

Shadows in the Sun – The guilty secret in a busy city

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Background

Background

A Chinese student in Chicago **was shot by a criminal near the university**. This accident caused great national grief at that time.



Dataset

Dataset



CITY OF CHICAGO · UPDATED 5 YEARS AGO



672

New Notebook



Chicago Crime

Chicago Crime (BigQuery Dataset)



Data

Code (557)

Discussion (4)

About Dataset

Context

Approximately 10 people are shot on an average day in Chicago.

<http://www.chicagotribune.com/news/data/ct-shooting-victims-map-charts-htlmstory.html>

<http://www.chicagotribune.com/news/local/breaking/ct-chicago-homicides-data-tracker-htlmstory.html>

<http://www.chicagotribune.com/news/local/breaking/ct-homicide-victims-2017-htlmstory.html>

crimes.head()

Date	ID	Date	Block	Primary Type	Description	Location Description	Arrest	Domestic	Beat	District	Ward	Community Area
2015-01-19 23:15:00	9932376	2015-01-19 23:15:00	052XX S NORMANDY AVE	THEFT	OVER \$500	STREET	False	False	811	8.0	23.0	56.0
2013-08-31 13:00:00	9287358	2013-08-31 13:00:00	047XX S ABERDEEN ST	MOTOR VEHICLE THEFT	AUTOMOBILE	STREET	False	False	933	9.0	3.0	61.0
2014-08-13 16:33:00	9736106	2014-08-13 16:33:00	029XX W IRVING PARK RD	OTHER OFFENSE	HARASSMENT BY TELEPHONE	OTHER	False	False	1733	17.0	33.0	16.0
2012-09-29 21:45:00	8824448	2012-09-29 21:45:00	007XX E 78TH ST	NARCOTICS	POSS: CANNABIS 30GMS OR LESS	SIDEWALK	True	False	624	6.0	6.0	69.0
2013-10-16 20:40:00	9352048	2013-10-16 20:40:00	008XX N HOMAN AVE	NARCOTICS	POSS: HEROIN(WHITE)	SIDEWALK	True	False	1121	11.0	27.0	23.0

Dataset

```
crimes.head()
```

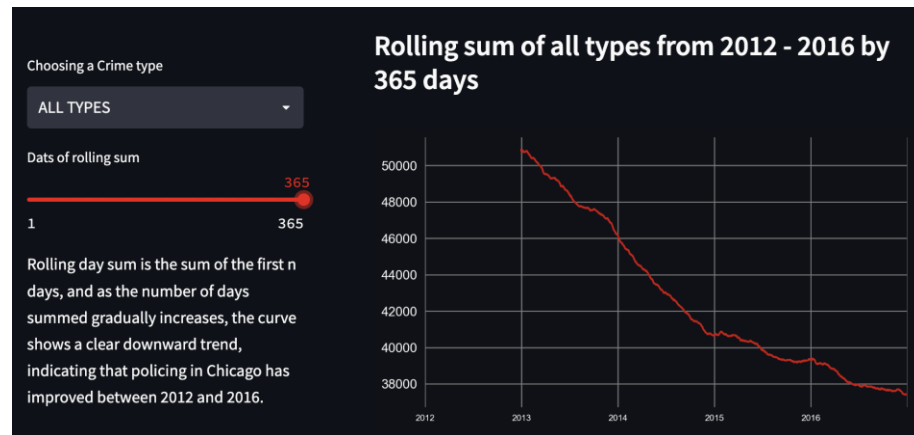
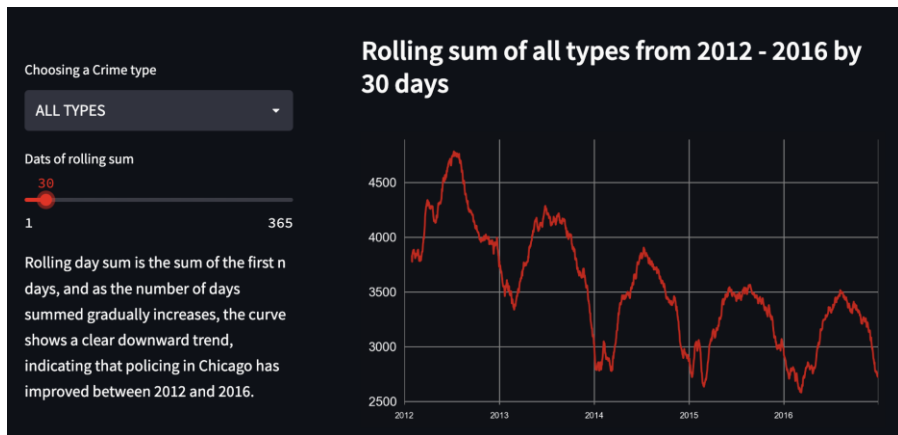
Python

Date	ID	Date	Block	Primary Type	Description	Location Description	Arrest	Domestic	Beat	District	Ward	Community Area	FBI Code	Year	Latitude	Longitude
2015-01-19 23:15:00	9932376	2015-01-19 23:15:00	052XX S NORMANDY AVE	THEFT	OVER \$500	STREET	False	False	811	8.0	23.0	56.0	06	2015	41.797130	-87.785
2013-08-31 13:00:00	9287358	2013-08-31 13:00:00	047XX S ABERDEEN ST	MOTOR VEHICLE THEFT	AUTOMOBILE	STREET	False	False	933	9.0	3.0	61.0	07	2013	41.808535	-87.65
2014-08-13 16:33:00	9736106	2014-08-13 16:33:00	029XX W IRVING PARK RD	OTHER OFFENSE	HARASSMENT BY TELEPHONE	OTHER	False	False	1733	17.0	33.0	16.0	26	2014	41.953955	-87.702
2012-09-29 21:45:00	8824448	2012-09-29 21:45:00	007XX E 78TH ST	NARCOTICS	POSS: CANNABIS 30GMS OR LESS	SIDEWALK	True	False	624	6.0	6.0	69.0	18	2012	41.753094	-87.601
2013-10-16 20:40:00	9352048	2013-10-16 20:40:00	006XX N HOMAN AVE	NARCOTICS	POSS: HEROIN(WHITE)	SIDEWALK	True	False	1121	11.0	27.0	23.0	18	2013	41.892825	-87.711

Analysis

Rolling sum

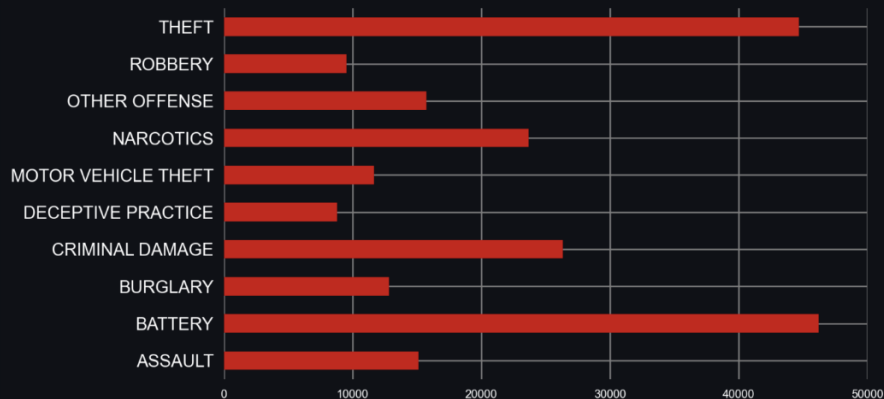
Improvement in Chicago's security



Time slots

- All Day

Distribution of cases in different time periods



- Only Midnight

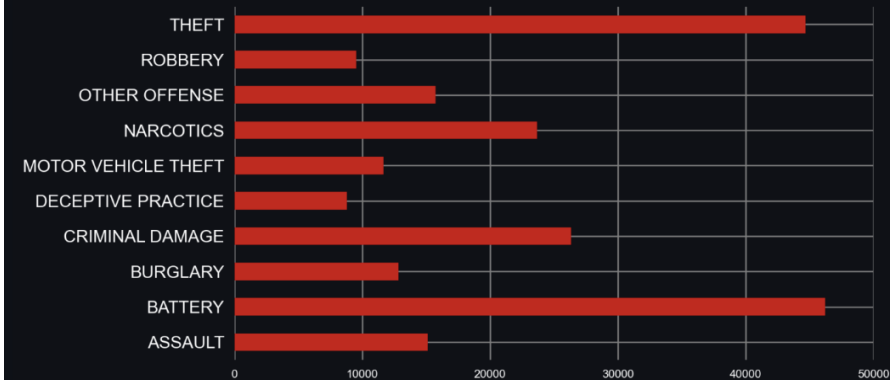
Distribution of cases in different time periods



Narcotics arrested rate

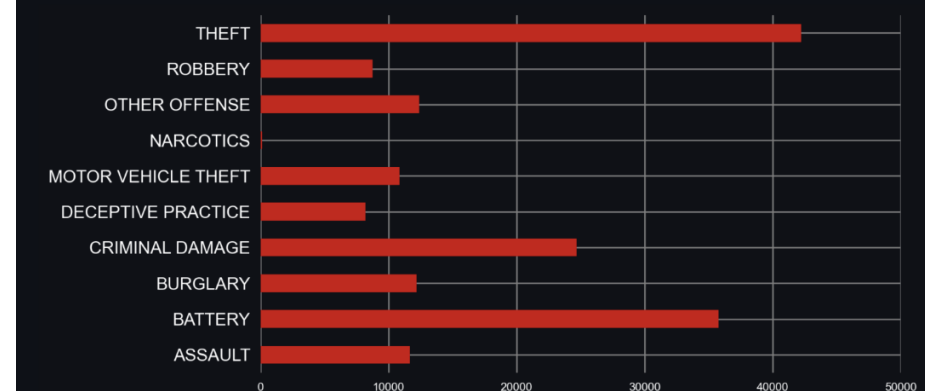
- All Cases

Distribution of cases in different time periods

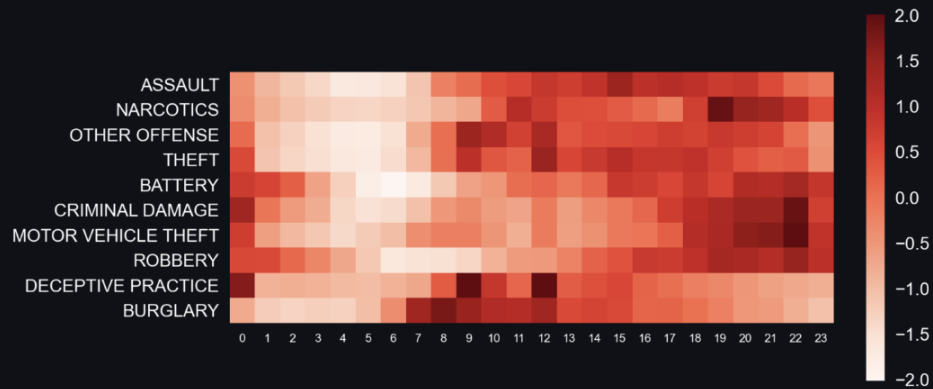


- Only not arrested

Distribution of cases in different time periods



Thermodynamic diagram

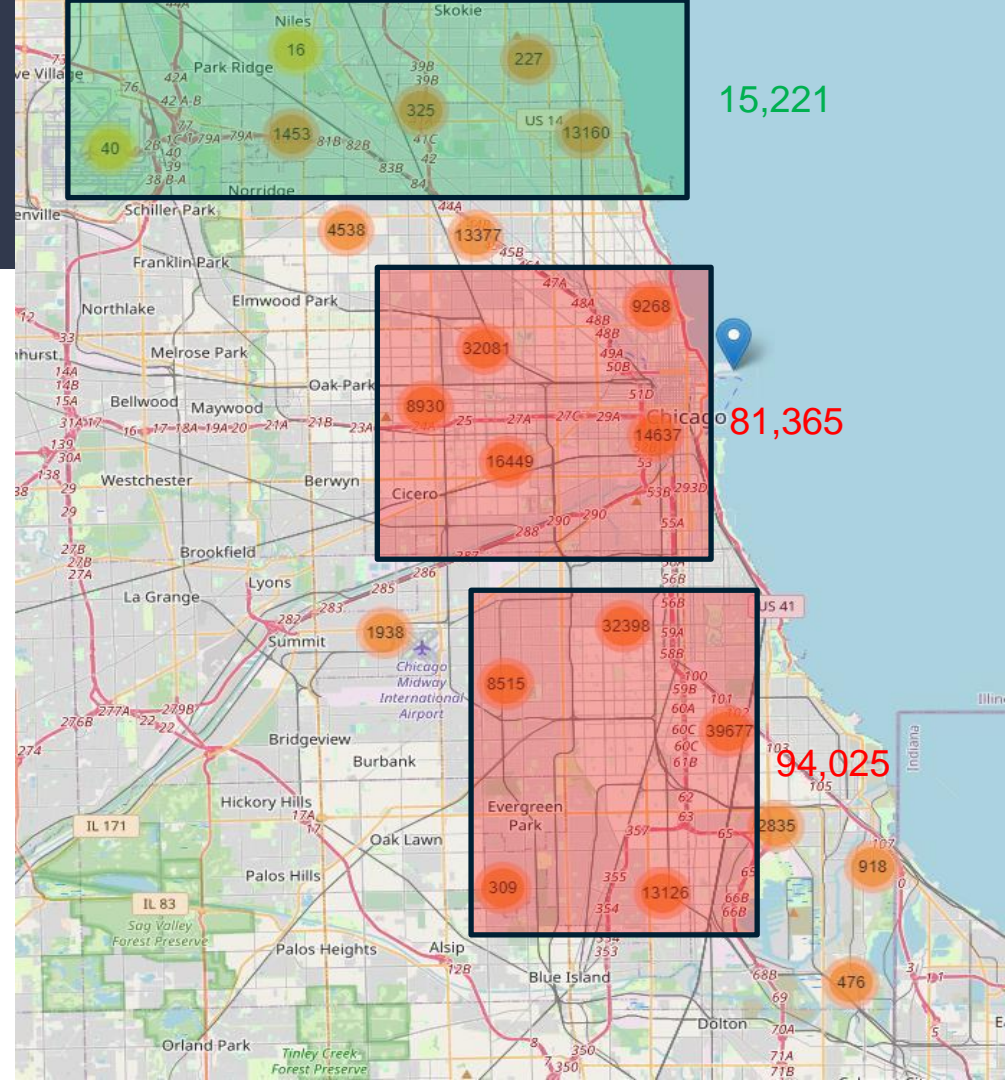


Location

The North Side of Chicago (Green Part) is safer due to its proximity to the wealthy parts of Chicago.

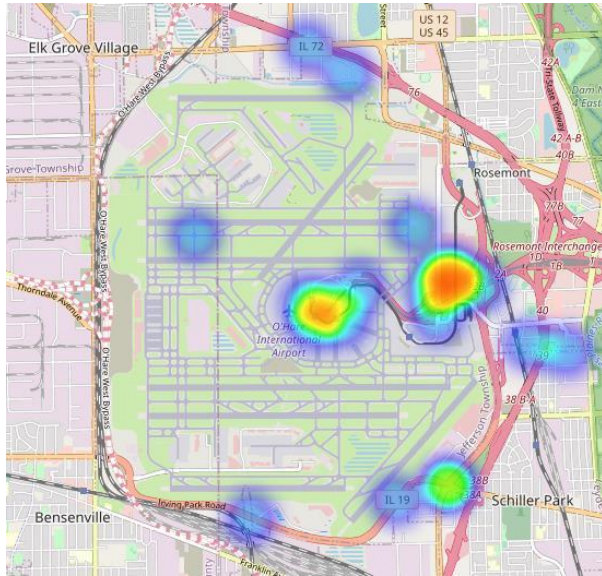
Central Chicago and the South Side of Chicago (Red Part) are less secure

City boundaries' area is also safer.



Closer Look

- Airport



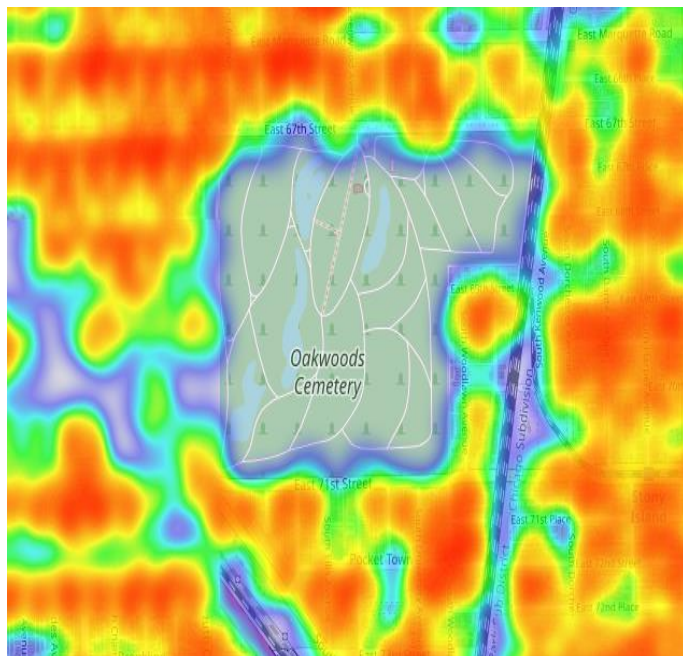
- Campus



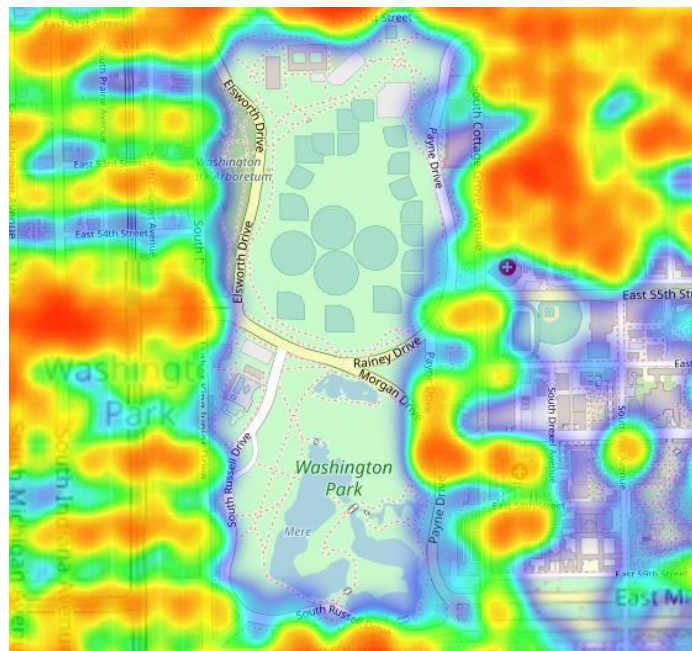
The deeper the color, the more frequent the cases

Closer Look

- Cemetery

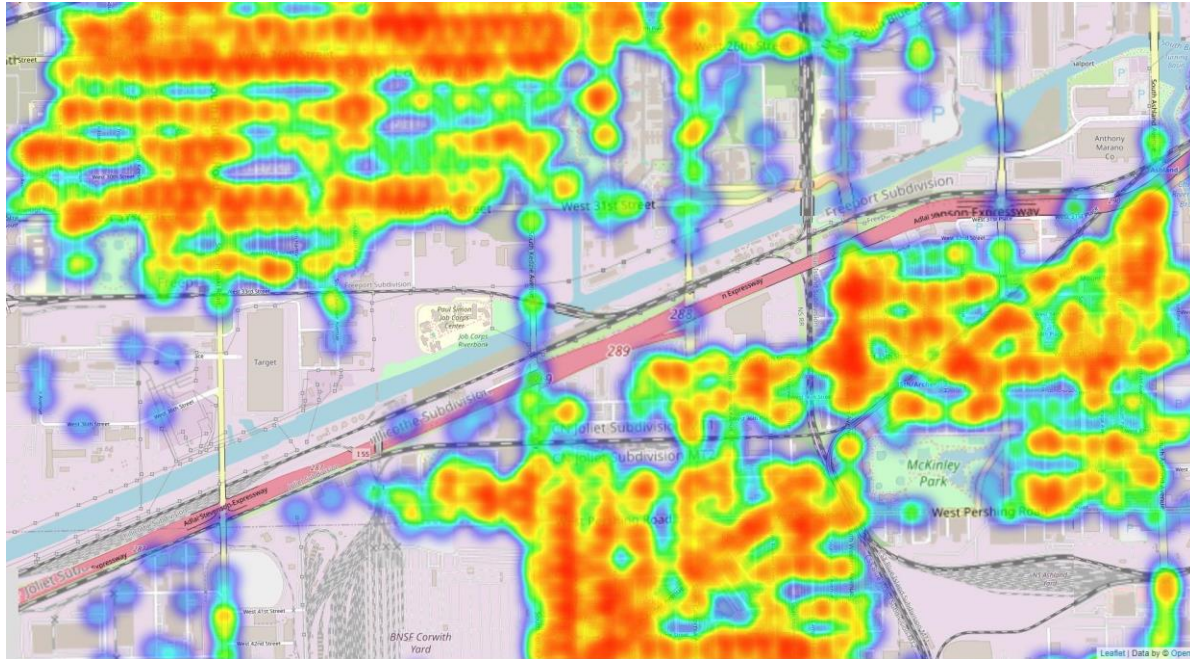


- Public Park



Closer Look

- Adlai-Stevenson Expressway (Interstate 55 in Illinois)

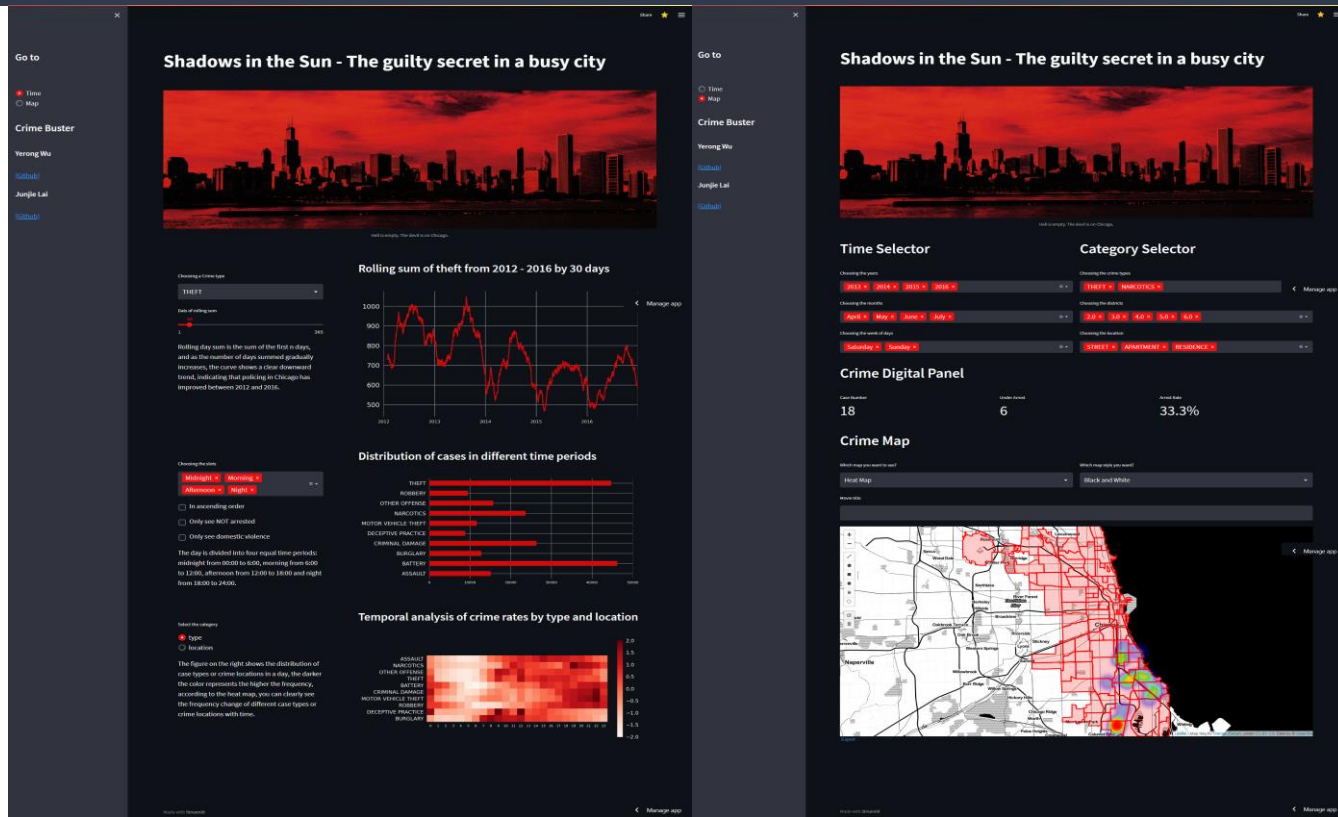


Demo

<https://fairy-rong-final-project-app-xm32au.streamlit.app/>

Nichols Park, Chicago

Screenshots



Screenshots

Choosing a Crime type

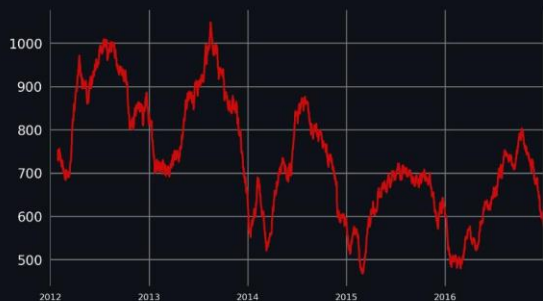
THEFT

Date of rolling sum

1 30 365

Rolling day sum is the sum of the first n days, and as the number of days summed gradually increases, the curve shows a clear downward trend, indicating that policing in Chicago has improved between 2012 and 2016.

Rolling sum of theft from 2012 - 2016 by 30 days



Choosing the slots

Midnight x Morning x

Afternoon x Night x

- ☐ In ascending order
- ☐ Only see NOT arrested
- ☐ Only see domestic violence

The day is divided into four equal time periods: midnight from 00:00 to 6:00, morning from 6:00 to 12:00, afternoon from 12:00 to 18:00 and night from 18:00 to 24:00.

Distribution of cases in different time periods



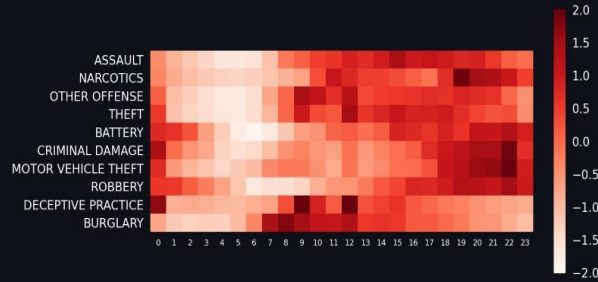
Screenshots

Temporal analysis of crime rates by type and location

Select the category

- ☒ type
☐ location

The figure on the right shows the distribution of case types or crime locations in a day, the darker the color represents the higher the frequency, according to the heat map, you can clearly see the frequency change of different case types or crime locations with time.

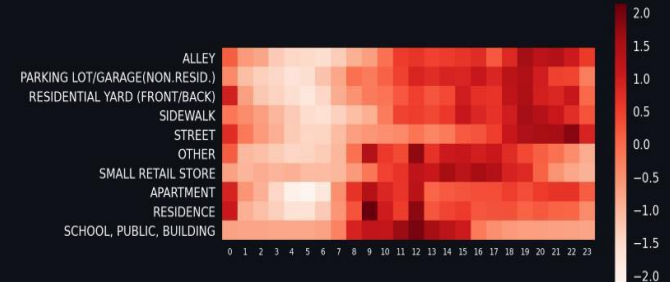


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Screenshots

Time Selector

Choosing the years

2013 x 2014 x 2015 x 2016 x

Choosing the months

April x May x June x July x

Choosing the week of days

Saturday x Sunday x

Category Selector

Choosing the crime types

THEFT x NARCOTICS x

Choosing the districts

2.0 x 3.0 x 4.0 x 5.0 x 6.0 x

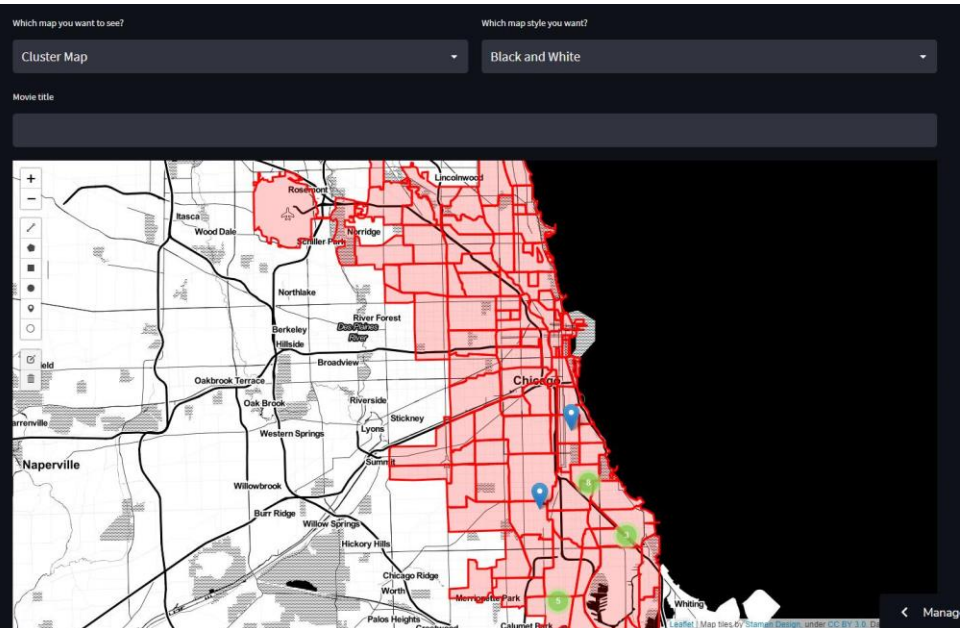
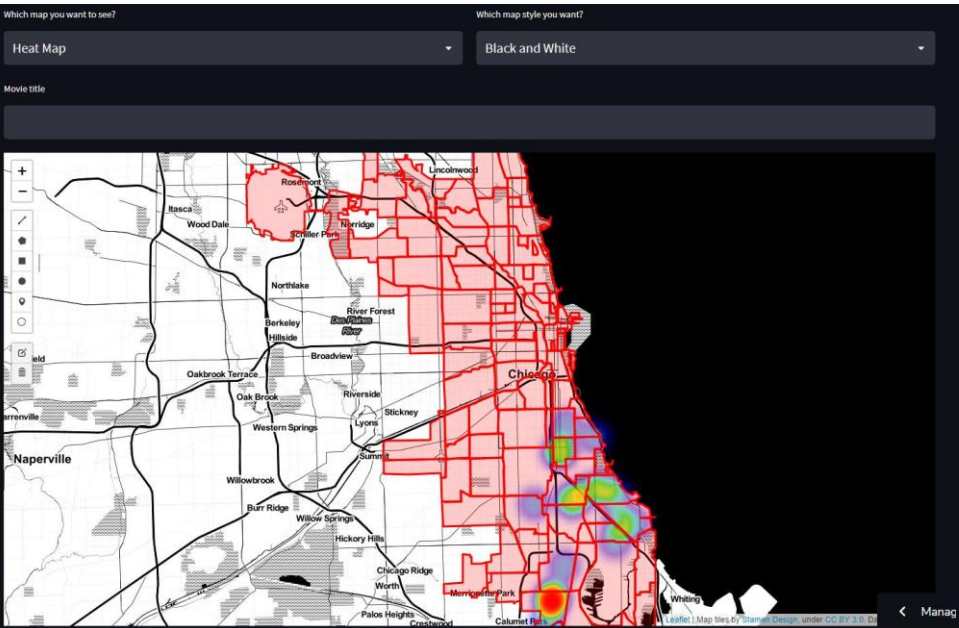
Choosing the location

STREET x APARTMENT x RESIDENCE x

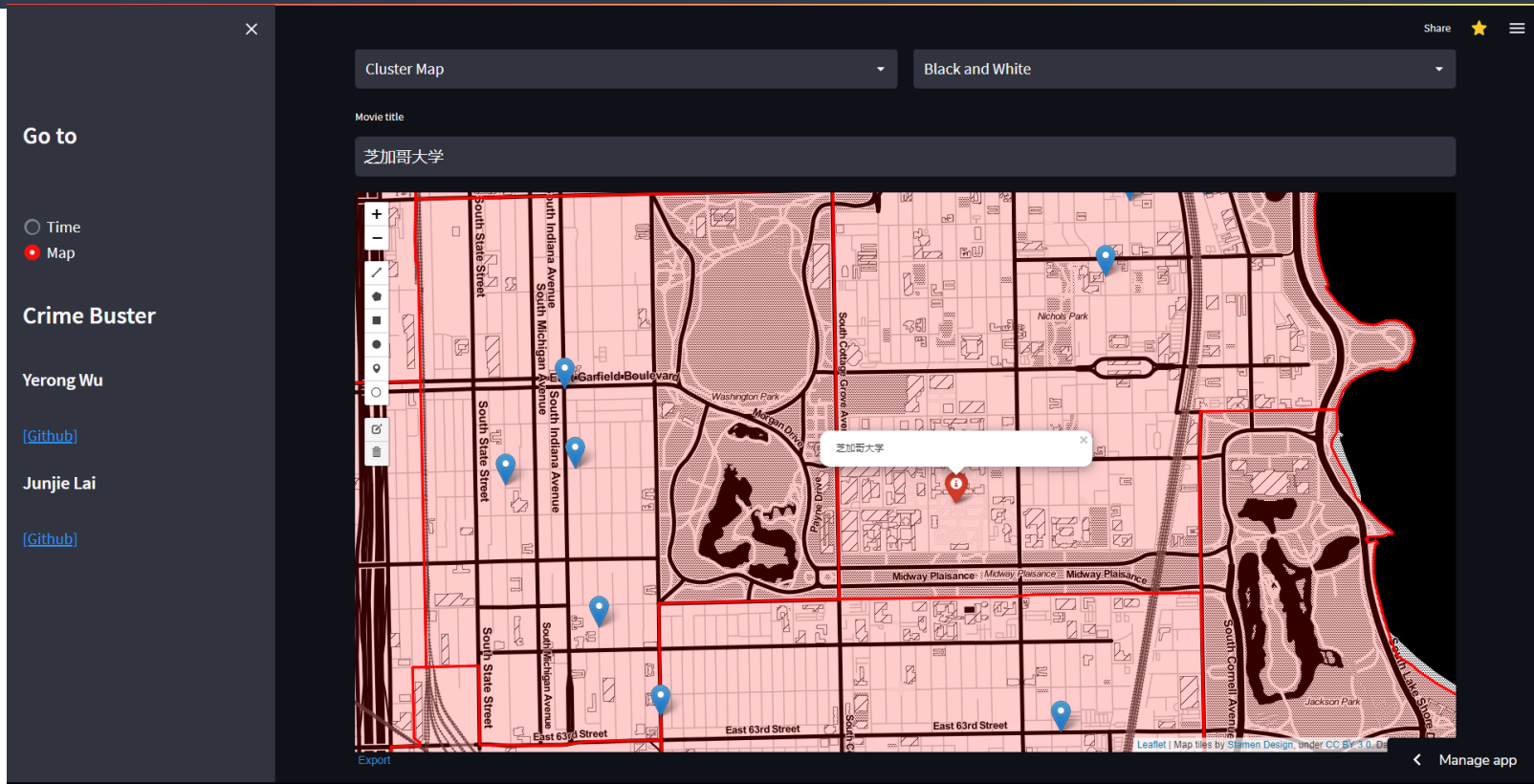
Crime Digital Panel

Case Number	Under Arrest	Arrest Rate
18	6	33.3%

Screenshots



Screenshots



Screenshots

Artificial Intelligence Dialogue

Your question:

Do you think I should go to the bar at midnight?

Your Security Advisor:

I don't think so.



Screenshots

Artificial Intelligence Dialogue

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Thank You !