THE IMPACT OF EVICTION ON NEIGHBORHOOD GUN VIOLENCE

By

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Decades of research established a connection between crime and highly disadvantaged neighborhoods, characterized by persistent poverty, residential instability, and other economic and social strains. Despite the importance of housing stability, few studies have sought to tease out the association of eviction with violent crime beyond other markers of disadvantage. This thesis seeks to establish the association between evictions, poverty and gun violence. Understanding the neighborhood level characteristics that exacerbate and contribute to crime is critical to tackling the US gun violence issue and is especially important due to the pandemic-caused eviction crisis. Many indicators of disadvantage like poverty, unemployment, joblessness, and a lack of social resources are closely linked to each other and understanding each on a distinct level is important to understanding if and how each may cause violence. I test this using negative binomial regression models, and separately by majority white and majority Black neighborhoods. Eviction had a robust and consistent association with shootings in my sample, although most pronounced in communities with lower than average poverty rates.
Introduction

Gun violence is a persistent and pressing public health problem facing American communities. Firearm homicide and nonfatal shootings have been the exception from recent declines in crime in the United States. In terms of available data, information on nonfatal shootings is hard to come by, as it is not a universal measure collected across the country. According to the Gun Violence Archive (gunviolencearchive.org), there were 86,743 deaths, and 169,477 injuries as a result of gun violence between the years 2014-2019. In this six year range of the most recent data, deaths peaked in 2017 with 15,679 and injuries peaked in 2016 with 30,666 incidents (2021).

A growing body of gun violence research in the United States has explored the importance of neighborhood factors, drawing primarily on theories of social disorganization (Shaw & McKay, 1942) and community strain (Agnew, 1999; Warner, 2003), in addition to subcultural theories of violence (Anderson, 1999). This study similarly draws on social disorganization theory to discuss the relationship between gun violence and eviction. Specifically, I argue that eviction is an alternative indicator of residential instability but more consequential than other types of moves that residents may face. As a forced and involuntary move, higher levels of eviction may represent a more destabilizing trend among communities with the attendant accumulation of strain increasing the pressure for violent crime.
Theories of Community Disadvantage and Violence

Disadvantage, more specifically relative and/or absolute deprivation, are often examined in relation to crime. Relative deprivation is defined as being within an income threshold that is lower than that of the median income of an area. In contrast, absolute deprivation is identified as being below an established level of poverty. Both identifiers of disadvantage are positively and significantly associated with neighborhood violent crime (Krivo & Peterson, 1996; Chamberlain & Hipp, 2015; Becker, 2016). These studies also identify the spatial effects of surrounding neighborhoods as being key to understanding violent crime rates. The significance of disadvantage measures is maintained when considering the surrounding area and provides further understanding.

Collective efficacy, another important measure, is the connection between neighbors - do they share the same concerns, would they work together to address neighborhood issues? Collective efficacy has long been a measure used to predict crime. It also relates to residential instability and mobility, a concept referring to the residential population changing often with many people moving in and out of the neighborhood frequently. Residential instability suggests that when many people come and go, relationships between neighbors are unlikely to form. Collective efficacy is therefore unlikely when instability is high because neighbors that often come and go are less likely to be as invested in the wellbeing of the neighborhood as those who have lived there for years. Frequent neighbor to neighbor contact serves as a control measure when it comes to neighborhood crime (Sampson, Raudenbush, & Earls, 1997; Bellair, 1997) Higher collective efficacy provides cohesion in a neighborhood - where there is more cohesion, there is less neighborhood crime, (Sampson, Raudenbush, & Earls, 1997, p. 923).
Collective efficacy was a significant predictor of violent crime, and was by far the largest predictor of violent crime, when Sampson, Raudenbush, and Earls controlled for previous violence, residential stability, concentrated disadvantage and immigrant concentration within the neighborhood. These tests continued to hold up when the authors added race to the mix by studying neighborhoods that were more than 75% African American. They found collective efficacy remained a significant predictor of neighborhood violence, even when previous homicide, neighborhood services, friendship/kinship ties, and organizational participation were controlled. Therefore, while racial composition certainly adds to the understanding of community violence, collective efficacy remains steady in explaining variation (Sampson, Raudenbush, & Earls, 1997, p. 923).

The racial makeup of a neighborhood is also important in the context of crime. According to the Bureau of Justice Statistics, the homicide victimization rate in 2008 was six times higher for African Americans, and the homicide offending rate was seven times higher than that of whites, (2011, p. 11). Neighborhoods with higher minority populations are associated with higher violent crime rates (Hipp, 2007; Bogess & Hipp, 2010) This finding goes for both African American populations, as well as Hispanic populations. More racially mixed neighborhoods also have higher levels of violent crime. In terms of some specific crimes like aggravated assault, neighborhoods that are more heterogeneous have higher levels of crime than neighborhoods that are mostly African American or Latino, (Hipp, 2007, p. 679). Income inequality is another significant issue, however, it differs when income inequality is total, between racial/ethnic groups, or within racial/ethnic groups. Higher income inequality within these groups saw an increase in the murder rate. Overall inequality, as well as inequality within groups generally increased
crime. Finally, income inequality between racial/ethnic groups saw no significant relationship with any measure of crime (Hipp, 2007, p. 683). While this is important, it is likely also being affected by higher poverty and disadvantage, which racial minorities are more likely to experience in the US. Nevertheless, all these factors are significant contributors of crime.
Economic Disadvantage

Poverty & Joblessness

Since the seminal work of Land et al. (1990), ecological studies of economic disadvantage and crime largely relied on composite measures of disadvantage, given high intercorrelations between poverty, inequality, joblessness, welfare receipt, single-parent households and racial and ethnic heterogeneity. Such composite factors have been established as the leading causes of violent crime (Bogess & Hipp, 2010; Chamberlain & Hipp, 2015; Dollar et al., 2019; Hipp 2007; Hipp & Yates, 2011). The downside to this approach is that it fails to tease out discrete measures that may be more salient in a given time or place (Stansfield & Parker, 2013; Steffensmeier et al., 2011). As an example, Dollar, Donnelly and Parker (2019) sought to understand the unique contribution of joblessness to homicide above and beyond other markers of disadvantage. Building on the work of Wilson (1996), they argued that the new urban poverty characterized by unemployment and underemployment creates distinct strains and changes to a person’s daily routine that may increase the risk for crime. In their study, they employ FBI index crime data available at the census tract level, as well as sociodemographic variables for each tract and metropolitan statistical area from the 2000 census. The outcome variables are homicide (murder and nonnegligent manslaughter) and violent crime (robbery, aggravated assault and forcible rape). The independent variables are joblessness and poverty. Dollar et al. measure joblessness as the combination of the unemployment rate, the percentage of civilian workforce aged 16-64 who are not in the labor force or are unemployed, the proportion of the employed civilian population employed in the six lowest average income jobs and the proportion of the employed civilian population 16
and over in management, professional, related occupations. They measure poverty as the percent of population at or below the official poverty level in 1999. Controls used are age structure, sex ratio, residential instability, and the percent of divorced men.

The authors find at the census tract level that joblessness is “most pronounced in tracts with the highest poverty rates, but still common in moderate poverty areas, and least common in low poverty areas, (p. 349). Areas with high poverty had the highest mean homicide rate of 3.16 over three years, a rate of 2.62 homicides in moderate poverty areas, and 0.73 in low poverty areas. Both high and moderate poverty areas were above the average homicide rate of 1.51, with low poverty areas having a below average rate. Joblessness and homicide were positively related in all levels of poverty, but within each neighborhood type, the relationship differs. Overall, joblessness has a “strong independent association with nonfatal violent offenses, a greater connection than that of poverty alone,” (Dollar, Donnelly, & Parker, 2019, p. 355). Joblessness is consistently more impactful on violent crime than poverty, increasing homicides in communities more so than poverty, with its biggest difference occurring in high poverty areas where poverty alone is not enough to drive up violent crime, (Dollar, Donnelly, & Parker, 2019, p. 355).

There is a significant amount of theory surrounding the relationship between crime and poverty, however as John Hipp and Daniel Yates outline, there is a lack of strong empirical research backing it beyond simply specifying the relationship, (2011, p. 959). Is the effect of poverty linear? Is it exponential? Hipp and Yates assert that most likely the relationship is linear until it reaches a certain threshold of poverty where the effect takes a major jump (2011, p. 961), but what explains it? Some studies have claimed a linear relationship with an “accelerating positive effect,” and some the opposite, a
“diminishing positive effect.” The authors’ main point is that few studies have empirically tested the function of the relationship they claim exists between poverty and crime, and for that reason, it is decidedly unknown (2011, p. 963).

Hipp and Yates go on to conduct their own test of the poverty-crime relationship. They identify a nonlinear relationship between violent crime and poverty meaning that it does not necessarily increase with poverty increase, finding that in reality, crime rates flatten in neighborhoods around 35% or more in poverty, (2011, p. 971). In terms of property crime, levels increase until reaching 20-25% poverty where they level off, asserting that beyond 25% in poverty, it no longer plays a role in determining crime rates, (p. 972). Analyzing the specifics of crime, the authors found a linear, diminishing positive effect for both aggravated assaults and robberies, and when including spatial effects, most rates of crime actually decrease in census tracts beyond 40% in poverty, (p.973). What does all this mean? Establishing parameters for crime levels by poverty level can help isolate the effects of other aspects of disadvantage - like eviction.

**Eviction**

Some populations are more likely to be evicted than others. Matthew Desmond and Carl Gershenson (2016) conducted a study to identify most likely evictees using the Milwaukee Area Renters Study (MARS). They sought to determine which individual-level (gender, number of children, race/ethnicity, and recent job loss and/or serious relationship dissolution), and neighborhood-level characteristics (2010 US census demographics and Milwaukee Police Department crime records), as well as network disadvantage factors (specifics about participants close friends and family, e.g who they are associated with) could predict likelihood of eviction for those participating in the
study. Although the findings of the study are specific to the city of Milwaukee, Wisconsin, the characteristics of the city and the specifics of eviction suggest that with additional research, the findings may be generalizable to other major US cities. The authors found that each increase in the number of children a renter had also increased the likelihood they were evicted, (2016, p. 369). A shorter rental history and/or other recent evictions also increased eviction likelihood. In contrast with what many have previously asserted about eviction, the study did not find that women or racial minorities were at increased likelihood (2016, p. 369). Neighborhood crime rates, as well as the neighborhood eviction rate, were both identified as likely predictors.

Eviction and crime has been studied even less than poverty and crime. One may ask by which mode the relationship even exists. Do eviction events make people more likely to commit crime, or are those most likely to be evicted also already more likely to commit crime? To date, there are only a handful of empirical studies on the relationship.

Initially, Susanne Alm (2018) sought to isolate the effect of eviction on the likelihood of criminal convictions in a Sweden study of evictees. The author conducted a multivariate analysis using eviction data from 5,050 eviction cases and conviction data from Sweden’s National Crime Register, and controlled for gender, age, foreign born residents, education, income, social assistance, previous psychiatric history, and previous criminal convictions. In the evicted population, many more were men from single households, they had lower income and lower levels of education, and were more likely to have had a history of psychiatric diagnosis, to be born outside of Sweden, have received social assistance, and to have previous convictions. The author found that incidence rates and the prevalence of offending was increased up to two years before
eviction and two years following, asserting that this may be attributed to the threat of eviction coming early on, the notice of eviction following, and then the actual event occurring, all in line with offending that cannot be explained by demographics alone (Alm, 2018, p. 269). Looking at gender differences, men and women differed in only one way - male convictions peaked at the time of eviction, whereas female convictions did not peak until two years following the event (Alm, 2018, p. 273).

Aaron Gottlieb and Jessica Moose then brought the conversation about eviction and crime to the US, studying specifically how urban mothers may be affected. They conducted an analysis on criminal convictions and evictions, while controlling for maternal education level, substance use, prior criminal conviction, foreign born status, maternal depression, and maternal youth family structure, all of which are suggested to either increase criminal propensity or likelihood of eviction, (Gottlieb & Moose, 2018, p. 5). The study used data from Fragile Families, a study of more than 4,000 families with children born in 20 major US cities between 1998-2000.

Findings included that mothers who experienced eviction were also at a higher risk for criminal justice involvement, even when the eviction was less recent, compared to mothers who were not evicted. The authors also noted that General Strain Theory, as well as Rational Choice Theory, were critical in understanding why eviction may have an impact, as the mediating variables of financial hardship, maternal depression, and substance use all mediated significantly the associations between eviction and criminal involvement, (Gottlieb & Moose, 2018, p. 9). These findings further build upon the understanding of the crime and eviction relationship.
In another study, Susanne Alm and Olof Backmun (2020) then sought to connect experiences with eviction to the commission of three types of crimes: utilitarian (theft, petty theft, fraud and robbery), violent crimes (homicide, assault, threat and sexual offenses), and drug crimes (selling, possession, using, and smuggling narcotic drugs). They established a time frame for both the treated group and the reference group of five years prior to eviction (2004), and until three years after eviction (2012), the evictees were evicted in 2009 (the treatment) and the reference population were not. In terms of differences between the two groups, the evictees had more men than women, and many more of the evicted households were single households. The evictees were also younger, and had a lower level of education, as well as were more likely to be from outside of Sweden, where the study occurred.

Alm and Backman suspected a link between eviction and both utilitarian and violent crimes because the ‘normal’ age-crime curve that exists in the reference population for these crimes, does not exist in the evicted population. The prevalence of drug crimes for both groups was similar over time with no obvious link being observed. To zero in on the effect of eviction, the authors ran a logistic regression model, controlling for gender, age, birth country, no post-upper secondary education, single household, experience of psychiatric diagnosis in the past decade, receipt of social assistance in 2009, and work income in 2009. Each of the groups was matched in a way that made the reference group equal to the treated group in every way except that they were not evicted to simulate what would have happened without eviction occurring and isolate the effect the eviction had on them from a crime perspective. The only instance where both the evicted group and reference group had no difference was where both had
no prior convictions for all 3 crimes in the years 2004-2009 (2020, p. 12). The authors note an increase in the treated group for all three crime types in 2010 with a slight decrease following, but never reaching zero. The increase for violent and drug crimes was smaller than that of utilitarian crimes. The authors made assumptions about their findings on the difference in violent crime through the basis of general strain theory, noting that eviction can be a major life event and can cause significant anger with one’s life situation. Utilitarian crimes, the authors sought to understand from a resource perspective, noting that evictees will commit these crimes as a mode of financial gain (2020, p. 15).

Alm and Backman’s research suggests the relationship between eviction and crime is most critical immediately following eviction, when need is the most significant. Their limitations were that they used conviction data, which is suggested to contain individuals that were more likely to have been caught - evictees may spend more time in public and therefore be more visible, (2020, p. 15). The authors also lacked information on the individual evictees beyond their demographics - no behavioral/personality knowledge, no housing history - two aspects that could potentially have driven up the likelihood of both being evicted and of committing crime - likely erasing the effect of an eviction event increasing criminal propensity, (p. 16).

Eviction can be considered a type of residential instability. Residential instability is a term used for a neighborhood with many people moving in and out at any given time. There is not a lot of potential for connection and these residents are not around long enough to be invested in the neighborhood. Bogess and Hipp (2010) sought to explore the relationship between crime and residential instability. The authors found that higher rates
of violent crime were associated with more residential instability. Also important to note is that there were different results found for homeowners versus renters. For renters, there was a “reciprocal effect of violent crime on residential stability and residential instability on violence,” and the effect of crime on residential instability was stronger than the reverse, (p. 367). When looking at solely homeowners, the effect of instability on crime was not significant. However, the effect of increasing crime rates was associated with greater residential instability for both homeowners and renters alike, (p. 367).

The lack of empirical understanding of crime and eviction drives the need for more studies. Theoretically, Robert Agnew’s General Strain Theory (GST) can help understand the impact that one’s life situation has on their likelihood of committing crimes, and applying it at the community level can help further explore the relationship of strain and crime. Agnew asserts that individual strain can be complicated by certain community characteristics - a lack of certain positive stimuli and presence of negative stimuli, communities with many individuals that struggle to achieve positively valued goals (money, status/respect, etc.), high existing community crime rates, relative deprivation, (1999, p. 127). Certain aspects of the theory are closely intertwined with aspects of this study - poverty, a community characteristic Agnew identifies as exacerbating strain, is examined. Eviction can also be seen as a segment of the issue, and is a somewhat unexplored addition to the conversation.

Barbara Warner and Shannon Fowler (2003) conducted an empirical study on Agnew’s application of GST at the community level. The authors found that community levels of strain were affected by community disadvantage and rates of residential stability, and that strain was also associated with an effect on neighborhood violence.
Perhaps most importantly, neighborhoods with consistently strong social support/social capital systems were not associated with higher levels of violence, even though they were associated with higher levels of strain, (Warner & Fowler, 2003, p. 518). Neighborhoods with more residents receiving social support are likely to be more disadvantaged and this will provide for important insights on the impact of community strain. Rates of eviction and poverty are both aspects of community disadvantage and will likely interact. Though the relationship of eviction and crime is also found at the individual level, this study will examine more so the place-level relationship of the two to establish connections that are important from both a crime and a public health perspective.
The Present Study

The current study seeks to understand the impact of eviction on neighborhood gun violence. Additionally, another study found that varying levels of poverty have different effects on crime (Hipp & Yates, 2011), which this study seeks to account for by establishing a poverty-eviction interaction term to address how eviction affects crime in differing poverty thresholds. Third, the study examines whether the effects of eviction on crime are felt differently in majority Black versus majority White neighborhoods. On eviction, I hypothesize eviction will be associated with an increase in shooting incidents. In terms of poverty, I assume that eviction will have a lesser effect on neighborhood violence as poverty thresholds increase, e.g. low poverty areas will see a larger increase in violence with an increase in evictions than areas with higher poverty. On how the racial makeup affects neighborhood shooting rates, it is assumed that majority White neighborhoods will see a larger increase in violence with higher eviction rates than will majority Black neighborhoods.
Data and Methods

This study included census tract level data from four cities in the United States: Philadelphia, PA; Newark, NJ; Cincinnati, OH; and New York City, NY, totalling over 1700 tracts available for analysis. Each of these cities experienced an overall rise in gun violence incidents in the past year. The data were collected for each tract at two different periods of time, and include the period 2006-2010, and 2016-2020. Data were compiled for indicators of economic conditions, eviction rates, and other demographic factors. Shooting data came from each city’s police department through publicly available sources and represent five year averages for both 2006-2010 and 2016-2020. The use of 5 year averages is important to stabilize counts and reduce the influence of any additional year (Crutchfield, 1982).

Eviction data were obtained from the Eviction Lab (evictionlab.org) to account for the eviction rate of each neighborhood. The remaining variables were obtained from the corresponding 5-year estimates of the American Community Survey (ACS) to account for sociodemographic measures in each of the city’s neighborhoods. Each of the time points was missing eviction data for both Manhattan and Queens, New York City and therefore resulted in any corresponding census tracts being eliminated from the study.

Dependent Variables

Shooting data were obtained through police departments of the four cities and were provided as incident-level files, including both fatal and non-fatal occurrences. All incidents were mapped within each corresponding tract to generate a count of total shooting incidents per tract. A spatial lag of the dependent variable was also included to account for the effect of gun violence in surrounding neighborhoods, given that violence
tends to cluster within cities. The lag was created using GeoDa and represents the average shooting rate for all surrounding neighborhoods in a given census tract (Dollar et.al, 2019). Without it, the results may be biased.

**Independent Variables**

Eviction data were obtained from The Eviction Lab, an organization responsible for studying eviction within the United States. The Eviction Lab produced rates of eviction for each of the cities within the present study. Rates were produced using all formal eviction records for the years 2000-2016. The Eviction Lab used court reports, record collections from online portals, and from companies that have manually collected court records. The formal reporting of eviction does not always occur in every case, however, the methods by which The Eviction Lab produces eviction rates create a consistent measure throughout each of the cities.

In addition to eviction, poverty was also included as a measure. For the purposes of this study, poverty was defined as the number of families in a given area that are living below the established poverty line, and was created as a percentage. For the eviction-poverty interaction term, thresholds were utilized - 0-20% of families in poverty is considered low poverty, 20-40% of families is moderate poverty, and high poverty, or concentrated disadvantage, includes neighborhoods with more than 40% of families in poverty.

**Controls**

Control measures consisted of: percentage of people in civilian labor force who are unemployed, percentage of people who are not within the labor force, percentage of Black residents, percentage of Hispanic residents, percentage of males over 15 who are
divorced, percentage of residents currently enrolled in college, percentage of houses currently renter occupied, percentage of residents who are foreign born, and the ratio of females to males. All of these variables are established to have known impacts on violence at the neighborhood level (Bogess & Hipp, 2010; Chamberlain & Hipp, 2015; Dollar et al., 2019; Hipp 2007; Hipp & Yates, 2011; Stansfield & Parker, 2013).

**Analysis**

The dependent variable for this thesis is a count of shootings in each neighborhood, which is overdispersed and does not follow a normal distribution. These data are thus ill-suited to ordinary least squares regression (Osgood, 2000). In modelling rare incidents over time like shootings or homicides, researchers could create per capita rates by dividing the incident counts into the area population and estimating a linear regression (e.g. Light & Thomas, 2019; Parker & Stansfield, 2015). Alternatively, researchers more commonly use count-based models (such as Poisson or negative binomial distributions) where the number of incidents represents the dependent variable, and models offset counts with the population size (Ousey & Kubrin, 2014). Given the distribution of shootings in these data, I also utilize negative binomial models. Incident Rate Ratios (IRRs) are displayed to ease the interpretation of results. Specifically, IRRs allow me to describe effect sizes in terms of percentage increases in the incident rate of shootings.

My analysis occurred in several stages. First, I focused on establishing the overall association between eviction, poverty and shootings with the addition of a spatial lag measure to account for the effects of surrounding neighborhoods’ violence. I do this using a cross-sectional negative binomial model to establish the overall association
between the key variables. Initially covariates were not included, and were then added in to produce a second model establishing whether the associations remain net of pertinent controls. I also added an interaction term to account for the effects eviction and poverty may have had on each other and together. Secondly, models were estimated separately for tracts that had a majority of white residents (> 50%) versus tracts that were majority Black. Given the higher burden of both gun violence and housing instability in majority Black neighborhoods, this step allowed me to assess whether eviction has a greater impact on shootings by neighborhood type. Third, I estimated a fixed effects model to assess whether changes in eviction within each of the neighborhoods across the two time periods was associated with change in shootings. A fixed effects analysis allows me to provide stronger causal claims about the association of eviction and shootings.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All shootings</td>
<td>1.21</td>
<td>4.05</td>
</tr>
<tr>
<td>Eviction rate</td>
<td>2.74</td>
<td>3.02</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>16.00</td>
<td>13.68</td>
</tr>
<tr>
<td>Renter</td>
<td>57.79</td>
<td>26.90</td>
</tr>
<tr>
<td>Black</td>
<td>28.21</td>
<td>32.09</td>
</tr>
<tr>
<td>Hispanic</td>
<td>21.56</td>
<td>22.34</td>
</tr>
<tr>
<td>Unemployed</td>
<td>9.80</td>
<td>6.56</td>
</tr>
<tr>
<td>Not in labor force</td>
<td>30.62</td>
<td>11.71</td>
</tr>
<tr>
<td>Immigrant population</td>
<td>29.99</td>
<td>18.35</td>
</tr>
<tr>
<td>Divorced</td>
<td>8.27</td>
<td>4.01</td>
</tr>
<tr>
<td>Female</td>
<td>1.11</td>
<td>0.25</td>
</tr>
<tr>
<td>In college</td>
<td>31.54</td>
<td>21.08</td>
</tr>
</tbody>
</table>
Results

Eviction, Crime, and Poverty

In the first model regressing shootings on eviction, poverty, and their product, the first hypothesis is confirmed in that a one unit increase in the rate of eviction is associated with a 26% increase in shootings and is significant. In terms of the second hypothesis about poverty, a one percentage increase in the poverty rate is associated with a 4% increase in shootings, which is also statistically significant. When an interaction variable was added for eviction and poverty, a negative coefficient was observed, meaning that as poverty increases, the effect of eviction on shootings is lessened. That is, the positive association of eviction with shootings is stronger in neighborhoods with lower than average poverty rates.

Table 2: Negative Binomial Regression

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IRR</td>
<td>SE</td>
<td>IRR</td>
<td>SE</td>
</tr>
<tr>
<td>Eviction rate</td>
<td>1.259*</td>
<td>0.438</td>
<td>1.195*</td>
<td>0.039</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>1.041*</td>
<td>0.005</td>
<td>1.016*</td>
<td>0.005</td>
</tr>
<tr>
<td>Eviction-Poverty Interaction</td>
<td>0.997*</td>
<td>0.001</td>
<td>0.998*</td>
<td>0.001</td>
</tr>
<tr>
<td>Lag</td>
<td>1.090*</td>
<td>0.059</td>
<td>1.035*</td>
<td>0.005</td>
</tr>
<tr>
<td>Renter</td>
<td></td>
<td></td>
<td>1.019*</td>
<td>0.002</td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td></td>
<td>1.026*</td>
<td>0.002</td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
<td>1.015*</td>
<td>0.003</td>
</tr>
<tr>
<td>Unemployed</td>
<td></td>
<td></td>
<td>1.014</td>
<td>0.011</td>
</tr>
<tr>
<td>Not in the labor force</td>
<td></td>
<td></td>
<td>1.001</td>
<td>0.005</td>
</tr>
<tr>
<td>Immigrant population</td>
<td></td>
<td></td>
<td>0.991*</td>
<td>0.003</td>
</tr>
<tr>
<td>Divorced</td>
<td></td>
<td></td>
<td>1.006</td>
<td>0.003</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td>0.590*</td>
<td>0.099</td>
</tr>
<tr>
<td>In college</td>
<td></td>
<td></td>
<td>1.006</td>
<td>0.003</td>
</tr>
</tbody>
</table>
In model 2 of the first analysis, all social and demographic controls are added. With the control variables covaried, the association of eviction and poverty with shootings is reduced in magnitude (to 19% and 2% respectively). However, they still retain their significance. The interaction term continues to produce a negative coefficient (.997), maintaining that as poverty increases, eviction loses its effect. Other covariates were largely associated with shootings as expected. As an example, a 1% increase in renter occupied homes produced a 2% increase in shootings. Additionally, a higher percentage of Black and Hispanic residents was associated with a 3% and 2% increase in shootings respectively. As expected, an increase in the immigrant population of 1% was associated with a negative effect on shootings. As the female population increases in a neighborhood, it also produced a decreasing incident rate of shootings.

**Racial Differences**

Moving onto the third question about race, eviction was consistently associated with shootings regardless of neighborhood racial composition, with a 39% increase in shootings in majority White neighborhoods and a 8% increase in majority Black neighborhoods. In majority Black neighborhoods, as poverty increased, shootings increased by 1%. However, in White neighborhoods, poverty did not produce a significant finding. In majority White neighborhoods, the percentage of renter occupied homes, the percentage of Black residents in the neighborhood, as well as the percentage of Hispanic residents, and the percentage of those not in the labor force were all significant predictors of the shooting rate. The same controls were significant in majority Black neighborhoods, with the addition of the percentage of unemployed and the percentage of foreign born residents.
Table 3: Black v. White Neighborhoods

<table>
<thead>
<tr>
<th></th>
<th>Majority White</th>
<th>Majority Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRR</td>
<td>SE</td>
<td>IRR</td>
</tr>
<tr>
<td>Eviction rate</td>
<td>1.386*</td>
<td>0.156</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>0.997</td>
<td>0.015</td>
</tr>
<tr>
<td>Eviction-Poverty Interaction</td>
<td>1.003</td>
<td>0.005</td>
</tr>
<tr>
<td>Lag</td>
<td>1.106*</td>
<td>0.021</td>
</tr>
<tr>
<td>Renter</td>
<td>1.043*</td>
<td>0.007</td>
</tr>
<tr>
<td>Black</td>
<td>1.028*</td>
<td>0.012</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.962*</td>
<td>0.017</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1.024</td>
<td>0.022</td>
</tr>
<tr>
<td>Not in labor force</td>
<td>0.959*</td>
<td>0.012</td>
</tr>
<tr>
<td>Immigrant population</td>
<td>0.989</td>
<td>0.009</td>
</tr>
<tr>
<td>Divorced</td>
<td>1.001</td>
<td>0.027</td>
</tr>
<tr>
<td>Female</td>
<td>0.631</td>
<td>0.353</td>
</tr>
<tr>
<td>In college</td>
<td>0.998</td>
<td>0.007</td>
</tr>
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</table>
Discussion

Higher rates of eviction were significantly associated with an increase in shootings. This may be due to the strain eviction can place on one’s life situation and make them more likely to commit various types of crime, notably violent and property crimes (Alm & Backmun, 2020). Poverty was also significantly associated with urban gun violence. However, when the eviction-poverty interaction term is added, poverty loses its effect, therefore meaning that as poverty increases, the impact of eviction on crime decreases. Most interestingly, there were key differences between neighborhoods with different racial makeups. Although eviction produced an increasing impact in both majority Black and majority White neighborhoods, there were important differences between which other variables mattered.

A lot of theoretical attention in criminology focuses on other factors of disadvantage like poverty and unemployment (Bogess & Hipp, 2010; Hipp & Yates, 2011; Chamberlain & Hipp, 2015; Dollar et.al 2019). Not only are there many studies exploring the relationship between poverty and crime, but there are a multitude of existing policy interventions. This study suggests housing insecurity, in the form of eviction, may be even more important of a factor when it comes to urban gun violence. The strain of losing one’s place to live and being forced to relocate, or to become homeless, has the potential to be significantly more impactful. The frustration of a serious life event like losing one’s residence is sudden and severe. Any feelings or actions to follow may also be sudden and severe. It seems eviction may be qualitatively different - although it can be considered a form of residential instability - it has a more involuntary aspect to it. Eviction causes a sudden, forced move, whereas instability generally is more
voluntary, people are coming and going because they are able to, not because they have to. Whereas poverty has lasting effects, it may be that the new and sudden impact of an eviction creates a drastic change in an individual’s criminal propensity in the short term following the eviction, (Alm & Backmun, 2020).

Examining poverty and its effects, it has a significant association with increasing rates of gun violence. However, it loses its effect when the interaction term is applied. The interaction term produced a negative coefficient because the impact of eviction is lessened as the poverty threshold increases. This suggests that in low poverty areas eviction matters much more for violence than in higher poverty areas. It may be that in high poverty areas, especially areas of concentrated disadvantage, evictions are more common and therefore more residents are likely to have lived through that experience or know someone who has - the shock factor is not as prevalent. However, in low poverty areas, where eviction is likely to be less common, it may produce a higher strain on residents who likely have not experienced eviction before. Eviction is a part of the unknown and may produce a more drastic, potentially violent response. It may also be that high poverty areas have an accumulation of many serious issues, of which eviction may only be one small factor in comparison to the rest.

There were some differences found in the way eviction matters in majority Black neighborhoods as opposed to majority White neighborhoods. Notably, eviction is more salient in majority White neighborhoods, as it was associated with a 39% increase in shootings. This difference may be attributed to the way poverty and eviction interact. Because poverty disproportionately affects minority neighborhoods in the U.S., it may be that eviction is associated with a larger impact on crime because majority White
neighborhoods are more likely to be low poverty, and therefore the strain of eviction is more impactful. Unemployment also had a differing impact in Black neighborhoods that was not found significant in White neighborhoods. There are critical inequalities when it comes to employment in majority Black versus majority White neighborhoods. The most poignant issue is that unemployment is more likely to be high in minority neighborhoods because jobs are less likely to exist there in the first place, (Wilson, 1996). In contrast, if jobs choose to relocate from a majority White neighborhood, residents have a better chance of either following the job to its new location or being able to easily find new employment. This also suggests that job availability will make unemployment last a shorter period of time for non-minority neighborhoods, another reason why it may not have a significant effect.

The number of Black residents in each neighborhood was a significant measure in both the model on majority White neighborhoods, as well as majority Black neighborhoods, with both being associated with nearly the same increase in shootings. The Hispanic population was also significant in both neighborhoods, however, in majority White neighborhoods, as the percentage of Hispanic residents increased, the shooting rate actually went down. In majority Black neighborhoods, a 1% increase in the Hispanic population was associated with a 2% increase in shootings. The increase in crime may possibly be due to a higher racial heterogeneity in Black neighborhoods that is not as present in the White neighborhoods of this study (Hipp, 2007). In terms of the percent of foreign born residents in a neighborhood, this measure was not significant for majority White neighborhoods. Majority Black neighborhoods saw a significant decreasing effect on shootings as the immigrant population increased. A higher
immigrant population is a well known mitigating factor of neighborhood crime (Ousey & Kubrin, 2014).

It is important to note that there were several limitations within the study. The present study consisted of data from two different time periods that were 10 years apart. Not only can a lot of change occur in 10 years, but not having data available by each year may take away from the integrity of the results of this study. There are also notable differences between each of the four cities, and it may be that any findings in the data are largely skewed by the majority of neighborhoods in the study, which are found in New York City. The poverty-eviction interaction may also be somewhat unexpected, and has the potential to be merely statistical. In addition, the way eviction data was collected is consistent for all cities, however true eviction rates cannot be known for certain without having data on evictions that do not occur formally, and occur outside of the court system. This may also change the results if more accurate numbers were used.
Future Research

Due to the increasing importance of eviction on urban gun violence, more studies are needed. Because the effect of eviction and other factors of economic disadvantage are often intertwined, future studies may need to identify a better method to isolate the effect of eviction in and of itself. Drawing on the only existing study on eviction and crime, it may benefit to recreate the study within the United States to identify the unique effects eviction may have in this country. In addition, a new US study like that of Alm and Backmun’s Sweden study can be supplemented with the addition of individual level data to target not only eviction but the reasons behind it. There are many potential causes for why someone may be evicted. It may be of importance to identify how different individual level causes affect commission of crime likelihood. Due to the current relevance of the topic of eviction, with there being a nationwide eviction moratorium during the pandemic, it would be interesting to see if and how the stop affected neighborhood violence. There was a period of time during the beginning of the pandemic where a moratorium had not yet gone into effect and may offer a time period of comparison for a look at any impact the eviction stop may have had. There will be another opportunity, as well, to observe how things change as cities begin to lift any eviction protections in place, likely before many families have economically recovered.

In addition to exploring eviction, it may be beneficial to dive deeper into poverty thresholds as well. Poverty measures are different in each state and it may even benefit to not only consider a state’s threshold but to adjust for any changes in cost of living and wage stagnation over the last few decades. It may be that poverty levels are far lower than they should be. With that consideration in mind, establishing new poverty measures
and accounting for neighborhoods with low, moderate, and high poverty thresholds may produce different results.

Neighborhood level measures of collective efficacy may also provide critical insights into the eviction-crime relationship. Poverty is closely intertwined with residential instability, just as instability is associated with collective efficacy. With more residents moving in and out of a given neighborhood, it becomes harder for any community connections and relationships to become established, meaning there is less support between neighbors. Lower levels of support may be an important factor to examine when observing the impact of eviction on community rates of crime.

Since eviction mattered similarly in both majority White and majority Black neighborhoods, it may benefit to explore further the racial makeup of each neighborhood. Some studies suggest that more racial diversity in a neighborhood is associated with more crime than majority Black or majority Lation neighborhoods alone, (Hipp, 2007). A higher number of immigrants living in a neighborhood is also associated with having a decreasing effect on crime, perhaps exploring racial heterogeneity with immigration in mind may also answer some questions.
Policy Implications

There are a number of government programs already in place that help residents who are at the threat of being evicted at the national, state, and local levels. These programs should continue to be funded and be made as accessible as possible for anyone who needs them. In addition, the existence of public assistance programs should be expanded and made more accessible. All of these programs can help stop an eviction from occurring, and give residents financial help when necessary. The Department of Housing and Urban Development (HUD) is also a national resource for programs like rental assistance, which could be influential to preventing eviction. HUD is involved in public housing and ensuring that affordable living is accessible throughout the country. Perhaps the issue of eviction can be better addressed by fixing affordability issues to avoid even coming close to an eviction. Therefore, funding to HUD is critical to the issue at hand and perhaps a larger budget being allocated to them is necessary. Due to the association eviction has on neighborhood shooting rates, it would be imperative to invest in these programs and prevent evictions in the first place.

Each of the four cities also have unique policies and programs in place currently to help with the eviction crisis. Initially, Philadelphia, Cincinnati, Newark, and New York City all were abiding by the national eviction moratorium. Since then, only Cincinnati has chosen to let it expire. All four cities are observing in one form or another a requirement of no eviction due to nonpayment of rent. New York City still allows evictions due to other reasons like health and safety hazards. Hamilton County, where Cincinnati is, allows evictions for tenants who do not take part in their payment assistance programs. Rent payment help is available in Newark, Cincinnati, and
Philadelphia which varies in each city. Cincinnati residents can receive up to 12 months of past due rent and utilities payment, as well as up to 3 months of future rent paid. In Philadelphia, landlords are required to offer a multi-month rent repayment plan, and are also not allowed to charge late fees. Newark, NJ’s Emergency Rental Assistance Fund provides up to 12 months of rent paid forward, and also prevents late fees from being charged.

Unique to New York City, the eviction prevention program also prevents foreclosures, tax lien sales, negative credit reporting, and also has eviction/foreclosure protection for small businesses. Philadelphia has perhaps the most interesting approach to eviction prevention through their Emergency Housing Protection Act. The act requires landlords to offer not only a 30 days notice to any potential evictions, but also must inform the tenant(s) of all their rights when it comes to eviction. In addition, landlords in Philly must attempt a mediation in court through their Eviction Diversion Program before they are able to evict. This is unique because New York City, Cincinnati, and Newark, NJ, all have halted eviction proceedings in the courts. In New Jersey, there are specific guidelines about handling illegal lockouts that direct police to issue a warning and require tenants be restored access initially, and then charge landlords who chose to ignore warnings with a complaint summons. None of the other cities provided specific directives to police. Each of the programs in the corresponding four cities was helping hundreds, if not thousands, of families from being evicted and offering financial assistance to many more.

Some researchers suggest a three pronged approach to addressing urban gun violence (Abt, 2019). Thomas Abt’s *Bleeding Out* seeks to combine prevention,
intervention, and enforcement for what he identifies as hot people, places, and behaviors. Taking this multifaceted approach will not only target underlying issues like economic disadvantage, of which eviction is a factor, but also directly target the people who are most likely to shoot, as well as the places where it is most likely to occur. Eviction would fit within the prevention aspect of Abt’s approach and investing in programs like that of each of the cities would be beneficial. Some other prevention methods that could occur deal with targeting the illegal gun market and also tightening gun laws by establishing things like red flag rules and mandatory waiting periods. Mandatory waiting periods may be especially helpful as Alm and Backmun assert that violent crime is most likely to spike for a shorter period of time that immediately follows an eviction event, (2020, p. 15). All in all, the issue of eviction has become highly relevant during the past year and the global pandemic. If the eviction moratorium was to be lifted, thousands of people will be at risk for losing their homes. Violence already spiked during the pandemic and an eviction crisis would surely only exacerbate the issue.
References


Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science (American Association for the Advancement of Science); Science, 277*(5328), 918-924. 10.1126/science.277.5328.918


