

The Costs of Gun Violence against Children

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SUMMARY

Gun violence imposes significant costs on children, families, and American society as a whole. But these costs can be difficult to quantify, as much of the burden of gun violence results from intangible concerns about injury and death. This article explores several methods for estimating the costs of gun violence.

One method is to assess how much Americans would be willing to pay to reduce the risk of gun violence. The authors use this “willingness-to-pay” framework to estimate the total costs of gun violence. Their approach yields the following lessons:

- ▶ Although gun violence has a disproportionate impact on the poor, it imposes costs on the entire socioeconomic spectrum through increased taxes, decreased property values, limits on choices of where to live and visit, and safety concerns.
- ▶ Most of the costs of gun violence—especially violence against children—result from concerns about safety. These are not

captured by the traditional public health approach to estimating costs, which focuses on medical expenses and lost earnings.

- ▶ When people in a national survey were asked about their willingness to pay for reductions in gun violence, their answers suggested that the costs of gun violence are approximately \$100 billion per year, of which at least \$15 billion is directly attributable to gun violence against youth.

The authors note that in light of the substantial costs of gun violence, even modestly effective regulatory and other interventions may generate benefits to society that exceed costs.

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For some, the title of this article may conjure up a dry accounting exercise, calculating medical expenditures and earnings lost because of injury. But an accounting of this sort, while common enough, misses the point. Public concern about gun violence has little to do with the resulting burden on the health care system or the reduction in the labor force due to death and disability. Rather, the costs of gun violence that truly matter, especially for children and their families, have everything to do with concerns about safety. Avoiding and preventing gun violence is a costly enterprise in both the public and private spheres, but most parents (and other community members) would be willing to pay even more if they could reduce that threat further. The cost of gun violence, then, is the flip side of the value of safety.

In recent years, the United States has benefitted from a substantial increase in safety from violence. (See the articles by Blumstein and by Fingerhut and Christoffel in this journal issue.) The immediate economic benefit of this reduction has included savings in criminal justice and medical costs. More importantly, lower violence rates have played a leading role in stimulating a renaissance in many central cities. Cities have become more livable and attractive because they are safer. That change is worth billions of dollars, as demonstrated by rising urban property values.¹⁻⁴

A major exception to this trend is concern about school gun violence. Although school shootings remain quite rare (see the article by Fingerhut and Christoffel), with the shootings at Columbine High School in Littleton, Colorado, and elsewhere, even suburban schools no longer seem like a safe haven. It would be worth a great deal to reestablish the sense of security in schools that prevailed as recently as the mid-1990s.

These observations are helpful in understanding the economic burden that gun violence places on American society. Quite simply, the threat of death and injury reduces the standard of living in a variety of ways. Translating that insight into specific dollar estimates is not easy, because the value of safety from gun violence is subjective and only partly reflected in market transactions. But the practical difficulties of developing a reliable estimate are not insurmountable.

Estimates of this sort are intended to provide guidance in evaluating policies to reduce gun violence. Violence-reduction programs compete for resources with activities that could enhance the quality of life in other domains. Placing a dollar value on enhanced safety may seem a bit mechanistic, but it is necessary when deciding how much, if anything, to invest in each of the myriad possible programs for reducing gun violence. More generally, it may help judge the value of greater safety against other programs to help youth in areas such as education, health, and housing.

This article is based on research published in a recent book, *Gun Violence: The Real Costs*,⁵ which develops an estimate for the overall costs of gun violence, including criminal assault, suicide, and unintentional injury. The article begins by summarizing some of the patterns of gun violence risk to children and by explaining why gun violence is of greater concern than violence with other commonly used weapons. It continues with an analysis of the ways in which the threat of gun violence imposes costs on the community. The article then reviews techniques for estimating the costs of gun violence, and assesses how much people would value a reduction or elimination of gun violence, based primarily on their responses to questions in a national survey.

The total costs of gun violence to society are approximately \$100 billion per year, of which roughly \$15 billion is attributable to gun violence against youth. A related finding is that the costs of gun violence are far more widely distributed across the population than victimization statistics would suggest. Although gunshot injuries disproportionately afflict the poor, the threat of gun violence reduces the quality of life for all Americans by engendering concerns about safety, raising taxes, and limiting choices about where to live, work, travel, and attend school.

Guns and Youth Violence

Guns exact a huge toll on America's children and youth, both in terms of lives lost and in terms of quality of life. (See the articles by Fingerhut and Christoffel and by Garbarino, Bradshaw, and Vorrasi in this journal issue.) Injury data for American youths under age 20 reveal that the threat of gun violence differs widely by sex, race, and ethnicity: 85% of all gun fatalities involving young victims

are males (a 5.5 to 1 disparity with females), and the racial gaps are even greater. Table 1 presents the relevant statistics for gun fatalities and, for the sake of comparison, for highway fatalities. The statistics are limited to males, as they constitute the bulk of these fatalities. The racial and ethnic patterns for females' gun fatalities follow the same patterns, at a lower incidence level.

These statistics reveal large racial disparities in homicide rates due to gun violence; the rate for black males is 2.4 times as high as that for Hispanic males, and 15.3 times as high as that for non-Hispanic white males. For black families, the chance of their male children dying from a gunshot wound is 62% higher than the chance of dying in a motor vehicle crash. For Hispanics, the chance of dying by gunfire is about the same as that of dying in a crash, whereas for whites, motor vehicles are a greater threat than guns.

To translate these threats into more meaningful terms, consider a black family with two boys. What is the chance (given the firearm death rates that prevailed in 1998) that the parents will lose one of their sons to gunfire by age 20? The answer is about 1 in 115, or close to 1%, with almost all of that risk coming from homicide. For whites, the answer is about 1 in 512, with most of the risk stemming from suicide. Hispanics are in between, at about 1 in 260, mostly from homicide. These statistics are for fatalities; for every gun homicide victim, there are five or six gunshot victims who survive, some with permanent disabilities. For unintentional shootings, the ratio of nonfatal to fatal injuries is roughly 13 to 1. Thus, the hypothetical black family faces at least a 1-in-20 chance that one of their sons will be shot while growing up. That is a national average: The risk is many times higher if they live in an Atlanta housing project than in a Boston suburb. However, even the national averages are high enough to highlight the importance of gun violence as a threat to children's safety.

Of course, guns are not the only weapons used to perpetrate assaults. In the United States in 1998, more than three million violent crimes were committed against people under age 21,⁶ and fewer than 10% of them involved a gun.⁶⁻⁸ The significance of gun violence is that its fatality rate is much higher than that of assaults with other weapons. As a result, nearly two-thirds of homicides in 1998 were committed with a gun. The same pattern holds for suicide: 50,000 or more adolescents attempt

suicide each year,⁹ but most fatalities occur in the relatively small fraction of attempts in which a gun was used. It appears that whether victims of violence live or die depends to a great extent on the type of weapon available to the perpetrator.¹⁰

Guns also have a unique capacity to project fear, simply because security against them is harder to buy than for knives, clubs, and fists. Drive-by knifings and accidental beatings are virtually unheard of. On the other hand, guns kill at a distance and stray bullets may find an unintended victim almost anywhere. The perception of risk—of no safe place—is further exacerbated by the sound of gunfire.

In short, the type of weapon matters. Guns intensify violence and spread terror in heavily impacted neighborhoods. As a result, the goal of separating guns from violence is an important one, somewhat distinct from the goal of reducing overall violence rates. Even if a program to reduce gun use resulted in a one-for-one replacement of assaults and suicide attempts with other weapons instead of guns, this outcome would still be socially beneficial because the injuries would be less serious on average, and the impacts on neighborhoods would be less severe. Fewer families would lose a child to violence.

Table 1

**U.S. Fatality Rates per 100,000 Population, 1998
Gun Violence and Motor Vehicle Crashes
Males, Ages 0 to 19**

| | Black | White | Hispanic |
|---------------------------|-------|-------|----------|
| Gun Homicide | 17.76 | 1.16 | 7.34 |
| Gun Suicide | 2.21 | 3.06 | 1.52 |
| Gun, Unintentional | .97 | .52 | .48 |
| Overall Gun Fatality Rate | 21.58 | 4.88 | 9.64 |
| Highway Fatality Rate | 13.26 | 13.25 | 10.65 |

Source: Centers for Disease Control and Prevention. WONDER mortality system. Downloaded from <http://www.wonder.cdc.gov/wonder> on December 7, 2000.



Types of Costs Attributable to Gun Violence

Victimization statistics indicate that gun violence is highly concentrated within a narrow sociodemographic slice of the population. Yet a consideration of economic costs suggests that the burden of gun violence is shared much more broadly across society, affecting taxes, residential choice, fear, and freedom of movement.

Taxes

Increased tax expenditures to prevent gun crime are perhaps the most obvious way that gun violence affects the quality of life of all households in the United States. For example, most criminal homicides are committed with guns; if a gun had not been available, many of those violent incidents would have ended in cuts or bruises instead of death. Homicide, however, is rightfully considered a far more serious crime than is assault with injury, and is prosecuted and punished more severely. The estimated cost to taxpayers of processing

the “extra” murder cases resulting from the higher fatality rate in gun assaults is approximately \$2.4 billion per year.^{11,12} Although there is no guarantee how that money would be spent if it were not allocated to the criminal justice system, it is instructive to note that an additional \$2.4 billion would be enough to increase Head Start’s annual budget by almost 40%.¹³

Taxpayers also pay for tight school security to protect students from gun violence. For example, nearly 1 in 10 high schools in the United States conducted random metal detector checks on students in 1996–1997, and around 1 in 50 schools nationwide required all students to walk through metal detectors on the way into school every day.¹⁴ While statistics are not yet available, the proportion of schools that use such preventive measures has almost certainly increased since the shootings at Columbine High School in April 1999.

Although school efforts to protect against the threat of gun violence are a national phenomenon (see the article by Garbarino, Bradshaw, and Vorrasi), the problem

Arguably, the threat of gun violence reduces the quality of life for all children in America, even those who are not victimized.

is still most acute in urban areas. Consider, for example, the preventive measures undertaken by the Chicago public school system, which spends approximately \$41 million each year for school security personnel in addition to the costs of purchasing and maintaining walk-through metal detectors for every school. While some of these expenditures would remain even if gun misuse was eliminated, because knives and other nongun weapons would still pose a threat to student safety, expenditures would almost certainly be lower in a world without gun violence.

Residential Choice

For families, the largest investment in increased safety from violence is often embedded in the decision of where to live. Choosing a safe neighborhood and schools may come at the cost of economizing on space, enduring a long commute, and losing easy access to the cultural amenities of the central city. Research demonstrates that the rate of out-migration from central-city neighborhoods is highly sensitive to homicide rates.¹⁵

Fear

Families who cannot afford to move to a safer neighborhood are left attempting to protect their children as best they can. The stories from violence-ridden public housing projects are particularly striking. One single mother living in Chicago's public housing reported, "At night you had to put your mattress on the floor because bullets would be coming through the windows. It was like Vietnam."¹⁶ In other urban neighborhoods, children are taught by their parents to hide under beds or in bathtubs at the sound of gunfire. As the *New York Times* reported, "When the leader of a Christian missionary group asked a group of children in the Cooper housing project [in New Orleans] to name some things they worry about, a 7-year-old girl raised her hand and said 'Dying.' After the class, the children ran screaming from the playground when the sound of a machine gun ripped through the air. It was 11:57 A.M." A mother in a different public housing complex in New Orleans reported, "I got a letter from this one little girl. She said her goal in life was to live to graduate high school."¹⁷

Freedom of Movement

The fear of being shot causes some people to avoid particular areas at certain times and others to avoid going outside at all, which in turn reduces the overall quality of community life. Consider the case of Washington Heights, a neighborhood in New York City, where for years people were afraid to venture outside because of the threat of gunfire. One police officer assigned to the area said, "We found people who had lived across the street from each other for 25 years and had never seen each other." According to one resident, "We were hibernating like bears." Another remarked, "I've got to get over my fear. It controls you. It does not allow you to be. It makes you feel like a prisoner when you have not committed a crime."¹⁸

When the Department of Housing and Urban Development implemented an experimental program of housing vouchers in Boston (as part of the Moving to Opportunity program, which provided subsidies for low-income families to rent apartments in higher-income neighborhoods), evaluators found that by far the most important reason families signed up for the program was fear of crime and violence in the housing projects. The "opportunity" that they sought was a safer environment, where parents did not have to organize their lives around protecting their children. One of the mothers told the interviewer that she was not concerned that her children would be specifically targeted, but that stray bullets were always a threat.¹⁹

Although residents of high-crime areas are most likely to be directly affected by gun violence, arguably, the threat of gun violence reduces the quality of life for all children in America, even those who are not victimized. The most important costs may be intangible, stemming from the fear children and their parents experience owing to the threat of gunshot injury. Measuring intangible costs is complicated but necessary for developing an accurate picture of the overall costs of gun violence toward children.

Valuing Safety

Considerable effort and resources are devoted to avoiding, preventing, and coping with violence, including gun violence that threatens youth. Despite these efforts, a substantial threat of victimization remains, as demonstrated in Table 1. A comprehensive scheme for assessing the costs of gun violence requires an estimation of value for that remaining threat, as well as for avoidance and prevention efforts. Standard techniques for assigning a value to the threat of injury and death attempt to put a price on life. But it is not lives that should be valued so much as the risk of death. It is logically equivalent but perhaps more palatable to say that what is being valued is safety.

This section of the article introduces a method for assessing the value of safety: the “willingness-to-pay” approach. This approach yields a more complete estimate of the costs of gun violence than other benefit–cost methods do, particularly when it comes to children.

Placing a Value on Human Life

The idea of conducting a benefit–cost analysis in the area of crime and injury avoidance may strike many as wrongheaded and disturbing. Life should be priceless. Actually, economists would agree up to a point, noting that human lives are “priceless” in the sense that they are not regularly bought and sold in the marketplace. Moreover, no feasible sum of money can fully compensate the family and friends of the victims of fatal gunshot injuries.

Nevertheless, assessing the value of human life and the risk of death is a necessary part of public policy. Reducing gun violence directed at children is surely a good thing, but it competes for limited resources with many other good things. Determining whether any program to reduce gun violence should be expanded or discontinued requires some assessment of the consequences. Both benefits and costs must be measured in the same metric—namely, dollars.

For example, courts regularly place a price on life and limb in setting damages for personal injury suits; more to the point, legislatures and regulatory agencies are routinely required to decide how much an increment in safety is worth. When Congress established a national speed limit of 55 miles per hour in 1974, the high-

way fatality rate dropped dramatically.²⁰ But much of the public, including commercial trucking interests that lost time and money because of lower speed limits, eventually demanded a return to higher speed limits, despite the likely increase in fatalities that would result, and Congress complied. Individual consumers are also forced to make decisions in the face of what might be thought of as a “quality–quantity” tradeoff for their lives. Should they spend more to obtain a car with antilock brakes, or save the money for their child’s college fund? Should they pay an extra \$10,000 to buy a house that is farther away from the local nuclear power plant?

Estimating the value of life in the context of gun violence is complicated because policymakers and private citizens must make judgments about the value of reducing the risk of gunshot injury in the future, before the identity of those who will be injured is known. While most people would give up much of their net worth to save themselves or a loved one from certain death, their willingness to pay for small reductions in the risk of death is more limited. The summation of what people will pay for small reductions in the probability of death defines the “value of a statistical life.” For example, if each person in a community of 100,000 is willing to pay \$50 to reduce the number of injury deaths in that community by one per year, then the value of a statistical life to those residents equals \$5 million.

People’s “willingness to pay” to reduce the risk of gunshot injury presumably depends on how that risk affects them, their families, and their communities. Sometimes the monetary value of greater safety comes straight from a spreadsheet. For example, the sharp declines in violent crime rates during the 1990s have brought windfall gains in property values to many property owners in urban neighborhoods. But primarily at stake are intangible commodities not traded in the marketplace—freedom from the threat of gun violence, and relief from the necessity of taking steps to reduce the threat.

Children as a Special Case

Valuing safety for children poses a special problem, because much of that value comes from the fact that their futures are at stake. Presumably the adults that children will become if they successfully avoid gun vio-

lence (and other hazards) would be willing to contribute something to make them safer as children. But in fact, the only way that their future selves have a “voice” is if their families express it for them, or if they themselves are farsighted enough to recognize the value of protecting their future.

Children and, most importantly, adolescents are often so present-oriented that they take risks that their adult selves would never allow. (See the article by Hardy in this journal issue.) For example, adolescent suicide is often a response to anger or despair engendered by problems that an older person would recognize as transitory. And homicide victimization is in many cases the result of behavior so risky that it is tantamount to suicide, or perhaps Russian roulette. One recent study found that inner-city drug dealing presents a great risk of being shot for meager compensation, a tradeoff that amounts to just \$55,000 per life.²¹ That is not a “price” that should be taken seriously in setting policy priorities. But if parents and neighbors have a voice in placing a value on children’s lives, the result will likely be much closer to an appropriate valuation.

Willingness-to-Pay vs. Cost-of-Illness Methods

The “willingness-to-pay” (WTP) approach to benefit-cost analysis leads to a very different picture of the monetary costs of gun violence from the standard public health “cost-of-illness” (COI) approach. As Table 2 shows, the COI approach defines the costs of gun violence as the medical expenses incurred by victims plus lost productivity. This method ignores most of what is captured in WTP: the subjective value of safety, concern about others’ welfare, and the costs of prevention and avoidance.

Medical expenses and lost productivity actually make up very little of the societal burden of gun violence.²² For example, the net cost of medical treatment to victims for all gunshot injuries in 1997 was only about \$1 billion. The effect of gunshot injuries on labor force productivity is also quite small, especially given the reasonable possibility that workers lost to gun violence could be replaced through immigration.

There are two important conclusions here. First, the COI framework is inappropriate for evaluating public programs to reduce gun violence. Second, its application to children’s gunshot injuries has the effect of understating their cost to society.

Table 2

Types of Costs That Gun Violence Imposes on Society

| Cost Method | Types of Costs Included | Examples of Costs |
|--|--|--|
| Public health “cost-of-illness” (COI) approach | Tangible costs to victims of gun violence | Medical expenses Lost productivity |
| Economic “willingness-to-pay” (WTP) approach | Intangible costs to society from threat of gun violence Tangible expenditures to reduce risks of gunshot injury | Concern for safety of self and loved ones Costs of prosecuting and punishing gun crimes Metal detectors Flight to suburbs |

A broad cross section of the public is affected by gun violence, as shown by the substantial proportion of households who are willing to pay more in taxes each year to reduce gunshot injuries.

Quantifying the Costs of Gun Violence

Families and government agencies undertake substantial preventive activities in response to the threat of gun violence, which provides some evidence that society's willingness to pay to reduce gunshot injuries may be quite significant. However, estimating that willingness to pay can present a significant challenge.

One of the standard methods for estimating the value of reductions in injury risk is to examine people's marketplace behaviors. For example, a number of studies have attempted to estimate the value that people place on the risk of workplace accidents by studying the wage premium paid to those who work in high-risk occupations.²³ This approach is impractical for estimating the costs of gun violence, however, in part because no good data are available on the risks of gunshot injury for different occupations. Even if such data existed, isolating the effects of injury risks on wages from the effects of other job characteristics is quite difficult. More generally, the wage premium associated with, for instance, a 30% reduction in a worker's personal risk of injury will understate many potentially important benefits that individuals derive from programs to reduce gun violence by 30% in society as a whole, such as reductions in risk to family and friends or reductions in preventive activities.

The most straightforward approach for estimating what people would pay to reduce gun violence in society is to ask them directly, within the context of a social science survey. This section of the article quantifies the overall costs of gun violence to society using this "contingent valuation" (CV) method to value society's willingness to pay to reduce gun violence. The estimates suggest that the American public is willing to pay \$24.5 billion to reduce gun violence by 30%. Including the costs of suicide and accidental shootings increases the total value of eliminating all gun violence to \$100 billion, of which approximately \$15 billion is attributable to improvements in youth safety.

The Contingent Valuation Approach

The CV approach attempts to infer what people will pay for goods that are not bought and sold in the marketplace, such as improvements to health and safety, by creating hypothetical market scenarios. The CV method has a long tradition within the field of environmental economics. Although contingent valuation remains somewhat controversial within the broader economics profession,²⁴ for the purposes of studying the costs of gun violence, the CV method is less imperfect than its alternatives.

The CV estimates reported in this article represent the first use of this method to estimate the costs of crime. The data come from a nationally representative telephone survey of 1,200 American adults conducted in 1998 by the National Opinion Research Center (NORC) at the University of Chicago, one of the nation's leading survey organizations. (See the article by Smith in this journal issue.) After a series of questions regarding their attitudes toward government and various current or proposed gun regulations, respondents were asked:

Suppose that you were asked to vote for or against a new program in your state to reduce gun thefts and illegal gun dealers. This program would make it more difficult for criminals and delinquents to obtain guns. It would reduce gun injuries by about 30%, but taxes would have to be increased to pay for it. If it would cost you an extra [\$50/\$100/\$200] in annual taxes, would you vote for or against this new program?

The amount of the tax increase that the respondents were asked about—either \$50, \$100, or \$200—was randomly determined by the survey software, so answers for each of the three dollar amounts were given by approximately one-third of the sample. Respondents were then asked a follow-up question in which the dollar amount in the initial question was either doubled or halved, depending on whether the initial answer was positive or negative, respectively.

Survey Results

The survey results suggest that a broad cross section of the public is affected by gun violence, as shown by the substantial proportion of households who are willing to pay more in taxes each year to reduce gunshot injuries. As Table 3 indicates, 76% of respondents reported that they would pay \$50 more per year in taxes to reduce crime-related gunshot injuries by 30%, while 64% said they would pay \$200 more in taxes. A formal statistical analysis indicates that the average American household would pay \$239 more per year in taxes to fund such a program.

Children's safety plays an important part in people's willingness to pay to reduce gun violence, as shown by the significant differences in what households with and without children would be willing to pay. Holding constant other household characteristics, such as income and number of adults, the difference in WTP between households with and without children under age 18 is \$108.

Given the total number of households in the United States—approximately 102.5 million in 1998²⁵—all households together are willing to pay an estimated \$24.5 billion to reduce assault-related gunshot injuries by 30%. If the difference in WTP between households with and without children is \$108, then the value of reducing the risk of gunshot injury to youth specifically by 30% is

equal to the premium that households with children are willing to pay: at least \$3.8 billion.

The Value of Eliminating Crime-Related Gun Violence

The public's WTP to eliminate all crime-related gunshot injuries can be approximated by multiplying the WTP for a 30% reduction by 3.33. The resulting estimate is \$82 billion, of which \$13 billion (\$3.8 billion times 3.33) relates to concern for children's safety by members of their immediate household. The true value of children's safety will be higher to the extent that friends and extended family members are also concerned.

This estimate is valid to the extent that the value of a reduction in injuries is proportional to the relative magnitude of the reduction. The estimated value of a total reduction in gun violence may be too high if the public derives diminishing returns from additional reductions in gun violence. However, the value of completely eliminating the risk of gun violence could have greater-than-proportional value, because it would remove a major threat to the safety of children and families, creating significant economic and psychological benefits.

Several external benchmarks suggest that these survey responses are reasonable. First, the results of the NORC

Table 3

Willingness-to-Pay Survey Results 1998 National Gun Policy Survey

| | How would you vote on a program to reduce gunshot injuries by 30% that cost \$50 more per year in income taxes? | How would you vote on a program to reduce gunshot injuries by 30% that cost \$100 more per year in income taxes? | How would you vote on a program to reduce gunshot injuries by 30% that cost \$200 more per year in income taxes? |
|---------------------------------------|---|--|--|
| Percentage voting in favor of program | 75.8 | 68.5 | 63.6 |
| Number of question respondents | 400 | 400 | 404 |

Source: Adapted from Cook, P.J., and Ludwig, J. *Gun violence: The real costs*. New York: Oxford University Press, 2000.

survey can be used to generate an estimate of the value per statistical life saved. That estimate is consistent with estimates derived from analyzing actual marketplace data from other contexts, such as the wage premium associated with riskier jobs or the negative house price premium associated with living closer to a Superfund site.^{23,26}

Second, the general pattern of responses to the gun survey seems reasonable. For example, households with more income are more likely to support higher taxes to reduce gun violence. Households with more children are also more likely to vote to reduce gun violence, presumably because such households experience a greater benefit from the intervention than do families with fewer members.

Finally, a recent study²⁷ finds that the average household currently spends around \$1,800 per year in taxes and other expenditures to fund the criminal justice system and private protective measures. Thus, it seems plausible that the average household would spend an additional \$239 per year to reduce the threat of gunshot injury by 30%, particularly because the fear of crime in America appears to be driven largely by the threat of violent crime.^{15,28}

Adding Gun Suicides and Accidents

Estimating the total costs of gun violence, beyond the costs of a reduction in crime-related gunshot injuries, requires additional assumptions. Because the NORC survey captures only crime-related gun violence, estimating the costs of gun suicides and unintentional injuries requires other sources of information.²⁹ These estimates should be viewed with some trepidation because they are derived from people's willingness to pay to reduce nongun injuries, and exclude the value of whatever preventive measures are undertaken to protect against the risk of unintentional or self-inflicted gunshot injuries.

The estimates suggest that the costs of gun suicides and accidents range from \$10 billion to \$20 billion per year; adding this figure to the estimated costs of crime-related gun violence (\$82 billion) brings the total costs of all gunshot injuries in the United States to approximately \$100 billion. Using the ratio of youth costs to total costs from the survey results discussed above, the annual value of eliminating all gunshot injuries to youth is at least \$15 to \$16 billion.

Conclusion

Although it is not possible to be precise, the national costs of gun violence are roughly \$100 billion per year, with \$15 billion or more attributable to gun violence against youth. The tangible costs to the victims from medical expenses and lost productivity are only a small part of the overall problem. The real burden of gun violence comes from the cost of public and private efforts to reduce the risks, and the fear of victimization that remains despite these efforts.

An important conclusion, then, is that the costs of gun violence are far larger than the public health community's traditional COI approach would suggest, and that these costs affect everyone in America. But another important conclusion is that while the costs of gun violence—or equivalently, the benefits of reducing gun violence—are large, they are not infinite. One informal slogan held by some gun control advocates is that any intervention targeted against gun violence is worthwhile “so long as one life is saved.” As a guide for serving the public interest, this slogan is not helpful.

Nonetheless, a variety of gun-oriented interventions do appear to generate benefits in excess of costs. One of the more promising gun control regulations is to require that all new handguns incorporate a built-in personalization device, such as a combination lock or microchip that reads a fingerprint. (See the article by Teret and Culross in this journal issue.) These and other available devices would make the weapons inoperable by unauthorized users, including children, despondent teens, or juvenile delinquents, who almost

always obtain their guns in the secondary market.³⁰ (For an explanation of the secondary market, see the article by Wintemute in this journal issue.) The idea of mandating personalized gun technologies has been criticized in part because they will add to the price of new handguns. But if the technology ultimately adds \$100 to the price of a new gun, this regulatory requirement will generate benefits that outweigh costs so long as at least one shooting is prevented per 10,000 units sold.³¹ The effects of personalized gun technology should easily clear this bar, given that every 10,000 handguns sold are involved in about 3,000 robberies and assaults and 100 homicides.^{8,32}

The stakes are high in preventing gun violence against America's children. Determining the full cost of gun violence provides useful guidance in assessing which gun violence prevention proposals are worthwhile and which are not. Such estimates also give a surprising picture of the burden that gun violence—especially violence against children—imposes on American society. It is not just a problem for inner-city residents and families with suicidal adolescents; it affects everyone. With such estimates in hand, Americans can make better-informed decisions about the tradeoffs involved in protecting the safety of children and youth.

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7. This estimate comes from self-reported victimization reports to the National Crime Victimization Survey (NCVS), which suggests almost three million crimes of violence against people ages 12 to 20. The actual number of violent crimes is higher than three million because some children under age 12 are victimized but are not included in the NCVS sampling frame, and the youth who are at greatest risk for criminal victimization appear to be underrepresented in the NCVS sample. See Cook, P.J. The case of the missing victims: Gunshot woundings in the National Crime Survey. *Journal of Quantitative Criminology* (March 1985) 1(1):91-102.
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9. The best available estimates suggest that there are more than 2,000 suicide fatalities among Americans age 19 and younger each year and approximately 25 suicide attempts for every completion. National Institute of Mental Health. *Suicide facts*. Downloaded from <http://www.nih.gov/research/suifact.htm> on December 18, 2000.
10. The "instrumentality" effect has been debated for both homicide and suicide, on the grounds that the high case-fatality rates for gun violence simply indicate seriousness of purpose, and that those perpetrators would have found another way to kill if they had not had access to a gun. However, the evidence is very strong that the type of weapon has an independent, causal effect on the outcome for both assault and suicide. See Zimring, F.E. Is gun control likely to reduce violent killings? *University of Chicago Law Review* (1968) 35:21-37; Zimring, F.E. The medium is the message: Firearm calibre as a determinant of death from assault. *Journal of Legal Studies* (1972) 1:97-124; Cook, P.J. Robbery violence. *Journal of Criminal Law & Criminology* (1987) 70(2):357-76; Cook, P.J. The technology of personal violence. In *Crime and Justice: An annual review of research*. Vol. 14. M. Tonry, ed. Chicago: University of Chicago Press, 1991; Zimring, F.E., and Hawkins, G. *Crime is not the problem: Lethal violence in America*. New York: Oxford University Press, 1997; and Miller, M., and Hemenway, D. The relationship between firearms and suicide: A review of the literature. *Aggression and Violent Behavior* (1999) 4(1):59-75.
11. To see how this figure is derived, consider the effects of an intervention that results in 100 fewer gunshot injuries. Previous studies suggest that, on average, every 100 assault-related gunshot injuries will result in 20 deaths. To be conservative, assume that all of the 100 gunshot injuries that are prevented are replaced by 100 nongun injuries, of which approximately 7 will be fatal. See Cook, P.J., and Leitzel, J. Perversity, futility, jeopardy: An economic analysis of the attack on gun control. *Law and Contemporary Problems* (Winter 1996) 59(1):91-118.
12. The savings to the criminal justice system from eliminating 100 gunshot injuries equal the difference between the criminal justice costs of 13 homicide cases (13 times \$243,960 = \$3.2 million) and the costs of 13 nonfatal aggravated assaults (13 times \$6,200 = \$80,600). The costs associated with all gunshot injuries thus equal the costs per injury (\$31,000) times the number of crime-related gunshot injuries, equal to around 78,000 in 1997. See note no. 5. Cook and Ludwig, pp. 86-87.
13. The Head Start program, administered by the Head Start Bureau of the U.S. Department of Health and Human Services, was appropriated \$6.2 billion during the 2001 federal fiscal year. See White House Office of Management and Budget. *Budget of the United States Government, Fiscal Year 2002*. Appendix. Washington, DC: OMB, 2001, p. 470. Downloaded from <http://www.whitehouse.gov/omb/budget/fy2002/hhs.pdf> on November 12, 2001.
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