

A faint, dark map of Chicago serves as the background for the entire page. It shows the city's grid of streets and major highways, with the Lake Michigan coastline visible on the right side.

IE SCHOOL OF HUMAN SCIENCE AND TECHNOLOGY

# Chicago Crime Report 2012

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## Data Visualization

Group-D  
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**Link to map:** <https://anupsatyal.carto.com/builder/a1c86012-23b8-49ad-82cc-f18d3ff565f4/embed>

## Intro

The sample dataset we selected from the Carto demo's library provides historical data for the year 2012 for the reported crime incidents in the city of Chicago. The dataset contains a detailed list the of 500 crime incidents. Some of the variables include: Date, Coordinates/Location, Arrest made, Community/District information and the Police beat or "district" in which it was reported.

We expect the visual interpretation of the data will allow us to answer the following questions.

- What areas have the most crimes incidents reported?
  - What are the most common types of crime incidents committed?
  - In what sublocations are typically crime incidents reported?
- Is their enough police support and attention in high crime area?
- Are the police arresting the criminals?
- How does domestic violence relate to high/low crime rate zones?
- Based on the answers of the previous questions we aim to identify:
  - High criminality areas in which more police effort should be focused.

Is it possible to identify what neighborhoods should be deemed as "safe" or "dangerous" (visualizing amount of crimes, types of crimes and the number of arrests)?

## Layer 1 (Show me the crimes)

**Analysis A1** Intersect and Aggregate

In the first layer we decided to visualize the distribution of crime incidents reported throughout the city. We observe how Theft, Battery and Narcotics are the most common types of crimes reported. We aggregated our data with hexagons to show magnitude with a yellow-red pallet scale in which darker shades of red indicate a higher volume of crime incidents reported.

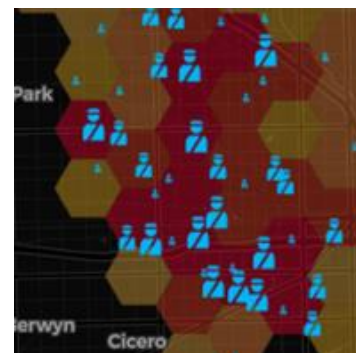


Now we can visualize the amount of crimes throughout the city of Chicago and we can also filter with a widget by the **types** of crimes reported and the **sub-location** where the crime incident happened. This allow to identify what types of crimes are committed in specific locations throughout the city ie: Street/Residence/Sidewalk/Apartment.

## Layer 2 (Where is the Police)

**Analysis B1** Create Centroids of Geometries

In the second layer, we have created categorized centroids by the beats for the crimes reported. A Beat is the smallest police geographical area, each beat has an assigned patrol car. In our visualization we have decided to encode the **frequency of Beats by the size of the icons** displayed on the map. By mapping out the Beats throughout the city



we can identify where the police are located. The bigger the police icon, the more crimes that Beat has been assigned.

After adding this as the second layer we can identify if the police are allocated to the high frequency crimes as might be expected. This analysis will help identify what Police districts are most busy and identify which ones might need backup.

### ***Layer 3 (Are we getting these guys?)***

**Analysis A1** Create Polygons from Points

**Analysis A2** Intersect and Aggregate

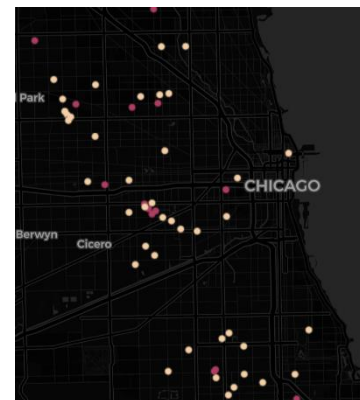


In the third layer we chose to visualize the different districts in the city of Chicago by creating polygons for each one and aggregating by the average percentage of arrests per total crimes for each district. We can clearly identify the 22 districts in Chicago, **encoded with different shades of blue to mark the difference in districts by the percentages of arrests per total crimes**. The scale was designed as follows:

### ***Layer 4 (Domestic Violence Arrests?)***

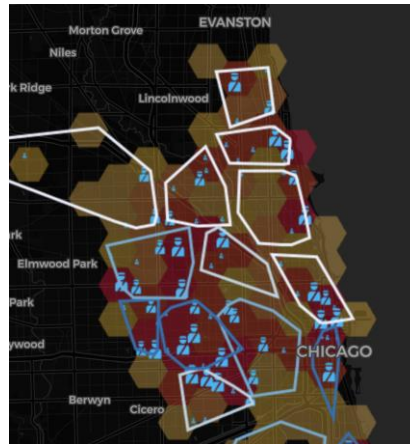
**Analysis D1** Detect Outliers and Clusters

For the fourth layer we decided to investigate the case of Domestic Violence Arrests in Chicago. The layer displays all crime incidents that were reported with Domestic Violence incidents. The lighter points indicate the incidents that did not result in arrests, while the darker dots indicate the incidents that did result in an arrest.



### ***Final Analysis***

Putting layers 1 to 3 together we are able to **identify the districts that have high criminal incidents but low arrests**. With this information we help the Chicago Police department focus police effort in order to get more arrests in high criminal areas.



On the other hand, it is interesting to compare domestic violence reports over the Crime Incidents Layer. Here we can observe how **domestic violence incidents are mostly reported in areas where there is a high frequency of crimes**. This will help domestic violence agencies to focus the efforts in high crime areas, especially those where there is no arrest.

