



Northwestern
University

COLLISION ANALYSIS ON HOLIDAY'S

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COLLISION FREQUENCY AND SEVERITY MAPPED AND VISUALIZED FOR EVERY MAJOR US HOLIDAY

INTRODUCTION

What we are looking to answer is if there should be a time when the city should be more alert to vehicle collisions. I specifically picked US holidays as those days see the highest influx of travelers in and out of NY.

Collision Analysis: Understanding the types of collisions, and frequency of at least 1 car.

Seasonal behavior: Check holiday's within the year to see frequency of collisions to see if patrols/shifts need to be increased or decreased.

Visualization: Showcase data graphically so can pinpoint areas of interest via a heat map and markers.

Recommendation: Bring forth a recommendation to the DOT of NY based off of data findings.

METHODOLOGY

Exploratory Data Analysis:

- Analyze frequency/severity of collisions through data grouping
- Time series analysis and decomposition of data to explore trends/seasonality/cyclical nature of the collision data
- Mark key US holidays on decomposition for deeper analysis.

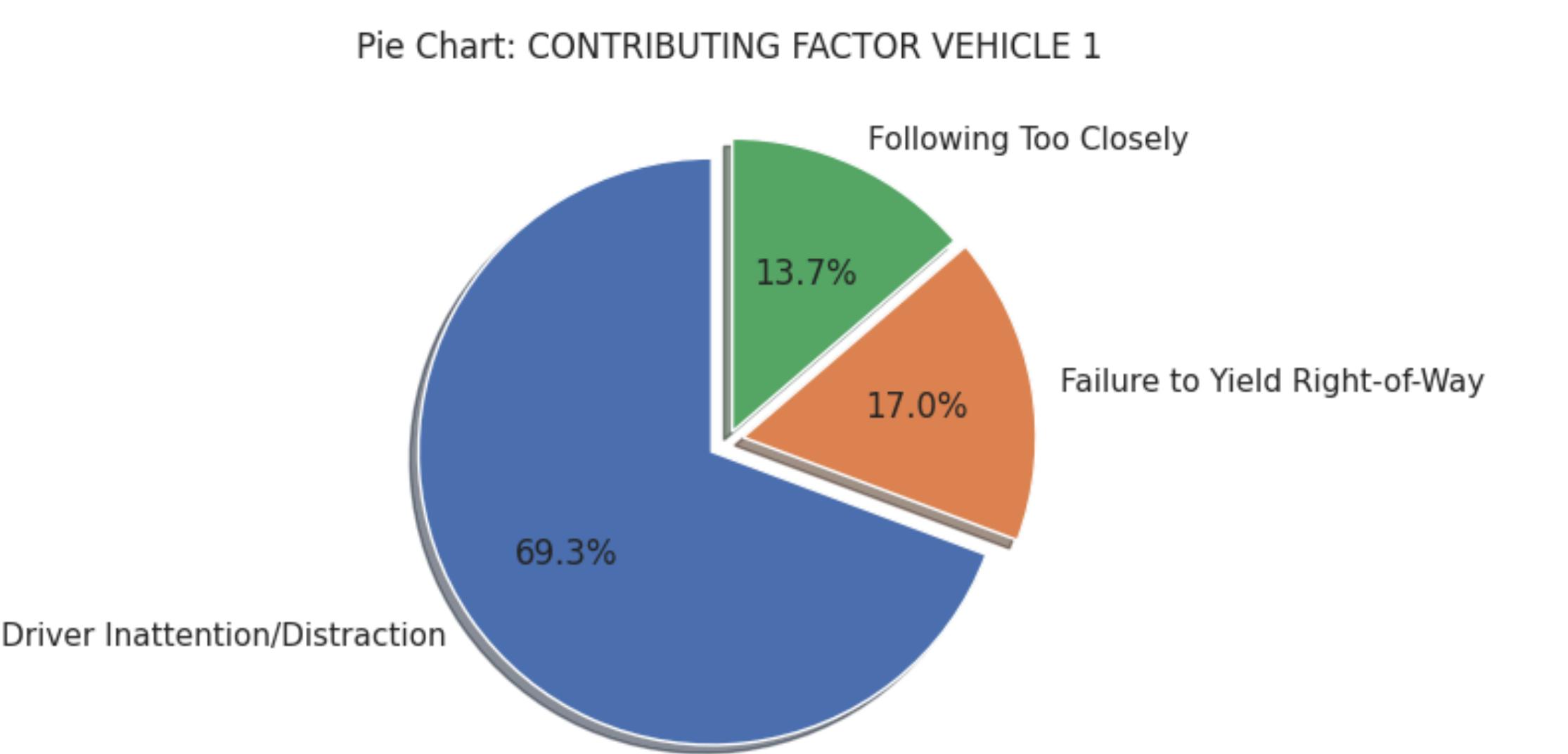
Geospatial Visualization:

- Heatmapping/marketing areas of interest during US Holidays

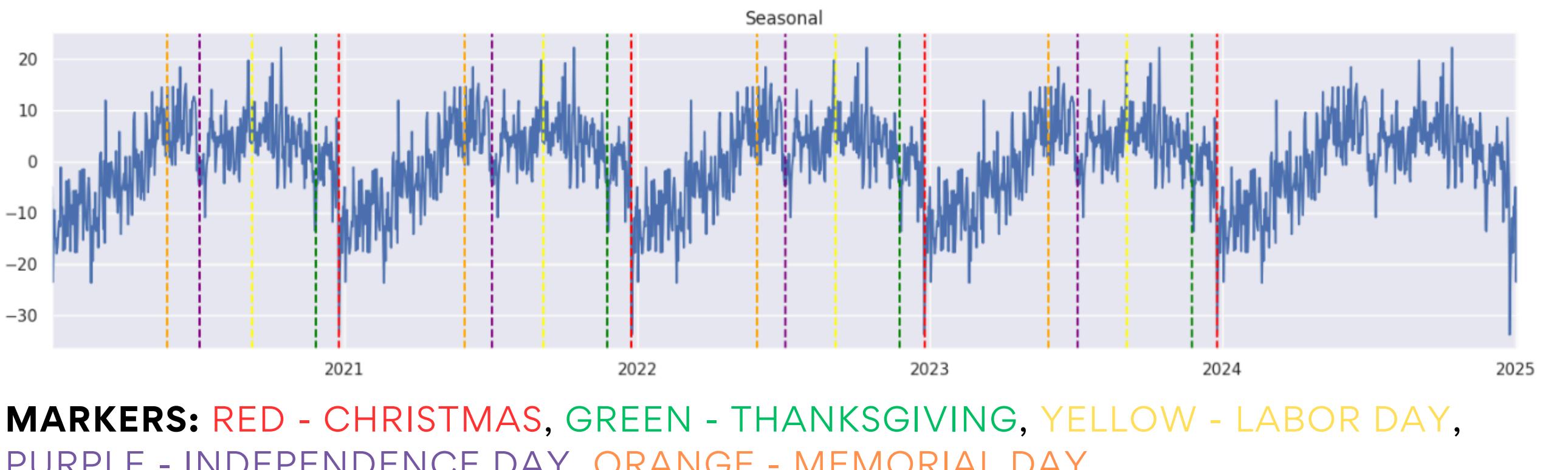
ANALYSIS

Holiday's do seem to factor in collisions around NY as there is a small spike before the holiday and then a drop. These collisions also look to be mostly in Brooklyn rather than Manhattan.

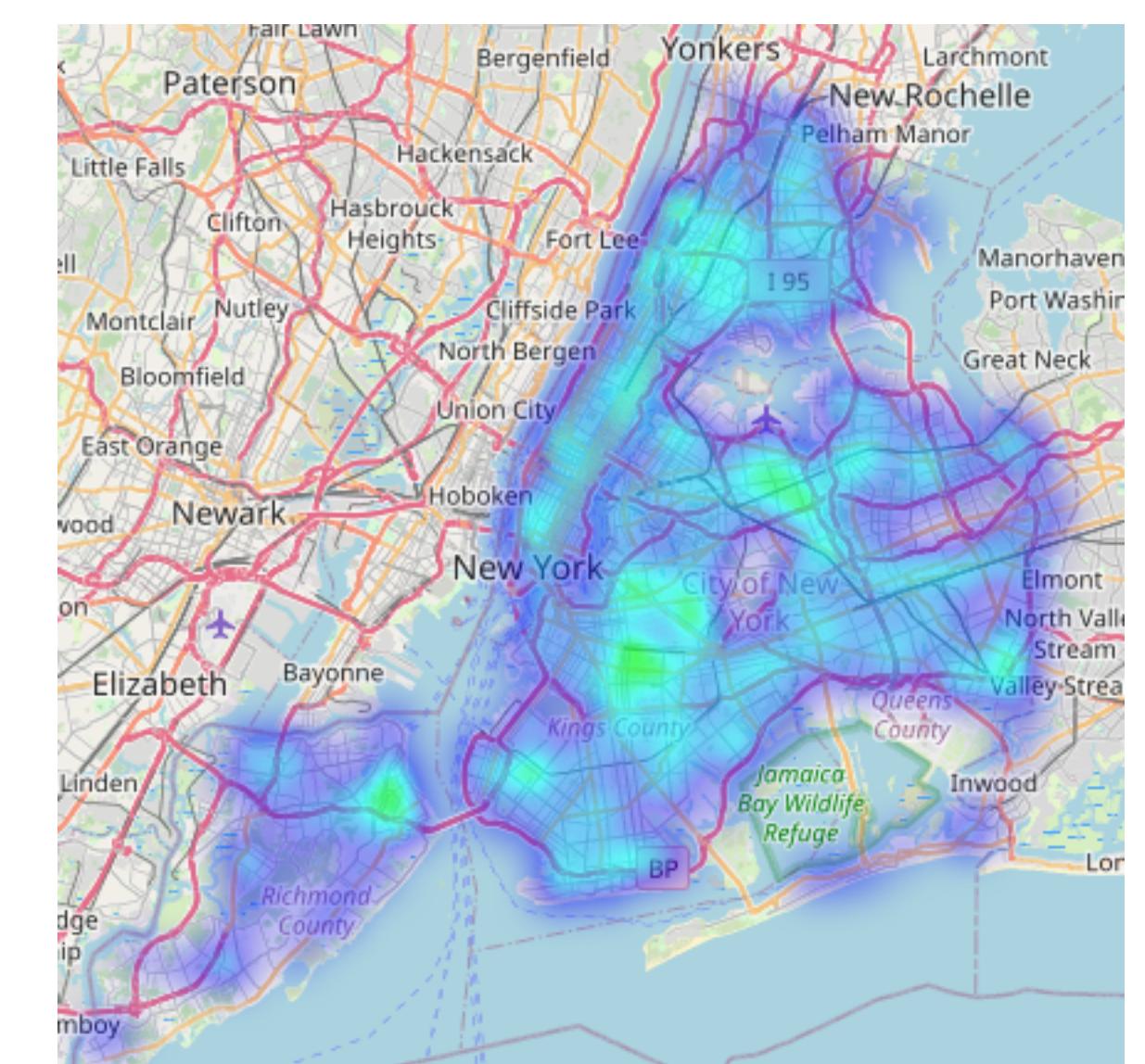
Main Collision Factors



Seasonality of most common collision factor



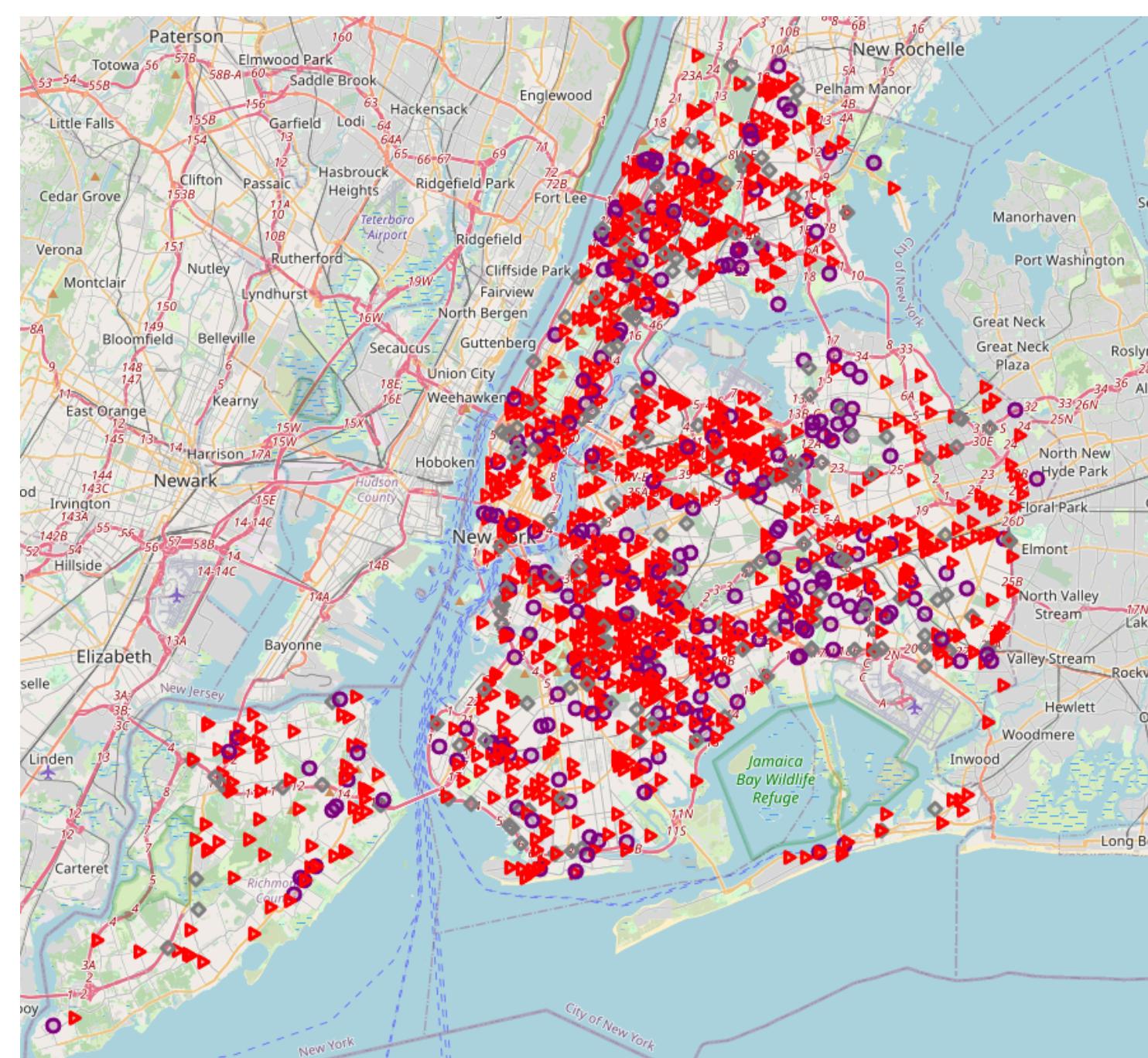
Heat map of collisions on US holidays



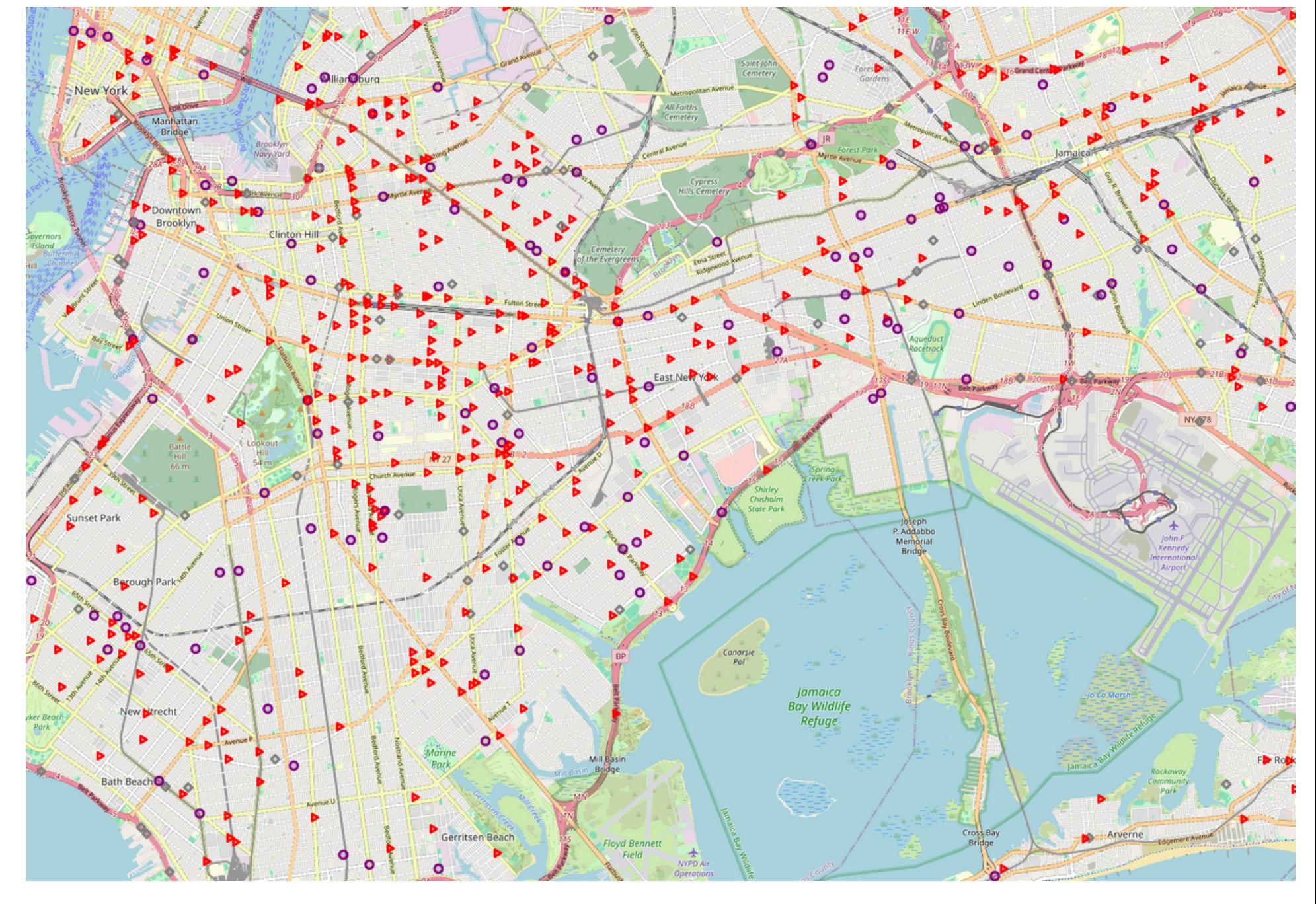
REFERENCES:

- TRAFFIC DATA: [HTTPS://DATA.CITYOFNEWYORK.US/PUBLIC-SAFETY/MOTOR-VEHICLE-COLLISIONS-CRASHES/H9G1-1NX9/ABOUT_DATA](https://data.cityofnewyork.us/Public-Safety/Motor-Vehicle-Collisions-Crashes/H9G1-1NX9/ABOUT_DATA)
- HOLIDAY DATA: WWW.CALENDARPEDIA.COM
- BUSIEST US HOLIDAYS: [HTTPS://WWW.BOOKING.COM/GUIDES/ARTICLE/FLIGHTS/WHICH-TIMES-OF-YEAR-ARE-THE-BUSIEST-FOR-AIR-TRAVEL-IN-THE-US.HTML](https://WWW.BOOKING.COM/GUIDES/ARTICLE/FLIGHTS/WHICH-TIMES-OF-YEAR-ARE-THE-BUSIEST-FOR-AIR-TRAVEL-IN-THE-US.HTML)

MAP MARKERS OF COLLISIONS ON US HOLIDAYS



Map of whole NY city



Brooklyn collision map analysis

KEY FINDINGS

We can see collisions do have a strong seasonal trend. We can see collisions rise throughout the beginning of the year peaking around late summer to fall, and then slowly start to drop to new years. When looking closely at the markers for holidays we can see a sharp rise in road collisions before the holiday followed by a fall. We can also see in areas such as Brooklyn where public transportation is less accessible or is a pass through area collisions are higher.

CONCLUSION AND KEY RECOMMENDATIONS

From our findings we can see that traffic does follow a trend when US holidays are present and people have more time to travel. I believe during these times the DOT can advise the traffic divisions of when extra staffing might be needed to deal with increased incidents and when staffing can be lighter. This can benefit both the public by adding more road assistance and save the city money by adjusting the needed civil servants on duty or issuing more warranted tickets which therefore should lower the traffic accidents.

ACKNOWLEDGEMENT:

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