

Police Data Challenge

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Datasets Used - Baltimore

Dataset Provided

- **Baltimore for Calls Service**: emergency and non-emergency calls to law enforcement in Baltimore (Eastern Region) from 2015-2017

External Datasets

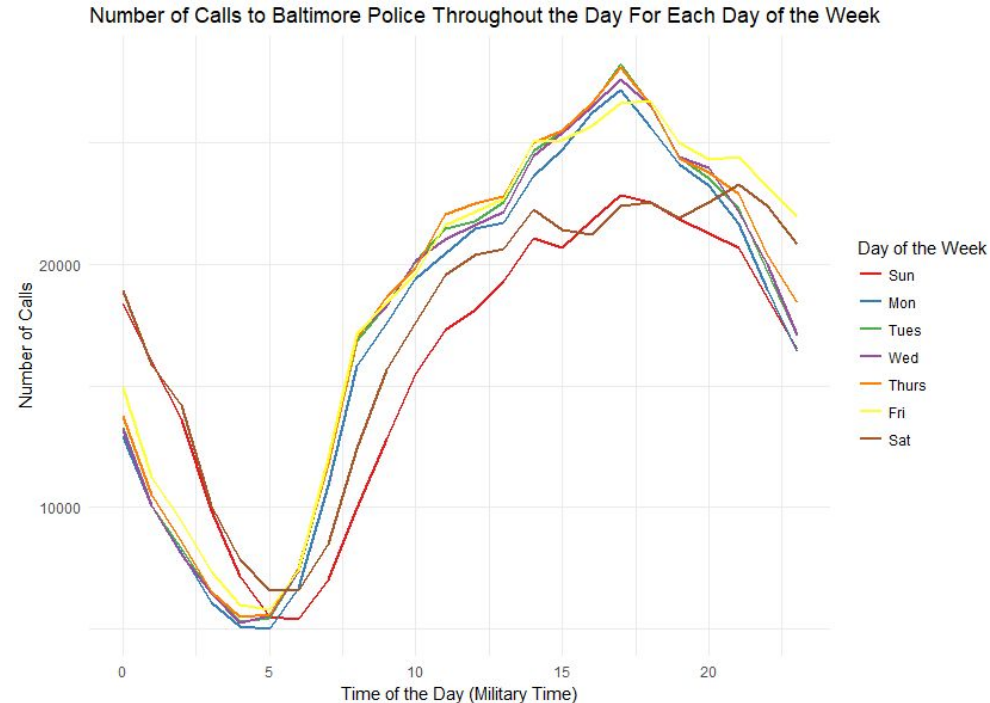
- **Baltimore Police Department Victims**: information on victim crimes in Baltimore
- **Baltimore Police Department Arrests**: top arrest charges of those processed at Baltimore's Central Booking & Intake Facility (NO JUVENILES, 18+)
- **Baltimore Police Department Gun Offenders Registry**: gun offenders registered with the Baltimore Police Department
- **Baltimore Police Department Stations**: location of 9 police district stations and 1 headquarter station



How can Baltimore more efficiently and effectively deal with crime? -Time

- Weekdays = Monday through Friday & Weekends = Saturday through Sunday
- Overall trend is similar between the weekdays & weekend
- Clear shift between weekdays & weekends: compared to weekdays...
 - 0-5: greater # of calls on weekends
 - 5-0: less # of calls on weekends

Police can better delegate assignments to officers according to day and time of day

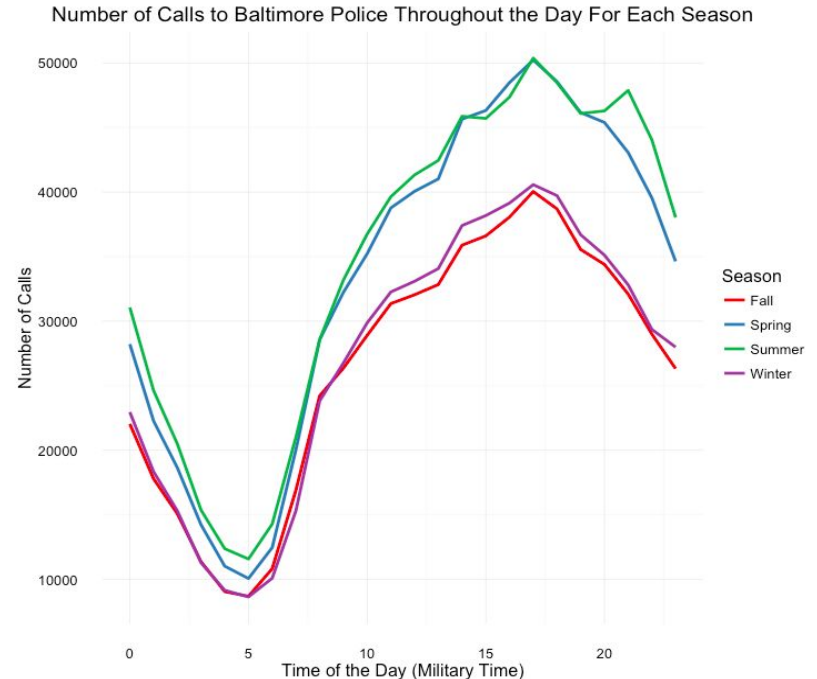




How can Baltimore more efficiently and effectively deal with crime? -Season

- Higher crime rates during higher temperature seasons (Spring & Summer)
- Possible correlation with aggression and temperature concluded by social psychologists
 - Uncomfortable environmental factors correlate with higher aggression = higher crime rates
- More likely to be aggressive/confrontational which leads to higher crime rates in higher temperatures

Increase police activity depending on the season & temperature of the day

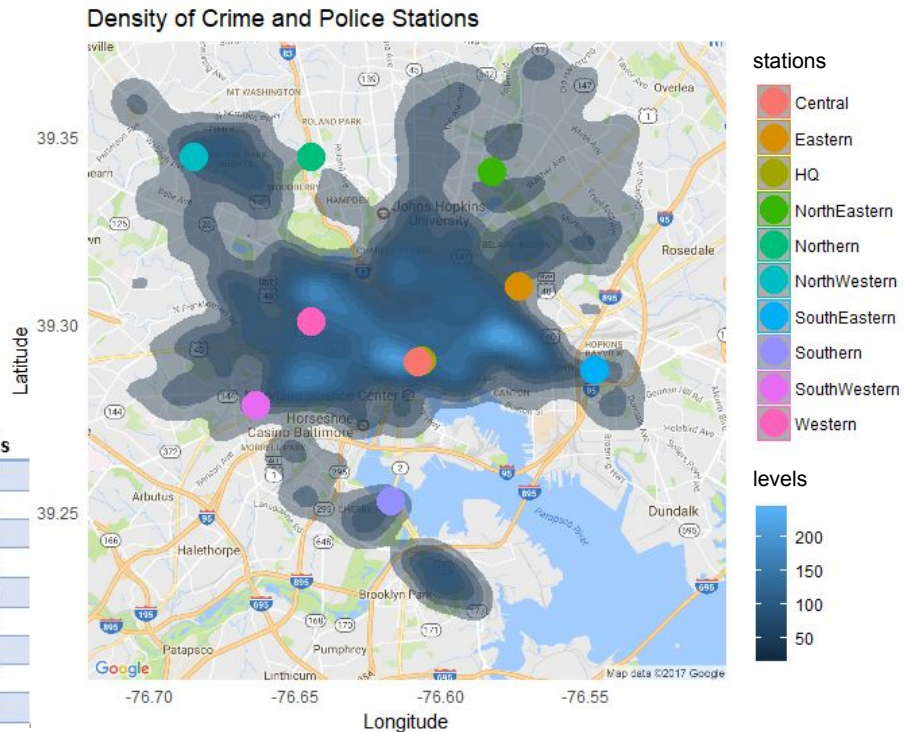


How can Baltimore more efficiently and effectively deal with crime? -Location

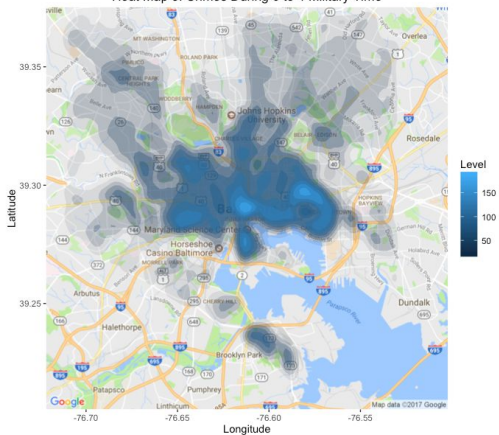
- Stations covering large outskirts (e.g. NorthEastern and Southern locations) requires additional support
 - Additional officers
 - Temporary stations
- Western and Eastern police stations could be relocated to improve response time and crime control

Stations can be placed in more strategic locations based on the density of crime

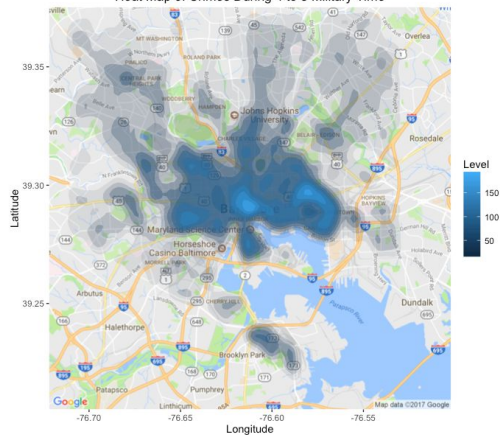
District	# of Calls
Northeast	426857
South	324564
Southwest	322828
Central	320968
Southeast	317723
North	292746
Northwest	291492
West	276957
East	273589



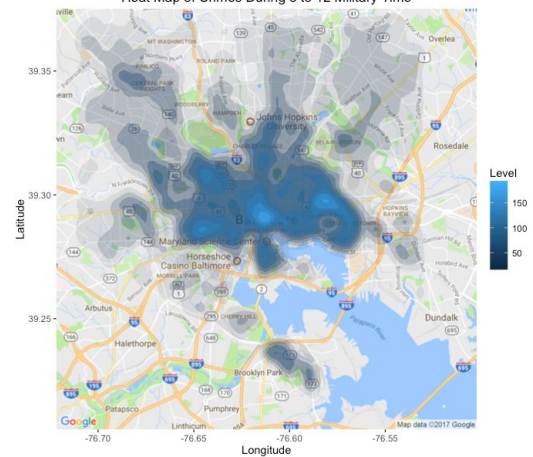
Heat Map of Crimes During 0 to 4 Military Time



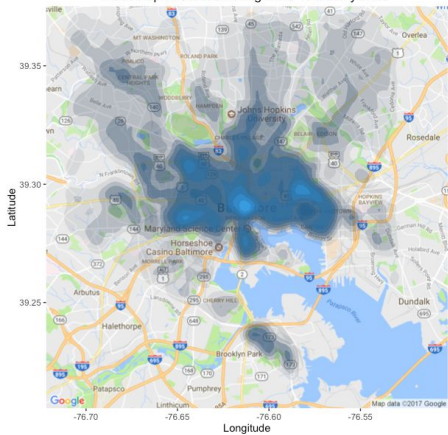
Heat Map of Crimes During 4 to 8 Military Time



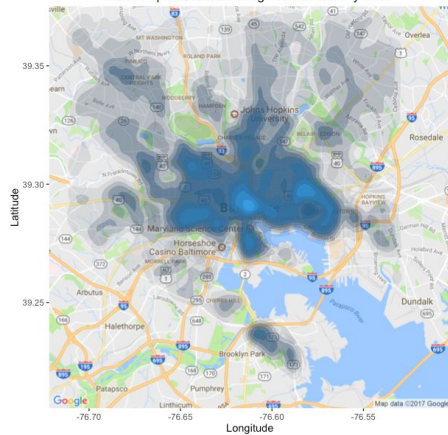
Heat Map of Crimes During 8 to 12 Military Time



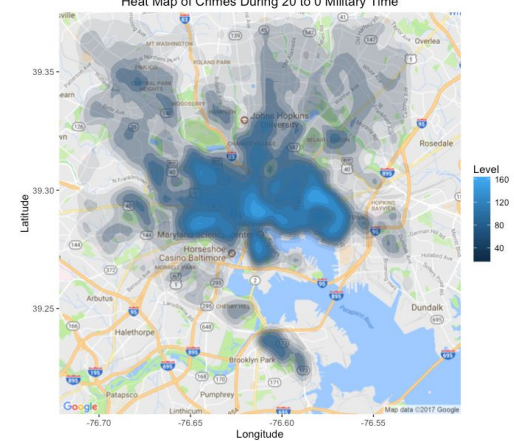
Heat Map of Crimes During 12 to 16 Military Time



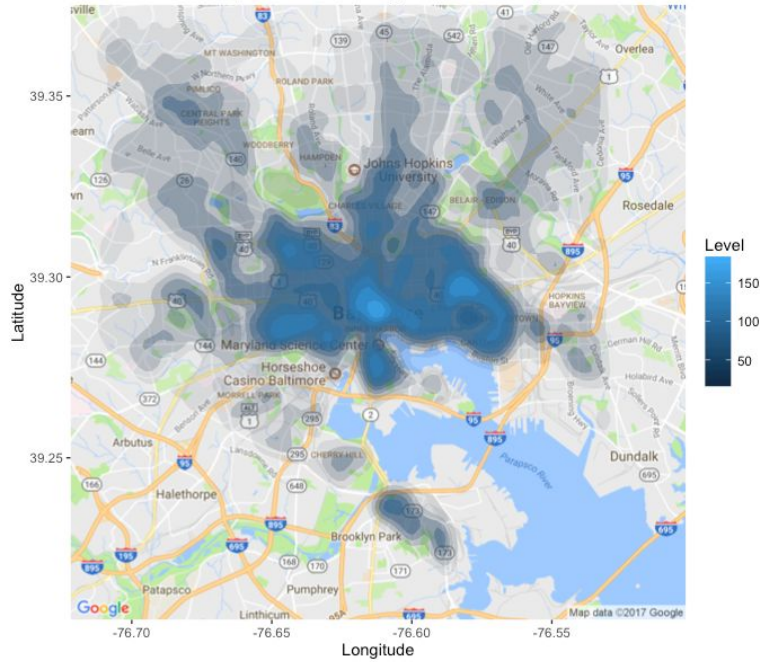
Heat Map of Crimes During 16 to 20 Military Time



Heat Map of Crimes During 20 to 0 Military Time



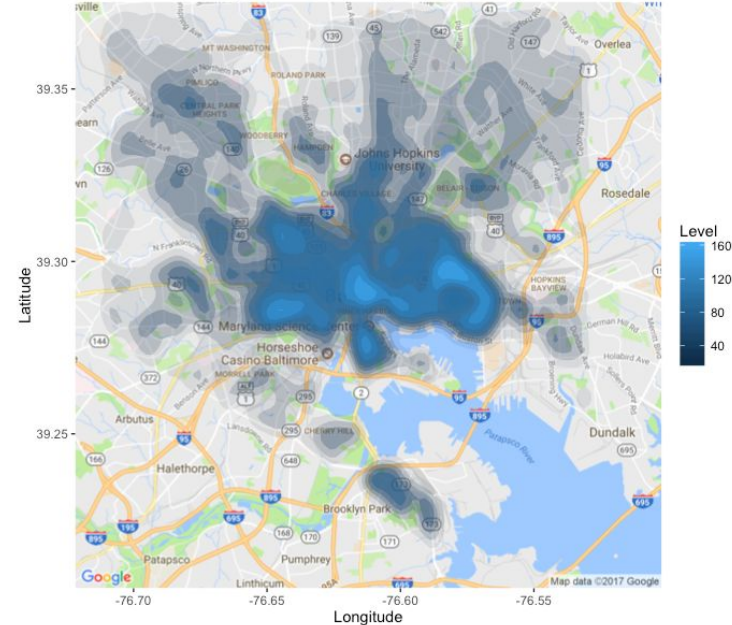
Heat Map of Crimes During 16 to 20 Military Time



- No obvious distinction in volume of crime between different hours of the day
 - May be due to high frequency of crime in one hour being drowned out by other hours in range
- Outskirts become more dense throughout the day
 - High density areas remain relatively the same

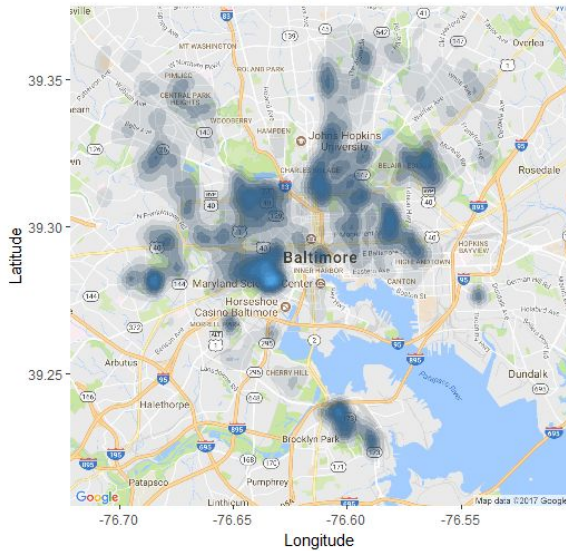
Sending more police officers towards the outskirts of Baltimore as the day progresses will allow for more area coverage

Heat Map of Crimes During 20 to 0 Military Time

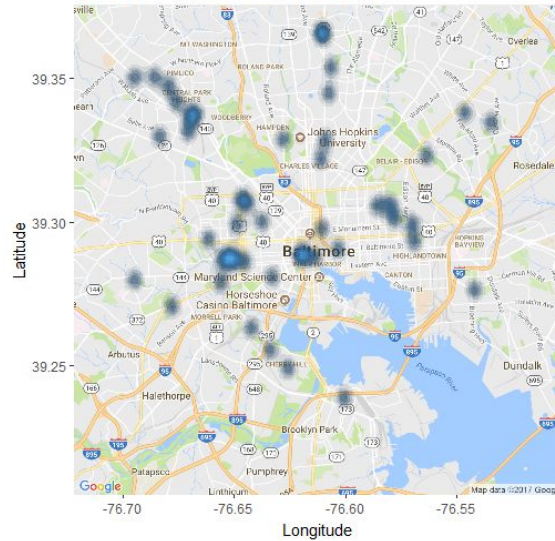


What innovative approaches can be used to increase public safety for police?

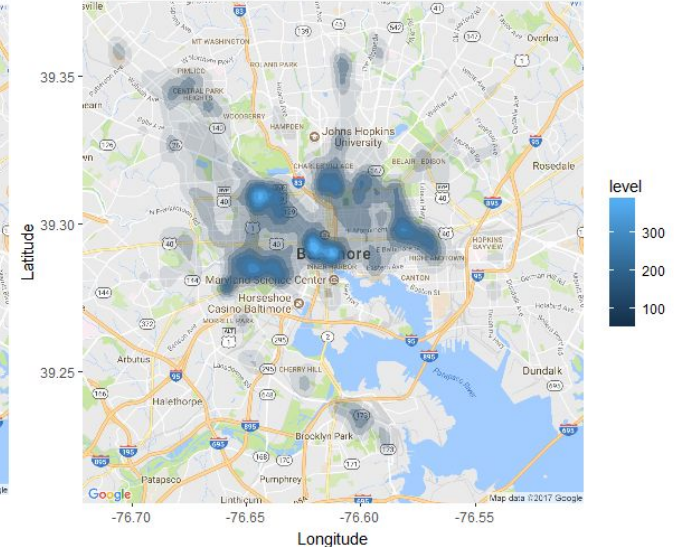
Calls for Incidents Involving Guns



Calls for Incidents Involving Knives



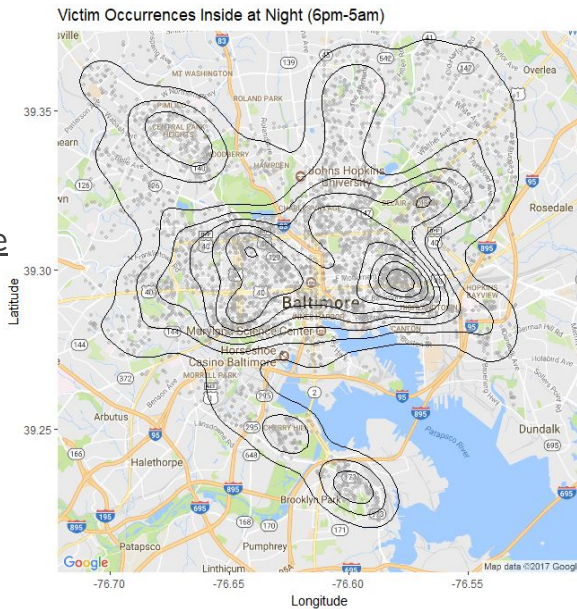
Calls for Armed Incidents



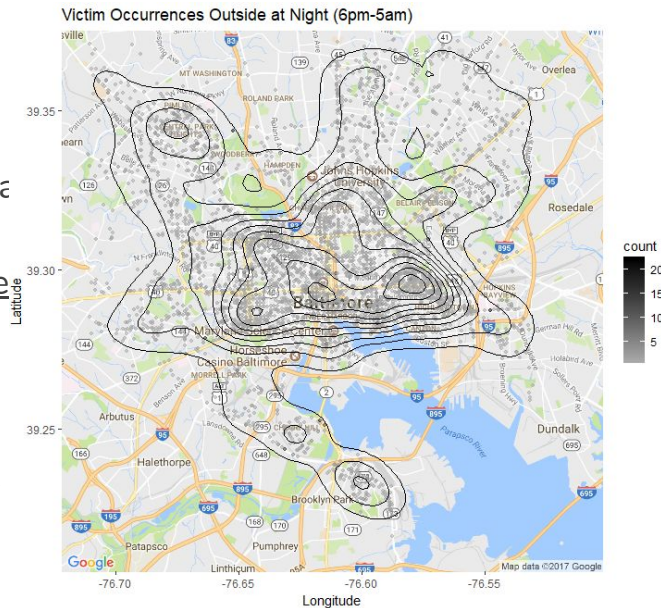
- Better prepare police officers for weapons offenders use in certain areas
- In areas with more gun related crimes, police officers should always wear their bulletproof vests if not already and allocate more resources to areas with higher density of certain call types

What innovative approaches can be used to increase public safety for citizens?

Inside: A high frequency of the crime happening inside at night is happening east of Inner Harbor. More police could be stationed in that area during these times for quicker response rates to the scene and intervention of crimes.



Outside: Higher frequencies of crime happening outside at night are around Central Baltimore. More police can also be stationed here at these times as well as the addition of street lights if these areas are lacking some.



What innovative approaches can be used to increase public safety for police AND citizens?

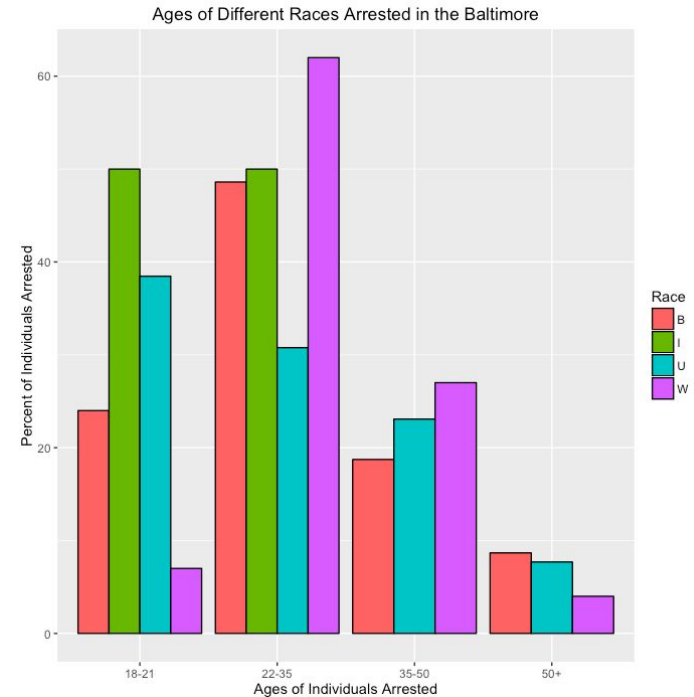
- Crime committed more by White people than Black people in half of the groups despite “popular belief”
 - 50+: only group that Black people committed the most crime
 - Many of the arrested are younger than 35

Funding youth programs & schools to promote non-gang related activities

Could decrease crime especially for ages 18-21

Could impact the succeeding age groups

This approach's impact(s) may not be able to be seen until several years pass





Summary of Approaches

- Assign officers more efficiently according to location, day/time of day, season/temperature, and location of headquarters
- Prepare officers in accordance to their assignment areas and needs
- Provide better support for citizens and target programs for groups most frequently involved in crimes
- Allocate more resources to locations that have higher densities of certain types of crimes
- Place stations based on crime densities for more effective and faster response rates