Costs of Juvenile Crime in Urban Areas: A Longitudinal Perspective

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A Longitudinal Perspective

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It is important to calculate the monetized social burden of crime, and a longitudinal perspective offers distinct advantages over studies limited to one year. This study assessed the monetary costs to society of self-reported male juvenile offending in urban areas. Previously published estimates of victim costs of a number of violent and property crimes were used to calculate the monetized social burden of criminal activity of a cohort of 503 boys (ages 7–17 years), comprising the youngest sample of the Pittsburgh Youth Study. Conservatively estimated, the cohort caused a substantial burden of harm to society in the form of victimization costs, ranging from a low of $89 million to a high of $110 million. From an early age the cohort was responsible for substantial crime victim losses, with these losses mounting in the teen years. Importantly, it is argued that high crime costs do not themselves suggest a policy solution. Implications for policy and research are explored within this context.

Keywords: *juvenile crime; victimization costs; longitudinal study; early onset; chronic offending*

The impact on society of juvenile crime, including damage to property, pain and suffering to victims of crime, and the involvement of the police and other agencies of the juvenile justice system can be converted into monetary terms. The damaged property will need to be repaired or replaced, and it is the victim who will often have to pay for this, as many crime victims do not have insurance. The pain and suffering that is inflicted on an individual from an assault or robbery can result in short- and long-term medical care, lost wages from not being able to work, as well as reduced quality of life from debilitating injuries, fear of repeat victimization, and counseling. Here again it is the crime victim and

also the victim's family, employer, and many services, such as Medicaid, welfare, and mental health that have to incur the costs associated with these services. Then there is the cost of the involvement of the police, the courts, and correction agencies. Although some of the costs that are incurred by the juvenile justice system go toward addressing the needs of victims, such as follow-up interviews by police and court-based victim assistance programs, the majority of the costs are directed at the processing of offenders, starting with the costs of police arrest to public defender, court appearances, serving a sentence, whether it be probation or incarceration, and aftercare programs on release into the community. There are also costs incurred by society in efforts to prevent juvenile crime, through various types of prevention programs.

Putting a price tag on crime can be viewed as a politically charged enterprise. On the political right, large dollar-cost estimates of the impact of crime are interpreted as justification for more punitive crime policies, whereas on the left such cost estimates are seen as yet another reason to invest in early intervention methods to ward off the future consequences of criminal activity. One only has to recall the debate surrounding the release of the National Institute of Justice's report, *Victim Costs and Consequences: A New Look*, by Miller, Cohen, and Wiersema (1996), which estimated that crime costs the nation $450 billion a year. (The cost of the criminal justice system was not included in this total.) In a *New York Times* article on the report, Butterfield (1996) interviewed a Republican Congressman who said that it "demonstrates that the cost of building prisons and adding police are justified, in terms of the cost to our society." Although some Democrats shared this view, Butterfield (1996), quoting Alfred Blumstein and other criminologists, reported that they "expressed concern that the very high estimate made it easier to justify building expensive prisons and handing out longer sentences."

Since then, debate has not waned. Cook and Ludwig's (2000) book, *Gun Violence: The Real Costs*, was assailed in one review for inflating the costs of gun violence for the expressed purpose of drumming up political support for advocates of gun control measures (Kleck, 2001). Other reviews praised the book as an impartial, sophisticated study to quantify the societal impact of gun violence so as to allow for—as the book's authors intended—comparisons with other social problems (McDowall, 2001; Rosenfeld, 2001).

The present study may also be viewed as supporting some political agenda, namely, getting tough on juvenile crime, but it should not be so. At the end of this article, we explore some of the potential implications of our cost estimates. But these are grounded in research rather than partisan politics. Our approach is not meant to dismiss instrumental and emotional/symbolic dimensions of responses to crime and punishment (Freiberg, 2001;

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Garland, 1990) but rather to call for an economics-informed dialogue on the implications of the monetized social burden of crime. The main aim of this article is to assess the monetary cost to society of juvenile offending in urban settings. The focus is on one of the main types of costs of crime to society: costs associated with being a victim.

Costing Crime

Why put a price tag on the impact of crime? Miller, Cohen, and Rossman (1993) identified three main uses. First, it facilitates combining statistics on different crimes into a single, readily understood metric of dollars and cents. This allows for a comparison of the relative harm caused by different types of crime (Cohen, 1988, 2000). A second use is that this information can provide decision makers with guidance in allocating scarce resources, and a third use is that it can be used to carry out economic analyses of programs and policies to prevent or control crime. Cost-benefit and cost-effectiveness analyses are the two most widely used techniques of economic analysis. Each provides information that allows decisions to be made on whether to continue funding certain programs or to spend money on new programs. By quantifying the cost of a robbery, for example, one is able to say that if a crime prevention program prevented 10 robberies the saving is 10 times the cost of one robbery. In the case of a cost-benefit analysis, this saving of 10 times the cost of a robbery is compared to the cost of running the program, such as employee wages and benefits and rental of office space. If benefits are larger than costs, then the program has produced value for money. This may be a very powerful argument for continuing to fund a program (or eliminate a program if costs exceed its benefits).

Types of Costs

We have already mentioned some of the types of costs of crime, but not all of them. Economists typically distinguish between three main types of costs that are caused by crime:

1. Costs that offenders impose on victims and others.
2. Costs that society incurs to prevent or control crime.
3. Costs that offenders incur (Cohen, Miller, & Rossman, 1994).

This article focuses on the first type of crime costs—those that offenders impose on victims and others—that are largely made up of costs incurred by victims of crime. Costs to victims of crime can be classified into two main categories: tangible and intangible losses. Tangible or out-of-pocket victim costs include financial losses resulting from such things as damaged or stolen property, medical expenses (covered and not covered by insurance), and lost wages from not being able to work. Intangible victim costs include reduced quality of life, pain, suffering, and fear of being victimized again. Other parties that sometimes incur the costs of crime include the victim's family, witnesses to the crime, jury members, and society in general through, for example, increased insurance premiums.

Another component of victim costs is risk of death. This is more often applicable to crimes against the person, such as rape, robbery, and aggravated assault. The monetary value of this is calculated by multiplying risk of death probabilities for the crimes in question by

Table 1
Losses per Criminal Victimization

Crime	Tangible	Intangible	Risk of Death	Total
Rape	$6,000	$96,000	$1,000	$103,000
Robbery	$2,700	$6,700	$6,200	$15,600
Aggravated assault	$1,800	$9,200	$29,700	$40,700
Burglary	$1,300	$350	n.a.	$1,650
Larceny	$440	n.a.	n.a	$440
Motor vehicle theft	$4,100	$350	n.a.	$4,450

Note: All costs are in 1997 dollars. n.a. = not applicable.
Source: Adapted from Cohen (1998, p. 16, Table II).

the "value of a statistical life."[1] Because the value of a statistical life includes both a tangible (wages) and intangible (quality of life) component, the risk of death also includes both tangible and intangible costs.

As illustrated in Table 1, for the violent crimes, intangible victim costs far outweigh tangible victim costs, whereas for property crimes this is reversed. In the case of robbery, for example, intangible costs are almost 2.5 times tangible costs ($6,700 vs. $2,700). For the property crime of burglary, tangible costs are $1,300 and intangible costs are $350. The reason for violent crimes having higher intangible victim costs than property crimes is that there is a greater likelihood of injury from violent crimes, and it is this form of harm that contributes to costly effects of pain, suffering, and reduced quality of life.[2] As noted above, some crimes also carry a risk of death. In the case of robbery, for example, adding the cost of risk of death to the tangible and intangible victim costs increases total victim costs of a typical robbery by two thirds, from $9,400 to $15,600.[3]

What do we know about the costs of juvenile crime?

In recent years, there has been a great deal of research on the costs of crime. This research has covered a wide range of topics, including the cost of gun violence (Cook, Lawrence, Ludwig, & Miller, 1999; Cook & Ludwig, 2000), the cost of violence against women (Laurence & Spalter-Roth, 1996), the cost to crime victims in general (Cohen, 1988; Cohen & Miller, 1998; Macmillan, 2000; Miller et al., 1996), the cost of and willingness of the public to pay for crime prevention programs (Cohen, Rust, Steen, & Tidd, 2004; Welsh & Farrington, 2000; Welsh, Farrington, & Sherman, 2001; Witte & Witt, 2001), the cost of crime to businesses (van Dijk & Terlouw, 1996), and the aggregate cost of crime to society (Anderson, 1999; see also Atkinson, Mourato, & Healey, 2003). The costs of juvenile crime have also been a topic that has been the subject of research by criminologists and economists, and what follows are estimates of juvenile crime costs from the leading studies.

Costs of a Criminal Career

Cohen (1998) reported that the typical criminal career over the juvenile and adult years costs society around $1.3 to $1.5 million (in 1997 dollars). Also estimated were the dollar costs of the associated problem behaviors of drug use and high school dropout, bringing the

total societal cost of a high-risk youth to $1.7 to $2.3 million. Cohen drew on his previously published estimates of the cost of criminal offending to victims and the criminal justice system (Cohen, 1988, 1990; Cohen et al., 1994; Miller et al., 1993, 1996), as well as published reports on criminal careers, to calculate the monetized social burden of a life of crime.

Just focusing on the juvenile years, it was estimated that a typical juvenile criminal career imposes costs on society in the range of $80,000 to $325,000, or 6% to 22% of the total costs of a criminal career. Victim costs (tangible plus intangible) related to a juvenile criminal career were found to be three times greater than criminal justice costs ($60,000-$244,000 vs. $20,000-$82,000).

Delisi and Gatling (2003), using unit cost estimates developed by Cohen (1998), reported that the average career criminal costs society more than $1.1 million (in 2002 dollars). Cost estimates were based on the self-reported criminal history, from police contact to prison sentences, of 500 adult career criminals who were processed in a large urban jail located in the Western United States between 1995 and 2000. Unlike Cohen (1998), the authors did not report on the cost of a criminal career during juvenile years.

Some important criminal career parameters for the calculation of the costs of crime. The cost of crime varies much with the frequency and severity of offending by individuals. Studies agree that early onset offenders, compared to late onset offenders, have a two-to-three-times higher risk of becoming tomorrow's chronic offenders (Loeber & Farrington, 2001a). Also it is generally accepted that offending levels by individuals are higher in urban compared to suburban or rural environments.

In addition, official records of delinquent offending based on arrest or court documents, constitute an underestimate of actual offending as evident from self-reports (Loeber & Farrington, 1998). Thus, it can be expected that cost estimates resulting from delinquent offending need to be adjusted upward, once self-reported delinquency (SRD) is taken into account. Such estimates are especially needed to establish the costs of offending by chronic offenders and early compared to late onset offenders.

Aggregated Costs of Juvenile Crime for States

Miller, Fisher, and Cohen (2001) examined the costs of juvenile violence in the Commonwealth of Pennsylvania in 1993.[4] The study was based on the violent offenses of homicide, rape, robbery, assault, and child physical and sexual abuse. The study used national victim cost data (Miller et al., 1996) adjusted for state wages and prices and state juvenile and adult justice system cost data. Violence by juveniles was estimated to cost $2.6 billion in victim costs and $46 million in perpetrator costs per year (in 1993 dollars). Juvenile perpetrator costs were made up of costs to the juvenile and adult justice systems, which included costs from probation, detention, juvenile treatment programs, and incarceration in adult prisons.

The study also reported on the costs of violence against juveniles that was committed by adults and other juveniles. Much higher victim costs were associated with violence committed against juveniles compared to violence committed by juveniles: $4.5 billion versus $2.6 billion. The main reason for this difference was because of a greater incidence of sexual abuse against juveniles committed by adults.

Other states, such as Florida and Washington, have also been the subject of studies that have estimated the costs of juvenile crime, examining the impact on both the justice system and crime victims (Florida Department of Juvenile Justice, 2000; Washington State Institute for Public Policy, 2002).

Aggregated Costs of Juvenile Crime for the Nation

The only national estimate of the costs of juvenile crime focuses on violent crime. Violent crime by juveniles was estimated to cost the United States $158 billion each year (Children's Safety Network Economics and Insurance Resource Center, 2000). This estimate includes some of the costs incurred by federal, state, and local governments to assist victims of juvenile violence, such as medical treatment for injuries and services for victims. These out-of-pocket victim costs of juvenile violence came to $30 billion. But the majority of the costs of juvenile violence, the remaining $128 billion, were because of losses suffered by victims, such as lost wages, pain, suffering, and reduced quality of life. Missing from this $158 billion price tag are the costs of society's response to juvenile violence, which includes early prevention programs, services for juveniles, and the juvenile justice system. These costs are largely unknown.

Data and Methods

The main aim of the present study is to assess the monetary costs to society of self-reported male juvenile offending in urban areas. We use self-reports of offending, which provide a more complete picture than official records (Farrington et al., 2003). We focus on urban areas because our sample of juveniles is drawn from the public schools in the metropolitan area of Pittsburgh, Pennsylvania. More specifically, our sample comprises the youngest cohort of boys (ages 7-17 years) in the PYS, which is a multicohort, prospective longitudinal study of 1,517 inner-city boys (see below).

To make the findings more applicable to boys in other urban areas across the nation, we weighted the crime data, which means that we compensated for the greater number of higher risk boys in the PYS. Another important point about the research is that, unlike most cost of crime studies, it is not limited to 1 year. Instead, we examined the costs of crime by these young people from a longitudinal perspective. This approach facilitates more detailed and more comprehensive estimates of the financial burden of juvenile offending and allows for in-depth cost estimates of different categories of offenders (e.g., early and late onset offenders).

Analyses were performed to investigate the following key questions:

1. What is the aggregate cost of crime committed by 500 male juveniles, aged 7 to 17, in urban areas?
2. What is the share of total victim costs attributable to violent and property crime?
3. What is the share of total victim costs attributable to tangible and intangible costs?
4. How do the costs of crime vary with age?
5. What is the cost of juvenile crime for those who begin offending early in life (early onset) compared to those who begin later (late onset)?
6. What is the cost of chronic offending?

PYS

The PYS is one of three coordinated projects that have been supported by the Office of Juvenile Justice and Delinquency Prevention since 1986, through its Program of Research on the Causes and Correlates of Delinquency.[5] Boys attending the first, fourth, and seventh grades in the public school system in inner-city Pittsburgh (about 1,000 in each grade) were randomly selected from schools all over the city. Of those families contacted, 85% of the boys and their parents agreed to participate. An initial screening assessment then followed to identify high-risk participants. About 850 boys were screened in each grade at average ages of 7, 10, and 13.

The information from this screening assessment was used to identify the approximately 30% (40% in the youngest sample) of boys with the most severe disruptive behavior problems (around 250 boys in each of the three samples). In addition, a random selection of boys from the remaining 70% of each sample was made (around 250 boys in each follow-up sample). This selection process resulted in approximately 500 boys in each sample (503, 508, and 506, in the youngest, middle, and oldest samples, respectively), which were half high risk and half average or low risk. Just over half were African American boys and just under half were White boys (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998).

The youngest sample was selected as objects of the cost study. This sample was studied from ages 7 to 17, and, compared to the other samples, for that reason represented the most comprehensive assessment of SRD during the juvenile years. The boys in the youngest sample, as well as their parents, were initially followed up at half-yearly intervals (9 assessments) and then at yearly intervals (another 6 assessments), for a total of 15 assessments. Data were also collected from teachers at each wave until age 16.

The principal measurement instrument used is SRD. The SRD questionnaire used with adolescents, which was adapted from the SRD questionnaire used in the National Youth Survey (Elliott, Huizinga, & Ageton, 1985), was judged to be too difficult to be understood by boys below age 10, and not all items applied to this younger age group. Therefore, a new 33-item Self-Reported Antisocial (SRA) Behavior Scale was developed (Loeber, Stouthamer-Loeber, Van Kammen, & Farrington, 1989). Other changes had to do with making the items more specific to make them easier to be understood by younger children. The SRA Scale was administered in 7 half-yearly intervals, beginning when the subjects were an average age of 7 years. The SRD Scale was administered in 2 half-yearly and 6 yearly intervals, beginning when the subjects were an average age of 10.5. The final assessment with the SRD Scale took place when the subjects were, on average, 17 years old.

Developing Cost Estimates

In monetizing the burden on society from male juvenile offending, our focus was on one of the main types of costs: costs associated with victims of crime. Three steps were involved in developing cost estimates associated with crime victims. (Appendices A and B document this process and present the unit cost estimates used in this study.) The first step involved identifying from the PYS's questionnaires those crimes that were as close as possible to crimes monetized by Miller et al. (1996). In this way, we were working backwards, that is, in Miller et al. (1996) we already had cost estimates for a range of crimes, but we needed to match the PYS crimes with the crimes valued by Miller et al. (1996).

Altogether, seven serious crimes could be included that covered a wide range of severity: assault, rape/sexual assault, robbery, arson, larceny, burglary, and motor vehicle theft. From the SRD instrument, all seven crimes could be included, whereas from the SRA instrument only assault, arson, and burglary could be included.

The second step involved adjusting Miller et al.'s (1996) national cost estimates so they would more closely approximate these costs if they were incurred in Allegheny County (in which Pittsburgh is located). These price adjusters were available as ratios of Allegheny County costs to national costs (Joint State Government Commission, 1995), and these ratios were multiplied by the separate cost components, with the exception of quality of life, that made up Miller et al.'s (1996) national victim cost estimates.[6] This produced a cost per criminal victimization in Allegheny County for the seven different crimes. It is important to note that these cost adjustments are based on differences in the cost of living between Allegheny County and the United States, not on any differences among the harmfulness of crimes. The third and final step involved converting cost figures in 1993 dollars to real or inflation-adjusted 2000 dollars, using the U.S. (period average) Consumer Price Index.

Three assumptions were important to our use of Miller et al.'s (1996) crime victim cost estimates. First, juvenile crime is on average as harmful as "average" crime. This is important because the latter is what Miller et al.'s (1996) victim cost estimates were based on. (See below under "Severity of Assaults" for a discussion of the methods used to calculate different cost estimates for assaults committed by older and younger boys.) Second, the severity of crime has not changed much between 1987 and 1990 (the time frame for which the study by Miller et al., 1996 was conducted) and the present day. Third, the "average" crime in Allegheny County is as harmful as the average crime in the United States.

Severity of assaults. For assaults reported in the SRA and SRD instruments, it was important to investigate whether there was a difference in their severity. Two main reasons prompted this. First, the questions on assaults were qualitatively different for the two instruments, with the assault questions for the SRD instrument asking about a more serious event. Second, there is evidence showing that a violent offense committed by a younger offender will result in somewhat less severe injuries to the victim than one committed by an older offender. For example, from the National Crime Victimization Survey (NCVS), violent crimes committed by juveniles under age 12 (based on victim's perception of the age of the offender) resulted in minor injuries in 24.8% of total incidents and severe injuries in 0.8% of total incidents. For violent crimes committed by juveniles between the ages of 18 and 20, minor injuries were reported in 21.5% of total incidents and severe injuries were reported in 3.5% of total incidents (Simon, Mercy, & Perkins, 2001, p. 8, Table 9; percentages were recalculated taking out rape).

An analysis of the implied versus the actual risk of homicide indicates that the severity of assaults reported by the present sample of boys in the PYS is considerably less than average. The risk of death in an assault in the study by Miller et al. (1996) was 0.00203 (20,164 deaths and 9,906,000 assaults). This rate implies a total of about 18 homicides in the sample (8,651 $\times$ 0.00203), but there were only five officially recorded homicides in the sample.

An analysis of assaults from the SRD instrument (ages 10.5-17) compared to NCVS data on injury severity, based on victim's perception of the age of the offender (Simon et al., 2001),

shows that the percentage of severe injuries is slightly higher than average and much higher than that caused by younger offenders in the NCVS. From the SRD instrument, 4.9% of offenders who reported assaults indicated they had the "idea of seriously" hurting compared to 95.1% that had the "idea of hurting." If "seriously" hurting is construed as having committed severe harm, then severity of injuries inflicted by the present sample is slightly higher compared to a somewhat similar age group of 12- to 17-year-olds (4.9% vs. 1.2%-3.0%) and much higher compared to those 12 and under (4.9% vs. 0.8%).

On the basis of these findings, there is some evidence that the severity of injuries inflicted on victims is more than average, but the extent of it is not known. Also on the basis of these findings and the definitions of assault in the two instruments, there is some evidence that assaults committed by younger juvenile offenders result in less severe injuries to victims than assaults committed by older juvenile offenders, but again the extent is not known.

Miller et al. (1996) produced three estimates of the unit cost of assault to victims that are relevant to the present discussion: (a) assault with injury, $24,136; (b) assault with no injury, $1,928; and (c) assault with or without injury, $9,353. (These estimates are in 1993 dollars and do not include a risk-of-death component.) In light of these estimates, and the findings on assault severity, for SRA assaults a lower and upper bound cost estimate was used, with the lower cost being "without injury" and the upper cost being "with or without injury." For SRD assaults the cost estimate with or without injury was used.

Although all violent crime categories carry with them a risk of death, we have not included a monetary value for the risk of death in our aggregate crime cost estimates for two reasons. First, we have actual homicide estimates so that we can include the actual cost of homicide in our estimates.[7] Thus, beginning with Miller et al.'s (1996) estimate of $2,940,000 (in 1993 dollars), we estimate in 2000 dollars the average cost per homicide in Allegheny County as $3,641,856, for a total cost of $18,209,280 for the five officially recorded homicides perpetrated by the sample. Second, we note that the implied risk of death in our sample is lower than the estimated risk of death nationwide as reported in Miller et al. (1996).

Findings and Analysis

Total Number of Crimes

Between the ages of 7 and 17, boys in the youngest sample of the PYS self-reported around 12,500 of the seven types of serious crimes under study (see Table 2). More than two thirds (69.1%) of these crimes were assaults. Larceny was the second most common crime, accounting for one quarter (25.1%) of all self-reported crimes. Only one rape or sexual assault was reported.

Aggregate Costs

The costs of crime committed by 500 male juveniles between the ages of 7 and 17 years were estimated to range from a low of $89 million to a high of $110 million (in 2000 dollars). Like all cost figures presented here, this one is restricted to those costs associated with

Table 2
Self-Reported Crimes by Youngest Sample of the Pittsburgh Youth Study (PYS) Between Ages 7 and 17

Crime Type	Total Number
Arson	101
Burglary	276
Larceny	3,140
Motor Vehicle Theft	253
Assault	8,651
Rape/sexual assault	1
Robbery	92
Total	12,514

Note: Cases are weighted.

Table 3
Costs of Violent Crime by 500 Male Juveniles, Ages 7 to 17, in Urban Areas

Crime	Victim Costs	% Of Total Victim Costs[a]
Assault	$63,369,000 to $84,110,000	71.2% to 76.7%
Homicide	$18,209,000	20.5% to 16.6%
Rape/sexual assault	$107,000	0.1% to 0.1%
Robbery	$779,000	0.9% to 0.7%
Total	$82,464,000 to $103,205,000	92.7% to 94.1%

Notes: Risk of death has been taken out of the individual crime estimates because actual homicides are included. All costs are in 2000 dollars, and all costs, except homicide, are in present value (2.0% discount rate).
a. Of lower and upper bound total (violent plus property) victim costs.

victims of crime, such as damaged property, lost wages from time off work, and pain and suffering. It is not known how much higher the aggregate cost would have been had we been able to estimate the cost of these 500 males to the juvenile justice system. In one study it was found that victim costs—the same types that we have used here—related to a juvenile criminal career were three times greater than juvenile justice costs (Cohen, 1998).

Costs of Violent Crime

Violent juvenile crime accounted for the largest share of the aggregate cost, between 92.7% and 94.1% or around $82 million to $103 million. As illustrated in Table 3, assault accounted for the overwhelming majority of the total cost associated with victims from property and violent crime (71.2% to 76.7%) and an even greater share of victim costs from violent crime (76.8% to 81.5%). At just over $18 million, homicide accounted for the next largest share of the total victim cost. The violent crime of rape or sexual assault accounted for the smallest share of the total victim cost, with robbery, at a cost of $779,000, also accounting for less than 1%.

Table 4
Costs of Property Crime by 500 Male Juveniles, Ages 7 to 17, in Urban Areas

Crime	Victim Costs	% Of Total Victim Costs[a]
Arson	$4,532,000	5.1% to 4.1%
Burglary	$454,000	0.5% to 0.4%
Larceny	$445,000	0.5% to 0.4%
Motor vehicle theft	$1,072,000	1.2% to 1.0%
Total	$6,503,000	7.3% to 5.9%

Note: Risk of death has been taken out of the individual crime estimates because actual homicides are included. All costs are in 2000 dollars, and all costs are in present value (2.0% discount rate).
a. Of lower and upper bound total (violent plus property) victim costs.

Costs of Property Crime

As shown in Table 4, victim costs from property crimes were estimated at $6.5 million or between 5.9% and 7.3% of the total cost to crime victims. Arson was estimated to be the costliest property crime at $4.5 million, accounting for two thirds (69.7%) of victim costs from all property crimes. Arson's share of the total (property and violent) victim cost was between 4.1% and 5.1%. Motor vehicle theft was the next costliest property crime committed by male juveniles in urban areas, followed by burglary and then larceny.

Tangible and Intangible Victim Costs

As noted above, there are different types of victim costs, and in the present study it was possible to assess tangible or direct and intangible or indirect losses. At $71 million to $84 million, intangible losses to crime victims, in the form of pain, suffering, and lost quality of life, made up more than three quarters (79.4% and 76.3%, respectively) of the aggregate cost (see Table 5). But not all crimes exact intangible losses to crime victims. In the case of larceny, only tangible losses could be counted because no estimates of intangible costs exist.

As shown in Table 5, intangible losses were higher than tangible losses for the four violent crimes, whereas the opposite was true for the four property crimes. For example, intangible losses made up 70.0% of victim costs from robbery and only 19.4% of victim costs from burglary. This is not at all surprising, because intangible losses are more likely to be incurred by victims of personal rather than property crimes.

Changes in the Costs of Crime by Age

An assessment of the age-specific costs of crime by a cohort may provide important insights into the timing of introduction of early prevention programs or interventions in the teenage years. Figure 1 shows the mean average total victim costs (for all crimes) per juvenile from ages 7.5 to 17 years. It is necessary, however, to treat the cohort as two distinct age groups: 7.5 to 10 (younger group) and 10.5 to 17 (older group). This was done because different crime types and numbers of crime types were monetized for the two groups in the SRA compared to the SRD (see above). It is important to point out that, for the younger

Table 5
Tangible and Intangible Costs

Crime	Tangible Costs	Intangible Costs	Total
Assault	$7,478,000 to $15,140,000	$55,891,000 to $68,970,000	$63,369,000 to $84,110,000
Homicide	$6,373,000	$11,836,000	$18,209,000
Rape/sexual assault	$7,000	$100,000	$107,000
Robbery	$234,000	$545,000	$779,000
Arson	$2,465,000	$2,067,000	$4,532,000
Burglary	$366,000	$88,000	$454,000
Larceny	$445,000	$0	$445,000
Motor vehicle theft	$995,000	$77,000	$1,072,000
Total	$18,363,000 to $26,025,000	$70,604,000 to $83,683,000	$88,967,000 to $109,708,000

Note: Risk of death has been taken out of the individual crime estimates because actual homicides are included. All costs are in 2000 dollars, and all costs, except homicide, are in present value (2.0% discount rate).

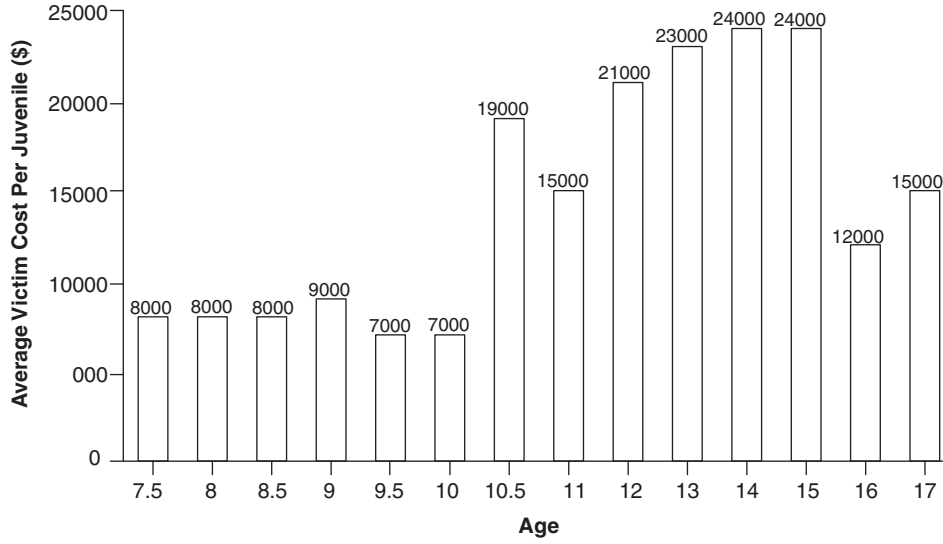
group, this graphic displays the midpoint between the lower and upper bound average victim cost per juvenile. It is also important to note that, for the older group, subjects aged 10.5 and 11 were asked to report on crimes they committed in the last 6 months, whereas subjects aged 12 to 17 were asked about crimes they committed in the last year.

As shown in Figure 1, the average victim costs per juvenile were quite stable through age 10, ranging from a high of $9,000 (age 9) to a low of $7,000 (ages 9.5 and 10). This was not the case for the older group. At ages 10.5 and 11, costs totaled $19,000 and $15,000, respectively—for a total cost of $34,000 over the 1-year period. Subsequently, moving to the annual survey at age 12, costs were reduced to $21,000, increasing slightly through ages 14 and 15 ($24,000 each). However, costs decreased considerably at ages 16 ($12,000) and 17 ($15,000). As we noted earlier, one cannot compare total costs through age 11 to those from ages 12 to 17 because of changes in the survey instrument. However, we could compare the two separate time periods to determine whether there are significant differences within each sample. This was done using panel regression models, where the dependent variable was total costs, and we controlled for each youth and each age. We find a statistically significant increase in costs for the first two time periods for the older group—ages 10.5 and 11. This is because of a significant increase in the number of assaults in the 10.5- and 11-year-old categories. We also find a statistically significant reduction in costs for ages 16 and 17. This drop in costs in the later years was caused by a substantial decrease in the number of assaults. Neither the increase in assaults at ages 10.5 and 11, nor the decrease in assaults at ages 16 and 17, appear to be the result of a few outliers. Instead, they appear to be overall trends in the data.

Costs of Early Versus Late Onset Offending

Past research has shown that early onset offenders have higher rates of serious offending than late onset offenders (Loeber & Farrington, 2001b). It stands to reason that these early starters should impose a greater financial burden on society over time. To investigate whether the costs of juvenile crime to victims are greater for early onset compared to late

Figure 1
Costs of Crime Between Ages 7 and 17 Years



Note: Boys aged 7.5 to 10 (younger group) were administered the SRA questionnaire at 6-month intervals and boys aged 10.5 to 17 (older group) were administered the SRD questionnaire at 12-month intervals (except at ages 10.5 and 11). All costs are in 2000 dollars.

onset offenders, independent sample *t*-tests were used to assess between-group differences for average number of crimes per offender and average victim costs per offender. The early onset group includes subjects under age 13 (ages 10.5, 11, and 12) who committed at least one crime during this period. The late-onset group includes subjects aged 13 or older (ages 14-17) who committed at least one crime during this period only. Analyses were limited to these two age groups because they were both administered the SRD questionnaire.

It was found that subjects who began offending before age 13 had a significantly higher rate of serious offending over their juvenile years than those who began offending at age 13 or later (34.2 compared to 15.6 crimes per offender). As shown in Table 6, this translates into a significant difference in crime victim costs, with early starters causing, on average, $139,000 more than late starters.

Costs of Chronic Offending

Beginning with the Philadelphia Birth Cohort study (Wolfgang, Figlio, & Sellin, 1972), many prospective longitudinal studies of juvenile delinquency and later offending have found that a small number of offenders account for a substantial proportion if not a majority of offenses (Loeber, Farrington, & Waschbush, 1998). In the present research this was no different, with 10.2% (n = 34) of the offending sample accounting for half (50.1%) of all self-reported offenses. Compared to the remaining offenders (n = 298), the chronics reported having committed, on average, nine times as many crimes (see Table 7).

Table 6
Costs of Early Versus Late Onset Offending

	Early Onset Offenders (n = 199)	Late Onset Offenders (n = 83)
Average number of crimes per offender	34.2	15.6
Average victim costs per offender	$224,000	$85,000

Note: All costs are in present value (2.0% discount rate) and in 2000 dollars. Both between-group differences are significant ($p < .000$).

Table 7
Costs of Chronic Offending

	Chronic Offenders (n = 34)	Other Offenders (n = 298)
Average number of crimes per offender	142.0	16.6
Average victim costs per offender	$793,000–$861,000	$101,000–$147,000

Note: All costs are in present value (2.0% discount rate) and in 2000 dollars. Both between-group differences are significant ($p < .000$).

Independent sample *t*-tests to assess the between-group difference for average victim costs per offender reveal that juvenile chronic offenders caused significantly higher average victim costs than the other group of offenders (see Table 7). At $793,000 to $861,000, the average victim costs per chronic offender was more than five to eight times higher than the average victim cost per nonchronic offender.

Discussion and Conclusion

This study found that a typical cohort of 500 boys in an urban area, beginning in childhood through late adolescence, caused a substantial burden of harm to society in the form of victimization costs. Conservatively estimated, this harm ranged from a low of $89 million to a high of $110 million, with more than three quarters of this total resulting from crime victims' pain, suffering, and lost quality of life. Violent juvenile crime accounted for the largest share of the aggregate cost, with the bulk of these costs associated with assault, which is relatively less serious compared to homicide and robbery. It was also found that from an early age the cohort was responsible for substantial crime victim losses (expressed as average victim costs per juvenile), with these losses mounting in the teen years. Early onset offenders, compared to late onset offenders, had a significantly higher rate of serious offending, and this translated into a significant difference in crime victim costs. Also, chronic offenders—those accounting for half of all self-reported offenses—caused five-to-eight-times higher average victim costs than other offenders.

Limitations

There were several limitations in the computation of the cost estimates. First, some crimes could not be monetized. The SRA and SRD instruments asked about the commission of a number of crimes for which cost estimates were not available with Miller et al. (1996). Vandalism was the one crime that was common to both the SRA and SRD instruments that could not be monetized. From the SRD instrument, the crimes that could not be monetized included various types of fraud, selling of stolen goods (fencing), prostitution, and drug selling. From the SRA instrument, various forms of larceny could not be monetized. Five different questions were asked, for example, "In the past six months have you taken something from a store without paying for it?" and "In the past six months have you taken anything at school from a teacher or other kids that did not belong to you?" We could not include larceny from the SRA, for which Miller et al. (1996) produced a cost estimate, because the question or follow-up questions did not specify the amount stolen.

Second, some cost estimates from Miller et al. (1996) could not be used. As indicated above, from the SRD instrument, we were able to produce cost estimates for seven different crimes. With a couple of exceptions (e.g., robbery with or without injury; we used Miller et al.'s [1996] average of these two subsets), we were able to use all the applicable crimes for which there were cost estimates. Those crimes that were not applicable (i.e., PYS boys were too young to commit them and hence were not asked about them) were child abuse and drunk driving.

As noted above, from the SRA instrument, we were able to produce cost estimates for three different crimes. For the reason noted above, we could use Miller et al.'s (1996) cost estimate neither for larceny nor for rape/sexual assault or motor vehicle theft. This was because there were no questions that asked about either crime in the SRA. Child abuse and drunk driving were also not applicable to the SRA instrument.

Third, some cost estimates included attempts and others did not. The unit cost estimate of arson from Miller et al. (1996) was based on completed acts, but the SRA and SRD instruments asked about both completed and attempted acts. More than likely, this had the effect of overestimating the costs of arson. However, because arson accounted for a relatively small share of the total costs to crime victims (4.1% to 5.1%; see Table 4), an overestimation would likely not alter substantially the aggregate costs. The unit cost estimates of assault, robbery, and burglary from Miller et al. (1996) were based on completed and attempted acts, but the SRA and SRD instruments only asked about completed acts. More than likely, this had the effect of underestimating the costs of assault, robbery, and burglary. In the case of assault, which accounted for a very large share of total victim costs (71.2% to 76.7%; see Table 3), an underestimation would likely decrease substantially total costs, whereas for robbery and burglary (only for the question from the SRA instrument), which both accounted for an extremely small share of total victim costs (0.7% to 0.9%; see Table 3, and 0.4% to 0.5%; see Table 4, respectively), an underestimation would likely have very little effect on total victim costs. For all the other crimes, the basis of the unit cost estimates from Miller et al. (1996) matched the questions that were asked.

Although we have already drawn attention to some of the benefits of the use of self-reports over police records in measuring delinquency, self-report data also have some limitations; for example, youths may exaggerate, conceal, or forget their acts.

Finally, we note that the costs estimated here are only those imposed on victims—they ignore the added burden on the taxpayer for the juvenile justice system and at-risk youth prevention programs. They also underestimate costs to the extent that the public at large is afraid of crime, takes costly avoidance behaviors to reduce risk of victimization, and they omit community-level costs (e.g., lack of social cohesion) associated with higher crime rates (see Cohen et al., 2004, for a discussion of how much higher social costs may be once those additional costs are accounted for).

High Crime Costs Do Not Themselves Suggest a Policy Solution

We have identified the high costs associated with juvenile crime in our sample. However, the fact that juvenile offenders impose high costs on victims and society does not necessarily suggest a policy solution. Before settling on a policy recommendation, analysts need to assess both the costs of juvenile crime and the benefits of programs designed to reduce or mitigate its effects. Thus, without further information on the effectiveness of various policy alternatives, one should not use our findings to suggest that we must either "get tougher" on juvenile offenders or focus our attention exclusively on early prevention programs, or do both.

On the prevention side, there are already many direct research-based arguments that support the need for more spending on early prevention, such as results of meta-analyses and systematic reviews, cost-benefit analyses, and public opinion surveys (Cullen, Vose, Lero Jonson, & Unnever, 2007; Farrington & Welsh, 2003, 2007; Lösel & Beelmann, 2003; Welsh, 2003; Welsh & Farrington, 2000). On the punishment side, there is also some evidence that a movement toward harsher punishment in the United States reduced juvenile crime (Levitt, 1998).[8] Yet there is also growing evidence that alternatives to incarceration for some offenders might be more cost-beneficial than more punitive sanctions (see, e.g., Aos, Lieb, Mayfield, Miller, & Pennucci, 2004). Thus, one of the key policy issues to be considered in the face of scarce resources is the appropriate mix of prevention, punishment, and treatment.

This matter deserves an economic perspective. Miller et al. (2001), in discussing the policy implications arising from their findings on the costs of juvenile violence in Pennsylvania, noted that "Determining the appropriate balance among care of victims, perpetrators, and prevention of future victimizations requires exploring both unmet needs and public priorities in the face of scarce resources" (p. 7). By this the authors mean that any response to the high costs of crime needs to be driven by what society is (and is not) doing, how the public views the problem alongside other competing priorities, and what the government can afford relative to current expenditures in other areas. This is by no means an easy task, but it calls attention to the need for a systematic, knowledge-based approach in proposing a response to the high costs of juvenile crime.

In the absence of being able to report on original research that addresses each one of the factors raised by Miller et al. (2001), there is something to be said about the current state of the nation's response to juvenile crime that provides us with a starting point for thinking about implications for public policy arising from the findings reported here. In short, the high costs of juvenile crime need to be placed in context.

For many years, certainly during the follow-up of the cohort in this study and up to the present, the response to juvenile crime in this country has been increasingly punitive

(McCord, Widom, & Crowell, 2001). This has involved juvenile courts delivering harsher dispositions, more juvenile offenders being transferred to adult court, a greater reliance on the use of confinement than treatment (Howell, 1997, 2003), and a growing number of juvenile offenders serving time in secure facilities. According to the Office of Juvenile Justice and Delinquency Prevention's Census of Juveniles in Residential Placement, the placement of juvenile offenders in juvenile correctional facilities grew by 43% between 1991 and 1999, from 76,000 to 109,000 (Sickmund, 2004). This overall increased punitiveness has also led many scholars to assert that the treatment and protection aims of the juvenile justice system have become more a matter of theory than of reality (Feld, 1998; Hagan & Foster, 2001).

At the same time, it cannot be said that this increased punitiveness has taken place amid an effort to strike a greater balance between prevention and repression (Vila, 1997; Welsh, 2005). In fact, just the opposite has occurred. Federal, state, and local resources for early prevention programs have been cut back, in many cases to help pay for the growing costs of these punitive responses (Butterfield, 2003b). Interestingly, at the same time, state and city governments faced with budget crises have been forced to reduce spending on some of the most costly punitive responses to adult and juvenile crime (Butterfield, 2003a, 2003c), some of which have been shown through cost-benefit analyses to be economically inefficient (Fass & Pi, 2002). In 2001, federal, state, and local government expenditures on the criminal justice system reached $167 billion, a 165% increase over 1982 expenditures (in inflation-adjusted dollars; Bauer & Owens, 2004).

Against the backdrop of these two trends—increasing punitiveness toward juvenile crime and declining resources for early prevention programs—some may view the high costs of juvenile crime in urban areas as a reason to allocate more public resources to prevention and intervention services. It may also be the case that one of the unmet needs in society's response to juvenile crime is to spend more on early prevention programs. There is evidence that the public has taken this view as well, because there appears to be growing demand for early prevention programs and little demand for increased use of incarceration (Cohen, Rust, & Steen, 2006).

What is required is a more balanced response. This balance is about improving the juvenile justice response to those that have already come in conflict with the law and expanding the role of early prevention and intervention services for children, teens, and families in greatest need.

The Need for Economic Evaluation Research

If there is indeed an interest in how best to reduce the high costs of juvenile crime, then it is also important to consider what are the most worthwhile or economically efficient measures that can be taken. This calls for economic evaluation research (e.g., cost-benefit analysis, cost-effectiveness analysis), which will aid in decisions on how best to use scarce public resources.

Although the number of cost–benefit analyses of early prevention and youth development programs is somewhat limited at present, one of the consistent findings to emerge from these studies is that these programs need only produce a modest level of crime reduction to fully pay back program costs and produce a dividend for government and crime victims (Aos,

Phipps, Barnoski, & Lieb, 2001; Welsh & Farrington, 2000). This is particularly true for programs that are targeted at high-risk youth as opposed to the general population. This is largely explained by the large number of offenses committed (when a more realistic self-report estimate is used), the high unit cost of criminal offenses, and the relatively low cost per participant of running many of these programs. For example, in the case of the well-known Seattle Social Development Project (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999), which included modified classroom teaching practices, parent training, and child social skills training, Aos et al. (2001) estimated that it produced $4.25 in benefits for every dollar of cost ($18,524 in benefits divided by $4,355 in costs per program participant; in 2000 dollars), and for the program to break even with taxpayers (or government) and crime victims it needed to reduce crime by no more than 6%.[9]

Similar findings were obtained in Cohen's (1998) comparison of his cost estimates of a criminal career to Greenwood, Model, Rydell, and Chiesa's (1996) cost-effectiveness estimates of California's three strikes law and a number of alternative (nonpunitive) interventions to reduce crime. To be cost-beneficial, the following success rates were needed: 2% to 3% for home visit/day care, 3% to 5% for graduation incentives, and about 1 in 1,000 for delinquent supervision (Cohen, 1998, p. 30). Of course, the cost savings from preventing a criminal career are potentially far greater than from preventing a handful of offenses across a number of program participants. Substituting our cost estimates of the burden of harm caused to victims by chronic juvenile offenders (see Table 7) requires decreasing only marginally the success rates of these interventions (by about 1.8 times). This means that these nonpunitive interventions need only produce a modest level of crime reduction to pay back program costs and produce a dividend for society.

One of the first-known studies to investigate the cost-effectiveness of interventions for chronic or high-rate juvenile offenders was carried out by Rydell (1986). Two different strategies were compared: early developmental intervention (e.g., day care enrichment, parent training) and selective incapacitation (longer custodial sentences). On the basis of the finding that the predictability of high-rate offenders is between one third and one-half, Rydell estimated that selective incapacitation could reduce crime by 5% to 7%. He concluded that

> To achieve that same reduction in crime, an early intervention program must reduce offense rates of treated offenders by 37% to 42%. Moreover, this analysis finds that the early intervention program can spend from $28,000 to $32,000 per person (total cost however long the treatment takes) and still cost no more than the selective incapacitation program. (Rydell, 1986, pp. 236, 238)

Another consistent finding to emerge from the literature on cost-benefit analyses of early prevention and youth development programs is that these programs provide important monetary benefits beyond reduced crime (Aos et al., 2004; Welsh & Farrington, 2000). These benefits can take the form of, for example, increased tax revenue from higher earnings, savings from reduced usage of social services, and savings from less health care utilization. In many cases, these noncrime benefits can account for a substantial portion of a prevention program's total benefits. In the case of the well-known Elmira (New York) nurse home visitation program (Olds et al., 1998), an independent cost–benefit analysis by Karoly et al. (1998) found that savings to the criminal justice system accounted for just 20% of total

benefits, whereas reduction in welfare costs (57%), reduction in health care services (less than 1%), and tax revenue from increased employment (23%) made up the other benefits.

More cost–benefit and cost–effectiveness analyses need to be carried out to assess the independent and comparative value of early crime prevention, youth development, and juvenile justice programs. Research on the costs of juvenile crime should also be initiated on many fronts, including developing estimates of the costs that juvenile offending presents to the juvenile and criminal justice systems, testing our findings using other longitudinal surveys of the development of juvenile offending, and investigating the costs of female juvenile crime in urban areas and other settings.

The present study will not settle the debate on what the high costs of juvenile crime mean for public policy in this country. It does, however, offer to contribute to the knowledge base on the monetary costs of juvenile crime, and through its focus on a real-life cohort covering the most crime-prone years offers a new look into how best we should be allocating scarce resources to achieve a safer, more sustainable society in the years to come.

Appendix A
Estimated Average Cost per Criminal Victimization Based on the PYS Self-Reported Delinquency Scale

Question	Crime	Cost per Criminal Victimization in United States (in 1993 Dollars)[a]	Cost per Criminal Victimization in Allegheny County (in 1993 Dollars)[b]	Cost per Criminal Victimization in Allegheny County (in 2000 Dollars)[c]
In the past year, have you physically hurt or threatened to hurt someone to get them to have sex with you? (Q.32)	Rape and sexual assault	$86,464	$86,923	$103,586
In the past year, have you attacked someone with a weapon or with the idea of seriously hurting or killing them? (Q.26)	Assault	$9,353[d]	$9,512	$11,335
In the past year, have you hit someone with the idea of hurting them? (Q.27; does not include events mentioned in Q.26)	Assault	$9,353[d]	$9,512	$11,335
In the past year, have you used a weapon, force, or strong-arm methods to get money from people? (Q.28)	Robbery	$7,991[d]	$8,261	$9,845

(continued)

Appendix A (continued)

Question	Crime	Cost per Criminal Victimization in United States (in 1993 Dollars)[a]	Cost per Criminal Victimization in Allegheny County (in 1993 Dollars)[b]	Cost per Criminal Victimization in Allegheny County (in 2000 Dollars)[c]
In the past year, have you purposely set fire to a house, building, car, or other property, or tried to do so? (Q.10)	Arson	$37,368[e]	$39,502	$47,074
In the past year, have you stolen or tried to steal something worth $5 or less? (Q.13)	Larceny or attempt	$98	$108	$129
In the past year, have you stolen or tried to steal something worth between $5 and $50? (Q.14)	Larceny or attempt	$123	$136	$162
In the past year, have you stolen or tried to steal something worth between $50 and $100? (Q.15)	Larceny or attempt	$170	$188	$224
In the past year, have you stolen or tried to steal something worth $100 or more? (Q.16)	Larceny or attempt	$365	$405	$483
In the past year, have you gone into or tried to go into a building to steal something? (Q.12)	Burglary or attempt	$1,422	$1,547	$1,844
In the past year, have you stolen or tried to steal a motor vehicle such as a car or motorcycle? (Q.22)	MVT or attempt	$3,790	$4,180	$4,981

Note: MVT = motor vehicle theft; Q = question number.

a. These are national estimates from Miller et al. (1996, p. 9, Table 2).

b. National cost estimates in the column to the left were multiplied by price and wage adjusters for Allegheny County, which were taken from Joint State Government Commission (1995, p. 73, Appendix Table 3).

c. Cost estimates in the column to the immediate left were converted to 2000 dollars using the U.S. (period average) Consumer Price Index (Bureau of Labor Statistics, 2001).

d. The cost estimate is based on completed and attempted acts, but the question does not ask about attempts.

e. The cost estimate is only based on completed acts, but the question asks about attempted and completed acts.

Appendix B
Estimated Average Cost per Criminal Victimization Based on the PYS Self-Reported Antisocial (SRA) Behavior Scale

Question	Crime	Cost per Criminal Victimization in United States (in 1993 Dollars)[a]	Cost per Criminal Victimization in Allegheny County (in 1993 Dollars)[b]	Cost per Criminal Victimization in Allegheny County (in 2000 Dollars)[c]
In the past six months, have you hit, slapped, or shoved a teacher or another grown-up at school? (Q.12)	Assault	$1,928 to $9,353[d]	$1,951 to $9,512	$2,325 to $11,335
In the past six months, have you hit, slapped, or shoved other kids, or got into a physical fight with them? (Q.15)	Assault	$1,928 to $9,353[d]	$1,951 to $9,512	$2,325 to $11,335
In the past six months, have you purposely set fire to a building, car, or something else or tried to do so? (Q.22)	Arson	$37,368[e]	$39,502	$47,074
In the past six months, have you gone into a building or somebody's house, yard, or garage and taken something that did not belong to you? (Q.9)	Burglary	$1,422[d]	$1,547	$1,844

Note: Q = question number.
a. These are national estimates from Miller et al. (1996, p. 9, Table 2).
b. National cost estimates in the column to the left were multiplied by price and wage adjusters for Allegheny County, which were taken from Joint State Government Commission (1995, p. 73, Appendix Table 3).
c. Cost estimates in the column to the immediate left were converted to 2000 dollars using the U.S. (period average) Consumer Price Index (Bureau of Labor Statistics, 2001).
d. The cost estimate is based on completed and attempted acts, but the question does not ask about attempts.
e. The cost estimate is based on completed acts, but the question asks about attempted and completed acts.

Notes

1. This "should *not* [italics in original] be interpreted as the value of any one particular life, but instead is society's value of saving a 'statistical' life" (Cohen, 2001, p. 37).

2. Intangible costs are not actual out-of-pocket losses that people pay in dollars. Instead, they are the estimated monetary equivalent of pain, suffering, and lost quality of life.

3. The risk of death cost is based on the value of a statistical life of $3.4 million (in 1997 dollars; Cohen, 1998).

4. This was based on a larger report by the Joint State Government Commission (1995) that was prepared for the state's Task Force to Study the Issues Surrounding Violence as a Public Health Concern.

5. The principal investigator for the main study is Rolf Loeber, with Magda Stouthamer-Loeber and David Farrington as coinvestigators, who were in recent years joined by Helene Raskin White.

6. Each victimization cost was calculated on the basis of seven separate cost components: (1) productivity (e.g., lost wages), (2) medical care (e.g., treatment, emergency transport), (3) mental health care (e.g., services provided by psychiatrists, psychologists, and social workers), (4) police services (i.e., initial response and follow-up investigation), (5) victim and social services (e.g., shelters), (6) property loss and damage, and (7) quality of life (e.g., pain, suffering, and lost quality of life).

7. Other personal crimes, such as robbery and arson, carry a risk of death, but the numbers of other offenses self-reported by the sample were too small to be useful for an analysis of actual versus implied risk of death.

8. Levitt (1998) found that juvenile crime is responsive to harsher sanctions imposed by the criminal justice system.

9. This is based on Aos et al.'s (2001, p. 135) estimate that for the program to break even with taxpayers alone it needed to reduce crime by 27.6%. Program benefits to taxpayers ($3,898 per program participant), which were limited to savings to the criminal justice system, failed to cover the cost of running the program. This resulted in a benefit-to-cost ratio of 0.90. But when taxpayer benefits are added to crime victim benefits ($14,626 per program participant), for a benefit-to-cost ratio of 4.25, the percentage reduction in crime to break even for both parties is reduced by a factor of 4.72 times, from 27.6% to 5.85%.

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