

PROJECT - POLICE DEPARTMENT INCIDENT REPORTS

INTRODUCTION

In today's rapidly evolving world, data-driven insights play a pivotal role in enhancing public safety, urban planning, and law enforcement strategies. This report delves into a comprehensive analysis of the "Police Department Incident Reports" dataset, shedding light on incident patterns, temporal trends, and incident categories distribution. Leveraging data visualizations generated through Qlik, this report aims to provide valuable insights into the dynamics of incidents, empowering decision-makers, law enforcement agencies, and city planners with actionable information.

The dataset under investigation comprises a plethora of variables, each contributing to a holistic understanding of incidents. These variables range from incident datetime, category, and description to geographical coordinates and neighborhood classifications. By skillfully crafting data visualizations, we unravel essential insights into incident distribution by day of the week, incident type categories, and trends over the years. These visualizations, thoughtfully designed to facilitate comprehension, offer a clear and concise representation of complex data.

With the aid of meticulously designed pie charts, bar charts, and line plots, this report accentuates critical trends and patterns.

DATASET

The key components that are included in this dataset are:

Incident Date: Records the date when the incident occurred, offering temporal context for analysis.

Incident Category: Categories incidents into distinct types, aiding in identifying prevalent crime patterns.

Incident Description: Provides a detailed narrative of the incident, offering insight into the nature of each event.

Incident Day of Week: Indicates the day of the week on which incidents most frequently occur, revealing temporal trends.

Police District: Specifies the policing jurisdiction for each incident, aiding law enforcement resource allocation.

Analysis Neighborhood: Classifies incidents based on neighborhood, facilitating localized crime analysis.

Latitude & Longitude: Offers precise geographical coordinates of incidents, enabling spatial analysis.

Resolution: Describes the outcome or status of an incident, providing insights into case outcomes.

Incident Trends Over Years: Highlights changing patterns in incident counts over different years, aiding historical analysis.

Incident Type Distribution: Illustrates the frequency of various incident types based on report descriptions, aiding in understanding crime diversity.

STATISTICS

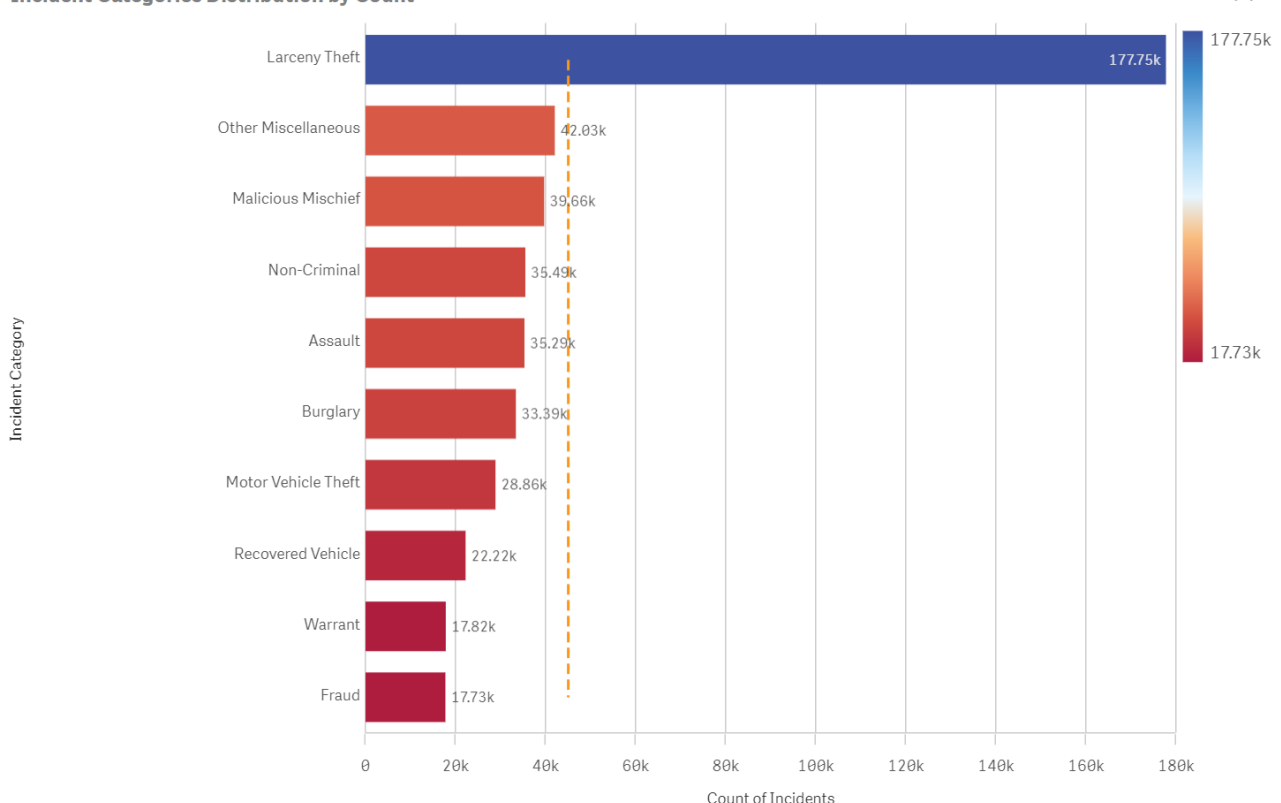
DATA VISUALISATIONS

1. Which type of incident occurs frequently?

Distribution of Incident Categories

This bar chart depicts the distribution of incident categories based on the descriptions of their respective report kinds. Each bar represents a distinct report-type description, and its height correlates to the number of events linked with that report-type description. The graphic depicts the frequency of various incident categories reported in a straightforward visual manner.

Incident Categories Distribution by Count



The graph was created with a focus on clarity and aesthetics in mind. To provide a professional appearance the bars are designed with a neutral color palette. Subtle grid lines are added to aid in reading the data precisely. The light backdrop color improves readability and decreases visual distractions.

The graph clearly shows that certain incident categories are more prevalent than others. Larceny Theft and Other Miscellaneous occurrences have the largest total, followed by "Non-Criminal" and "Assault." Human trafficking (A), commercial sex acts, and homicide, on the other side, have the lowest counts. The yellow line at approximately 45k is the average of the count of the incidents

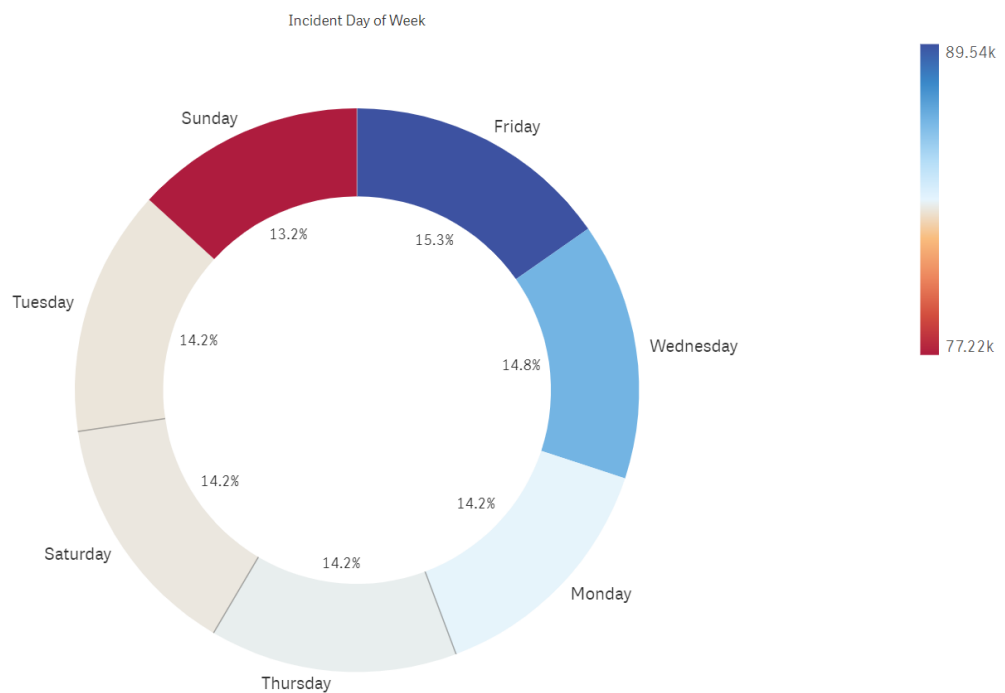
Purpose: The graph enables stakeholders to quickly understand the prevalence of event types across various report-type descriptions. This data can be useful for allocating resources, recognizing crime patterns, and making educated decisions about law enforcement and public safety policies.

2. Which days are the most frequent occurrences of crime?

Distribution of Incidents by Day of the Week

It is intended to provide a clear depiction of incident distribution based on weekdays. The chart effectively conveys information regarding the most likely times for accidents to occur, allowing viewers to easily grasp patterns and trends.

Distribution of Incidents by Day of Week



The chart is divided into seven slices, one for each day of the week. The proportion of occurrences that occurred on that given day is represented by the size of each slice, which is labeled with both the percentage and the exact count of incidents that occurred on that day. Each day of the week is distinguished by a carefully chosen color palette. This allows viewers to quickly distinguish between the slices and correlate different hues with different days. These labels provide precise information without crowding out the chart. To the right of the chart, a legend helps the viewers grasp the chart even if they are unfamiliar with the color coding. When hovering over a slice, a tooltip with comprehensive information about the selected day shows, including the day name, incident count, and percentage.

The pie chart displays information regarding incident distribution throughout the week in an instant:

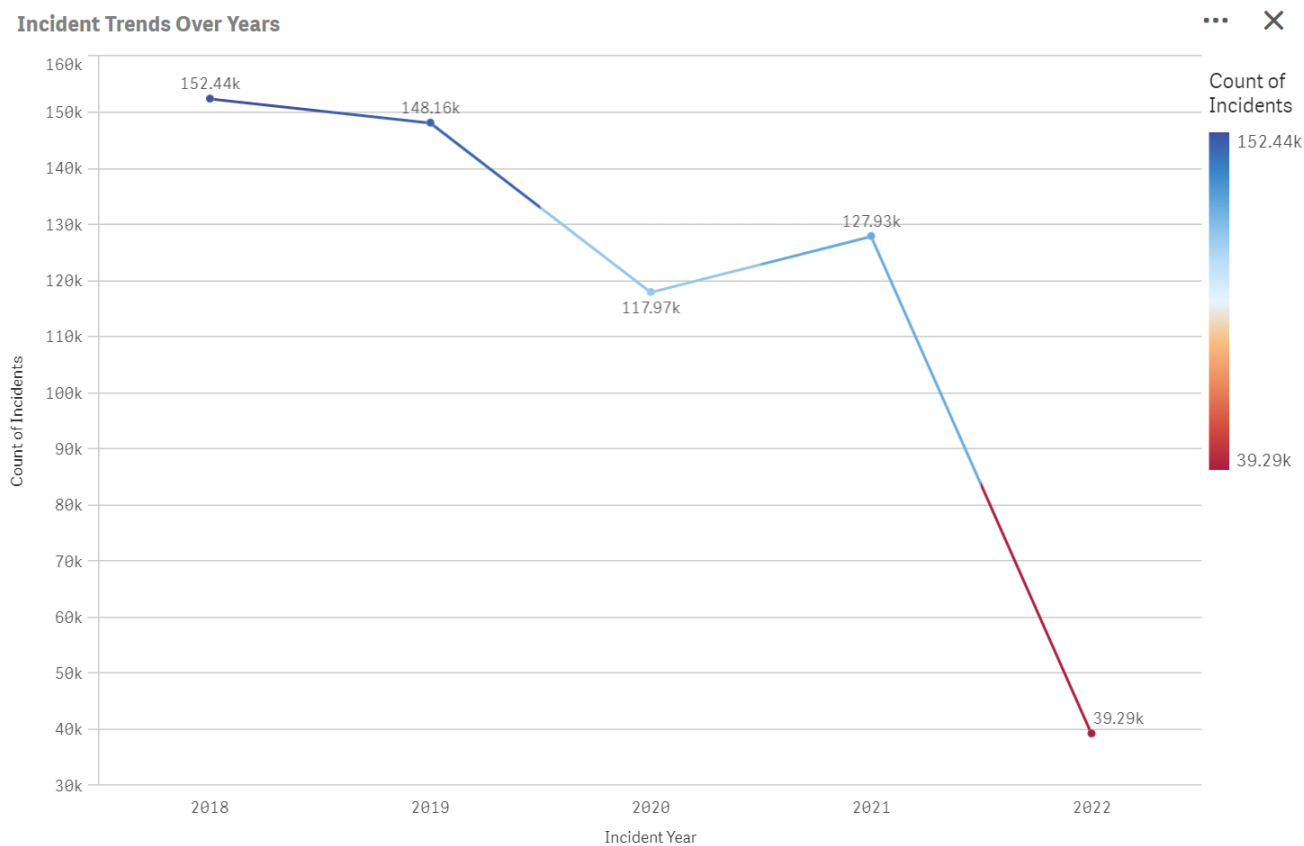
- It is clear which days of the week have greater or lower incidence counts.
- Any patterns or trends indicating that certain days are busier or quieter are immediately discernible.
- Without having to refer to raw data, users may instantly view the relative proportions of incidences on different days.

Purpose: This graphic is especially insightful for law enforcement organizations, municipal planners, and scholars interested in the temporal distribution of occurrences. The data is turned into a meaningful and accessible form by employing a pie chart with proper design choices, allowing for more informed decision-making and actionable insights.

3. How do the incidents trends over the years?

Incident trends over the years

The "Incident Trends Over Years" line chart depicts the annual trend of occurrences recorded over a specified time period. The graphic is intended to show how the number of events has changed from year to year. The years are shown by the x-axis, while the number of incidences is represented by the y-axis.



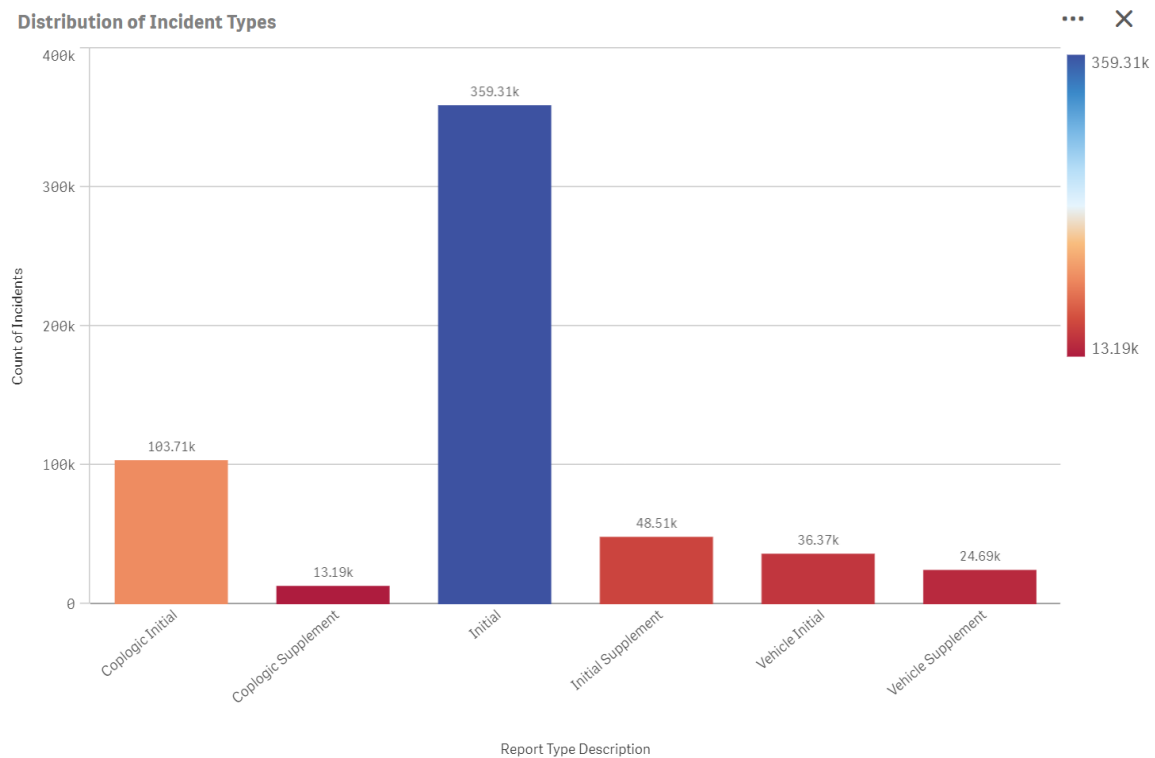
The layout of the chart is neat and well-organized. The color palette for the line plot, data labels, and tooltips is consistent, assuring readability and coherence. Horizontal gridlines aid in value reading and the legend is located in the upper-right corner for convenient access. Annotations are deliberately put on the line plot to identify trends, spikes, or dips in occurrence counts. These annotations shed light on the possible causes of variations in event patterns. A contextual information box above the chart briefly explains the graphic's purpose and significance. It contextualizes the trends seen in the chart, providing the audience with a clear narrative.

The x-axis data range spans the appropriate time period, offering a full perspective of occurrence trends. The chart is also responsive, assuring its accessibility on a variety of screen widths.

Overall, the line chart effectively illustrates shifting event trends over time, aided by clear labeling, annotations, and contextual data. It is an excellent tool for studying past patterns and making data-driven decisions.

4. What are the different report-type descriptions?

Distribution of Incident Types



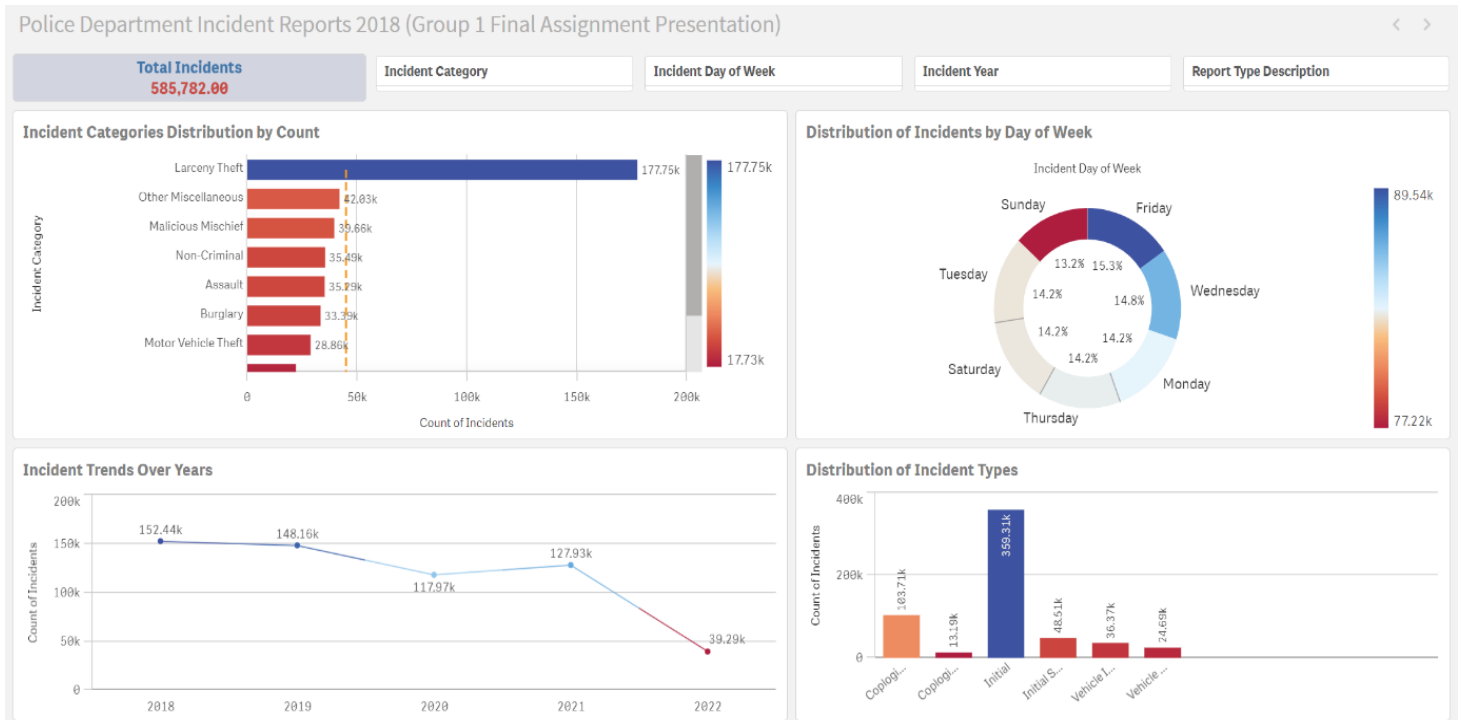
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The chart assists stakeholders in quickly understanding the prevalence of event types across various report-type descriptions. This data can be useful for allocating resources, recognizing crime patterns, and making educated decisions about law enforcement and public safety policies.

DASHBOARD ANALYSIS



Understanding Incident Dynamics for Informed Decisions

Our meticulously designed dashboard amalgamates four insightful visualizations, each unveiling distinct facets of incident data from the "Police Department Incident Reports" dataset. This comprehensive analysis empowers stakeholders with a holistic understanding of incident patterns, enabling informed decisions for public safety strategies, resource allocation, and law enforcement initiatives.

Incident Categories Distribution by Count: The bar chart graphically portrays the distribution of incidents across various categories. This reveals which incident types are most prevalent, with Larceny Theft and Other Miscellaneous topping the list. This insight aids resource allocation, allowing authorities to allocate efforts where incidents are most frequent while highlighting fewer common categories that may require targeted intervention.

Distribution of Incidents by Day of Week: The pie chart offers a clear representation of incident patterns throughout the week. We can observe when incidents are most likely to occur, identifying trends that may inform law enforcement staffing and deployment strategies.

It becomes evident if certain days experience higher incident counts, enhancing operational efficiency.

Incident Type Distribution: This bar chart systematically showcases the distribution of incident types based on their report type descriptions. It provides an overview of incident diversity, facilitating a nuanced understanding of crime trends. Stakeholders can prioritize responses based on the frequency of specific incident types, focusing on addressing the most prevalent issues.

Incident Trends Over Years: The line chart's historical perspective sheds light on evolving incident patterns over the years. Spikes and dips in incident counts can be correlated with external factors, policy changes, or societal shifts. This analysis aids in anticipating future trends, allowing proactive measures to mitigate potential crime surges.

Interconnected Insights: The convergence of these visualizations yields powerful insights. For instance, the "Distribution of Incidents by Day of Week" can be cross-referenced with the "Incident Type Distribution" to identify whether specific incident categories are more prominent on certain days. Similarly, the temporal patterns highlighted in the "Incident Trends Over Years" visualization can be used to contextualize the prevalence of incident types.

Holistic Decision-Making: By considering all these visualizations together, stakeholders can make more holistic decisions. They can allocate resources based on the most common incident types, deploy personnel strategically on high-incidence days, and enact policies that address long-term trends. Moreover, understanding incident patterns within specific neighbourhoods, as facilitated by the analysis of "Analysis Neighbourhood," permits tailored interventions for community safety.

In conclusion, our dashboard amalgamates diverse incident data dimensions, rendering it a valuable tool for comprehensive analysis and decision-making. By merging these insights, we empower authorities to craft effective strategies that address the dynamic landscape of incidents, contributing to a safer and more secure environment for all.

CONCLUSION

In the pursuit of safer and more secure communities, this report delved into the intricate realm of incident data through meticulous analysis and compelling visualizations. By harnessing the power of the "Police Department Incident Reports" dataset and employing data visualization

tools, we have unveiled patterns, trends, and nuances that hold profound implications for law enforcement, urban planning, and public safety strategies.

The amalgamation of data-driven insights has paved the way for more informed decision-making. By discerning prevalent incident categories, authorities can strategically allocate resources, concentrating efforts where they are most needed. This targeted approach enhances the efficacy of public safety measures, yielding positive impacts on crime reduction and community resilience.

Exploring previous event trends has provided a contextual lens that allows for a more sophisticated understanding of evolving patterns. These insights enable proactive planning and predictive modeling, assisting authorities in anticipating potential issues and proactively allocating resources. Communities can adapt and respond successfully to shifting crime landscapes by taking a forward-thinking approach.

the fusion of data analysis and visualization has empowered us to extract valuable insights from the "Police Department Incident Reports" dataset. These insights stand as a testament to the transformative potential of data-driven decision-making. Armed with the knowledge gained from this analysis, stakeholders are better equipped to create safer, more secure environments that flourish through strategic interventions, community engagement, and continuous adaptation.

REFERENCES

Data Visualization (<https://rkabacoff.github.io/datavis/>) Kabacoff, R. I. (2015). Data Visualization. John Wiley & Sons.

Department, P. (2023, August 17). Police Department Incident Reports: 2018 to present: DataSF: City and county of San Francisco. Police Department Incident Reports: 2018 to Present | DataSF | City and County of San Francisco. <https://data.sfgov.org/Public-Safety/Police-Department-Incident-Reports-2018-to-Present/wg3w-h783>