Waiting for Justice: Examining the Relationship Between Homicide Clearance Rates and Homicide Rates

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1 Introduction

Does the ability of law enforcement to clear homicide cases affect homicide rates? Research on homicide clearance has consistently shown that the likelihood of a homicide case being cleared is lower when the victim is non-white (Riedel, 2008). As a result, families of black homicide victims are less likely to receive justice and more likely to remain at risk of further traumatization. This, in turn, can lead residents of black communities to view law enforcement as unresponsive and unempathetic (Leovy, 2015). It has been shown that the prevalence of such attitudes about law enforcement, frequently referred to as "legal cynicism", are positively associated with violent crime rates (Corsaro et al., 2015, Kubrin and Weitzer, 2003). Through this attitudinal mechanism, homicide clearance rates are theoretically related to rates of violent crime. However, no prior studies have systematically analyzed how the ability of law enforcement to clear homicide cases influences aggregate rates of homicide. I aim to close this gap in the literature by empirically testing the relationship between homicide clearance rates and homicide rates. Apart from increasing the general understanding of what factors contribute to higher homicide rates, this research has important policy ramifications. More specifically, this research can inform law enforcement agencies on how to more effectively allocate their resources. For example, if increased effectiveness in clearing homicide cases reduces aggregate homicides, then law enforcement agencies could place greater emphasis on clearing homicide cases to reduce homicide.

2 Background and Theory

Dating back to Thomas Hobbes, scholars have explored the relationship between legal authority and violence. Hobbes (1651) famously argued that humans are inherently prone to engage in violence in order to acquire material goods, preempt violence from

others, and maintain honor. Based on this assessment of humanity, Hobbes concluded that only a centralized source of authority with a monopoly on violence can temper the murderous impulses of individuals. These ideas have been applied by more contemporary scholars to explain variation in homicide rates across time and space. In The Civilizing Process, Norbert Elias (1939) argues that a consolidation of state power in medieval Europe (along with economic restructuring) pacified bellicose aristocrats. Prior to this consolidation of state power, violence was the primary vehicle for economic gain and conflict resolution. More modern forms of adjudication only replaced violence as the primary judicial vehicle after the nobility ceded their power to the state. Employing a similar logic to Elias, Donald Black (1983) conceptualizes violent crime as a type of informal social control. More specifically, Black theorizes that violence is often used as a form of conflict resolution in contexts where legal authority is either weak or completely lacking. He gives the settling of disputes through homicide in under-policed, disadvantaged neighborhoods as an example of his theory.

The argument that a breakdown of state authority is associated with the development of violent subcultures has been supported by a number of ethnographic studies. In his influential study of a disadvantaged Philadelphia neighborhood, Elijah Anderson (1999) notes that the residents of the neighborhood use an informal set of laws, or what Anderson calls "the code of the street", to settle disputes. Anderson finds that the neighborhood's residents adhere to the code of the street because they lack faith in the criminal justice system. Other ethnographic accounts, such as Fagan and Wilkinson's (1998) study of youth violence in the inner city and Horowitz's (1983) examination of honor in a Mexican American community emphasize similar themes of self-preservation, utilization of violence, and reputation management in the face of lacking legal protection. Collectively, these studies posit that conflict resolution is handled in a vigilante manner when people feel as though they cannot rely on law enforcement to adminis-

ter justice. In such environments informal social control mechanisms become codified, leading to the normalization of self-help violence.

Following this logic, one would expect higher rates of homicide in communities where residents distrust conventional forms of authority and express skepticism towards the conflict resolution capacity of the police. Indeed, a number of studies have found a positive link between legal cynicism, defined as "a cultural orientation in which the law and the agents of its enforcement are viewed as illegitimate, unresponsive, and ill equipped to ensure public safety" (Kirk and Matsuda, 2011), and rates of violence at the neighborhood level (Corsaro et al., 2015, Kubrin and Weitzer, 2003). Further studies have shown that compromised police legitimacy can lead to higher rates of violent crime at the neighborhood level (Kane, 2005), reduce the likelihood of neighborhood residents reporting crime to the police (Desmond Kirk, 2016), and strengthen positive attitudes towards violent self-help (Jackson et al., 2013). In these studies, attitudes about law enforcement have either been measured directly using localized survey data (Corsaro et al., 2015, Jackson et al., 2013) or inferred through reported incidents of police malpractice (Desmond et al., 2016, Kane, 2005) and through motives recorded by police in homicide reports (Kubrin and Weitzer, 2003). While all of these measures are conceptually valid, none of them account for perceptions of investigative police work. Furthermore, most studies that have used police actions as a proxy for attitudes about law enforcement have focused exclusively on street-level policing. However, as Leovy (2015) points out, the ability of local law enforcement to solve homicide cases can impact local attitudes about the competence, empathy, and responsiveness of law enforcement. Through this mechanism, the ability of law enforcement to solve murder cases is linked to the ecological conditions (community level rates of legal cynicism and perceived police legitimacy) that either suppress or increase the use of violent self-help. Based on this line of reasoning, I formulate my central hypothesis. Namely, that higher

homicide clearance rates lead to a reduction in homicide rates.

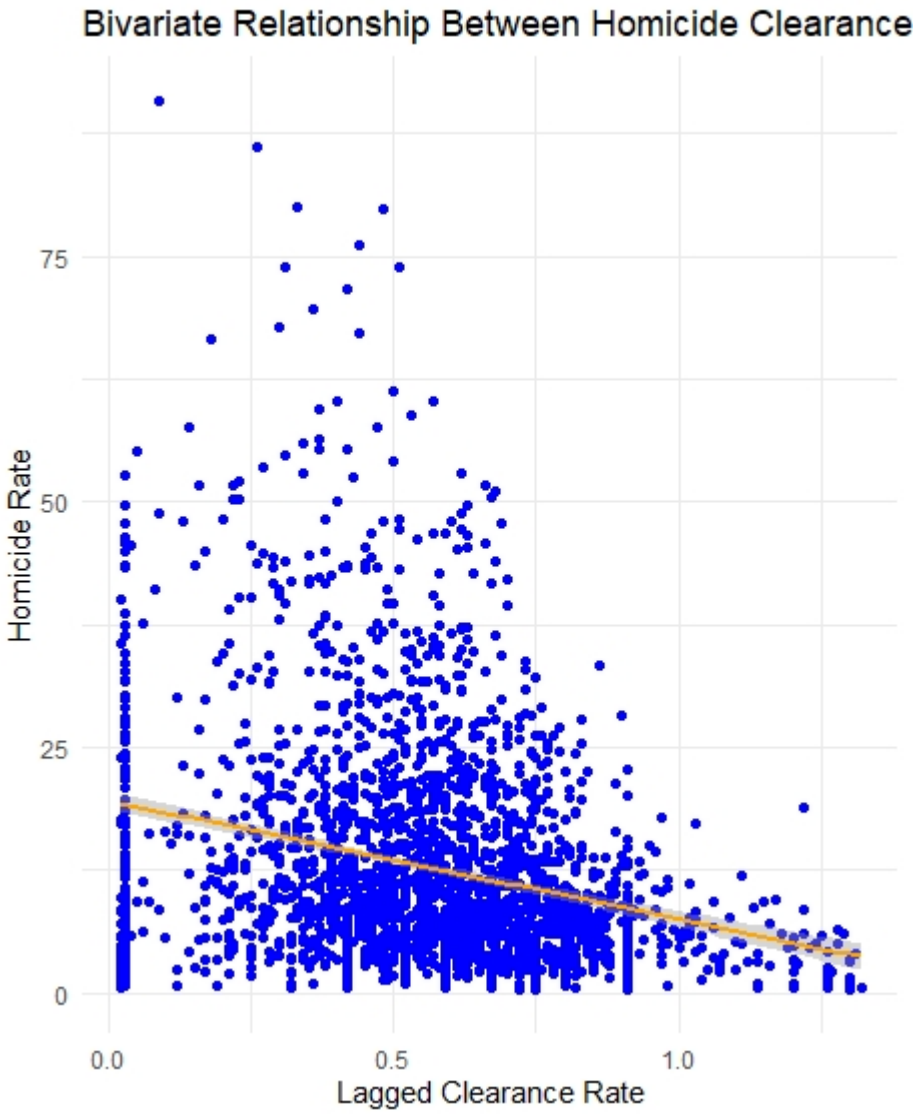
3 Data and Methods

3.1 Analytic Sample

The sample for this analysis consists of the 100 largest cities in the United States, based on 2010 census estimates. Longitudinal data were collected for these cities between the years 1990 and 2016. The year 1990 was eventually dropped due to technical reasons discussed later on in this section. Therefore, the final data consist of 2,600 city years. After using listwise deletion to remove missing cases, the final sample consists of 2,487 observations.

3.2 Dependant Variable

The dependant variable of importance is the annual homicide rate per 100,000 population, calculated as the number of annual homicides divided by the annual population estimates multiplied by 100,000. Population estimates for each city were gathered from the Census Bureau's website. Population data was not available for the years 1991-1999. The missing values were estimated using linear interpolation. The annual number of homicides for each city were obtained from the Homicide Clearance Project (HCP), which collects annual city, state, and county level homicide incidence data from the FBI's Uniform Crime Reporting (UCR) database. The HCP makes the data publicly available on its website.



3.3 Independent Variables

The main independent variable is the homicide clearance rate, measured as the number of homicides divided by the number of cleared homicides for a given year. To determine whether clearance rates drive homicide rates, a lagged measure of the clearance rate will be utilized. For example, for the year 1991 the clearance rate for 1990 will be used as the primary predictor. Using a lagged clearance measure allows for increased

causal inference, mainly because homicide rates have been used as a predictor for clearance rates. The lagged measure (to a certain degree) shields the analysis from this potential reverse causality. Moreover, because clearances and homicides occur concurrently throughout the year, it makes sense to use preceding annual clearance trends rather than the same-year measure of clearance and homicide. Like annual homicide totals, the annual number of cleared homicide cases was also obtained from the HCP, meaning that they were originally derived from the UCR database.

3.4 Control Variables

Control variables for this analysis include the percentage of a city's population that is black, the annual unemployment rate, and the number of sworn full-time police officers per 100,000 population. Annual unemployment measures were obtained from the Bureau of Labor Statistics's (BLS) Local Area Unemployment Statistics (LAUS) series. A measure for the percent black for each city was obtained from the Census Bureau's website. Unfortunately, this measure was only available for the years 2000 and 2010, meaning that the measure had to be estimated for the remaining years. To do so, I utilized linear interpolation. The number of full time sworn officers was obtained from the Law Enforcement Management and Administrative Statistics (LEMAS) survey issued by the Bureau of Justice Statistics. Because the survey only captures the years 1990, 1993,1997, 1999, 2000, 2003, 2007, and 2013, linear interpolation was used to estimate the remaining years.

These control variables were selected based on their general bearing on homicide rates. Because black Americans tend to commit homicide and be the victims of homicide rates at higher rates than other racial groups, the percentage of a city's population that is black should, in theory, be associated with homicide rates. The annual unemployment rate serves as an indicator of economic problems and poverty, which have

both been linked to homicide. Finally, the amount of sworn officers per 100,000 population should be associated with homicide rates because an increased police presence may drive down homicide or be implemented in response to rising homicide rates. Table 1 provides descriptives for all relevant variables.

Table 1: Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Homicide Rate	2,487	12.847	11.656	0.361	4.991	16.762	90.802
Clearance Rate	2,487	0.565	0.261	0.020	0.420	0.725	1.320
Unemployment Rate	2,487	6.356	2.786	1.500	4.400	7.700	25.100
Percent Black	2,487	20.938	18.560	0.000	6.000	28.680	82.700
Sworn Officers	2,487	231.580	113.423	10.808	154.224	284.195	837.175

4 Results

4.1 Bivariate Correlations

Table 2 shows bi-variate correlations between the homicide rate and the relevant independent variables. Most of the correlations are in the predicted direction. As expected, the lagged clearance measure is negatively associated with the homicide rate. The percentage of the population that is black as well as the unemployment rate are also negatively correlated with the homicide rate. The only surprising relationship is the positive correlation between the homicide rate and the number of sworn police officers per 100,000 population. Generally, one would expect a larger police presence to deter crime. Alternatively, cities may increase the size of their police forces in the face of rising homicide rates.

Table 2: Bivariate Correlations

	1	2	3	4	5
1. Lagged Clearance	1	-0.302	-0.202	-0.120	-0.192
2. Hom. Rate	-0.302	1	0.747	0.362	0.647
3. Percent Black	-0.202	0.747	1	0.278	0.682
4. Unemployment	-0.120	0.362	0.278	1	0.208
5. Sworn Officers	-0.192	0.647	0.682	0.208	1

4.2 Regression Analysis

The structure of the data, which consists of annual observations nested within cities, necessitates a more complex analytic technique than ordinary least squared (OLS) regression. In the case of this study, multi-level modeling techniques provide an appropriate alternative to OLS because they are able to control for the unique effects of each city. For the final analysis I opted to use a fixed-effects regression model rather than a random-effects model. To adjudicate between these two options I ran an omnibus fixed-effect model and an omnibus random-effects model and conducted a Hausman test to compare the fixed-effect model with the random-effects model. The test was significant, indicating that the fixed-effect model is the better choice.

Table 3 displays the results of a fixed effect regression model used to predict homicide rates. All relevant independent variables were included in the model. As shown by Table 3 the lagged clearance measure exerts a strong and significant ($p<0.001$) negative influence on the homicide rate and the relationship is highly significant. Across the models, the coefficient and significance of the lagged homicide measure barely changes

after sworn officers per 100,000 population is controlled for. Among the control variables, the percentage of the population that is black and the percentage of sworn officers per 100,000 population are both positively associated with homicide rates. Moreover, these associations are highly significant ($p<0.001$). The unemployment rate has a positive effect on homicide rate, but this effect is insignificant across both models.

The results indicate that the lagged homicide clearance measure drives down the homicide rate. However, the adjusted R squared across both models indicates that the four variables included in the model account for only about 5 percent in the variation in homicide rates across the years in questions.

Table 3: Results of fixed-effect models predicting homicide rates

	Dependent variable:	
	Homicide Rate	
	(1)	(2)
Clearance Lagged	-1.715^{***}	-1.675^{***}
	(0.476)	(0.474)
Percent Black	0.599^{***}	0.560^{***}
	(0.059)	(0.059)
Unemployment Rate	0.068	0.077
	(0.052)	(0.052)
Sworn Officers		0.019^{***}
		(0.004)
Observations	2,487	2,487
R^2	0.048	0.056
Adjusted R^2	0.008	0.016
F Statistic	39.982^{***} (df = 3; 2386)	35.543^{***} (df = 4; 2385)

Note: *p<0.05; **p<0.01; ***p<0.001

5 discussion

The results shown in table 3 support the hypothesis that higher clearance rates reduce homicide rates later in time. However, these findings should be regarded with an air of caution. First off, fixed-effect regression modeling does not allow for causal assertions, mainly because rising homicide rates can, in theory, also lead to lower clearance rates. As detectives receive more cases and take on a larger workload, they may need to prioritize some cases over others or they simply not have the resources and time to solve all open cases. In such circumstances, the clearance rate would decrease as a direct result of an increased number of homicides. The lagged clearance measure is designed to shield the analysis from this potential reverse causality, but it does so imperfectly. Future studies are needed to determine the causal direction of the relationship between the homicide rate and the homicide clearance rate. That said, this study does provide evidence that changes in clearance rates may, indeed, contribute to changes in homicide rates. While further analysis is necessary, this study provides an important first step in expanding the legal cynicism literature into other areas of policing. As previously mentioned, current studies that examine the relationship between legal cynicism and homicide have not used detective work as an indicator of legal cynicism. This study indicates that the the literature on legal cynicism should consider expanding the scope of its measures, as communities may become disillusioned with police because of a failure by law enforcement to clear homicide cases.

Finally, this study has a series of important policy implications. If it is indeed the case that an inability of law enforcement to solve homicide cases breeds legal cynicism and thereby increases the homicide rate, then law enforcement agencies should consider devoting more resources to solving homicide cases. Moreover, if the inability to solve homicide cases is unevenly distributed based on the race and socioeconomic status

of the victim, then law enforcement agencies should seek to even out this inequality. Unfortunately, many homicide cases are difficult to solve and detectives are very often overworked. In general, it appears reasonable to assert that solving more homicide cases would be beneficial regardless of whether doing so drives down homicide rates.

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