

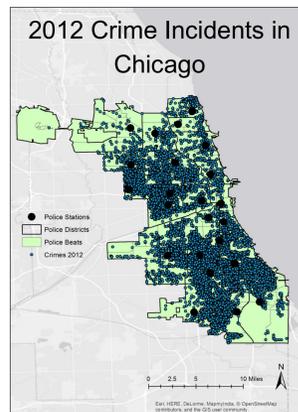
Chicago Gun Violence | Mapping “Operation Impact” Foot & Bike Patrol Effectiveness 2012-2016

Introduction

According to the Chicago Tribune Breaking News Staff, in just the first quarter of 2016, Chicago violence reached levels more than double those of the first quarter of 2015. After a particularly violent 2012, former Chicago Police Department (CPD) Superintendent Gary McCarthy launched “Operation Impact,” a policy in 2013 to focus on communities that were most vulnerable to crime. Mayor Rahm Emanuel claimed that the program was so successful in reducing crime in these first few districts that he was expanding it to a second zone in 2014, and according to the Chicago Police Department Press Office, the program affected all districts in the city. Despite the mayor’s praise for the program, it was recently halted after criticism of the CPD rose in late 2015.

This project aims to see whether the policy should have been ended, whether the efforts of the CPD to deter crime overlapped with where violence was occurring spatially and temporally, and whether the program could have been better placed. Mapping this is a timely and useful endeavor, since Chicago is experiencing many administrative hurdles right now, and there is evidence that shows that geographically based strategies can be effective in reducing crime.

Methods



Crime data was gathered from the City of Chicago Data Portal from the dataset Crimes – 2001 to present. Filters were applied to obtain data for Public Violence crime only, which the Chicago Police Department defines as crimes “primarily comprised of gun related crimes committed in the public way.” Data for 2016 was only obtained from January 1 – April 30. Shapefiles were downloaded from the City of Chicago Data Portal for boundaries of Police Districts, Police Beats, and Police Stations.

The crime data was joined spatially to Police Districts and Police Beats for each year and divided into five classes. A clustering and outlier analysis was also conducted. This clustering and outlier analysis was done using the crime data as it was joined to the Police Beats to have more spatial detail in the visual results. An interpolation was done to show what crime data that is not recorded might have looked like in 2012 and what it may look like in 2016 to show the differences in crime incidence before and after “Operation Impact” took place.

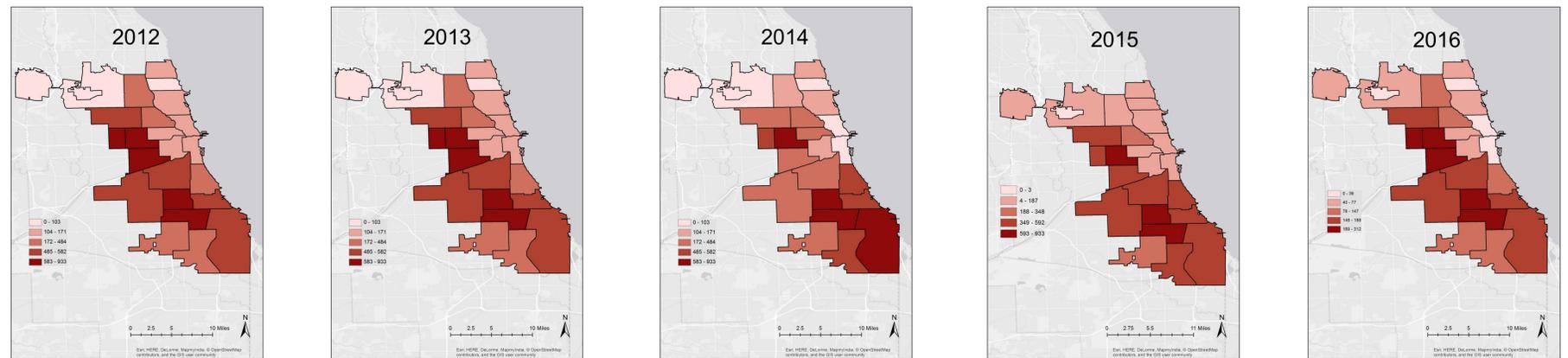
Sources

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GIS 101
5/10/2016

Spatial Reference:
GCS_WGS_1984
Data Sources: City of Chicago
Data Portal

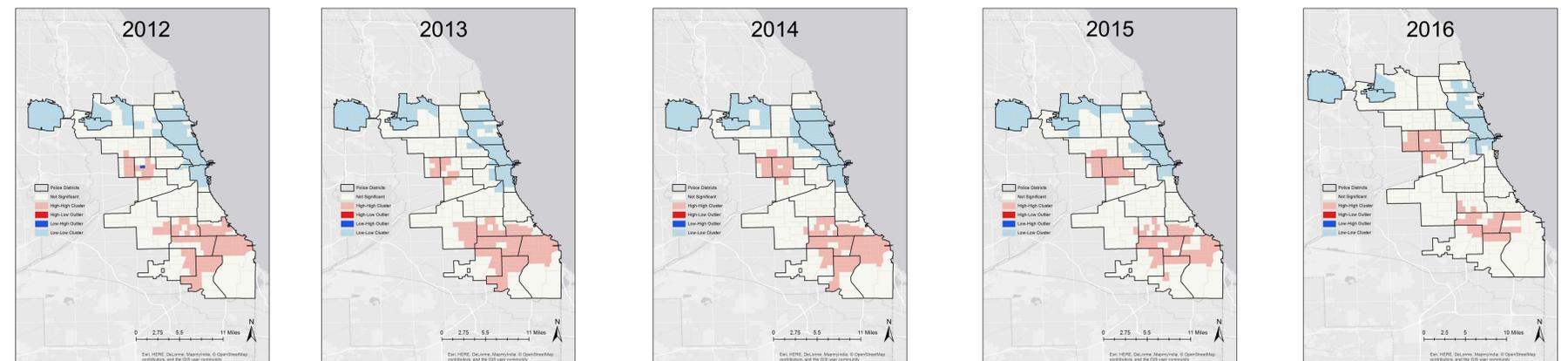


Did the Policy Have an Effect on Crime?



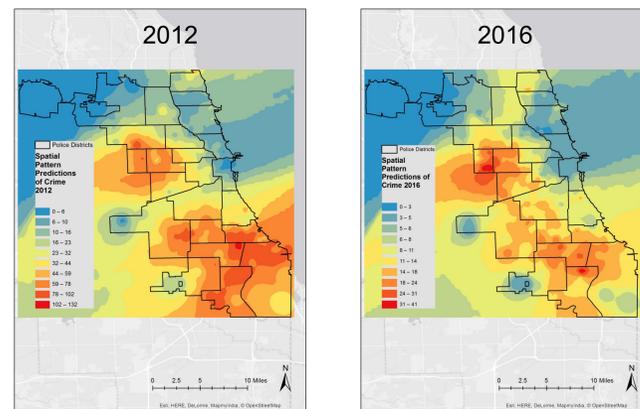
This shows where the Chicago Police Department could have focused its resources by pinpointing which districts were most vulnerable to crime each year.

Did the Chicago Police Department Optimize its Resources?



This clustering and outlier analysis reveals where the CPD could have focused its resources by showing where there was clustering of crime each year. Beats that are highlighted in red reveal where there are areas of high crime incidence surrounded by other areas of high crime incidence. The analysis also shows where the CPD could have avoided wasting resources by showing where there were low crime incidence areas surrounded by other beats also experiencing low crime incidence.

Spatial Pattern Prediction of Crime & Results



The interpolation maps at left show what crime is like for areas of Chicago that are not recording crime, but may still be experiencing it. These maps show another way that the CPD could optimize its policy to account for crime hotspots, for instance, by focusing on the 19th, 20th, 23rd, and 25th after 2012. Based on the data from the first four months of 2016, the CPD should now focus on the 5th and 15th districts.

Examining crime count by district indicates that crime has decreased over time. The number of districts that were experiencing high incidences of gun violence decreased; nine districts had over 583 public violence incidents in 2012, which fell to six districts in 2013, and only five in the years after. It is likely that “Operation Impact” had an influence in that decrease. Likewise, the clustering and outlier analysis shows that areas experiencing high-high crime have decreased over time.

However, it appears that the CPD did not need to implement its “Operation Impact” in each district: the districts with low-low crime did not need the resources of this policy, so CPD could have avoided these areas and optimized its policy by focusing on beats highlighted in red clusters. The clusters can be helpful in assessing where “Operation Impact” could be implemented now.