In Depth Analysis of the Relationship Between Accident Causes and Vehicle Passenger Count

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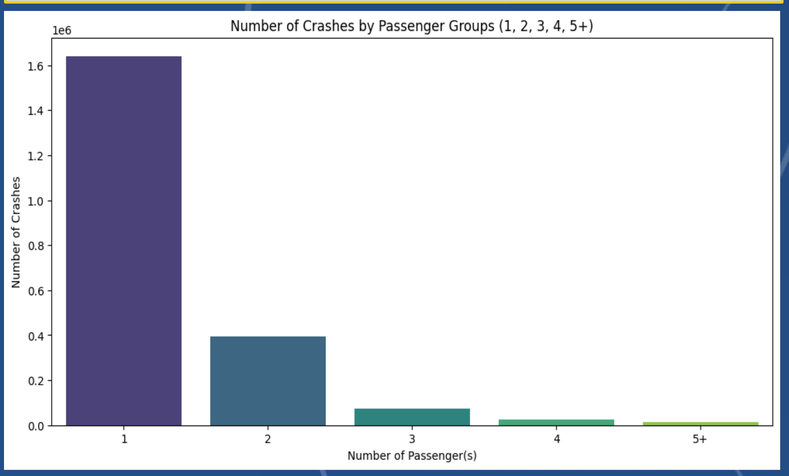
Study questions

This poster explores the relationship between the number of passengers in a vehicle and the cause of accidents they were involved in. Specifically, we examine how the number of passengers influences the cause of accidents and analyze changes in passenger numbers during accidents throughout the COVID-19 pandemic. The findings reveal intriguing and unexpected patterns.

Overview

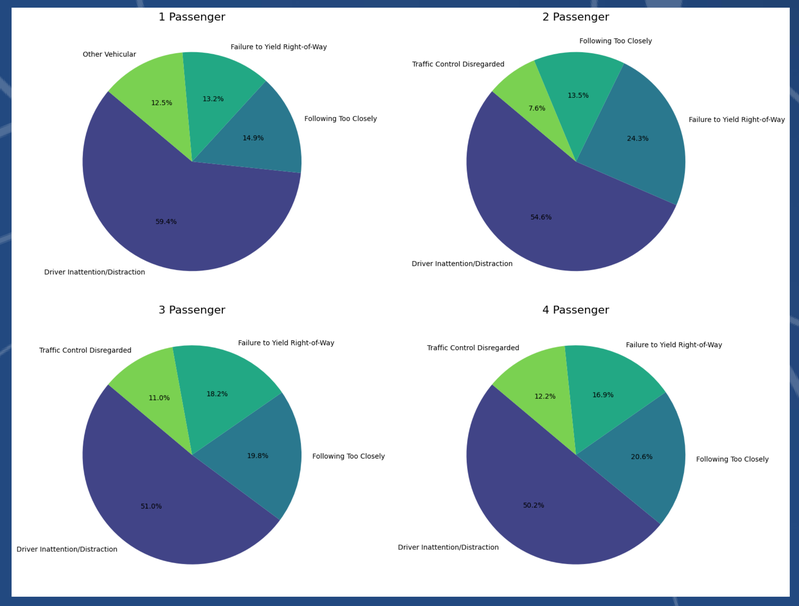
We began by cleaning the data and analyzing the total number of accidents based on the number of passengers in a vehicle.



As shown in the above figure, most accidents occur with single-passenger vehicles, which aligns with the fact that most individuals in the U.S. drive alone. Interestingly, we observed that having more passengers in a vehicle does not necessarily lead to more accidents, contrary to our initial assumption. In particular the figure reveals a general downward trend in the number of accidents.

Accident's Cause

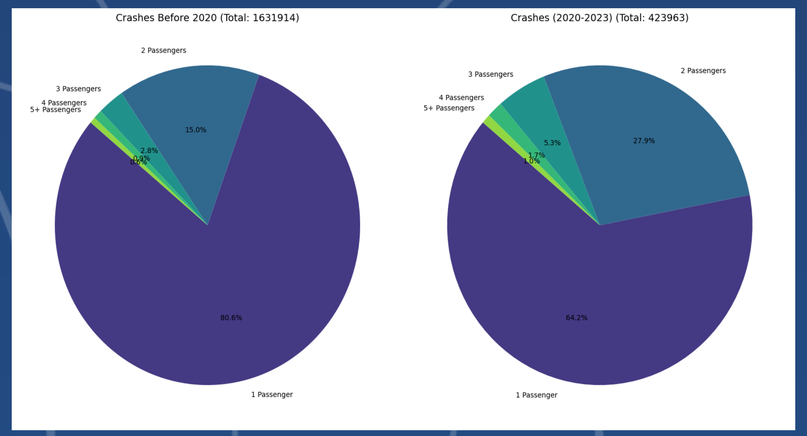
The previous unexpected finding leads us to further investigate how the presence of more passengers influences the causes of accidents. Illustrated in the graph below.



As shown in the above figure, the number of passengers does not significantly impact the cause of accidents. Across all categories of passenger numbers, "distraction" consistently remains the leading cause of accidents. This result is encouraging, as it suggests that drivers generally maintain focus on the road, even when traveling with larger groups of passengers. This positive finding highlights the seriousness with which drivers approach their responsibilities, regardless of vehicle occupancy.

Effect's of COVID-19

Next, we examined the effects of COVID-19 on the ratio of accidents based on the number of vehicle passengers. While it is well-documented that the total number of accidents decreased during the pandemic due to reduced driving activity, our goal was to explore whether the percentage of people involved in accidents per vehicle increased or decreased during this period. This analysis provides new insights into how the pandemic influenced vehicle occupancy and accident trends.



As shown in the figure above, the percentage of accidents involving two passengers increased significantly during the COVID-19 pandemic. This trend may be attributed to mendate quarantine, with people primarily traveling for emergencies and essential purposes, often accompanied by another individual. This can be concluded as we know that the increase in passenger number does not effect the accident's reason shown previously.

Reference: City of New York. (n.d.). Motor Vehicle Collisions - Crashes. Retrieved from https://data.cityofnewyork.us/Public-Safety/Motor-Vehicle-Collisions-Crashes/h9gi-nx95/about_data