

Cost-Benefit Analysis and Public Safety Technology: A Roundtable Discussion

OCTOBER 2014



Jules Verdone • Carl Matthies

EXECUTIVE SUMMARY

Public safety agencies face continuing budget pressure and need to get the greatest return from their scarce resources. New public safety technologies (PSTs) have the potential to make law enforcement more effective, whether it is an automated reporting system, protective gear for officers, a crime analysis program, or body cameras to record interactions between police and civilians. But these technologies are constantly evolving and each year brings a new set of options for decision makers. What is the best way to inform PST investments? Is cost-benefit analysis (CBA) a useful tool?

The Vera Institute of Justice convened a roundtable to discuss public safety technologies, the intersection of PST and CBA, how law enforcement approaches PST investments, and the potential role of CBA and other economic analyses to guide these decisions.

As the roundtable participants (see page 4) discussed, PST decisions are often based on word of mouth rather than formal analysis. Sometimes investment decisions are made to “keep up” with the technology. Agency leadership influences technology decisions, as can vendor marketing and legislation. Although these factors will always influence policymaking, the participants made a number of suggestions to improve PST decisions:

- > Investigate whether the root of the problem is technological;
- > Explore whether technologies that have already been deployed can address the problem; and
- > Determine whether there is capacity to effectively deploy a new technology.

If the answers to these questions indicate that it is worth exploring a new PST investment, the group discussed that CBA can:

- > Facilitate a discussion about the short-term and long-term effects of the investment;
- > Calculate the “fully loaded” cost of the PST, including training and ongoing maintenance, so there are no surprises about the total cost; and
- > Support funding requests by estimating the return on investment.

Cost-benefit analysis will not always be feasible because some technologies are so new that they have not yet been evaluated, and the effort required for a CBA may not be justified to study a small or obviously beneficial investment. But even when hard data is not available, CBA can be used as a framework to weigh a PST’s pros and cons.

FROM THE UNIT DIRECTOR

When a new technology comes on the market, many of us have the impulse to buy it right away—after all, technologies are marketed as a way to simplify and improve our lives. Law enforcement often shares that impulse; Public Safety Technologies (PSTs)—such as electronic monitoring, DNA databases, and risk-assessment tools—hold the promise of better outcomes at lower cost.

So how do law enforcement agencies determine which PSTs to buy? Using cost-benefit analysis (CBA)—an economic tool that weighs an investment’s costs and benefits—is one option.

When the Vera Institute of Justice’s Cost-Benefit Analysis Unit convened a roundtable of researchers, practitioners, and policymakers with expertise in law enforcement, PSTs, or both, the participants tackled difficult questions about how technology decisions are currently made and the effectiveness of using CBA to inform these decisions.

This paper covers the broad range of issues participants discussed during the daylong meeting. It may comfort readers to know that they are not alone in their questions about the relative costs and benefits of PSTs and that many others are grappling with the same issues. We hope you find this paper instructive and look forward to hearing your ideas and approaches to making decisions about PST investments.



Christian Henrichson
Director, Cost-Benefit Analysis Unit

Contents

- 4 Introduction
 - 4 Roundtable participants
 - 5 Public Safety Technologies Discussed in the Roundtable
- 8 Current decision making and planning for public safety technologies
- 11 Applying CBA to PSTs
 - 11 Staffing
 - 11 Budget challenges
 - 12 Strategic planning
 - 12 Types of Economic Analysis
- 13 Challenges of using CBA to assess public safety technologies
 - 13 Methods
 - 13 Practicality
 - 14 Application and interpretation
- 14 Recommendations for better decision making
- 15 When to conduct a CBA
- 17 Conclusion
- 18 Resources

Introduction

ROUNDTABLE PARTICIPANTS

Meghan Cook

Program director, Center for Technology in Government, the University at Albany, State University of New York

Cabell Cropper

Executive director, National Criminal Justice Association

John Dough

Chief warrant officer, Essex County Sheriff's Office, New Jersey

Doug Dretke

Executive director, Correctional Management Institute of Texas

Cynthia Lum

Director and associate professor, Center for Evidence-Based Crime Policy, George Mason University

Tom McEwen

Director of research, Institute for Law and Justice

Geraldine Nagy

Director, Travis County Community Supervision and Corrections Department, Texas

David O'Keefe

Chief, Crime Strategies Unit, Manhattan District Attorney's Office, New York

Linda Rosenberg

Executive director, Pennsylvania Commission on Crime and Delinquency

Susan Turner

Director, Center for Evidence-Based Corrections, University of California, Irvine

Note: Participants' titles and affiliations at the time of the roundtable meeting in October 2012.

Technology plays an ever-increasing role in public safety. An array of new tools for detecting and investigating crime, monitoring offenders, and preventing recidivism brings the promise of greater safety, more conclusive proof of innocence or guilt, fewer repeat offenders, and even taxpayer savings. The return on investment for public safety technologies (PSTs) is often difficult to calculate, however, not only for technologies just becoming available, but for those that have already been widely implemented.

As part of its Cost-Benefit Knowledge Bank for Criminal Justice (CBKB) project, the Vera Institute of Justice convened a roundtable to examine the use of CBA and other economic analyses to make PST investment decisions. Anecdotes and demonstrations can provide examples of the pros and cons of deploying a technology, but assessing its impact on public safety and its long-term benefits and costs often requires a more thorough examination.

The staff of Vera's Cost-Benefit Analysis Unit drew on the knowledge and experience of a distinguished group of roundtable participants to better understand the challenges policymakers and criminal justice executives face when assessing whether to invest in PSTs. (See a list of participants and their affiliations on this page.) These researchers and practitioners discussed their thoughts about whether and how cost-benefit analysis—a systematic, monetized accounting of the advantages and disadvantages of a proposal, policy, or program—can be useful in this process, and what other techniques might help.

For the roundtable discussion and in this paper, public safety technology (PST) is defined broadly to include both “hard” technology—the gadgets and machines that typically come to mind—and “soft” technology, such as risk-assessment tools, predictive models, and other innovations used in policing, courts, and institutional and community corrections. (See “Public Safety Technologies Discussed in the Roundtable,” pages 5 to 7.) PSTs of particular interest are those that provide public safety officials with information, either by generating novel information or by improving access to information that wasn't widely available or simply wasn't shared outside a given program, agency, or jurisdiction. Two examples are information systems used in network regional intelligence centers and forensic DNA databases.

The benefits of PSTs are often described in terms of their ability to increase an organization's efficiency, increase an organization's effectiveness, or enable an organization to do something worthwhile that was previously beyond its capabilities. When public sector budgets are distressed, technology is seen as a force multiplier, a way to do more with less, to operate with greater efficiency. Technologies that increase efficiency may also make an agency more effective by freeing up time and resources for tasks more directly related to its public safety mission. But not every technology has that effect, and as Cabell Cropper, executive director of the National Criminal Justice Association, said during the roundtable, technology “is a component of a strategy, not a strategy in and of itself.”

Over the past decade, the criminal justice field has seen marked improvements in the evaluation of public safety programs, including technology investments, and a shift toward an evidence-based paradigm of decision making. The National Law Enforcement and Corrections Technology Center (justnet.org) has published a step-by-step “technology decision tool” to help agencies assess and compare the costs and benefits of public safety technologies. And the U.S. Department of Justice’s Office of Justice Programs maintains CrimeSolutions.gov, a website that catalogs empirical evidence on a wide range of criminal justice programs.

Yet the use of cost-benefit analysis (CBA) for selecting investments in these technologies remains limited because of practical and conceptual challenges. It can be difficult to determine whether a technology will achieve its desired outcomes and be enabling, effective, and/or efficient. The roundtable participants tackled questions about when a CBA might be helpful in deciding which PSTs to purchase; if so, under what conditions; and if not, what other options might make sense.

Public Safety Technologies Discussed in the Roundtable

Public Safety Technologies are constantly evolving and more options surface every year. Participants talked about numerous PSTs during the daylong meeting, focusing on those used in law enforcement, corrections, and community corrections. This list is not exhaustive, but illustrates some points of discussion, as well as specific issues concerning investment and evaluation.

AUTOMATED FIELD REPORTING SYSTEMS: The U.S. Department of Justice Office of Community Oriented Policing Services describes these systems as allowing law enforcement officers “to use mobile data computers or laptops to fill out incident reports without leaving their assigned areas.” Tom McEwen of the Institute for Law and Justice said that these types of systems have been adopted “to do a job in a better, more efficient way” and that they benefit not only patrol officers, but help supervisors make approvals and allow analysts to obtain data faster. These devices also enable patrol officers to get information on prior calls to or occupants of an address to which they have been called, which can significantly improve officer safety.

AUTOMATED NOTIFICATION SYSTEMS: Roundtable members talked briefly about both victim notification systems, which inform victims of an inmate’s release, transfer, or escape, and prosecutor notification systems, which inform district attorneys of the arrest of priority defendants. Regarding Pennsylvania’s Statewide Automated Victim Information and Notification system, Linda Rosenberg of the Pennsylvania Commission on Crime and Delinquency (PCCD) asked, “How do you show the benefit to those victims who were not [re-]victimized because they received a notification and were able to plan appropriately? We can give you all the outputs in terms of the number of notifications that were sent, but we don’t know how many people were not victimized and feel safer because they’re able to access that information.” David O’Keefe of the Manhattan District Attorney’s Office’s Crime Strategies Unit described his office’s Arrest Alert system as the “central nervous system of our whole intelligence-driven

Public Safety Technologies Discussed – CONTINUED

prosecution model.” By automatically informing prosecutors when specific persons of interest are arrested, the system allows assistant district attorneys to take early ownership of cases and helps ensure that charging decisions and bail recommendations appropriately reflect a defendant’s known impact on crime in a community.

AUTOMATIC LICENSE PLATE READERS (ALPR): These devices use optic technology to read license plates. Cynthia Lum of the Center for Evidence-Based Crime Policy called ALPR “one of the most rapidly diffusing technologies in law enforcement.” She said that a lot of money has been spent on ALPR and that at least two evaluations question whether this technology is effective in reducing car theft or in deterring crime generally. Lum said more research is needed to determine whether this technology can have an impact on crime prevention. (For more discussion of ALPR, see “When to conduct a CBA,” page 15.)

CELL PHONE CAPTURE AND DETECTION TECHNOLOGIES: Correctional facilities may use these technologies to prevent cell phone calls and text messages inside the prison and block illicit phone communications, as well as to detect and locate the activity of contraband cell phones. (For more on this, see “Current decision making and planning for public safety technologies,” page 8.)

CRIME ANALYSIS PROGRAMS: These programs organize and interpret data to assess criminal activity and patterns. Tom McEwen talked about one automated program that allowed a department to identify “hot spots” of crime. He said that when departments “have a marriage of the technology with operations...you have a chance of having some true effectiveness on crime reduction or clearances. If you just implement technology and nothing else changes, it’s less likely to end up having a real effect within the department.”

DIGITAL DASHBOARDS: These customized portals or interfaces display key information about a program, agency, or system—sometimes with visual representations of data. For example, Linda Rosenberg talked about developing digital dashboards in Pennsylvania that will provide key indicators of crime trends and other relevant data to county criminal justice planning boards.

DNA TESTING AND DATABASES: DNA evidence is critical for both incrimination and exoneration. Linked databases allow for comparisons on a statewide, national, or even international scale. In the United States, justice systems have gradually widened the criteria for inclusion in an offender database, the point at which they can be added (e.g., at arrest versus upon conviction), and whether near matches can be used to investigate offenders’ kin. David O’Keefe noted that DNA database policies raise constitutional and ethical issues, and the state of New York determined that DNA would be collected “at the point of conviction, so we do lose the ability to find some people we would have caught otherwise, but that was a value decision that was made.” Doug Dretke, executive director of the Correctional Management Institute of Texas, said that in his state, he expected a legislative push to collect DNA at the point of all felony arrests.* He predicted that some county commissioners and sheriffs would object to that idea because related costs would shift from the state level to their local jurisdictions. Susan Turner, director of the Center for Evidence-Based Corrections at University of California, Irvine, suggested that some effort be made to measure the cost of reduced privacy in deciding how inclusive to make a DNA database.

* Since 2010, the state has collected DNA from convicted felons and after grand jury indictments of people charged with burglary or sex crimes.

FINGERPRINTING AND PALM-PRINTING LIVE SCANNERS: Digital capture of fingerprint, palm-print, and mug-shot data makes offender identification information immediately available to state and federal law enforcement databases for comparison against convicted offender information, as well as prints associated with unsolved crimes. Linda Rosenberg mentioned that the Pennsylvania Commission on Crime and Delinquency uses federal Justice Assistance Grants to help procure standardized fingerprint, palm-print, and mug-shot capture devices. She cited this as an example of the kind of technology investment her agency is inclined to support because of its statewide impact and public safety value, for both officer safety and offender identification. Arresting officers use this technology to capture identifying information and submit it electronically to law enforcement agencies in Pennsylvania and throughout the United States. These devices are connected to other systems that notify officers when individuals in custody are wanted by other law enforcement, probation, or parole agencies.

GLOBAL POSITIONING SYSTEM (GPS) AND OTHER ELECTRONIC MONITORING TECHNOLOGIES: Roundtable participants discussed these PSTs in the context of parole, particularly for monitoring sex offenders. Electronic devices potentially lower the cost of monitoring individuals compared to the costs of direct supervision by community corrections officers, cost less than keeping individuals incarcerated, and can enhance public safety. If these technologies aren't used properly and monitored appropriately, however, unintended consequences may result, such as expending more time and labor than anticipated. Departments also need to have clear policies and procedures that set guidelines as to how soon officers should respond to indications of violations of probation or parole conditions.

INFORMATION-SHARING TECHNOLOGY: Participants talked about many types of this technology, including sharing ALPR data across state lines and public safety-related data among agencies within a jurisdiction (such as Essex County, New Jersey). On a smaller scale, David O'Keefe told the group that an intern in his office helped develop a database for information about priority offenders for the Crime Strategies Unit that, coupled with other data systems, is "the core for our intelligence-driven prosecution." NCJA executive director Cabell Cropper pointed out that the cost of governance—of overcoming inter-jurisdictional policy and IT compatibility issues—is rarely factored into the cost of information-sharing projects.

RISK-ASSESSMENT TECHNOLOGY: Usually deemed "soft technology," in a corrections context these tools are used to gauge the relative risk level—and typically the needs—of people who are pretrial, in a facility, or under community supervision. Such instruments may assess the risk of flight, future criminal activity, or both; criminal justice agencies use them to make decisions about pretrial release, placement, supervision, and case management. Two instruments discussed during the roundtable are the LSI-R and COMPAS; another is the ORAS. (See "Resources" on page 18 for more information.)

SUPERVISION KIOSKS: Computerized kiosks verify a person's identity and present a number of questions he or she must answer as a condition of supervision. People on parole or probation may be required to use this technology as part of their supervision, usually in lieu of a visit to a probation or parole office. Like electronic monitoring, this technology is designed to lower the cost of providing community-corrections services, but it has the added benefit of lessening disruption in the lives of supervisees with job and family responsibilities.

Current decision making and planning for public safety technologies

A host of factors influence decisions about investing in public safety technologies, although cost-benefit analysis is rarely one of them. A few themes emerged when roundtable participants discussed the decision-making process.

When agencies analyze the diffusion of innovations, their decisions about technology investments are sometimes based on objective information and data about what really works. More often, however, investments in PSTs are based on recommendations and word-of-mouth from colleagues. Several participants spoke about the desire to keep up with changing technology. They acknowledged that emotions often play an important role: peer pres-

“When you buy technology...you’re also buying the business process that accompanies it.”

John Dough
Chief warrant officer, Essex County
Sheriff’s Office, New Jersey

sure, competition, anxiety, fear, and envy can drive an agency’s decisions to invest in PSTs. Cynthia Lum, director and associate professor at George Mason University’s Center for Evidence-Based Crime Policy, alluded to a belief in policing and other fields that “we have to keep up” with technology, a belief that “pushes law enforcement to make decisions about acquiring technologies very quickly,” with little knowledge or research about what the costs and benefits will be.

Political factors also drive investment decisions. Changes in leadership and philosophies within an agency or jurisdiction can influence technological choices, and vendors are often persuasive. Legislation may require agencies to adopt a specific PST, particularly, in recent

legislative sessions, a risk and needs assessment tool. And organizations may purchase a PST opportunistically, for example, when funds are available and must be spent within a given time frame, or in response to a crisis or a perceived crisis.

Doug Dretke, executive director of the Correctional Management Institute of Texas, said that as agencies try to tie technology to their strategic plan, “sometimes technology is an easy way out” of difficult discussions, and potentially may allow people “to avoid the real issues we need to challenge ourselves with.” As an example, he cited the expensive technologies correctional institutions invest in to combat smuggling of cellular phones and hinder their use by inmates, even when facility staff may be the main source of contraband phones. From Dretke’s perspective, “All of a sudden we’re spending millions of dollars to put unproven technologies in place to prevent cell phone use.”

Some jurisdictions are setting parameters for technology investment decisions; for example, Linda Rosenberg, executive director of the Pennsylvania

Commission on Crime and Delinquency, said Pennsylvania funds only those technology initiatives expected to have a statewide impact and that adhere to established statewide standards.* Other jurisdictions write detailed fiscal notes, providing legislators official estimates of the costs and savings associated with a proposed investment; Maine, Texas, Washington, and Wisconsin have produced guides outlining a consistent process for writing fiscal notes. (For more about fiscal notes, see the sidebar “Types of Economic Analysis,” page 12, and “Resources,” page 18.)

When public safety officials don’t approach technology investments as they would another business decision, problems may arise. “When you buy technology...you’re also buying the business process that accompanies it,” said chief warrant officer John Dough of the Essex County Sheriff’s Office in New Jersey. He said this realization may catch local police departments off guard, and that unless people think through the entire strategy surrounding a PST purchase, they end up “married to a process they hate.” Some mistakes are obvious in hindsight, such as an IT upgrade project that didn’t factor in the cost of air cards when purchasing laptops, thus immobilizing what was supposed to be a mobile technology.

By contrast, agency officials may make the best investment decisions when they consider what will be needed both logistically and in terms of infrastructure to support a new technology. Doug Dretke said these concerns often go unaddressed, “even in our very simple front-end cost analysis. So we don’t invest in the training that’s critical; we don’t hire or bring in the level of facilities maintenance people to keep this technology up. My belief is that you can go to a significant number of facilities, into their underground storages, and you’ll see all kinds of really cool technology that was bought and within a very short period of time became obsolete because we didn’t understand the costs that were necessary to budget to maintain that technology, to keep it functional, to keep it viable.”

Cabell Cropper emphasized the importance of “deploying existing technology to accomplish a new strategic objective.” One example is modifying existing data systems to share information across agency and state lines. He also noted that the process of governance itself adds considerable underappreciated costs to PST implementation. These include not only research and development costs but administrative costs, particularly when a technology decision involves many agencies or jurisdictions, which may have conflicting policies and laws.

On the other hand, purchasing the right technology stands to benefit a number of users, as Tom McEwen, director of research for the Institute for Law and Justice, explained. In the context of policing, a field reporting system “helps patrol officers, but it also helps supervisors on approvals and helps

* According to PCCD’s most recent annual report, “OCJSI works to improve the integration of justice information by facilitating the development and ongoing enhancement of statewide-standardized records management systems that integrate data vertically and horizontally with other local, county, state and federal justice systems.” PCCD, *Pennsylvania Commission on Crime and Delinquency Annual Report 2010-2011* (Harrisburg, PA, 2014), 15.

analysts on getting data quicker.” McEwen also talked about how technology can allow police “to do something they hadn’t been able to do before,” and, in combination with operations, can reduce crime or improve clearances (see the sidebar “Public Safety Technologies Discussed in the Roundtable,” pages 5 to 7).

Because people often don’t think about the entire picture when they contemplate the costs and implementation of PSTs, the following things can be overlooked:

- Public safety technologies can have both intended and unintended effects on organizations in the short and long term, and thus may be difficult to evaluate. As Cynthia Lum said about policing, technology has an impact on “every single aspect” of a department’s work, from budgets, operations, and unit and officer roles and hierarchies, to things that are more difficult to measure, such as organizational culture and community perceptions. Certain technologies that can improve crime detection may not help prevent crime—and vice versa; Lum cited automated license plate readers as an example of the former scenario.
- Reaching agreement on the goals PSTs are meant to achieve can be difficult. “There’s really no uniform agreement on what is the goal of an agency,” David O’Keefe said. “So if I set the goal as A and you set it as goal B, then how do you define success and how do you measure it and how do you monetize it?”

Lum said that it can be challenging to reach agreement on policing goals, in part because officers and agencies “differ on their visions of what ‘good policing’ includes. For example, law enforcement leaders might say, ‘Our vision is proactivity: information-led, evidence-based policing,’ but their core values, their standard operating procedures, their strategic plans, and their organizational culture all emphasize a more reactive approach.” She said that performance is typically measured and rewarded by numbers of arrests and case clearances, by how well officers understand and implement standard operating procedures, or by how quickly they find a perpetrator. There may be a misalignment between the vision and the philosophy of either a leader or an agency and the strategic and operational procedures the agency implements and rewards. Because of these differences, Lum said, “it’s really difficult to determine the costs and benefits of purchasing a particular technology.”

Doug Dretke gave the example of maintaining security and reducing recidivism as sometimes-competing goals in corrections settings. Facilities typically ban use of the Internet, for example, so many people are unprepared to use it when they return to the community and look for work. “Rather than challenging ourselves about how we harness technologies like the Internet to use for things like rehabilitation and recidivism programs,” many if not most correctional facilities ban its use. “Instead,” he continued, “how do we use technology to [reduce recidivism], do it safely, protect victims,” and meet other goals?

Applying CBA to PSTs

Cost-benefit analysis is a systematic process that, among other things, generates discussion about assumptions, values, and biases. (See “Types of Economic Analysis,” page 12). But organizations often don’t have the time or resources to commit to an in-depth analysis before purchasing technologies, said Meghan Cook, program director with the Center for Technology in Government at the University at Albany, State University of New York. How, then, can people apply CBA to decision making about PSTs? Roundtable participants discussed CBA in the context of staffing, the broad budget climate for government agencies, and organizational strategic planning.

STAFFING

Some roundtable participants suggested that CBA might help assess the staffing implications of PSTs. Some roundtable participants stressed that new PSTs can create work and be a burden to staff. The *Staffing Analysis Workbook for Jails*, a National Institute of Corrections publication, cautions that “technology rarely reduces staffing needs” and goes on to warn about “salespersons who promise ‘staff savings’ by deploying their new equipment,” a point also discussed at the roundtable. (See the Resources section for more information.)

BUDGET CHALLENGES

John Dough, Essex County chief warrant officer, and other roundtable participants suggested that CBA could be helpful in situations when agencies and jurisdictions consider sharing PSTs through consolidation or regionalization, both of which can be politically charged issues. “Everybody wants to have their own chief of police and their own cop that comes in different uniforms and everything,” he acknowledged. “But sooner or later, it’s going to face the criminal justice system that you can’t have all these disparate systems. You can have the same one and get the same effect.”

On a similar note, Michael Jacobson, director of the Vera Institute of Justice when the roundtable discussion took place, talked about what lies ahead for state and local budgets: “This is going to be a brutal time for local governments generally and law enforcement specifically. It’s already pretty bad, but it’s just going to get worse.” He implied that CBA could be a useful decision-making tool, given that any federal cuts will inevitably have a dramatic impact on local jurisdictions and agencies, and that “they’re going to be under increasingly huge fiscal pressures for the next few years. That’s one of the reasons we want to try thinking about these issues in a really practical way and make them useful to the field.”

“You cannot do evidence-based practices without some kind of evidence, and I think CBA is a critical step to do this.”

Geraldine Nagy
Director, Travis County Community
Supervision and Corrections
Department, Texas

STRATEGIC PLANNING

Broadly speaking, CBA can help promote strategic planning and critical thinking. Geraldine Nagy, who was director of the Travis County Community Supervision and Corrections Department in Texas at the time of the round-table discussion, said, “We’re talking about money when we do a cost-benefit analysis. I think that’s really valuable, because it simply gets people thinking differently and checking their assumptions.” She concluded, “You cannot do evidence-based practices without some kind of evidence, and I think CBA is a critical step to do this.” David O’Keefe, chief of the Crime Strategies Unit for the Manhattan District Attorney’s Office in New York City, expressed some misgivings about the ability of CBA to quantify the intangible benefits of government initiatives, but said that if “you limit the number of factors you have to consider, I think [CBA is] incredibly valuable. It really makes you think differently about the process.” Others said that “cost-benefit thinking” may be constructive even when an agency doesn’t conduct a CBA.

Doug Dretke reinforced some of what others said regarding the use of CBA as part of decision making about public safety technologies: “Much of what we’ve been talking about is actually strategic planning,” he said. “It’s critical thinking; it’s building a framework with which to evaluate something like technology in public safety.” Dretke concluded, “So it could have a huge impact if we somehow take this process and are able to lay a framework to go through the multiplicity of stakeholders, the dynamics, and make good decisions, and then tie it back to what our jurisdictions are really about.”

TYPES OF ECONOMIC ANALYSIS

A **cost analysis** provides a complete accounting of the expenses related to a given policy or program decision. It supplies the most basic cost information that decision makers and practitioners require and forms the foundation of all other economic analyses.

A **fiscal impact analysis** is a comprehensive study of all governmental revenues, expenditures, and savings that will result from a proposed policy or program. State and local fiscal offices routinely produce fiscal impact analyses, also called fiscal notes when they are prepared for draft legislation. This type of analysis helps policymakers determine whether a proposed initiative is affordable from a budgetary standpoint. The legislation in some states requires a revenue match for any costs projected in fiscal notes, which would also require a separate analysis.

A **cost-effectiveness analysis** (CEA) can determine whether an initiative is an efficient use of resources by evaluating which program or policy creates the desired result at the lowest cost. CEA is a valuable tool for weighing programs or policies in which the desired outcomes are similar (such as two job-training projects), but should not be used to compare programs in which the outcomes sought are different (for example, comparing a drug treatment program to a strictly cognitive behavioral program).

A **cost-benefit analysis** (CBA) is a method for comparing the economic pros and cons of policies and programs to help policymakers identify the best or most valuable options to pursue. A characteristic feature of CBA is that it monetizes, or puts into dollar terms, all of an initiative’s benefits and costs so that they can be directly compared. Because outcomes are monetized, a CBA can compare initiatives that have different purposes—such as reducing victimization or improving program participants’ reading scores. (For more information about CBA and criminal justice, go to cbkb.org/basics.)

Challenges of using CBA to assess public safety technologies

In general, the following challenges are associated with CBA:

METHODS

- Some roundtable participants questioned the appropriateness of applying CBA to government work. As David O’Keefe said, “To me, cost-benefit analysis is very much a business-driven model, and government is not a business.” To perform CBA of a PST investment, he continued, “You would have to incorporate many other unquantifiable intangibles [such as privacy, police legitimacy, and due process].”
- In some cases, estimating the costs and benefits of a PST over its life span, which could be many years, may be considered a liability of CBA, rather than an asset, because the long term is often speculative. Some participants expressed concern about the credibility of cost-benefit estimates that extend beyond a single budget cycle—even if estimates take uncertainty into account. (For more on uncertainty and sensitivity analysis, see “Application and interpretation,” page 14.)

PRACTICALITY

- Performing a thorough CBA may entail a considerable investment and may not be deemed worth the effort. Strategic planning can be difficult even without the addition of CBA. Agencies may not have sufficient time, knowledge, staff, or other resources to do a comprehensive analysis. CBA may be excessive for relatively small investments or when an investment’s net benefits seem intuitively obvious. And although an organization’s leaders may recognize the value of CBA, they may not be able to perform or fund one.
- Conducting CBAs of innovative programs and policies may be difficult, especially because such analysis depends on program evaluation. If organizations must wait for evaluations to be completed before embarking on a CBA, the process could discourage the uptake of creative new ideas. “I feel like everything has become evidence-based,” O’Keefe said. “Everything you do has to be measured and valued [somehow], and I think I feel constricted in some ways, in terms of innovation, because you have to prove everything.”
- In addition to the challenges with analytic methods, practical concerns about implementation merit attention too. For instance, technologies may become obsolete much more quickly than predicted. Consider the information technology innovation of cloud computing: agencies that only recently have invested in new database servers might already be contemplating a move to virtual data storage.

APPLICATION AND INTERPRETATION

- › Benefits and budgetary savings are not the same thing. Budgetary savings are a subset of benefits—and not all benefits are budgetary savings. First, benefits may accrue to parties other than the government (and therefore to its budget). Second, if a CBA shows that a program, policy, or type of technology does generate taxpayer benefits, the analysis demonstrates

“Much of what we’ve been talking about is actually strategic planning. It’s critical thinking; it’s building a framework with which to evaluate something like technology in public safety.”

Doug Dretke
Executive director, Correctional
Management Institute of Texas

benefits as an opportunity for savings; it’s up to policy-makers to revise the budget. Government agencies are under great pressure to find ways to save precious dollars, so policymakers may not have much interest in benefits that don’t result in budget savings. People are impatient to see savings and may care more about generating savings than about creating additional benefits. A CBA may show that an investment will either take several years to recoup its costs or will recoup them only under specific conditions; an information technology system overhaul may fall into this category. As Linda Rosenberg explained, some people “only want short-term results. If the benefit is going to take a couple years to realize, they’re not interested and it becomes very challenging to show them the short-term benefit.”

- › Jurisdictions may not want CBA results on paper, that is, something “FOIA-able”—meaning they could be obtained under the Freedom of Information Act—as some participants described it, because results could be considered too sensitive to document, opening the door to public review and criticism, even if studies aren’t published.

Recommendations for better decision making

Roundtable participants offered many recommendations for making investment decisions about public safety technologies and the use of cost-benefit analysis or other types of economic analysis. All of these ideas had support from some members of the group, but there was no unanimous agreement or consensus on any recommendation.

General decision making about public safety technologies

- › Ask whether your agency or jurisdiction needs a technology-based solution—and why. Members of the roundtable agreed that people should consider a series of questions about the business need before deciding whether

to invest in a PST, starting with these:

–Is the root of the problem at hand a technological one—or do other motivations explain the call for an investment in a PST?

–Is there an existing technology that the program, agency, or jurisdiction can repurpose?

–What costs will the technology entail both at start-up and when it is “fully loaded”? That is, will training, additional staff time, or other expenses be required to use the PST successfully? (See the National Law Enforcement and Corrections Technology Center’s Technology Decision Tool, which is hyperlinked in the Resources section, for a description of costs associated with technology purchases.)

› If the answers point decision makers in the direction of investing, it’s important to ask the following questions:

–Is the technology in question effective—and if so, according to whose experience, research, and data?

–Under what conditions is the PST effective? Do those conditions exist in the system or jurisdiction that is considering the investment?

–Can the technology be deployed or implemented properly?

When to conduct a CBA

Given that cost-benefit analysis is more comprehensive than other types of economic analysis (see “Types of Economic Analysis,” page 12), conducting a CBA could be a good way to avoid purchasing gadgets that quickly grow outdated or adopting impractical business processes associated with their acquisition. But the vast majority of investment decisions about public safety technology don’t entail CBA, mostly because the process takes time and is resource-intensive. Conducting a CBA for all investments would be excessive. Roundtable participants made these suggestions about when CBA would make the most sense with regard to PSTs:

› **Consider whether you should use CBA or another tool to help make decisions.**

–Meghan Cook said that the intent of planning tools is to elicit information and support a group analysis and decision-making process: “It’s not the tool that is the golden ticket, it’s the information generated from the analytical process.”

–She also talked about using a public-value framework in decisions about PST investments, and likened the use of CBA to that of the Portfolio Public Value Assessment Tool, or PVAT, which her research center developed. She said the tool is based on a value framework “that includes a range of social and political returns beyond the usual financial metrics.” (For more on the

PVAT, see the Resources section.)

–Roundtable participants said some agencies might want to consider using “cost-effectiveness analysis plus”—that is, an analysis less intensive than a CBA—and then explicitly discussing unintended consequences and the technology’s impact on shared values. David O’Keefe of the Manhattan District Attorney’s Office suggested this approach for decisions about PST investments rather than performing outright cost-benefit analysis.

- **Include CBA as part of a planning process—and not as a stand-alone answer.** A number of participants talked about cost-benefit analysis as an important part of a planning process. As Tom McEwen put it, “I think there’s a tendency when you say ‘CBA,’ to say that all you have to look at is the table at the end that shows the dollars, and you don’t have to think about what came before that.” He said it would be useful “if you can push agencies to start talking about what the real use of the technology is in an agency, and what the benefits might be and the whole process that leads up to...the costing and the benefit part.” Similarly, Cynthia Lum explained how CBA could be useful in a police agency’s general planning: “Getting the commanders to discuss concerns that are raised in cost-benefit analysis is positive for policing.”
- **Use CBA to help ensure that projects are scoped properly.** Many members of the roundtable talked about the challenges inherent in request for proposal (RFP) processes involving technology. Linda Rosenberg stressed the importance of making sure that RFPs clearly define the proposed deliverables and project benefits. Clients and vendors must have realistic expectations. She said one reason huge information-technology projects fail is that “they’re not scoped properly and there’s still not enough qualified staff available to manage them properly.” If the scope of a project is unwieldy or poorly defined, CBA-type thinking can help reveal that.
- **Use CBA to examine existing investments.** Some roundtable participants support the idea of applying CBA to existing technologies as a way of assessing whether the investments lived up to expectations. Geraldine Nagy suggested that this is analogous to piloting programs to see whether they might be adopted more widely. “Drug courts are a perfect example of this,” she said. “At first you don’t even know if drug court is worthwhile at all—it’s very expensive—and then with time you get to review it and dig down and see what is really good about those courts that do work. Then you have a model and you set standards and you know you can move forward.” Cynthia Lum described talking with the International Association of Law Enforcement Planners about strategic planning for automated license plate readers (ALPR or LPR), which she said evaluations have shown to have “very little to no effect” on crime reduction and prevention, despite extensive investment in the technology. “Many agencies have already acquired it,” she said. “Not

Cost-benefit analysis can push agencies to start talking about what the purpose, goal, and real use of a technology is.

only have they already purchased the LPR, it's rapidly diffusing into police agencies." She suggested that discussing the costs and benefits of these technologies could challenge commanders and chief executives "to figure out how to use LPR technology in the best way possible to get the most out of their investment."

- **Use CBA at a certain cost or risk threshold.** Agencies or jurisdictions may choose to set levels of spending or risk that would trigger a cost-benefit study of a program or policy. Susan Turner, of the Center for Evidence-Based Corrections, suggested that CBA might be desirable when agencies or systems undergo "big changes" in technology, especially with something that could potentially "get them in trouble," such as the early release of prisoners or significant changes in deployment of police.

Conclusion

Making sound decisions about any purchase can be challenging and time-consuming. With public safety technologies, the pressure to acquire the latest gadget and not "get left behind" makes critical thinking about these often costly investments even more important.

The group suggested that Vera, and other organizations that focus on CBA or criminal justice, support better decision making when it comes to PST spending by advising professionals on technology planning and cost-benefit analysis. They recommended more training on technology planning as part of an executive or managerial skill set and incorporating CBA as part of leadership and executive development processes. They pointed out that CBAs of basic data systems could demonstrate the value of and encourage more investments in fundamental infrastructure, which could then go on to support further evaluations and economic analyses.

Participants thought it would be useful to have a toolkit for county or state officials that describes the information to collect when building CBA into an initiative. They also liked the idea of creating a similar toolkit for other stakeholders, such as policymakers, budget staff, legislators, and even a broad public audience. Making materials and presentations available to guide people on what costs and benefits to include, and to clarify what the related terminology means, would support the use of CBA.

By the end of the roundtable, members of the group agreed that CBA can be useful under specific—but not all—circumstances involving PSTs (see "When to conduct a CBA," page 15). Participants cited the challenge of getting good evaluations of PSTs, along with the resource-intensive nature of performing CBA, as obstacles to conducting cost-benefit studies. They also noted general improvements in planning and decision making, regardless of whether an agency or jurisdiction uses CBA.

Resources

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

Elizabeth Groff and Tom McEwen, *Identifying and Measuring the Effects of Information Technologies on Law Enforcement Agencies: The Making Officer Redeployment Effective Program: A Guide for Law Enforcement* (Alexandria, VA: Institute for Law and Justice, 2008).

Guidelines for writing fiscal notes

- **Maine:** [Office of Fiscal and Program Review](#)
- **Texas:** [Legislative Budget Board](#)
- **Washington:** [Office of Financial Management](#)
- **Wisconsin:** [Legislative Reference Bureau](#)

The National Law Enforcement and Corrections Technology Center's [Technology Decision Tool](#)

The Portfolio Public [Value Assessment Tool](#) (PVAT)

D.R. Liebert and R. Miller, *Staffing Analysis Workbook for Jails, Second Edition* (Washington, DC: U.S. Department of Justice, National Institute of Corrections, 2001).

Risk and needs assessment tools:

- [LSI-R](#)
- [COMPAS](#)
- [ORAS](#)

U.S. Department of Justice's Community Oriented Policing Services (COPS Office) [glossary](#)

Acknowledgments

The authors would like to thank the Bureau of Justice Assistance for their generous support of the Cost-Benefit Knowledge Bank for Criminal Justice (CBKB) and the Public Safety Technology roundtable discussion. Thanks is also due the many Vera staff, including Dan Wilhelm, Peggy McGarry, Mary Crowley, Christian Henrichson, Patricia Connelly, and Scarlet Neath who reviewed and edited this document. The authors would especially like to thank the roundtable participants for their candid and insightful comments on this vital area of government investment.

About the Cost-Benefit Knowledge Bank for Criminal Justice

The Cost-Benefit Knowledge Bank for Criminal Justice (CBKB) 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.

About the Cost-Benefit Analysis Unit

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.

© 2014 Vera Institute of Justice. All rights reserved.

This guide is available on Vera's website at www.vera.org/cba-and-public-safety-technology.

For more information about this report, contact Christian Henrichson at chenrichson@vera.org.

This project is supported by Grant No. 2009-MU-BX K029 awarded by the Bureau of Justice Assistance. The Bureau of Justice Assistance is a component of the Office of Justice Programs, which also includes the Bureau of Justice Statistics, the National Institute of Justice, the Office of Juvenile Justice and Delinquency Prevention, the Office for Victims of Crime, the Community Capacity Development Office, and the Office of Sex Offender Sentencing, Monitoring, Apprehending, Registering, and Tracking. Points of view or opinions in this document are those of the authors and do not necessarily represent the official position or policies of the U.S. Department of Justice.

The Vera Institute of Justice is an independent nonprofit organization that combines expertise in research, demonstration projects, and technical assistance to help leaders in government and civil society improve the systems people rely on for justice and safety.

Suggested Citation

Jules Verdone and Carl Matthies. *Cost-Benefit Analysis and Public Safety Technology: A Roundtable Discussion*. New York: Vera Institute of Justice, 2014.

cost-benefit knowledge bank
for criminal justice **CBKB**

Vera Institute of Justice
233 Broadway, 12th Floor
New York, NY 10279
Tel: (212) 334-1300
Fax: (212) 941-9407

Washington DC Office
1100 First St. NE, Suite 950
Washington, DC 20002
Tel: (202) 465-8900
Fax: (202) 408-1972

New Orleans Office
546 Carondelet St.
New Orleans, LA 70130
Tel: (504) 593-0937
Fax: (212) 941-9407

Los Angeles Office
707 Wilshire Blvd., Suite 3850
Los Angeles, CA 90017
Tel: (213) 223-2442
Fax: (213) 955-9250

VERA
INSTITUTE OF JUSTICE