THE PUBLIC HEALTH APPROACH TO REDUCING FIREARM INJURY AND VIOLENCE

David Hemenway*

I. THE PROBLEM

Firearm injuries are a major public health problem in the United States. On an average day in 2002, for example, firearms were used to kill some eighty people and to wound some 160 more.1 Each day guns were also used in the commission of about 1000 crimes, and were often used by batterers to intimidate their victims.2

The U.S. rates of death and injuries due to firearms, and the rate of crimes committed with firearms, are far higher than those in any other high-income country (“high-income” as defined by the World Bank). Perhaps the most appropriate international comparisons are between the United States and other developed “frontier” countries where English is spoken: Australia, Canada, and New Zealand. These four nations have roughly similar cultures, and have histories that include the violent displacement of indigenous populations.

In the mid-1990s, rates of property crime and violent crime were comparable across these four countries; by 2000, the United States had somewhat lower rates of crime and violence (Table 1). But what really distinguishes the United States from these countries is its high rate of lethal violence, most of which involves guns. Our firearm murder rate is about ten times higher than the average of these three other countries (Table 2), and our overall murder rate is three times higher. Comparisons with other developed

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countries make our gun/lethal violence problem look even worse.

Canada, Australia and New Zealand all have many guns (Table 2), though not nearly as many handguns as the United States. The key difference is that these countries do a much better job of keeping guns out of the wrong hands. Like other high-income countries, they have much stronger firearm regulations than the United States. For example they have a license system, storage regulations, and training requirements (Table 3). Their experience suggests that when there are reasonable restrictions on guns, gun injuries need not be such a large public health problem. Their experience also shows that it is possible to live in a society with many guns, yet one in which relatively few outlaws possess or use guns.

While gunshot wounds often result in deaths, even nonfatal wounds can be devastating, leading to permanent disability. Traumatic brain injury and spinal cord injuries are two of the more serious firearm-related injuries. For example, non-fatal gunshot injuries are currently the second leading cause of spinal cord injury in the United States. In each year during the 1990s, it was estimated that more than two thousand individuals who were shot suffered spinal cord injuries. Spinal cord injuries from gunshot wounds also tend to be serious—gunshot wounds are more likely than nonviolence-related traumatic spinal cord injury (e.g., from falls or motor vehicle collisions) to lead to paraplegia and complete spinal cord injury.

The psychological ravages of firearm trauma can be especially long-lasting. For example, compared to other traumatic injuries, gunshot wounds are more likely to lead to the development of post-traumatic stress disorder (PTSD) in children. Chronic PTSD following firearm injury is common. In one study, eighty percent of hospitalized gunshot-wound victims reported moderate or severe symptoms of post-traumatic stress eight months after the incident. In another study, fifty-eight percent of victims of firearm assault met the full diagnostic criteria for PTSD-3, within thirty-six months of the injury. Even witnessing firearm violence can have serious psychological consequences. In one study, high school students who witnessed a firearms

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suicide on a bus were at higher risk than other demographically similar students to develop psychopathology—specifically anxiety disorders and PTSD.  

The direct medical costs of gunshot wounds were estimated to be $6 million per day in the 1990s; the mean medical cost of a gunshot injury is about $17,000 and would be higher except that the medical costs for deaths at the scene are low. Half of these costs are borne directly by U.S. taxpayers; gun injuries are the leading cause of uninsured hospital stays in the United States. The disability, pain, grief, and fear caused by gun violence in the United States are probably incalculable. Perhaps the best estimate, derived from asking people how much they would pay to reduce gun violence, is that the cost of gun violence in America is about $100 billion per year.

Fortunately, many reasonable policies can reduce this enormous and, among high-income countries, uniquely American public health problem while still enabling responsible citizens to own firearms. This paper describes the public health approach to reducing injuries, and suggests how that approach could substantially reduce our rates of gun violence and death.

Table 1. Percent of People who were Victims in 2000 (from comparable victimization surveys)

<table>
<thead>
<tr>
<th>Nation</th>
<th>Car Theft</th>
<th>Burglary</th>
<th>Robbery</th>
<th>Sexual Incident</th>
<th>Assault or Threat</th>
<th>Total Crime</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>0.5</td>
<td>1.8</td>
<td>0.6</td>
<td>1.5</td>
<td>3.4</td>
<td>21.1</td>
</tr>
<tr>
<td>Canada</td>
<td>1.4</td>
<td>2.3</td>
<td>0.9</td>
<td>2.1</td>
<td>5.3</td>
<td>23.8</td>
</tr>
<tr>
<td>Australia</td>
<td>1.9</td>
<td>3.9</td>
<td>1.2</td>
<td>4.0</td>
<td>6.4</td>
<td>30.0</td>
</tr>
<tr>
<td>New Zealand(a)</td>
<td>2.7</td>
<td>4.3</td>
<td>0.7</td>
<td>2.8</td>
<td>5.7</td>
<td>29.4</td>
</tr>
<tr>
<td>17 Industrialized Nations (b)</td>
<td>1.0</td>
<td>1.8</td>
<td>0.8</td>
<td>1.7</td>
<td>3.5</td>
<td>21.3</td>
</tr>
</tbody>
</table>

11. COOK & LUDWIG, supra note 3, at 115.
12. John N. Van Kesteren et al., Crime Victimization in 17 Industrialized Countries: Key Findings from the 2000 International Crime Victims Survey (2000), available at http://www.unieri.it/1wwd/analysis/icvs/publications.php. (a) Data for 1992; (b) The seventeen industrialized nations include: Australia, Belgium, Canada, Catalonia (Spain), Denmark, England and Wales, Finland, France, Japan, Netherlands, Northern Ireland, Poland, Portugal, Scotland, Sweden, Switzerland, and the United States.
Table 2. Firearm and Non-Firearm Homicide in the Frontier Countries and other Developed Countries, Rates per 100,000, 1999-2000

<table>
<thead>
<tr>
<th>Nation</th>
<th>Firearm Homicide Rate</th>
<th>Non-Firearm Homicide Rate</th>
<th>Total Homicide Rate</th>
<th>Percentage Households with Guns</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>4.0</td>
<td>2.2</td>
<td>6.1</td>
<td>41%</td>
</tr>
<tr>
<td>Canada</td>
<td>0.6</td>
<td>1.2</td>
<td>1.8</td>
<td>26%</td>
</tr>
<tr>
<td>Australia</td>
<td>0.4</td>
<td>1.4</td>
<td>1.8</td>
<td>16%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0.2</td>
<td>1.5</td>
<td>1.7</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 3. National Firearm Regulations

<table>
<thead>
<tr>
<th>Country</th>
<th>License System</th>
<th>Storage Regulations</th>
<th>Training Certificate Needed for Purchase</th>
<th>Handgun Ownership Permitted for Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Austria</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Belgium</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No*</td>
</tr>
<tr>
<td>Denmark</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Finland</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>France</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Germany</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>


II. YOUNG CHILDREN

There is strong evidence, from more than a dozen case-control studies, that a gun in the home in the United States is a risk factor for homicide and suicide, as well as unintentional firearm death. The evidence also shows that in states and regions with more guns there are more violent deaths, because there are more gun deaths.15

One criterion by which a country may be judged is how it protects its children. By that criterion the United States is doing extremely poorly with regard to firearms. One could pick various groups (e.g., women, youth, the elderly) to examine in detail, but here let us focus on children aged 5-14—where it is particularly difficult to “blame the victim.” A comparison of violent deaths of 5-14 year olds between the United States and the twenty-six other high-income countries in the 1990s shows that the United States had about seventeen times the firearm homicide rate (and a somewhat higher non-firearm homicide rate), and ten times the firearm suicide rate (and the same non-firearm suicide rate) as these other countries. Our unintentional firearm death rate was nine times higher (Table 4).

An international study of twelve industrialized countries for which there were comparable data on gun ownership levels from telephone surveys found that, for children 0-14 years of age, the percentage of households with a gun was strongly and significantly associated with homicide rates, suicide rates, and

accidental gun deaths. Children in countries with many guns (e.g., Finland, Norway, the United States) were at far greater risk of these types of violent death than children in countries with few guns (e.g., the United Kingdom, West Germany, the Netherlands).

Between 1999 and 2002, firearms killed, on average, one child aged 5-14 each day in the United States. Although firearm homicide deaths decreased dramatically in the ten years preceding 2002, in 2002 firearm deaths still ranked as the sixth leading cause of death for 5-9 year-olds, and the third leading cause of death for 10-14 year-olds.17

In the United States, regions and states with the most guns have the highest rates of child homicide, suicide, and accidental gun deaths. One study of children aged 5-14 found that in states where more households contained guns, significantly more children were dying firearm-related deaths. The children were substantially more likely to be murdered and to commit suicide; they were also substantially more likely to be killed unintentionally with a firearm. The differences in violent deaths resulted almost entirely from differences in gun homicides and gun suicides; there was no relationship between household gun ownership levels and non-firearm homicide or non-firearm suicide. The relationships held even after accounting for poverty and degree of urbanization.18

To illustrate such findings, Table 5 compares the number of violent deaths to children aged 5-14 in the fifteen states with the highest levels of household gun ownership to the six states with the lowest levels of household gun ownership (and generally the strictest gun control laws) between 1998 and 2002. For children in the high gun ownership states, the gun homicide rate was three and a half times higher, the gun suicide rate was twelve times higher, and the unintentional gun death rate was sixteen times higher. Although these states were selected so that there were virtually the same number of children in both groups, 129 committed suicide with a gun in the high gun states compared to 11 in the low gun states; 110 children in the high gun ownership states were the victims of fatal gun accidents, compared to 7 in the low gun ownership states (Table 5).

Many children in the United States have great anxiety about guns and violence. A study of 233 children aged 6-11, recruited at fifteen shopping malls throughout the nation, found that, through writing, artwork, photographs, and collages, almost two-thirds depicted intense, unsettling anxieties about guns, deaths, and violence. Among 9-11 year olds, the percentage rose to seventy-five.19

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17. CTRS. FOR DISEASE CONTROL AND PREVENTION, supra note 1.
19. Sesame Workshop, *A View from the Middle: Life through the Eyes of Middle*
Guns seem to provide few health or safety benefits to children. Firearms rarely protect children against criminal attack. For example, three national self-defense gun surveys sponsored by Harvard Injury Control Research Center asked more than 5500 respondents about self-defense gun use. When respondents described the most recent self-defense gun use event, no one reported an incident in which the gun was used to protect a child under age fourteen.20

Even non-traditional guns pose a danger to children. For example, in one urban pediatric trauma center, between 1988 and 1995, six children per year (median age eleven) were hospitalized from airgun injuries. Thirty-eight percent had a serious long term disability as a result of their injuries.21

With other products, society usually shows great concern for children’s safety. For example, in the 1990s, six children per year died in bunk bed accidents. In response, the Consumer Product Safety Commission (CPSC) recalled more than 630,000 beds and created new regulations that toughened spacing requirements for lower bunks and required continuous guardrails on the wall side of top bunks.22

Similarly, in the mid-1990s the CPSC identified seventeen total deaths in ten years—fewer than two deaths per year—when the drawstrings on children’s clothing became entangled with playground slides, school bus doors, cribs, an escalator, a fence, a farm grinder, a turn signal lever, a ski chair lift, and a tricycle. CPSC brought manufacturers together, persuaded them to replace strings with snaps and Velcro, and advised parents to remove drawstrings from existing clothes.23

These immediate and successful redesigns (often on a voluntary basis with full industry participation), along with added regulations, stand in sharp contrast to the situation in firearms, which in the 1990s caused more than fifty times the number of fatalities for young children as these more benign products.


20. DAVID HEMENWAY & DEBORAH AZRAEL, GUN USE IN THE UNITED STATES: RESULTS FROM A NATIONAL SURVEY, A REPORT TO THE NATIONAL INSTITUTE OF JUSTICE (1997); David Hemenway et al., Gun Use in the United States: Results from Two National Surveys, 6 INJ. PREV. 263, 263-67 (2000).
Table 4. Homicide, Suicide, and Gun Death Rates Among 5-14 Year Olds, United States versus twenty-five other high-income populous nations, early 1990s.24

(Rates per 100,000)

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>Other Countries</th>
<th>Mortality Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Homicides</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gun homicides</td>
<td>1.22</td>
<td>0.07</td>
<td>17.4</td>
</tr>
<tr>
<td>Non-gun homicides</td>
<td>0.53</td>
<td>0.23</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1.75</td>
<td>0.30</td>
<td>5.8</td>
</tr>
<tr>
<td><strong>Suicides</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gun suicides</td>
<td>0.49</td>
<td>0.05</td>
<td>9.8</td>
</tr>
<tr>
<td>Non-gun suicides</td>
<td>0.35</td>
<td>0.35</td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0.84</td>
<td>0.40</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Unintentional firearm deaths</strong></td>
<td>0.46</td>
<td>0.05</td>
<td>9.2</td>
</tr>
</tbody>
</table>

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Table 5. Numbers of Homicide, Suicide, and Firearm-Related Death among 5-14 year olds: The fifteen U.S. states with the highest vs. the six U.S. states with the lowest average household gun ownership levels (1998-2002).25

<table>
<thead>
<tr>
<th></th>
<th>High-gun states</th>
<th>Low-gun states</th>
<th>Mortality Rate Ratio (High Gun : Low Gun)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population at risk, 5-14 year-olds (1998-2002)</td>
<td>26.8 million</td>
<td>27.4 million</td>
<td></td>
</tr>
<tr>
<td><strong>Homicides</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gun homicides</td>
<td>168</td>
<td>49</td>
<td>3.5</td>
</tr>
<tr>
<td>Non-gun homicides</td>
<td>128</td>
<td>99</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>296</td>
<td>148</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Suicides</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gun suicides</td>
<td>129</td>
<td>11</td>
<td>12.0</td>
</tr>
<tr>
<td>Non-gun suicides</td>
<td>134</td>
<td>86</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>263</td>
<td>97</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Unintentional firearm deaths</strong></td>
<td>110</td>
<td>7</td>
<td>16.1</td>
</tr>
</tbody>
</table>

III. THE PUBLIC HEALTH APPROACH

Through most of the twentieth century, gun assaults were seen almost exclusively as a criminal justice problem, gun suicides as a mental health problem, and unintentional gunshot wounds as a safety issue. Since the mid-1980s, it has become increasingly recognized that the most promising approach to reduce firearm injury is to emphasize prevention, focus on the community,

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25. Household gun ownership levels were determined by the CDC 2001 Behavioral Risk Factor Surveillance System. CTRS. FOR DISEASE CONTROL AND PREVENTION, BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM, available at http://www.cdc.gov/brfss. The fifteen states with the highest levels of household gun ownership are: Wyoming, Montana, Alaska, South Dakota, Arkansas, West Virginia, Alabama, Idaho, Mississippi, North Dakota, Kentucky, Wisconsin, South Carolina, Utah, and Louisiana. The six states with the lowest levels of household gun ownership are: Hawaii, Massachusetts, Rhode Island, New Jersey, Connecticut, and New York.
use a broad array of policies, and bring together diverse interest groups. This approach is proactive rather than reactive, pragmatic rather than doctrinaire, and has a distinguished record of successes. This is the public health approach.

The proactive, community-oriented approach of public health can be contrasted to the often reactive, individual focus of therapeutic medicine and traditional criminal justice. Medicine’s principal focus is on curing the individual patient. Medical care providers across the country treat gunshot victims and their families on a daily basis, usually in humane and often heroic ways, but they do so one patient at a time.

Similarly, the law enforcement and criminal justice systems seek to apprehend and punish those committing crimes, one perpetrator at a time. Although deterrence is an important goal of the criminal justice and tort systems, and prevention is increasingly seen as a police function, most of the activity still takes place after the fact. By contrast, the goal of public health is neither to determine fault nor to punish perpetrators. Public health focuses directly on prevention—eliminating the problem before something bad happens.

The scientific core of public health is epidemiology, which identifies the risk factors, trends, and causes of health problems. But sound science is the starting point, not the end point, of the public health approach. The stated mission of public health is “to generate organized community effort to address the public interest in health by applying scientific and technical knowledge . . .”26 Rallying political and social support around scientific solutions is the way public health has achieved its goals.

Public health has had major achievements, such as a safer water supply, the suppression of many childhood diseases, the reduction in lead poisoning, and the control of foodborne infections. Most of the improvement in the health of the American people (e.g., a rise in life expectancy from forty-seven years in 1900 to seventy-six years in 1990) has been accomplished through public health measures rather than direct medical advances.27

During the past 150 years, two factors have shaped public health: 1) growing scientific knowledge about sources and means of controlling disease and promoting health; and 2) growing acceptance that disease control and health promotion are both a possibility and a public responsibility.

Urbanization and industrialization in the nineteenth century produced a poor and crowded population susceptible to disease, and living conditions conducive to the transmission of those diseases to surrounding communities. The spread of communicable disease in the metropolitan area was not selective; almost all families lost children to diphtheria, smallpox, influenza, and other

infections. Because of the often deplorable economic and social conditions, “poverty and disease could no longer be treated simply as individual failings.” 28 “Even those persons who attempted to maintain clean and decent homes were foiled in their efforts to resist disease if the behavior of others invited the visitation of epidemics.” 29 Similarly, inner city parents today often find it difficult to protect their children from the epidemic of gun violence.

Perhaps the most important public health advance of the nineteenth century was “the great sanitary awakening” 30 which identified filth as both a cause of disease and a vehicle of transmission. Sanitation changed the way society thought about health. Illness came to be seen as an indicator not of poor moral and spiritual conditions but of poor environmental conditions. Public health interventions began to emphasize the need to change the environment rather than just changing individual behavior.

Early efforts to combat tuberculosis, for example, succeeded primarily because they addressed poor sanitation and overcrowding in urban neighborhoods rather than because of individual medical treatments. 31 The knowledge that social and environmental conditions could cause disease and the identification of societal actions that could dramatically reduce the occurrence and severity of disease outbreaks meant that health could no longer simply be considered an individual responsibility. Public health came into its own.

In the United States, gun violence is a modern day public health epidemic. Preventing gun violence requires not only individual (e.g., parental) accountability, but also collective responsibility. Generating support for collective efforts to reduce gun violence is a current challenge for public health.

Because public health takes a population approach rather than an individual approach, beneficiaries do not often recognize that they have been helped. While the medical and criminal justice communities deal with identifiable people in identifiable ways, the benefits of public health interventions usually involve only statistical lives. For example, a woman with appendicitis knows she is sick and is grateful to the medical providers who treat her. A victim of violence gains some satisfaction when the individual perpetrator is brought to justice. But the consumer who does not get poisoned because unsafe products are kept off the market does not even know that her life has been saved, partly as a result of the efforts of the public health

Public health solutions rely on both governmental and private sector actions and often meet with organized opposition. The “sanitary idea”—building a drainage network to remove sewage and waste—was quite controversial in the nineteenth century. In the twentieth century, campaigns to reduce public health burdens, such as those caused by tobacco or excessive alcohol use, riled powerful economic interests. For example, smokers resented attempts to raise tobacco taxes or impose statutory limits on smoking in elevators, airplanes, and other public places, and the tobacco industry fiercely fought such measures.

Efforts to reduce the heavy U.S. injury toll have also met opposition—especially from product manufacturers. But the public health community believes that advocacy, based on sound scientific evidence, is essential for securing gains in social justice as well as health, well-being, and quality of life. Fortunately, public health brings a very American, pragmatic, “can-do” attitude to problems—finding innovative solutions and eliminating the fatalistic and complacent beliefs that little can be done to reduce the problem.

IV. THE MOTOR VEHICLE ANALOGY

Many lessons for effective firearms policies can be learned from considering the public health approach to reducing the negative health effects of tobacco, alcohol, and motor vehicles, while maintaining the free right of Americans to buy, own, and use these goods responsibly. The successful motor vehicle story is briefly discussed below.

From 1920 through the 1950s, the traffic safety establishment, dominated by the automobile industry, perpetuated the belief that drivers were responsible for accidents. Drivers were suspect, while the actions of engineers and automakers were unquestioned. Proposed remedies focused on eliminating driver fault. Federal policy reflected twin goals: punish the careless driver and instill good driving habits in the general population. Scientific crash research by engineers and physicians slowly began to change this perception.

The typical question in the 1940s was who caused the accident. It was not until the late 1940s and early 1950s that public health physicians and others began investigating the somewhat different question of what caused the injury. For example, physician William Harper, after studying 3000 crashes, concluded that too much emphasis was being placed on driver error and not enough on ways to make the vehicle and the highways more survivable. “We


have spent too damn much time worrying about the cause of accidents. It’s time we started worrying about the cause of injuries.”

Physicians who studied automotive injury knew that the sources of injury (e.g., the unyielding steering column or passenger compartments that would crush on impact) had obvious technical solutions, such as collapsible steering columns, padded interiors, shatterproof windshields, crush resistant passenger compartments, and anchored seatbelts. Physicians found it appalling that manufacturers did so little to prevent the large numbers of deaths and injuries. In 1953, they persuaded the American Medical Association (AMA) to pass a resolution recommending that auto manufacturers “consider equipping all automobiles with safety belts.” In 1955, the AMA passed another resolution urging the President “to request legislation from Congress authorizing the appointment of a national body to approve and regulate standards of automobile construction.”

Congressional hearings in the mid-1960s led to the landmark Motor Vehicle Act of 1966, which created a federal agency to ensure the safety of highways and automobiles. The first administrator of the new agency was Dr. William Haddon, a physician and public health expert. During his tenure, the data (surveillance) system on motor vehicle injuries was initiated, and many federal safety standards were mandated. These measures reduced the likelihood of collision and markedly improved the survivability of motorists in crashes.

Many physicians participated in the struggle for automotive safety. For example, the work of Dr. Robert Sanders, a health officer and pediatrician in Tennessee, led to the passage of the first mandatory child-safety seat use law in 1978. Within eight years, all fifty states passed such legislation, and child safety seat use rose to more than eighty percent. Children not in restraint devices have been shown to be eleven times more likely to die in a crash than those who are restrained.

The key to reducing motor vehicle injuries in the second half of the twentieth century was a change in approach. It has always been true that most traffic crashes could be eliminated if drivers stopped making errors, and that most traffic deaths could be eliminated if drivers stopped behaving illegally (e.g., speeding, running red lights, or driving drunk). Nonetheless, rather than focusing almost entirely on educating the driver and punishing misconduct, injury-control experts recognized that there were better ways to reduce the likelihood of collision and injury—by improving the vehicle and the highway.

35. Id. at 424.
environment.

The addition of better braking systems and the third light on the back of cars are two of the many ways in which the automobile has been improved to reduce collisions. Divided highways, limited-access roads, and better lighting and signage are a few of the ways in which highways have been made safer. Methods were also sought to reduce the chance of serious injury once collisions occurred. People make mistakes, and sometimes they behave recklessly and inappropriately. But when they do, should they or others die? The goal was to build a system that not only made it less likely for people to make errors, but also was more forgiving when errors were made or people behaved illegally or improperly.

Probably the most important traffic safety advances over the past fifty years involved making the motor vehicle safer for human occupants. For example, we now have steering wheels that collapse on impact rather than spear the driver, airbags that cushion occupants in head-on collisions, windshields that do not shatter and rip car occupants’ faces, seatbelts that prevent occupants from flying around the car’s interior, and gas tanks that do not rupture and explode.

The roads on which we drive are also much safer. For example, following the “forgiving roadside” philosophy, roadside hazards have been removed or modified, and energy-absorbing cushions (impact attenuation devices) have been installed in front of bridge pillars, tunnel portals, or fixed obstacles where the road divides because of an exit ramp. Finally, advances in emergency medical services have reduced the disabilities caused by crashes. Helicopters now race the seriously injured to trauma centers to receive immediate medical attention.

No one believes that today’s drivers are more careful or considerate than those of the 1950s—indeed, many people believe that road rage has increased along with traffic. Yet, since the 1950s, the number of motor vehicle fatalities per mile driven has been reduced by more than eighty percent. The improvement in motor vehicle safety in the United States has been deemed a “20th century public health achievement” by the Centers for Disease Control and Prevention. The key was reframing the policy questions from the fatalistic how can you change human nature to the realistic question what are the most cost-effective ways to reduce injury.

The struggle for motor vehicle safety is on-going—further improvements are clearly needed in many areas, such as reducing injuries to pedestrians,


teens, and the elderly. But the successes provide many lessons for the firearms field. One is that the industry often tries to place the entire blame on the individual user. The automobile industry from the 1920s to the 1960s used the gun lobby mantra, arguing in effect that motor vehicles don’t kill people—people kill people. And like many gun advocates today, motor vehicle manufacturers argued exclusively for better education of motorists and increased punishment for bad drivers. By contrast, public health practitioners know that the effort to find fault and place blame is often counterproductive, that the most effective approach to safety is a multi-faceted one, and that often the most cost-effective interventions are those that improve the product and the environment.

A second lesson for firearms safety is the important role played by physicians in reducing the toll of motor vehicle injuries. Like motor vehicle safety, firearm safety should be a concern for physicians and public health officials. It is also important to realize that the work of a single individual (e.g., Dr. Robert Sanders) can make an enormous difference. Note too that few people have ever heard of Dr. Sanders or other public health scientists.

A third lesson is that success in the motor vehicle area has largely resulted from the availability of good data, which enabled scientists to determine the key factors that affect the traffic fatality rate, and to determine which policies proved effective. A fourth lesson is that it has been the combination of scores of policies and actions that have reduced motor vehicle fatalities; no one single policy, such as seat belt laws or collapsible steering columns, has made the key difference. A final and crucial lesson has been the importance of a regulatory authority with some power over the industry. Like firearms, motor vehicles are constantly changing, and continual oversight is necessary to protect the public health.

V. REASONABLE FIREARM POLICIES

Three core public health concepts are: 1) prevention is preferable to treatment, 2) alterations in the environment are more likely to be effective than attempts to change individual behaviors, and 3) multiple strategies directed toward different risk factors are necessary to solve the problem. These principles can be used to structure programs to prevent firearm deaths and injuries.

Many policies that do not deal directly with guns could reduce firearm injuries in the United States. For example, policies aimed at preventing and treating depression and mental illness could reduce suicidal attempts by all

methods, including firearms. Policies that improve parenting skills, channel anger, or reduce racism and injustice, could help to prevent all kinds of violence, including gun violence. Policies that reduce alcohol and drug problems can help prevent injuries of all sorts, including both intentional and unintentional gunshot injuries.

There are also scores of reasonable policies focused directly on guns that could reduce U.S. firearm injuries while keeping almost all of the recreational and self-defense benefits of firearms. Currently, many crucial firearm policy issues have not been addressed at the national level. The United States has, by far, the most severe gun problem of any high-income country, yet, unlike most other industrialized nations, we have no national requirements for training, licensing, registration, or safe storage. We also have virtually no product safety requirements for guns, no good data collection system concerning gun injuries, and no real oversight for the entire secondary market of gun sales and transfers. The current national laws are filled with major loopholes and grandfather clauses, and often impede effective enforcement.

State laws are also generally quite lax. For example, a 2000 survey found that forty-three states did not require a permit or registration to purchase semi-automatic weapons; thirty-two states did not require background checks for buying a handgun from a private seller; thirty-one states had no waiting period for handgun purchases; and only four states had a one-gun-a-month purchase

43. A myth exists within the United States about self-defense gun use, of an armed citizenry deterring crime and protecting themselves from criminals. No credible evidence exists that private gun ownership deters crime. Instead, the evidence shows that where there are more guns there is more lethal violence. Studies show that guns are used far more often for crime than for self-defense. And the self-defense episodes reported in private surveys usually appear to involve escalating private disputes rather than instances of true self-defense; indeed, most of the purported self-defense gun uses are probably illegal and threaten public safety. David Hemenway, Matthew Miller, & Deborah R. Azrael, Gun Use in the United States: Results From Two National Surveys, INJURY PREVENTION 6, 263-67 (2000). Most gun-owning households will never have the opportunity to use their guns against actual robbers or burglars. Untrained in dispute resolution, they will have plenty of opportunity to use their guns inappropriately when they are angry, annoyed, tired, drunk, or afraid. DAVID HEMENWAY, PRIVATE GUNS PUBLIC HEALTH (2004).

A related myth is that people without guns are unarmed and thus incapable of defending themselves or their property. Yet the vast majority of self-defense incidents in the United States involve non-firearm weapons. Homeowners more often defend themselves with a baseball bat than with a firearm. When guns are used in the home, they are more often used to threaten and coerce intimates than to defend against intruders. Id.

Statistics from a recent analysis of National Crime Victimization Survey data indicate that self-defense gun use is very rare (e.g., in sexual assaults, only one victim in 1119 incidents reported attacking or threatening the perpetrator with a gun), and, in terms of not being injured, nothing appeared more effective than the most common forms of “resistance” (i.e., calling the police or running away). Jongyeon Tark & Gary Kleck, Resisting Crime: The Effects of Victim Action on the Outcomes of Crime, CRIMINOLOGY 42, 861-909 (2004) see also DAVID HEMENWAY, COMMENTS ON TARK AND KLECK, http://www.hsph.harvard.edu/faculty/Hemenway/comments.html. Nevertheless, the policies discussed in this paper should have little effect on the ability to protect one’s self or one’s home with a firearm.
law to reduce gun-running. Six states did not even have a legal minimum age for a child to possess a handgun.44 The ease with which guns involved in crime move across state boundaries limits the effectiveness of even strict state regulations.

This section of the paper briefly discusses specific firearm-related activities and policies—all of which are acceptable to the large majority of Americans.45 The list is not comprehensive, but indicates a wide range of opportunities to save lives.

At the non-governmental level, schools, community organizations, medical professionals, the media, private companies, and others can play an important role in reducing firearm violence. Education is needed, perhaps through local parent-teacher associations, concerning children and guns. Two important topics are gun storage practices and teaching parents to routinely inquire about possible access to firearms when their children are invited to their friends’ houses.

Medical professionals can influence their patients to improve their gun safety awareness. In one study, almost three-quarters of gun-owning parents said they were very likely to follow a pediatrician’s recommendations regarding the safe storage of firearms.46

Hollywood can also do its part by modeling non-violent non-gun behavior and safe gun practices. Television shows helped spread the idea of a “designated driver” and promoted seat belt use by having characters “buckle up.” With this in mind, public health injury control experts met with Hollywood’s creative community to explore ways the medium can promote safe and responsible gun ownership and use.47

In terms of governmental policy, a crucial first step would seem to be to create a new agency or provide an existing agency with the power to regulate firearms as a consumer product.48 The agency should create and maintain a national violent death data system (a public health surveillance system) that provides information on the circumstances and weapon for every violent death,49 and a non-fatal firearm injury data system that provides information on a representative sample of non-fatal shootings. The agency should make the

data readily available and provide funds for social scientists, criminologists, and other expert researchers interested in reducing firearm violence and firearm injuries. Detailed information would thus be available to guide and evaluate firearm policy.

The agency should also investigate a sample of gun injuries. When an airplane crashes, the National Transportation Safety Board investigates what went wrong so that future tragedies can be prevented. By contrast, when a gun tragedy occurs, little is done to explore what happened in order to prevent the next catastrophe. This needs to change. For a sample of firearm injuries, a team of behavioral, engineering, and policy experts should systematically investigate the facts and circumstances surrounding the incidents and recommend changes that could prevent future firearm injuries.50

The agency should have the power to require safety and crime detection measures for all firearms manufactured or sold in the United States. For example, guns should not fire when dropped and should be made child-proof (a toddler should not be able to fire any gun). Pistols should have magazine safeties that prevent firing once the magazine has been removed. The regulatory agency should have the power to ensure that every gun has a unique identifier, that the serial number is virtually impossible to obliterate and that bullets can be readily traced to a particular gun. It should have the funds to promote research on personalized or “smart guns” and on less lethal ammunition and weapons.

The agency should have the power to ban from regular civilian use certain products that are not needed for protection and which endanger the public. As bazookas, machine guns, and plastic guns have been effectively banned, so probably should caseless ammunition and .50 caliber bullets. Except perhaps for bona fide collectors, the agency should prohibit the manufacturing, possession, and sale of silencers, short-barreled shotguns, large capacity ammunition magazines, and “gadget” guns that are difficult for metal detectors to identify or are disguised as innocuous items such as key chains, cigarette lighters, or pens. The agency should also have jurisdiction over firearm-related products, such as laser sights, trigger activators, and ammunition. The agency should also have the power to prevent the introduction into the civilian market of new firearm products that are more lethal, more concealable, or more conducive to crime than current firearms.

The key point is not to prescribe exactly what the agency would or should do, but to create such an agency and invest it with the resources and power—including standard-setting, recall and research capability—for making reasonable decisions about firearms. The power to determine the side-impact performance standards for automobiles resides with a regulatory agency, as

does the power to decide whether or not to ban three-wheeled all-terrain vehicles (while allowing the safer four-wheeled models). Similarly, specific rules regulating the firearm as a product should go through an administrative rather than a legislative process.

To reduce criminal gun use, all gun sales and other non-family transfers should be required to go through licensed dealers. In addition, the dealers should only make such sales from their licensed retail premises—not from their home kitchens, garages, or automobile trunks. These simple requirements will help eliminate the enormous secondary market loophole that currently makes it easy for juveniles and criminals to purchase firearms at flea markets, at gun shows, and through friends.

Licensed dealers should be under greater scrutiny by both the manufacturers and the government. The Bureau of Alcohol, Tobacco, Firearms and Explosives should have the ability to bring felony suits against rogue dealers and make unannounced visits at the Bureau’s discretion. Background checks should be required for all gun store employees. All firearm thefts should be reported.

To reduce gun running, there might be a national one-gun-per-month law, which would prohibit the sale of more than one handgun per month to any single individual. Police should routinely trace all guns used in crimes, as is done in drug enforcement, to help identify and prosecute illegal sellers.

At the level of the individual gun user, gun possession should be banned from those convicted of violent crimes—violent misdemeanors as well as felonies. A national waiting period for gun purchases should be reenacted to reduce suicides due to momentary impulses, and homicides due to momentarily enraged adults. The legal age for gun ownership should be raised; just as the national minimum legal drinking age is twenty-one, so too should the legal age for possessing a handgun be twenty-one (although a lower age for long guns is probably reasonable).

To reduce criminal access to firearms, there should be licensing of gun owners, and registration of handguns. Licensing and registration are currently required of automobile owners and do not limit the availability of motor vehicles. Licensing and registration of guns are policies used by most other high-income countries as part of their overall regulation of firearms. A number of U.S. states already have licensing or registration requirements.

A licensing system will reduce gun running from states with lax gun controls to states with stringent gun controls. A national handgun license card would make it more difficult for gun runners to obtain fake identification documents, and tougher for violent persons to use temporary residences in other states to buy guns they could not purchase in their home states. To obtain a handgun license, the individual should pass a fingerprint based background check, and complete an approved handgun safety course.

Registration of handguns will allow all legal firearm transfers to be tracked. Current gun tracing typically provides information only about the
initial retail sale. A registration system will make it difficult for an individual to act as a straw purchaser—someone with a clean record who buys guns for a criminal. Registration records will make it possible to identify both straw buyers, gun runners, and rogue dealers.

Gun ownership, possession, and carrying entail responsibilities. To prevent theft, accidents and suicide, some countries require that guns be stored unloaded, locked, with the ammunition kept separately. Just as swimming pool owners are liable for misadventures if they do not reasonably restrict access, so should gun owners be held liable for juvenile misuse when guns are stored inappropriately. Some scholars argue for strict liability for gun owners to encourage safe storage and other responsible behaviors.51 Others suggest that just as liability insurance is typically mandated for automobile owners, gun owners might also be required to purchase liability coverage for injuries caused by their firearms.52

Drinking is legal and driving is legal, but we have wisely made it illegal to drink-and-drive, even if the driver has not broken any other law. Similarly we should make the combination of heavy drinking and gun carrying illegal. Gun carrying laws should give police discretion to prohibit gun carrying by persons they believe to be dangerous to the community.

Because of the external costs imposed on society by gun availability, the tax on the retail sales of guns and ammunition should be increased. The revenue should be earmarked to help underwrite the direct costs of gun injuries (e.g., medical care) and gun related regulatory activities (e.g., data collection, licensing).

Many creative police tactics and community activities should be used to reduce gun violence. A Department of Justice publication describes sixty different “promising strategies”—innovative local programs designed to reduce gun violence.53 For example, in 1994, Rhode Island established the nation’s first stand-alone Gun Court to increase the speed of disposition and level and certainty of punishment. In Detroit, a court-based intervention program requires gun violence education for gun-toting youth as a condition of their bond.

In some communities, police have created special teams that target illegal gun traffickers (Charleston, WV), scofflaw dealers (Oakland, CA), and violent career criminals (Charlotte, NC). Memphis has created a Weapon Watch hotline that allows students anonymously to report fellow students who bring firearms to school. In Baton Rouge, police probation teams implement intensive, regular home visits to monitor probation compliance. Various other campaigns are designed to promote safe gun storage, change truant youth

attitudes about guns and violence, and prevent at-risk youth from becoming involved with gangs.

Many other policies also merit attention. Voluntary gun buyback programs, for example, have a minimal effect on street gun violence, but might reduce gun accidents, suicides, and the use of firearms in domestic disputes. Firearm advertising probably should be monitored more closely; for example, some ads deceptively imply that a handgun in the home is protective for children, wives, and family members in general.54

The list is not comprehensive. It merely indicates some of the multiple policies which, when combined, can effectively decrease firearm crime and injuries.

VI. CONCLUSION

Compared to all other high-income countries, the United States has far more handguns per capita, and these guns are easily obtainable by virtually anyone who wants them. Our crime and violence rates are not out of line compared to other developed countries. What distinguishes the United States is our rates of lethal violence, most of which is gun violence.55 Guns are clearly bad for the health of children. In America, states with the most guns have the largest problem—in terms of homicide, suicide and gun accidents to children. A gun in the home is a risk factor for violent death.

The public health approach, so successful in reducing the burden of infectious disease, can also be used to reduce gun violence. The public health approach is scientific, emphasizes prevention, focuses on the community as a whole, and encourages multi-disciplinary and multi-faceted research and action.

While gun advocates focus on education and punishment, the public health approach emphasizes that it is rarely cost-effective to direct policy exclusively or even largely toward the individual product user. Good policy also needs to focus on the manufacture and distribution of the product and the environment of the product user. It is unrealistic to expect every individual to behave appropriately and responsibly on every occasion. To prevent injuries, it is more effective to build a system that makes it easier for people to act properly, more difficult to make errors, and less likely for serious injury to occur when people behave improperly, inappropriately, or legally.

People should be held accountable for their actions. Such responsibility pertains not only to the behavior of gun users, but also the conduct of gun

owners, gun carriers, gun manufacturers, gun distributors, public officials, and other decision-makers. However, the goal of public health is not to find fault. The goal is to prevent rather than to punish—except to the extent that punishment helps deter and diminish wrongful and criminal action.

The public health approach has already broadened the discussions of firearms policy from an exclusively criminal justice orientation to one concerned with all firearm injuries—including suicides and unintentional gun deaths. The entry of public health practitioners into the field of firearm injury control has brought new data sources, new types of statistical analyses (e.g., odds ratios), new research designs (e.g., case-control studies), and new organizations (e.g., the American Academy of Pediatrics). It has also brought an increased spirit of science, pragmatism, and optimism.56

56. There are many success stories in public health in the past century (I am writing a book tentatively entitled “While You Were Sleeping: Fifty Success Stories in Injury and Violence Prevention,” which just scratches the surface of successes in one area of public health). For example, who would have thought twenty-five years ago that American airlines, workplaces, and most restaurants would currently be smoke free; that automobile manufacturers would be actively advertising side airbags, or that American seat belt use would have risen from eleven percent to eighty percent; that dog excrement would no longer be a major public health problem on American urban sidewalks; or that smallpox (which killed my grandfather) would have been eliminated throughout the entire globe?