Introduction

Montgomery County, MD
- 389 deaths.
- 48,655 crashes.
- 1 million+ violations in 12 years.

Every crash is preventable. Every life counts. Maryland's Vision Zero project aims to have ZERO deaths due to crashes by 2030.

Our analysis aims to identify key reasons leading to crashes & implement as well as optimize evidence-based methods for Zero Deaths.

Points of Interest

- Identify areas with high violation frequency
- Understand when (month, day, and time) violations occur the most
- Examine the relationship between driver negligence and accidents or damage
- Examine trends in the types of violations
- Understand whether certain racial or community groups are more likely to be stopped, searched, and arrested for traffic violations

Data Processing and Cleaning

Our dataset was obtained from the dataMontgomery website.

The traffic violations dataset had to be processed and cleaned to prepare it for analysis. To do this, the team took several actions such as:
- Identifying necessary approaches for processing the data
- Understanding the data types of each column
- Building assumptions based on research for handling missing data
- Deleting columns that were deemed as irrelevant to the analysis
- Conducting consistency checks

Accidents Caused by Driver's Negligence

→ Every 1 out of 3 accidents are caused by 1 of 6 irresponsible actions of drivers.

→ Recurring behavior among drivers that could be addressed by Traffic Calming.
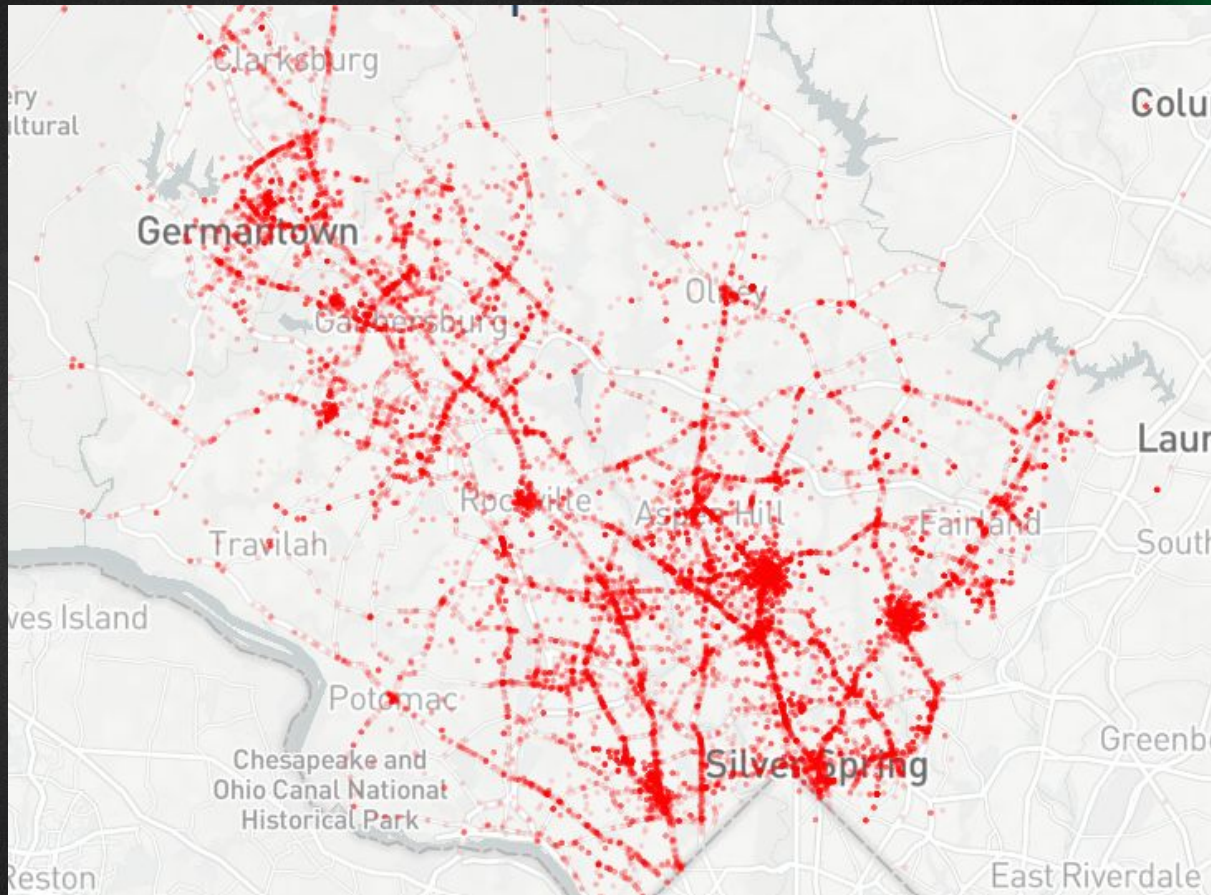

Driver Negligent Actions and Consequences
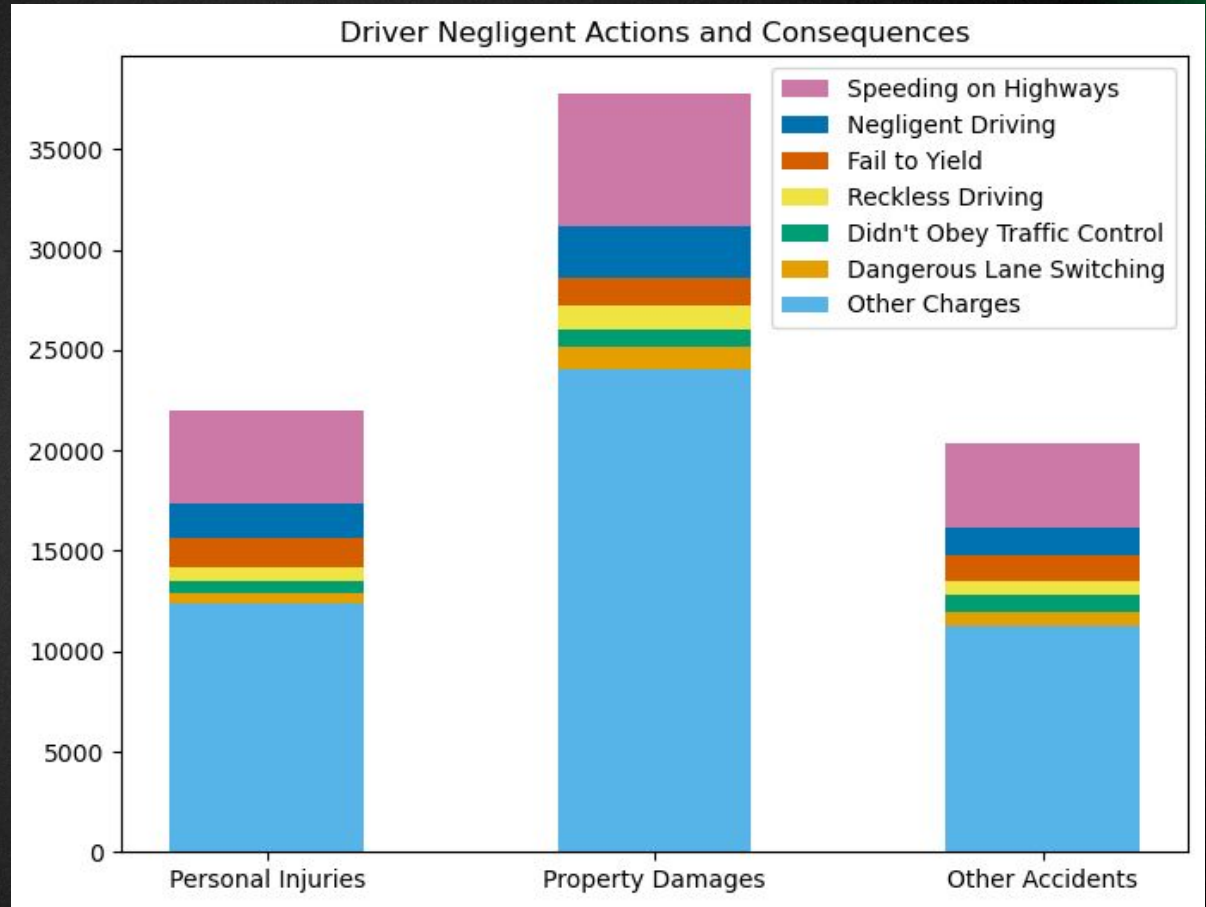
Accident Clusters in Montgomery County

→ Glenmont, White Oak, Bethesda, Silver Spring

→ Clusters present around intersections & main road junctions

→ Road design re-evaluated based on traffic flow

Accidents By Hour

→ Identification of accident peak hours

→ Rush hour, fatigue, ineffective road safety planning

→ Efficient resource allocation

→ Enhanced public transportation, traffic flow optimization, road maintenance & improvement

Circular Bar Plot of Accidents by Hour
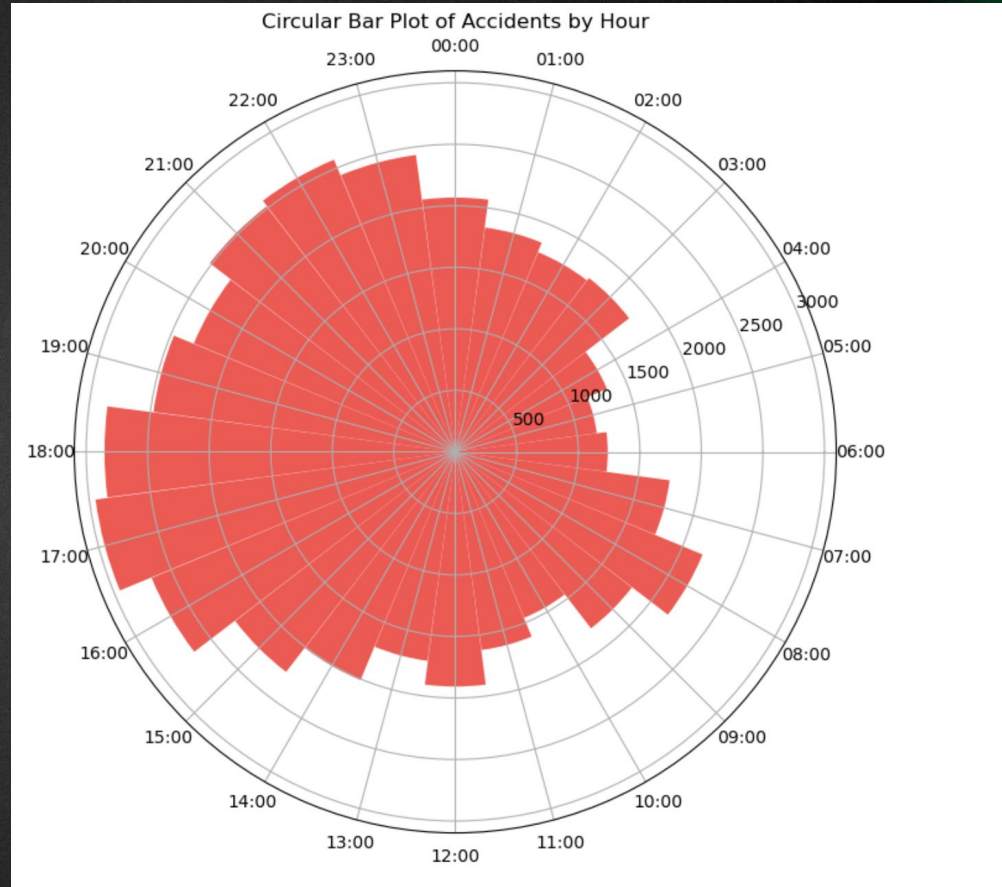
Recommendations

1. **Koper Curve Theory:** Visit hot spot locations for traffic violations on a random basis & patrol the area for 15-20 minutes. Potentially, reduce crashes by 22.56%.

2. **Traffic Calming (TC):**
   Level 1: using an educational strategy
   Level 2: implementation of traffic control devices. Reduced crashes by 14% in NYC.

3. **Increase Seat Belt Fines:** 95% of victims involved in accidents in Montgomery County, Maryland, were found to be without a seatbelt during impact.

4. Data-driven decisions for efficient resource allocation

5. Re-evaluating design of roads to encourage safer behaviour from drivers

6. Promote a transit-oriented community as opposed to heavy automobile usage

Conclusion

1. **Traffic and Return to Offices:** As we return to normal and offices call back employees, we anticipate increased traffic, leading to a rise in accidents and fatalities.

2. **Importance of Safety Measures:** It is imperative to implement measures to address driver negligence and enhance public safety.

3. **Key findings:**
   - Common misdemeanors that frequently contribute to accidents.
   - Identification of accident hot spots.
   - Peak times for accidents.
   - Recommendations for targeted prevention strategies.

4. **Toward Zero Deaths:** Utilizing these insights will take us a step closer to our goal of "Zero Deaths" on the roads.

Thank You

Traffic Violations in Montgomery County, MD