

## **New Carrollton Data Dashboard**

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## **Abstract**

The City of New Carrollton is a town located in Prince George's County, Maryland. Founded in 1953, this town has over 13,000 residents which cover a variety of different demographics. We were tasked with creating a data dashboard using police department data. With this dashboard, the city wants to be more transparent with the community about the data they have. The client's objectives are to have a dashboard that is cohesive and easy to access, has data from the police department in New Carrollton, has graphics and other images to show trends in the data, is easy to update after the semester by someone who is not as experienced with coding, and is accessible to the people of New Carrollton and meets ADA compliances.

Our main contact, Andrew Facey, was responsible for our tasking. Our secondary contact was the Mayor of New Carrollton, Katrina Dodro. Early in the project, we met and spoke weekly with Mr. Facey about the project and what we needed to do. As the project progressed, we moved from weekly meetings to only scheduling the meetings as needed. Originally, the group was supposed to be getting data from other departments too, but due to delays in receiving this data, we just focused on the data received from the police department. The overall goal of the project stayed the same, which was to build a dashboard. We just had to change our plan to work with less data. With this given information, we were able to create an effective dashboard that will aim to improve the city's transparency.

## **Methods**

The initial dataset that we received had substantial data hygiene challenges, thus to meet the requirements of our project, it needed to be thoroughly cleaned and organized. Our group started a detailed procedure that included standardizing data fields, finding and eliminating duplicate entries, and fixing formatting errors in the data. In order to guarantee the precision and dependability of our analysis and visualizations, we needed to tackle these obstacles. The team understood that adding latitude and longitude information for each location in our dataset would improve its

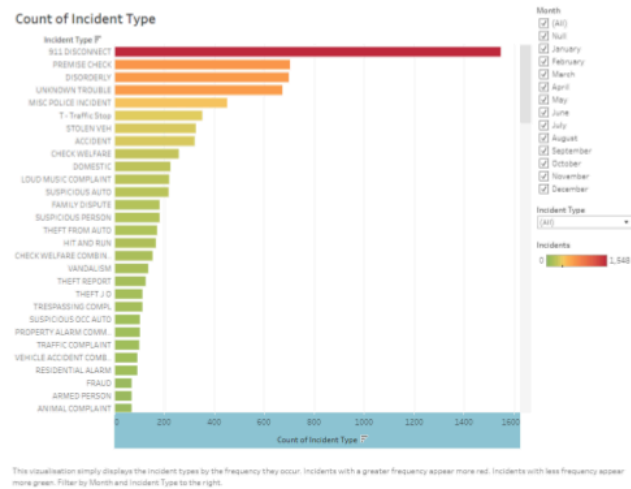
analytical depth and make it easier to create a comprehensive heat map. This required using an API to geocode addresses, which was lengthy and time-consuming. By using this method, we were able to consistently convert textual addresses into geographic coordinates, which allowed us to precisely map data points on a map and draw conclusions about geographic developments. This dataset will be an essential tool for carrying out in-depth analysis that will help the citizens, the city's police department, and the City of New Carrollton as a whole.

Furthermore, our team used Tableau to create several visualizations and an effective Data Dashboard after obtaining the cleaned and geocoded data. We carefully transformed the cleaned data into aesthetically appealing displays that may persuade our client with important information. Each visualization was carefully created to draw attention to important correlations, trends, and patterns in the data, empowering our client to take action and make informed decisions. Even with our greatest efforts, we were unable to connect the data dashboard because of compatibility problems between Tableau Desktop and Tableau Public. This unforeseen challenge required extensive troubleshooting and modifications to guarantee smooth platform integration and performance. We overcame these obstacles by referring to different resources, persistence, and teamwork, which allowed us to go on with the creation and implementation of our dashboard and visualizations.

The team carefully outlined the required actions and procedures in a detailed user manual since we understood the value of shared expertise, sustainability, and it being a required deliverable. With its comprehensive instructions on data cleaning methods, visualization generation processes, and dashboard navigation, this document is a great help to users. We hope that by providing this user manual to the client, they will be more equipped to utilize the project outcomes and continue to gain insights for an extended duration.

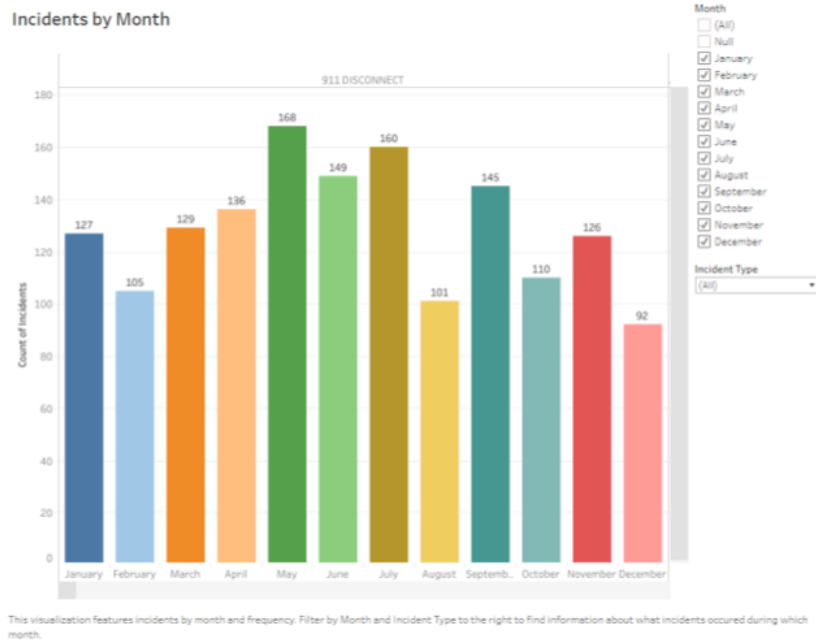
## Deliverables

# Visualizations



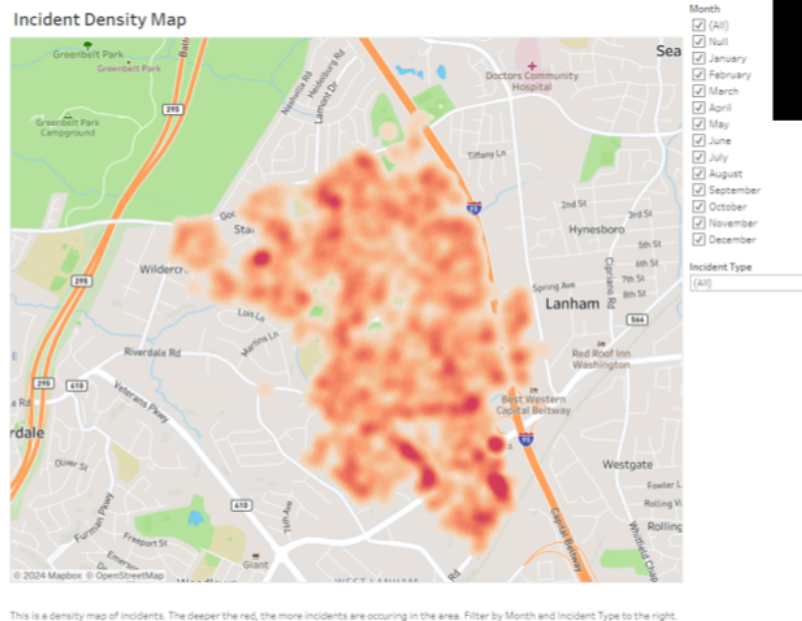
*Figure 1. Incident Bar Graph*

A bar graph showing the total number of crimes for each month. Shows general counts rather than time trends. Provides data usability and enhances data insight by providing an easy to read depiction of data.



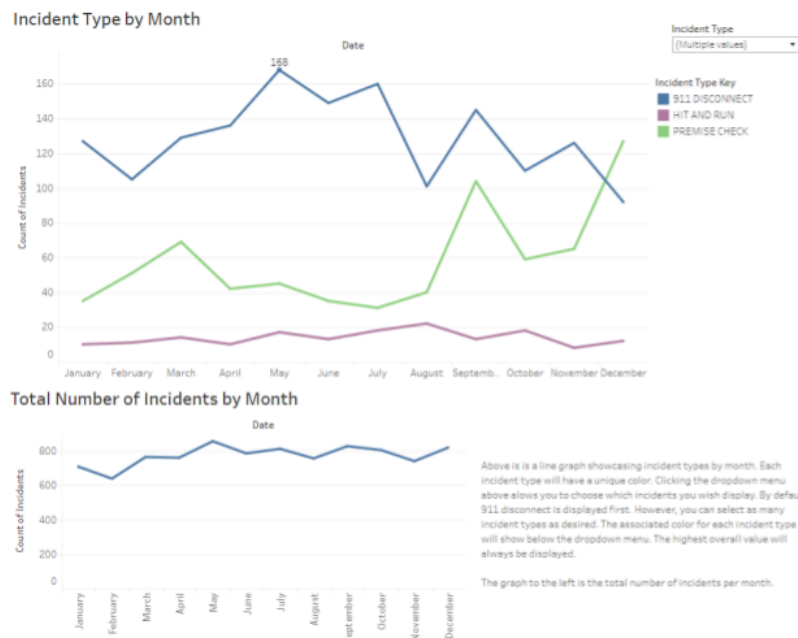
*Figure 2. Incident Bar Graph By Month*

A bar graph showing trends over time. Provides transparency and enhances data readability for the City of New Carrollton and their stakeholders. Enhances data insights by providing an easy to read depiction of data.



*Figure 3. Incident Density Map*

A geospatial map showing density of crime(s) and month(s) selected in the City of New Carrollton. The deeper the red, the higher the concentration of crimes happening in that area. Provides an alternative qualitative representation of data that communicates a message of magnitude for the City of New Carrollton and their stakeholders.



*Figure 4. Incident Line Graphs*

Line graphs that show trends over time. The top graph shows trends for selected crimes. A key element to enhancing user experience is the maximum number of reports depicted as a dot and the associated value. The bottom graph shows general trends for incident reporting throughout the whole year. Enhances data insight by providing an easy to read depiction of data.

## **Recommendations**

There is a significant amount of work that can be done to extend, complement and better this project. Some of this work can be completed in the future as capstone projects.

1. Clean the Calls for Service file and create visualizations to extend the Tableau Story. This could include creating an application that performs the data cleaning semi-automatically.
2. Create visualizations based on data from other departments to extend the Tableau Story.
3. Connect Tableau directly to New Carrollton databases to automate the data updating process.
4. Create a standardized form for data collection to ensure proper data hygiene for data analysis and visualizations.
5. Include the Response Times report in the tableau story. Find a way to effectively clean and visualize the data.

## **Conclusions**

This project has created multiple different customizable data visualizations for police responses in the city of New Carrollton and put them all in one dashboard together. This dashboard has a range of information on the breakdown of each category of call, a heatmap of different areas where the police were called, and a line graph showing the difference in calls for each category of call over time. This data dashboard is a tool that can be used by the people of New Carrollton to find their own insights on and ensure that the city is being transparent with its police calls and response data.

Since the dashboard is being posted on the New Carrollton website is also ADA compliant and easily updatable by the staff of New Carrollton. To add new data, all they have to do is update a spreadsheet online and within 24 hours, the new data will be uploaded to the dashboard and will be accessible to the public. This means that new yearly reports can be added to the dashboard and can be updated by other students in the future. They can also



add data from other departments in future years allowing for more analysis and visualization types to be added to the dashboard.