

CRIM 545 Project 2

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Libraries

```
library(tidyverse)
library(leaflet)
library(sf)
library(tigris)
library(data.table)
library(lubridate)
```

Map 1

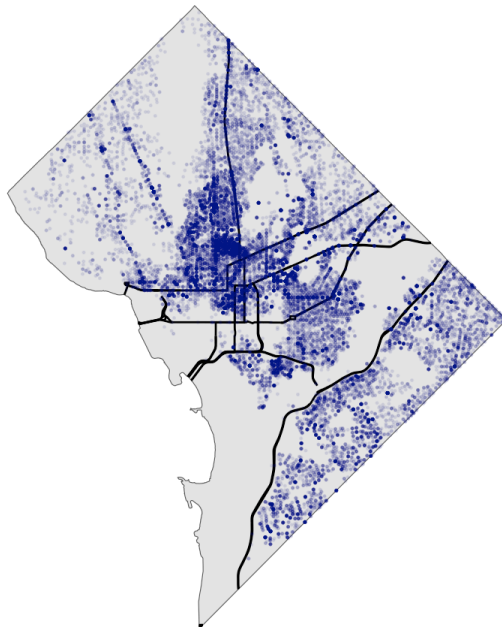
Subset

```
dc_2023<-subset(dc.data, dc.data$YEAR == '2023')
```

Transparency Map

```
ggplot() +
  geom_sf(data = dc.outline) +
  geom_sf(data = dc.roads.major) +
  geom_point(aes(x = LONGITUDE, y = LATITUDE), data = dc_2023,
             alpha = 0.085, size = 0.25, color = "darkblue") +
  labs(title = "DC Major Crime Hot Spots 2023") +
  theme_void()
```

DC Major Crime Hot Spots 2023



Analysis

According to the map, there are three main hot spots for DC Major Crimes for 2023. The first, largest, hot spot is located in central DC. The second largest hot spot is located southeast of this location. The third hot spot covers a larger area, which is south of the Potomac river. Cold spots include north-central DC and southwest DC.

Map 2

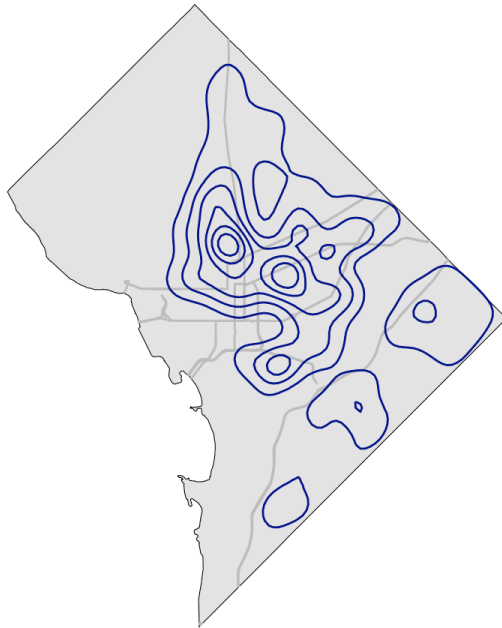
Subset

```
dc_2024<-subset(dc.data, dc.data$YEAR == '2024')  
dc_auto_2024<-subset(dc_2024, dc_2024$OFFENSE=='MOTOR VEHICLE THEFT' | dc_2024$OFFENSE == 'THEFT F/AUTO')
```

Density Map

```
ggplot() +  
  geom_sf(data = dc.outline, color = "black") +  
  geom_sf(data = dc.roads.major, color='gray') +  
  geom_density2d(data = dc_auto_2024, aes(x = LONGITUDE, y = LATITUDE), size = 0.5, color =  
    "darkblue") +  
  ggtitle("Auto Crime Hot Spots 2024") +  
  theme_void()
```

Auto Crime Hot Spots 2024



Analysis

According to the map of DC Auto Crimes in 2024, there is one main hot spot located in central DC. There are six other, smaller, hot spots located in northwest and south DC. Cold spots include southwest DC and some of northwest DC.

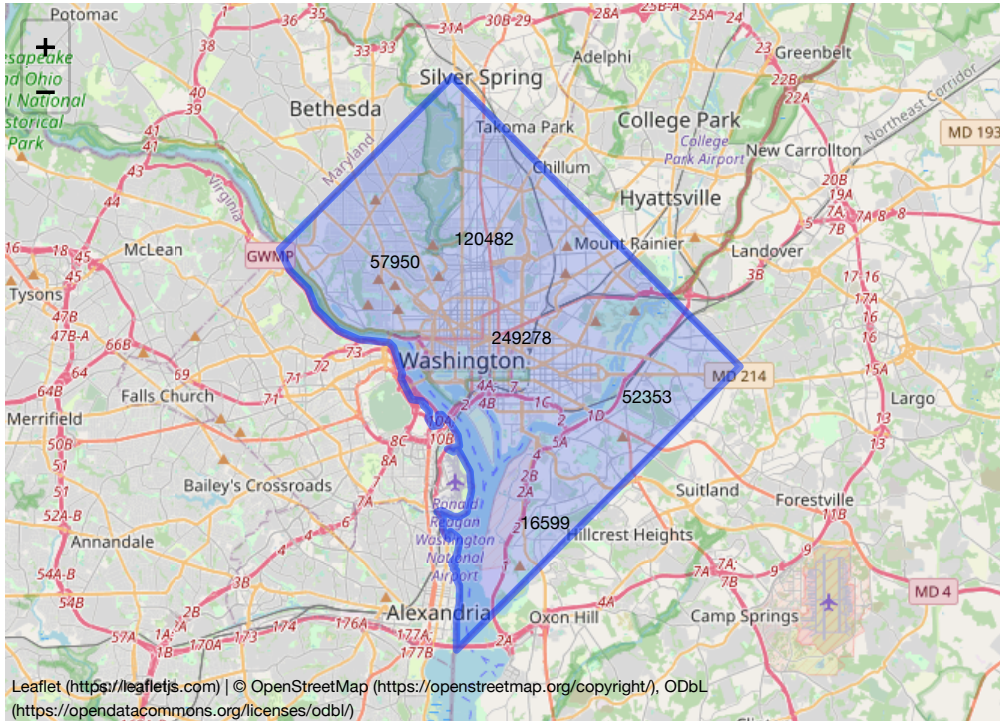
Map 3

Subset

```
dc_prop_2024<-subset(dc_2024, dc_2024$OFFENSE=='THEFT/OTHER' | dc_2024$OFFENSE == 'BURGLARY')
```

Interactive Cluster Map

```
leaflet(dc_prop_2024) %>%  
  addTiles() %>%  
  addMarkers(lng = ~LONGITUDE, lat = ~LATITUDE,  
    popup = paste(  
      "Crime Type: ", dc_prop_2024$OFFENSE, "<br>",  
      "Date:", dc.data$DATE),  
    clusterOptions = markerClusterOptions()) %>%  
  addPolygons(data = dc.outline)
```



Analysis

According to the map of DC Theft and Burglary crimes in 2024, there is one main hot spot in central DC near Columbia Heights. There is another hot spot that is located southeast of central DC near Langston. There are a few other, smaller hot spots that are located south of the Potomac River and in northwest DC (specifically Friendship Heights, Cleveland Park, and Glover Park). Additionally, there is a cold spot in southwest DC, which is part of the Potomac River, and a cold spot in central north DC, which is Rock Creek Park.