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Police shootings, violent crime, race and socio-economic factors in municipalities in the United States of America

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Abstract

Background: Both police shootings and violent crime remain high in the United States of America compared to other developed nations but debates continue about whether race, mental health or other social factors are related to them.

Aims: Our aim was to test relationships between community factors indicative of socio-economic status, racial demographics, police shootings, and violent crime.

Methods: Data on police shootings, violent crime and community sociodemographic factors were drawn from two publicly accessible datasets: health and police records of 100 US municipalities and relationships between them explored using regression analyses.

Results: Data were from the 100 largest US municipalities as designated by the mapping police violence database. The median per capital violent crime rate was 5.94 and median killings by police per 10 thousand arrests was 13.7. Violent crime was found to be related mainly to income inequality and lower academic achievement in the community. Race was unrelated to violent crime after controlling for other factors. Police shootings were found to be related to community level mental health concerns, food insecurity and the municipality's violent crime rate.

Conclusion: The evidence suggests that socio-economic factors are the primary drivers of both violent crime

perpetration and police shootings. Policy approaches aimed at improving education and reducing poverty are likely to mitigate both violent crime and police shootings. However, it is important to recognise that being Black is an indicator of particular disadvantage within this context. This underscores the need for comprehensive strategies that address the systemic issues of racial disparities and socioeconomic inequality, while also acknowledging the complex interplay of race, poverty and policing in the context of violent crime and police shootings.

KEYWORDS
income inequality, mental health, police shootings, race, violent crime

1 | INTRODUCTION

Police shootings and their relationship to violent crime continue to be of interest to policy makers and the public. After a decades-long decline in violent crime, violent crime increased in 2020, following the protests and riots that year related to the murder of George Floyd (Berk, 2023). This has created renewed public concern regarding violent crime (Pew Research Center, 2022). The public is also concerned about police shootings, particularly the perception these may be motivated by race (Cesario et al., 2019) though police shootings, particularly of unarmed suspects, are, in fact, at a historic low (Reilly, 2020). We sought to examine the problems of violent crime and police shootings concurrently and to examine the degree to which community and race associated with each other.

1.1 | Violent crime

As noted above, violent crime has been a pressing issue for American citizens. For this paper, we define violent crimes as those causing injury to another person, consistent with the Uniform Crime Reports (UCR) as tracked by the Federal Bureau of Investigations. This tracking centres on four offences: murder and non-negligent manslaughter, rape, robbery, and aggravated assault. Overall, according to United Nations data, and contrary to common perceptions, the United States of America (USA) is not more prone to violent crime than most European countries (indeed, assault rates are higher in France, Belgium, Australia, New Zealand etc.; UNODC, 2023) but it has an unusually high homicide rate, likely due to widespread gun availability. Crimes are, however, often highly localised by neighbourhood, not least because neighbourhood factors may be associated with crime.

1.2 | Poverty

By and large, a strong correlation between poverty and an increased likelihood of engaging in criminal activities has been established in the literature (O'Brien et al., 2013). This includes more specific associations between poverty and property crime, violent crime and drug offences (Pratt & Cullen, 2005).

1.3 | Neighbourhood concerns

As noted, violent crime tends to be higher in poorer neighbourhoods (Males & Brown, 2014). Specifically, violent crime tends to correlate with various elements of community stress—for instance, crime is associated with reduced academic achievement (O'Brien et al., 2021), higher levels of mental health disorders (Grosholz et al., 2021) as well as environmental injustices (Lersch & Hart, 2014). Poverty-related difficulties, such as food insecurity, may particularly stand out as predictors of crime; we expand further on this below.

Food insecurity may indirectly lead to criminal behaviour in various ways. Individuals who are food insecure may, for example, engage in illegal activities such as theft, drug trafficking and prostitution to earn money to buy food. Studies have shown that food-insecure households are more likely to engage in property crime, such as theft, than food-secure households (Jackson et al., 2018). Food insecurity can also lead to physical aggression and violent behaviour. Other studies have found that individuals who experience food insecurity are more likely to engage in intimate partner violence (Ryu & Bartfeld, 2012). Similarly, food insecurity is associated with higher rates of child abuse and neglect (Bowen et al., 2021).

Food insecurity is also linked to mental health disorders, such as depression, anxiety and stress, which is in turn linked to criminal behaviour. Individuals with a range of mental health disorders are, for example, more likely to misuse substances, predisposing to increasing the risk of committing crimes. Furthermore, individuals who are food-insecure may experience shame, guilt and a sense of hopelessness and this too has been linked to engaging in criminal behaviour (Bartfeld & Collins, 2017).

Violent crime perpetration has been shown to vary according to ethnicity, with violent crime arrests or convictions proportionately higher in Black and Latino groups compared with White or Asian groups (Beck, 2021). This has led to some degree of 'black crime' narratives on the political right which portray race as an inherent predictor of crime. However, other analyses suggest that race is merely a proxy for socio-economic indicators, with race disappearing as a predictor of violent crime once community factors are controlled (Smith et al., 2023).

1.4 | Shootings by police officers

Police shootings of suspects is another multidimensional problem. Whether race does or does not predict police shootings remains controversial. Although Black individuals make up somewhere between 11% and 15% of the population of the USA, they are over a quarter (27.5%) of victims in police-involved fatal shootings in 2018 (Siegel et al., 2019); Beck (2021) reports that a similar higher proportion of violent criminal arrests are recorded against Black people, suggesting that the extent of police contact may be a key issue. At present, there are mixed findings on whether race does or does not predict police shootings or other misconduct (Cesario et al., 2019; Hemenway et al., 2020; Scott et al., 2017; Smith et al., 2022).

The relationship between police shootings and poverty also needs consideration (Feldman, 2020; Feldman et al., 2019; Kane, 2002; Sorensen et al., 1993). We have already indicated that extreme poverty, as in food insecurity, may be related to mental health problems and criminality, but it has been suggested that lack of resources and support more generally also lead to higher levels of stress and mental health problems (Lund et al., 2011). Mental health problems may also influence interaction with the police (Simpson, 2015), possibly, for example, affecting an individual's behaviour during a police encounter. In turn, police officers may be more likely to view individuals in poor neighbourhoods as suspicious or dangerous, leading to an increased-likelihood of police shootings. Poor neighbourhoods tend to have higher crime rates than richer ones, although not invariably so. As a consequence, the police tend to be more active in poor neighbourhoods, leading to more interactions between police officers and residents; such interactions may escalate into violence between civilians and police (Sorensen

et al., 1993). Previous evidence has found that community level mental-health strain, in particular, is associated with police misconduct (Smith et al., 2022).

1.5 | The current study

In our current study, we sought to test relationships between police shootings of suspects, violent crime and community factors, including community statistics on poverty, housing, education and mental health in 100 US municipality records. Analyses for this study were preregistered. Preregistration is a process of publishing hypotheses and data analyses plans in advance of data analysis. This process can reduce researcher degrees of freedom, p-hacking and, thus, reduce publication bias. This may be particularly important for such a politicised and emotional question as police shootings, particularly shootings of unarmed suspects. It transpired, however, that the median per capita incidents of police shootings an unarmed suspect in the areas and period under study was 0.000151, indicating remarkable rarity, so this line of inquiry could not be pursued further. Instead, we focused on general police shootings of both armed and unarmed suspects as well as violent crime in the communities.

Our main research questions were about the degree to which mental health problems, education, housing burden and race/ethnicity are associated with police shootings of suspects across municipalities and how these variables relate. In particular, we wanted to find out whether the race of the victim was significantly associated with police shootings after allowing for these other variables.

2 | METHODS

2.1 | Ethics

As we were accessing publicly available data, no ethics approval specific to this study was required.

2.2 | Preregistration

Preregistration for the current study can be found at: https://osf.io/btzug. Three non-trivial changes were made to the analyses since preregistration. First, it was decided that suicide outcomes were too separate a topic from violent crime and police shootings and, as such, will be published in a separate paper using the same dataset. Secondly, fatal police shootings of unarmed individuals were so rare in the dataset that data outcomes were nonsensical. As such, this outcome was dropped from analyses. This last change is interesting in itself and could not have been predicted prior to looking at the data. Thirdly, it was decided to also analyse violent crime as an outcome. As this was not preregistered, this will be considered exploratory, even though the same preregistered predictors were used for police shootings. However, our main question regarding social and race factors associated with police shootings are preregistered.

2.3 | Data sources

Data were sourced from two publicly available data sets for 2021–2022. First the County Health Rankings Dataset (CHRD) and, secondly, the Mapping Police Violence (MPV) dataset.

County Level Health Data were drawn from 100 of the largest cities across the USA from *CHRD*, compiled yearly by the Robert Wood Johnson Foundation and the University of Wisconsin Pollution Health Institute since 2010 (Remington et al., 2015). The 30 county-level measures in the CHRD provide data on mortality and morbidity and factors found to have an impact on health, including health-related behaviours, clinical care, social and economic factors and the physical environment. For our analysis, we not only included variables related to mental health but also food insecurity, youth standardised reading scores, median household income, percentage of children eligible for free lunch, severe housing cost burden, high school graduation rates, social association rates and income inequality ratio. The variable related to mental health, specifically, represents the percentage of adults reporting 14 or more poor mental health days each month and is designed to assess chronic and severe mental illness. We were also interested in the proportion of the community who identified as Black. In the US context, Black includes Americans who trace their ancestry to Africa and can include both African–American descendants of slaves as well as more recent African immigrants, and those with heritage in the Caribbean.

This dataset also includes data on violent crime perpetration. These data are drawn from the Federal Bureau of Investigation's UCR, which includes violent crimes of murder and non-negligent manslaughter, rape, robbery and aggravated assault. Such crimes represent *reported* crimes and, as such, do not necessarily represent all crimes, some of which go unreported. Reported crime, however, is generally a better reflection of real crime rates in a community than records of criminal convictions and reported crime data trends that more closely mirror sources such as the National Crime Victimization Survey.

Police shooting data were obtained from the MPV dataset (retrieved from https://mappingpoliceviolence.org), which is compiled regularly and made available to the public by a collective of researchers and data scientists with data going back to 2013. The MPV dataset provides a comprehensive record of police shootings in the 100 largest cities across the United States, offering crucial metrics of public safety and law enforcement practices.

In our research, we extracted data from the MPV on violent crime and police shootings. To be clear, the term 'police shootings' represents all instances where a police officer discharges their firearm towards a member of the public, irrespective of the circumstances or outcomes; it does not rate motives for the shootings. In addition, the MPV dataset provides data on the demographic composition of these cities, including the percentage of Black residents in each city. This was incorporated into our analysis to examine potential racial disparities in police shootings and crime rates.

It's worth noting that the MPV is not a static dataset. Instead, it dynamically evolves over time as the data are updated regularly. This allows for analysis that is as current as possible, enabling researchers to account for recent trends and developments in police shootings and crime rates. It also provides a detailed and nuanced understanding of the landscape of police shootings in America's largest cities. It serves as an essential resource for researchers investigating the complex intersection of law enforcement, violence and community demographics.

2.4 | Analytic plan

Analyses were conducted using the jamovi software. Both our dependent variables—police shootings and violent crime—had acceptable levels of kurtosis and skew. Pairwise deletion was used for missing data (though retesting the regression with listwise deletion did not produce different results). Pairwise deletion is beneficial when not comparing individuals because it allows us to maximise the sample size and statistical power for each specific analysis. Resiliency testing suggested that switching to other means for dealing with missing data did not substantially change the results.

We used ordinary least squares (OLS) regression and ran collinearity diagnostics on our regression equation. Most variables were within acceptable levels of collinearity (e.g. Variance Inflation Factor [VIF] < 3.0). Median household income was slightly outside this (VIF $= 3.27$) but removing this variable had no impact on other outcomes, so it was retained.

Given our $n = 100$ will reduce power in OLS regression, we generally consider effect sizes larger than $\beta = 0.20$ as clinically meaningful, even if they do not meet the $p = 0.05$ threshold (Ferguson, 2009). We considered that using this analysis of effect size would reduce Type II error.

All were OLS regressions, with the independent variables being mental health distress, food insecurity, youth standardised reading scores, median household income, percentage of children eligible for free lunch, severe housing cost burden, high school graduation rates, social association rates, income inequality ratio and percentage of Black residents. For the proposed exploration of relationships to police shootings, the plan was to make violent crime in the community an additional independent variable.

3 | RESULTS

Table 1 provides a description of the sample. The mean number of shootings by police per 10,000 arrests over the period was 15.22 (standard deviation 8.985). This translates as under 0.2% of arrests. We are, therefore, cautious about interpreting tests of community factors associated with police shootings. Further, this variable includes both 'justified' and 'unjustified' shootings. Table 2 shows the bivariate correlation matrix between variables. As our questions pertain to the degree of association between variables in controlled multivariate analyses, we do not consider these bivariate results further.

3.1 | Shootings by police officers

Table 3 shows the results for the OLS regression with per capita shootings by police as the dependent variable. The full model was statistically significant using the omnibus ANOVA test ($N = 100$; $R = 0.533$; $R^2 = 0.284$; $p = 0.003$, $F[11, 81] = 2.93$). Of the independent variables, violent crime rate ($\beta = 0.32$), food insecurity ($\beta = 0.37$) and percentage of Blacks ($\beta = -0.041$) were all statistically significant and over our 0.20 effect size threshold for statistical significance. Although race was statistically significant, it was in the opposing direction from expected—a finding that warrants further examination. There may be interaction effects between the variables that help explain this

TABLE 1 Socio-economic characteristics of the sample.

	N	Mean	Median	SD
Frequent mental distress	100	12.20	12.00	1.504
Food insecurity	100	13.75	13.50	3.000
Reading scores	100	2.99	3.00	0.206
Median household income	100	65,101.55	61,868.00	16,081.025
% Children eligible for free lunch	94	55.66	55.00	13.835
Severe housing cost burden	100	16.29	16.00	3.391
% Black residents	100	16.05	11.65	13.200
High school graduation	100	83.69	84.00	5.937
Social association rate	100	8.47	8.00	3.430
Income inequality ratio	99	4.88	4.70	0.713
Violent crime rate	99	6.77	5.94	4.136
Killings by police per 10k arrests	100	15.22	13.69	8.985

Abbreviation: SD, standard deviation.

TABLE 2 Correlation matrix of socio-economic factors with community violent crime rate and police killing of arrestee per 10,000 arrests.

Variable	Value	Frequent mental distress	Food insecurity	Reading scores	Median household income	Children eligible for free lunch	Suicide rate	Severe housing cost burden	% Black residents	High school graduation	Social association rate	Income inequality ratio	Violent crime rate	Killings by police per 10k arrests
Frequent mental distress	Pearson's *r*	–												
	p-value	–												
Food insecurity	Pearson's *r*	0.557***	–											
	p-value	<0.001	–											
Reading scores	Pearson's *r*	−0.218*	−0.186	–										
	p-value	0.029	0.064	–										
Median household income	Pearson's *r*	−0.774***	−0.523***	0.253*	–									
	p-value	<0.001	<0.001	0.011	–									
Children eligible for free lunch	Pearson's *r*	0.454***	0.200	−0.521***	−0.558***	–								
	p-value	<0.001	0.053	<0.001	<0.001	–								
Suicide rate	Pearson's *r*	0.190	0.111	−0.095	−0.260**	−0.034	–							
	p-value	0.058	0.273	0.345	0.009	0.746	–							
Severe housing cost burden	Pearson's *r*	0.107	−0.042	−0.304**	−0.051	0.457***	−0.413***	–						
	p-value	0.288	0.675	0.002	0.613	<0.001	<0.001	–						
% Black residents	Pearson's *r*	0.398**	0.637***	−0.014	−0.357***	0.211*	−0.240*	0.221*	–					
	p-value	<0.001	<0.001	0.892	<0.001	0.041	0.016	0.027	–					
High school graduation	Pearson's *r*	−0.167	−0.168	0.312**	0.119	−0.181	−0.178	−0.219*	−0.048	–				
	p-value	0.096	0.095	0.002	0.237	0.081	0.076	0.028	0.635	–				
Social association rate	Pearson's *r*	0.046	0.152	0.206*	−0.001	−0.203	0.005	−0.183	0.467***	−0.079	–			
	p-value	0.647	0.131	0.040	0.990	0.050	0.958	0.068	<0.001	0.433	–			

(Continues)

TABLE 2 (Continued)

Variable	Value	Frequent mental distress	Food insecurity	Reading scores	Median household income	Children eligible for free lunch	Suicide rate	Severe housing cost burden	% Black residents	High school graduation	Social association rate	Income inequality ratio	Violent crime rate	Killings by police per 10k arrests
Income inequality ratio	Pearson's *r*	0.326***	0.301**	−0.202*	−0.143	0.344***	−0.467***	0.605***	0.358***	−0.352***	−0.013	–		
	p-value	<0.001	0.002	0.045	0.157	<0.001	<0.001	<0.001	<0.001	<0.001	0.896	–		
Violent crime rate	Pearson's *r*	0.344***	0.483***	−0.256*	−0.333***	0.080	−0.019	0.062	0.464***	−0.146	0.205*	0.307**	–	
	p-value	<0.001	<0.001	0.011	<0.001	0.446	0.852	0.539	<0.001	0.149	0.042	0.002	–	
Killings by police per 10k arrests	Pearson's *r*	0.108	0.153	−0.232*	0.016	0.002	0.143	−0.063	−0.152	−0.101	−0.162	0.010	0.173	–
	p-value	0.286	0.128	0.020	0.875	0.988	0.155	0.533	0.130	0.316	0.108	0.922	0.087	–

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

TABLE 3 Factors associated with per capita fatal shootings by police officers.

Model coefficients—Killings by police per 10k arrests					
Variable	**Estimate**	**SE**	***t***	***p***	**Stand. estimate**
Intercept	−7.9277	27.9523	−0.2836	0.777	
Frequent mental distress	1.6221	0.8958	1.8108	0.074	0.28452
Food insecurity	1.0621	0.4537	2.3413	0.022	0.37214
Reading scores	−2.4468	5.1653	−0.4737	0.637	−0.06074
Median household income	1.41e-4	9.16e-5	1.5366	0.128	0.26114
% children free lunch eligible	−0.0142	0.0905	−0.1566	0.876	−0.02301
Severe housing cost burden	0.1377	0.3719	0.3704	0.712	0.05533
% Black residents	−0.2743	0.1099	−2.4945	0.015	−0.40639
High school graduation	−0.0105	0.1576	−0.0669	0.947	−0.00710
Social association rate	−0.4507	0.3658	−1.2320	0.222	−0.14791
Income inequality ratio	−2.1510	1.8352	−1.1721	0.245	−0.16683
Violent crime rate	0.6901	0.2536	2.7211	0.008	0.32147

unexpected finding regarding race, but investigating such effects is beyond the scope of this research and one worthy of further consideration. Regarding the effect size, this indicates that violent crime rate is associated with approximately 10.2% of the variance in police shootings, food insecurity 13.7% and living in a Black neighbourhood inversely associated with 16.8% of the variance in police shootings. Frequency of mental distress was of borderline statistical significance ($p = 0.07$); although its effect size was above 0.20, it thus falls just outside our range of consideration ($\beta = 0.28$), associated with 7.8% of the variance in police shootings. Median household income, likewise, was above the 0.20 threshold, but given the slightly higher multicollinearity for that variable, the effect size was likely inflated above 0.20 and thus we do not consider it further.

3.2 | Violent crime

Table 4 shows the exploratory OLS regression findings with per capita violent crime as the dependent variable, ignoring police shootings. The full model was statistically significant using omnibus ANOVA ($N = 100$; $R = 0.606$; $R^2 = 0.367$; $p < 0.001$, F [10, 82] = 4.75). Of the independent variables, income inequality ratio ($\beta = 0.28$; 7.8% of the variance), percentage of children eligible for free lunch ($\beta = -0.31$; 9.6% of the variance) and standardised reading scores ($\beta = -0.36$; 13.0% of the variance) were each independently related to violent crime, according to our 0.20 effect size threshold for statistical significance. Race was not related to violent crime once other community factors were controlled.

4 | DISCUSSION

Police shootings were rare—occurring in under 0.2% of arrests—while fatal shootings were so rare that they could not be included in the analysis at all. Higher police shooting rates were associated with higher violent crime rates across the municipalities, but they were also independently associated with higher food insecurity and mental health distress; in a full statistical model allowing for criminal, health and social status, being Black was inversely

TABLE 4 Factors associated with per capita violent crime.

Model coefficients—Violent crime rate					
Variable	**Estimate**	**SE**	***t***	***p***	**Stand. estimate**
Intercept	23.7067	11.8859	1.995	0.049	
Frequent mental distress	−0.0646	0.3900	−0.166	0.869	−0.0243
Food insecurity	0.1564	0.1968	0.795	0.429	0.1177
Reading scores	−6.8232	2.1191	−3.220	0.002	−0.3636
Median household income	−5.56e-5	3.94e-5	−1.412	0.162	−0.2217
% children free lunch eligible	−0.0885	0.0382	−2.317	0.023	−0.3084
Severe housing cost burden	−0.1294	0.1613	−0.802	0.425	−0.1116
% Black residents	0.0627	0.0474	1.323	0.189	0.1994
High school graduation	0.0313	0.0685	0.456	0.649	0.0452
Social association rate	0.0985	0.1589	0.620	0.537	0.0694
Income inequality ratio	1.7012	0.7767	2.190	0.031	0.2833

related to the rate of police shootings. Thus, we suggest that it is better to consider socio-economic and health status rather than 'race' when trying to understand what might reduce the risk of police shootings. This finding does not imply that race fails to matter vis-à-vis police violence, but rather suggests more nuanced dynamics may manifest as minorities gain increased representation across communities. While fatal shooting rates were at their lowest in areas with higher proportions of Black residents, a likelihood remains that structural racism persists despite such initiatives as minority officer recruitment, cultural competency policies or community investment.

That shootings by police officers occur in more violent communities is not surprising. This is likely to occur for several reasons. First, the need to respond to violent crimes means that, inevitably, some officers may be called upon to use deadly force to protect themselves or civilians. Secondly, officers are likely to be aware of which neighbourhoods have high violence rates and, upon entering such neighbourhoods, may be primed to respond more aggressively, potentially being more likely to interpret some ambiguous circumstances as more threatening than they actually are. Thus, if reduction in police shootings is a key aim, one important way of achieving this is to reduce community violence—and our second set of analyses suggest ways of doing this. High community violence rates were independently related to socio-economic disadvantage of various kinds.

Although our data testing is correlational, it fits well with other data to suggest that improving community quality including improving educational and employment opportunities for residents may have a significant impact on violence-related outcomes. Reducing community stress may also reduce police shootings.

Overall, our evidence suggests that socioeconomic factors, including educational attainment, are independently associated with both violent crime and police shootings, although the strength of specific relationships differed somewhat between the two 'outcomes'. Food insecurity and population level mental health had higher odds of association with police shootings, whereas reading scores, income inequality and percentage of children eligible for free lunch had higher odds of association with violent crime. Much of the focus on crime, whether related to perpetrators of crime or victims of police shootings, is on race. This is understandable given the past history of racism in the USA, but also the disproportionate representation of some ethnicities in some databases as both perpetrators of crime and victims of police brutality. The legacy of this past racism still manifests in disproportionate representation of Black and Latino Americans among lower income communities, and White and Asian Americans among middle to higher income communities, despite significantly better upward mobility than in generations past. Our data tend to confirm that ethnicity/colour per se is not dangerous, but rather linked to

disadvantage of various kinds, that is, a better explanation of crime and police shootings. Indeed, it would be interesting also to explore adverse life events and trauma as additional variables here.

As such, a greater focus on community problems may be more fruitful than focusing on race or policing as it relates to improving crime and policing outcomes at the community level. While this also has the advantage of avoiding the polarising nature of race-related conversations, focus on policies that will improve access to education and decent remuneration for work done for all is going to have the best chance of progress to real community improvements.

While we have focused on race and socio-economic status in the US context in relation to police shootings and violence, it is worth noting that, minus the readiness to shoot, similar considerations are likely to apply to improving relationships between the police and their community in all countries with a high socio-demographic profile. A further consideration would be whether similar findings would apply in respect of immigration. The largest group of immigrants in the USA, including illegal immigrants, comes from Central and South America, including Mexico, and these groups typically have low crime rates. In some countries such as France and England, some immigrants and perhaps refugees have been implicated in crime (e.g. Casey, 2015). Again, however, it is likely that the social circumstances of the migrants are at least as if not more important than their ethnicity or nationality. Traumatised and financially poor people are likely to have a very different experience from people sought for their specialist skills and paid well for them.

4.1 | Policy implications

A fairly straightforward policy implication of our results is that in order to reduce police shootings, municipalities should focus on reducing violent crime (Braga, 2022). Though approaches, such as strategic, transparent and well-trained policing, may aid with this, investing in communities is also a positive policy goal to reduce violent crime (Henderson & Brown, 2022). Specifically, reducing income inequality may reduce violent crimes (Anser et al., 2020). Perhaps more importantly, focusing on basic student success in schools with well-developed programmes for reading may be key (García et al., 2019). Similarly, providing free school lunches may be one simple intervention that can reduce at least some degree of violent crimes (Gollub et al., 2019). Of course, our data are correlational and making prescriptive recommendations involves making causal inferences, but we believe that free school lunches and improved teaching of reading are basic interventions with few downsides should causal extensions prove to be incorrect.

Our findings that police shootings are also related to community level mental health distress may require municipalities to take a sober look at mental health programmes as many have done (Gaylord-Harden et al., 2022), as well as providing at least basic knowledge and skills in the field to police or having them work in partnership with mental health services on call out (Balfour et al., 2022; Kane et al., 2018; Rogers et al., 2019). Chronically mentally ill individuals may struggle to comply with police requests, be frightened by police and, in turn, frighten attending officers, increasing the likelihood of shootings. Several studies have emphasised the need for police training for de-escalation and improved community-based mental health services to improve police interactions with individuals diagnosed with mental health disorders (Lavoie et al., 2023; Watson et al., 2019). However, despite the increase in police training and community outreach efforts and the various models available, the question is about how well they are implemented in any given community.

4.2 | Research implications

The evidence from our study suggests that socio-economic factors are the primary drivers of both violent crime perpetration and police shootings. Policy approaches aimed at improving education and reducing poverty are likely to mitigate both violent crime and police shootings. However, it is important to recognise that being Black is an

indicator of particular disadvantage within this context. This underscores the need to better understand the impact of comprehensive strategies that address the systemic issues of racial disparities and socio-economic inequality, while also continuing to research the complex interplay of race, poverty, and policing in the context of violent crime and police shootings.

In addition to these findings, it is crucial to consider the heterogeneity within poor communities and begin to better disaggregate individuals, rather than lumping them into categories based on skin colour. For instance, the experiences of African–American descendants of slaves may differ markedly from recent immigrants from Africa or the Caribbean. Similarly, poor Whites may have very different experiences from middle and upper class White persons. Exploring these more detailed class stratifications may reveal predictive outcomes that have not been adequately considered in current academic research.

By integrating our study's findings with the need for more nuanced ethnic classifications and a focus on the heterogeneity within poor communities, future research can gain a more comprehensive understanding of the complex relationships between race, ethnicity, socio-economic factors, and their impact on violent crime and police shootings. This can inform the development of more targeted and effective policies and interventions to address the root causes of these issues.

4.3 | Limitations and future directions

As with all research, our study has several limitations that are worth considering. First, it is correlational in nature and, despite our thoughts on policy, causal implications cannot be made. Secondly, our sample size of municipalities ($n = 100$) was limited, reducing power. We addressed this by focusing on effect sizes rather than statistical significance, but replication with larger samples is needed. A priori power analysis suggest that a sample size of 100 is adequate to detect effect sizes of $r = 0.20$ but with $r = 0.10$ power was weaker (a minimum $n = 176$ is desired). Thirdly, we focused on 'Black' as the key minority group because of the current national and international concerns that people who so identify by colour or ancestry may be at particular risk from the police. This, however, is likely to obscure within-group differences in experience and differences of experience in groups not specifically studied here. For instance, it is possible that the experiences of Black American descendants of slavery may differ markedly from more recent immigrants from Africa or the Caribbean. Lastly, our measure of violent crime includes UCR data on reported crimes and, as such, may not capture all crime phenomena.

There may be several promising avenues for future research. For instance, that more shootings by police occur in violent and struggling communities suggests that qualitative research may be valuable in understanding the mindset of police as they interact with people in these neighbourhoods. Similarly, such research with residents of these neighbourhoods could help us to understand their concerns, both as related to crime but also their experiences with police. Interviewing survivors of police violence—police and victims of it—may add especially important data. It may also be possible to design waiting-list control randomised controlled trials at the community level to examine the policy implications of improving communities with regard to mental health, education and employment opportunities to understand which policies may have the best impact. This of course raises a critical ethical question: is it ethically possible to deprive communities of policies that may work to alleviate poverty and crime? This question should be discussed and debated carefully. However, we do take the position that, attention must be paid to measurement of any short, medium and long term impacts of any pragmatic recommendations.

4.4 | Concluding thoughts

We found that most of those community factors which relate to violent crime perpetration, and have been shown by many to be predisposed to it, also relate to police shootings. While our findings take nothing away from calls for

better support and training for police, attention to community level factors are likely to be the true key to improving community relations. While communities with a high proportion of Black residents may be disproportionately likely to suffer police shootings and violent crimes, this is likely to be explained by various socioeconomic disadvantages.

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CONFLICT OF INTEREST STATEMENT

No conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in Mapping Police Violence and County Health Rankings Dataset at https://mappingpoliceviolence.org/methodology?utm_campaign=launch&utm_source=google&utm_medium=ad&utm_term=police%20violence%20statistics&gclid=CjwKCAiA1MCrBhAoEiwAC2d64Vy2OzUIDh8v1KbCYbMweHggMj5SMMkYl960Z-3eJAvRwmmUN8rD-gRoCHKQQAvD_BwE.

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