Introduction to Data Visualization BAN140

Project Milestone 4

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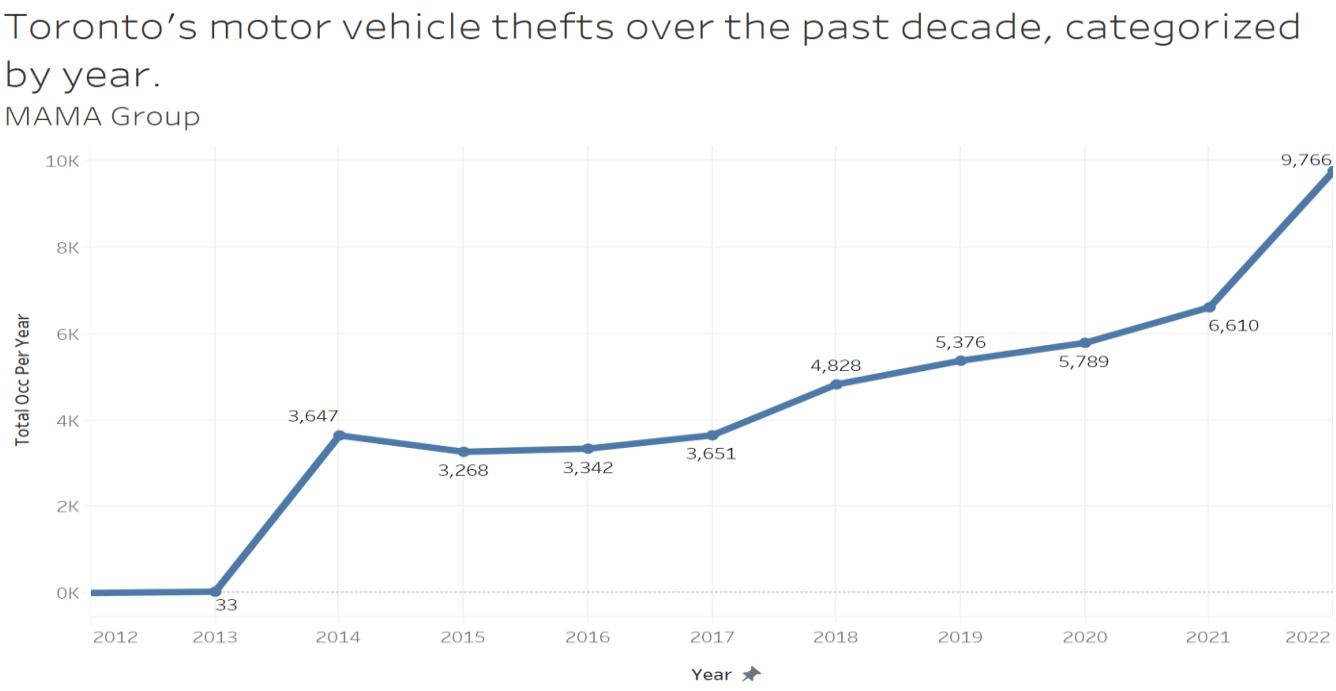
Data Report on Motor Vehicle Thefts in Toronto

Intended Audience: Insurance Companies, Toronto Police, City Planning Authorities, and The general public

The Toronto Police's comprehensive report on motor vehicle thefts spanning a decade offers invaluable insights for various entities, including insurance companies, law enforcement agencies, city planning authorities, and the general public. With its help, insurers can assess risk, adjust premiums, and offer incentives for anti-theft measures while the police can employ strategic planning to prevent crime through patrol scheduling, community policing initiatives, and resource allocation.

Additionally, city planners can address environmental factors contributing to theft risks and develop policies and zoning regulations to create safer communities. The report also serves as a foundation for educational institutions to develop research initiatives and educational programs on data analytics for public policy and business strategies.

Most importantly, this report equips Toronto citizens with crucial information that can impact their own decisions about car safety and encourages proactive measures to protect their property. By staying up to date on local auto theft trends, the public can take proactive steps like strengthening vehicle security or avoiding high-risk areas at particular times.



The graph illustrates the trend of motor vehicle theft in Toronto from 2012 to 2022.

Findings

The presented graph is a line chart that demonstrates the trend of motor vehicle thefts in Toronto from 2012 to 2022. It's evident from the chart that vehicle thefts have progressively increased during this period. In 2013, there were only 33 reported thefts, a notably small number. However, the following year

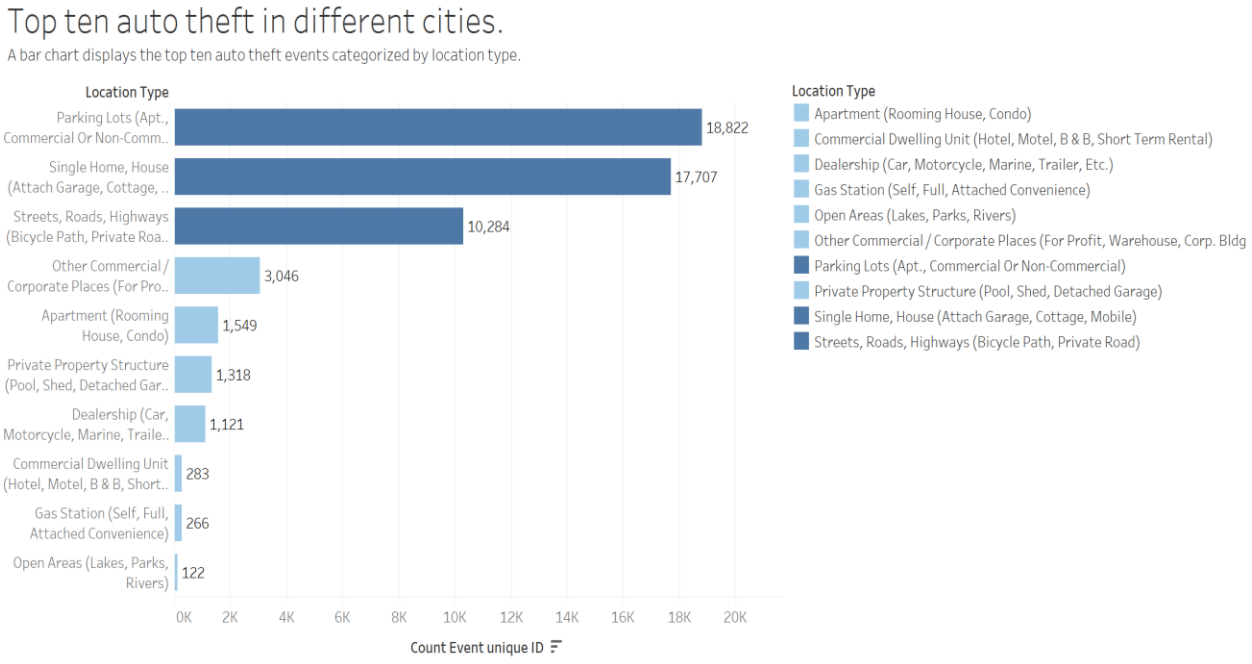
saw a significant increase to 3,647 thefts, which then held relatively steady from 2014 to 2017, with a slight fluctuation between 3,268 and 3,651 thefts per year.

Starting in 2018, there has been a noticeable rise in thefts each year, with 4,828 reported in that year alone. The upward trend continued, with numbers increasing to 5,376 in 2019, 5,789 in 2020, and making a further jump to 6,610 in 2021. The chart shows the highest spike in 2022, where the number of thefts nearly peaked at 10,000, specifically reaching 9,766 incidents, underscoring a significant rise in motor vehicle thefts in Toronto over the last five years of the decade shown. This sudden surge necessitates an in-depth investigation into the fundamental factors fueling the upswing, coupled with swift measures to address and resolve the issue. This detailed chart, provided by MAMA Group, offers an informative illustration of this concerning trend.

Recommendations

It is imperative to raise consciousness regarding the escalating prevalence of auto theft and underscore the significance of vehicle security. Law enforcement and other relevant organizations should conduct public education campaigns to educate the public about preventative measures.

Also, people need to take extra precautions to safeguard their cars, like installing anti-theft devices, locking the steering wheel, and parking in well-lit, secure areas. Cars that are properly secured can act as a deterrent to would-be thieves.



Fundings

The horizontal bar chart provided showcases the frequency of auto theft incidents across different cities and locations. The chart ranks the top 10 auto theft locations and aims to compare the prevalence of auto

thefts by location type. The x-axis shows unique auto theft events, while the y-axis categorizes the events by location.

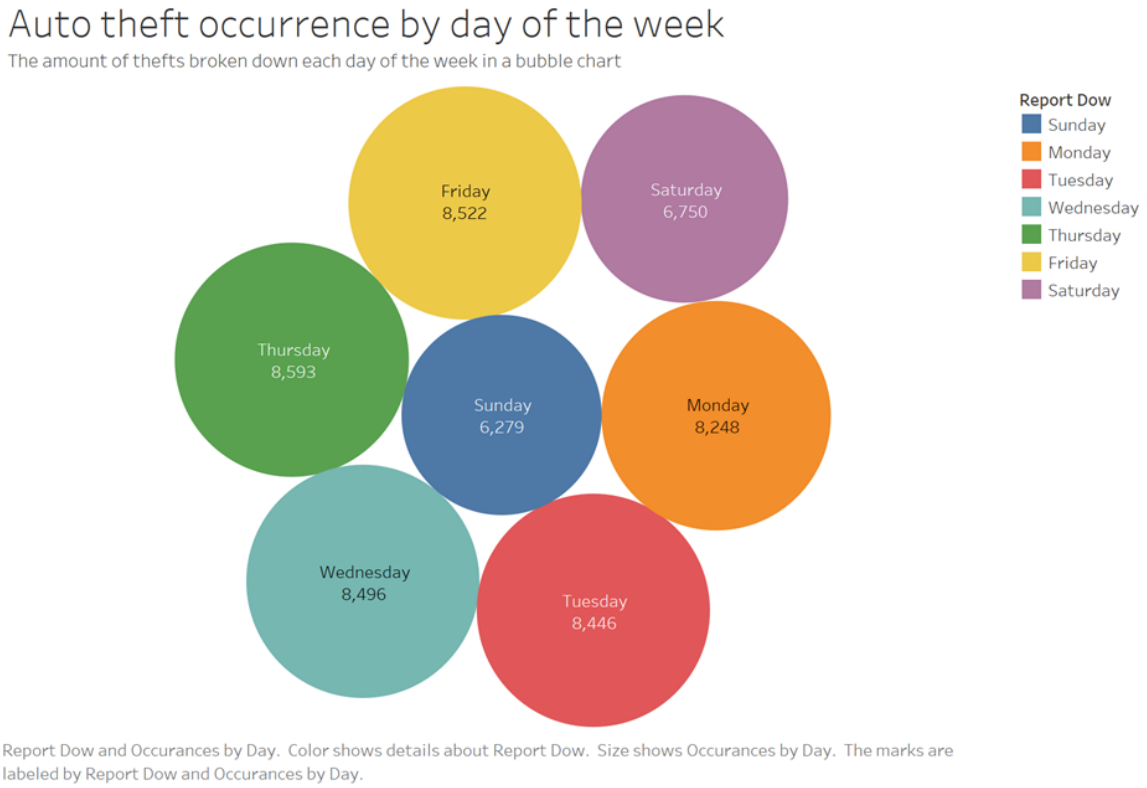
The chart compares two datasets, which may be from different cities or timeframes. It reveals that parking lots (18,822 incidents) and single homes (17,707 incidents) are the most vulnerable locations for auto theft. Streets and highways follow next with 10,284 incidents, and commercial or corporate areas which ranked fourth with 3,046 incidents.

On the other hand, apartments, private properties, car dealerships, commercial dwellings like hotels, gas stations, and open areas such as parks are the least impacted areas. Among these, parks have the lowest number of occurrences, with just 122 incidents.

The viewer is filtered on location type to provide a focused perspective on the locations most vulnerable to auto theft. Out of the total 41 categories, the chart represents only 10.

Recommendations

To combat auto theft, it is recommended that the Toronto Police increase their patrol presence and allocate additional resources to areas that have a high incidence of this crime. These areas include parking lots, residential areas, and major roads. The aim of this strategic move is to deter criminals from committing auto theft and increase the chances of catching offenders. In targeted areas, it is important for police to install signs indicating increased presence and surveillance, serving as a deterrent and reassurance to the community.



Findings

This bubble chart provides a comprehensive view of auto theft occurrences throughout the week. Each bubble's size corresponds to the number of reported thefts, while different colors represent different days, as indicated in the legend on the right.

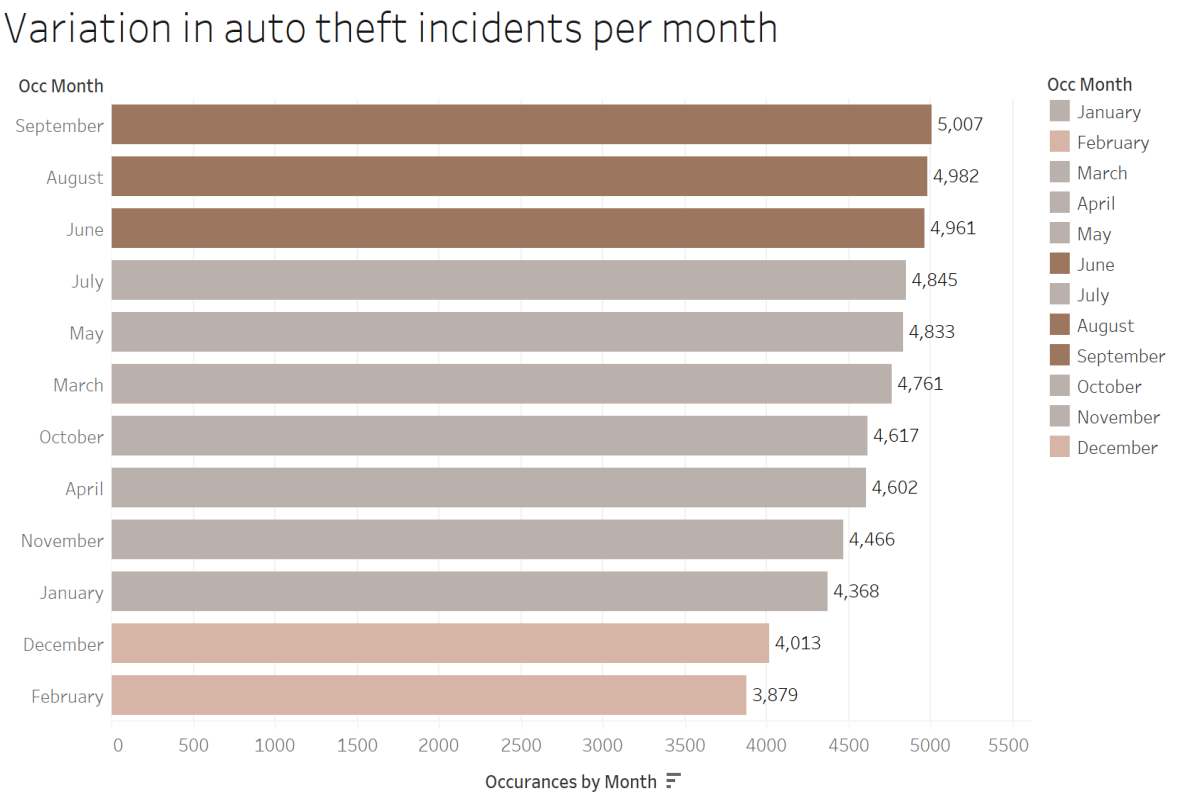
The largest bubble, colored green to represent Thursday, shows the highest incidence of auto thefts, with 8,593 reported cases. Friday, represented by a yellow bubble, has slightly fewer thefts at 8,522, making it the second most common day for auto thefts. Wednesday (teal), Tuesday (red), and Monday (orange) follow, with descending order of occurrence at 8,496, 8,446, and 8,248, respectively. The weekend days have the lowest occurrences, with Saturday (purple) at 6,750 and Sunday (dark blue) at 6,279 thefts.

This visual representation clearly demonstrates that auto thefts are more frequent during weekdays, reaching their peak on Thursday, and tapering off during the weekend, with Sunday having the least reported thefts.

Recommendations

It is crucial to consistently analyze and compare data from different years to gain valuable insights into the changing trends and patterns of vehicle theft. Law enforcement must make use of this data to improve their strategies and allocate resources effectively.

By examining crime data, patterns and hotspots can be identified, which helps in predicting where criminal activity is likely to occur. This, in turn, allows for a more targeted deployment of resources, increasing the effectiveness of law enforcement efforts.



Occurances by Month for each Occ Month. Color shows details about Occ Month. The marks are labeled by Occurances by Month. The view is filtered on Occ Month, which excludes Null.

Findings

The bar graph depicts the monthly variation in auto theft incidents. It presents the number of auto thefts that occurred each month. Each bar represents a month, with the length of the bar indicating the number of reported thefts.

The bars are arranged in descending order, from the longest to the shortest, based on the number of incidents. September had the highest number of thefts, with 5,007 incidents, followed closely by August and June with 4,982 and 4,961 incidents, respectively. The frequency of incidents decreases, with February having the least number of thefts, at 3,879 incidents.

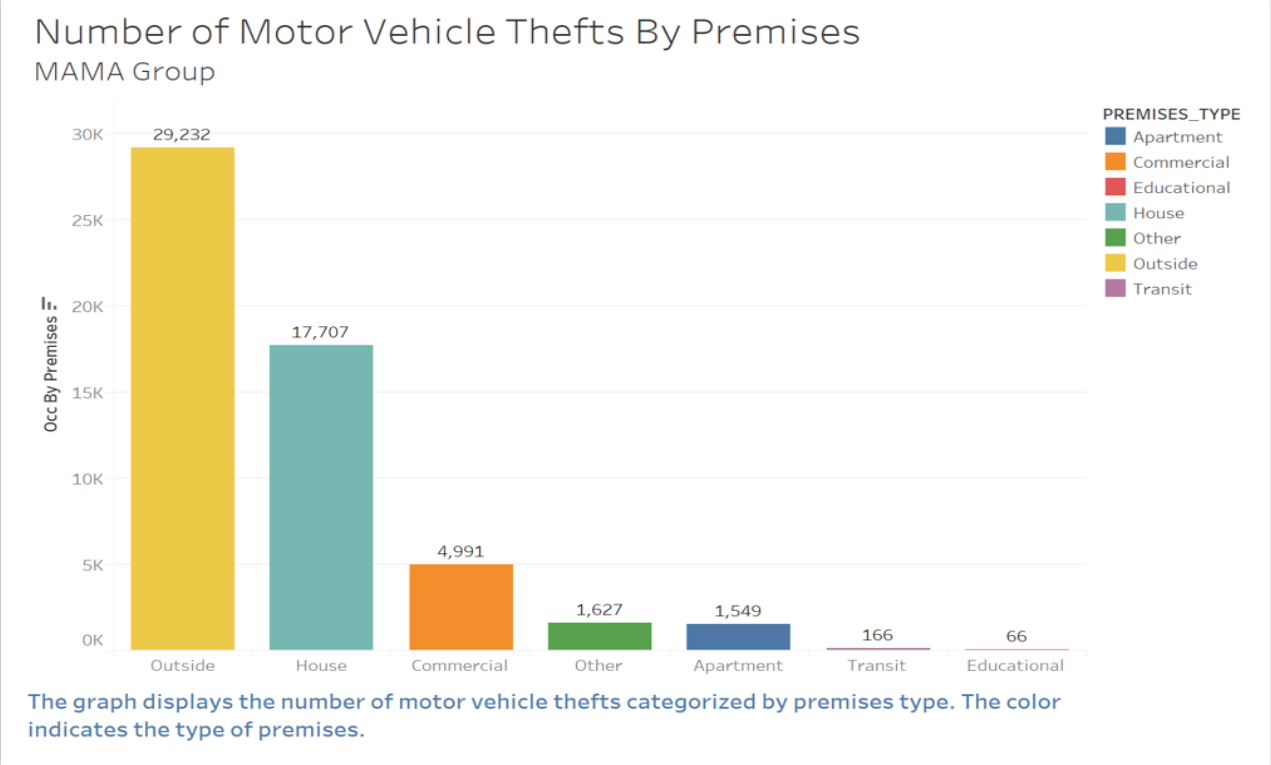
The bars are color-coded to differentiate the months visually. Each bar has marks that represent the exact number of occurrences for that month, providing a clear numerical reference for each data point.

This graph is useful for identifying trends in auto theft over the months, which could be critical for law enforcement and public awareness campaigns.

It is important for law enforcement to understand seasonal trends in order to develop effective anti-auto theft initiatives. By focusing on the months with the highest incidence of auto thefts, authorities can optimize resource deployment and personnel allocation. This involves increasing patrols and surveillance efforts during these critical periods. Additionally, these findings highlight the significance of data-driven policing, where decision-making is informed by historical trends, enabling the efficient use of resources.

Recommendations

To actively deter vehicle thefts, the Toronto Police should allocate increased resources and intensify patrols during the months of September, August, and June, which exhibit higher vulnerability. Moreover, for enhanced results, analyze data to pinpoint susceptible areas and conduct targeted operations.



Findings

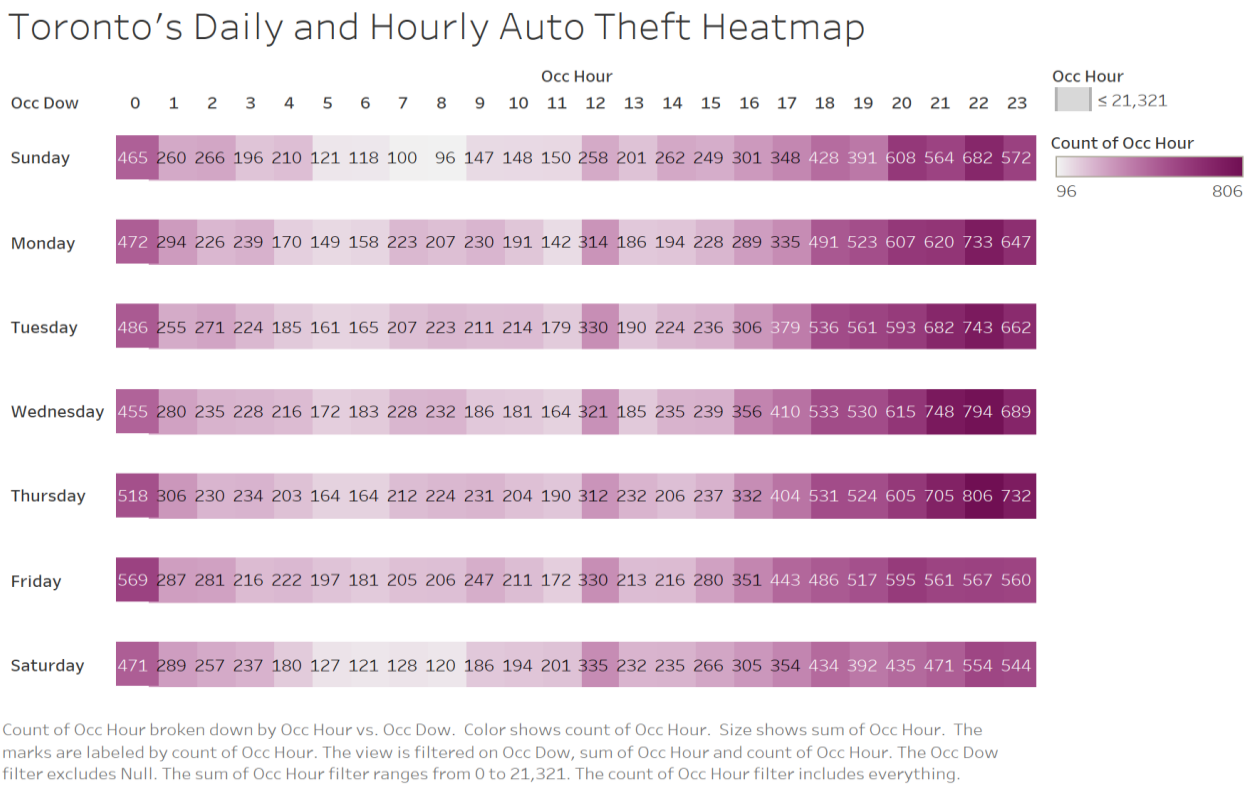
The bar chart presents a clear breakdown of motor vehicle thefts according to the location type where they occurred. The data shows a significant variance in the frequency of thefts across different premises. Most thefts occurred Outside, with a count of 29,232, indicating that open spaces are the most common areas for vehicle theft. Residential properties classified as Houses are the second most common theft locations, with 17,707 incidents, suggesting that private dwellings are also at considerable risk. Commercial premises have a moderately high incidence with 4,991 thefts.

In contrast, locations categorized as Other, which could include a variety of unspecified premises, have a lower occurrence of 1,627 thefts. Apartment complexes reported 1,549 thefts, which may reflect either a higher security presence or less access for potential thieves. Public transit areas and educational institutions appear to be the least affected, with notably low numbers of thefts at 166 and 66, respectively, possibly due to heightened security and surveillance in such premises. This chart reveals the relative risk of vehicle theft associated with various types of premises, highlighting the need for focused security measures in the most affected areas.

Recommendations

To tackle the issue of car theft in Toronto, it's vital to increase police patrols and allocate more resources to areas where such crimes are common, such as outside, houses, and commercial zones. This not only boosts the chances of catching the culprits but also acts as a deterrent to potential offenders.

In addition, the collaboration between the police and businesses in high-risk areas like construction sites and auto dealerships is crucial. By working together, they can enhance security measures and share information on potential risks, further strengthening the fight against car theft. With these measures in place, the police can effectively address the challenge of car theft in vulnerable areas.



Findings

The heatmap displays a visual representation of auto theft incidents in Toronto, organized by day and hour. The days are indicated on the vertical axis, while the hours are displayed horizontally. The graph shows that car thefts increase in frequency during the early morning hours. These thefts consistently remain high throughout this period, with a particular peak from 3 to 4 am. This suggests that auto thieves might be taking advantage of the low street activity and darkness during these hours. The heat map indicates that vehicle theft occurs more frequently on weekdays than on weekends.

As the morning progresses, there is a general decrease in thefts, reaching lower levels during typical business hours. This could be attributed to increased pedestrian traffic and the presence of people heading to work or school, which may discourage theft activities. Morning to early afternoon on workdays is when auto theft is least likely to occur. On the other hand, the likelihood of theft increases starting in the late afternoon and doesn't let up until late at night. This is the most critical period, especially from the evening to the night when people are less likely to be near their parked cars. This analysis is crucial for law enforcement to develop patrol strategies and for citizens to be more vigilant during high-risk hours.

While there are fluctuations in auto theft incidents throughout the week, the data suggests that the risk of theft consistently increases during the evening hours across all days. Wednesday and Thursday stand out as the days with the highest frequency of incidents, especially during the night, indicating that these might be the days when auto theft deterrent measures could be most effectively employed.

Recommendations

In order to optimize safety and security, it is advised that law enforcement concentrate their patrols during the designated peak hours, which are three to four in the morning. Potential thieves may be discouraged by stepping up patrols during these hours, and if any suspicious activity is noticed, quick action can be taken. Parking in secure areas should be a priority during rush hour, especially in places like parking lots, open roads, and private property buildings where cars are vulnerable to theft. Choosing parking lots that are well-lit and under surveillance can significantly lower the chance of theft.

External Sources:

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Équité Association. “Survey Finds Majority of Canadians Feel Unsafe in Their Communities as the Auto Theft Crisis Continues to Accelerate in the First Half of 2023.” Cision, 10 Oct. 2023, www.newswire.ca/news-releases/survey-finds-majority-of-canadians-feel-unsafe-in-their-communities-as-the-auto-theft-crisis-continues-to-accelerate-in-the-first-half-of-2023-826244168.html. Accessed 13 Nov. 2023.

Warmington, Joe. “WARMINGTON: Police Chief Warns Auto Theft Now at ‘epidemic Proportions.’” Torontosun, 20 June 2023, https://torontosun.com/news/local-news/warmington-police-chief-warns-auto-theft-now-at-epidemic-proportions

Toronto Police Service Public Safety Data Portal,https://data.torontopolice.on.ca/pages/autotheft

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	Name	Task(s)
3	Mamat Jasseh	creating charts, conducting analysis, and providing recommendations.