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FATAL AND NONFATAL SHOOTINGS AND COMMUNITY DYNAMICS IN INDIANAPOLIS (2014–2016)

INTRODUCTION

As gun-related homicides increase across the country, gun violence has become a public health crisis in the United States.^{1,2} In Indianapolis and nationwide, nonfatal shootings happen at higher rates than fatal shootings³ and can lead to repeat injury,⁴ physical disabilities, and post-traumatic stress disorder.^{5,6} Homicides and nonfatal shootings are known to happen within clusters of communities called “hot spots.”^{7,8} Community characteristics of these areas⁹ contribute to an individual’s risk for involvement in future violence, especially given that gun violence spreads through communities much like an infectious disease.^{10,11}

Neighborhood violence has been associated with community-level factors such as concentrated areas of disadvantage, residential instability, inequality, disorder, and whether residents have the ability to take action to achieve common community goals—known as collective efficacy.^{12,13} Higher levels of neighborhood disadvantage, residential instability, and inequality make it harder to develop the informal relationships¹⁴⁻¹⁶ that allow residents to exercise informal social control or gather external resources when public services are inaccessible or don’t meet their expectations (e.g., garbage collection, police patrols, etc.).^{16,17} Furthermore, while neighborhood disorder itself is not known to cause crime, it can indicate that a neighborhood lacks informal social control, which can lead to more crime. Small signs of disorder can increase resident fear and decrease neighborhoods’ ability to exert informal social control.¹⁸

This study examines where fatal and nonfatal shootings happen in Indianapolis and the

KEY FINDINGS

- In Indianapolis, shootings happen on 3 percent of the city’s street segments. These segments are not always in the most violent neighborhoods.
- Higher levels of social and physical disorder are associated with shootings on specific street segments.
- Interventions aimed to improve community engagement and eliminate abandoned homes on individual street segments may prevent future gun violence.

community-level factors of those street segments and neighborhoods. The purpose is to understand the social processes and street segments that contribute to high rates of shootings across the city. Identifying these segments and underlying social factors is key to designing effective programs to prevent future violence.

METHODOLOGY

The data collection period for this study was January 1, 2014, through December 31, 2016, and involved a variety of sources, including the Indianapolis Metropolitan Police Department (IMPD), the Indianapolis Mayor’s Action Center (MAC), Open Indy Data Portal, and the U.S. Census Bureau.

TABLE 1. Number of shootings per street segment (2014–2016)

NUMBER OF SHOOTINGS (N=1,142)	NUMBER OF STREET SEGMENTS	TOTAL % OF STREET SEGMENTS
4+	14	0.03
3	31	0.06
2	109	0.20
1	775	1.44
0	52,993	98.28
Total	53,922	100

RESULTS

The vast majority—98 percent—of Indianapolis' 53,922 street segments never experienced a shooting from 2014 through 2016. In that same time, 929 street segments experienced at least one shooting. Of those, 775 areas had only one incident, 109 experienced two, 31 segments had three shootings, and 14 had four or more incidents. These results, detailed in Table 1, show that shootings happen on less than 3 percent of street segments in Indianapolis and are spatially concentrated, as found in prior studies.^{8,19}

Figure 1 shows where shootings happened by street segment as well as the rate of gun violence for each neighborhood. Several patterns emerge. First, there are shootings happening in concentrated pockets of Indianapolis. Secondly, there are areas where shootings occurred that are in the outer limits of the city, bordering more affluent suburban communities. Lastly, street segments with at least four shooting incidents—highlighted in red on Figure 1—are dispersed across the city. It is important to note that these particular street segments are not concentrated within neighborhoods that have high levels of gun violence.

However, consistent with prior research, these findings suggest the majority of gun violence is concentrated within certain neighborhoods and is not randomly dispersed across the city.^{8,19} Yet even within those areas, most street segments do not experience shootings. Further, seemingly random

street segments around the city do experience incidents of gun violence and may be attributed to other factors such as incident motive and other known crime generators like gas stations, bars, and liquor stores.

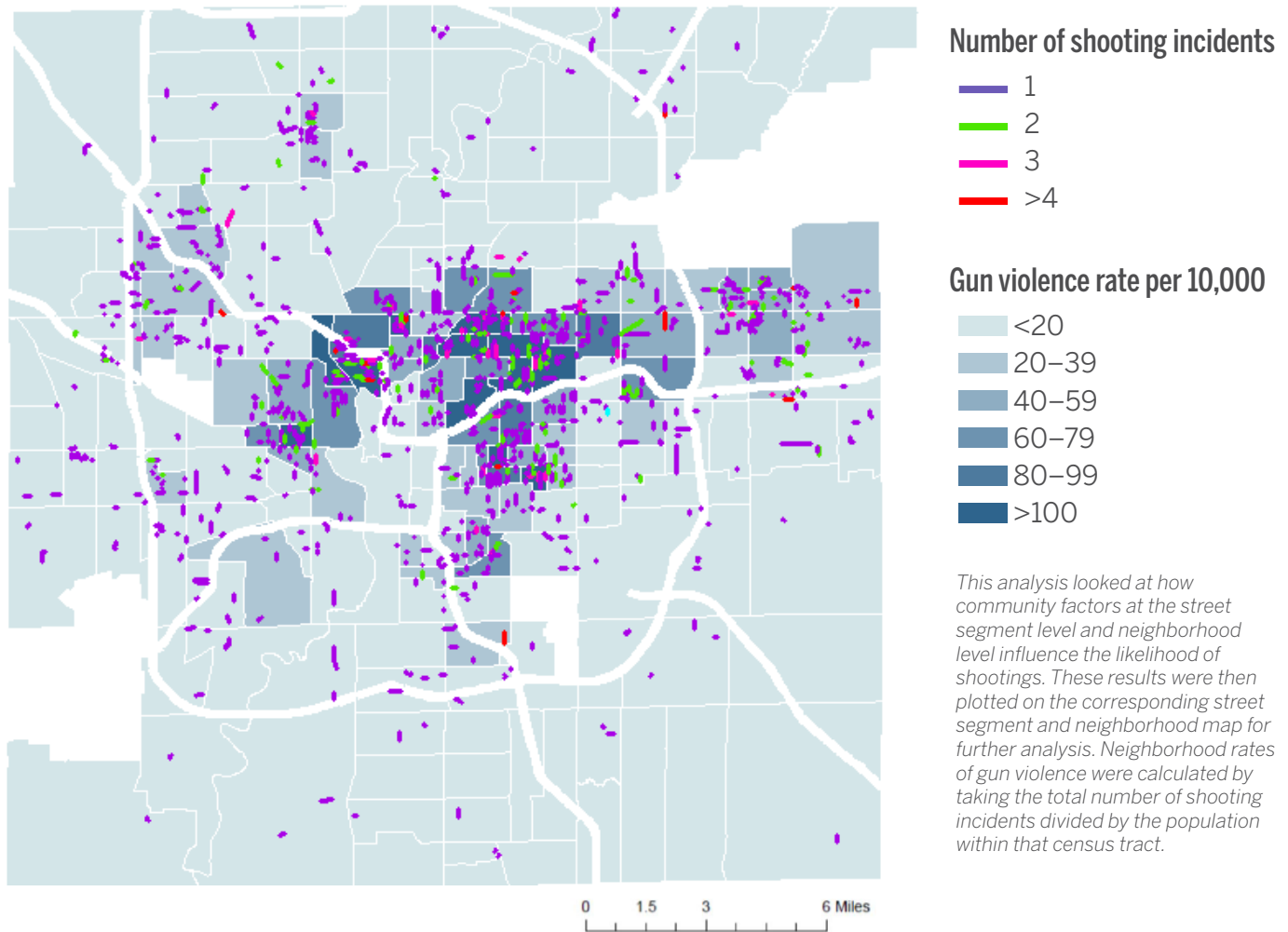
The results also indicate a strong association between community-level factors and shootings. For instance, indicators of social disorder (e.g., police calls for disturbances, narcotics, noise complaints, and public intoxication) have a strong association with shootings on specific street segments even after accounting for neighborhood- and street-level indicators. Higher levels of social and physical disorder increase the odds of a street segment experiencing a shooting by roughly 2 and 6 percent, respectively (see Table 2). An indicator of collective efficacy (i.e., citizen calls to the MAC) varied at the street segment level and suggests that lower levels of community engagement increase the odds of a shooting.

POLICY IMPLICATIONS

These findings indicate that Indianapolis' street segments with three or more shootings did not always fall into neighborhoods with high rates of gun violence. For example, there were two street segments that had six shootings during the three-year period that were not within neighborhoods that have high rates of gun violence. Therefore, when examining where fatal and nonfatal shootings happen, it is important to consider both neighborhoods and street segments, as they both deliver different lenses with which to view gun violence trends. Only examining neighborhood rates of gun violence would leave out street segments on the Far Eastside that are independently contributing to the citywide volume of fatal and nonfatal shootings. Furthermore, only examining the street segments would exclude neighborhood structures that collectively produce the highest rates of neighborhood gun violence.

When using both lenses, the evidence shows that the correct strategy to quantify Indianapolis' gun violence challenges may depend on objectives of the violence prevention or intervention program.

FIGURE 1. Number of shootings (2014–2016), gun violence rate per 10,000



For instance, a focused deterrence strategy (i.e., Indianapolis Violence Reduction Partnership)²⁰ may be better operationalized at the neighborhood level through the identification of neighborhoods with high rates of gun violence. On the other hand, an intervention strategy like Crime Prevention through Environmental Design (CPTED) or other community greening projects²¹ may benefit from identifying the street segments with the highest number of shootings and allocating resources to those specific segments, rather than spreading finite resources across an entire neighborhood.

Neighborhoods with high rates of fatal and nonfatal shootings in Indianapolis and across the country appear to be driven mostly by concentrated disadvantage, which incorporates larger social

issues that require action from a number of social organizations. The finding, however, that collective efficacy mediates the effects of concentrated disadvantage on gun violence reinforces the critical role of community-building efforts. Strategies to engage residents in community-building activities at street segment levels hold potential to prevent future violence by reducing disorder, eliminating abandoned homes, and increasing informal social control.

TABLE 2. Impact of community variables on gun violence

VARIABLE	ODDS RATIO	LIKELIHOOD OF GUN VIOLENCE
Street segment level		
Social disorder	5.96	For every increase in street segment social disorder, the odds of gun violence happening increases by 6 percent.
Physical disorder	2.16	For every increase in abandoned homes per street segment, the odds of gun violence climbs by 2 percent.
Resident engagement – collective efficacy	0.74	For every increase in calls to the MAC per street segment, the odds of gun violence occurring decreases by 26 percent.
Neighborhood level		
Concentrated disadvantage	1.55	For every increase in a neighborhood's concentrated disadvantage, the odds of gun violence increases by 1.6 percent.
Inequality	1.17	For every increase in neighborhood inequality, the odds of gun violence occurring increases by 1 percent.
Resident engagement – collective efficacy	0.57	For every increase in a community's ability to produce collective action, the odds of gun violence drops by 43 percent.

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