

IMPACT OF VEHICLE CHARACTERISTICS IN COLLISIONS

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OBJECTIVE

The objective of this research is to analyze the impact of vehicle characteristics consisting of manufacturing age, make, and model on collision rates in New York City. We aim to identify patterns and correlations between different vehicle categories, their ages, and their involvement in traffic incidents.

METHODOLOGY

In this study, we analyzed the New York Police Department's Motor Vehicle Collisions dataset. We used Python libraries such as Pandas, matplotlib, folium, and Seaborn to perform descriptive statistics and create visualizations, including bar charts and scatter plots. This approach allowed us to identify patterns between vehicle types, ages, and their association with collisions.

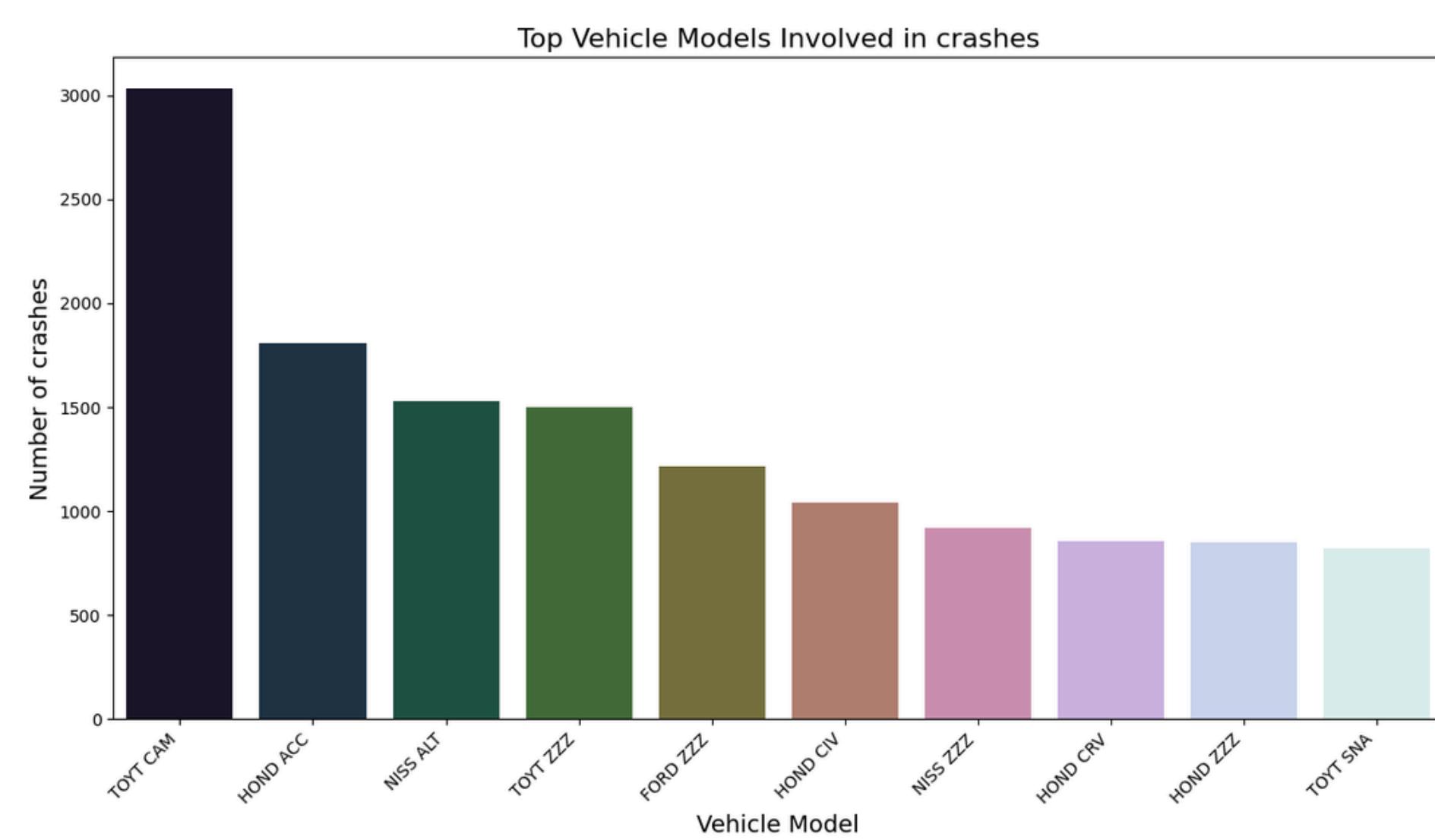


Figure 1. Vehicle Models in collisions

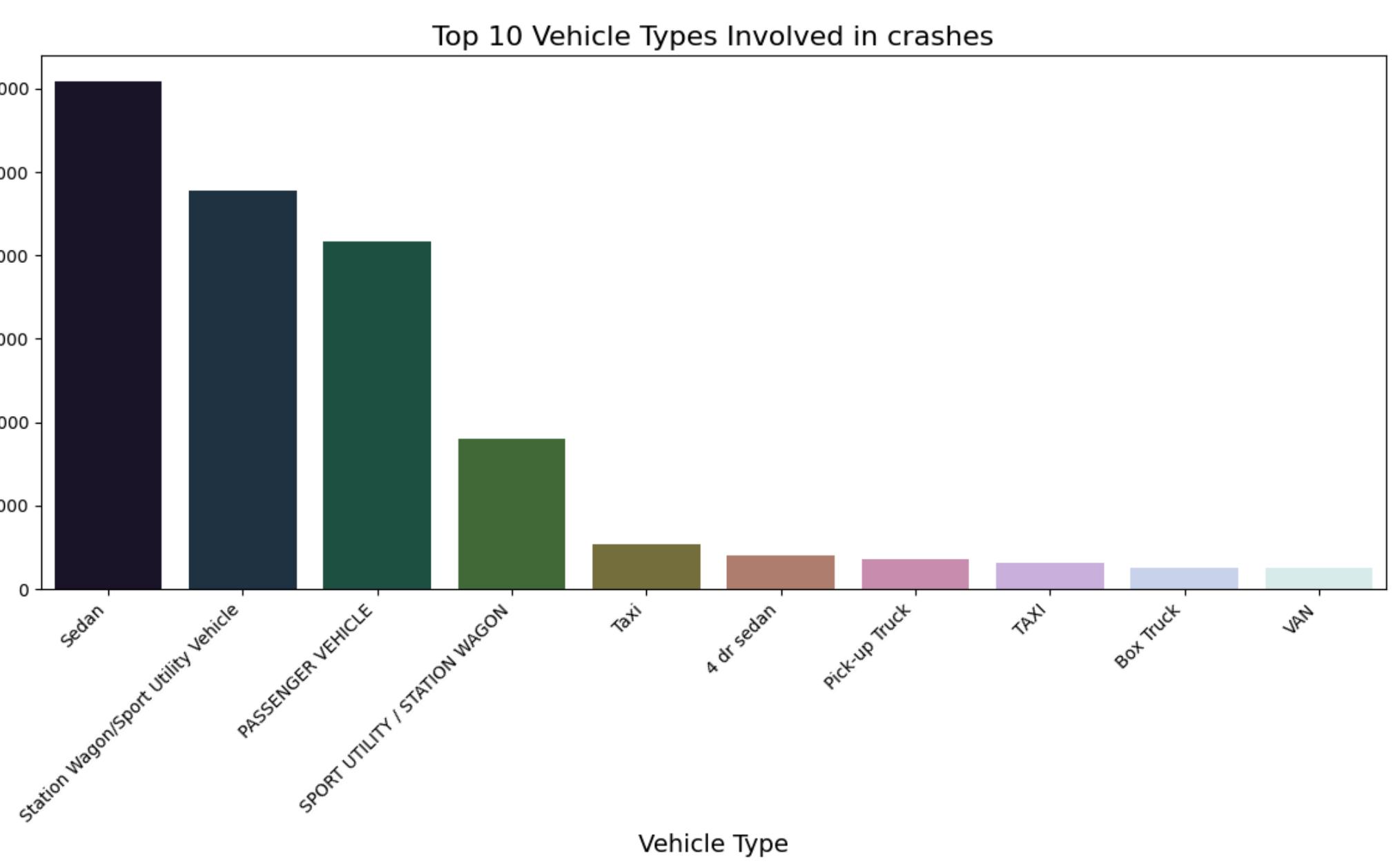


Figure 2. Vehicle Make in collisions

FINDINGS IN VEHICLE MODEL/MAKE

Our analysis shows that sedans and sports vehicles were in more crashes, with the Toyota Camry as the most frequently car model associated with collisions. This could be because of the high prevalence of sedans such as Toyota Camrys in NYC. Additionally, sports vehicles, designed for high performance and speed, may be more prone to crashes due to riskier driving behavior.

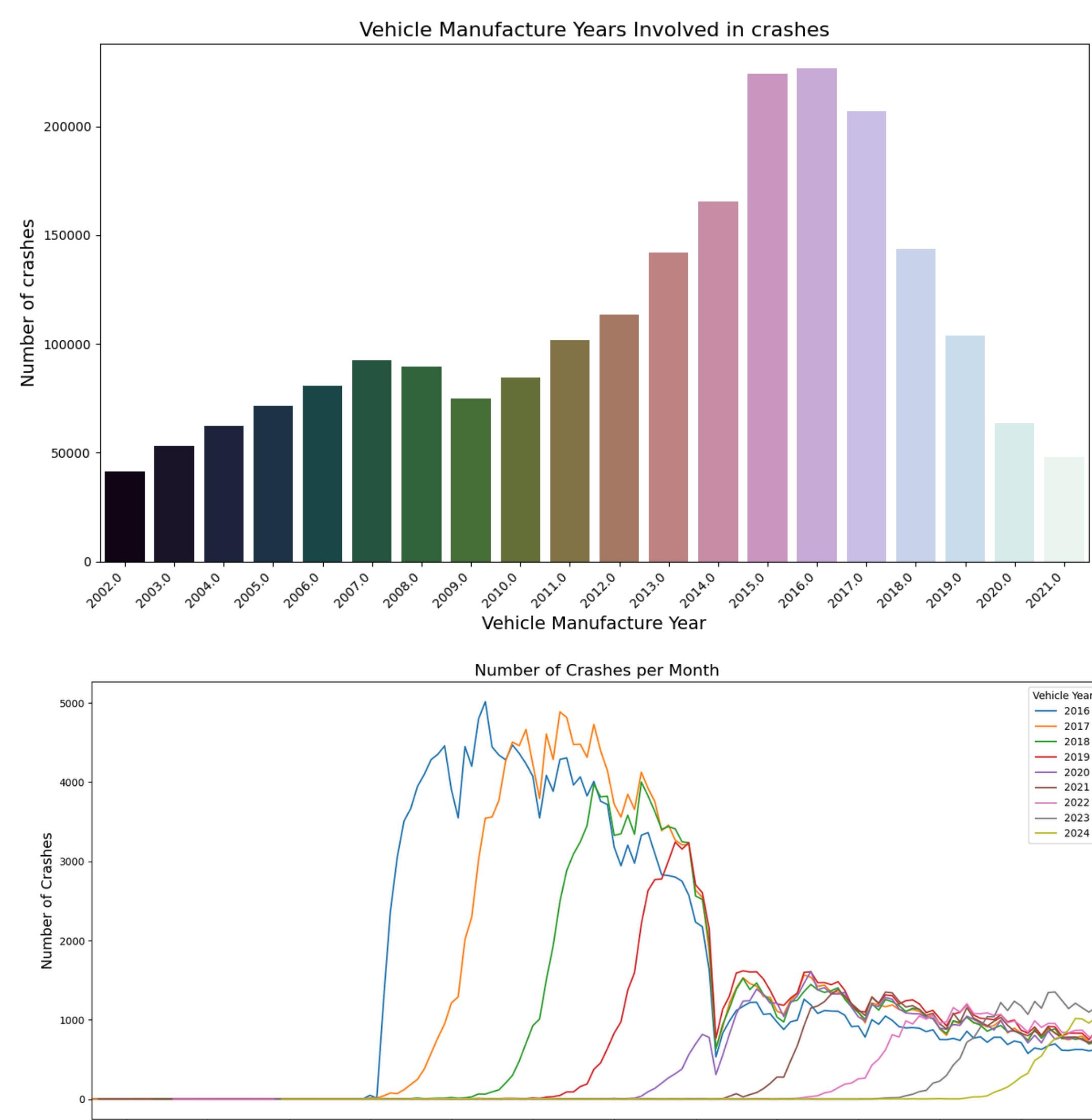


Figure 3. Vehicle Age in collisions

FINDINGS IN VEHICLE AGE

Our analysis revealed a decrease in collision rates during 2019, which may be attributed to the onset of the COVID-19 pandemic. The findings also indicate that newer vehicles were involved in a fewer number of crashes during their time of release, suggesting that newer vehicles, equipped with advanced safety features, may offer a safer driving experience.

FURTHER RESEARCH

The study's limitations include a lack of data on vehicle safety features and the cars that weren't involved in crashes. Future research should incorporate these factors to better understand collision causes. Addressing the link between vehicle characteristics and collisions is essential for improving urban road safety.

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