THE COST OF CRIME: ISSUES FOR CALIFORNIA-SPECIFIC ESTIMATION

INTERIM REPORT

State of California
Department of Corrections and Rehabilitation

Center for Public Policy Research
University of California, Davis

October 2009

Center for Public Policy Research

Rudy Haapanen, Ph.D.
Research Director
Center for Public Policy Research

Gail S. Goodman, Ph.D.
Distinguished Professor and Director
Center for Public Policy Research

Ingrid M. Cordon, Ph.D.
Quantitative Analyst
Center for Public Policy Research

Shay K. O'Brien, M.S.W.
Senior Writer
Center for Public Policy Research

Center for Public Policy Research
1632 Da Vinci Court
Davis, CA 95618
Telephone: (530) 757-8616
Website: http://cppr.ucdavis.edu

Acknowledgements: Anh Thai and Jessica Gould provided valuable assistance in preparing materials for this review.

ABSTRACT

This review focuses on developing cost-of-crime estimates for use in cost-benefit analyses of policies and programs in California. The large volume of literature on the topic of the economics of crime contains few attempts to produce estimates of the cost of individual crimes and little agreement on how to derive such estimates. This interim report focuses on the most relevant issues pertinent to the feasibility of deriving valid and useful estimates for California-based criminal justice cost-benefit analyses. It is intended to serve as the foundation for discussions of how best to proceed with this activity.

Executive Summary

INTRODUCTION

The purpose of this project is to review the literature on the "cost of crime" to determine the nature and feasibility of methods for estimating the costs associated with individual crimes in California. The goal is to develop estimates that can be used in cost-benefit analyses of California policies and programs. For this purpose, these estimates must be crime-specific to permit comparison of programs or policies that focus on different types of crimes (e.g., substance abuse vs. violence). They must also be scalable, so that they can serve to estimate savings both from programs that produce only relatively small changes in the overall number of crimes statewide and from programs that produce large changes. Small changes probably would not be expected to affect the operation or budgets of the criminal justice system, for example, whereas large changes could be expected to at least have the potential to affect these costs.

This interim report focuses on the most relevant studies and methodological descriptions in this area and uses these to frame a discussion of practices, extant recommendations, and issues pertinent to the feasibility of deriving cost-of-crime estimates for use in California-based criminal justice cost-benefit analyses. This report is intended to serve as the foundation for discussions of how best to proceed with this activity.

Synthesis of Findings

Although the thrust of the present report is on recent research, two early studies are important in demonstrating how policy recommendations based on cost-benefit analysis can be affected greatly by the manner in which costs are estimated. One, by Zedlewski (1987) has been argued to show how inflated estimates of the number of crimes committed by offenders on the street coupled with the use of average costs in place of marginal (incremental) costs can seriously inflate the estimated benefit of prison use. Another, by Austin (1986), is seen as an example of how costs based on out-of-pocket expenses may not adequately capture the social benefit of crime reduction in terms of long-term impact on victims, especially for violent crimes.

Since then, economists have attempted to derive estimates of crime costs that go beyond out-of-pocket expenses and more adequately capture the "social harm" caused by crime (Cohen, 1988). These estimates focus on costs to victims that include lifetime estimates of:

- lost wages/productivity;
- medical care;
- mental health care;
- police and fire services;
- victim services;
- property losses;
- pain, suffering, and lost quality of life; and
- risk of death for non-homicide crimes along with estimated value of a "statistical life."

Estimates produced for the National Institute of Justice in 1996 (Miller, Cohen, & Wiersema, 1996) have been widely used in a variety of cost-benefit analyses, although some experts have challenged the validity of estimates of "quality of life" or "pain and suffering" among these costs (Austin, 1999).

Miller et al.'s calculations may be useful for creating California-specific estimates of crime costs, but have certain limitations. They were based on 1993 data, and since then costs may have changed, both overall and relative to one another. Furthermore,

individual components of these costs (e.g., medical costs) could be different in California than in other geographical areas. They also only include crimes with unwilling victims (excluding, for example, drug crimes, consensual sex crimes, gambling, etc.) and on costs attributable to individual victimizations. Excluded are costs related to the general avoidance of crime, such as locks, alarms, or driving rather than walking at night.

Some estimates of crime costs have also attempted to incorporate criminal justice system costs. Attempts to estimate per-crime justice system costs have compared different jurisdictions within states along a number of cost dimensions as a function of the number of serious crimes in those jurisdictions (Aos et al., 2004; Fowles, Byrnes, & Hickert, 2005). Issues here include the difficulty of disaggregating these costs by individual crime type and differentiating between fixed and marginal costs—costs that respond to various incremental changes in crime rates. On the one hand, justice system components are not budgeted on a per-crime basis, and determining these individual costs is difficult. On the other hand, it has not been demonstrated what, if any, costs can be expected to change with the changes in crime brought about by programs or policies. In fact, existing evidence shows an inverse relation between overall criminal justice system costs and the amount of crime over the past decade both in the U.S. (Aos et al., 2008) and in Great Britain (Dubourg, Hamed, & Thorns, 2007). Care must be taken to avoid suggesting that costs will decrease with reductions in crime unless such a causal relation can be demonstrated.

Discussion

It is clear that estimates of costs for individual crimes can and have been made (that is, estimation is feasible), but that there are potential pitfalls associated with current methods of doing so. The question of feasibility, then, may be best thought of as asking what kinds of estimates would best fit various cost-benefit analyses and whether their estimation can be accomplished validly and accurately enough to warrant their use in important policy decisions. It may be advisable to produce different estimates for use in different kinds of analyses and of analyses of programs or policies with different levels of potential impact: Small rehabilitative programs, large-scale programs affecting many inmates, or global policies like parole reform or early discharge.

For estimates of victim cost, major issues include how to update the work done 10 years ago, whether the components of the estimates may have different relative values in California than elsewhere, and how best to incorporate differences in intangible costs (pain and suffering, emotional distress, long-term reductions in quality of life, and so on). It may be prudent to consider alternative estimates of these victim costs appropriate to different cost-benefit analyses. In some cases, it may be appropriate to compare taxpayer costs for programs to estimates that include “harm avoided” to victims (rather than actual costs avoided by taxpayers) using figures that convey something of depth of the impact. In other cases, these intangible cost differences may not aid in understanding the relative value of programs that target different types of crime, because differences in monetized harm may not represent differences in real dollar costs to be avoided.

When incorporating criminal justice system costs, there should be consideration of the nature of the impact of programs or policies on the criminal justice system and on the amount of crime that would have to be reduced before certain kinds of savings are realized. Further, the inclusion of capital, “fixed” costs may not be appropriate in all cases. It might be possible to consider capital costs separately so that they can be brought into analyses when appropriate, an

approach taken by UCLA researchers in their evaluation of the Substance Abuse and Crime Prevention Act–Proposition 36 (Hawkins et al., 2007; Urada et al., 2008).

During the next few months, therefore, the team will initiate discussions with CDCR Research Office staff and with experts in the field to, first, gain a better understanding of the potential uses for cost estimates of specific crimes and, second, to develop methods for tailoring earlier work to the California context. The goal will be to determine what kinds of estimates to develop and the methods to derive those estimates. In addition, these discussions will include a consideration of the types of outcomes to which these cost estimates will be applied and the sources of data on these outcomes.

The final product of these discussions and methodological studies will be a matrix of potential outcomes for CDCR policies and programs and the types of cost data that can be applied to them. The feasibility of obtaining valid, accurate, and reliable estimates of these costs will then be evaluated and methods for deriving those cost estimates will be determined. In addition, an estimate of the scope of the effort to develop the cost estimates and the resources required to do so will be developed to guide decisions about future investment in this approach.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

The purpose of this project is to review the literature on the "cost of crime" to determine the nature and feasibility of methods for estimating the costs associated with individual crimes in California. These estimates can then be used in cost-benefit analyses of policies and programs in California. As such, these estimates must be crime-specific to permit comparison of programs or policies that focus on different types of crimes (e.g., substance abuse vs. violence). They must also be scalable, so that they can serve to estimate savings both from programs that produce only relatively small changes in the overall number of crimes statewide and from programs that produce large changes. Small changes probably would not be expected to affect the operation or budgets of the criminal justice system, for example, while large changes could be expected to at least have the potential to affect these costs.

There is a large volume of literature on the topic of the economics of crime (see, for example, http://www.costsofcrime.org/AnnotatedBibliography). However, there have been few attempts to produce estimates of the cost of individual crimes. There is general agreement within the literature that estimating costs of individual crimes for use in a cost-benefit analysis for policy-making and program evaluation would be valuable (Cohen 2005; Key 2005; McDougall, Cohen, Swaray, & Perry, 2008; Swaray, Bowles, & Pradiptyo, 2005; Welsh 2004), but less agreement on how to derive such estimates and what should be included in them. Moreover, there has been almost no consideration of which crime-related costs might be expected to shift per unit change in individual crimes as a result of small increases or decreases in these crimes. Despite the large volume of literature, recent reviews of studies conducted between 1980 and 2001 (McDougall et al., 2008) found only 9 studies that included data on costs and benefits of sentencing options and 11 cost-effectiveness studies (in which only costs are monetized).

Similarly, in an earlier review, Welsh and Farrington (2000) found only 7 studies of criminal justice interventions that included information on monetary costs and benefits.

The bulk of the literature can be divided into two general groups. One group comprises descriptions and critiques of the few attempts at estimation, collectively suggesting that it is difficult to do successfully and potentially misleading if wrong. We will selectively review this group, identifying those issues that have particular relevance for the goal of deriving California-specific estimates. The other group accepts the existing methods and estimates somewhat uncritically, incorporating one or the other into various analyses of programs or policies. Literature in this group will be reviewed if it contributes estimation tools or points to the strengths or limitations of various approaches to the task.

Rather than provide a lengthy list of studies of varying relevance, this interim report will focus on the most relevant studies and methodological descriptions in this area and use these to frame a discussion of practices, extant recommendations, and issues pertinent to the feasibility of deriving cost-of-crime estimates for use in California-based criminal justice cost-benefit analyses. This report is intended to serve as the foundation for discussions of how best to proceed with this activity.

Early Estimates Used in Policy Discussions

The interest in determining the cost of individual crimes is not new, but it gained momentum in the 1980's with the publication of a report by Zedlewski (1987) in which estimates of "average costs per crime" were combined with estimates of average numbers of crimes committed by offenders sentenced to prison to arrive at an estimate of the cost of crimes per year on the street for active offenders. The resulting sum was argued to justify an expansion of prison use

as an incapacitation strategy. Critics of this study pointed out, among other things, that the use of these averages grossly overestimated that cost of crimes committed by non-imprisoned offenders (Meyer & Hopkins, 1991). The estimate of the average number of crimes was based on the Rand Inmate Surveys, conducted in the early 1980s in three states (Chaiken & Chaiken, 1982). The distribution of self-reported crimes was highly skewed, with drug sales and petty crimes dominating the crimes of the most active offenders. The average was therefore driven upwards. Although the average number of self-reported crimes ranged from 187 to 278 per year, the median number was only 15. Zedlewski derived his figure for the average cost of a crime by obtaining national estimates of crime avoidance, control, and justice system response expenditures. This large figure ($99.8 billion) was divided by the number of crimes committed in 1981 (42.5 million, as estimated from victimization surveys) to arrive at a per crime cost of $2,300. This number was treated in his analysis as if total costs could change by $2,300 as the number rises or falls by one unit. Critics agreed that not only were the estimates themselves questionable, the use of these averages as if they were "marginal" figures was wrong (Meyer & Hopkins, 1991; Piehl & DiIulio, 1995). Marginal (or incremental) figures are those that refer to expected changes in one dimension associated with each unit change in another dimension (for example, adding one more inmate to a particular prison), whereas average costs refer to total costs divided by the number of units (for example, the total cost of building and operating a prison for a year divided by the average daily population of inmates at that prison). Because they are calculated quite differently and respond to different influences, these types of costs cannot serve as accurate substitutes for one another (Meyer & Hopkins, 1991).

At about the same time, James Austin published a study of an Illinois early release program, in which he calculated costs related to crimes committed by those released early and compared it to the prison costs avoided by the early release (Austin, 1986). He used the National Institute of Justice's estimates for per-crime costs, which included only relatively short-term, out-of-pocket

expenses to victims as reported in national victimization surveys. Austin argued that these costs were overshadowed by the avoided prison costs. In contrast to Zedlewski's $2,300 per average crime, Austin's figures were much lower. A rape, for example, was valued at only $350, which was the average out-of-pocket expense reported by rape victims at the time.

These two studies demonstrate how policy recommendations based on cost-benefit analysis can be affected greatly by the manner in which costs are estimated. In Zedlewski's study, inflated estimates of the number of crimes committed by offenders on the street coupled with the use of average costs in place of marginal costs seriously inflated the estimated benefit of prison use. Austin's study, in contrast, demonstrated that costs based on out-of-pocket expenses may not adequately capture the social benefit of crime reduction in terms of long-term impact on victims, especially for violent crimes.

Victim Costs as Long-Term Costs and "Social Harm"

In response to Austin's report, Mark Cohen, an economist, attempted to derive estimates of crime costs that more adequately captured the "social harm" caused by crime that is not measured well by out-of-pocket expenses (Cohen, 1988). He published a re-analysis of Austin's data incorporating figures from jury awards for pain and suffering as part of the costs of crime and came to the opposite conclusion. When evaluated in terms of the harm done to victims and society, even a small number of serious crimes can be quite costly and may justify even expensive options such as prison. He pointed out, however, that there may be many other, even more efficient ways of achieving the same outcomes and that the essence of cost-benefit analysis is to compare alternative methods of achieving desired ends. He asserted that in the area of crime control, these comparisons must be made in terms of a monetized value of social harm.

Since that time, Cohen has extended his work considerably and, with his colleagues, produced the first set of crime-specific cost estimates for the National Institute of Justice (Miller, Cohen & Wiersema, 1996). As Cohen (2005) described, these estimates focused on costs to victims, but went beyond out-of-pocket expenses to include lifetime estimates of:

- lost wages/productivity;
- medical care;
- mental health care;
- police and fire services;
- victim services;
- property losses; and
- pain, suffering, and lost quality of life.

Additional analyses incorporated estimates for risk of death for non-homicide crimes and included an estimated value of a "statistical life" in these costs proportional to the risk of death for each crime. The value of a statistical life was based primarily on wage differentials for riskier jobs, with the implied value taking into account lost productivity and wages as well as lost quality of life (Cohen, 2005). The Miller et al. (1996) figures are reproduced in Table 1:

Table 1
Cost Estimates for Individual Crimes from Miller et al. (1996)

	Produc-tivity	Medical Care/Am-bulance	Mental Health Care	Police/ Fire Services	Social/ Victim Services	Property Loss/ Damage	Subtotal: Tangible Losses	Quality of Life	Total
Fatal Crime									
Rape, Assault, etc.	$1,000,000	$16,300	$4,800	$1,300	$0	$120	$1,030,000	$1,910,000	$2,940,000
Arson Deaths	724,000	17,600	4,800	1,900	0	21,600	770,000	1,970,000	2,740,000
DWI	1,150,000	18,300	4,800	740	0	9,700	1,180,000	1,995,000	3,180,000
Child Abuse	**2,200**	**430**	**2,500**	**29**	**1,800**	**10**	**7,931**	**52,371**	**60,000**
Sexual Abuse (incl. rape)	2,100	490	5,800	56	1,100	0	9,500	89,800	99,000
Physical Abuse	3,400	790	2,700	20	2,100	26	9,000	57,500	67,000
Emotional Abuse	900	0	2,700	20	2,100	0	5,700	21,100	27,000
Rape & Sexual Assault (excluding Child Abuse)	**2,200**	**500**	**2,200**	**37**	**27**	**100**	**5,100**	**81,400**	**87,000**
Other Assault or Attempt	**950**	**425**	**76**	**60**	**16**	**26**	**1,550**	**7,800**	**9,400**
NCVS with Injury	3,100	1,470	97	84	46	39	4,800	19,300	24,000
Age 0–11 with Injury	2,800	1,470	100	84	46	39	4,600	28,100	33,000
Non-NCVS Domestic	760	310	81	0	0	39	1,200	10,000	11,000
No Injury	70	0	65	69	9	15	200	1,700	2,000
Robbery or Attempt	**950**	**370**	**66**	**130**	**25**	**750**	**2,300**	**5,700**	**8,000**
With Injury	2,500	1,000	65	160	44	1,400	5,200	13,800	19,000
No Injury	75	0	66	110	15	400	700	1,300	2,000
Drunk Driving	**2,800**	**1,400**	**82**	**40**	**?**	**1,600**	**6,000**	**11,900**	**18,000**
With Injury	12,100	6,400	82	120	?	3,600	22,300	48,400	71,000
No Injury	170	0	82	17	0	1,000	1,300	1,400	2,700
Arson	**1,750**	**1,100**	**18**	**1,000**	**?**	**15,500**	**19,500**	**18,000**	**37,500**
With Injury	15,400	10,000	24	1,000	?	22,400	49,000	153,000	202,000
No Injury	8	0	18	1,000	0	14,600	16,000	500	16,000
Larceny or Attempt	**8**	**0**	**6**	**80**	**1**	**270**	**370**	**0**	**370**
Burglary or Attempt	**12**	**0**	**5**	**130**	**5**	**970**	**1,100**	**300**	**1,400**
Motor Vehicle Theft or Attempt	**45**	**0**	**5**	**140**	**0**	**3,300**	**3,500**	**300**	**3,700**
* Child Neglect	25	3	910	2	840	0	1,800	7,900	9,700

Note: These estimates are in 1993 dollars. Totals may not sum due to rounding.
Source: Miller, Cohen, & Wiersema, 1996. "Table 2: Losses per Criminal Victimization (including attempts)" as reported in Key (2005).

These concepts and the logic underlying these estimates have not been disputed for the most part and have been included in a number of subsequent estimates (Aos et al., 2004a, 2007; Fowles, Byrnes, & Hickert, 2005; Welsh, Loeber, Stevens, Stouthamer-Loeber, Cohen, & Farrington, 2008). However, some experts have challenged the utility of estimates of "quality of life" or "pain and suffering" among these costs (Austin, 1999). Austin points out that the quality of life loss estimates were based on jury awards for pain and suffering in civil cases. However, these civil cases, by definition, involved unusual situations and atypical victims. There is no basis for believing that these dollar figures would be placed on typical losses of the same type or that they are generalizable to criminal victimizations. In the context of tort litigation, these awards are not tied to any true cost in actual dollars expended but, rather, serve as a monetary

symbol of the seriousness of the consequences to the victim. Although they may help to clarify the relative extent of suffering and reduced quality of life, the dollar figures themselves have little basis in economic reality. In this view, to array these figures on the "benefit" side of a cost-benefit equation against real dollar expenditures for programs or policies on the "cost" side is to return to the problem that prompted the move toward cost-benefit analysis in the first place. What does it mean, for example, to value a rape at 62.1 burglaries (the ratio of the "costs")? Other economists have also noted that there is no direct way of estimating these intangible losses to victims, but generally view the issue as resolvable through refinement of the methods for obtaining these estimates (Dolan, Loomes, Peasgood, & Tsuchiya, 2005; Roman & Farrell, 2002).

For the purpose of creating California estimates of the cost of individual crimes, several notions regarding the Miller et al. estimates must be kept in mind. First, the estimates themselves were based on 1993 data; since then, costs may have changed, both overall and relative to one another. As Cohen (2005) points out, all of the types of costs change at differing rates over the years. Medical costs can increase faster than the value of property, for example. By extension, it may also be the case that the individual components of these costs (e.g., medical costs) could differ by geographical area, suggesting that California-specific adjustments should be made.

Second, the cost estimates are for costs to victims, and therefore only include crimes in which victimization of "unwilling" victims occurs. Excluded are costs related to drug use or possession, consensual sex crimes (prostitution or soliciting), con games, or gambling. These crimes clearly have social costs to society and clearly drain resources that could be devoted to alleviating other social problems, such as pollution or poverty. However, there is no consensus on how to estimate either the number of these crimes (e.g., If a person is in continual possession of controlled drugs, how many crimes does that amount to in a week?) or the proportion of criminal

justice, health, mental health, and other social service budgets allocated to them. Similarly, business or white-collar crimes such as embezzlement, fraud, or violations of health and safety codes are not included, partly because they are difficult to detect and partly because the methods for estimating their costs are uncertain.

Third, the Miller et al. (1996) estimates are limited to costs that can be reasonably attributed to individual victimizations. In his book, Cohen (2005) discusses other social costs related to crime that are difficult or impossible to attribute to specific incidents, such as installation of home security systems and car alarms, security services for buildings, driving rather than walking at night, or even the higher value of homes in "safer neighborhoods." Some of these costs are the direct result of victim responses to specific criminal victimizations and are presumably captured by "pain and suffering," although non-victims also spend money on these products and services to avoid their own victimization. A consideration of these costs is important for understanding the total burden of crime on society, although it is important to keep in mind that they would likely remain unaltered by relatively small changes in overall crime.

Criminal Justice System Costs

The Miller et al. (1996) estimates and Cohen's subsequent work (Cohen, 2005) did not attempt to include costs of society's response to crime through the criminal justice system, although others have attempted to do so (see below). Although these criminal justice system costs are substantial and important to consider when assessing the total burden of crime on society, they are generally not amenable to disaggregation by individual crime. Police officers are not paid on a per-arrest basis, and even investigators and district attorneys are not paid per crime investigated or prosecuted. For our purposes, it is also unclear how much, if any, of the criminal justice system's budget components respond to small, incremental changes in crime rates. As

Cohen (2000) notes, when marginal costs are needed for cost-benefit analysis, the inclusion of criminal justice system costs becomes problematic.

> Fixed costs do not vary with the number of participants in the program. Thus, the annualized cost associated with maintaining a criminal court (compensation for the judge, debt retirement on the building, etc.) might not be affected by the number of cases actually tried in any year. Other costs, such as a drug rehabilitation program or feeding an incarcerated offender, vary with the number of participants. These are considered incremental (or marginal) costs. Unless fixed costs change with a policy decision under review, they should be ignored for purposes of assessing that policy. (Cohen, 2000, p. 278)

Even the inclusion of costs for "feeding an incarcerated offender" may not vary with small changes in crime. If the jail or prison is at capacity or overcrowded, offenders may be released early or not incarcerated at all to leave room for more serious offenders. The court may respond to small reductions in crime by having offenders serve more of their terms or detaining offenders who would otherwise have been released at the outset. Further, it is not clear what specific operational cost figures should be considered in these incremental costs. Given that cooking and feeding, for example, are part of basic operations, the incremental cost of feeding one additional inmate may simply be the cost of the food consumed.

There have been some attempts to include an incremental cost figure for criminal justice system operations. Here, the approach has been to estimate per-crime costs by analyzing how operating budgets vary as a function of the number of crimes in the jurisdiction. This approach was used by the Washington State Institute for Public Policy (WSIPP), which combined the Miller et al. (1996) estimates of victim costs with estimates of per-crime costs within the

Washington State criminal justice system. The goal was to generate estimates of the costs of specific individual crimes for cost-benefit analyses of a variety of programs and policies in Washington State. Estimates of per-crime justice system costs were derived for serious crimes by comparing different jurisdictions within the state along a number of cost dimensions, as indicated in Table 2, which was included in the WSIPP (Aos et al., 2004) technical appendix.

Table 2
Types of Crimes and Resource Costs Analyzed in the WSIPP Cost-Benefit Model

Types of Crime	**Types of Resource Costs Incurred**
1. Murder/Manslaughter	1. Police and Sheriffs' Offices
2. Rape/Sex	2. Superior Courts and County Prosecutors
3. Robbery	3. Juvenile Detention, with Local Sentence
4. Aggravated Assault	4. Juvenile Detention, with JRA Sentence
5. Felony Property Crimes	5. Juvenile Local Probation
6. Drug Offenses	6. Juvenile Rehabilitation, Institutions
7. Misdemeanor Crimes	7. Juvenile Rehabilitation, Parole
	8. Adult Jail, with Local Sentence
	9. Adult Jail, with Prison Sentence
	10. State Community Supervision, Local Sentence
	11. Department of Corrections, Institutions
	12. Department of Corrections, Post-Prison Supervision
	13. Crime Victim Monetary Costs
	14. Crime Victim Quality of Life Costs

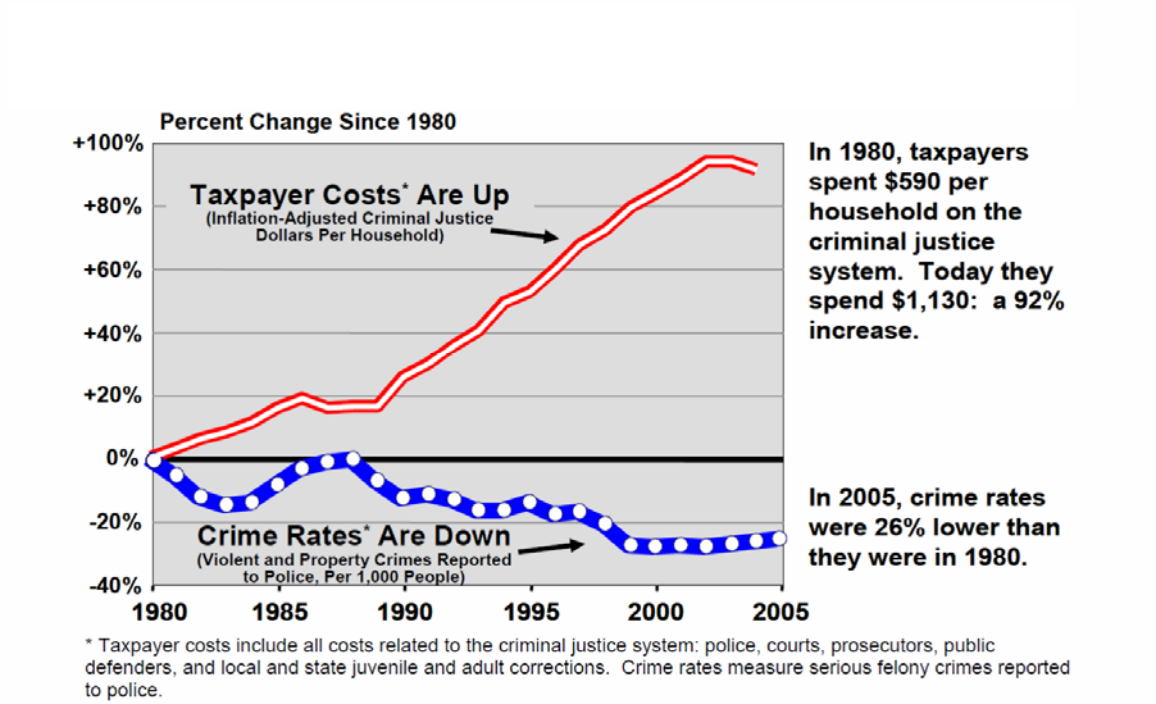
Source: Table D.2a Benefits and Costs of Prevention and Early Intervention Programs for Youth: Technical Appendix. Washington State Institute for Public Policy (Aos et al., 2001).

Because these estimates were intended to be used for both programs and policies, they included both operating costs and capital costs, which would only be affected by major changes in the criminal justice system itself. To estimate resource costs, the Institute used a mix of estimated marginal costs (items 1 and 2) and average costs (items 3 through 12). The last two items were taken from Miller et al. (1996) estimates of victim costs. The resulting cost figures and the subsequent cost-benefit ratios for youth programs have gained wide popularity in the literature on evidence-based practices. The ratios have been used as yardsticks for quantifying the value of a variety of potential programs to reduce delinquency and crime.

Producing similar estimates for California would be possible, but some caution should be exercised. First, because the California estimates are intended to be used to evaluate programmatic outcomes rather than broad policies, the inclusion of capital costs may not be appropriate. Unless the program can be expected to have a large enough impact that the criminal justice system itself is altered, these costs should be considered "fixed" and therefore irrelevant to cost-benefit analysis of marginal costs (Cohen, 2005). A possible alternative might be to consider capital costs separately so that they can be brought into consideration when appropriate. UCLA researchers utilized this approach in their evaluation of the Substance Abuse and Crime Prevention Act–Proposition 36 (Hawkins et al., 2007; Urada et al., 2008).

Second, care should be taken to ensure that estimated marginal costs are causally related to changes in crime across jurisdictions and that they can reasonably be expected to change with small changes in crime. On the one hand, the WSIPP estimates of costs for law enforcement, prosecution, and courts were developed by comparing jurisdictions with widely differing populations. It appears that population was not included in the model to estimate costs. Rather, budgets were regressed on arrests only, as if the cost of law enforcement for cities and counties of differing sizes was related only to the number of crimes. It is reasonable to assume a certain level of law enforcement would be expected by citizens and that the cost of law enforcement would increase as population increased, regardless of the number of crimes committed in that community or jurisdiction. To obtain true marginal cost estimates, it will be necessary to develop a method for estimating the extent to which law enforcement (or prosecution or courts) vary in size and budget as a function of crime volume *independent of population size*. Given the likelihood of a high correlation between population size and number of crimes (arrests or reported), calculating such an estimate may be difficult for using standard correlational methods such as regression analysis, but it would not be accurate to attribute all budgetary differences across jurisdictions to crime alone.

On the other hand, estimates of criminal justice system costs used in cost-benefit analyses should be reasonably expected to change in direct response to small changes in the number of crimes. Is there any evidence to suggest, for example, that a jurisdiction that handles 15 homicide cases per year would operate at less cost if the number of homicides dropped to 13 for the year? Would any police or prosecutors or judges be laid off or reduced to part-time work? On a larger scale, is there any evidence that reduced crime rates over the past 15 years have resulted in lower criminal justice system expenditures? In fact, the opposite has occurred. In WSIPP's 2008 report on options for reducing prison populations and criminal justice system costs, the authors point out that although crime rates have decreased by 26% since 1980, criminal justice system expenditures have increased by 92%. They show this difference graphically in Figure 1 (Aos et al., 2008, p. 5):



Source: Exhibit 3 in Aos et al., 2008.

Figure 1: The Change in Washington's Crime Rate and Taxpayer Costs of the Criminal Justice System: 1980 to 2005

They use the breakdown of the current criminal justice system costs as estimates of the cost-reduction payoff that would result from reductions in crime. Consequently, this report suggests a higher payoff value for crime reduction than the earlier report on potential savings from evidence-based youth programs (Aos et al., 2000). This increase in per-crime cost value is based on the fact that later criminal justice system costs (which have increased since 1996) are apportioned across a smaller number of crimes (which have decreased since 1996). This observed inverse relation between criminal justice system costs and the amount of crime should call into question the use of these costs as potential savings for crime reduction rather than lead to an ever-increasing estimate of that value.

It should be noted that WSIPP is not alone in handling these changes in crime and expenditures in this way. In their 2005 update of *The Economic and Social Costs of Crime Against Individuals and Households 2003/04* (Dubourg, Hamed, & Thorns, 2007), the British Home Office made the following observation about changes in estimated criminal justice system (CJS) costs per crime in the U.K. between 2000 and 2003/04:

> The increase in the values for non-violent crimes is due to a general increase in CJS resources over the period combined with a general decline in the estimated total number of offences. Both of these factors apply to violent crimes as well. (Dubourg et al., 2007, p. 22)

Researchers at the University of Utah (Fowles, Byrnes, & Hickert, 2005) used a similar approach, incorporating Miller et al.'s (1996) estimates of victim costs, and attempted to estimate a per-crime allocation of various criminal justice components. They also used a cross-sectional regression to estimate per-crime costs of law enforcement, prosecution, and courts. Like WSIPP, they did not include population figures in their equations. Consequently, all

differences in budgets across jurisdictions were attributed to differences in crime, rather than differences in population.

Clearly, there are a number of issues that must be addressed in relation to the inclusion of criminal justice system costs in California-specific estimates of the costs of crime. Foremost is the issue of whether these costs (or certain components of them) should be included at all. Logic suggests that marginal cost estimation should carefully consider whether components of the criminal justice system can and will respond to small downward changes in crime with commensurate cost reductions. Moreover, evidence clearly indicates that even large reductions in overall crime over the past 15 years have not been followed by reductions in criminal justice system expenditures. Apportioning criminal justice system costs across the crimes it handles seems reasonable for understanding the overall impact of crime. However, care must be taken to avoid suggesting that costs will decrease unless such a causal nexis can be demonstrated.

Willingness to Pay Estimates

In response to these issues regarding estimating crime costs by identifying the various types of costs associated with specific crimes, cost estimations using the limited data available, and summations to arrive at a figure that approximates the associated relative "social harm" (a "bottom up" approach), Cohen (2004, 2007) has begun to advocate for a more direct method of estimating the value of reductions in crime. He refers to this process as a "top down" approach in which harm is conceptualized in terms of people's "willingness to pay" (WTP) for its reduction. He has explored various methods of obtaining estimates of WTP for specific crimes, all of which rely on surveying citizens about their willingness to give certain dollar amounts from their own pockets to achieve certain percentage reductions in various kinds of crime. Although these methods have a certain conceptual appeal, they are quite new. There is no agreed-upon

methodology for obtaining the specific estimates and no body of generally accepted literature that demonstrates the value of this approach over the methods reviewed above.

The Feasibility of Developing California-Specific Cost-Of-Crime Estimates

From the discussion above, it is clear that estimates of costs for individual crimes can and have been made (that is, estimation is feasible), but that there are problems associated with current methods of doing so. A good estimate of these costs, however, is critical to making informed and reasonable policy or program decisions based on cost-benefit analysis. On the one side, cost estimates that are too high may show that all rehabilitative programs that reduce any amount of crime are cost-beneficial and can be compared only in terms of their relative cost-per-crime reduction. On the other side, high estimates may also suggest that any policy that might be expected to *increase* crime, even a little (such as an early release or early discharge policy), would "cost" more than the status quo. Moreover, the relative cost of different types of crime can profoundly affect policy decisions. The Miller et al. (1996) figures, for example, suggest that a program targeting burglary reduction would have to reduce the number of burglaries by 63 for every rape prevented by a rape-prevention program to be worth the same investment. These problems in estimation may be compounded by incorporating them into estimates of criminal careers. Studies of potential costs associated with "saving" a high-risk youth (Cohen, 1998; Cohen & Piquero, 2009) attribute the bulk of the cost savings to crime reduction (rather than lost productivity or treatment costs for substance abuse and related health problems). Incorrect estimates of crime costs can seriously misstate the potential cost savings to society for programs targeting these youth. Thus, although getting it right can be quite helpful for criminal justice decision-making, getting it wrong could be quite misleading.

The question of feasibility, then, is not so much whether these cost estimates are possible but rather what kinds of estimates would best fit various cost-benefit analyses and whether the estimation can be accomplished accurately enough to warrant the use of the estimates in important policy decisions. It may be advisable, for example, to produce different estimates for use in analyses of small rehabilitative programs, of large-scale programs affecting many inmates, or of global policies like parole reform or early discharge. Some of these estimates may include potential impact on criminal justice system expenditures whereas others do not. For those that may affect criminal justice system costs, there should be consideration of the nature of that influence and the amount of crime that would have to be reduced before certain kinds of savings are realized. For estimates of victim cost, major issues include how to update the work done 10 years ago, whether the components of the estimates may have different relative values in California than elsewhere, and how best to incorporate differences in intangible costs (pain and suffering, emotional distress, long-term reductions in quality of life, and so on). Although these differences are real, there are no straightforward ways to monetize them. Again, there may be alternative estimates of these victim costs appropriate to different cost-benefit analyses. In some cases, it may be appropriate to compare taxpayer costs for programs to estimates that include “harm avoided” to victims (rather than actual costs avoided to taxpayers) using figures that convey something of depth of the impact. In other cases, these intangible cost differences may not aid in understanding the relative value of programs that target different types of crime, because differences in monetized harm may not represent differences in real dollar costs to be avoided.

During the next few months, therefore, we will initiate discussions with CDCR Research Office staff and with experts in the field to, first, gain a better understanding of the potential uses for cost estimates of specific crimes and, second, to develop methods for tailoring earlier work to the California context. The goal will be to determine what kinds of estimates to develop (there

may be several estimates for each crime type, depending on the use and the scale of the potential effect) and the methods to derive those estimates.

In addition, these discussions will include a consideration of the types of outcomes to which these cost estimates will be applied and the sources of data on these outcomes. Cost-benefit analysis of programmatic interventions requires evaluative data on effectiveness. For evidence-based programs that have demonstrated effectiveness in other settings, the information required for preliminary California-specific cost-benefit analysis may focus on the potential applicability of the intervention (that is, the proportion of wards or inmates that could potentially participate), which would determine the scale of the potential effect on crime, and an estimate of how comparable the California participants would be to those used in earlier studies from which effect-size estimates were obtained. For evaluations planned or proposed for the future, the availability of cost estimates will influence the types of outcomes that should be incorporated into the studies. The availability of these cost estimates may also influence decisions about whether interventions or rehabilitative programs are implemented because they set the stage for cost-benefit analysis of these interventions. For larger-scale policy analysis, the intended type of impact typically determines the appropriate type of cost estimate (e.g., the reduction of prison costs through alternatives to revocation), but the availability of cost estimates related to other potential outcomes (e.g., the possible increase in crime associated with reducing revocations) makes it possible to take these outcomes into consideration. The ability to obtain these estimates of appropriate outcomes will be considered in determining the feasibility of obtaining useful cost estimates for cost-benefit analyses of programs and policies.

The final product of these discussions and methodological studies will be a matrix of potential outcomes for CDCR policies and programs and the types of cost data that can be applied to them. The feasibility of obtaining valid, accurate, and reliable estimates of these costs will then

be evaluated and methods for deriving those cost estimates will be determined. In addition, an estimate of the scope of the effort to develop the cost estimates and the resources required to do so will be developed to guide decisions about future investment in this approach.

References

Aos, S., Lieb, R., Mayfield, J., Miller, M., & Pennucci, A. (2004a). *Benefits and costs of prevention and early intervention programs for youth.* Olympia, WA: Washington State Institute for Public Policy.

Aos, S., Lieb, R., Mayfield, J., Miller, M., & Pennucci, A. (2004b). *Benefits and costs of prevention and early intervention programs for youth: Technical appendix.* Olympia, WA: Washington State Institute for Public Policy.

Aos, S., Miller, M., & Drake, E. (2006). *Evidence-based policy options to reduce future prison construction, criminal justice costs, and crime rates.* Olympia, WA: Washington State Institute for Public Policy.

Aos, S., Phipps, P., Barnoski, R., & Lieb, R. (2001). *Comparative costs and benefits of programs to reduce crime.* Olympia, WA: Washington State Institute for Public Policy.

Austin, J. (1986). Using early release to relieve prison crowding: A dilemma in public policy. *Crime & Delinquency, 32(4)*, 404-502.

Austin, J. (1996). Are prisons really a bargain? The use of voodoo economics. *Spectrum; The Journal of State Government, 69(2),* 6-15.

Chaiken, J., & Chaiken, M. (1982). *Varieties of criminal behavior* (R-2814-NIJ). Santa Monica, California: The Rand Corporation.

Cohen, M. (1988). Pain, suffering, and jury awards: A study of the cost of crime to victims. *Law and Society Review, 22(3)*, 537-555.

Cohen, M. (1998). The monetary value of saving a high-risk youth. *Journal of Quantitative Criminology, 14(1)*, 5-33.

Cohen, M. (2000). Measuring the costs and benefits of crime and justice. In *Measuring and Analysis of Crime and Justice* (NIJ Publication No. 182411, pp. 263-316). Washington, DC: National Institute of Justice.

Cohen, M. (2007). *Valuing crime control benefits using stated preference approaches.* Working Paper Number 08 -09, Vanderbilt University Law School, Nashville, TN. Retrieved from http://ssrn.com/abstract=1091456

Cohen, M., & Piquero, A. (2009). New evidence on the monetary value of saving a high-risk youth. *Journal of Quantitative Criminology, 25(1)*, 25-49.

Cohen, M., Rust, R., Steen, S., & Tidd, S. (2004). Willingness-to-pay for crime control programs. *Criminology, 42(1),* 89-109.

Dolan, P., Loomes, G., Peasgood, T., & Tsuchiya, A. (2005). Estimating the intangible victim costs of violent crime. *British Journal of Criminology, 45*, 958-976.

Dubourg, R., Hamed, J., & Thorns, J. (2007). *The economic and social costs of crime against individuals and households: 2003/04* (Home Office Online Report 30/05). Retrieved from www.homeoffice.gov.uk/rds/pdfs05/rdsolr3005.pdf

Farrell, G., & Roman, J. (2002). Cost-benefit analysis for crime prevention: Opportunity costs, routine savings and crime externalities. *Crime Prevention Studies, 14*, 53-92.

Farrell, G., & Roman, J. (2004). Crime as pollution: Proposal for market-based incentives to reduce crime externalities. In K. Moss and M. Stephens (Eds.) *Crime Reduction and the Law*. Abingdon: Routledge.

Fowles, R., Byrnes, E., & Hickert, A. (2005). *The cost of crime: A cost/benefit tool for analyzing Utah criminal justice program effectiveness.* Commission on Criminal and Juvenile Justice & Criminal and Juvenile Justice Consortium, University of Utah.

Hawken, A., Longshore, D., Urada, D., & Anglin, D. (2007). Proposition 36 benefit-cost analysis. In *Evaluation of the Substance Abuse and Crime Prevention Act Final Report*, pp. 94-125. Retrieved from http://www.uclaisap.org/prop36/documents/SACPAEvaluation Report.pdf

Key, T. (2005). *Cost-effective criminal justice: A survey of national issues and trends*. Wisconsin Sentencing Commission, Madison, WI. Retrieved from http://wsc.wi.gov/docview.asp?docid=3296

McDougall, C., Cohen, M., Swaray, R., & Perry, A. (2003). The costs and benefits of sentencing: A systematic review. *Annals of the American Academy of Political and Social Science, 587 (May)*, 160-177.

McDougall, C., Cohen, M., Swaray, R., & Perry, A. (2008). Benefit-cost analyses of sentencing. *Campbell Systematic Reviews, 2008:10.* doi: 10.4073/csr.2008.10

Mears, D. (2007). Towards rational and evidence-based crime policy. *Journal of Criminal Justice, 35 (6),* 667-682.

Meyer, P., & Hopkins, S. (1991). Making economically sound confinement decisions: A response to the Zedlewski thesis. *AJCJ, 15(2)*.

Miller, T., Cohen, M., & Wiersema, B. (1996). *Victim costs and consequences: A new look* (NCJ-155282). Retrieved from the National Institute of Justice Research website: http://www.ncjrs.org/pdffiles/victcost.pdf

Piehl, A., & DiIulio, J., Jr. (1995). Does prison pay? Revisited. *Brookings Review, 13 (Winter),* 21-25.

Swaray, R., Bowles, R., & Pradiptyo, R. (2005). The application of economic analysis to criminal justice interventions: A review of the literature. *Criminal Justice Policy Review, 16,* 141-163. doi: 10.1177/0887403404265631

Urada, D., Hawken, A., Conner, B., Evans, E., Anglin, M., Yang, J., Teruya, C., Herbeck, D., Fan, J., Rutkowski, B., Gonzales, R., Rawson, R., Grella, C., Prendergast, M., Hser, Y., Hunter, J., & Poe, A. (2008). *The substance abuse and crime prevention act of 2000: 2008 Report.* Retrieved from the University of California, Los Angeles, Integrated Substance Abuse Programs website: http://www.uclaisap.org/prop36/html/reports.html

Welsh, B. (2004). Monetary costs and benefits of correctional treatment programs: Implications for offender reentry. *Federal Probation, 68(2).* Retrieved from http://www.uscourts.gov/fedprob/September_2004/references.html#costs

Welsh, B., & Farrington, D. (2000). Correctional intervention programs and cost-benefit analysis. *Criminal Justice and Behavior, 27(1)*, 115-133.

Welsh, B., Farrington, D., & Sherman, L. (Eds.). (2001). *Costs and benefits of preventing crime.* Boulder, CO: Westview Press.

Welsh, B., Loeber, R., Stevens, B., Stouthamer-Loeber, M., Cohen, M., & Farrington, D. (2008). Costs of juvenile crime in urban areas: A longitudinal perspective. *Youth Violence and Juvenile Justice, 6(1),* 3-27.