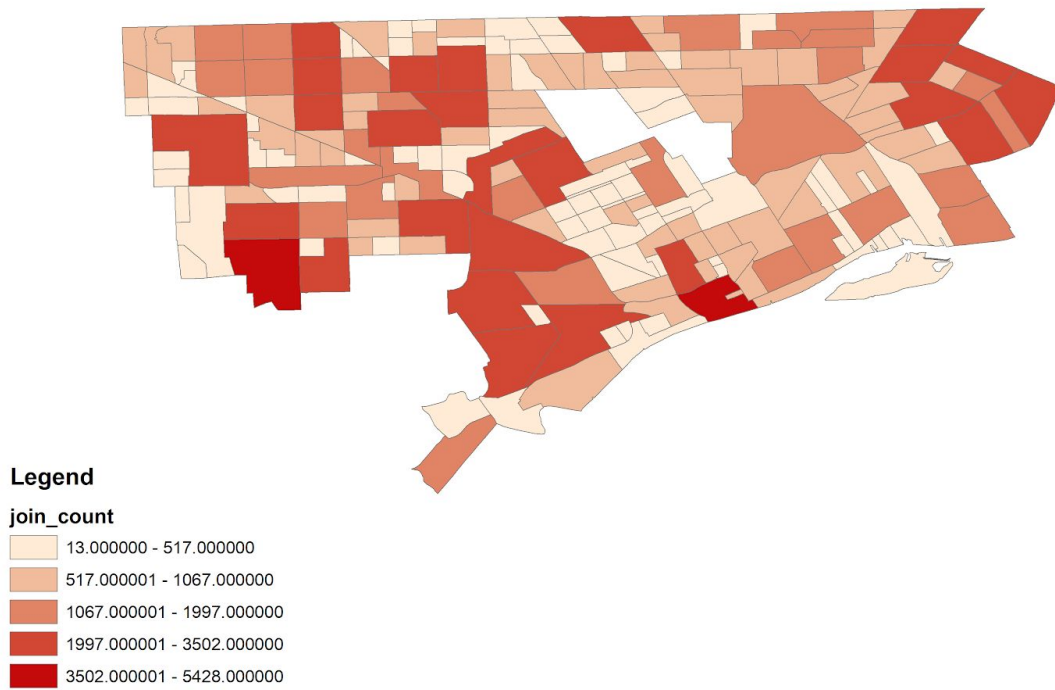


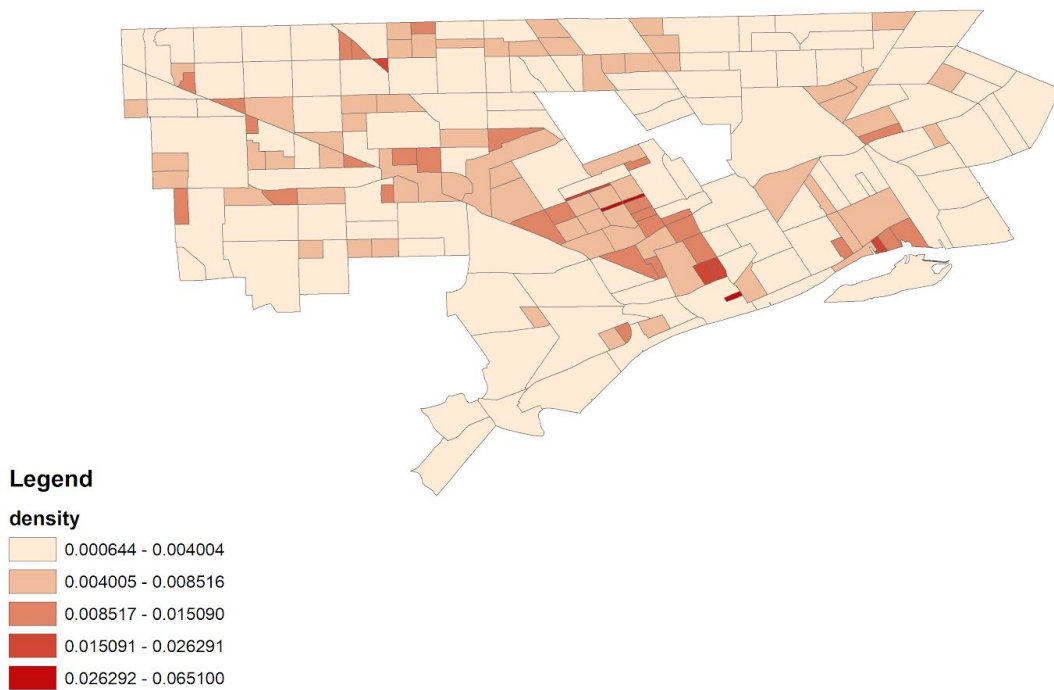
GEOG 380 Final Project

As we all know, Chicago is one of the most dangerous cities out there in United States. However, a city that tops Chicago with more violent crime points to Detroit, Michigan. Detroit has vast variety of crimes such as assault, burglary, damage to property, and etc. Due to severe high crime rates in the city, it is important to know and map out the city to identify and avoid such dangerous areas. Therefore, the objective of the project this time was to create new fields to calculate when the crimes occur (time) and what type of crimes are being committed. Using this data, we can create heat maps to show hot spots and cold spots of Detroit to see which areas of Detroit are safer than other non-safe areas. Through this model, we will be able to help people who are moving to Detroit avoid certain areas depending on the types of crimes they would want to avoid.

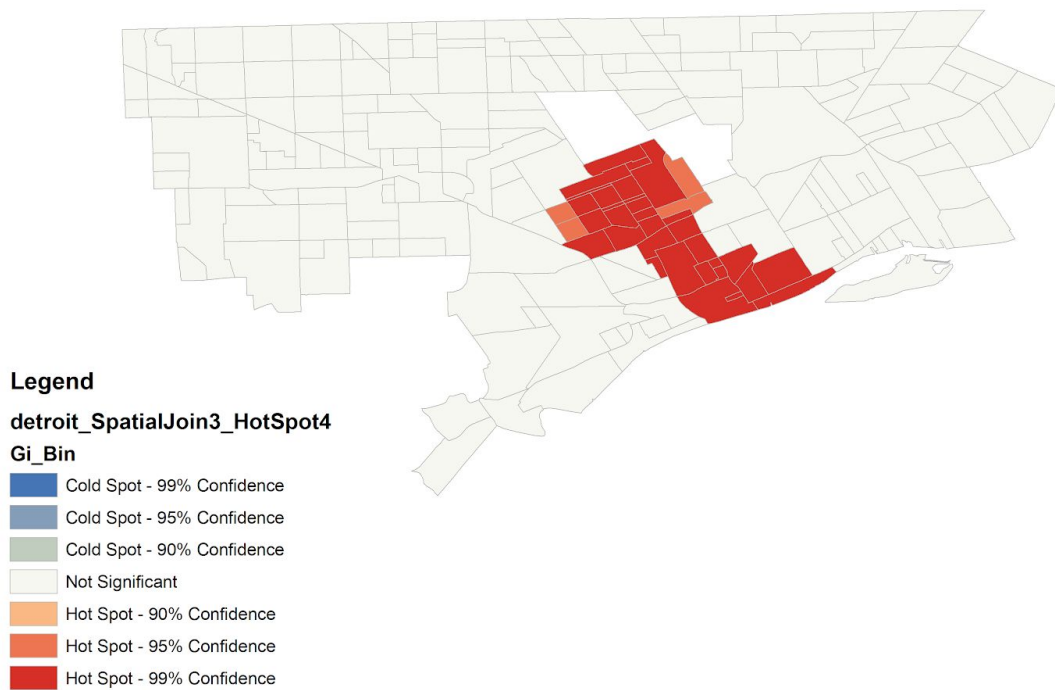
We were able to execute this process through multiple steps, including using QGIS to visualize certain steps that we would not be able to see in ArcGIS. The steps we took required tools such as Addfield_management, UpdateCursor, SpatialJoin_analysis, hotspot_analysis, and some for loops to complete the steps. The only data layers we needed to work with these tools were only crime points in Detroit and a map of Detroit. The Addfield_management() was used to create new field for a certain type of crime we wanted to study. Next, we would use the UpdateCursor() to validate and assign values into the new field we just created. Within the the UpdateCursor(), we would use for loops to find all the necessary type of crime we wanted in “Offence Ca” column, where all types of crimes were listed. The process would repeat until we wanted to find different type of data other than crime types, which then we had to UpdateCursor() to some other field we were working on.



A graduated color map illustrating the result of joint count. Neighborhoods in the east and west side of city tend to have more crimes than other areas. It's also probably because these area are relatively larger.



Based on the result of joint count, we created a map illustrating the density of crimes, which is number of crimes divided by acres. High crime density seems to be clustered on city center and along the MI-5 highway. It's also interesting to see that crime density has significant difference between neighborhoods north and south of MI-5 in some areas.



Result image of Hotspot Analysis based on crime density of each neighborhood. Crime hotspots are clustered the center of the city, and there seems to be no significant coldspots.



Animated heat map showing the occurrence of crime with type 'ASSAULT' in each hour

(Animation is available in Github /images folder)