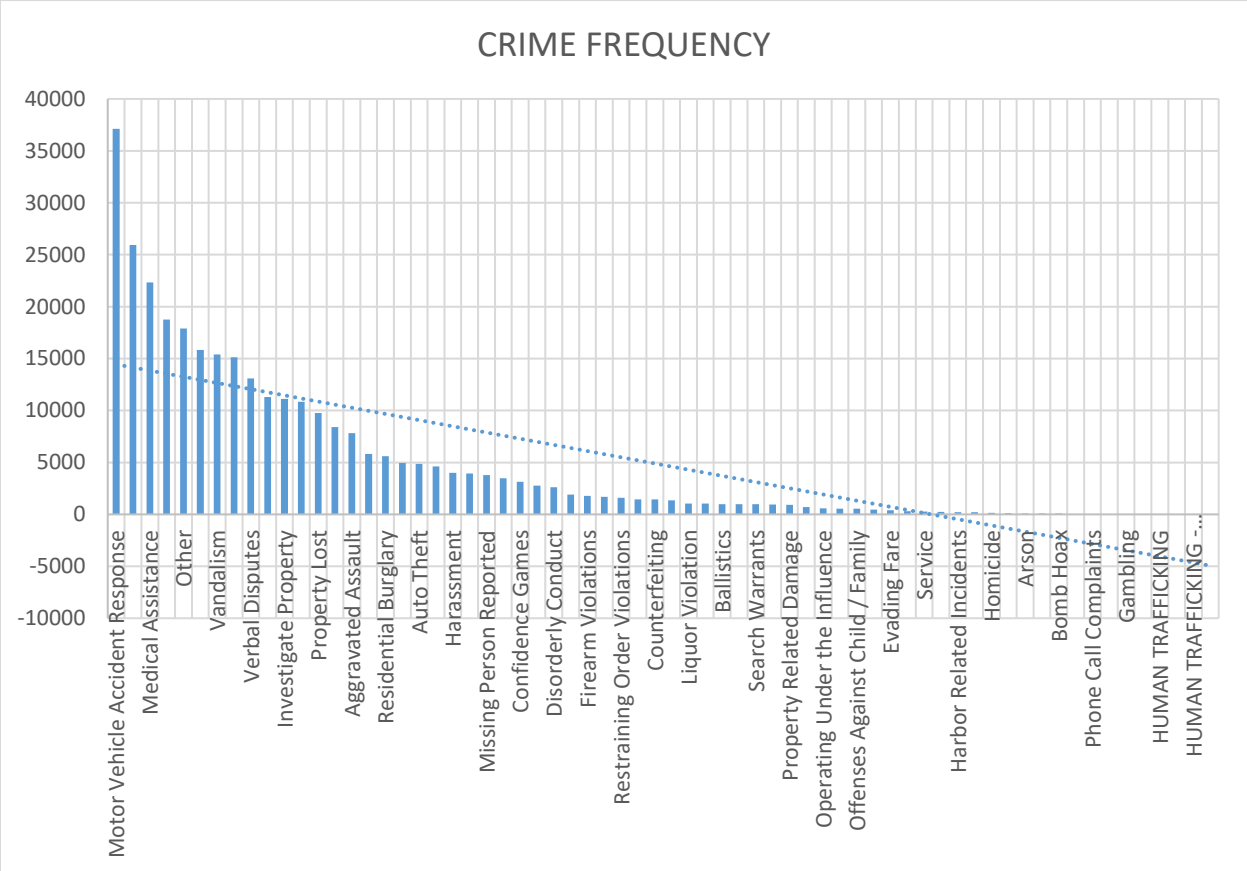
Boston Crime Analysis

Crime Frequency Analysis

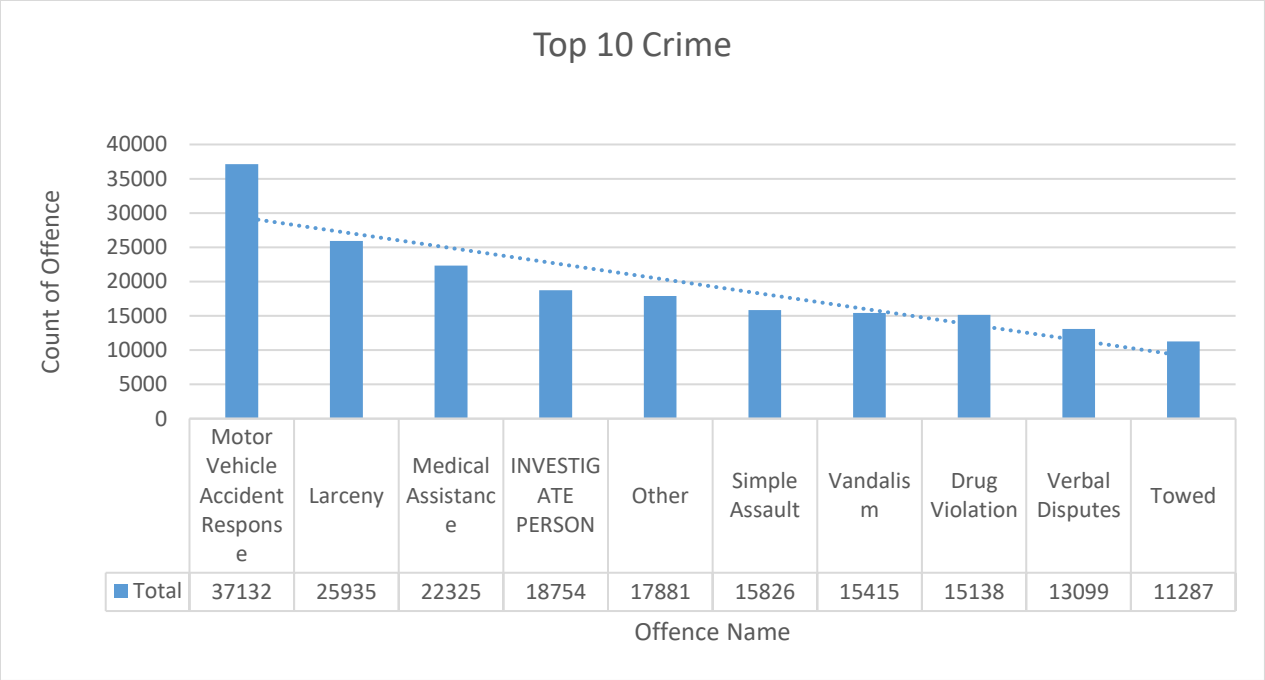


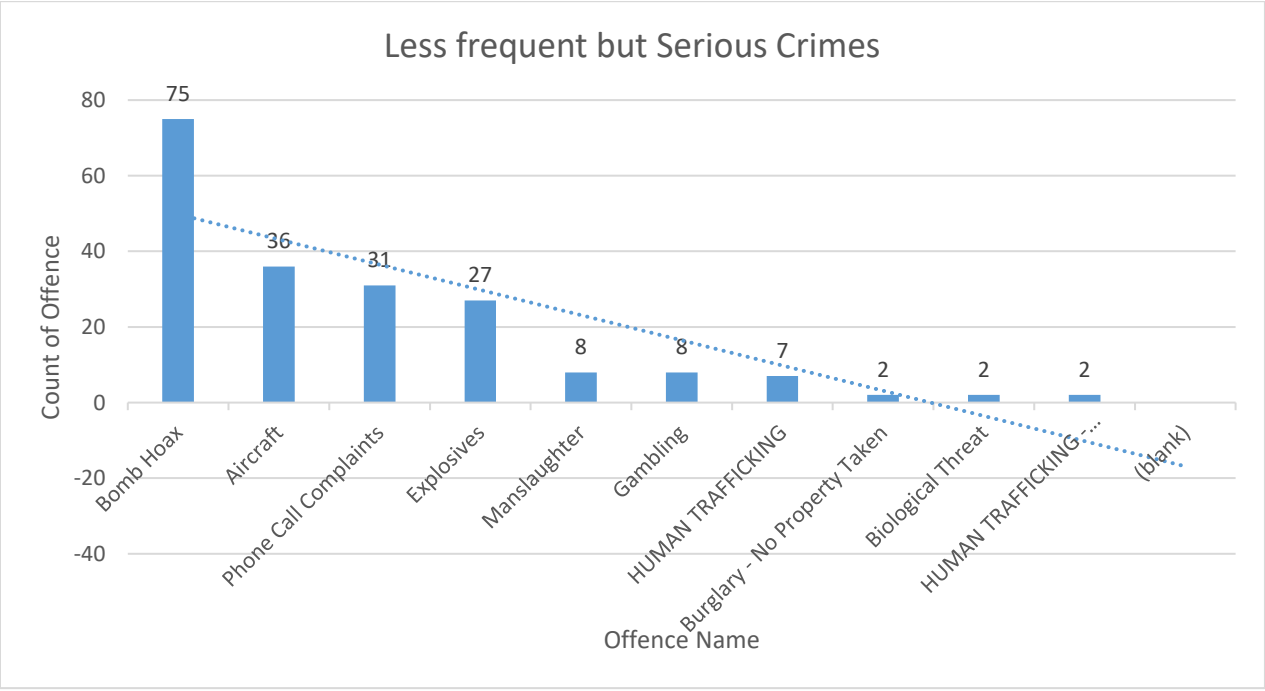
The frequency plot clearly shows a highly skewed distribution, with a steep decline from the most common offenses to the least common.

- **Overall Trend**: A clear downward trend is visible, indicating that most crimes which fall under serious categories are less frequent. This is highlighted by the long tail of many serious crimes occurring at very low frequencies.

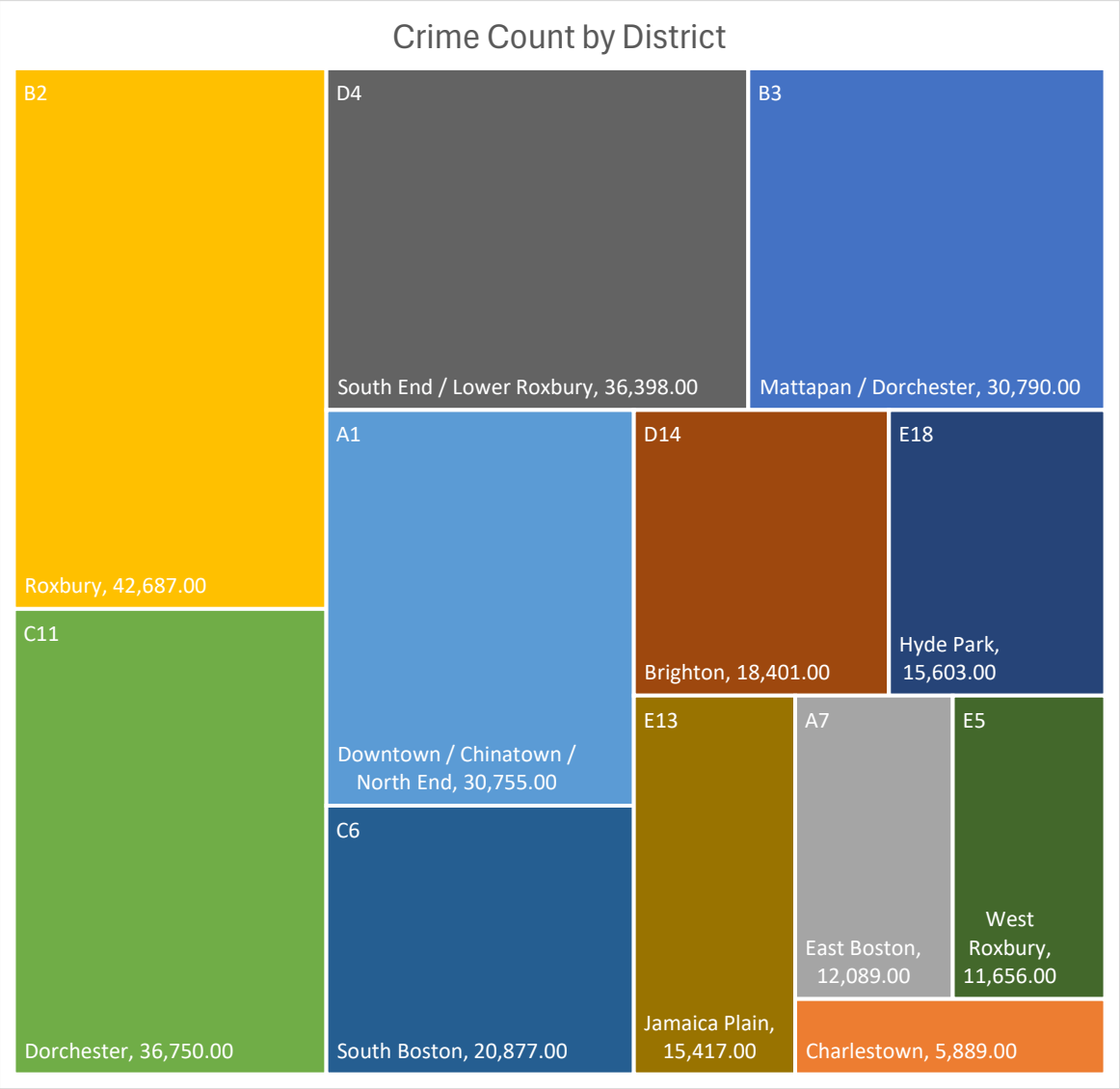
- **Most Frequent Offences**: The chart is dominated by a few high-frequency incident types. "Motor Vehicle Accident Response" and "Larceny" are the most common by a significant margin. Other notable frequent incidents include "Medical Assistance," "Investigate Person," and "Simple Assault."

- **Least Frequent Offenses**: Several serious crimes, such as "HUMAN TRAFFICKING," "INVOLUNTARY SERVITUDE," and "Biological Threat," appear to be the rarest, with their bars barely visible at the bottom of the chart.





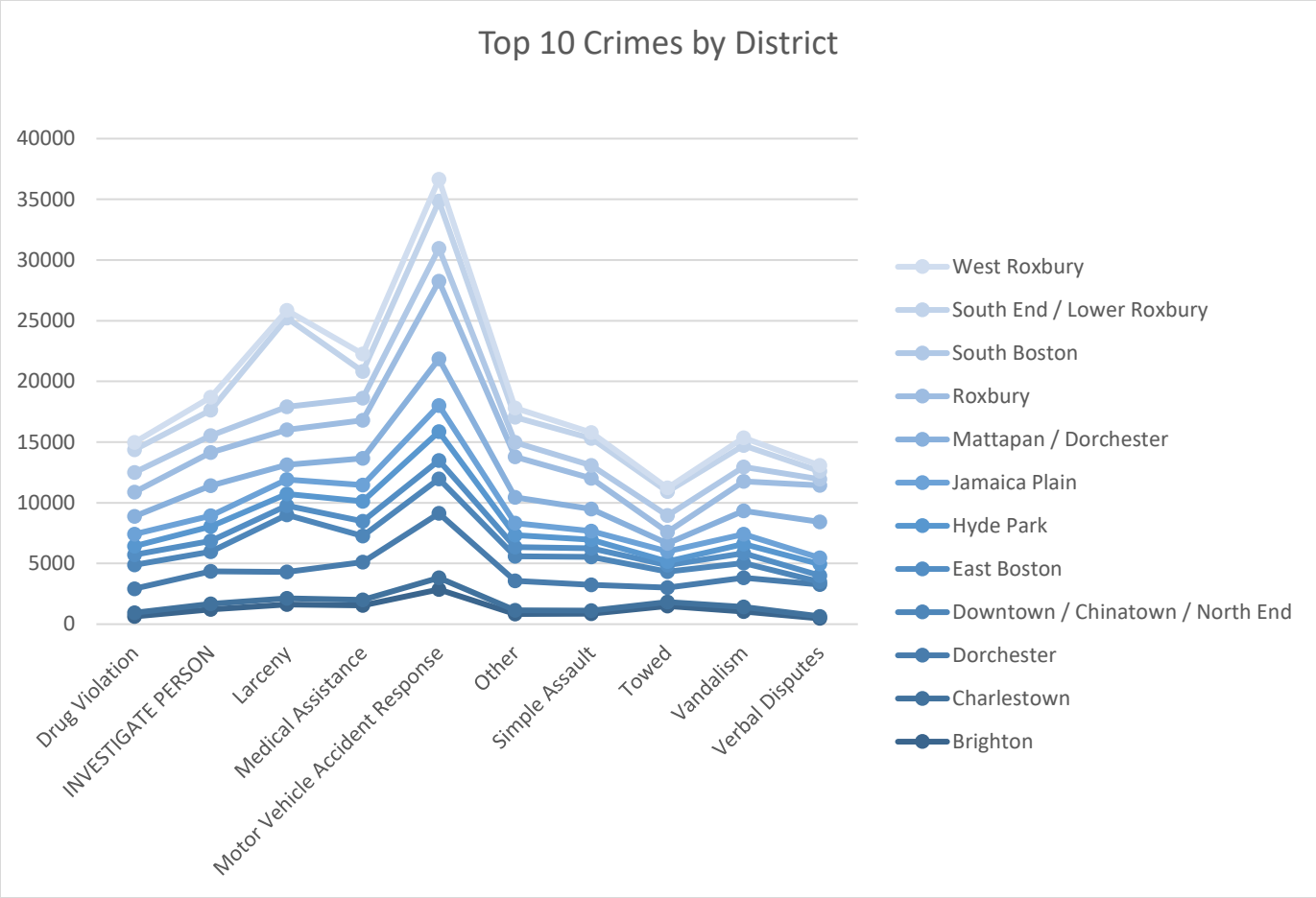
- **Conclusion**: The analysis suggests that while the data set covers a wide spectrum of offences, resources would be most effectively concentrated on addressing high-frequency incidents, while maintaining awareness of the full range of less common but more serious criminal activities.



- **High-Crime Districts:** The largest rectangles represent the districts with the highest crime rates. Roxbury (B2) and Mattapan / Dorchester (B3) have the highest numbers, followed by Dorchester (C11), South End / Lower Roxbury (D4), and Downtown / Chinatown / North End (A1).

- **Lower-Crime Districts:** The smaller rectangles indicate districts with fewer reported crimes. The lowest crime rates are in Charlestown (A7), East Boston (A7), and West Roxbury (E5).

- **Overall Observation:** The chart highlights a significant disparity in crime counts across the city's districts. A few districts account for a disproportionately large share of the total crimes, suggesting that targeted resource allocation to these areas could have a substantial impact on overall crime rate reduction.



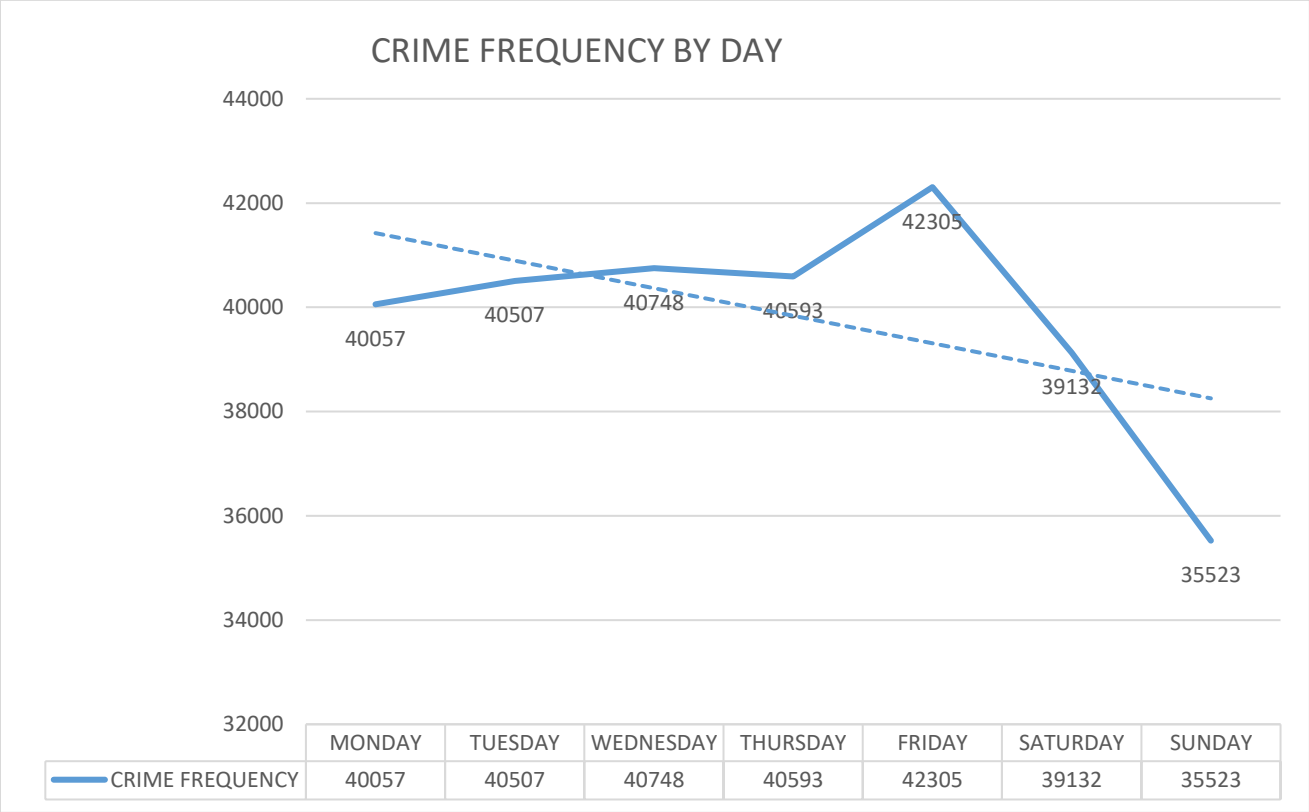
- **High-Frequency Crime Types:** The highest grand totals are observed for "Motor Vehicle Accident Response" (38,654), "Larceny" (25,861), and "Medical Assistance" (22,266). These three categories account for a significant portion of all reported incidents.

- **Crime Distribution by District:** The total crime counts vary substantially by district. Roxbury has the highest overall crime count (28,402), followed by Downtown / Chinatown / North End (20,360), and Brighton (12,557). In contrast, districts like West Roxbury (8,242) and Hyde Park (10,588) have lower crime counts.

- **Specific Crime Trends:** The chart reveals specific trends within districts. For instance, "Motor Vehicle Accident Response" is particularly high in Roxbury (6,407), while "Larceny" has the highest count in South End / Lower Roxbury (7,313). "Verbal Disputes" are most frequent in Roxbury (3,008) and Dorchester (2,617).

- **Overall Observation**: The data suggests that crime patterns are not uniform across districts. A few key crime types dominate the overall numbers, and their prevalence varies significantly from one district to another. This level of detail is crucial for developing targeted and effective crime prevention strategies for each specific area.

Time Series Analysis



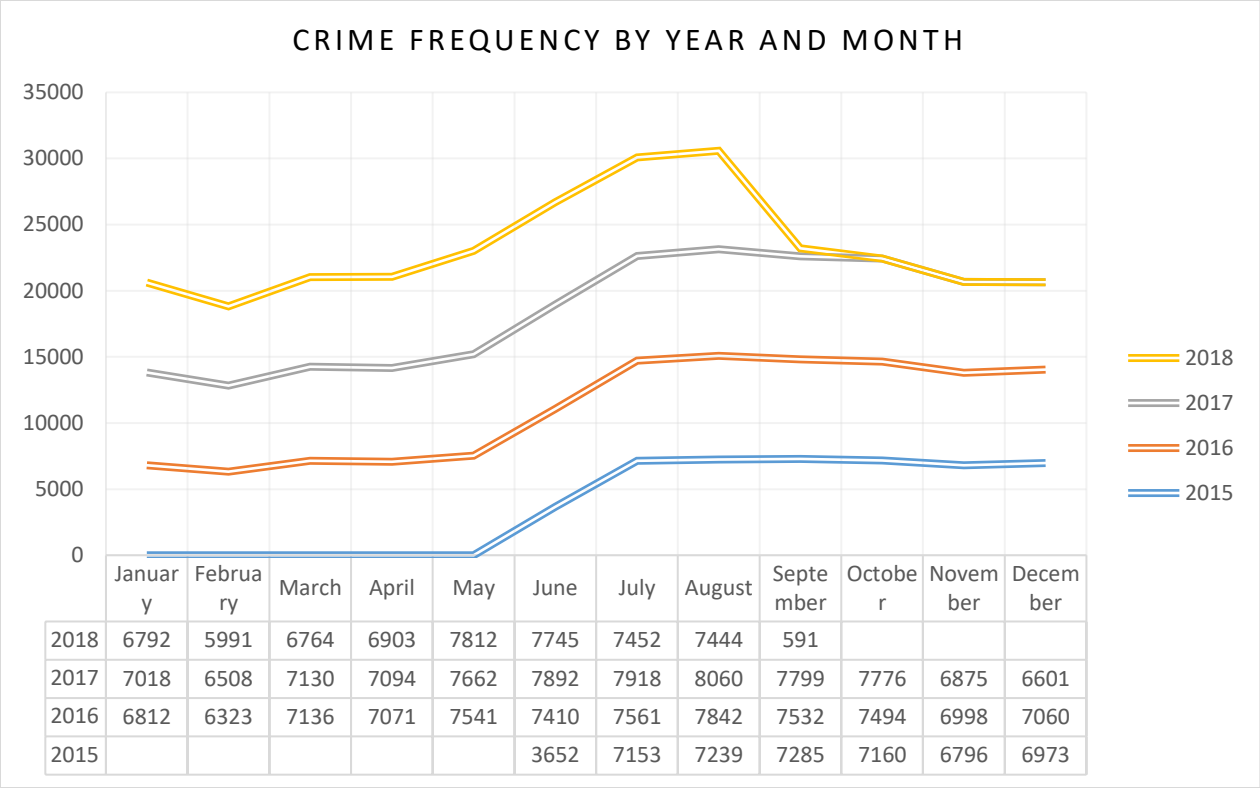
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
CRIME FREQUENCY	40057	40507	40748	40593	42305	39132	35523

- **Weekly Peak:** The chart shows a clear peak in crime frequency on **Friday**, with a count of 42,305. This suggests that more incidents occur at the end of the traditional workweek.

- **Mid-Week Consistency:** The crime rates remain relatively stable from Monday through Thursday, with a slight upward trend. The numbers for these days hover just above the 40,000 mark.

- **Weekend Decline:** There is a significant and sharp decline in crime frequency over the weekend, with a notable drop on Saturday (39,132) and a further decrease on Sunday (35,523).

- **Overall Trend:** While the trend line shows a slight overall decrease in crime frequency throughout the week, the most significant finding is the clear pattern of an increase leading up to Friday, followed by a sharp drop over the weekend. This trend could be useful for deploying resources or implementing prevention strategies on specific days of the week.



	January	February	March	April	May	June	July	August	September	October	November	December
2018	6792	5991	6764	6903	7812	7745	7452	7444	591			
2017	7018	6508	7130	7094	7662	7892	7918	8060	7799	7776	6875	6601
2016	6812	6323	7136	7071	7541	7410	7561	7842	7532	7494	6998	7060
2015						3652	7153	7239	7285	7160	6796	6973

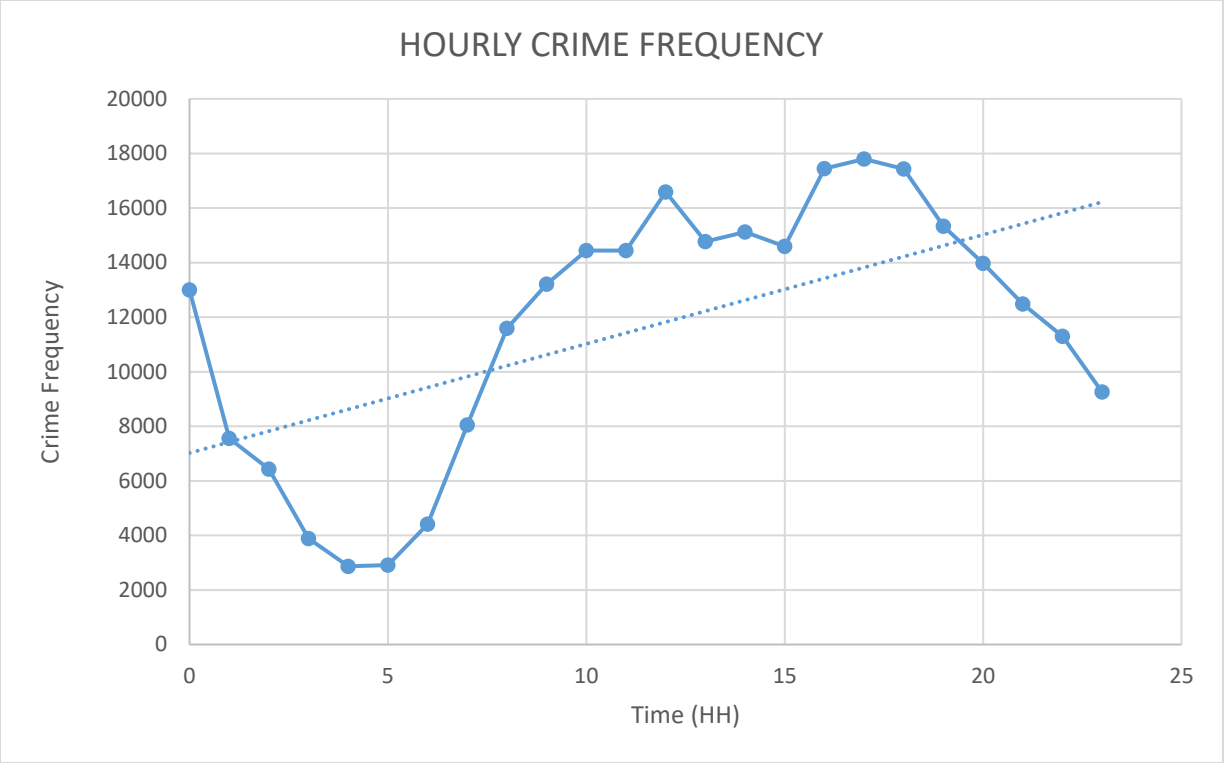
- **Annual Trend:** In all four years, a clear seasonal pattern is visible. Crime frequency is generally lower in the winter and spring months, starts to increase in late spring/early summer (around May), and peaks during the summer months of July and August. A decline then begins in the autumn, continuing into the winter.

- **Year-over-Year Comparison:** The chart indicates a consistent increase in crime frequency from year to year. The line for each successive year is positioned above the line for the previous year, with 2018 showing the highest crime rate and 2015 showing the lowest. This suggests an upward trend in overall crime rates over the period captured by the data.

- **Peak Months:** The highest crime counts for all years consistently occur in July and August. For example, the peak in 2018 reached around 30,000 incidents, while the peak in 2016 was around 15,000 incidents.

- **Valley Months:** The lowest crime rate generally falls in the early months of the year, particularly January and February.

- **Conclusion**: This analysis shows that crime frequency is not static but follows a predictable annual cycle, with summer months being the most active. The year-over-year increase is also a significant finding, indicating a need for attention to rising crime rates in the city.



- **Morning & Early Afternoon:** Crime frequency is lowest during the early morning hours, particularly from around 3 AM to 5 AM. It begins to rise sharply starting around 6 AM and continues to increase steadily through the morning and into the early afternoon.

- **Peak Crime Hours:** The highest crime frequencies are observed in two distinct periods. A smaller peak occurs around midday (12 PM), while the most significant and sustained peak is in the late afternoon and early evening, specifically between 5 PM and 7 PM. This suggests that the highest number of incidents occur during post-work hours.

- **Nighttime Decline:** After the evening peak, crime frequency begins to decline steadily through the late evening and night, dropping sharply after 9 PM.

- **Overall Trend**: The data suggests that crime is not uniformly distributed throughout the day. It is significantly more prevalent during daytime and evening hours, with a peak in the late afternoon. This pattern can be valuable for law enforcement to allocate resources more effectively throughout the day.

Collective Report on Boston Crime Analysis

This report presents key findings from a data analysis project on Boston crime data. The analysis was conducted in Microsoft Excel, leveraging Power Query for data transformation tasks such as changing data types, creating new columns and addressing data anomalies. Insightful visualizations were developed using pivot tables, supported by Excel functions including VLOOKUP, UNIQUE and COUNTIF.

Conclusion: This report demonstrates that Boston crime is not uniformly distributed but follows clear and predictable patterns across different dimensions: location, time of day, day of the week, and season. The most effective strategies for prevention and response would be those that are highly targeted, focusing on the specific areas, times, and types of crimes that are most prevalent, while also addressing the underlying factors contributing to the observed year-over-year increase. The data provides a strong foundation for data-driven decisions in public safety.