**Executive Summary**

### Problem Statement

Crime is an ever-growing occurrence in the US with the FBI reporting a total of 2,109.9 property crimes per 100,000 people and 379.4 violent crimes per 100,000 people in 2019. When looking locally at the city of Buffalo where crime has been steadily increasing year over year, until the pandemic, we are able to find patterns that could help law enforcement better respond to different kinds of incidents. The initial investigation showed that response time by law enforcement officers was spread out over an extensive range resulting in long wait times for victims where time may be of the utmost importance. We decided to look into this further and come up with a predictive model that would predict the response time of law enforcement officials based on explanatory variables like location, time of day, calendar month and incident type.

### Findings

Hour of day also shows a striking influence on the response time, especially the 0th and 12th hour, where more crime incidents are reported. Monday exhibits an interesting impact on response time with high Theft of services and Assault incidents comparatively. Incidents related to sexual offence have a significant impact pertaining to higher values in response time. January has a remarkable influence on response time with high crime rates. This could possibly be due to the holiday season. The Upper West Side neighborhood has the most inflated response time in the incidents that have been recorded. Population density and the area wise police districts do not seem to be uniformly distributed for the frequency of incidents occurring in Buffalo.

### Proposed Solutions

1. Based on our findings from the cluster analysis it can be concluded that the number of police districts can be increased from the current five districts (A-E) to seven. This suggestion is in line with population density, incident density and area coverage for incidents.
2. The officer patrol assignments and shifts could be scheduled to focus more on the neighborhoods where the probability of an incident occurring is highest like the Upper West Side and the days and months (Monday and January).
3. Special helplines for sexual related offenses and more officers assigned to the Special Victims Unit who would respond only to those related calls allowing regular patrol officers to shift their attention to other incident types.

### Final Thoughts and Next Steps

In line with the predicted models implemented, the emergency response time is especially at its peak with respect to certain incident types and incident record times. These factors continue to garner high influence on response time and must be immediately remedied with better vigilance and patrol. Furthermore, for enhanced emergency planning serviced for the city of Buffalo, a greater number of police districts are highly recommended. A more comprehensive dataset and additional census variables can also be gauged to better understand how response times are influenced.