# Chicago-using crime data to mark safe places for people to visit

## Background:

Chicago officially the City of Chicago, is the most populous city in Illinois, as well as the third most populous city in the United States. With an estimated population of 2,716,450 (2017), it is the most populous city in the Midwest.  Chicago is the principal city of the Chicago metropolitan area, often referred to as Chicagoland, the county seat of Cook County, the second most populous county in the United States.  The metropolitan area, at nearly 10 million people, is the third-largest in the United States.

There are miles of beautiful Chicago beaches, Chicago museums that rank among the world's best and the friendliest city-dwellers out there. With so much to see and do,it can be tough for visitors to decide which Chicago attractions are really worth experiencing. Whether we are an out-of-towner or a tried-and-true Chicagoan planning a staycation, Oh, and if we are feeling decadent, we must cap off our day of sightseeing with a meal at one of the best restaurants in Chicago.

### Business problem:

people usually try to search for restaurants which are *affordable*, near to them and has basic facilities like parking, air conditioning, etc. But usually, people don't consider the factor called safety. Hence a system which recommends safe places to visit would really help people and also help in the reduction of crime in Chicago. Police can use this exploratory data to keep a check of public areas where crime is committed more and help in reducing it.

## Data:

In order to solve the business problem, we will be using the Chicago crime data of 2012-2017.we will take the location of crime happening and cluster them. Then we will use clusters centroids to identify tourist places and other places around these clusters mark them safe and unsafe accordingly.The final data will serve a few additional features like price tier(affordability), rating, safety(analysis result), etc.
venue categories will be made and safest venue of type near to user will be recommended.

source:-
https://www.kaggle.com/currie32/crimes-in-chicago#Chicago_Crimes_2012_to_2017.csv

This dataset reflects reported incidents of crime (with the exception of murders where data exists for each victim) that occurred in the City of Chicago from 2001 to present, minus the most recent seven days. Data is extracted from the Chicago Police Department's CLEAR (Citizen Law Enforcement Analysis and Reporting) system. In order to protect the privacy of crime victims, addresses are shown at the block level only and specific locations are not identified

**Columns**:

ID - Unique identifier for the record.

Case Number - The Chicago Police Department RD Number (Records Division Number), which is unique to the incident.

Date - Date when the incident occurred. this is sometimes a best estimate.

Block - The partially redacted address where the incident occurred, placing it on the same block as the actual address.

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.

Primary Type - The primary description of the IUCR code.

Description - The secondary description of the IUCR code, a subcategory of the primary description.

Location Description - Description of the location where the incident occurred.

Arrest - Indicates whether an arrest was made.

Domestic - Indicates whether the incident was domestic-related as defined by the Illinois Domestic Violence Act.

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.

District - Indicates the police district where the incident occurred. See the districts at https://data.cityofchicago.org/d/fthy-xz3r.

Ward - The ward (City Council district) where the incident occurred. See the wards at https://data.cityofchicago.org/d/sp34-6z76.

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.

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.

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.

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.

Year - Year the incident occurred.

Updated On - Date and time the record was last updated.

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.

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.

Location - The location where the incident occurred in a format that allows for the 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.

Sample datastet:

Chicago_Crimes_2012_to_2017.csv (89.54 MB) — 20 of 23 columns — Views

| | # | ID | Case Number | Date | Block | IUCR |
|---|---|---|---|---|---|---|
| 1 | 3 | 10508693 | HZ250496 | 05/03/2016 11:40:00 PM | 013XX S SAWYER AVE | |
| 2 | 89 | 10508695 | HZ250409 | 05/03/2016 09:40:00 PM | 061XX S DREXEL AVE | |
| 3 | 197 | 10508697 | HZ250503 | 05/03/2016 11:31:00 PM | 053XX W CHICAGO AVE | |
| 4 | 673 | 10508698 | HZ250424 | 05/03/2016 10:10:00 PM | 049XX W FULTON ST | |
| 5 | 911 | 10508699 | HZ250455 | 05/03/2016 10:00:00 PM | 003XX N LOTUS AVE | |
| 6 | 1108 | 10508702 | HZ250447 | 05/03/2016 10:35:00 PM | 082XX S MARYLAND AVE | |
| 7 | 1130 | 10508703 | HZ250489 | 05/03/2016 10:30:00 PM | 027XX S STATE ST | |
| 8 | 1801 | 10508704 | HZ250514 | 05/03/2016 09:30:00 PM | 002XX E 46TH ST | |
| 9 | 1868 | 10508709 | HZ250523 | 05/03/2016 04:00:00 PM | 014XX W DEVON AVE | |
| 10 | 1891 | 10508982 | HZ250667 | 05/03/2016 10:30:00 PM | 069XX S ASHLAND AVE | |
| 11 | 1935 | 10508710 | HZ250469 | 05/03/2016 09:44:00 PM | 074XX S SOUTH SHORE DR | |

Chicago_Crimes_2012_to_2017.csv (89.54 MB) — 20 of 23 columns — Views

| | Ward | Community Area | FBI Code | X Coordinate | Y Coordinate | Year |
|---|---|---|---|---|---|---|
| 0 | 24.0 | 29.0 | 08B | 1154907.0 | 1893681.0 | |
| 0 | 20.0 | 42.0 | 08B | 1183066.0 | 1864330.0 | |
| 0 | 37.0 | 25.0 | 24 | 1140789.0 | 1904819.0 | |
| 0 | 28.0 | 25.0 | 08B | 1143223.0 | 1901475.0 | |
| 0 | 28.0 | 25.0 | 06 | 1139890.0 | 1901675.0 | |
| 0 | 8.0 | 44.0 | 04B | 1183336.0 | 1850642.0 | |
| 0 | 3.0 | 35.0 | 08B | 1176730.0 | 1886544.0 | |
| 0 | 3.0 | 38.0 | 08B | 1178514.0 | 1874573.0 | |
| 0 | 40.0 | 1.0 | 08B | 1165696.0 | 1942616.0 | |
| 0 | 17.0 | 67.0 | 08B | 1166876.0 | 1858796.0 | |
| 0 | 7.0 | 43.0 | 15 | 1195696.0 | 1856719.0 | |
| 0 | 42.0 | 8.0 | 08B | 1176630.0 | 1904401.0 | |

Usage of foursquare API:

| # Latitude | # Longitude |
|---|---|
| 41.864073157 | -87.706818608 |
| 41.782921527 | -87.60436317 |
| 41.894908283 | -87.758371958 |
| 41.885686845 | -87.749515983 |
| 41.886297242 | -87.761750709 |
| 41.745354023 | -87.603798903 |
| 41.844023772 | -87.626923253 |
| 41.811133958 | -87.62074077 |
| 41.99813061 | -87.665814038 |
| 41.768096835 | -87.663878589 |
| 41.761733286 | -87.558309979 |
| 41.893026751 | -87.626750829 |

These will help to acces neighbouhood data.