



Crash Analysis for Lake Saint Louis Police Department

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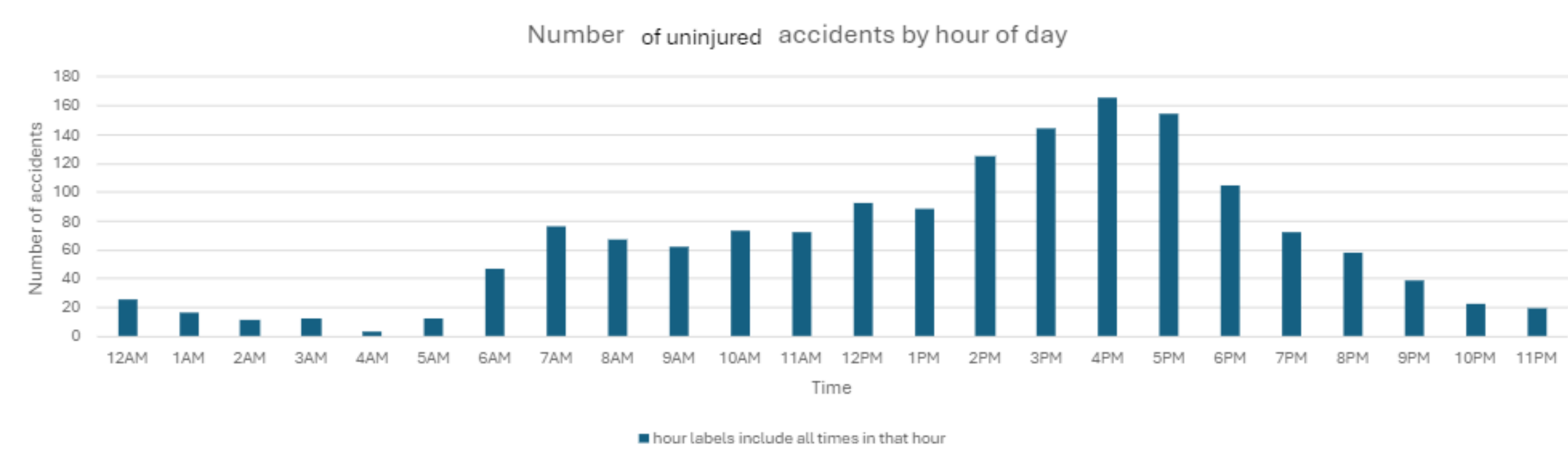
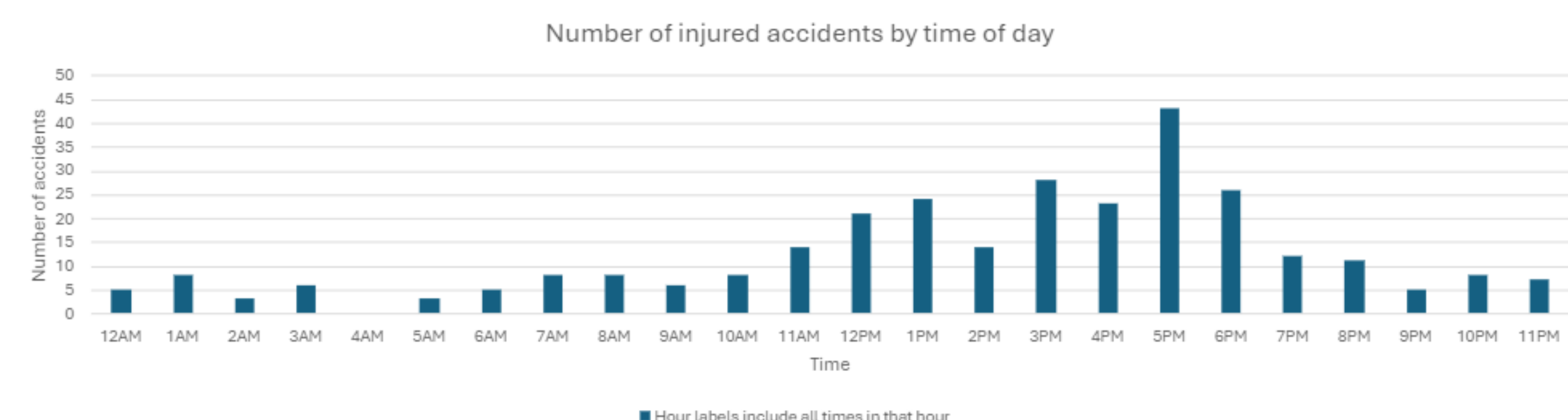
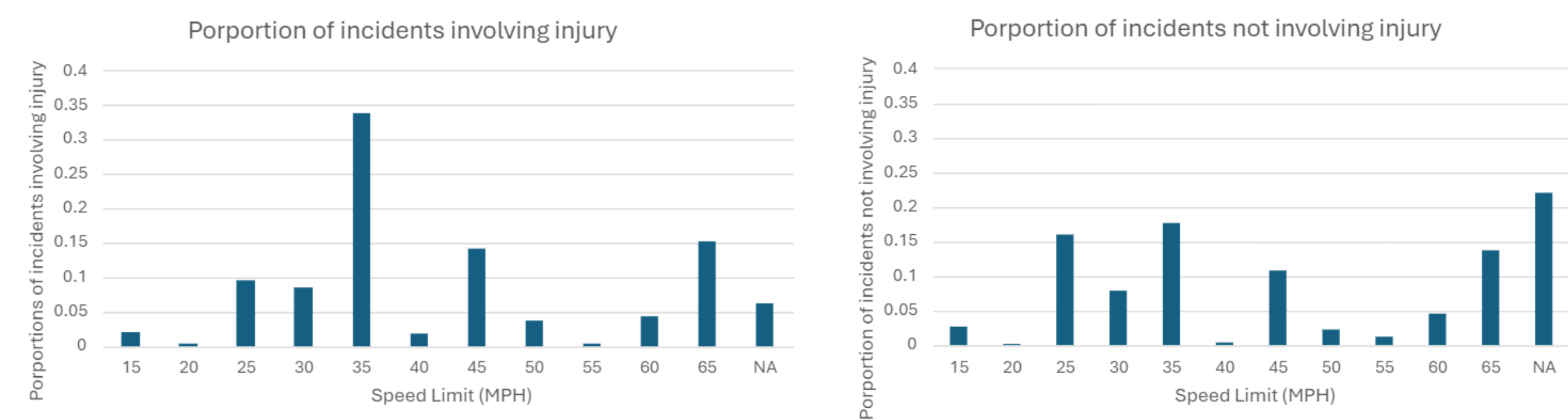


Abstract

Lake Saint Louis is a small city of just under 17,000 people in the same county as Lindenwood University. Originally a planned community, it is easily accessible by Interstate 64 and Interstate 70. It also contains two large lakes and shopping centers that attracts visitors to the area. As a result, there have been a number of traffic crashes in the area. The Police Department has requested that Lindenwood's PIC Math group review data from 2019-2023 to identify patterns. The group has reviewed the crash data at several locations and under multiple conditions and has uncovered some noticeable trends. The group also has insights that may result in changing driver behavior or provide an engineering solution that may reduce collisions.

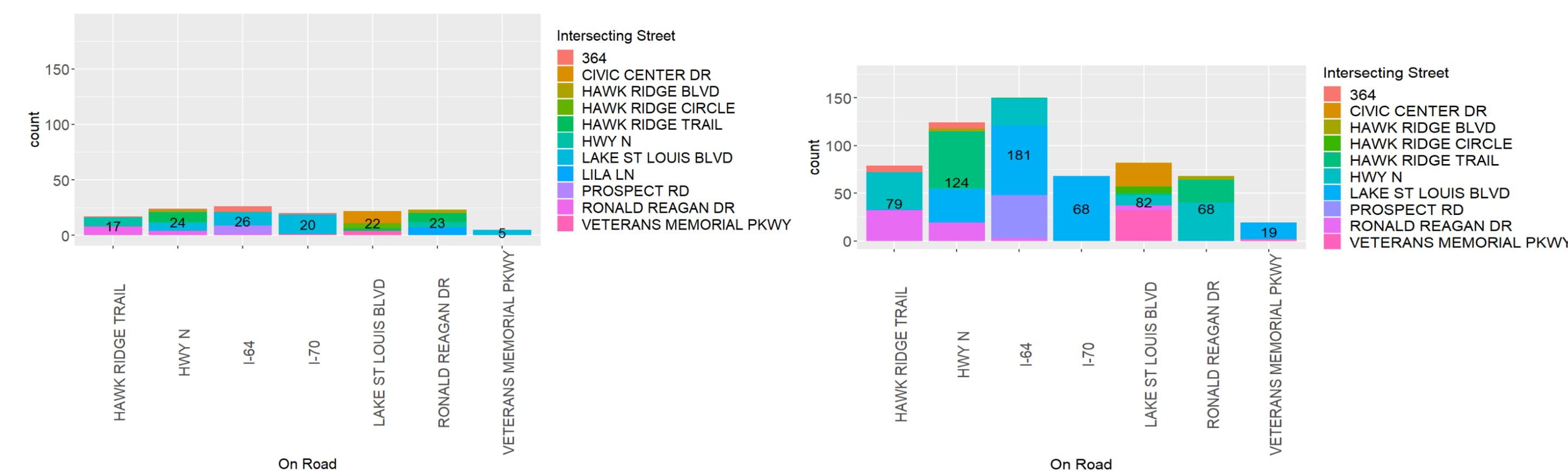
Data Sets

We split the data between crashes with injuries and crashes without injuries. This allows us to determine which factors affect each type of collision. There were various hypotheses about collisions, but after analyzing the data it is clear that evening rush hour time block and 35mph speed limits host most crashes.



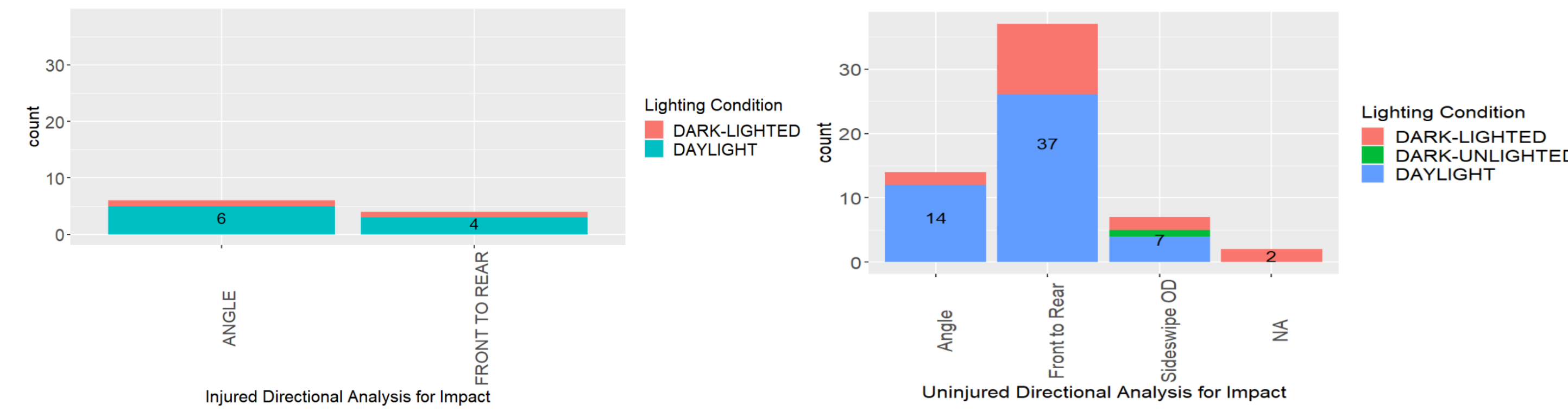
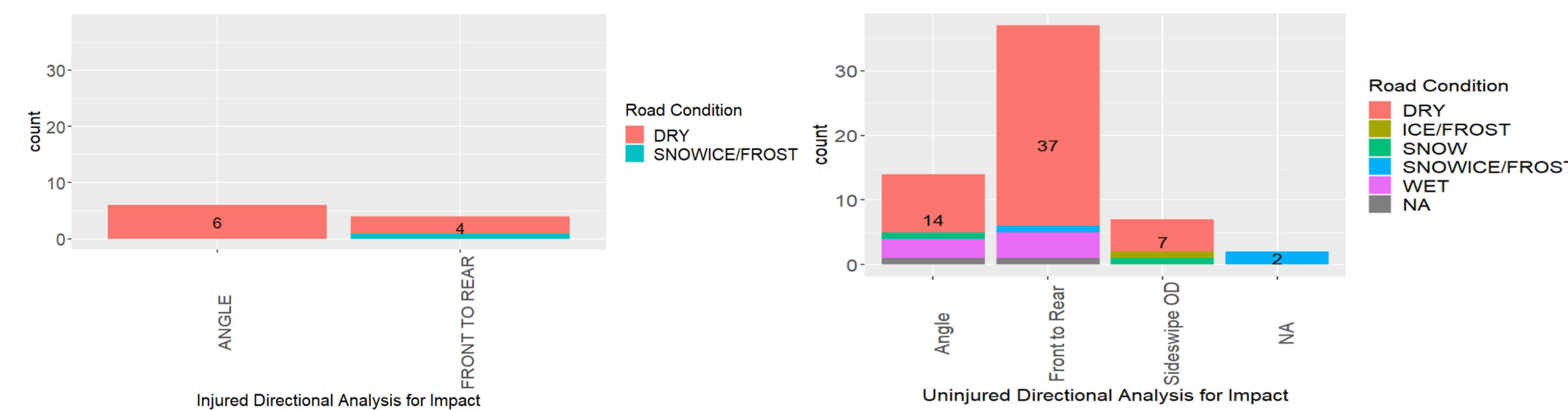
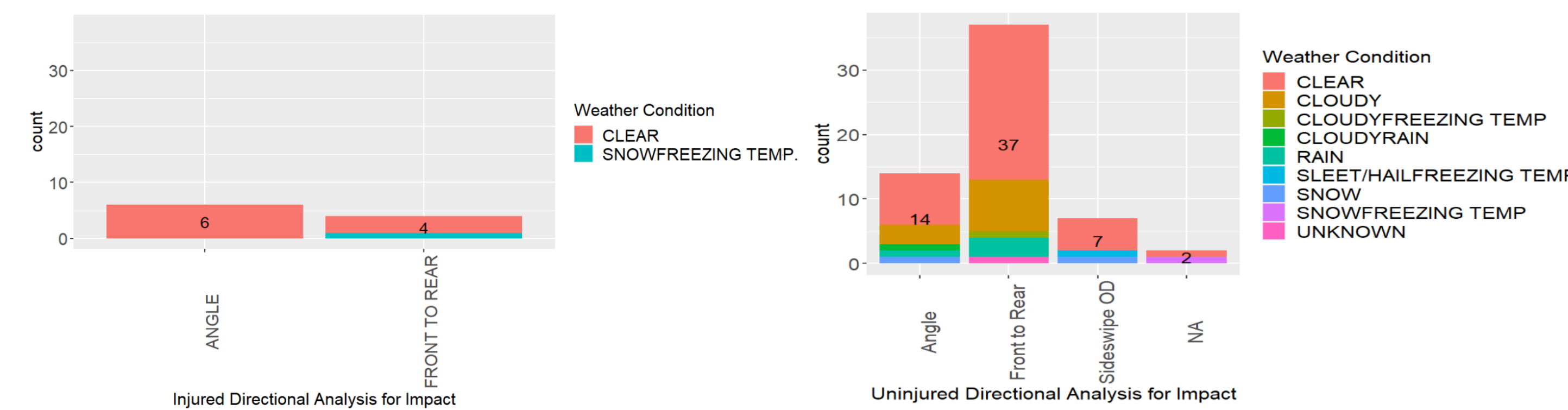
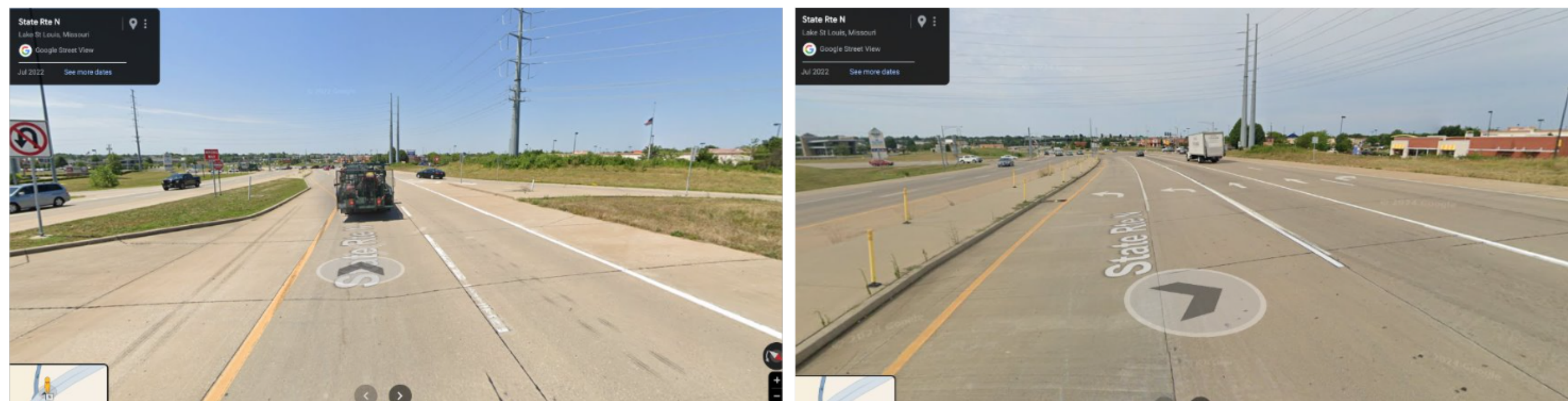
Significant Intersections

After splitting the data, we analyzed the data using a rigorous process to determine where a significant number of crashes occur. Each street containing 10 or more crashes was considered significant.



Hwy N and Hawk Ridge Trail

This is an intersection that happens right as Hwy 364 turns into Hwy N. It is maintained by MoDot. This transition of road names includes a change of 2 lanes to 5 lanes going varying directions. From the Saint Louis area to Lake Saint Louis, there are no traffic lights on Hwy 364 until this 4-way intersection which can be alarming to most drivers.

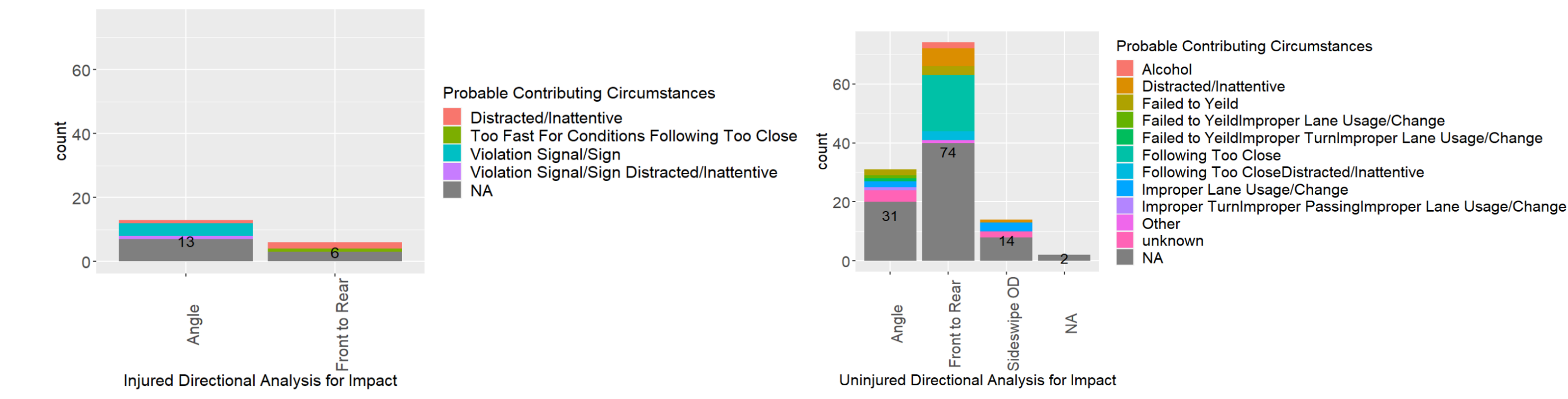
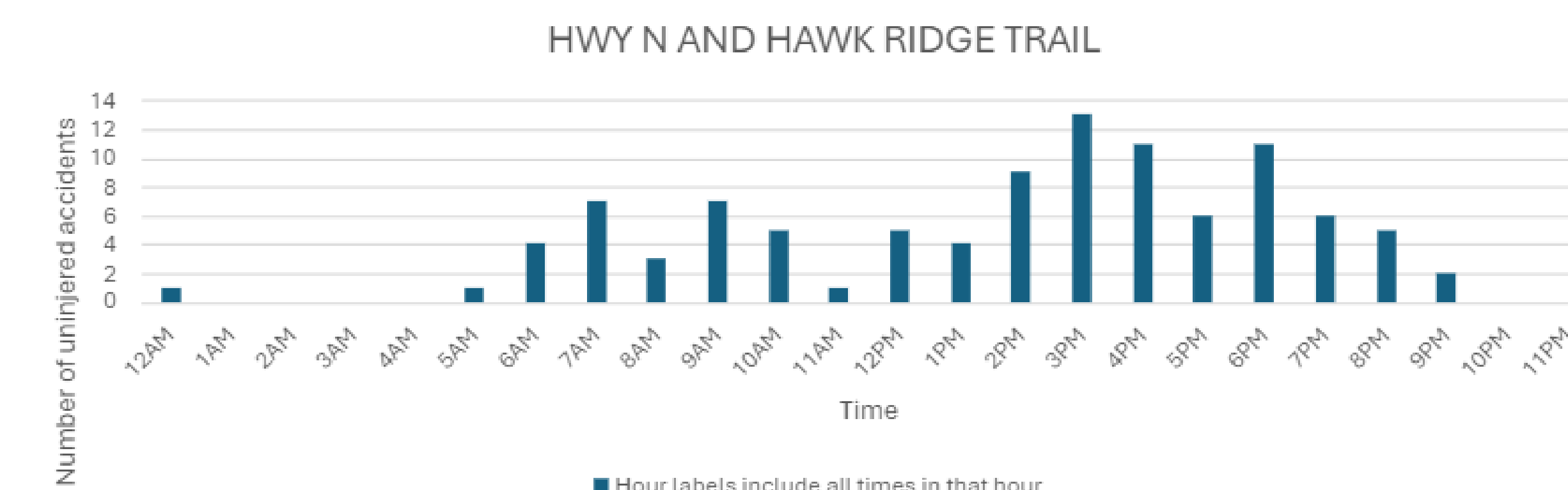
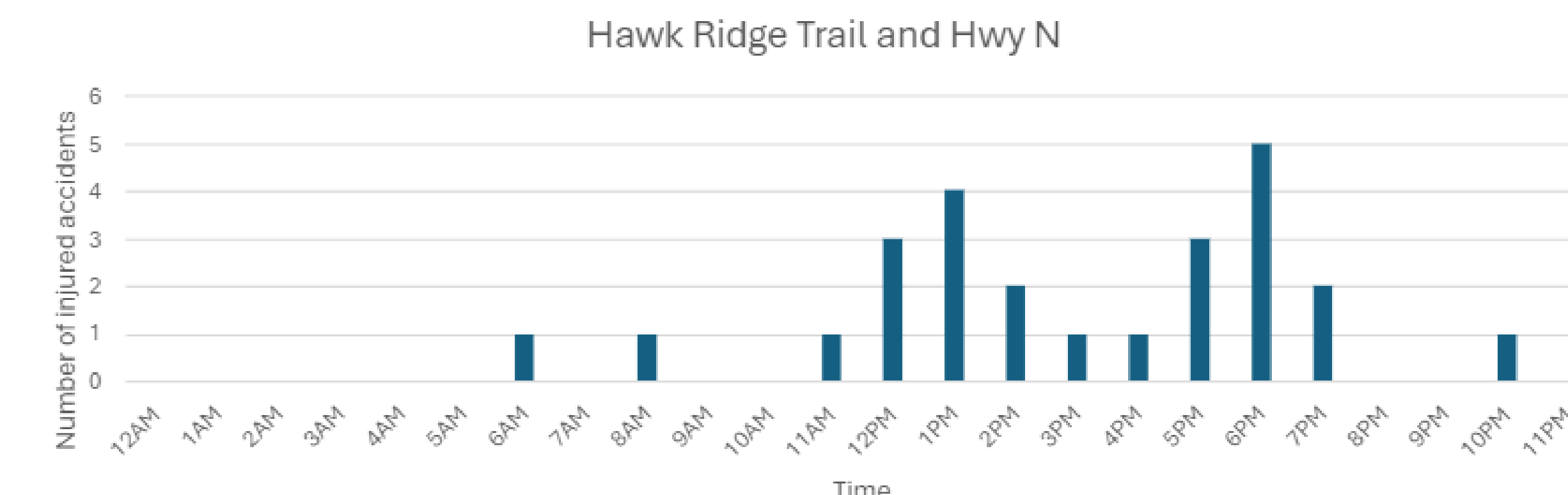


Analysis of Various Conditions

We had hypotheses that weather, road, and lighting conditions affected driver performance which led to our analysis. Unexpected trends were found. Most crashes at this intersection happen during daylight hours and on clear days. This is when the majority of cars are on the road, so it is more likely for collisions to occur.

Analysis of Various Conditions II

We analyzed the time of day collisions occurred at this intersection to see how it compared to the analysis of all the crashes. Officers are also encouraged to fill out a section on the crash report to determine probable causes for the crash. We recognized a need for change at this intersection.



Conclusions

It is clear that the time of day follows the trends seen in results for all collisions; however, the officers mostly report that following too close and improper lane usage are the probable causes for collisions. Thus, we recognized a need for change at this intersection. Additional signage could be added to alert drivers of the stoplight and lane direction.



Related/Future Projects

- Conduct further analysis on additional intersections
- Assess impact to reduce damage and injuries
- Determine correlation between Probable Cause of "Failed to Yield" with number of injuries
- Determine which government agency maintains each road/intersection and offer further recommendations.