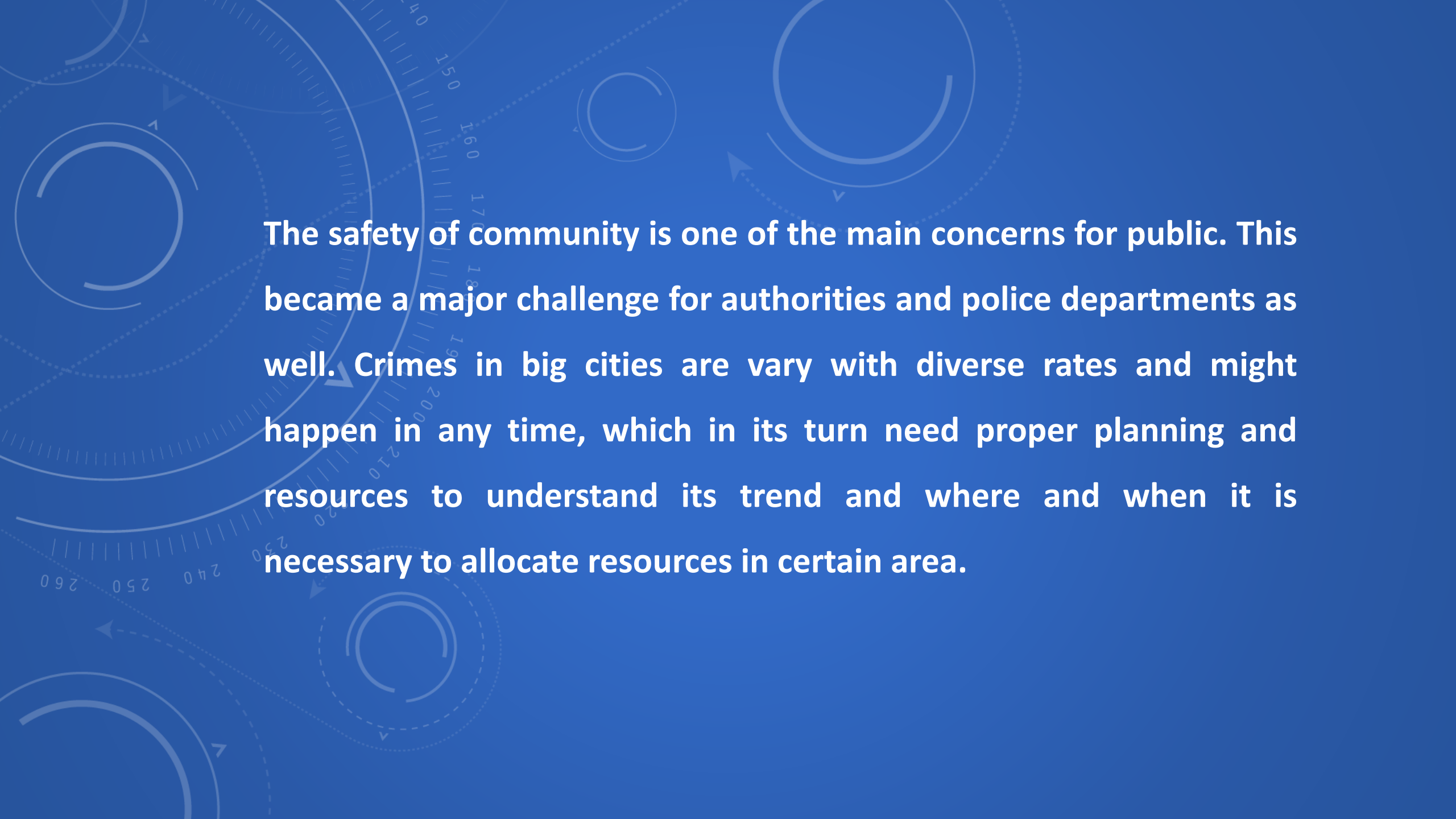


The background is a solid blue gradient. Overlaid on the left side are several concentric circles and radial lines, some solid and some dashed, creating a technical or architectural feel. A large circle on the left has radial lines extending from its center towards the right, intersecting with other circular elements. Smaller circles and arcs are scattered across the left and top-left areas, some with arrows indicating a clockwise or counter-clockwise direction.

# CRIME IN THE CITY

## CHICAGO

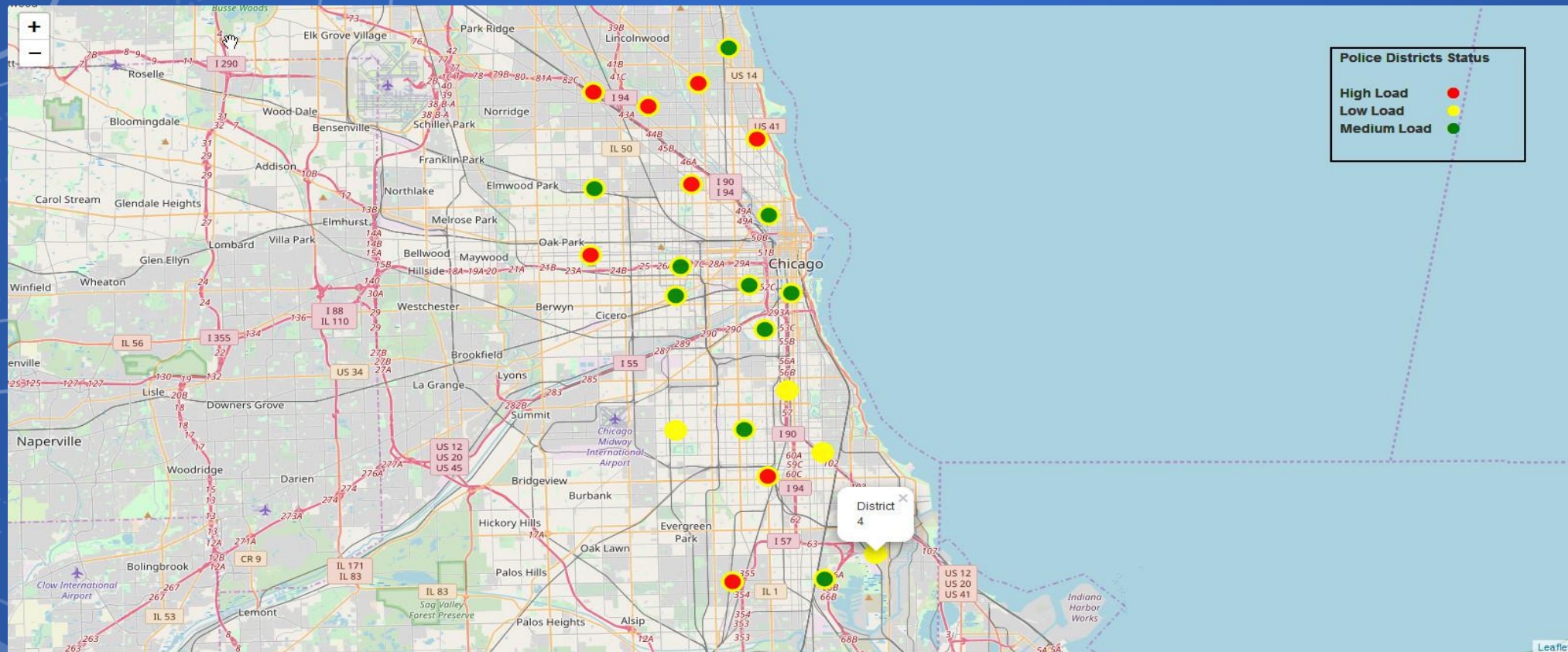
The background is a solid blue color with a complex pattern of white and light blue geometric shapes. These include concentric circles, arcs, and dashed lines. Some of these shapes have small arrows indicating a clockwise or counter-clockwise direction. There are also several numbers scattered across the background, including 40, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, and 260, which appear to be part of a larger, partially visible circular scale or gauge.

**The safety of community is one of the main concerns for public. This became a major challenge for authorities and police departments as well. Crimes in big cities are vary with diverse rates and might happen in any time, which in its turn need proper planning and resources to understand its trend and where and when it is necessary to allocate resources in certain area.**

# Data Acquisition and Cleaning

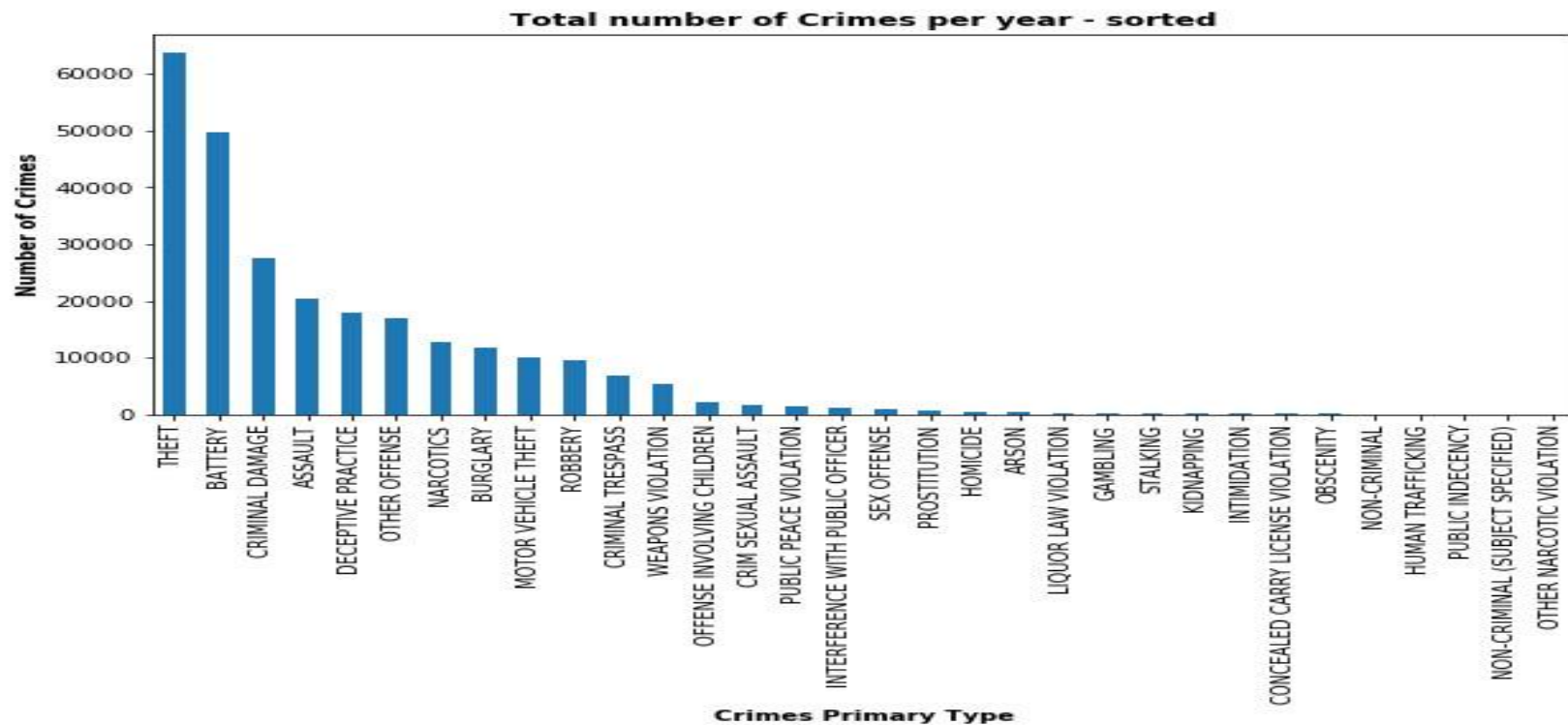
- Chicago crime incidents dataset from 2001 to present, which has detailed information on the daily cases, such as where it happened, when, case coordinates (latitude and longitude), crime type, etc. From [Chicago Data Portal](#)
- Foursquare, which is geo information platform Its API used to get nearby venues based on the crime case coordinates. From [Foursquare](#)
- After data cleaning, there were 6,705,122 samples and 18 attributes in the data
- We used KNN classifier to complete the missing details with accuracy 99.9%

# Classifying The Police Districts Per its Load

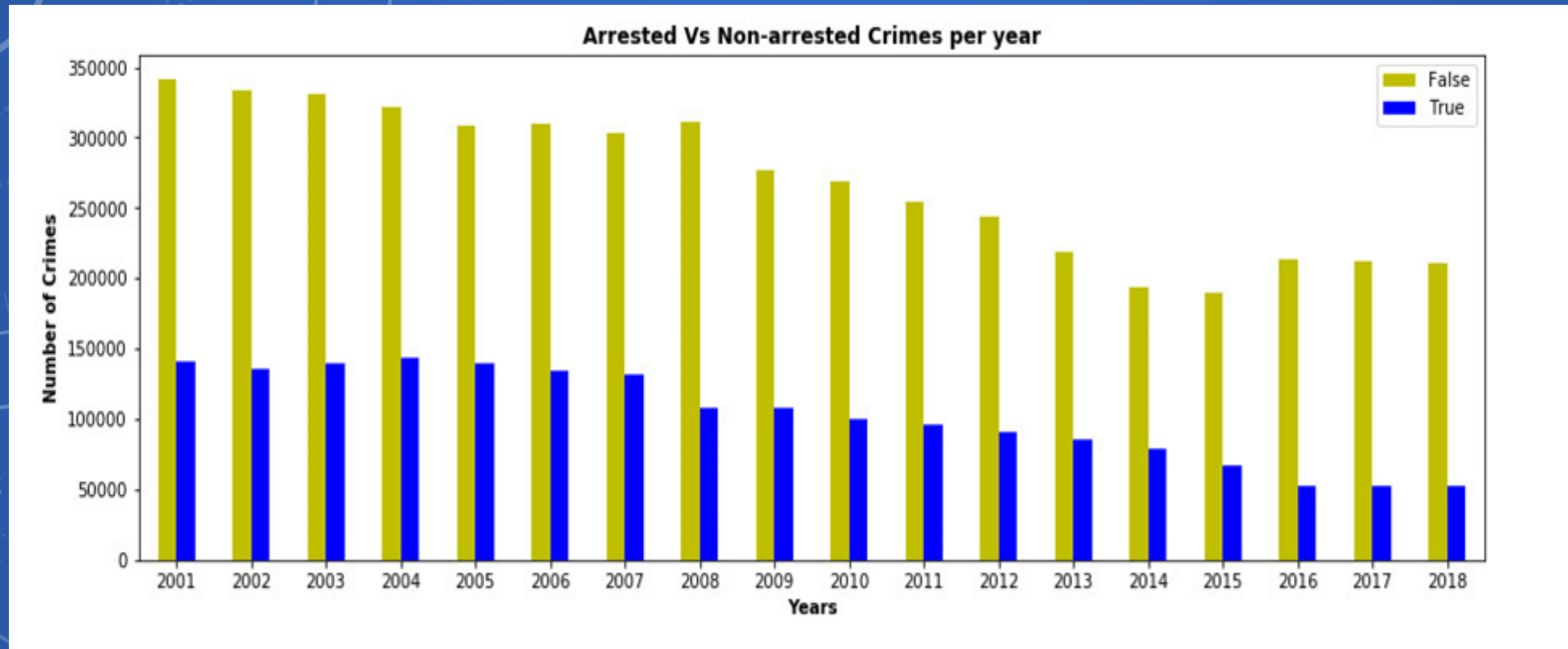




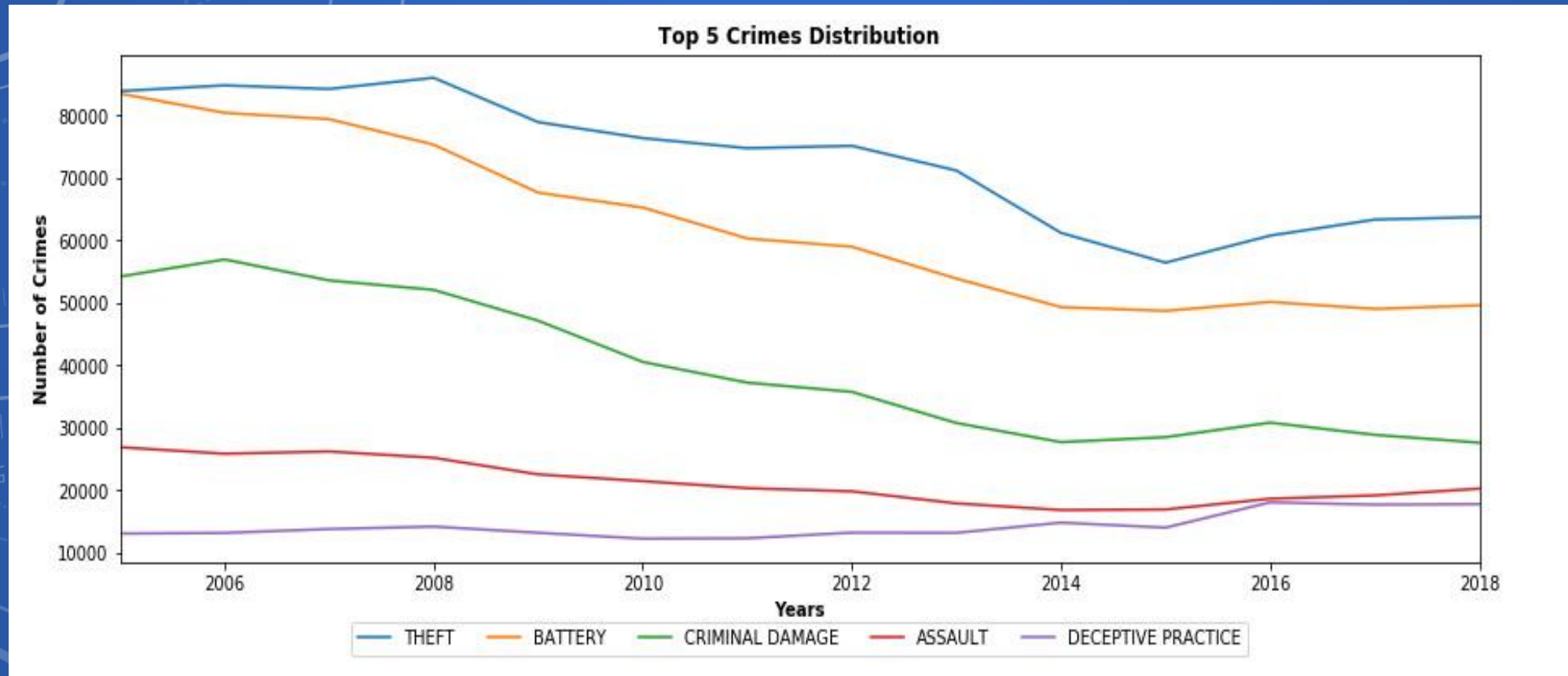
# Crime Types Distribution



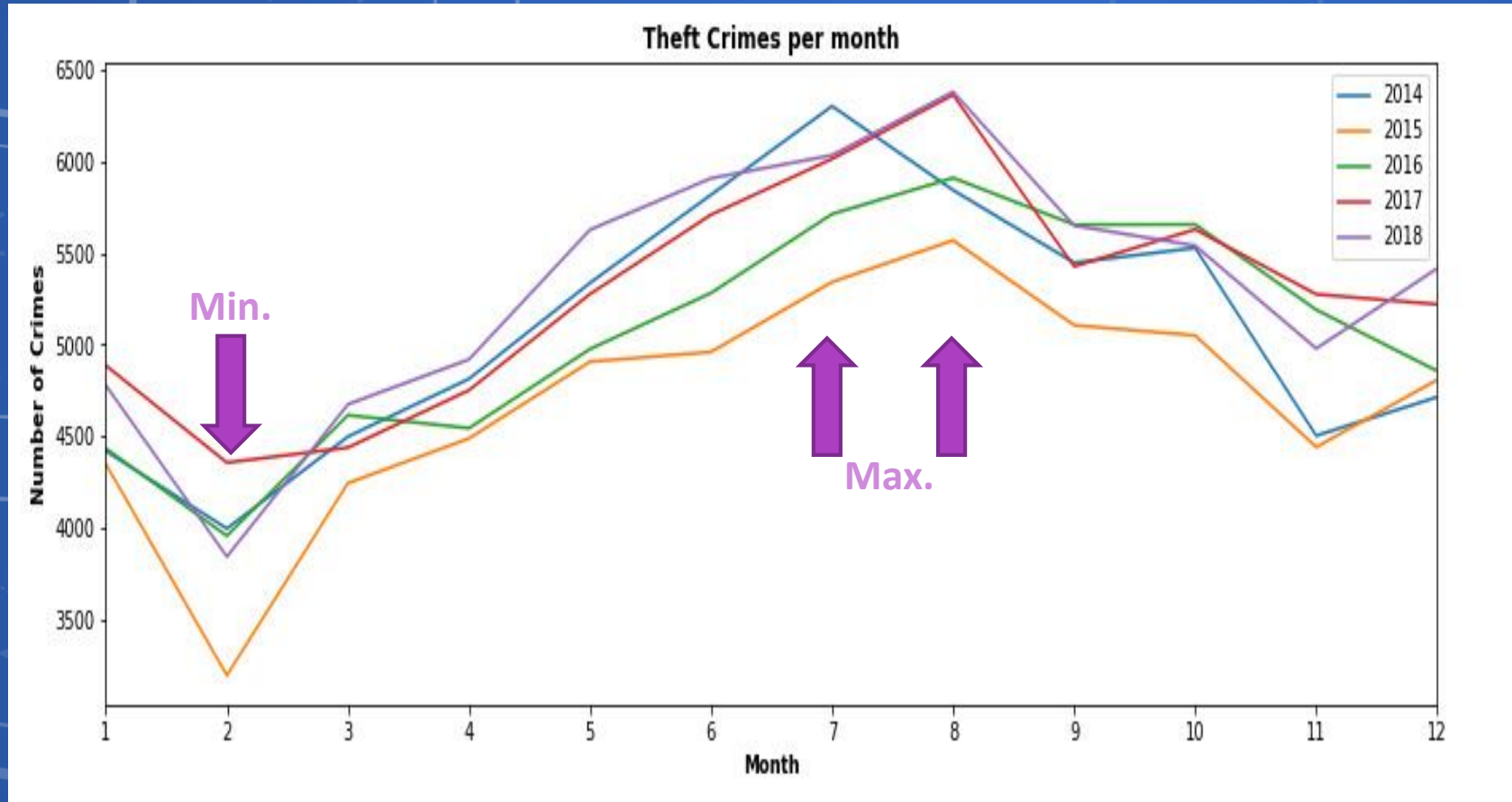
# Crime cases: Arrested Vs, Non-arrested



# Crime cases: Top 5 Distribution per Year



# Crime cases: Theft Distribution per Month

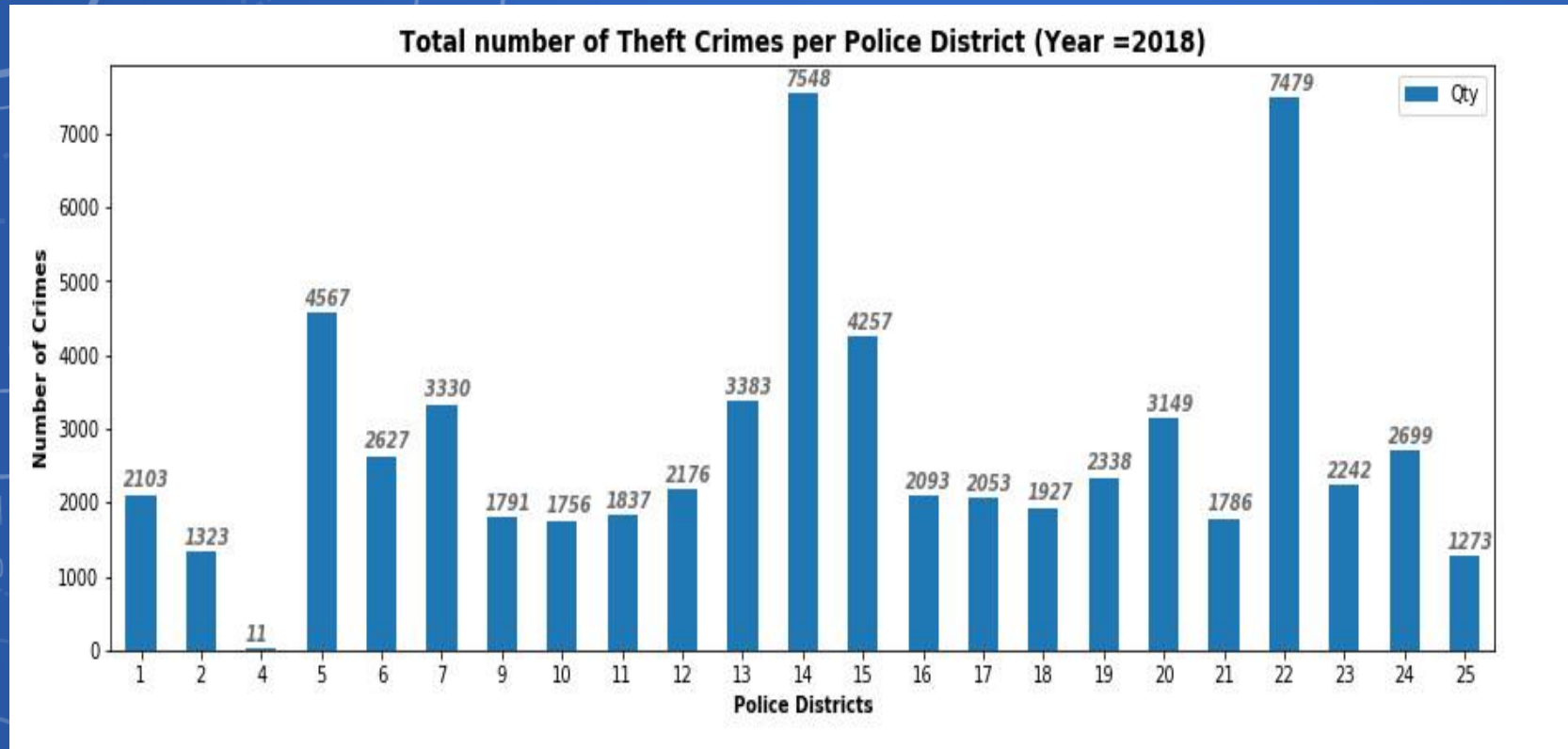


It found that:

- Feb. has the minimum rate for the registered case
- July and Aug have the highest rates



# Crime cases: Theft Crimes per Police District



It found that:

- The District 14 & 22 have the highest rate
- District 4 has rare number of cases

The map displays the city of Chicago with its police districts and crime cases. The legend on the right, titled "Police Districts Status", shows that red dots represent "Crime Case" and yellow circles represent "Police District". The map is densely populated with red dots, indicating a high concentration of crime cases across the city. Yellow circles are placed at the boundaries of police districts. A tooltip for "District 18" is visible, showing a close button (X). The map includes labels for various areas such as Roscoe Village, Oak Park, Forest Park, Berwyn, Cicero, and South Loop. The map also shows major roads and highways, including I-55, I-54, I-53, I-52, I-51, I-50, I-49, I-48, I-47, I-46, I-45, I-44, I-43, I-42, I-41, I-40, I-39, I-38, I-37, I-36, I-35, I-34, I-33, I-32, I-31, I-30, I-29, I-28, I-27, I-26, I-25, I-24, I-23, I-22, I-21, I-20, I-19, I-18, I-17, I-16, I-15, I-14, I-13, I-12, I-11, I-10, I-9, I-8, I-7, I-6, I-5, I-4, I-3, I-2, I-1, I-0, I-1, I-2, I-3, I-4, I-5, I-6, I-7, I-8, I-9, I-10, I-11, I-12, I-13, I-14, I-15, I-16, I-17, I-18, I-19, I-20, I-21, I-22, I-23, I-24, I-25, I-26, I-27, I-28, I-29, I-30, I-31, I-32, I-33, I-34, I-35, I-36, I-37, I-38, I-39, I-40, I-41, I-42, I-43, I-44, I-45, I-46, I-47, I-48, I-49, I-50, I-51, I-52, I-53, I-54, I-55.

- It found that:
  - There is a contradiction with the district location
  - e.g. District 18 shown as the nearest one for the major number of cases , while not having such load almost  $\frac{1}{3}$  comparing to District 22.



**Police Districts Status**

Crime Case     ●

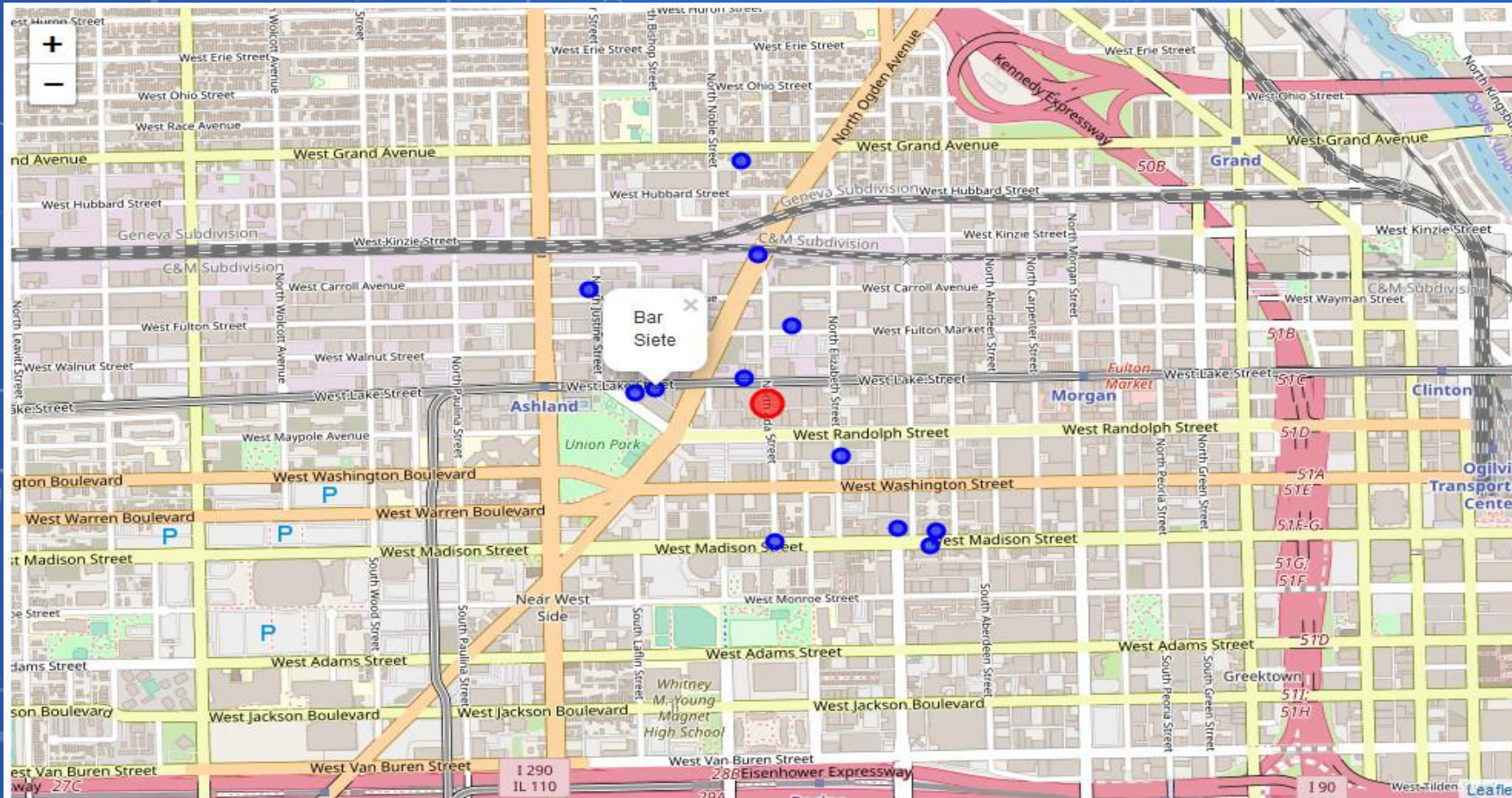
Police District     ●

District 22

This considered as open issue , as it needs some clarifications from Police dep. side.



# Crime cases: Venues nearby to Crime Case



Here the Venues that are nearby to Case No. JB410653 has been plotted

We assumed that the criminal used to be at some bars around the crime location, which can be used as good start during the investigation process.



# Conclusion and future directions

- In this study, the main objective was helping the government authorities and police departments in improving the planning and the quality of the provided service. Some primary objective was to understand the crimes and the police load trend and where and when it is necessary to allocate resources in certain area.
- The other direction was analyzing the crimes with focus on how to provide means to improve the arrested %.
- We think the models can be enhanced by capturing other attributes and extend the Foursquare tips use. e.g., cluster the crimes based on specific symptoms such as the social life surrounding the crime location that can provide better investigation process