significant rise in automatic vehicles post-2012 suggests innovations in automatic technology or changes in driving habits, like autonomous cars or robottic transmissions.
- The data indicates a strong market trend towards automatics in recent years, possibly due to their convenience and improved efficiency.



Popularity and Constructor Relationship

- **Luxury brands** like BMW, Audi, and Mercedes-Benz have a **balanced mix of manual and automatic**, reflecting diverse consumer preferences.
- **Mass-market brands** like Nissan, Ford, and Chevrolet show a **clear preference for automatic transmissions**, likely due to broader appeal.
- Overall, **automatic transmissions are more common across all contructors**, suggesting a shift in market demand towards this transmission type.



Conclusions

Transmission vs. MSRP: Manual's peak in 2005; Automatics generally higher-priced with volatility in 2008. Post-2008, trends align, reflecting market-wide influences.

Fuel Efficiency: Manual shows steady MPG improvements. Automatics see significant MPG gains post-2000, with efficiency gaps narrowing recently.

Market Category Influence: Automatics favored in luxury/performance; Manuals in performance for control. Crossovers lean automatic for comfort.

Engine Horsepower Trends: Manuals mostly <200 HP; Automatics span wider HP range, dominating >400 HP, indicating a shift towards powerful, user-friendly vehicles.

Implications: Trend towards automatics in high-end and performance sectors; Manufacturers adapting with advanced automatic technologies.

Methodology

- Dataset

"Car Features Dataset (1990-2017)." Data provided encompasses a comprehensive overview of car features including model, year, engine, and other properties along with MSRP. Dataset contains 11,915 rows across 16 columns.

- Python Libraries

Pandas
Matplotlib
Seaborn

- Software and Tools

Jupyter Notebook