**A description of the problem and a discussion of the background.**

**Problem: Chicago Police Department facing funding cuts**

Chicago is one of the largest cities of Illinois, and is widely believed to be one of the most dangerous cities in the US. Although Chicago accounts for only 0.8% if the US population (roughly 2.7 million), Chicago accounts for nearly half of the increase in 2016’s homicides (Sanburn, 2016). Especially in the category of violent crimes, it leads the national ranking with numbers well above the national average (City-Data.com, 2018).

Although measure have been taken to curtail this rampant increase, a large portion of the efforts have been towards spending more on the police budget. The most recent numbers suggest that Chicago spends nearly $1.6 billion on just over 13,000 police officers which work out to be about $123,000 per personnel. This comes under the $2.7 million that the city spends on public safety. And yet the number have not been promising over the years.

But the solution of more and specialized police has not been able to tackle the rise in crime over the last decade. Mayor Rahm Emanuel disbanded the Chicago Police Department's [anti-gang unit](https://en.wikipedia.org/wiki/Gang_intelligence_unit) in 2012 in order to focus on [beat patrols](https://en.wikipedia.org/wiki/Beat_(police)), which he said would have a more long-term solution to violence than anti-gang units (Wbez.org, 2012). This has been largely criticized.

Owing to the recent support for redistributing police funds to more appropriate segments of public safety, the Chicago Police department would be facing budget cuts in the future, which the department has resisted in the past. With a corporate fund of only $4.5 billion (2020), the move however seems inevitable (chicago.gov, 2020).

This however does not guarantee a safer neighborhood or a reduction in the crime rates. So, moving forward, the police department will have to come up with more prudent ways to spend their fund.

**Discussion: Better distribution of police funds to tackle crime**

The objective is to study the kind of crimes occurring in the city, their location and see if the police can be better prepared to tackle the rise in crime. The Study undertaken should also recommend the kind of policing required and the timings that they would be most in demand. This can enable the department to be better prepared in terms of the kind of personnel to train and the facilitate better scheduling for the available ones.

This study can prove valuable not just to the city of Chicago, but also form as a better means of reallocating the funds across the state or even on a federal level to better plan and prepare the officers of the law. The study could focus also on the easy interpretation of its findings so as to convince the boards and the government to enable easy and fast approvals for the decisions made in the future.

On terms of simple changes being suggested, the study could focus on the location data to let officers know about the places that need more resources. The output of the study could act as recommender system for the resources at the department’s disposal.

**A description of the data and how it will be used to solve the problem.**

**Data:**

The data used in the study has been gathers by *‘data.cityofchicago.org’*.

This data will be leverage to better understand the location of the crime using the foursquare API. This will be crucial in classifying the location based on the type of crimes. Eg: do more fights break-out near nightclubs? Are there more DUIs near a bar?

It has been recently updated on the 24th of October with nearly 260,000 records. The website that hosts the data is the government and the source for the data has been cited to be the Chicago Police department with the following disclaimer: *These crimes may be based upon preliminary information supplied to the Police Department by the reporting parties that have not been verified*. The website also provides information about research help through [RandD@chicagopolice.org](mailto:RandD@chicagopolice.org). The data is updated from Tuesday to Sunday and has had nearly 3400 downloads.

The city of Chicago has been able to maintain a constant record of crime statistics over the past decade, however the changing nature of the crime space, has limited the study to be effectively conducted only with the data from the last year which is the most recent information about the crime statistics. This has been proven useful to researches who study crimes in these cities to better equip the police and law makers of the kind of policies that are to be made.

A brief introduction into the data:

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| --- | --- | --- |
| **Column Name** | **Description** | **Type** |
| ID | Unique identifier for the record. | Number |
| Case Number | The Chicago Police Department RD Number (Records Division Number), which is unique to the incident. | Plain Text |
| Date | Date when the incident occurred. this is sometimes a best estimate. | Date & Time |
| Block | The partially redacted address where the incident occurred, placing it on the same block as the actual address. | Plain Text |
| IUCR | The Illinois Unifrom Crime Reporting code. This is directly linked to the Primary Type and Description. See the list of IUCR codes at <https://data.cityofchicago.org/d/c7ck-438e>. | Plain Text |
| Primary Type | The primary description of the IUCR code. | Plain Text |
| Description | The secondary description of the IUCR code, a subcategory of the primary description. | Plain Text |
| Location Description | Description of the location where the incident occurred. | Plain Text |
| Arrest | Indicates whether an arrest was made. | Checkbox |
| Domestic | Indicates whether the incident was domestic-related as defined by the Illinois Domestic Violence Act. | Checkbox |
| Beat | Indicates the beat where the incident occurred. A beat is the smallest police geographic area – each beat has a dedicated police beat car. Three to five beats make up a police sector, and three sectors make up a police district. The Chicago Police Department has 22 police districts. See the beats at <https://data.cityofchicago.org/d/aerh-rz74>. | Plain Text |
| District | Indicates the police district where the incident occurred. See the districts at <https://data.cityofchicago.org/d/fthy-xz3r>. | Plain Text |
| Ward | The ward (City Council district) where the incident occurred. See the wards at <https://data.cityofchicago.org/d/sp34-6z76>. | Number |
| Community Area | Indicates the community area where the incident occurred. Chicago has 77 community areas. See the community areas at <https://data.cityofchicago.org/d/cauq-8yn6>. | Plain Text |
| FBI Code | Indicates the crime classification as outlined in the FBI's National Incident-Based Reporting System (NIBRS). See the Chicago Police Department listing of these classifications at <http://gis.chicagopolice.org/clearmap_crime_sums/crime_types.html>. | Plain Text |
| X Coordinate | The x coordinate of the location where the incident occurred in State Plane Illinois East NAD 1983 projection. This location is shifted from the actual location for partial redaction but falls on the same block. | Number |
| Y Coordinate | The y coordinate of the location where the incident occurred in State Plane Illinois East NAD 1983 projection. This location is shifted from the actual location for partial redaction but falls on the same block. | Number |
| Year | Year the incident occurred. | Year |
| Updated On | Date and time the record was last updated. | Date & Time |
| Latitude | The latitude of the location where the incident occurred. This location is shifted from the actual location for partial redaction but falls on the same block. | Number |
| Longitude | The longitude of the location where the incident occurred. This location is shifted from the actual location for partial redaction but falls on the same block. | Number |
| Location | The location where the incident occurred in a format that allows for creation of maps and other geographic operations on this data portal. This location is shifted from the actual location for partial redaction but falls on the same block. | Location |

**Solution capability:**

**The data consists of the time, location and the type of crime One of the key areas of exploration will be the location. The partial location from the block and the ward can be easily visualized to better understand the problematic areas of the city.**

**Time data can explore into better scheduling for the city. This will help better plan the city’s response with adequate number of officers.**

**These two data can then be seen together to see if there is any co-relation between the time of day/month and the location in which these crimes occur. This will equip the police department to better allocate the resources at hand efficiently.**

**The description of the crime is another area of exploration. Something simple as a word cloud could provide inside into the type of crime beyond just the title, and also describe the frequency with which these crimes occur. The type of personnel to deal with these crimes can then be trained in the future.**

**Find other simple understand insights.**

# References

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