

Using Cost-Benefit Analysis for Justice Policymaking

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cost-benefit knowledge bank
for criminal justice

CBKB



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Executive Summary

Justice policymakers must make tough decisions with limited resources. Any number of investments, whether in law enforcement, corrections, probation—or even programs outside the justice system, such as early childhood education—can promote public safety. The critical question is *which* choices produce the greatest benefits.

Increasingly, government officials and other decision makers are turning to cost-benefit analysis (CBA)—an economic tool that compares the costs of programs with the benefits they deliver—to help weigh their options. But justice-related cost-benefit studies can be complicated, technical, and hard to understand, making it easy for people to misinterpret their findings and overlook critical information that can aid their decisions.

This white paper was written for a broad range of readers, including elected officials and their staff, policymakers, justice agency personnel, and service providers. It is meant to help people make sense of justice CBAs even if they have little interest or expertise in examining the details of a cost-benefit study. The paper draws on the experience of policymakers and practitioners, as well as CBA experts and researchers, to explain:

- what CBA is, how it's applied to justice policies and programs, and how it differs from other economic tools;
- how to assess the overall strengths and weaknesses of a cost-benefit study;
- what potential pitfalls to avoid when interpreting cost-benefit results;
- what information beyond the bottom-line results to pay attention to in a CBA; and
- how CBA fits within larger policy, planning, and decision-making processes.

Readers can use this paper to help them know what to look for in a justice-related CBA, understand what cost-benefit results mean, and use those results to inform their decisions.

About This Paper

This white paper advises policymakers, government officials, advocates, and others—the consumers of cost-benefit analysis—on applying CBA results to justice decision making. It is a product of the Vera Institute of Justice’s national Cost-Benefit Knowledge Bank for Criminal Justice project. The paper was shaped and informed by the Cost-Benefit Methods Working Group, which Vera convened in 2012 to help advance the use of rigorous CBAs to inform criminal-justice policy decisions. The goals of the working group were to:

- foster the use of CBA in justice policy by providing information on cost-benefit methods to criminal justice researchers and practitioners;
- provide guidance on some of the complicated areas of justice-related CBAs, such as measuring social benefits and addressing data limitations;
- provide advice on increasing the policy relevance of CBA; and
- investigate areas for further research.

The working group consisted of researchers and policymakers with diverse backgrounds. Some members were drawn from the ranks of academia and possess a deep understanding of CBA methods and concepts, while others have prominent roles in justice planning and administration in state and local government, with firsthand knowledge of the questions policymakers need answered, the available data, and the political and practical dimensions of policy decisions. The working-group members were:

- Mike Clark, chief economist, Kentucky Legislative Research Commission
- Meredith Farrar-Owens, director, Virginia Criminal Sentencing Commission
- Lynn A. Karoly, senior economist, RAND Corporation
- Mike Lawlor, under secretary, Criminal Justice Policy and Planning Division, Office of Policy and Management, State of Connecticut
- Lee Ann Labecki, former director, Office of Research, Evaluation, and Strategic Policy Development, Pennsylvania Commission on Crime and Delinquency
- Kristin Misner, chief of staff, Office of the Deputy Mayor for Health and Human Services, City of New York
- John Roman, senior fellow, Urban Institute
- Diane E. Shoop, manager, Outreach and Policy Support, Pennsylvania Commission on Sentencing
- Ronald Villa, deputy chief operating officer, City of San Diego
- David L. Weimer, Edwin E. Witte Professor of Political Economy, University of Wisconsin–Madison

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Introduction

Although the United States economy is no longer in a recession, criminal justice budgets remain stressed. Policymakers must still make tough choices with limited resources. Any number of investments, whether in law enforcement, corrections, community corrections—or even programs outside the justice system, such as early childhood education—can promote public safety. What are the most cost-effective responses? How should we spend our tax dollars?

Every budget decision is a selection of one option at the expense of possible alternatives. The critical question for policymakers is *which* choices produce the greatest benefits to society. Increasingly, government officials and other decision makers are turning to cost-benefit analysis—an economic tool that compares the costs of programs with the benefits they deliver—to help weigh their options.

But making sense of the growing body of criminal justice CBAs presents its own set of challenges for readers with little interest or expertise in deciphering the technical aspects of a cost-benefit study. How can they tell whether a CBA has been done well or poorly? How can they interpret a study’s findings? And how can they apply CBA results to the policymaking process? These are important questions, and this white paper was written to help a broad range of readers—including elected officials and their staff; policymakers; corrections, community corrections, court, and law enforcement personnel; service providers; and journalists—to know what to look for in a justice-related CBA, understand what cost-benefit results mean, and use those results to inform their decisions.

Vera’s working group of researchers, practitioners, and policymakers helped shape the content and focus of this paper. Several principles emerged from these conversations, although one stood out as particularly important in the context of policymaking: CBA is a “decision tool, not a decision rule.” That is, the results of a cost-benefit study do not dictate a simple approval or rejection of an investment, but provide information that decision makers should consider carefully. (See the appendix on page 17 for more about these principles.)

The paper begins with a brief discussion about why policymakers are interested in CBA (Section I) and how it differs from other tools (Section II). It provides a checklist of things you should look for in a CBA (Section III) and concludes with guidance on what to do with CBA results when making a policy decision (Section IV).

This paper provides a general overview of CBA. Consult the companion white paper, [*Advancing the Quality of Cost-Benefit Analysis for Justice Programs*](#), if you are interested in conducting cost-benefit studies or learning more about its technical aspects.¹ That paper provides more technical information and is intended for researchers; evaluators; legislative, policy, budget, and fiscal analysts; criminologists; and those in related professions. If you see cost-benefit terms you don’t understand, please go to cbkb.org/glossary.

¹ Carl Matthies, *Advancing the Quality of Cost-Benefit Analysis for Justice Programs* (New York: Vera Institute of Justice, 2014), www.vera.org/cbamethods (accessed March 31, 2014).

Section I: Why Policymakers Are Interested in Cost-Benefit Analysis

Investors are always asking, “Where should I be putting my money?” and “What is the return on my investment?” Governments have the same questions about public programs and, for many years, have used cost-benefit analysis to answer them. In the United States, the formal use of CBA to make funding decisions began in the early 20th century, when the U.S. Army Corps of Engineers adopted it as a tool to objectively select public works projects.² The federal government remains a proponent of CBA to inform policy options. Since 1981, for example, federal agencies have been required to conduct cost-benefit analyses of significant regulatory actions to demonstrate whether their societal benefits outweigh societal costs.³ At the state level, agencies are increasingly conducting CBAs and acting on a growing body of cost-benefit research. According to a recent report from the Pew Charitable Trusts and the John D. and Catherine T. MacArthur Foundation, cost-benefit studies directly influenced legislative or executive action in 29 states between 2008 and 2011.⁴

In the 1990s, the emergence of economic research on the social costs of crime paved the way for cost-benefit analysis in criminal justice. The combination of criminal justice research that measures impacts on crime and economic research that monetizes the societal costs of crime provided the ingredients necessary for justice CBAs. Because it is now possible to put a dollar value on crime, as well as on recidivism and other key outcomes of justice policies and programs, policymakers can use CBA to determine the return on their current investments and decide which new ones might be worthwhile.

What are we getting for our money?

One of the most common uses of CBA is to determine the return on existing investments. In this case, a CBA is conducted after an outcome evaluation has been completed. (An outcome evaluation examines what effects a program had on the outcomes it was designed to attain, such as reducing recidivism or increasing employment.) If a program works, CBA is used to determine whether achieving those outcomes is worth the cost. A CBA supplements the results of an outcome evaluation and translates a program’s impacts into dollars.

For several years, the Oregon Criminal Justice Commission (CJC), the state’s administering agency for federal Byrne Justice Assistance Grants (JAG), has invested in outcome evaluations and CBAs of its grant programs.⁵ A large portion of CJC’s federal funding is invested in drug courts, which research

² Richard O. Zerbo, Jr., Tyler Blake Davis, Nancy Garland, and Tyler Scott, *Toward Principles and Standards in the Use of Benefit-Cost Analysis* (Seattle, WA: Benefit-Cost Analysis Center at the Evans School of Public Affairs, University of Washington, November 2010), 12. <http://evans.uw.edu/centers-projects/bcac/principles-standards> (accessed February 18, 2014).

³ Richard L. Revesz and Michael A. Livermore, *Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health* (New York: Oxford University Press, 2008), 4.

⁴ Pew-MacArthur Results First Initiative, *States’ Use of Cost-Benefit Analysis: Improving Results for Taxpayers* (Washington, DC: The Pew Charitable Trusts, July 2013), 21. <http://www.pewstates.org/research/reports/states-use-of-cost-benefit-analysis-85899490452> (accessed February 18, 2014).

⁵ The Edward Byrne Memorial Justice Assistance Grant program (JAG) supports a wide range of state and local justice activities. Funding is allocated based on the state’s population and reported violent crime rate. For more information, see https://www.bja.gov/ProgramDetails.aspx?Program_ID=59.

has often shown to be cost-effective. A recent study found that Oregon drug courts reduced recidivism by 23 percent over three years and returned a net benefit of \$16,933 per participant.⁶

When the state's 2009 federal stimulus dollars expired in 2011, it looked likely that the drug courts would be downsized. Because CBA is a standard part of evaluating criminal justice programs in Oregon, legislators were able to draw on the cost-benefit findings when they were most relevant to the policy process. The state legislature decided to replace the stimulus funds with \$9 million in new appropriations.⁷ With these resources and JAG funding, Oregon was able to maintain drug court operations at their previous level.

Where should we invest our justice dollars?

Another use of CBA is to help inform which new investments the government should make. Because it is impossible to evaluate a program that hasn't been implemented, this type of CBA often estimates the investment's likely effect on outcomes by using meta-analysis, a systematic review of evaluations of similar programs.

For more than 15 years, the Washington State Institute for Public Policy (WSIPP) has used CBA to answer the question of where to invest their justice dollars. WSIPP has examined the costs and benefits of dozens of criminal and juvenile justice investments. It presents CBA results in what it calls a "Consumer Reports-type" listing of the most promising investments and their projected net benefits.

For example, in 2007 the Washington State Legislature voted to invest \$48 million in evidence-based programs after elected officials reviewed a CBA showing that such an investment could reduce the prison population and provide net benefits to society. Subsequently, the state's prison forecast was adjusted downward and as of 2013 the inmate population remained roughly the same size as in 2007.⁸

The use of CBA in Washington has encouraged other jurisdictions to follow its example. For example, the Results First Initiative, a project of the Pew Charitable Trusts and the John D. and Catherine T. MacArthur Foundation, works with states to use CBA to inform their justice policies. Similarly, the DC Crime Policy Institute predicts the costs and benefits of new justice policies and programs proposed for the District of Columbia.⁹

⁶ Shannon Carey et al., *Oregon Drug Court Cost Study: Statewide Costs and Promising Practices*, (Portland, OR: NPC Research, March 2011), II-III.
http://www.npcresearch.com/Files/ORDC_BJA_Cost_and_Best_Practices_Final_Rerelease_0311.pdf (accessed February 18, 2014).

⁷ National Criminal Justice Association, "From Grant Funds to State Appropriations" webinar,
<http://www.ncja.org/sites/default/files/documents/From-Grant-Funds-to-State-Appropriations-Webinar-Slides.pdf>
(accessed April 9, 2014).

⁸ Elizabeth Drake et al., *Evidence-Based Public Policy Options to Reduce Crime and Criminal Justice Costs: Implications in Washington State* (Olympia, WA: Washington State Institute for Public Policy, 2009), 171.
<http://www.wsipp.wa.gov/pub.asp?docid=09-00-1201> (accessed February 18, 2014). The average daily inmate population in Washington State was 17,121 in June 2007; it was 17,404 in June 2013. See
http://www.cfc.wa.gov/CriminalJustice_ADU_INM.htm

⁹ See <http://www.pewstates.org> for more information on Results First. See <http://www.dccrimepolicy.org> for more information on the District of Columbia Crime Policy Institute.

Section II: How Cost-Benefit Analysis Differs from Other Tools

A number of economic tools can help people weigh policy options, and each tool answers different questions. But cost-benefit analysis is unique in that it answers questions about costs, cost savings, and cost-effectiveness. Because CBA measures all benefits and costs in dollar terms, it allows decision makers to compare investments that have different outcomes. This makes CBA a powerful tool for addressing policy questions. To produce these results, CBA involves these steps:

1. *Consider the impact of the investment.* Does the policy or program work? Does it accomplish the desired end, such as reducing recidivism or substance use? If the initiative cannot be directly evaluated, has a similar initiative been shown to work?
2. *Measure the costs of the investment.* What does it cost to launch and operate the policy or program?
3. *Measure the costs and benefits of the investment's impact.* What is the dollar value of the investment's impact? Who benefits from the program? Who bears the costs? Criminal justice investments affect many groups, including taxpayers, victims, and program participants. What is the magnitude of the effect for each relevant group?
4. *Compare costs and benefits.* Over the long term, do the benefits outweigh the costs? Does the investment deliver higher or lower returns than other options?
5. *Test the reliability of the results.* Cost-benefit studies must make assumptions to calculate the expected results. What are the implications if the assumptions and estimates vary? Would different information change the bottom line results drastically, slightly, or not at all?

CBA is a valuable tool because it is comprehensive. Consequently, conducting a CBA can be time-consuming. Some pressing policy questions can be answered by using a less intensive type of analysis. Before jumping into a CBA, it's important to consider whether another tool would better suit the policy questions at hand. Take a look at these other types of analyses:

- **Cost analysis** provides a complete accounting of the expenses related to a given policy or program, and is the foundation of other economic analyses.
- **Cost-savings analysis**, sometimes called fiscal-impact analysis, is a comprehensive study of all governmental revenues, expenditures, and savings that will result from the proposed policy or program. Unlike CBA, this type of study will not measure the societal effects of the investment beyond the budget. State and local fiscal offices routinely produce these analyses—often called fiscal notes—to determine whether a proposed initiative is affordable.
- **Cost-effectiveness analysis** is a method that compares policy or program costs relative to their outcomes, and indicates which option produces a desired outcome for the lowest cost. Unlike CBA, this type of study can compare only those programs that have the same types of outcomes (for example, changes in recidivism or employment). It cannot be used to choose

between policies with different outcomes, such as one that reduces crime rates and another that decreases the rate of homelessness.

Reporting CBA results

Several measures are used to report CBA results:

- The **net present value (NPV)**, sometimes called the *net benefit*, or *net cost*, reflects the net value of the investment. The NPV is calculated by subtracting the total discounted costs from the total discounted benefits. (See page 10 for more on discounting.) A positive NPV means that benefits outweigh costs and the investment should be considered.
- The **benefit-cost ratio (BCR)** directly compares benefits and costs. The BCR is calculated by dividing total discounted benefits by total discounted costs. A BCR greater than 1 means the benefits outweigh the costs and the investment should be considered.
- The **return on investment (ROI)** is similar to BCR, but compares the *net benefit* to the investment cost. The ROI is typically expressed as a percentage (e.g., 10 percent). Thus, the investment (i.e., the cost) will generate a return (i.e., the net benefit) that amounts to 10 percent of the cost of the investment. If the ROI is positive, the benefits exceed the costs and the investment should be considered.

Criminal Justice CBAs

A feature of CBA that distinguishes it from other types of economic analysis is that it aims to monetize—that is, measure in dollar terms—the costs and benefits to all the parties affected by the policy under examination. A common thread through CBAs of public investments is that they measure the impact on taxpayer costs, but the other perspectives that are included depend on which policy is being studied. When CBA is used to study criminal justice initiatives, the perspectives of crime victims and program participants should also be examined.

Crime victims. The perspective of crime victims is a critical part of justice-related CBAs because improving public safety is the central goal of so many justice policies. Crime victims may experience financial, psychological, and physical harms. These harms are either tangible costs, such as medical expenses and lost property, or intangible costs, such as for pain and suffering or fear of crime.¹⁰ When victimization decreases or is prevented, the avoided harms are counted as benefits. Figure 1 illustrates the tangible, intangible, and total victim costs for several crime categories.

¹⁰ Placing a dollar value on victimization can be challenging, but several studies have estimated tangible and intangible victim costs by using the *cost-of-illness* or *jury-compensation* methods. The cost-of-illness approach measures direct, tangible costs like medical expenses (obtained from hospital databases) and lost earnings. The jury-compensation approach uses the money awarded to victims by juries to estimate the indirect or intangible victim costs of crime. See *Advancing the Quality of Cost-Benefit Analysis for Justice Programs* (<http://www.vera.org/cbamethods>) for a synopsis of estimates for victim costs.

The total victim cost of crime—both tangible and intangible costs—is the appropriate metric in a CBA. Some studies estimate only the tangible costs, in an effort to produce more conservative and presumably more widely accepted results. Yet this approach is not recommended because it undervalues violent crime and produces conspicuously erroneous results.¹¹ For example, using only the tangible costs would result in a higher victim cost for motor vehicle theft than for rape (see Figure 1).

Figure 1. Victim costs of crime (2008 dollars)

Type of Offense	Victim Costs (\$)		
	Tangible	Intangible	Total
Murder	\$737,517	\$8,442,000	\$8,442,000
Rape/sexual assault	\$5,556	\$199,642	\$205,085
Aggravated assault	\$8,700	\$95,023	\$96,254
Robbery	\$3,299	\$22,575	\$24,211
Motor vehicle theft	\$6,114	\$262	\$6,352
Arson	\$11,452	\$5,133	\$16,127
Household burglary	\$1,362	\$321	\$1,653
Larceny/theft	\$480	\$10	\$489

Source: Katherine E. McCollister, Michael T. French, and Hai Fang, “The Cost of Crime to Society: New Crime-Specific Estimates for Policy and Program Evaluation,” *Drug and Alcohol Dependence* 108, nos. 1-2 (2010), 98-109. www.ncbi.nlm.nih.gov/pubmed/20071107 (accessed February 3, 2014).¹²

Program participants. Justice programs strive to reduce crime and victimization, and, whenever possible, to improve outcomes for people involved in the justice system. CBAs often include the perspective of program participants as a means to capture all the costs and benefits to society. For example, CBAs of prison reentry services or inmate education projects calculate the costs and benefits from the perspective of program participants.

¹¹ Carl Matthies, *Advancing the Quality of Cost-Benefit Analysis for Justice Programs* (New York: Vera Institute of Justice, 2014), <http://www.vera.org/cbamethods> (accessed March 27, 2014), 25.

¹² For most offenses, values in the “Total” column do not equal the sum of the values in the “Tangible” and “Intangible” columns. The tangible and intangible costs of murder are estimated using two distinct methodologies. Tangible costs reflect the value of forgone lifetime earnings, whereas intangible costs represent the value of a statistical life. These two estimates should not be combined to create a “total victim cost per murder.” The tangible and intangible costs for the other offenses listed in Figure 1 include valuations of the risk of homicide costs attributable to those crimes, therefore the total victim costs were adjusted to avoid double-counting. For more information on these calculations see Katherine E. McCollister, Michael T. French, and Hai Fang, “The cost of crime to society: New crime-specific estimates for policy and program evaluation,” *Drug and Alcohol Dependence* 108, nos. 1-2 (2010).

Figure 2. Cost-Benefit Results, Center for Employment Opportunities

The Enhanced Services for the Hard-to-Employ Demonstration				
Table 4.4				
Net Benefits and Costs (in 2009 Dollars),				
Full Sample				
Center for Employment Opportunities				
	Taxpayer (\$)	Victim (\$)	Participant (\$)	Total (\$)
Benefits				
Criminal justice	2,912	432	0	3,344
Employment				
Earnings	0	0	590	590
Tax payments and credits ^a	190	0	-190	0
Value of output from CEO transitional jobs ^b	4,576	0	0	4,576
Costs				
CEO program costs ^c	-3,603	0	0	-3,603
Net benefits (per person)	4,075	432	400	4,907
Benefit-cost ratio	2.13	NA	NA	2.36

SOURCES: Marginal costs were estimated using information provided by New York City and state criminal justice agencies, New York State executive budget agencies, and Taifa (1995). See Appendix Table F.1 for more detail. For additional employment data sources, see Table 3.1; for additional criminal justice data sources, see Table 3.2.

NOTES:

^aIncome taxes and the federal and state Earned Income Tax Credit were based on tax rules for filing year 2009.

^bThe value of output from CEO transitional jobs was calculated using information from the Department of Citywide Administrative Services.

^cCEO program costs were calculated using CEO's financial expenditure reports for Fiscal Year 2005 and CEO's management information system (MIS), adjusted for inflation.

Source: Cindy Redcross, Megan Millenky, Timothy Rudd, and Valerie Levshin, *More Than a Job: Final Results from the Evaluation of the Center for Employment Opportunities (CEO) Transitional Jobs Program* (Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2012), OPRE Report 2011-18, 67.

Consider a program that provides employment and training services to people who have left prison. The program may confer future benefits to its participants through better job prospects and higher earnings. In addition, a portion of these earnings will be transferred to the government as a tax payment, which is a benefit to taxpayers. Figure 2 illustrates the benefits and costs of the Center for Employment Opportunities—an employment and training program for ex-offenders—from the perspectives of taxpayers, crime victims, and program participants. This program returns a net benefit of \$4,907 per participant: \$4,075 to taxpayers, \$432 to crime victims, and \$400 to participants.¹³

¹³ The Vera Institute of Justice prepared the cost-benefit analysis of CEO, in collaboration with MDRC. See *More Than a Job: Final Results from the Evaluation of the Center for Employment Opportunities (CEO) Transitional Jobs Program* (New York, NY: MDRC, January 2012). <http://www.mdrc.org/publication/more-job> (accessed February 18, 2014).

Section III: What to Look For in a CBA Report

How do you know whether a CBA is sound? To help you assess a study's strengths and weaknesses, keep in mind 10 important questions as you review a cost-benefit report:

1. *Do the authors have a bias that may affect the analysis?*

Are the authors known to have a point of view that might compromise the study's objectivity? Stakeholders with a bias can certainly prepare a rigorous and objective analysis, but it is worth keeping their influences in mind when reviewing research. For example, if the author represents stakeholders who oppose the investment, costs may have been measured more carefully than benefits.

2. *Where did the data come from?*

Justice system costs and operations vary across jurisdictions, and it is important to understand what data the analysis used. In general, data on justice system costs should be recent—or updated to account for the effects of inflation—to accurately depict the impact relative to the current budget. The use of local outcome and cost data is also preferable. But sometimes data from another jurisdiction can be a good stand-in if the jurisdiction is reasonably comparable. For example, the Oregon Criminal Justice Commission found it difficult to gather reliable data to calculate the marginal cost of an arrest. It determined that Washington State's estimate would be an acceptable substitute, as the two states have similar crime rates and numbers of police officers per capita.¹⁴

3. *How was the effectiveness of the investment estimated?*

The accuracy of CBA results hinges on the measurement of the policy impacts. The most reliable impacts are typically derived from randomized controlled trials (RCT), also referred to as experimental research. When RCTs are not feasible, quasi-experimental research, which statistically mimics a randomized experiment, can also produce reliable results.¹⁵ Analysts are advised against relying on non-experimental research, which compares outcomes before and after a program's implementation without a comparison group, because this research design cannot establish a strong causal link between the change in outcomes and the intervention. (For more information about the strengths and weaknesses of different research designs, see *Advancing the Quality of Cost-Benefit Analysis for Justice Programs* at www.vera.org/cbamethods). If a program has not been implemented, it cannot be evaluated. To predict how effective a program will be, researchers often rely on meta-analysis, a technique that uses past research to estimate the average impact of a similar investment.

¹⁴ Michael Wilson, *Cost Benefit Methodology*, (Salem, OR: State of Oregon, Criminal Justice Commission, July 2011), 5. http://www.oregon.gov/cjc/docs/cost_benefit_methodology_090106.pdf (accessed March 6, 2014).

¹⁵ Although in theory randomized controlled trials (RCT) should produce more accurate results, a well-designed quasi-experimental design can also produce accurate results and will certainly produce more accurate results than a poorly designed RCT.

4. *Did the analysis count all of the investment's costs?*

A CBA should count all of a policy's costs so as to not underestimate the total cost of the investment.¹⁶ Identifying these costs isn't as simple as looking at a budget. Multiple government agencies may bear the budgetary costs of an investment. For example, the costs of drug courts extend far beyond the courtroom and consume other agencies' resources, for expenses such as treatment, case management, and supervision. The economic value of private funding, donated goods and services, and the time costs of employees and other stakeholders should also be included. For more information on how to comprehensively measure a policy's costs, see *A Guide to Calculating Justice-System Marginal Costs* at www.vera.org/marginalcosts and *Advancing the Quality of Cost-Benefit Analysis for Justice Programs* at www.vera.org/cbamethods.¹⁷

5. *Did the analysis accurately estimate taxpayer costs?*

One fundamental question a CBA seeks to answer is how an investment affects the budget. But this calculation is not always simple. The taxpayer impact must be measured using marginal costs (also called incremental costs), which is the amount that total costs change when a unit of output/workload changes. Some CBA calculations erroneously use average costs, which usually include fixed costs.¹⁸ For example, CBAs often estimate the reduction in prison costs due to a decrease in recidivism. But if this benefit is measured using the average cost per inmate, the benefit to taxpayers will be overstated. That's because the average cost includes the fixed costs of operating a prison—such as utilities and central administration—costs that won't vary with small changes in the size of the prison population.

6. *Did the analysis measure the policy's effect on all of the relevant parties?*

A CBA should measure the effects of programs beyond the impact to the government budget. Justice CBAs commonly measure the perspective of taxpayers and victims—and sometimes the perspective of program participants, when applicable. Which perspectives a CBA includes or excludes can affect the bottom line.¹⁹ For instance, as shown in Figure 2 (see page 7), the Center for Employment Opportunities had a net benefit of \$4,075 per participant when only the taxpayer perspective was considered, an amount that increased to \$4,907 when the perspectives of victims and program participants were included.

¹⁶ Keep in mind that the investment costs included will depend on the purpose of the analysis. For instance, start-up costs, such as equipment and professional services, should be included when determining whether a program is worth *initiating*. If the purpose of the analysis, however, is to determine whether to *continue* a program, the start-up costs would be excluded. In economic terms, these are “sunk costs” that cannot be recovered and do not factor into a decision about whether a program should continue to operate.

¹⁷ Christian Henrichson and Sarah Galgano, *A Guide to Calculating Justice-System Marginal Costs* (New York: Vera Institute of Justice, May 2013), 20. <http://www.vera.org/marginalcosts> (accessed March 4, 2014); and Carl Matthies, 2014, p. 18.

¹⁸ For more on this topic, see *A Guide to Calculating Justice-System Marginal Costs*.

¹⁹ For more information on perspectives, see *Advancing the Quality of Cost-Benefit Analysis for Justice Programs* at www.vera.org/cbamethods.

7. *What potential costs or benefits were not monetized?*

Just as the selection of perspectives analyzed will affect the results, so will the selection of the specific impacts measured within each perspective. The inclusion of a perspective does not mean all the potential impacts within that perspective have been monetized. For instance, a CBA of a reentry program might calculate the benefit of program participants' increased earnings, but may not be able to put a dollar value on some of the intangible benefits, such as improved family relationships. Additionally, important costs and benefits—such as procedural justice, privacy, or the government's legitimacy—are often excluded from CBAs because they cannot be monetized. A study should provide a qualitative discussion of non-monetized factors so that decision makers can consider them along with the quantitative results.

8. *For how long did the study measure costs and benefits?*

The benefits of a successful program or policy are sometimes described as the waves created when a stone is thrown into a pond. The initial waves are largest, but ripple effects happen over time. This is why a longer time horizon for a cost-benefit analysis matters; a narrow time frame could misrepresent a project's net present value by overlooking future benefits or costs. CBAs should measure costs and benefits for as long as they persist, but in practice, analysts may estimate them for a shorter duration.

9. *How did the study adjust future costs and benefits?*

Because a dollar today is worth more than a dollar several years from now, CBAs use a technique called discounting to translate future costs and benefits into present-day values. The discount rate analysts use to make this adjustment is important because different rates can produce very different results. A higher rate has the power to reduce sizable future benefits and costs to small present values. A lower rate reduces future values less, making the value of future benefits and costs closer to current dollar values. Justice CBAs typically use a discount rate of 3 to 7 percent.

10. *How much confidence should readers have in the results?*

Cost-benefit studies must make assumptions and use estimates to calculate the expected costs and benefits of a policy or program. But what if the assumptions and estimates are off? Would different information change the bottom-line results drastically, slightly, or not at all? CBAs should show how a study's results would be affected by changes in the values of specific variables, using a technique called sensitivity analysis.²⁰ Be sure to look at how the authors test the results when they use different assumptions. CBA results should give a range of likely estimates, as well as the single point estimate the authors deem most likely.

Some answers to these questions may raise red flags. For example, if a CBA uses average costs instead of marginal costs to calculate the savings a program generates, these savings will likely be

²⁰ For more information on sensitivity analysis, see *Advancing the Quality of Cost-Benefit Analysis for Justice Programs* at www.vera.org/cbamethods.

overestimated. The results of the CBA, therefore, would overstate a program’s cost-effectiveness. In other cases, the answers to these questions will reveal that the results are credible but that the true effect may be slightly different from the results on the page. Consider, for example, a prisoner reentry program that is found to have a positive effect on recidivism but studied former inmates for only one year post-release. If recidivism rates remain low two years after release, a CBA with a shorter time frame would underestimate future benefits.

Section IV: What to Do with CBA Results and Information

Once you understand the strengths and limitations of a study (see Section III), how can you apply the information it provides, as well as its results to the policy decisions at hand? Keep in mind that CBA is a decision tool, and that tools should be used properly. This section describes:

- What potential pitfalls you can avoid when interpreting cost-benefit results;
- What information in a CBA you should look for beyond the bottom line to help you make decisions; and
- How CBA can fit within larger policy, planning, and decision-making processes.

Potential Pitfalls

One advantage of CBA is that the bottom-line results are easy to communicate in terms of a benefit-cost ratio, net present value, return on investment, or other summary measure (see “Reporting CBA results,” page 5). But this simplicity may lead readers to jump to the wrong conclusions about what the results mean. Be aware of these five common pitfalls so that you can avoid them:

1. *Don’t confuse benefits with savings.*

When reading a CBA, keep in mind that benefits aren’t necessarily the same as savings. A CBA may calculate the benefits to victims, offenders, program participants, and other stakeholders, but if those benefits don’t affect government budgets, they’re not considered cost savings. Especially when reading a synopsis of CBA results, remember that net benefits are sometimes erroneously characterized as a savings. Should a policy decision hinge on whether there is a net reduction in taxpayer spending, take a close look at the study to ensure that there really is a net benefit from the taxpayers’ perspective.

2. *Don’t focus only on the policy’s short-term effect on taxpayers.*

“Passing the cost-benefit test” means that from a societal perspective, the benefits exceed the costs. Although the effect on the budget is important, a policy that creates a budgetary cost is cost-beneficial if its total benefits exceed total costs. The short-term taxpayer benefits will get the attention of budget officials, but the broader purpose of CBA is to measure net benefits to society. As former New York State budget director Dall Forsythe said, “While balancing the

budget in the short term is a key goal, budget officials will also acknowledge that long-term and non-budgetary social benefits are important.”²¹

3. *Don't assume that past performance will guarantee future success.*

Whether explicitly or implicitly, people often perceive CBAs as predictors of the future. If a CBA tells you that a program had a return of \$3 for every \$1 invested, don't assume that this return is guaranteed. CBA provides a forecast of the benefits and costs you can expect when your policy or program achieves certain outcomes. Just because a program works at one site, in one context, and at one time doesn't ensure that it will work again in the same way.

4. *Don't forget to factor in uncertainty and risk.*

Many CBAs report results as a single “point estimate” (say, “for every dollar invested, you can expect three dollars in benefits”). But such an estimate may be misleading because it represents the most likely result drawn from a variety of possible scenarios. The actual return on investment may vary. Some CBAs report results as a range or, as the Washington State Institute for Public Policy does in its recent studies, present the odds that the policy will at least have benefits that are greater than the costs. “Communicating this uncertainty gives policymakers more information and puts them in a much better position,” according to working-group member John Roman of the Urban Institute. “They can say, ‘There’s only a small chance the investment won’t pay off, but I’m just not willing to take the risk.’ Or they could say, ‘There’s a big chance the investment won’t pay off, but if it does, we can make dramatic improvements, and that’s good enough for me.’”²²

5. *Don't rely on the benefit-cost ratio alone.*

The benefit-cost ratio (BCR) reports the size of the benefit relative to the investment, and is a simple way to communicate findings (say, \$1 dollar invested returns \$2.50 in benefits). But it's more important to know the net present value (NPV) of the investment. For example, it's possible for different programs to have the same benefit-cost ratio and for one program to have a net benefit of, say, \$1,000 per participant, and for the other to have a net benefit of \$10,000 per participant. (For more about NPV, see “Reporting CBA results,” page 5.)

Beyond the Bottom Line

A cost-benefit study can provide much more information than whether a program's costs outweigh its benefits or vice versa. A CBA can point to the factors that drive a program to have a net cost or a net benefit. Costs will outweigh the benefits when (1) the program costs are too high; (2) the program had no effect—or a negative effect—on outcomes; or (3) a positive effect was insufficient to outweigh the costs. Knowing which of these factors drove the results has important implications not only for

²¹ Cost-Benefit Knowledge Bank for Criminal Justice. “Four questions for Dall Forsythe.” October 11, 2011. <http://cbkb.org/2011/10/four-questions-for-dall-forsythe/> (accessed February 19, 2014).

²² Cost-Benefit Knowledge Bank for Criminal Justice. “Guest blog post: A reflection on the Multisite Adult Drug Court Evaluation.” September 21, 2011. <http://cbkb.org/2011/09/reflection-on-the-multisite-adult-drug-court-evaluation-john-roman/> (accessed February 19, 2014).

selecting programs to invest in, but also for improving underperforming programs and for sustaining and enhancing programs that are producing net benefits. Look for the following details:

1. *What's driving the costs?*

Whether a program is found to have a net benefit or a net cost, it's important to look at where the costs are. Is there a risk that the costs could rise in the future—or is there an opportunity to make the program more effective by controlling costs? If a net cost is the result of program expenses, could these expenses be reduced or would there be greater economies if the program served a larger population? If a program is new, can start-up costs be contained?

2. *What's driving the benefits?*

Knowing why the benefits outweigh the costs will help you assess the likelihood of attaining these results in the future. For example, if the net benefits are driven by a positive policy effect, think about what's needed to get those effects (see question 4 below) and whether these effects may not persist or may not be applicable in your jurisdiction. How much will the size of the benefits change if the policy is somewhat less effective than predicted? Are the benefits driven by tangible savings to government agencies or by intangible returns from avoided crimes or other harms?

3. *At what point do the benefits break even with the costs?*

When there is uncertainty about how effective the investment will be, analysts may report what effect the policy or program needs to have on outcomes for the benefits to at least equal the costs. This can then be used to gauge the likelihood of attaining a net benefit.

4. *How does implementation affect the results?*

If there is room for improvement in administering the policy or program, there may be an opportunity for better returns on the investment. Evidence-based programs that veer from fidelity to their program model may yield more modest benefits than anticipated. When a program scales up, CBA results may change. For instance, as Minnesota Department of Corrections director Tom Roy wrote about his state's prison programs, "A program's size or capacity has a large impact on its return on investment ... To get these programs to produce even better ROIs, though, we need to focus more on increasing their capacity, which will hopefully enhance their cost-effectiveness by reducing their operational costs."²³

5. *Are the results transferable to other jurisdictions?*

CBA results from one jurisdiction are often used to inform policy in another. The appropriateness of "importing" results depends on differences in the jurisdictions and the specific programs or policies being studied. It is worth consulting the CBA results of a program

²³ Cost-Benefit Knowledge Bank for Criminal Justice. "Minnesota DOC Commissioner Tom Roy: CBA can help agencies spend limited resources." November 12, 2013. <http://cbkb.org/2013/11/minnesota-doc-commissioner-tom-roy-cba-can-help-agencies-spend-limited-resources-wisely/> (accessed February 19, 2014).

from another jurisdiction if the program is similar in design and implementation. However, it's important to consider whether the program costs may differ because of regional cost-of-living differences.

CBA in a Planning, Policy, and Decision-Making Context

CBA doesn't exist in a vacuum. Understanding and maximizing cost-effectiveness are important, but are rarely an agency's only policy goals. Like Oregon and Washington, the jurisdictions and agencies that have most effectively used CBA incorporate it into a broader decision-making process to address a variety of policy questions. The New York State Division of Criminal Justice Services (DCJS), for example, embeds CBA in a business model of decision making that follows these steps:

1. Analyze population and program needs.
2. Recommend programming through cost-benefit analysis.
3. Implement programming.
4. Verify program quality
5. Evaluate program outcomes.
6. Confirm that results are as expected.
7. Use results to inform future funding decisions.²⁴

Cost-benefit analysis is just one part of the decision-making process. It's important to know what options are the most promising, but even promising investments yield returns only when they meet a critical need and are well implemented. As DCJS cost-benefit coordinator Marc Schabbes described his agency's work, "A broader approach was necessary to ensure that the outcomes we sought would be realized."

Aligning CBA with other processes, including the budget cycle, doesn't happen overnight. (See [Building Cost-Benefit Analysis Capacity in Criminal Justice: Notes from a Roundtable Discussion](#) for more information on developing a capacity for CBA.²⁵) Think also about these basic, practical questions as you weigh policy and program options:

- *Is there a need for the program?* Many policy options will yield net benefits, but you'll want to assess the public's desire for the option and whether it serves a target population. If the area of greatest need is addressing chronic homelessness, a juvenile justice program with a large net benefit may not be the best use of limited resources.
- *Is there capacity to implement the program?* Even if a program has fared well in other parts of the country, there may not be capacity to deliver a similar program in your jurisdiction. Some policy reforms also require changes in the government's business processes. It's important to assess whether you have the resources and buy-in necessary to make these changes.

²⁴ Cost-Benefit Knowledge Bank for Criminal Justice. "An interview with Marc Schabbes of the New York State Division of Criminal Justice Services." July 25, 2013. <http://cbkb.org/2013/07/an-interview-with-marc-schabbes-of-the-new-york-state-division-of-criminal-justice-services/> (accessed February 19, 2014).

²⁵ Tina Chiu, *Building Cost-Benefit Analysis Capacity in Criminal Justice: Notes from a Roundtable Discussion*. (New York, NY: Vera Institute of Justice, April 2013). <http://www.vera.org/pubs/building-cost-benefit-analysis-capacity-criminal-justice-notes-roundtable-discussion> (accessed February 19, 2014).

- *Can you afford the program?* Even when government agencies stand to make large potential gains, there may not be sufficient resources to launch a program. The budget often dictates which policy options are viable.
- *What other options are available—even if no CBA has been done?* Limiting your program or policy options only to those subjected to cost-benefit analysis is almost certainly too restrictive. Some good options may not lend themselves to CBA and others may not have been analyzed yet.

Conclusion

Confronted with budget limitations, decision makers often look to cost-benefit studies to help them allocate justice resources. But it is important to remember that CBA is a tool that aids decision making; CBA results alone do not—and should not—dictate decisions. Policymakers are accountable for the choices they make, so it is incumbent on them to use CBAs correctly.

This white paper was designed to help readers become more educated about CBA so that they can do the following:

- recognize when CBA is an appropriate tool to use;
- assess the overall strengths and weaknesses of a study;
- look beyond the bottom line of a CBA to extract additional information;
- avoid misinterpreting CBA findings; and
- adopt the use of CBA in policy planning and decision-making.

Readers who are interested in learning more about CBA should review the “Resources” section on page 16 and the references cited in footnotes throughout the paper.

Resources

General information

- Cost-Benefit Knowledge Bank for Criminal Justice: cbkb.org

Organizations that produce criminal justice CBAs

- District of Columbia Crime Policy Institute: <http://www.dccrimepolicy.org/>
- Pew-MacArthur Results First Initiative: pewstates.org
- Vera Institute of Justice: www.vera.org/cba
- Washington State Institute for Public Policy: wsipp.wa.gov

How to build a capacity for CBA

- [*Building Cost-Benefit Analysis Capacity in Criminal Justice: Notes from a Roundtable Discussion*](#), Vera Institute of Justice, 2013.

CBA methods

- Carl Matthies, *Advancing the Quality of Cost-Benefit Analysis for Justice Programs*, New York: Vera Institute of Justice, 2014, www.vera.org/cbamethods.
- Christian Henrichson and Sarah Galgano, *A Guide to Calculating Justice-System Marginal Costs*, New York: Vera Institute of Justice, 2013, www.vera.org/marginalcosts.
- Richard O. Zerbe, Jr., Tyler Blake Davis, Nancy Garland, and Tyler Scott, *Toward Principles and Standards in the Use of Benefit-Cost Analysis*, Seattle: Benefit-Cost Analysis Center at the Evans School of Public Affairs, University of Washington, November 2010, <http://evans.uw.edu/centers-projects/bcac/principles-standards>.

Appendix: Principles for Cost-Benefit Analysis and Justice Policymaking

This paper is guided by six key principles adapted from the Society for Benefit Cost Analysis and endorsed by Vera’s Cost-Benefit Methods Working Group.

1. Cost-benefit analysis is a decision *tool*, not a decision *rule*.

CBA can improve the decision-making process by providing a clear, systematic assessment of the decision’s effects. CBA is not intended to replace the role of the decision maker or be used in lieu of existing decision-making processes. Rather, consider CBA a tool that adds information about the efficient use of resources to the other sources of information decision makers rely on.²⁶

2. Analysts should strive to quantify all impacts of a policy alternative relative to current policy, and to monetize costs and benefits for all members of society.

All policies generate costs and benefits. To accurately depict future conditions, cost-benefit analysts should attempt to quantify all impacts and monetize the costs and benefits of a proposed policy change relative to the status quo. But not all outcomes can be quantified or monetized. In such cases, analysts should document the qualitative outcomes along with the quantitative results. The analysis should also discuss who would be affected by the policy alternative and who would be affected by the current policy.

3. Transparency in a CBA enhances its value.

Transparency makes a CBA replicable and helps foster the reader’s trust. Assumptions and calculations should be sufficiently clear and detailed in the analysis to allow technical audiences to replicate it or, at a minimum, understand the steps taken in the analysis. When readers trust a CBA, their focus can shift from the technical details to the decision-making process.²⁷ Transparency also relates to clarity, that is, presenting the analysis in a way that is understandable and meaningful to policy audiences.

4. A CBA should disclose areas of uncertainty and clearly describe how uncertainty has been addressed.

A cost-benefit study is stronger when its authors address uncertainty. Some uncertainty is inevitable when forecasting policy effects and monetizing costs and benefits. Uncertainty should not paralyze the analysis; rather, analysts should explicitly acknowledge and address it by exploring the sensitivity of net benefits to the assumptions and estimates that they employed. They should document any uncertainty about predictions and valuations, as well as other assumptions that might affect the policy recommendation. They should also discuss the sensitivity techniques they used to address uncertainty.

²⁶ Matthew J. Kotchen, “Cost-benefit analysis,” in *Encyclopedia of Climate and Weather*, second edition, edited by Stephen H. Schneider, Michael Mastrandrea, and Terry L. Root (Oxford, UK: Oxford University Press, 2011).

²⁷ Richard O. Zerbe et al., 2010, p. 35.

5. The effort required for a CBA should not outweigh the expected value of the resulting information.

Some key issues can be addressed by using another less time-consuming form of economic analysis, such as cost-effectiveness analysis or fiscal-impact analysis. Before conducting a CBA, decision makers and analysts should consider whether the answer to the question being asked is worth the effort that will be expended to conduct the analysis. Moreover, when conducting a CBA, the analytic effort should focus on the factors most likely to affect the results.

6. The pursuit of a perfect analysis should not prevent the completion of a useful one.

Perfection is an unattainable and therefore unreasonable standard in economic analysis. A CBA that meets basic requirements regarding objectivity and methodology can provide valuable information and contribute to the decision-making process, so long as the study's limitations are explicit.²⁸

²⁸ Zerbe et al., 2010, p. 36.

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The Cost-Benefit Knowledge Bank for Criminal Justice helps to broaden the knowledge base of practitioners and policymakers about criminal justice cost-benefit analysis, deepen the knowledge and practice in this area, and support practitioners in building their capacity to promote, use, and interpret cost-benefit analysis in criminal justice settings.

Vera's Cost-Benefit Analysis Unit provides policymakers with clear, accessible information on the economic pros and cons associated with criminal and juvenile justice investments so that they can identify effective, affordable interventions for their jurisdictions and allocate resources accordingly.

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