

New Evidence on the Monetary Value of Saving a High Risk Youth*

Mark A. Cohen
Vanderbilt University
and
University of York (U.K.)

Alex R. Piquero
John Jay College of Criminal Justice & City University of New York Graduate Center

December 2007

* The authors gratefully acknowledge funding for this research from YouthBuild USA through a grant from the Skoll Foundation. Mark Cohen also acknowledges support from the Dean's Fund for Summer Research, Owen Graduate School of Management, Vanderbilt University.

Contact Author:

Mark A. Cohen
Vanderbilt Owen Graduate School of Management
Nashville TN 37203 USA
mark.cohen@owen.vanderbilt.edu

ABSTRACT

There is growing interest in crime prevention through early youth interventions; yet, the standard United States response to the crime problem, particularly among juveniles, has been to increase the use and resource allocation allotted toward punishment and incapacitation and away from prevention and treatment. At the same time, longitudinal studies of delinquency and crime have repeatedly documented a strong link between past and future behavior and have identified a small subset of offenders who commit a large share of criminal offenses. These findings suggest that if these offenders can be identified early and correctly and provided with prevention and treatment resources early in the life course, their criminal activity may be curtailed. While researchers have studied these offenders in great detail, little attention has been paid to the costs they exert on society. This paper provides estimates of the cost of crime imposed on society by high risk youth. Our approach follows and builds upon the early framework and basic methodology developed by Cohen (1998), by using new estimates of the costs of individual crimes, ones that are more comprehensive and that significantly increased the monetary cost per crime. We also use new estimates on the underlying offending rate for high risk juvenile offenders.

Key words: costs of crime, criminal careers, crime policy

Introduction

There is growing interest by both the public and policy makers in crime prevention through early youth interventions (Farrington and Welsh, 2007; Farrington et al., 2003). In a recent nationally representative survey, spending more public money on “prevention programs to help keep youth out of trouble” ranked higher than four other options: drug treatment programs for non-violent offenders, more police on the street, more spending on prisons, and even returning money to taxpayers (Cohen et al., 2006). A statewide study of Pennsylvania residents (Nagin et al., 2006) comparing contingent-valuation-based estimates for the public’s willingness-to-pay for two distinctively different responses to serious juvenile crime (incarceration and rehabilitation) showed that the public is at least as willing to pay for rehabilitation as a response to juvenile offenders (and on average will pay more for rehabilitation than for incarceration). Nagin et al. (2006) also found that the public’s willingness-to-pay for an early childhood prevention program (nurse home visitation) was substantial.

At the same time, the US response to the crime problem, particularly among juveniles, has been to increase punishment and incapacitation and to move away from rehabilitation. In fact, resource allocation in the US to youth prevention programs is rather small, especially when compared to the resource allocation to more punitive responses (Greenwood, 2006; Aos et al., 2004). Although the reasons for this are varied and include politician and policy-makers’ (incorrect) assumption that the public is more punitive than not (see Cullen and Gendreau, 2000, and Cohen et al., 2006), there has been a general lack of funding for prevention, and among those programs that do exist, many have to turn juveniles away because they are largely under-resourced.

Support for rehabilitation programs, especially early childhood prevention programs, are a key area of interest among academics and policymakers alike, largely because of the observation in longitudinal studies of crime and delinquency showing the strong relationship between prior and future behavior (Nagin and Paternoster, 1991). Across multiple data sources collected at different time periods and throughout the world, a consistent finding indicates that antisocial and deviant behavior that emerges early in the life course tends to continue into childhood, adolescence, and adulthood, of course in different manifestations (see review in Piquero, Farrington, and Blumstein, 2003).¹ Several of these studies have also shown that a small subset of offenders across all studies are responsible for much of the crime—especially costly property and violent crimes. And while researchers have paid close attention to this small subset of offenders, their attention has been devoted to documenting and understanding the etiology of their offending, as well as the nature and course of their criminal careers. Unfortunately, a concomitant amount of information has not been devoted to identifying the kind of (economic) costs and the toll these chronic/career offenders exert on society.²

In one of the few studies on this topic, Cohen (1998) estimated the present value of external costs imposed by a typical career criminal to be \$1.3 million to \$1.5 million in 1997 dollars. However, the worst offenders were estimated to impose costs as high as \$36 million. Comparable estimates are \$370,000 to \$970,000 for a heavy drug abuser and \$243,000 to \$388,000 for a high school drop out. Combining these three different costs

¹ At the same time, although most adult offenders have a prior history of juvenile offending, not all juvenile offenders become adult offenders.

² While we acknowledge that placing dollar values on crimes is not without controversy – especially the valuation of nonpecuniary losses associated with victimization – benefit-cost analysis is now being conducted routinely by policy analysts. For example, the State of Washington has mandated that benefit-cost analyses be conducted for “criminal justice policies, violence prevention programs, and other efforts to decrease the criminal recidivism of juvenile and adult offenders, and certain at-risk behaviors of youth” (see Aos et al, 2001). Thus, it is important that existing estimates be refined and improved upon over time.

(but eliminating overlap since some drug crimes would otherwise be counted twice) resulted in an estimate of the present value of the monetary value of saving a high risk youth of \$1.7 to \$2.3 million.

More recently, two studies have attempted to estimate lifetime costs of career offenders. DeLisi and Gatling (2003) studied a group of 500 offenders in the US and estimated their lifetime costs to be \$1.14 million in 2002 dollars. They used a combination of self-reported offending behavior and official records as verification. While their study attempted to utilize the same costing methodology as Cohen (1998), it was also based on the number of offenses to date – and thus necessarily understated the cost of an entire criminal career. Using data from the Pittsburgh Youth Study, a longitudinal study of 500 inner-city youth aged 7-17, Welsh et al. (2008) estimated the cost of juvenile offending and found that early-onset offenders (whose first offense occurred before age 13) averaged 34.2 offenses and imposed costs of \$224,000. Chronic offenders (10.2% of the sample of offenders who represent 50.1% of all offenses), imposed between \$793,000 and \$861,000 in 2000 dollars and committed on average 142 offenses through age 17. Neither the DeLisi and Gatling nor the Welsh et al. studies estimated the costs of a lifetime of crime, and both employed rather select samples of individuals only followed for a specific slice of the life course.

The current paper provides new estimates of the cost of a high risk youth using the same framework and basic methodology developed in Cohen (1998). Since that time, new estimates of the costs of individual crimes have been generated – estimates that are more comprehensive and that significantly increased the monetary cost per crime (see Cohen et al., 2004). In addition, new estimates are now available on the underlying

offending rate for high risk juvenile offenders (see Farrington et al., 2003). More importantly, we utilize a longitudinal dataset of a large, urban birth cohort to examine real criminal careers.

In particular, we examine the offending behavior of all 27,186 individuals born in 1958 in Philadelphia (see Tracy et al., 1990; Tracy and Kempf-Leonard, 1996) through 1984 - about age 26.³ The Second Philadelphia Birth Cohort Study data (hereafter, “Philadelphia Cohort”) allow us to estimate the number of crimes for each offender – not simply a generic ‘average’ offender – which provides a better understanding of the pattern of offending behavior and the ultimate costs imposed by those with the worst criminal records. It also expands considerably on the types of crimes we are able to include in our analysis. Whereas Cohen (1998) included murder, rape, robbery, aggravated assault, burglary, larceny and motor vehicle theft, we have been able to add the crimes of simple assault, vandalism, fraud, arson, drunk driving crashes, and other minor status offenses. Finally, another important feature of this paper is that we provide estimates at various ages depending upon the age upon which a youth prevention program is targeted. The estimates in Cohen (1998) were based on a 14 year-old juvenile, and all costs were discounted to present value as of age 14. Instead, we provide estimates of the present value of saving a high risk youth at birth (to account for more recent and generally effective programs such as nurse visitation and early childhood education), age 10 (the date at which most self-reported offending begins), 14 (the date most official juvenile records start), and 18 (the age at which many criminal careers begin to slope

³ Note that the Philadelphia Cohort data actually contain offending information through December 1984 – hence only about half of age 26 offenses are recorded. Later, we adjust for this truncation to estimate all offenses at age 26.

downward; see Piquero et al., 2003; Laub and Sampson, 2003). We also provide year-by-year estimates of the costs imposed by high risk youth throughout their criminal careers.

The remainder of the paper closely follows the outline in Cohen (1998), and the reader is referred to that paper for more details on the underlying theory and approach. In Section 2, we estimate the cost of a criminal career, which is then followed by Section 3 estimating the cost of drug abuse for “heavy drug users” and Section 4 that focuses on education and estimates the cost of dropping out of high school. Section 5 summarizes and aggregates these estimates, and a final section provides some concluding remarks and suggestions for future research.

2. The Cost of Criminal Careers

The external costs imposed by a criminal career were enumerated in Cohen (1998) as:

$$\text{Lifetime Cost} = \sum_{ij} (1 - r)^{j-1} \sum_{ij} [(VC_i + CJ_i + CI * T_i + W * T_i)]$$

where

- \sum_{ij} = mean number of offenses
- VC = victim cost of crime
- CJ = cost of criminal justice investigation, arrest, adjudication
- CI = cost of incarceration (in days)
- T = average time served (in days)
- r = discount rate
- W = opportunity cost of offender's time
- i = crime 1 through crime I
- j = year 1 through year J of crime

Inside the square brackets are four terms: VC_i (average cost to victims for each type of crime); CJ_i (average criminal justice cost per crime); $CI * T_i$ (average cost of incarceration per crime); and $W * T_i$ (opportunity cost of incarceration as measured by a

convicted offender's legitimate wages). Each of these terms is multiplied by λ_{ij} , the number of offenses committed by a career criminal each year.

2.1 The Number of Crimes Committed by Career Criminals,

Cohen (1998: Table 2) estimated that the juvenile offender commits between 1-4 offenses annually from age 14-17, and the adult offender commits 10.6 crime annually for six years. Thus, the total number of crimes was estimated to be about 68 to 80 over the offending career. This estimate was based on the 6% of boys who are “chronic juvenile offenders” that Wolfgang et al. (1972) estimated commit 50% of all offenses.

Table 1 reports on our estimated offense multiples per police reported contact (i.e., estimates of arrest risk per crime by offense). These multiples are estimated from three different studies. The first set cover the juvenile period, ages 11 through 17, and are from the Seattle Social Development Youth Study (Farrington et al., 2003). These data emerge from a prospective longitudinal study of 808 youths, residing in high-crime neighborhoods in Seattle, and include both self-report and court referral information for several crime types. For example, the self-reports contained past twelve-month offending information for burglary, vehicle theft, larceny, robbery, assault, vandalism, marijuana use, and drug selling, and court referrals were collected and counted for the same eight crime types for the same reference period.

The second column of offending multiples (hereinafter “M1”) comes from data originally collected by Blumstein and Cohen (1979) and reported in Blumstein et al. (1986) and Cohen (1986:300-301) on (a) a sample of all adults (18 or older) arrested in Washington, DC, during 1973 for murder, rape, robbery, aggravated assault, burglary, or auto theft (n = 5,338). Their analysis focused on cohort subsamples who turned 18

between 1963 and 1966 and whose first arrest as adults was between ages 18 and 20 (n = 80 to 200 active offenders for individual offense types, as well as (b) a sample of all adults (age 18 and older) arrested in the Detroit SMSA between 1974 and 1977 for murder, rape, robbery, aggravated assault, burglary, or auto theft (n = 18,635) for 1974 to 1977 arrestees in the Detroit SMSA. Their analysis focused on cohort subsamples who turned 18 between 1964 and 1967 and whose first arrest as adults was between ages 18 and 20 (n = 100 to 300 active offenders for individual offense types).

The third column of offending multiples (hereinafter “M2”) comes from Rand Corporation estimates based on surveys of male inmates serving sentences in state prisons in California, Michigan, and Texas (Peterson and Braiker, 1980; Chaiken and Chaiken, 1982). The inmate samples were restricted to offenders whose current offense or prior criminal record are serious enough to have warranted incarceration, with inmates’ self-reported frequency estimates based on their self-reports of counts of crimes they committed in an observation period preceding the current incarceration (Blumstein et al., 1986:56).

* Table 1 about here *

Table 2 reports on the number of offenders and offenses in the Philadelphia Cohort data through 1984, about age 26. Of the 27,160 individuals born in 1958 in Philadelphia, 6,157 (23%) recorded at least one police contact. The average number of police contacts was 3.2 per offender. On average, there are an estimated 41.1 to 47.8 offenses for the average individual with at least one police contact. We show comparable figures for those who have 2 or more police contacts, 3 or more, etc. and also the 5% and 1% of offenders with the most police contacts or offenses. For example, the 95th

percentile offender has 11 contacts and between 156 and 186 offenses, while the 99th percentile offender has 20 police contacts and between 304 and 369 offenses.

* Table 2 about here *

As shown in Table 2, we find in the Philadelphia Cohort data that about 4% of the population (16% of offenders) represent 51% of all police contacts (and between 49% and 51% of total offenses), and use that as the average benchmark for our criminal career. The average number of police contacts for these offenders is 10.5 through age 26. However, these 10.5 police contacts represent an estimated 134.4 to 150.4 actual offenses.

Table 3 displays offending behavior by age. Actual police contacts peak at age 16 with 1.54 offenses per offender. Offending behavior is estimated to peak at age 18, between 20.2 and 22.4 offenses. One of the reasons for the difference when police contacts versus offenses are estimated to peak is that the multiples for adult offenders are considerably higher than for juveniles (see Table 1).

* Table 3 about here *

Table 4 breaks these offenses down by type of crime. The average “high risk” juvenile offender has 5.9 police contacts through age 17, and an estimated 22.9 offenses. The most common offenses are motor vehicle theft (5.2 per juvenile offender), drug violations (3.8), and robbery (2.2). As adults through age 26, these individuals have 4.6 police contacts on average, and an estimated 111.5 to 127.5 total offenses. The three most common adult offenses are theft (34.3 to 48.0), drug violations (16.6 to 27.6), and burglary (12.8 to 17.6).

* Table 4 about here *

2.2 Costs of Individual Crimes

As shown above, Cohen (1998) estimated three components of the cost of individual crimes – victim costs, criminal justice costs (including police, courts, and prisons), and lost productivity of offenders who are incarcerated. The methodology used to estimate crime costs was taken from Miller et al. (1996) – a “bottom up” approach that ignores some very important components of the costs of crime – including the “fear of crime,” expenditures or actions taken by the public to avoid the risk of crime, as well as any residual loss to the community in terms of social cohesion, community development, etc. (see Nagin, 2001). More recently, Cohen et al. (2004) utilized a “top down” approach to estimate the public’s willingness-to-pay (“WTP”) to reduce crime (see also Nagin et al., 2006 and Cohen, 2005 and 2008 for a discussion of these different approaches). While we believe the WTP approach is more appropriate and comprehensive, the “bottom up” approach also provides useful information on some of the components of costs. Thus, while we ultimately adopt the WTP estimates in this paper, throughout the text, we provide estimates using both approaches so that the reader can choose to adopt either method.

The next sections identify these individual costs using a “bottom up” approach, which is then followed by a section that provides alternative estimates using a “top down” approach that is based on the public’s WTP to reduce crime.

2.2.1 Victim costs

Miller et al. (1996) estimate victim costs for various crime categories. However, a few adjustments need to be made in order to estimate the costs required in this study. First, those estimates include a category for “police/fire services,” which need to be

subtracted out from victim costs in order not to double count with criminal justice costs which would include most of that category. For example, the cost of a larceny was listed as \$370 including \$80 in police investigation costs. Thus, net victim costs are \$290, or \$450 in 2007 dollars.⁴

For simple assaults, Miller et al. (1996) included a category of assault with “no injury,” which was valued at \$1,860 in 1993 dollars, and a category titled “NCVS with injury” valued at \$24,000. Unfortunately, the definition of “simple assault” which is how the Philadelphia Cohort data are coded, includes minor injuries. Thus, neither estimate is perfect. According to the most recent NCVS data, 76% of simple assaults result in no injury.⁵ If we assume that simple assaults with “minor injury” are about 25% as serious as the average assault with injury, those simple assaults would cost \$6,000 (\$24,000/4). Based on the ratio of simple assaults with injury versus no injury, this implies an average cost of approximately \$2,900 – or \$4,495 in 2007 dollars. Table 5 displays these updated estimates. In addition, we have added new estimates of the victim costs of vandalism and fraud based on the Philadelphia Cohort data. The average reported property damage due to vandalism was \$370 in 2007 dollars, while the reported loss due to fraud was \$1,100 in 2007 dollars.⁶

⁴To convert 1993 to 2007 dollars, we have taken the ratio of the average hourly wage rate in the U.S. from U.S. Census data, resulting in a multiple of 1.55.

⁵ Criminal Victimization in the United States, 2005, Table 91 – Percent distribution of victimizations, by type of crime and whether or not reported to the police. Available at: <http://www.ojp.usdoj.gov/bjs/pub/pdf/cvus/current/cv0591.pdf>.

⁶ The Philadelphia Cohort data contain 19 frauds committed by juveniles where victim costs were estimated. The estimated average victim cost for those juvenile frauds was \$110; in addition to 74 adult frauds with an average cost of \$515. Updated to 2007 dollars, the weighted average cost was \$1,100. There were also 724 recorded cases of juvenile vandalism with monetary estimates averaging \$74, and an additional 8 adult offenses averaging \$79. Updated to 2007 dollars, these offenses average \$370.

* Table 5 about here *

2.2.2 Criminal Justice-Related Costs Due to Career Criminals

We follow Cohen (1998) by estimating the likelihood that an offender who has been arrested will be convicted, sentenced to probation versus prison, as well as the costs of each stage of the criminal justice process. These estimates come from the same sources as before – primarily BJS.⁷

2.2.3 Opportunity Cost of Career Criminal’s Time While Incarcerated

Using a similar methodology to that in Cohen (1998), we estimate legitimate wage earnings by inmates prior to incarceration to be \$10,400 annually in 1997 (BJS, 2001), or \$14,626 in 2007 dollars. It is not clear why this is significantly higher than the \$7,542 estimated in 1997 dollars in Cohen (1998). However, the earlier estimate was based on 1978 inmate surveys, while the current one is based on 1997 data. It appears that a slightly higher percent of the more recent sample had wage income (64.3% versus 60%).

While this section had been titled “Foregone Earnings of Career Criminals” in Cohen (1998), the term ‘W’ was actually defined as the “opportunity cost of the offender’s time,” and it was noted that “legitimate wages” were used as a measure of the opportunity cost. We have changed the title here to account for the fact that there are other potential costs associated with an offender’s time in prison – including costs borne by his or her family as well physical or mental harm suffered by the offender while in prison.⁸ This is perhaps the least studied area of the cost of crime – and also one that is

⁷ Estimates of time served were taken from BJS (2006a, 2006b, 2007). The average daily cost of prison was estimated to be \$62.01 in 2001 (BJS, 2004), or \$72.65 in 2007 dollars using the consumer price index.

⁸ To be sure, researchers have recently begun to consider both the economic and non-economic costs on a

quite controversial. Should the offender's utility be included in the calculation of the costs of imprisonment? After all, one of the reasons we incarcerate offenders is to deter others from committing crimes – so imposing disutility on offenders might be considered something that is a social good. On the other hand, it is also true that if we were faced with two options that had identical crime reduction benefits and otherwise cost the same amount of money – the one that imposed the least disutility on offenders would be preferred. Cohen (2005) identifies these psychic offender costs as a potential category of the costs of crime but acknowledges that little evidence exists. Perhaps more important is the cost to the family of offenders. On the one hand, growing up with an incarcerated parent might have a negative effect on a child's upbringing. On the other hand, since many offenders are also alcohol or drug abusers it is possible that taking the parent out of the home has a positive effect. Unfortunately, we lack good data on this – and further studies are needed.

Even if one does not consider the welfare of the offender, what about the family of the offender? There is evidence that children of incarcerated parents suffer in many ways – from being placed in foster care (with the resulting costs to society of caring for them) to having bad educational, psychological and delinquency outcomes themselves.⁹ To date, only two studies have shed some light on the potential magnitude of the costs of imprisonment on the offender and his or her family.

Lengyel (2006) attempts to estimate the social costs of imprisoning a drug offender who is the parent of young children in New York state. He estimates the social

community or neighborhood's well-being when an individual is incarcerated.

⁹ Note that there is obvious interest in this topic, as the Home Office in 2004 announced a policy of monitoring children of prisoners and providing them with programs and assistance in the hope of breaking the cycle. See: <http://society.guardian.co.uk/children/story/0,,1284177,00.html>.

costs of imprisonment to be \$776,698 – which includes \$430,906 in “pain and suffering” to the offender, partner and children. While the bulk of the remaining costs are estimated to be the cost of imprisonment and lost wages of the offender, additional costs include \$10,358 for additional child care that must be replaced. As Lengyel acknowledges, however, his pain and suffering estimates are not based on studies of imprisoned offenders; instead, he compares imprisonment to illnesses that confine people to their homes. Moreover, he does not account for the possibility that some offenders’ children and/or partners might be better off with the offender out of the home.

Of course, if one wants to seriously consider the intergenerational transfer of criminality and other social ills, it might be appropriate to also consider the fact that children whose parents are career criminals are likely to be at high risk of becoming criminals themselves – independent of any potential effect of incarceration. Thus, one potential cost of a career criminal might be the intergenerational transfer of crime. While this topic has been studied (Widom, 1989), it has not yet made its way into serious efforts to “cost” a criminal career.

Abrams and Rohlfs (2007) provide the first evidence of the actual WTP of offenders for their freedom. By examining the decision of defendants to post bail, they estimate the subjective value of freedom and find that the average defendant foregoes \$949 in wages for 90 days and has a value of freedom of \$1,050 for the same time period. While one would expect the value of freedom to be significantly higher than foregone wages – as it should include the value of restricted movement, costs to friends and family, etc., Abrams and Rohlfs also note that the offender receives food, medical care and shelter while in prison and this amount is not accounted for either. Thus, at least in this

one sample of defendants, foregone earnings are a reasonable proxy for the value of lost freedom. Given this evidence and the lack of solid data on external costs versus benefits to the families of incarcerated offenders, we have not included any costs other than foregone earnings.

2.2.4 Willingness-to-Pay for Reduced Crime

While conceptually, one could use a “bottom up” approach to piece together all of the costs of crime, in practice, researchers have yet to fully account for all cost components. For example, no estimates have been made of the monetary value of fear of crime as well as the prevention and avoidance behavior by potential victims (for recent attempts to fill some of these gaps in the U.K., see Dolan et al. (2005) and Moore (2006)). While Anderson (1999) has attempted to incorporate these costs at the aggregate level, his methodology does not allow for the costing of individual crimes or of a criminal career. In contrast, the “top down” WTP approach to estimating the costs of crime reduces this concern as individuals are asked to assess their value of reducing crime – regardless of what the cost components are.

The more encompassing estimates of Cohen et al. (2004) do not include all crime categories, and instead focused on murder, rape, armed robbery, aggravated assault, and burglary. The Cohen et al. (2004) estimates are admittedly preliminary and based on one study. Nonetheless, they are based on a nationally representative survey and are in line with other independently generated WTP estimates. In particular, they noted that the estimated cost of a murder (\$11.3 million in 2007) is nearly identical to the upper end estimate of the WTP for reduced death suggested by Viscusi (1998). Further, Ludwig and Cook (2001) used this methodology to estimate the cost of a gunshot injury to be

\$1.2 million in 1998. This is higher than the Cohen et al. (2004) estimate of \$237,000 for an armed robbery, and lower than the cost of a murder – an ordering that is consistent with the anticipated harm from these three crimes. Finally, we note that other economists have begun to adopt these estimates in cost-benefit analysis (Donahue, 2007; Nagin et al., 2006). Thus, it appears reasonable to use the Cohen et al. (2004) estimates and to consider them as more-than-appropriate cost of crime numbers.

One way to expand the list of crimes is to estimate the relationship between the “bottom up” and “top down” approaches and use this multiple to estimate a WTP for crimes not included in Cohen et al. (2004). This approach was used in Cohen (2008) and Donohue (2007). However, one of the unknowns about the Cohen et al. (2004) methodology is exactly what components of crime costs respondents included in their valuation. The survey questions do not provide details on what would likely happen in the event crime is reduced – it only asks respondents to value a 10% reduction in crime. Presumably, this would include the respondent’s valuation of fear, expected costs of victimization, as well as any anticipated reduction in personal expenditures or avoidance behaviors. Donohue (2007) argues that it is unlikely to include the criminal justice system or offender productivity savings associated with reduced crime. Thus, he adds these components to the Cohen et al. (2004) costs to arrive at a total “social cost” of crime. Cohen (2008) does not take that approach, and instead assumes that these estimates are all encompassing. Until we have further contingent valuation studies that probe respondents on these questions, there is no way to know whether to add these categories or not. Luckily, they are an extremely small portion of the total costs once we use the Cohen et al. (2004) estimates. For example, Donohue (2007: Table 5) shows that 91.5%

to 97.9% of his combined costs of crime are accounted for using the Cohen et al. (2004) estimates alone. In this paper, since we are showing these components separately, the reader could choose to include or exclude them.

Table 6 provides updated 2007 dollar estimates of the cost of individual crimes using the bottom up approach from Miller et al. (1996) (victim, criminal justice system and offender productivity costs), and the WTP approach from Cohen (2004). Details of the assumptions and calculations are contained in Appendix A.

* Table 6 about here *

For example, as shown in Table 5, the total victim costs associated with a murder are estimated to be \$4.6 million (including lost productivity, pain, suffering and lost quality of life, etc.). Each murder (after controlling for the likelihood of detecting and punishing the offender) results in an estimated \$300,000 in criminal justice costs and \$140,000 in offender productivity losses. Thus, the total “bottom up” estimate of the cost of murder is \$5.0 million. Alternatively, based on the Cohen et al. (2004) WTP study, the cost of murder is estimated to be \$11.8 million.

2.3 The Present Value of a Lifetime of Crime

Table 7 reports on the present value of total costs imposed by a career criminal through about age 26.¹⁰ Present values have been calculated as of age 8 at a 2% discount rate. The first column reports average costs for offenders who have only one police contact through age 26. The cost of the single police contact offense for those who have only one police contact through age 26 ranges from \$39,620 (based on a bottom up cost method) to \$90,268 (based on WTP). Since not all offenses result in police contacts, the

¹⁰ As noted elsewhere in the text, these data only include about half of the crimes committed by 26 year olds. Later, in Table 9, we estimate crimes past that age.

total costs imposed by those who only have one police contact are estimated to be higher – ranging from \$63,784 to \$241,950 – depending upon which multiple and cost estimation method is used. Note that there are 2,827 individuals with only one police contact. Thus, they represent about 10% of the entire cohort and 46% of all offenders.

The second column of Table 7 reports the average costs imposed by offenders who have had two or more police contacts – representing 12.3% of the Philadelphia cohort population, and 54.1% of the offender population. If we only look at the cost imposed by police contacts (ignoring any multiples), the present value ranges from \$201,527 based on the “bottom up” approach (including victim costs, criminal justice costs and offender productivity), or \$473,039 based on WTP estimates. The next two rows show comparable figures for the bottom up approach, using the estimated multiples. This increases the cost to between \$378,593 and \$532,553. The final two rows use the WTP estimates, resulting in costs ranging between \$1,074,124 and \$1,627,736. As shown in Table 7, the worst offenders impose much higher costs. Those with 15 or more police contacts, for example, impose costs between \$3.6 and \$5.8 million dollars using the WTP approach. These offenders represent 0.6% of the Philadelphia cohort and 2.5% of the offender population. Although not shown in Table 7, the costs are even higher if we look at the 99th percentile of the offender population – with total WTP costs ranging from \$10.3 to \$10.4 million.¹¹

* Table 7 about here *

Cohen (1998) estimated the present value of a career criminal to range from \$1.3 to \$1.5 million in 1997 dollars. This would be equivalent to approximately \$1.8 to \$2.1 million in 2007. In Cohen (1998), the career criminal was estimated to have committed

¹¹ Although these cost estimates are high, they are only relevant for a very small number of offenders.

between 1 and 4 crimes per year for four years as a juvenile, and approximately 10.6 crimes per year over the course of 6 years as an adult offender – between 68 and 80 crimes overall. Cohen (1998) also indicated these individuals represent about 6% of all boys, and account for about 50% of all crimes. This cohort would be equivalent to the fifth column of Table 6 (offenders with 6 or more contacts). On average, they commit between 134.4 and 150.4 crimes through approximately age 26 – about 10.5 of which involve police contact. The present value for these offenders using the “bottom up” approach is estimated to range between \$800,000 and \$1.0 million – about half the amount in Cohen (1998) once converted to 2007 dollars. However, the present value of WTP estimates range from \$2.3 and \$3.5 million – considerably higher.

While it is difficult to compare the Cohen (1998) estimates to those reported here, it appears that the main reason for the significant monetary difference is the large number of aggravated assaults. Cohen (1998) assumed a total of 19.1 to 22.5 aggravated assaults over the criminal career – compared to 4.0 to 7.8 as shown in Table 4. Aggravated assaults are particularly costly – especially since Cohen (1998) included a ‘risk of death’ measure in each underlying crime. In fact, the risk of murder and aggravated assault combined accounted for over 70% of the costs of a criminal career in Cohen (1998). As shown in Table 8, however, these two cost categories only account for 35% to 40% of crime costs in the Philadelphia Cohort sample. Moreover, the additional crime costs that we do include account for only a small portion of total costs.

Table 9 compares the total WTP costs each year for high risk offenders. For offenders who ultimately have six or more police contacts through age 26, the costs imposed in the early ages (through age 10) are relatively low – about \$3,000 at age 10.

Much like aggregate age/crime curves, costs peak at age 18 – estimated to range between \$314,286 and \$552,613. Through age 26, total costs are estimated to range between \$2.9 and \$4.5 million. As noted earlier, however, the Philadelphia Cohort data include all births in 1958 but only include crimes committed through December 1984. Thus, individuals born in mid-1958, for example, will only have turned 26.5 by December 1984, and we miss half of their potential crimes during age 26. Based on the monthly distribution of births in 1958 and monthly distribution of adult crimes in the Philadelphia Cohort data (to account for seasonality), we estimate that about 50.6% of crimes were committed by 26 year-old cohorts during 1985. In fact, as shown in Table 9, while age 25 costs range from \$132,125 to \$255,362, age 26 costs are less than half this amount – between \$55,730 and \$106,844. Thus, we have doubled the actual crime rate for the age 26 cohort. Further, while we do not have any offending data past age 26, we estimated a quadratic regression model with total costs being the dependent variable and age (and age-squared) being the independent variables. The adjusted r-squared on these two regressions ranged from 0.70 to 0.72. These regressions allow for estimation of predicted costs, resulting in additional losses through age 32 for the M1 multiple crime estimate, and age 29 for M2. Using this estimation procedure, total lifetime costs range between \$3.2 and \$5.7 million. While costs from age 26 onward are extrapolated and thus subject to further error, we note that costs based solely on the Philadelphia Cohort data before extrapolation account for 78.7% of total costs using M1 and 91.3% using M2.

* Table 9 about here *

Table 10 reports on the total lifetime costs using various starting dates. For example, while the total lifetime costs are estimated to range from \$3,172,998 to

\$5,699,586, the present value of these costs at the time of birth ranges from \$2,140,893 to \$3,739,904. Since the Philadelphia Cohort data include crimes as early as age 8, we have calculated costs starting from that age. Thus, the present value of estimated lifetime costs starting at age 8 range from \$2,508,398 to \$4,351,252. If we start calculating costs later, the present value generally increases. For example, from age 10 onward there are fewer crimes (because we ignore those committed before age 10), but (as shown in Table 9) these crimes are not as costly as those going forward.

* Table 10 about here *

3. Drug Abuse

The model estimated in Cohen (1998) for the lifetime cost imposed by a drug user is:

$$\text{Lifetime Costs} = \sum_k (1-p)^{k-1} [(1-p)*DC_k + s_k*DT + W*H_k + u_k*M + d_k* \text{PROD} + \sum_k (VC + CJ + CI*T_k + W*T_k) + a_k * (CJ + CI + W*T_k) + v_k * TC]$$

- where
- p = risk premium for drug distributors
 - DC = retail price of drugs to illegal users
 - s = fraction of offenders in drug treatment programs
 - DT = drug treatment costs
 - H = hours of lost productivity while a drug user
 - u = risk of medical emergency
 - M = medical costs associated with drug use
 - d = risk of death from drug overdose or related illness
 - PROD = value of future productivity lost due to drug-related death
= net criminal offenses, "drug-related" crimes (not drug-defined crimes)
 - a = arrest rate for drug-defined crimes (not drug-related crimes)
 - v = risk of third party costs
 - TC = third party costs (e.g., crack babies, abused or neglected children)
 - k = year 1 through K of drug use

Inside the square brackets are eight terms: (1-p)*DC_k (opportunity cost of resources associated with drug distribution); s_k*DT (annual cost of drug treatment per abuser); W*H_k (annual loss in worker productivity due to drug abuse); u_k*M (annual medical

costs due to drug abuse); d_k * PROD (lost productivity due to premature deaths of abusers); k * (VC + CJ + CI*T_k + W*T_k) (annual victim costs and criminal justice related costs per drug abuser who commits crime); a_k * (CJ + CI*T_k + W*T_k) (criminal justice related costs due to drug-defined crimes); and v_k * TC (annual third party costs).¹²

Each of these components has been updated.

3.1 The Number of Heavy Drug Users

In 2006, 20.4 million Americans age 12 or older reportedly used illicit drugs during the past month (SAMHSA, 2007a: 16). This represents 8.3% of the population age 12+, an increase from the 5.5% reported in Cohen (1998). Further, it is estimated based on DSM-IV criteria for substance abuse that 7.8 million (38.2% of users) are in need of treatment (SAMHSA, 2007a: 81). Among the most problematic drug users are 2.4 million who reported having used cocaine in the last month, 700,000 crack users, 730,000 methamphetamine users, and 340,000 heroin users – a total of 3.5 million (ignoring duplication). An alternative estimate by ONDCP (2000: 10) is that there were 3.325 million “hardcore” cocaine users, 977,000 “hardcore” heroin users in 2000, and between 300,000 and 400,000 methamphetamine users – over 4.6 million in total.¹³ Since the SAMHSA estimates are more recent, we use their estimate of 3.5 million heavy drug

¹² Note that the distinction is often made between "drug-defined" crimes such as drug use and dealing, and "drug-related" crimes, such as property theft to support a drug habit, assaults due to the pharmacological effects of drugs, or territorial fights among drug dealers. See for example, Bureau of Justice Statistics (1992: 2).

¹³ According to ONDCP (2000: 6), “The *hardcore user* is identified in the NHSDA as one who used cocaine at least one or two days a week every week during the year before the survey, or one who used heroin on more than 10 days during the month before the survey. In this analysis, hardcore users in the DUF data are defined as those who admitted using cocaine or heroin on more than 10 days during the month before being arrested.”

users as our base for purposes of cost estimates. In Cohen (1998), this base estimate was 2.5 million.

To estimate the “retention rate” among users, using the same methodology in Cohen (1998), we obtained data from National Survey on Drug Use and Health, 2005, on past month usage by age.¹⁴ We calculated the number of past month drug users for cocaine, crack, and heroin from age 19 onward, who reported their original use of that drug occurred prior to age 19. By comparing the fraction of age 20 users who began their drug use prior to age 19, for example, to the fraction of age 19 users who also began their drug use prior to age 19, we can estimate a retention percentage by each age group. For example, 2.80% of age 19 respondents reported having used cocaine, crack or heroin in the past month and having started their drug use prior to age 19. At age 20, this drops to 2.47%. Thus, the “retention” rate is estimated to be 88.2% from age 19 to age 20. This drops to 74.4% at age 21, etc. In the age 35-49 category, only 12.4% remain, and there are none left in the age 50-64 category. Using these data, we estimated a quadratic regression equation by age category to obtain year-by-year retention estimates. To arrive at annual estimates for heavy drug abusers, we start at age 14 and continue through age 41 (the last year in which the regression model predicts positive usage for those who begin prior to age 19). Based on the estimated retention probabilities, this results in approximately 13.5 years of heavy drug use.

3.2 Opportunity cost of resources associated with the manufacture and sale of drugs

According to the most recent study on user spending (ONDCP, 2000: 3), annual spending on illicit drugs declined over the 1990s, and by 2000 was approximately \$63

¹⁴ The survey data are available from ICPSR at:
<http://www.icpsr.umich.edu/cocoon/ICPSR/STUDY/04596.xml>.

billion in 1998 dollars (compared to a high of \$116 billion in 1998). ONDCP (2000: 13) estimated that the median hardcore cocaine users in the US spent \$186 per week, while a hardcore heroin user spent \$209, and methamphetamine users spent \$90 per week. On an annual basis, these figures are \$9,672 for cocaine users, \$10,868 for heroin, and \$4,680 for methamphetamine. Note that these figures are about identical for cocaine users reported in Cohen (1998) based on 1990 expenditures, and actually lower than the estimates at the time for heroin users – which reflects the fact that heroin prices have come down since that time. More recent DEA data suggest that drug prices are no higher in 2007; hence in the absence of better data, we use 2000 prices. Based on the proportion of heavy drug users by type of drug, we thus estimate that the typical “heavy drug user” spends about \$9,500 annually on drug purchases in 2007 dollars.¹⁵ This represents about \$44.5 billion annually.

The estimate of \$9,500 can be combined with the "retention rate" to determine the expected lifetime value of purchases by a typical heavy drug user, approximately \$128,000 or \$110,000 in present value terms as of the time the youth becomes a heavy drug user. Discounting to present value as of birth would reduce this to \$73,000; and \$102,000 as of age 10.¹⁶ This is a significant drop from the estimate of \$336,000 (\$252,000 in present value terms) in Cohen (1998), reflecting a combination of lower prices and shorter career length. Following Cohen (1998), we reduce this figure by 50-75% to account for the opportunity cost of resources devoted to drug distribution, since

¹⁵ This figure is obtained by taking the weighted average of 3.325 million hardcore cocaine users at \$9,672 per year; 977,000 heroin users at \$10,868; and 350,000 methamphetamine users at \$4,680.

¹⁶ Since heavy drug use can start at various ages, and since we are providing estimates based on age 14 and 18 throughout this paper, the present value of drug abuse cost estimates are identical for ages 14 and age 18. When we discount from age 10 or birth, we assume that drug abuse begins at age 14.

the price includes a substantial risk premium. Thus, the lifetime opportunity costs are estimated to be \$32,000 to \$64,000, or \$27,500 to \$55,000 in present value terms as of age 14 or 18. As of birth, the present value would range from \$18,250 to \$36,500; and as of age 10 from \$25,500 to \$51,000.

3.3 Drug rehabilitation expenses

Due to data availability, only federal government spending on drug treatment was included in Cohen (1998). Since then, SAMHSA (2007b: 44) estimated 2003 expenditures from all sources (including state, local, insurance, and private sources) to be \$10.2 billion – including \$2.966 billion at the federal level. Ten years later, ONDCP (2007b) reported that the federal government spent \$2.93 billion on drug treatment in 2007 – about the same as the amount spent in 2003. Thus, for our purposes, we use the 2003 figure of \$10.2 billion as the base for 2007. Using a similar methodology as Cohen (1998), we divide this figure by the number of drug users “in need of treatment” (7.8 million) to arrive at an estimated cost per user of \$1,300 in 2007. Converting this into a lifetime total (based on the retention rates estimates above) yields a cost of \$17,500, or \$15,000 when discounted at a 2% rate at either age 14 or 18, \$14,000 at age 10, and \$10,000 at birth.

3.4 Reduced productivity due to decreased work ability

ONDCP (2004: IV-4) estimated the productivity loss due to drug abusers who are hospitalized or suffer from drug abuse-related illness totaled \$58 billion in 2002. Using the growth in average wages in the US between 2002 and 2007, this would be approximately \$67.4 billion. Of the 20.4 million Americans who reported using drugs in the past month, 17.9 million of them are over age 17 (SAMHSA, 2007a: 19). If we divide

this 17.9 million into the \$67.4 billion productivity loss, this amounts to \$3,750 per drug user. This is conservative as we are unable to separate out the presumably higher cost for heavy drug abusers from the “average” drug abuser who has a positive productivity loss. Over the course of a drug career, this amounts to \$50,000. In present value terms, this is equal to \$29,000 at birth, \$40,000 at age 10, and \$43,500 at age 14 or 18.¹⁷

3.5 Medical Costs Associated with Overdose or Other Drug-Related Illness

ONDCP (2004: IV-3) estimated the cost of hospital and ambulatory care for acute drug-related illness was \$1.454 billion in 2002. Additional costs for special diseases associated with drug use were estimated to be \$19 million for Tuberculosis, \$3.755 billion for HIV/AIDS, and \$312 million for Hepatitis B and C. Health insurance administration costs were estimated to be an additional 7.6% on top of these expenses. Combined, medical care costs are estimated to be \$5.96 billion, or \$7.3 billion inflated to 2007 dollars using the medical care cost component of the CPI. Assuming that 75% of these costs are due to heavy drug abusers, this amounts to \$1,500 per person annually (75% x \$7.3 billion / 3.5 million heavy drug users). Over the estimated 13.5 years of heavy drug abuse, this totals approximately \$20,000. Discounted to present value at birth, this is \$11,500; \$16,000 at age 10; and \$17,500 at ages 14 or 18.

3.6 Premature Death Due to Drug Abuse

ONDCP (2004: Table B-10) estimates there were 20,928 premature deaths in 2000 due to drug abuse (excluding those caused by homicide which would be included elsewhere herein). They report the present value of future productivity loss for the

¹⁷ Note that Cohen (1998) cited previous research suggesting that there was only a small (if not insignificant) demonstrated relationship between drug use and productivity. However, more recent evidence has refined this by showing that there is a significant reduction in productivity among the chronic (as opposed to the casual) drug abuser (see French et al., 2001; Alexandre and French, 2004).

average premature death to be \$1.05 million based on the weighted average age/sex earnings profile. Converting this to a 2% discount rate (used in this paper, as opposed to the 3% used by ONDCP) and updating to 2007 dollars, this would be the equivalent of \$1.56 million in present value terms (or \$2.4 million undiscounted). Based on the estimated 3.5 million heavy drug users, the annual risk of death is 0.6%, for a lifetime risk of about 8%. Cohen (1998) cited another study suggesting a lifetime risk as high as 14%. More recently, Neumark et al. (2000) report on a probability sample of 3,481 adults in Baltimore, following 14 years of drug use between 1981 and 1995. They found adjusted excess mortality rates of for heavy users of 1.7 to 2.0 times that of nonusers. Estimated median age at death for non-users was 83.9 compared to only 76.5 for those heavy users who were never daily users (-8.8%), while it was 57.3 years for those who had been daily users for two or more weeks at any point in their life (-31.7%). In this paper, we have estimated losses ranging from a low of 8% lifetime risk to a high of 14%. Thus, the average cost of premature death for a heavy drug user is estimated to range from \$190,000 to \$330,000. In present value terms, this is equivalent to \$90,000 to \$160,000 at birth, \$100,000 to \$175,000 at age 10, or \$125,000 to \$220,000 at 14 or 18.

3.7 Additional Crime Committed by Drug Users

Miller et al. (2006) estimated the total cost of “drug-attributable” crime to be \$37.5 billion in 1999 – the equivalent of about \$58 billion in 2007 dollars. This estimate is based on the “bottom up” costing methodology of Miller et al. (1996), which had estimated total costs of crime to be \$450 billion in 1993. Updated to 1999 dollars, this would be \$550 billion. Hence, drug-attributable crime accounts for about 6.8% of all crime costs committed in the US. Using the WTP estimates to value these crimes results

in a total of \$211 billion in 2007 dollars. Divided over the estimated 3.5 million heavy drug abusers, the annual cost of crimes attributable to drug abuse would range between \$16,500 and \$60,000 per drug abuser. Over their drug abuse career, these costs total \$220,000 to \$800,000. Discounted to present value from birth, they range from \$125,000 to \$460,000; from age 10, \$175,000 to \$640,000; from age 14 or 18, \$190,000 to \$700,000. Since our final estimates are based on WTP, we use the upper end of these ranges in our summary tables.

3.8 Criminal Justice Costs Associated with Drug Use

The FBI (2007) estimates there were 1,889,000 drug related arrests in the US in 2006. Using the same methodology as Cohen (1998), we assume about 25% of these arrests were heavy drug abusers. Thus, we estimate there would be about 475,000 drug arrests annually among the population of 3.5 million heavy drug abusers – about 13.6% of the heavy drug abuser population annually. Taking into account the cost of arrest, probability of conviction, time served, etc., the estimated criminal justice related costs per arrested drug offender is \$19,500. Thus, the annual costs per heavy drug abuser are estimated to be \$2,650 (13.6% x \$19,500). Over the drug abuse career, this totals \$36,000. At birth, the present value of drug-related criminal justice costs total \$20,000; \$28,000 at age 10; and \$31,000 at ages 14 or 18.

3.9 Third-Party Costs (e.g., Crack Babies, Malnourished, Neglected, or Mistreated Children)

ONDCP (2004: IV-3) estimated the cost of illness for drug-exposed children to be \$605 million in 2002. Increasing this by 7.6% to account for administrative costs and 22.5% for medical care inflation, this is approximately \$740 million in 2007. Dividing

this amount among 3.5 million heavy drug abusers results in an average cost of \$210. However, it would be closer to \$400 per female drug abuser. Over the 13.5 years of a drug career, this amounts to \$2,800, or \$5,500 for female drug abusers. Due to the small number relative to other costs, and the uncertainty of attributing these costs to specific individuals, we have not included them in the summary tables.

3.10 The Present Value of a Heavy Drug Abuser

Table 11 summarizes the lifetime costs imposed by a heavy drug abuser – with total costs estimated to range between \$1.15 and \$1.3 million. Discounted to present value at ages 14 or 18, costs are estimated to range between \$950,000 and \$1.1 million. The largest cost category is crime attributable to drug abuse, which makes up 60-70% of these costs. The second largest category is the lost productivity associated with premature death of drug abusers – about 15-25% of total costs.

* Table 11 about here *

4. Lost Wages and Productivity

As discussed in Cohen (1998), the benefits of a high school education include higher wages and productivity, as well as additional private and public (external) benefits, including enhanced enjoyment of leisure activities, enhanced non-market productivity, improved child development and nurturing activities, improved health status, social cohesion, charitable giving, and a host of other social benefits.

According to US Census Bureau data, the average earnings in 2006 for a high school graduate (including GED) who worked full-time year round was \$37,303, compared to \$28,881 for the average individual with a 9th grade through 12th grade education but no degree. This differential varies by age and is highest during the peak

earning years of age 40-49. Those who graduate from high school are also in the labor force more years. The worklife expectancy for an 18-year old high school educated male is 37.97 years compared to 33.38 years for a high school drop out (Skoog and Ciecka, 2001). For females, the corresponding worklife estimates are 32.62 and 26.64. Thus, on average, a high school drop out will work 30.0 years, compared to 35.3 years for the high school graduate. Over an entire worklife, the average earnings premium for a high school graduate is \$450,000. Discounted at 2% from age 18, this is equivalent to \$280,000; while it is \$250,000 measured at age 14; \$240,000 at age 10 and \$200,000 at birth. Added to these wage losses is the value of employer-paid fringe benefits, estimated to be 25.8% of earnings.¹⁸

Following Cohen (1998), the private returns from a high school education are increased from 25% to 100%. While further studies have confirmed and expanded upon the evidence that there are substantial private and external benefits from education that go beyond wage increases, there are still no definitive estimates of its magnitude. Most recently, Wolfe and Haveman (2002) contend that they are likely to exceed the private wage returns (see also Grossman, 2005).

Table 12 summarizes the lifetime costs of dropping out of high school, which are estimated to range between \$675,000 and \$1.0 million. Discounted to present value as of age 18, the total costs range from \$420,000 to \$630,000. Additional estimates are provided as of birth (\$300,000 to \$450,000), age 10 (\$360,000 to \$540,000) and age 14 (\$390,000 to \$580,000).

¹⁸ Bureau of Labor Statistics, "Employer Costs for Employee Compensation – June 2007," September 20, 2007, <http://www.bls.gov/news.release/ecec.t01.htm>. Total wages, paid leave and supplemental pay was \$22.05 per hour for all workers, while benefits totaled \$5.70 per hour, or 25.8%.

* Table 12 about here *

5. Summary of Monetary Estimates

Table 13 summarizes the estimates presented in this paper. The present value of saving a high-risk youth is estimated to be \$2.6 to \$5.3 million at age 18. These figures have been adjusted to account for the fact that the three categories (crime, drugs, and high school dropout) are not mutually exclusive, as career criminals might also be heavy drug abusers. The costs are actually higher at ages 10 (\$3.2 and \$5.5 million) and 14 (\$3.2 and \$5.8 million) since criminal offending and drug abuse generally begins earlier in those that pursue a lifetime of crime (Loeber and Farrington, 1998; Farrington, 2003). Discounted to birth, the present value of saving a high-risk youth is estimated to range from \$2.6 to \$4.4 million.

* Table 13 about here *

6. Concluding Remarks

This study provides new estimates of the monetary value of saving a high risk youth, updating and expanding on Cohen (1998). In addition to using new estimates of the cost of crime and expanding on the number of crimes included in the analysis, the paper utilizes actual police contact data from the Philadelphia Cohort study which provides a rich set of longitudinal data from which one can compare the costs imposed at various ages and offending rates. Several key findings emerged from our study.

First, the typical “high risk” youth with six or more police contacts over their lifetime (who collectively commit about 50% of all crimes), imposes between \$4.2 and \$7.2 million in costs. Discounted to present value as of age 14, costs total \$3.2 to \$5.8 million. The bulk of these costs (\$2.7 million to \$4.8 million) are imposed by crimes

committed by offenders, while an additional \$390,000 to \$580,000 is estimated to be the value of lost productivity due to dropping out of high school. The cost of a heavy drug abuser is estimated to range between \$840,000 and \$1.1 million, although \$700,000 of that amount is the cost of crime committed by heavy drug abusers (and hence already included in the crime cost estimates).

Second, we also provide estimates of the value of saving a high risk youth at various ages. For example, programs targeting first-time juvenile offenders and attempting to prevent them from a life of crime can utilize estimates based on age 14 - \$3.2 to \$5.8 million. However, other programs target early childhood – from high risk mothers and their newborn children through early childhood education (see Greenwood, 2006). Discounted to present value at birth, the monetary value of saving a high risk youth is estimated to range between \$2.6 and \$4.4 million.

Third, one of the important findings of our research is that while juvenile offending behavior accounts for only a small fraction of total costs, if those juveniles can be prevented from becoming career criminals, the savings may be enormous. For example, the typical career criminal imposes about \$65,000 in costs through age 12 and about \$230,000 through age 14 (see Table 9). However, throughout a lifetime, these costs aggregate to nearly \$5.7 million. Thus, early interventions targeting high risk youth can have high payoffs *if* they are effective.

Fourth, our estimates also highlight the tremendous value that could be gained by targeting certain high risk offenders. For example, we find that the present value of costs imposed by someone who only has one police contact in their lifetime ranges from \$173,000 to \$242,000 (see Table 7). However, an offender with two or more police

contacts imposed \$1.1 to \$1.6 million through age 26. The worst offenders, i.e., those who have 15 or more police contacts, impose costs are estimated to range between \$3.6 and \$5.8 million through age 26.

While the state of the art in costing a criminal career has evolved considerably over the past decade, further research needs exist. At the top of any list would be a more thorough understanding of the intergenerational transfer of crime. To the extent high risk youth ultimately become parents whose children follow their career paths, the monetary estimates in this paper understate the full lifetime costs of crime. Related to this is the continued need for further understanding of the effect (and resultant costs) of punishment on offenders. We do not know much about the extent to which incarceration imposes costs on an offender's family – or in some instances benefits to his/her family. We also know little about the cost to offenders themselves from being incarcerated. This is not only the monetary value from the reduced freedom associated with incarceration, but also the effect that incarceration has on future offending behavior and lifetime earning capacity (Piquero and Blumstein, 2007). More research on these topics would assist policy makers in understanding the trade-offs between various punishment and rehabilitation strategies.¹⁹ Finally, replication of our work with other longitudinal data sources, including an array of offenders, locales, and crime types, is warranted in an effort to provide comparability to our estimates.

¹⁹ Policy implications and suggestions for how these estimates might be used are contained in Cohen (1998) and will not be repeated here.

Table 1 – Offense Multiples

	Juvenile (Farrington et al.)	Adult (Detroit and DC) “M1”	Adult (RAND) “M2”
Murder	(1)	(1)	(1)
Rape	(5.7)	(11.6)	(4.2)
Armed Robbery	2.8	17.8	5.4
Robbery	2.8	17.8	5.4
Aggravated Assaults	5.7	11.6	4.2
Simple Assaults	5.7	11.6	4.2
Burglary	1.6	23.0	16.7
Motor Vehicle Theft	2.95	32.2	9.1
Larceny	5.8	35.7	50.0
Drunk Driving Crash*	(1)	(1)	(1)
Arson	(5.7)	(11.6)	(4.2)
Vandalism	4.1	(11.6)	(4.2)
Fraud	(5.8)	(35.7)	(50)
Other (drunk driving, prostitution, etc.)	(5.8)	30.0	(50)

Notes: Numbers in parentheses are estimated based on similar or the lowest categories. See text for sources.

* Drunk driving cases are considered “other” unless the police report noted a victim – in which case it was considered an actual crash.

Table 2
 Number of Police Contacts and Estimated Number of Offenses
 Philadelphia Cohort – through Age 26*

	Number of Offenders	Number of Contacts	Number of Offenses (M1)	Number of Offenses (M2)	Percent of Population	Percent of Offenders	Percent of Contacts	Percent of Offenses (M1)	Percent of Offenses (M2)
One or more contacts	6157	3.2	41.1	47.8	23%	100%	100%	100%	100%
2+ contacts	3330	5.1	65.5	75.3	12%	54%	86%	86%	85%
3+ contacts	2208	6.7	85.4	97.2	8%	36%	75%	75%	73%
4+ contacts	1612	8.1	103.2	116.7	6%	26%	66%	66%	64%
5+ contacts	1240	9.3	119.0	133.6	5%	20%	59%	59%	56%
6+contacts	966	10.5	134.4	150.4	4%	16%	51%	51%	49%
10+ contacts	425	14.7	184.3	204.6	2%	7%	32%	32%	30%
15+ contacts	155	20.2	233.2	253.3	1%	3%	16%	16%	13%
95%	308	11	156.4	186.1	1%	5%	17%	17%	19%
99%	62	20	304.0	369.0	0.2%	1%	6%	6%	8%

* Age 26 cohort only measured for six months on average. See text.

Table 3
 Number of Police Contacts and Offenses by Age
 Philadelphia Cohort Data
 (Offenders with 6+ Police Contacts)

	Contacts	Offenses (M1)	Offenses (M2)
Through Age 8	0.06	0.1	0.1
Age 9	0.07	0.2	0.2
Age 10	0.07	0.2	0.2
Age 11	0.18	0.6	0.6
Age 12	0.35	1.1	1.1
Age 13	0.52	1.6	1.6
Age 14	0.70	2.4	2.4
Age 15	1.19	4.4	4.4
Age 16	1.54	6.7	6.7
Age 17	1.21	5.5	5.5
Age 18	0.82	20.2	22.4
Age 19	0.68	16.2	18.0
Age 20	0.55	13.3	14.7
Age 21	0.57	13.9	16.3
Age 22	0.58	14.1	17.0
Age 23	0.55	13.2	15.6
Age 24	0.42	10.1	11.8
Age 25	0.31	7.4	8.3
Age 26*	0.13	3.1	3.4
TOTAL	10.50	134.4	150.4

* Age 26 cohort only measured for six months on average. See text.

Table 4
Number of Police Contacts and Offenses by Type of Crime
Philadelphia Cohort Data (age 8 through 26*)
(Offenders with 6+ Police Contacts)

	Juvenile Contacts	Adult Contacts	Combined Contacts	Juvenile Offenses	Adult Offenses (M1)	Adult Offenses (M2)	Combined (M1)	Combined (M2)
Murder	0.03	0.04	0.07	0.03	0.04	0.04	0.07	0.07
Rape	0.1	0.1	0.2	0.4	1.2	0.4	1.6	0.9
Armed Robbery	0.1	0.2	0.3	0.3	3.2	1.0	3.5	1.3
Robbery	0.8	0.6	1.4	2.2	10.8	3.3	12.9	5.4
Aggravated Assault	0.3	0.5	0.9	1.8	6.0	2.2	7.8	4.0
Burglary	1.1	0.8	1.9	1.7	17.6	12.8	19.3	14.5
Theft	1.0	1.0	2.0	5.2	34.3	48.0	39.5	53.3
MV Theft	0.4	0.01	0.4	1.2	0.2	0.07	1.4	1.3
Simple Assault	0.4	0.2	0.6	1.7	2.5	0.9	4.2	2.6
Arson	0.03	0.002	0.03	0.1	0.02	0.009	0.2	0.1
Fraud	0.01	0.04	0.05	0.04	1.6	2.2	1.6	2.3
Prostitution	0.01	0.11	0.12	0.05	3.4	5.7	3.5	5.8
Vandalism	0.4	0.005	0.4	1.1	0.1	0.02	1.1	1.1
Weapons	0.3	0.15	0.4	1.3	4.4	7.4	5.7	8.7
Drugs	0.3	0.6	0.9	3.8	16.6	27.6	20.4	31.4
Gambling	0.004	0.05	0.05	0.014	1.5	2.5	1.5	2.5
Drunk Driving Crash	0	0	0.03	0	0.03	0.03	0.03	0.03
Alcohol Violation	0.2	0.009	0.2	0.5	0.3	0.5	0.8	1.0
Loitering	0.02	0.007	0.03	0.07	0.2	0.4	0.3	0.4
Other	0.4	0.2	0.6	1.3	7.5	12.5	8.8	13.8
Total Crimes	5.9	4.6	10.5	22.9	111.5	127.5	134.4	150.4

* Age 26 cohort only measured for six months on average. See text.

Table 5
Cost of Crime to Victims

	Miller et al. (1996)	Excluding "police/fire" services	Updated to 2007 \$
Murder	\$3,700,000	\$2,938,700	\$4,554,985
Rape	\$109,000	\$86,963	\$134,793
Robbery	\$9,980	\$7,870	\$12,198
Aggravated Assaults	\$30,540	\$23,916	\$37,070
Simple Assaults	\$3,700	\$2,900	\$4,495
Burglary	\$1,640	\$1,270	\$1,968
Motor Vehicle Theft	\$3,700	\$3,560	\$5,518
Larceny	\$370	\$290	\$450
Fraud	---	---	\$1,100
Vandalism	---	---	\$370

Source: Miller et al. (1996), Table 2, updated from 1993 to 2007 dollars. Fraud and Vandalism have been estimated from the Philadelphia Cohort data, updated to 2007.

Table 6
Estimated “Bottom Up” and WTP for Crimes (2007 Dollars)

	Victim Costs	CJ Costs	Offender Productivity	TOTAL	WTP Estimate
Murder	\$4.6 million	\$300,000	\$140,000	\$5.0 million	\$11.8 million
Rape	\$135,000	\$8,300	\$4,500	\$150,000	\$290,000
Armed Robbery	\$29,000	\$14,700	\$8,000	\$50,000	\$280,000
Robbery	\$12,000	\$7,400	\$4,000	\$23,000	\$39,000
Aggravated Assaults	\$37,000	\$13,500	\$6,400	\$55,000	\$85,000
Simple Assaults	\$4,500	\$5,000	\$1,300	\$11,000	\$19,000
Burglary	\$2,000	\$2,300	\$1,000	\$5,000	\$35,000
Motor Vehicle Theft	\$5,500	\$2,900	\$1,000	\$9,000	\$17,000
Larceny	\$450	\$1,700	\$700	\$2,800	\$4,000
Drunk Driving Crash	\$28,000	\$1,700	\$700	\$30,000	\$60,000
Arson	\$57,000	\$1,700	\$700	\$60,000	\$115,000
Vandalism	\$370	\$630	--	\$1,000	\$2,000
Fraud	\$1,100	\$1,700	\$700	\$3,500	\$5,500
Other offenses (prostitution, loitering, false statements, etc.)	---	\$500	--	\$500	\$1,000

Table 7
Present Value of Cost of a Career Criminal by Number of Police Contacts
Philadelphia Cohort (from Age 8 through 26*)
(2007 Dollars)

	1 contact	2+ contacts	3+ contacts	4+ contacts	5+ contacts	6+ contacts	10+ contacts	15+ contacts
PV "Bottom Up" Costs - Contacts Only	\$ 39,620	\$ 201,527	\$ 275,102	\$ 291,731	\$ 345,526	\$ 412,579	\$ 492,951	\$ 480,503
PV WTP – Contacts Only	\$ 90,268	\$ 473,039	\$ 648,385	\$ 688,927	\$ 818,517	\$ 978,193	\$1,176,666	\$1,168,169
PV "Bottom Up" Costs - Offenses (Multiple 2)	\$ 63,784	\$ 378,593	\$ 513,399	\$ 581,682	\$ 680,939	\$ 793,468	\$1,030,926	\$1,179,109
PV "Bottom Up" Costs – Offenses (Multiple 1)	\$ 87,626	\$ 532,553	\$ 717,387	\$ 823,853	\$ 961,362	\$1,108,196	\$1,455,258	\$1,710,457
PV WTP – Offenses (Multiple 2)	\$ 173,140	\$1,074,124	\$ 1,456,357	\$ 1,680,672	\$ 1,980,304	\$2,308,447	\$3,051,238	\$3,649,350
PV WTP - Offenses (Multiple 1)	\$ 241,950	\$ 1,627,736	\$2,204,516	\$ 2,585,596	\$3,048,512	\$3,523,193	\$4,739,861	\$5,815,344

Note: Discount rate 2% calculated from age 8. All figures updated to 2007 dollars.

* Age 26 cohort only measured for six months on average. See text.

Table 8
Willingness-to-Pay Costs by Type of Crime through Age 26*
Philadelphia Cohort Data (Offenders with 6+ police contacts)

	WTP Juvenile Only	WTP Combined (M1)	WTP Combined (M2)	Percent of Total Costs (M1)	Percent of Total Costs (M2)
Murder	\$ 354,244	\$ 855,072	\$ 855,072	19%	29%
Rape	\$ 24,917	\$ 464,961	\$ 247,251	10%	9%
Armed Robbery	\$ 31,594	\$ 990,841	\$ 361,855	22%	12%
Robbery	\$ 30,441	\$ 504,408	\$ 212,045	11%	7%
Aggravated Assault	\$ 28,861	\$ 662,674	\$ 337,756	15%	12%
Burglary	38,043	\$ 675,964	\$ 507,279	15%	17%
Theft	\$ 4,054	\$ 158,071	\$ 213,021	4%	7%
MV Theft	\$ 7,004	\$ 24,114	\$ 21,268	0.5%	0.7%
Simple Assault	\$ 7,769	\$ 79,767	\$ 49,347	2%	2%
Arson	\$ 2,976	\$ 17,488	\$ 15,726	0.4%	0.5%
Fraud	\$ 46	\$ 8,950	\$ 12,451	0.2%	0.4%
Prostitution	\$ 9	\$ 3,501	\$ 5,799	0.1%	0.2%
Vandalism	\$ 406	\$ 1,111	\$ 1,073	0.0%	0.0%
Weapons	\$ 257	\$ 5,746	\$ 8,707	0.1%	0.3%
Drugs	\$ 311	\$ 20,381	\$ 31,416	0.5%	1%
Gambling	\$ 4	\$ 1,505	\$ 2,499	0.0%	0.1%
Drunk Driving Crash	\$ -	\$ 2,050	\$ 2,050	0.0%	0.1%
Alcohol Violation	\$ 184	\$ 822	\$ 1,008	0.0%	0.0%
Loitering	\$ 20	\$ 292	\$ 437	0.0%	0.0%
Other	\$ 395	\$ 8,804	\$ 13,794	0.2%	0.5%
Total Crimes	\$ 531,536	\$ 4,486,520	\$ 2,899,853	100%	100%

Note: All costs are shown in 2007 dollars and are not discounted to present value.

* Age 26 cohort only measured for six months on average. See text.

Table 9
 Year-by-Year Costs Imposed by “High Risk Offenders”
 Philadelphia Cohort Data (Offenders with 6+ police contacts)

	\$ WTP (M1)	\$ WTP (M2)
Through Age 8	\$ 2,482	\$ 2,482
Age 9	\$ 2,741	\$ 2,741
Age 10	\$ 3,010	\$ 3,010
Age 11	\$ 24,316	\$ 24,316
Age 12	\$ 32,669	\$ 32,669
Age 13	\$ 69,199	\$ 69,199
Age 14	\$ 97,397	\$ 97,397
Age 15	\$ 143,448	\$ 143,448
Age 16	\$ 279,371	\$ 279,371
Age 17	\$ 306,732	\$ 306,732
Age 18	\$ 552,613	\$ 314,286
Age 19	\$ 506,358	\$ 273,543
Age 20	\$ 366,024	\$ 191,235
Age 21	\$ 419,557	\$ 216,942
Age 22	\$ 492,415	\$ 296,495
Age 23	\$ 458,017	\$ 250,562
Age 24	\$ 369,075	\$ 205,531
Age 25	\$ 255,362	\$ 132,125
Age 26 (half year)	\$ 106,844	\$ 55,730
Subtotal	\$ 4,487,631	\$ 2,897,813
Estimated Age 26	\$ 106,844	\$ 55,730
Estimated Age 27	\$ 293,162	\$ 113,032
Estimated Age 28	\$ 257,367	\$ 74,771
Estimated Age 29	\$ 215,725	\$ 31,650
Estimated Age 30	\$ 168,237	---
Estimated Age 31	\$ 114,901	---
Estimated Age 32	\$ 55,718	---
Total	\$ 5,699,586	\$ 3,172,998

* Estimated based on half year of data. See text.

Note: All costs are shown in 2007 dollars and are not discounted to present value.
 Numbers may not add due to rounding.

Table 10
 Present Value of Lifetime Costs of a Career Criminal
 Philadelphia Cohort Data (Offenders with 6+ police contacts)

Discounted as of:	WTP (M1)	WTP (M2)
Not Discounted	\$5,699,586	\$3,172,998
Birth	\$3,739,904	\$2,140,893
Age 8	\$4,351,252	\$2,508,398
Age 10	\$4,553,545	\$2,604,359
Age 14	\$4,795,270	\$2,685,409
Age 18	\$4,329,376	\$2,045,595

Note: All costs in reported in 2007 dollars using a 2% discount rate. Present value costs only include future crimes. Thus, for example, the estimate at age 10 excludes crimes committed at ages 9 and earlier.

Table 11
The Lifetime Costs Imposed by a Heavy Drug User
(2007 Dollars)*

	Total Costs	Present Value (Age 14 or 18)	Present Value (Age 10)	Present Value (Birth)
Resources devoted to drug market	\$32,000 - \$64,000	\$27,500 - \$55,000	\$25,500 - \$51,000	\$18,250 - \$36,500
Drug treatment	\$17,500	\$15,000	\$14,000	\$10,000
Reduced Productivity	\$50,000	\$43,500	\$40,000	\$29,000
Medical costs	\$20,000	\$17,500	\$16,000	\$11,500
Premature death	\$190,000 - \$330,000	\$125,000 - \$220,000	\$100,000 - \$175,000	\$90,000 - \$160,000
Drug-defined crime (CJ costs)	\$36,000	\$20,000	\$28,000	\$31,000
Additional crime	\$800,000	\$700,000	\$640,000	\$460,000
Total	\$1,150,000 - \$1,300,000	\$950,000 - \$1,100,000	\$865,000 - \$965,000	\$650,000 - \$740,000

* Note: Numbers may not add due to rounding.

Table 12
 Lifetime Costs of Dropping Out of High School
 (2007 Dollars)*

	Total Costs	Present Value (Age 18)	Present Value (Age 14)	Present Value (Age 10)	Present Value (Birth)
Lost wage productivity	\$450,000	\$280,000	\$250,000	\$240,000	\$200,000
Fringe benefits	\$115,000	\$70,000	\$65,000	\$60,000	\$50,000
Nonmarket losses	\$115,000 - \$450,000	\$70,000 - \$280,000	\$65,000 - \$250,000	\$60,000 - \$240,000	\$50,000 - \$200,000
Total	\$675,000 - \$1.0 million	\$420,000 - \$630,000	\$390,000 - \$580,000	\$360,000 - \$540,000	\$300,000 - \$450,000

* Note: Numbers may not add due to rounding.

Table 13
 Summary of the Monetary Value of Saving a High Risk Youth
 (2007 Dollars)*

	Total Costs	Present Value (Age 18)	Present Value (Age 14)	Present Value (Age 10)	Present Value (Birth)
Career criminal	\$3.2 to \$5.7 million	\$2.0 to \$4.3 million	\$2.7 to \$4.8 million	\$2.6 to \$4.6 million	\$2.1 to \$3.7 million
Heavy drug use	\$1.15 to \$1.3 million	\$840,000 - \$1,100,000	\$840,000 - \$1,100,000	\$865,000 - \$965,000	\$650,000 - \$740,000
Dropping out of High School	\$675,000 – \$1.0 million	\$420,000 - \$630,000	\$390,000 - \$580,000	\$360,000 - \$540,000	\$300,000 - \$450,000
Less duplication	(\$800,000)	(\$700,000)	(\$700,000)	(\$640,000)	(\$460,000)
Total	\$4.2 – \$7.2 million	\$2.6 - \$5.3 million	\$3.2 - \$5.8 million	\$3.2 - \$5.5 million	\$2.6 - \$4.4 million

* Note: Numbers may not add due to rounding.

Appendix A: Derivation of Willingness-to-Pay Crime Costs

Willingness-to-pay (WTP) estimates are taken from Cohen et al. (2004), which provides estimates for five crimes – burglary, armed robbery, serious assaults, rape & sexual assaults, and murder. Burglary, rape & sexual assaults, serious assaults,²⁰ and murder are identical categories to those reported on in the UCR. However, the UCR index crimes also include larceny, motor vehicle theft, robberies, and aggravated assaults. Table A-1 compares the WTP estimates from Cohen et al. (2004) to prior estimates of victim costs and criminal justice costs taken from earlier studies. Assuming that WTP estimates include criminal justice costs, we have first added criminal justice costs to the victim costs from Miller et al. (1996) in order to compare the two approaches. For example, as shown in Table A-1, the victim costs of burglary are estimated to be \$1,612,²¹ while criminal justice costs are \$1,797²² – resulting in total costs of \$3,409. This compares to the WTP of \$29,000 to reduce one burglary. Thus, WTP is 8.5 times estimated victim plus criminal justice costs for burglary.

²⁰ Note that while the official designation is “aggravated assault,” the survey in Cohen et al. (2004) used a slightly different term with the same intended severity – “serious assaults.”

²¹ Subtracting out the cost of “police/fire services” (\$130) from the loss per criminal victimization (\$1400) in Table 2 of Miller et al. (1996), victim costs are estimated to be \$1,270 for burglary. Note that Miller et al. (1996) was in 1993 dollars. An inflation factor of 1.27 was used for 1993-2000 dollars based on the growth in hourly wages for the typical hourly worker in the United States as reported by the Bureau of Labor Statistics. Hence, costs are estimated to be \$1,612. Similar calculations are done for the other crimes.

²² Criminal justice costs have been updated using the methodology in Cohen (1998), using more up-to-date estimates of arrest rates, dispositions, prison costs, and time served. Arrest rates are obtained by comparing NCVS to UCR in 2005. Prison costs are taken from BJS (2004). Court dispositions are taken from BJS (2006b). Time served estimates for felony defendants are based on BJS (2007). Aos et al. (2006) provides an estimate of the number of convictions by type of crime by felony versus misdemeanor status as well as the average time served for misdemeanor offenses. Combining these two sources we can estimate the weighted average time served and costs by type of crime.

Table A-1
Willingness-to-Pay versus Victim & CJS Costs
(2000 Dollars)

	Victim Costs (A)	CJ Costs (B)	Net Costs (A) + (B)	WTP (C)	Ratio (C)/[(A)+(B)]
Burglary	\$1,612	\$1,797	\$3,409	\$29,000	8.5
Armed Robbery	\$23,913	\$11,750	\$32,483	\$232,000	6.5
Serious Assaults	\$30,353	\$10,777	\$41,130	\$70,000	1.7
Rape & Sexual Assaults	\$110,379	\$6,615	\$116,994	\$237,000	2.0
Murder	\$3,729,991	\$243,274	\$3,973,625	\$9,700,000	2.4

Sources: (A) Miller et al. (1996), Table 2; (B) updated using methodology in Cohen (1998), Table 3; (C) Cohen et al. (2004), Table 2. Costs from Miller et al. (1996) and Cohen (1998) have been updated to 2000 dollars for comparison purposes.

To estimate WTP values for crimes not included in the Cohen et al. (2004) study, we first obtained victim costs from Miller et al. (1996), and updated them to 2007 dollars. Next, a multiple had to be chosen. To be conservative, we use 2.0, the low end of multiples from Table A-1. For example, as shown in Table A-2, average larceny victim costs from Miller et al. (1996) were \$370. Subtracting the average \$80 in emergency response costs, the net cost to victims is estimated to be \$290. Updating from 1993 dollars to 2000 dollars (multiple of 1.27) yields an estimate of \$368. Criminal justice costs for larceny are estimated to be \$1,400 in 1997 dollars according to Cohen (1998), or \$1,569 in 2000 dollars based on a multiplier of 1.12. Combined, victim and criminal justice costs are thus estimated to be \$1,937 in 2000 dollars. Multiplying by 2.0 yields an estimated WTP value of \$3,874 for larceny. Figures for larceny, motor vehicle theft, robbery and simple assault are shown in Table A-2. Further research is needed to shed

light on the appropriate multiple. On the one hand, a low multiple might be appropriate since neither of these crimes involve direct victim contact. On the other hand, burglary also involves no victim contact and yet has a high multiple of 16.4. Presumably, victims feel violated and a loss of security from household burglary – something that far exceeds the out-of-pocket losses. Thus, it might be reasonable to assume the same for larceny. In the case of robbery, a good argument might be made for a higher multiple, but it is not clear that it should be as high as armed robbery – where fear is likely to be higher.

We cannot make comparable estimates in the case of fraud or drunk driving crashes, since we do not know the base victimization rate. However, note that the average time served in a fraud case is 20 months, virtually identical to larceny (BJS, 2007). In the case of drunk driving, a study of current jail inmates and state prisoners in 1997 found that the mean sentence was 11 months for jail inmates and 49 months for state prisoners (BJS, 1999). Hence, these costs are not expected to be negligible. In addition, since we do not have estimates of criminal justice costs in the case of arson, fraud or drunk driving offenses, we assume they are equivalent to the cost of larceny – which is the lowest category of criminal justice costs. Like larceny, the arrest rates for fraud and arson are relatively low (e.g., less than 10%).²³ In the case of drunk driving crashes, while we do not have any estimate of the arrest rates, the average time served is likely to be low.

Some of the more minor offense categories were not included in Miller et al. (1996) – including offenses such as drug violations, illegal gambling, prostitution, loitering, and vandalism. While there are a few studies looking at the harm caused by

²³ For example, according to the U.S. Fire Administration, there are an estimated 267,000 arsons annually. (Arson in the United States, U.S. Fire Administration, 2001 <http://www.usfa.dhs.gov/downloads/pdf/tfrs/v1i8-508.pdf>). The FBI UCR reported 16,337 arrests in 2005, an arrest rate of about 6%. Comparing the UCR to NCVS for larceny results in an arrest rate of about 8%.

some of these offenses (especially drug abuse), we do not have adequate information to place dollar values on the social costs imposed by these offenses. Regardless of whether or not these crimes are deemed ‘victimless’ they certainly result in costs – at least to the extent they absorb police and criminal justice resources. At the very least, it appears reasonable to value them at 50% of the cost of vandalism – an offense that generally results in a small dollar loss. These figures are shown in Table A-2.

Table A-2
Estimation of WTP Values for Additional Crimes

	Victim Costs	Criminal Justice Costs	Victim + CJ Costs	Multiplier	WTP Estimate
Larceny	\$450	\$1,664	\$2,112	2.0	\$4,000
MV Theft	\$5,518	\$2,901	\$ 8,419	2.0	\$17,000
Robbery	\$12,198	\$7,350	\$19,548	2.0	\$39,000
Simple assault	\$4,495	\$4,975	\$9,470	2.0	\$19,000
Drunk driving crashes	\$27,838	\$1,664*	\$29,502	2.0	\$60,000
Arson	\$56,575	\$1,664*	\$58,239	2.0	\$115,000
Fraud	\$1,100	\$1,664*	\$2,764	2.0	\$5,500
Vandalism	\$370	\$ 630*	\$1,000	2.0	\$2,000

Victim costs taken from Miller et al. (1996), except fraud and vandalism which are based on the Philadelphia cohort data; Criminal justice costs estimated using Cohen (1998) methodology. See footnote text. Costs are shown in 2007 dollars.

* No estimates of CJ costs; estimates based on least serious offense of larceny. In the case of vandalism, this has been reduced based on estimates of the lower criminal justice costs for misdemeanor offenses taken from Aos (2006).

REFERENCES

- Abrams, David S. and Chris Rohlfs. (2007). Optimal Bail and the Value of Freedom: Evidence from the Philadelphia Bail Experiment. Univ. of Chicago Working Paper, (August). available at <http://ssrn.com/abstract=id=995323>.
- Alexandre, P.K., and M.T. French (2004). Further Evidence on the Labor Market Effects of Addiction: Chronic Drug Use and Employment in Metropolitan Miami. 22 Contemporary Economic Policy 382-93.
- Anderson, David A. (1999). The Aggregate Burden of Crime.' 42 *Journal of Law and Economics* 611-42.
- Aos, Steve, Polly Phipps, Robert Bamoski, and Roxanne Lieb. (2001). The Comparative Costs and Benefits of Programs to Reduce Crime, v 4.0. Washington State Institute for Public Policy, Olympia, WA.
- Aos, Steve, Roxanne Lieb, Jim Mayfield, Mama Miller, and Annie Pennucci. (2004). Benefits and Costs of Prevention and Early Intervention Programs for Youth. Washington State Institute for Public Policy, Olympia, WA.
- Aos, S., M. Millar and E. Drake, 2006: Evidence-based public policy options to reduce future prison construction, criminal justice costs, and crime rates, Washington State Institute for Public Policy, Olympia, WA.
- Blumstein, Alfred and Jacqueline Cohen. (1979). Estimation of Individual Crime Rates from Arrest Records. *Journal of Criminal Law and Criminology* 70:561-585.
- Blumstein, Alfred, Jacqueline Cohen, Jeffrey A. Roth, and Christy A. Visher (Eds.). (1986). *Criminal Careers and "Career Criminals"*, Volume 1. National Academy of Sciences, National Academy Press: Washington, DC.

Bureau of Justice Statistics (2007) State Court Sentencing of Convicted Felons, 2004.

<http://www.ojp.usdoj.gov/bjs/pub/html/scscf04/tables/scs04105tab.htm>.

_____. (2006a). Violent Felons in Large Urban Counties. NCJ 205289 (August).

_____. (2006b) Felony Defendants in Large Urban Counties, 2002. by Thomas H.

Cohen and Brian A. Reaves. NCJ 210818 (February), available at:

<http://www.ojp.usdoj.gov/bjs/pub/pdf/fdluc02.pdf>.

_____. (2004), State Prison Expenditures, 2001. by James J. Stephan. NCJ 202949
(June).

_____. (1999). DWI Offenders under Correctional Supervision. NCJ 172212.

_____. (1992). Drugs, Crime, and the Justice System, NCJ 133652,
Chaiken, Jan and Marcia Chaiken. 1982. Varieties of Criminal Behavior. Rand Report R-
2814-NIJ. Rand Corporation: Santa Monica, CA.

Cohen, Jacqueline. (1986). Appendix B: Research on Criminal Careers: Individual
Frequency Rates and Offense Seriousness. In Alfred Blumstein, Jacqueline Cohen,
Jeffrey A. Roth, and Christy A. Visher (Eds.), Criminal Careers and “Career
Criminals”, Volume 1. National Academy of Sciences, National Academy Press:
Washington, DC.

Cohen, Mark A. (2008). Valuing Crime Control Benefits Using Stated Preference
Approaches. Chapter in book on Cost and Benefits of Crime, Terence Dunworth
(ed.). (Washington, DC: Urban Institute Press). Forthcoming.

_____. (2005). The Costs of Crime and Justice (New York, NY: Routledge).

_____. (1998). The monetary value of saving a high risk youth. Journal of
Quantitative Criminology 14: 5-33.

- Cohen, Mark A., Roland T. Rust, and Sara Steen, (2006). "Prevention, Crime Control or Cash? Public Preferences towards Criminal Justice Spending Priorities." *Justice Quarterly* 23(3): 317-335.
- Cohen, Mark A., Roland T. Rust, Sara Steen, and Simon Tidd. (2004). Willingness-to-Pay for Crime Control Programs. *Criminology* 42(1): 86-106 (February).
- Cullen, Francis T. and Paul Gendreau (2000). "Assessing Correctional Rehabilitation: Policy, Practice, and Prospects." In Julie Horney (ed.), *Criminal Justice 2000: Volume 3-Policies, Processes, and Decisions of the Criminal Justice System*. Washington, DC: U.S. Department of Justice, National Institute of Justice, pp. 109-175.
- DeLisi, Matt and Jewel M. Gatling. (2003). Who pays for a life of crime? An empirical assessment of the assorted victimization costs posed by career criminals. *Criminal Justice Studies: A Critical Journal of Crime, Law and Society* 16: 283-93.
- Dolan, Paul, Graham Loomes, Tessa Peasgood, and Aki Tsuchiya. (2005). Estimating the intangible victim costs of violent crime. *British Journal of Criminology* 45: 958-76.
- Donohue, John J. III. (2007). Assessing the Relative Benefits of Incarceration: The Overall Change Over the Previous Decades and the Benefits on the Margin. Yale Law School and NBER Working Paper (October).
- Farrington, David P. (2003). "Developmental and Life-Course Criminology: Key Theoretical and Empirical Issues—The 2002 Sutherland Award Address". *Criminology* 41(2): 221-255.

- Farrington, David P. and Brandon C. Welsh. (2007). *Saving Children from a Life of Crime*. Boulder, CO: Westview
- Farrington, David P. Darrick Jolliffe, J. David Hawkins, Richard F. Catalano, Karl G. Hill, and Rick Kosterman. (2003). Comparing Delinquency Careers in Court Records and Self-Reports. *Criminology* 31(3): 933-58.
- Federal Bureau of Investigation. (2007), *Crime in the United States, 2006*.
- Federal Trade Commission. (2003), "Identity Theft Survey Report," prepared by Synovate, September 2003, available at:
<http://www.ftc.gov/os/2003/09/synovatereport.pdf>.
- Figlio, Robert M., Paul E. Tracy, and Marvin E. Wolfgang. (1994). *Delinquency in a Birth Cohort II: Philadelphia, 1958-1988* [Computer file]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research.
- French, M.T., M.C. Roebuck, and P.K. Alexandre. (2001). Illicit Drug Use, Employment, and Labor Force Participation. *68 Southern Economic Journal* 349-68.
- Greenwood, Peter. 2006. *Changing Lives: Delinquency Prevention as Crime Control Policy*. Chicago: University of Chicago Press.
- Grossman, Michael. (2005). Education and Nonmarket Outcomes. NBER Working Paper No. 11582 (August).
- Laub, John H. and Robert J. Sampson. (2003). *Shared Beginnings, Divergent Lives: Delinquent Boys to Age 70*. Cambridge, MA: Harvard University Press.
- Lengyel, Thomas E. (2006). *Spreading the Pain: The Social Cost of Incarcerating Parents*. New York: Healing the Divide. Available at:
http://www.alliance1.org/Research/articlearchive/Spreading_Pain_Sept06.pdf.

- Loeber, Rolf and David P. Farrington. (1998). *Serious & Violent Juvenile Offenders: Risk and Protective Factors*. Newbury Park, CA: Sage.
- Ludwig, Jens and Philip J. Cook. (2001). "The Benefits of Reducing Gun Violence: Evidence from Contingent-Valuation Survey Data." *Journal of Risk and Uncertainty*, 22(3): 207-226.
- Miller, Ted R., Mark A. Cohen, and Brian Wiersema. 1996. *Victim Costs and Consequences: A New Look*. Washington, DC: National Institute of Justice..
- Miller, Ted R., David T. Levy, Mark A. Cohen, and Kenya L.C. Cox. (2006). *Costs of Alcohol and Drug-Involved Crime*. *Prevention Science* 7: 333-342.
- Moore, Simon Christopher. (2006). *The value of reducing fear: An analysis using the European Social Survey*. *Applied Economics* 38: 115-7.
- Nagin, Daniel S. (2001). *Measuring Economic Benefits of Developmental Prevention Programs*. In Welsh, Farrington and Sherman, *Costs and Benefits of Preventing Crime*. Boulder, Colorado: Westview Press.
- Nagin, Daniel S. and Raymond Paternoster. 1991. "On the Relationship Between Past and Future Criminality." *Criminology* 29:163-189.
- Nagin, Daniel S., Alex R. Piquero, Elizabeth S. Scott, and Laurence Steinberg. 2006. *Public Preferences for Rehabilitation versus Incarceration of Juvenile Offenders: Evidence from a Contingent Valuation Survey*." *Criminology & Public Policy* 5:627-652.

- Neumark, Yehuda D., Michelle L. Van Etten, and James C. Anthony. (2000). "Drug Dependence" and Death: Survival Analysis of the Baltimore ECA Sample from 1981 to 1995. *Substance Use & Misuse* 35(3): 313-27.
- Office of National Drug Control Policy (2007a). National Drug Control Strategy, <http://www.whitehousedrugpolicy.gov/publications/policy/ndcs07/ndcs07.pdf>.
- _____. (2007b). National Drug Control Budget: FY 2008 Budget Summary, <http://www.whitehousedrugpolicy.gov/publications/policy/08budget/index.html>.
- _____. (2004). The Economic Costs of Drug Abuse in the United States, 1992-2002, http://www.whitehousedrugpolicy.gov/publications/economic_costs/economic_costs.pdf.
- _____. What America's Users Spend on Illegal Drugs, 1988-1999, www.whitehousedrugpolicy.gov/publications/pdf/spending_drugs_1988_1998.pdf
- Peterson, M.A. and H.B. Braiker. 1980. Doing Crime: A Survey of California Prison Inmates. Report R-2200-DOJ. Santa Monica, CA: Rand Corporation.
- Piquero, Alex R. and Alfred Blumstein. (2007). "Does incapacitation reduce crime?" *Journal of Quantitative Criminology* 23(4): 267-286.
- Piquero, Alex R., David P. Farrington, and Alfred Blumstein. (2003). "The criminal career paradigm." In Michael Tonry (Ed.), *Crime and Justice: A Review of Research*, Volume 30. Chicago: University of Chicago Press.
- Skoog and Ciecka. 2001. "A Markov (Increment-Decrement) Model of Labor Force Activity: Extended Tables of Central Tendency, Variation, and Probability Intervals," *Journal of Legal Economics* Spring/Summer 2001.

- Substance Abuse and Mental Health Services Administration (“SAMHSA”). (2007a)
Results from the 2006 National Survey on Drug Use and Health: National
Findings, <http://www.oas.samhsa.gov/nsduh/2k6nsduh/2k6results.pdf>.
- _____. (2007b) National Expenditures for Mental Health Services and Substance
Abuse Treatment, 1993-2003,
- Tracy, Paul, Marvin E. Wolfgang, and Robert M. Figlio. Delinquency Careers in Two
Birth Cohorts. Chicago: University of Chicago Press.
- Tracy, Paul E. and Kimberly Kempf-Leonard. (1996). Continuity and Discontinuity in
Criminal Careers. New York: Plenum.
- Viscusi, W. Kip (1998). Rational Risk Policy. Oxford: Clarendon Press.
- Welsh, Brandon C., Rolf Loeber, Bradley R. Stevens, Magda Stouthamer-Loeber, Mark
A. Cohen, and David P. Farrington. (2008). Costs of Juvenile Crime in Urban
Areas: A Longitudinal Perspective. Youth Violence and Juvenile Justice
(forthcoming).
- Widom, Cathy S. (1989). The Cycle of Violence. Science 244: 160–166.
- Wolfe, Barbara L. and Robert H. Haveman. (2002) “Social and Nonmarket Benefits from
Education in an Advanced Economy,” in Education in the 21st Century: Meeting
the Challenges in a Changing World, edited by Y. Kodzycki. Boston: Federal
Reserve Bank of Boston, 2002. [p. 97-131.
<http://www.bos.frb.org/economic/conf/conf47/conf47g.pdf>
- Wolfgang, Marvin E., Robert M. Figlio, and Thorsten Sellin. (1972). Delinquency in a
Birth Cohort. Chicago: University of Chicago Press.