



Educational Costs of Gun Violence

Implications for Washington, DC

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Like many cities, Washington, DC, has experienced a spike in gun violence in the past few years. Gun violence and violent crime more generally impose substantial costs on communities. These include direct costs like those for health care for victims and costs for law enforcement and incarceration, but they also include indirect costs such as the effects on business activity and the housing market. Research indicates that gun violence and violent crime can negatively affect educational outcomes as well. Social and economic inequities are often at the root of community gun violence and disproportionately affect Black and Latinx communities, underscoring the importance of addressing these systemic inequities and investing in resources that will reduce gun violence and promote opportunity for young people living in structurally disadvantaged neighborhoods in the District.

Below we summarize research on this topic, situate this evidence in the context of the geography of gun violence and educational outcomes in DC, and describe implications for DC communities.

Existing Research

Community gun violence can have a drastic impact on the education of young people. As Borofsky and colleagues explain, “The connection between community violence exposure and adverse academic performance usually [includes] elevated levels of psychological distress or difficulties with concentration resulting from violence exposure which, in turn, impair an adolescent’s ability to learn in

the classroom” (Borofsky et al. 2013). Research has demonstrated that exposure to gun violence and violent crime can affect students' educational attainment, grades, test scores, graduation rates, and academic engagement. In this section, we summarize research findings on the effects of gun violence and violent crime on educational outcomes.

Educational Engagement and Achievement

Several mechanisms have been proposed to explain how exposure to violence can result in lower academic engagement and, in turn, reduced educational achievement; among them are the acute stress responses of exposure to violence during childhood and the chronic psychological stress from prolonged exposure. These types of stress result in symptoms such as depression, increased aggression, anxiety, disrupted sleep, and difficulty concentrating (Gorman-Smith and Tolan 1998; Martinez and Richters 1993; Osofsky 1999), which can lead to reduced academic engagement.

A recent study examined how growth mindset can be used to examine two components of childhood adversity (Lurie et al. 2022): threat (experiences that pose serious harm or threat of harm, such as exposure to violence and physical and sexual abuse) and deprivation (experiences that represent decreases in developmentally appropriate cognitive and social stimulation, such as emotional neglect, low cognitive stimulation, and insecure access to food and necessities). The study findings revealed a “significant indirect effect of experiences of threat on both lower academic performance and greater symptoms of anxiety through lower growth mindset” (Lurie et al. 2022). Traumatic events such as witnessing violence during childhood can create lasting psychological symptoms for a child, including feeling anxious, having trouble sleeping, and struggling to cope with their emotions. When these symptoms continue for extended periods, it can greatly affect the child’s school achievement and social skill development (Danese et al. 2020). In fact, one in four children exposed to traumatic events develops posttraumatic stress disorder by age 18 (Danese et al. 2020); prevalence is even higher among young people exposed to armed conflict.

Academic engagement has been defined as students’ active participation in and emotional commitment to learning (Borofsky et al. 2013). Engagement thus encompasses the attentiveness and participation necessary to realize educational success and can be captured by metrics such as completion of schoolwork, enjoyment of school, or attendance. Research has found that early exposure to community violence predicted lower levels of school engagement (Borofsky et al. 2013; Elsaesser et al. 2020).

Reduced academic engagement may lead to lower measures of academic performance, such as standardized test scores or grade point averages (Borofsky et al. 2013). Several studies have examined how gun violence and violent crime are associated with changes in test scores. In 2018, based on a study in Syracuse, New York, researchers discovered that elementary schools in areas with a higher concentration of gunshots had English and math test scores that were 50 percent lower than those of students attending schools in areas with fewer gunshots (Bergen-Cico et al. 2018). Further, higher levels of gun violence in the community were significantly associated with higher rates of failure on math and English tests (i.e., not meeting proficiency levels). A New York City study also established that

exposure to violence in the week leading up to a state standardized test unfavorably affected English scores for third-to-eighth graders, decreasing their probability of passing by 1.1 percentage points when compared with students exposed to violence the week after the test (Sharkey 2010). The difference was even more stark for Black students, who experienced a 2.8 percentage-point decrease, equivalent to an 18 percent Black-White gap in passing rates. Additionally, some literature has detailed how lower test scores early on can lead to “cumulative disadvantage” over time (Burdick-Will 2016). In particular, third grade students in more violent neighborhoods had slightly lower test scores than their counterparts in less violent neighborhoods. However, by eleventh grade, that gap had grown substantially.

Other measures of neighborhood safety appear to be just as important as levels of reported gun crime for predicting standardized test performance. According to one study, increased neighborhood violence scores (as measured by factors such as blood in the street and the presence of shell casings, police tape, memorials, people yelling, people swearing, and people fighting) were related to a 6.2 percent decrease in the share of students receiving proficient reading standardized test scores (Milam, Furr-Holden, and Leaf 2010). The authors also discovered that higher levels of perceived safety were associated with an increase in the percentage of students meeting proficiency standards.

The relationship between educational outcomes and gun violence can run in both directions. One study found that academic engagement predicted lower community violence later on in the follow-up period (Elsaesser et al. 2020). Similarly, a recent study in Baltimore revealed that higher rates of reading proficiency in the third grade were attributable to reduced neighborhood homicide mortality rates among young people (Bray et al. 2020). Specifically, each 1.97 percent increase in the proportion of students proficient in their reading level was associated with 1 fewer neighborhood homicide per 100,000 people. These findings are consistent with literature examining the relevance of “education as a determinant of social capital and violence” (Bray et al. 2020).

Graduation Rates and Future Earnings

The negative consequences of community violence for students’ academic engagement and achievement can lead to lower educational attainment, as measured by reduced graduation rates. This has important implications for young people and their future earnings. Moore (2018) found that schools with higher levels of surrounding community gun violence tend to have higher rates of students not completing high school. Importantly, Black and Latinx students were disproportionately affected; they were twice as likely as their peers to not complete high school.

Failure in school can have “long-term detrimental consequences for competency and social adjustment as adolescents transition into adulthood” (Borofsky et al. 2013). If students cannot complete high school, they are ineligible to enroll in a postsecondary educational program such as a four-year university or community college. Such students earn less, on average, than their peers who graduate. Not completing high school has been associated with a 46 percent decrease in earned income and amplified economic hardship (Campbell 2015). Over their lifetime, someone who does not graduate

from high school can expect to make \$1.8 million less than a high school graduate (Irani et al. 2019). The return on investment is even greater for students who continue to pursue higher education.

In conclusion, exposure to gun violence or community violence has damaging effects on students' academic achievement and engagement. These consequences affect students in the short term but can also have lasting negative implications for their future educational attainment and earnings.

Implications for Washington, DC

Below we situate the above research findings in the context of the prevalence of gun violence and educational outcomes in Washington, DC. A detailed methodology can be found in a methodological appendix, "Costs of Gun Violence in Washington, DC: Methodology Appendix" (Tiry and Jackson 2022).

Socioeconomic Context of Washington, DC, Wards

Historically, the Washington, DC, population has been predominantly Black. However, the city's Black population decreased dramatically from 65 percent in 1990 to 48 percent in 2015 (Golash-Boza and Oh 2021). Although gentrification has played a role in the economic development of the District, it has severely displaced and disproportionately affected minority residents, especially the Black community. The percentage of Black homeowners continues to dwindle despite DC having one of the highest rates of Black homeownership in previous years.¹ The District had the "highest intensity of gentrification of any city in the US between 2000 and 2013."²

Studies have shown that within the city "the concentration of violent crime in Black neighborhoods is due to resource deprivation and structural barriers in those neighborhoods and that Black neighborhoods with high levels of violent crime will experience an increase in Black residents and concentrated disadvantage" (Golash-Boza and Oh 2021). Extreme shifts in neighborhood composition have occurred since the 1990s, and an influx of wealthier residents has led to an increase in concentrated disadvantage in certain neighborhoods.

Black and low-income neighborhoods in the District continue to experience disadvantage, which has resulted in the decline in the number of Black residents. Demographic data suggest racial groups are concentrated within certain wards. The northwest portion of the city (Wards 1, 2, and 3) has a significantly higher White population than the city's southern portion (Wards 7 and 8), which has a higher Black population.³ Socioeconomic status differs based on location and in this context is measured by income, employment status, and occupation and education. In 2018, "17 percent of DC residents lived in poverty" and the statistics were even higher for children under 18 (26 percent).⁴ The average median household income for the city's White residents was \$160,100 that year, which is 229 percent higher than that for Black residents (\$48,572). To further capture the disparities Black residents face, both Wards 7 and 8 had the largest shares of children but the lowest median family incomes among all wards.

According to a study by the Justice Policy Institute, “the wards that continue to experience more crime also have a lower educational attainment,” and Wards 7 and 8 continue to encounter crime and public safety concerns (Ashton 2012). Ward 3 has more educated residents; more than 80 percent have a bachelor’s degree or higher.⁵ Further, Wards 7 and 8 comprise a large percentage of DC’s population ages 17 and younger, but investments are not regularly made into these wards, and the effects on educational attainment, crime, and public safety are evident.

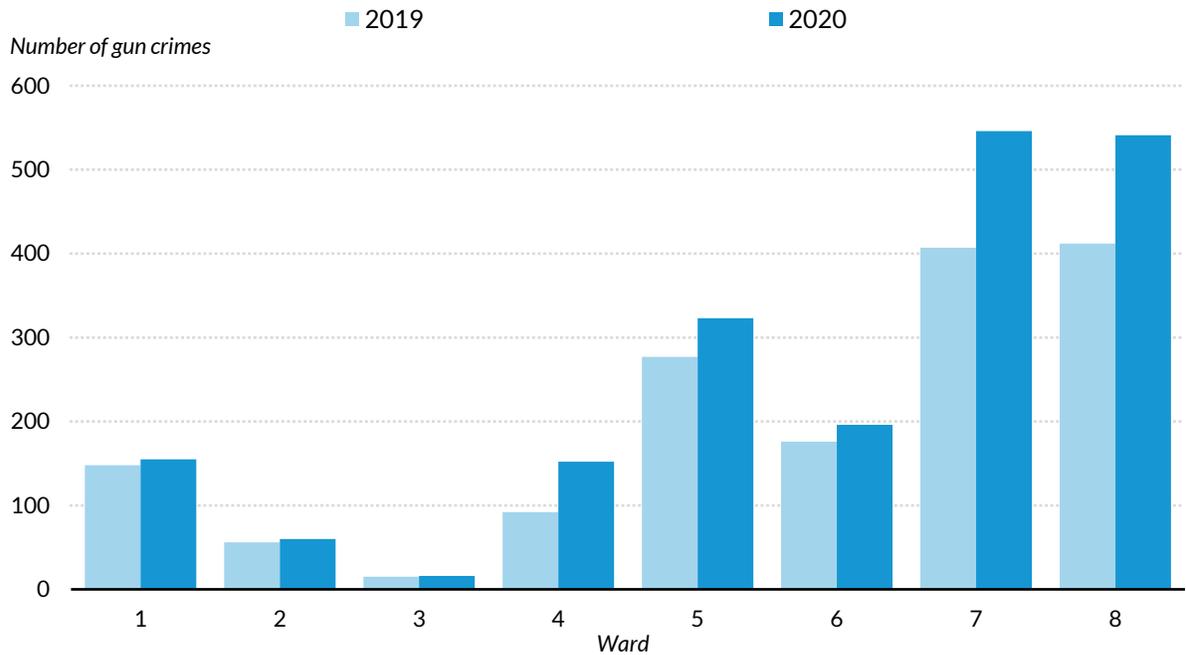
Gun Violence

A recent analysis of the 226 homicides that occurred in Washington, DC, in 2021 found that close to 80 percent of District residents lived within a half mile of a homicide and nearly two-thirds lived within a half mile of multiple homicides (Din 2022). Further, racial disparities exist in District residents’ proximity to homicide; 87 percent of nonwhite residents lived within a half mile of a homicide compared with 19 percent of white residents. For children, the disparity is similar; approximately 89 percent of nonwhite children resided within a half mile of a homicide compared with 57 percent of white children. Though the analysis did not solely examine gun homicides, it is important to understand the level of overall violence exposure District residents, particularly children, experience.

One data source for measuring gun violence in the District is gunfire recorded by gunshot detection technology, such as ShotSpotter. Research using ShotSpotter data to examine the prevalence of gunfire around schools found that gunfire around schools in DC is relatively common, but it is also concentrated among a small number of schools (Bieler and La Vigne 2014). During the 2011–12 school year, of all the gunfire incidents that occurred during school hours, more than half (54 percent) occurred within 1,000 feet of a school. However, nearly half of these incidents affected only 9 percent of schools, mainly those in Wards 7 and 8.

Gun violence can also be measured using reported crime data. Figure 1 illustrates the differences in overall reported gun crimes between wards in 2019 and 2020. According to data from Open Data DC, in 2019, there were 1,631 gun-related incidents in the District, including robbery, assault, and homicide. Of those incidents, more than 80 percent were robberies and assaults. Most gun incidents occurred in Wards 7 and 8. In fact, Ward 8 had the largest share of gun incidents, 26 percent, whereas Ward 3 had the lowest, 1 percent. In 2020, there were 2,031 reported crimes involving a gun, most of which were robberies, assaults, and homicides (48, 42, and 8 percent). Specifically, 169 homicides were committed with a gun. Wards 7 and 8 had the highest numbers of gun crimes in 2020, with 27 percent occurring in Ward 7 and 27 percent occurring in Ward 8. Ward 3 had the fewest gun incidents with only 16 reported that year.

FIGURE 1
Gun Crimes in Washington, DC, by Ward, 2019 and 2020

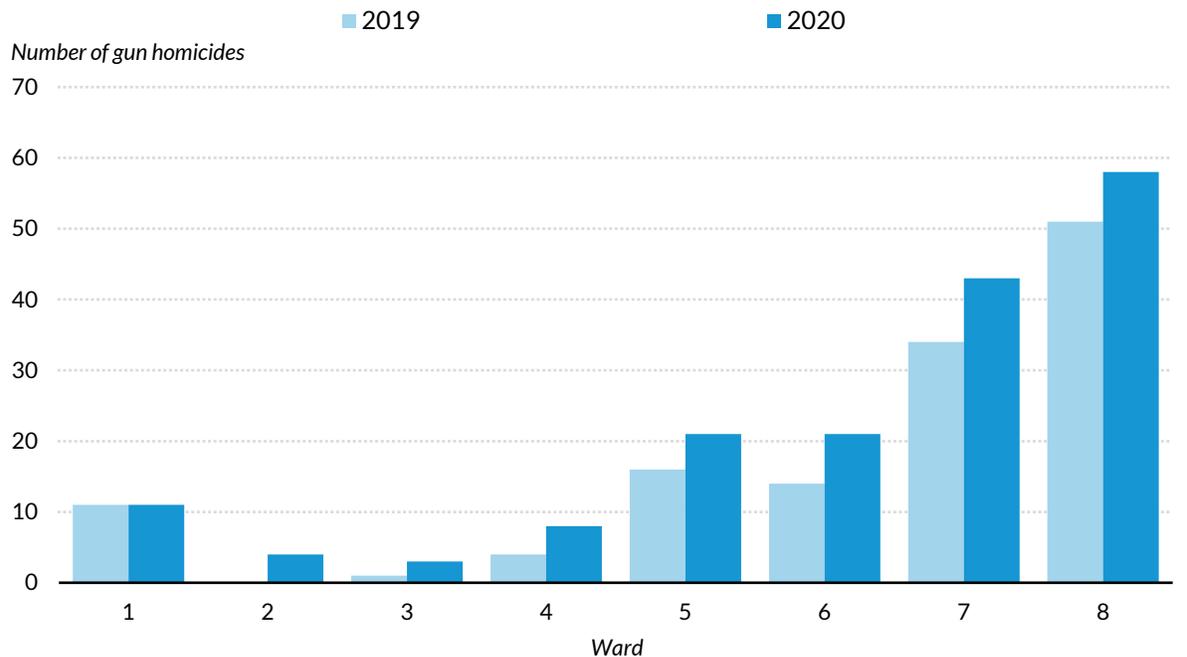


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Source: Open Data DC.

These differences among wards are also apparent when examining homicides. During 2019, 131 homicides were carried out with a gun (figure 2). Geographical disparities were prevalent, with Wards 7 and 8 experiencing the highest number of gun homicides (26 and 39 percent). Similarly, of the 169 gun homicides in 2020, almost 60 percent occurred in Wards 7 and 8 (25 and 34 percent). Once again, Ward 3 experienced the fewest gun homicides (3, representing 2 percent of all homicides in the District). Gun homicides and crimes in the District increased from 2019 to 2020. These numbers clearly show that gun homicides are disproportionately occurring in certain parts of the city.

FIGURE 2
Gun Homicides in Washington, DC, by Ward, 2019 and 2020



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Source: Open Data DC.

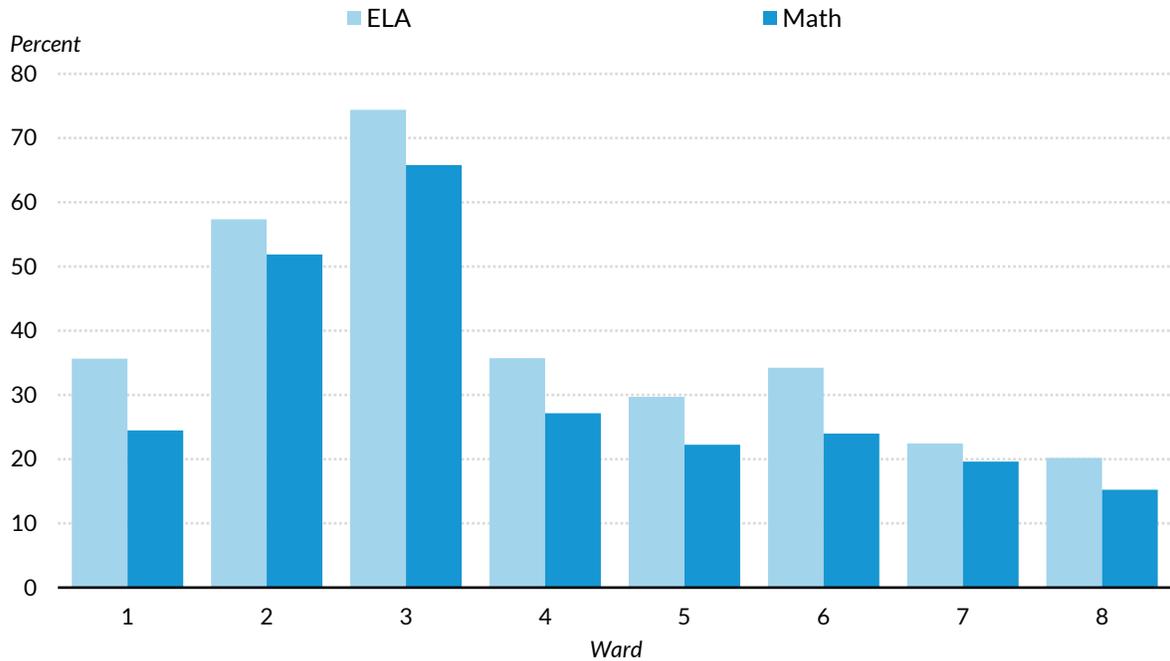
Education

For this brief, we examined academic proficiency, graduation rates, and postsecondary enrollment as metrics of educational outcomes. The two standardized tests captured in the data were the PARCC (Partnership for Assessment of Readiness for College and Careers) and the MSAA (Multi-State Alternate Assessment). One of the limitations of these data is that they only capture information based on the school’s location, rather than where the student resides. In some cases, students reside in different wards than where they attend school and may experience different levels of violence during and outside school hours. Schools that report to the District of Columbia Public Schools system are reflected in the results, which include traditional public schools and public charter schools.

According to PARCC data for the 2018–19 school year, across the District the average percentages of students meeting or exceeding expectations were about 32 percent for English language arts and about 25 percent for math. However, as shown in figure 3, these metrics differed substantially by ward. Ward 3 demonstrated the highest average number of students who met or exceeded expectations for English language arts (74 percent). The average percentage of students meeting or exceeding English language arts expectations was lowest in Ward 8, where only 20 percent of students met the criteria. Correspondingly, the same trend is evident for math scores; Ward 3 had the highest percentage (66 percent) and Ward 8 had the lowest percentage (15 percent) of students meeting or exceeding expectations.

FIGURE 3

Percentage of Washington, DC, Students Meeting or Exceeding Expectations for English Language Arts and Math (Grades 3–12), 2018–19 School Year



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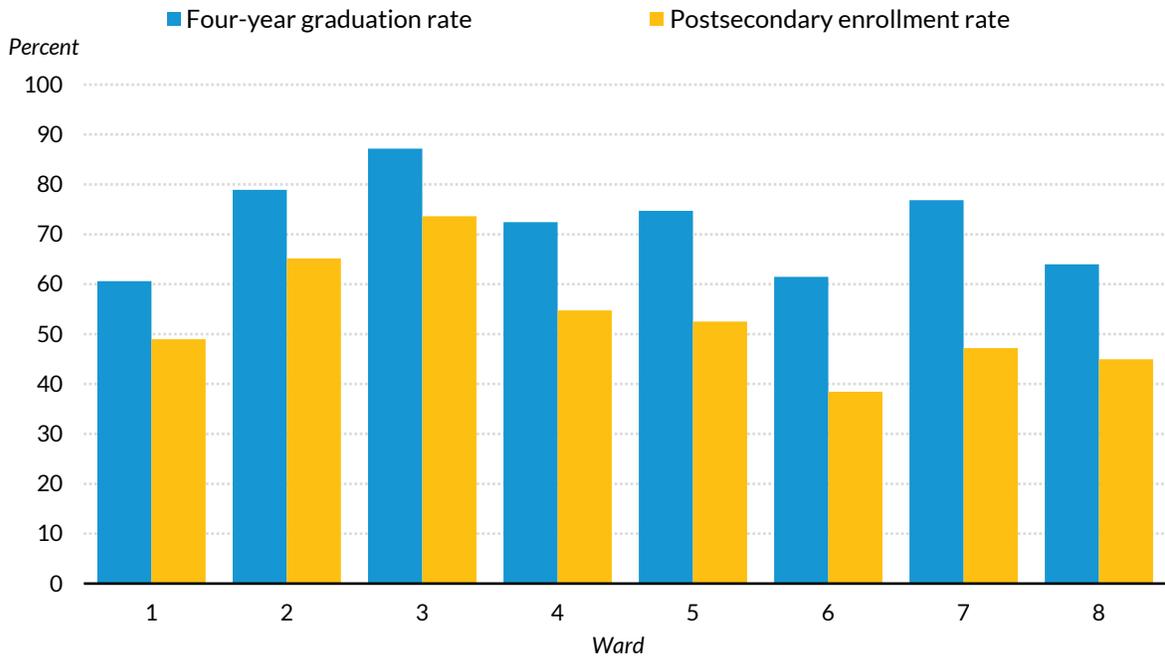
Source: 2018–19 PARCC (Partnership for Assessment of Readiness for College and Careers) results and resources from the District of Columbia Office of the State Superintendent of Education.

Note: ELA = English language arts.

These discrepancies persist into graduation and postsecondary enrollment rates. Variations exist between wards based on both four- and five-year graduation rates. Additionally, the average rate of students who enroll in postsecondary programs six months after graduation showed significant disparities across the city. Figure 4 illustrates the average high school graduation and postsecondary enrollment rates for each ward in the 2018–19 school year. Graduation rates were lower in Wards 1, 6, and 8. The difference between the highest average four-year graduation rate (Ward 3) and the lowest (Ward 6) is almost 26 percent. The same patterns are also apparent for postsecondary enrollment six months after graduation. Once again, Ward 3 had the highest postsecondary enrollment rate (73.6 percent), whereas Ward 6 had the lowest (38.4 percent). Undoubtedly, students in the city face disparities in educational outcomes.

Patterns found in DC are fairly consistent with the previously discussed gun-incidents data, specifically the disproportionate geographic distribution of gun crimes and homicides, that showed that most of the gun crimes and homicides in both 2019 and 2020 occurred in Wards 7 and 8. Though Ward 6 fell somewhat in the middle of the lowest and highest rates of gun crimes and homicides in 2019 and 2020, it still had the lowest postsecondary education enrollment rate.

FIGURE 4
Four-Year High School Graduation Rate and Postsecondary Enrollment Rate,
by Washington, DC, Ward, 2018–19 School Year



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Source: District of Columbia Office of the State Superintendent of Education school report card resource library.

Note: Postsecondary enrollment rate is the share of students who enrolled in postsecondary education in the six months after graduation.

Conclusion

The consequences of exposure to gun violence for young people’s educational outcomes are dire. Research illustrates that community gun violence has lasting negative impacts on students’ academic engagement, performance, and achievement and their overall health and psychological well-being. Both single-event and chronic exposure to gun violence adversely affect students beyond secondary education, hampering students’ enrollment in college and their potential for future earnings. Further, community gun violence exposure exacerbates existing educational disparities among Black and Latinx students when compared with white students.

The neighborhoods disproportionately affected by gun violence in Washington, DC, are the same neighborhoods where educational inequities are concentrated. Given the research evidence of the negative impacts of exposure to gun violence on educational outcomes, this strongly suggests that the current high levels of gun violence significantly impede efforts to narrow educational inequities and support educational success for all students in the District. Community-level gun violence exposure has long-term consequences for the school performance, educational attainment, and earnings potential of

the District's young people. Mitigating those consequences is a meaningful benefit of effective violence-reduction practice.

Notes

- ¹ Steven Overly, Delece Smith-Barrow, Katy O'Donnell, and Ming Li, "Washington Was an Icon of Black Political Power. Then Came Gentrification.," *Politico*, April 15, 2022, <https://www.politico.com/the-politico-magazine-friday-cover-archives/the-friday-cover-washington-gentrification>.
- ² "Overview of the State - District of Columbia - 2020," Health Resources and Services Administration, Maternal and Child Health, accessed June 23, 2022, <https://mchb.tvisdata.hrsa.gov/Narratives/Overview/258318d0-8dbe-46fd-9a77-385b6753e1c7>.
- ³ "Overview of the State - District of Columbia - 2020," Health Resources and Services Administration.
- ⁴ "Overview of the State - District of Columbia - 2020," Health Resources and Services Administration.
- ⁵ "Overview of the State - District of Columbia - 2020," Health Resources and Services Administration.

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