Criminal Justice Evaluation Framework (CJEF): Cost and Efficiency Evaluations

THE CRIMINAL JUSTICE EVALUATION FRAMEWORK (CJEF)

The Criminal Justice Evaluation Framework (CJEF) comprises a series of documents designed to introduce people who are inexperienced in evaluation to the various methodologies available so that they can determine the most appropriate approach for their particular evaluation. It is also designed to provide guidance to government departments and external agencies on the standard expected by the Department of the Premier and Cabinet (DPC) of evaluations conducted in a criminal justice context. While DPC acknowledges that evaluating programs, policies, initiatives, interventions and operations that exist within real-world contexts requires flexibility, patience, and the capacity to communicate effectively across multiple disciplines and with persons inexperienced in research methodologies, it expects the highest standard of research in all criminal justice evaluations.

INTRODUCTION

Criminal justice agencies are increasingly required to demonstrate the effectiveness of crime prevention, diversion and rehabilitation initiatives, as well as new service delivery models. Evidence of program effectiveness is critical to ensure that programs are achieving their goals and not having unintended consequences. Such evaluations also inform resource allocation decisions and the distribution of limited funds across a highly competitive criminal justice sector. Yet few policy advisors and program coordinators have the time to develop significant expertise in research methods and design. This sometimes means that well-intentioned evaluations become methodologically flawed, making it difficult to meet government requirements to provide evidence of a program's effectiveness.

Fortunately, policy advisors and program coordinators do not require a detailed knowledge of research methods and design in order to improve their evaluations and assist in the process of interpreting and critiquing program outcomes. Simply learning the basic principles of evaluation can help avoid costly mistakes and better demonstrate the outcomes of interventions.

WHAT IS AN EVALUATION?

Evaluation is the systematic collection and analysis of information to make judgements about the effectiveness, efficiency, and appropriateness of a program or initiative. The principles of evaluation can be applied to many contexts (e.g. policies, programs, initiatives, interventions, and operations). For ease of communication, this document adopts a broad definition of program evaluation which may occur in any of these contexts. A program typically contains a series of actions or processes designed to produce some level of measurable change or outcome. For example, a mentoring program may match at-risk youth with mentors; support the relationship over time to improve the number in education and employment; and reduce the numbers who have contact with the criminal justice system. Alternatively, police operations may be changed through the introduction of hot spot policing where their activities are focused on high-crime locations to improve community safety and reduce the number of crimes in a particular location. Evaluation is a dynamic process that assists with the ongoing development and adaptation of programs to better suit the context in which they operate. Therefore, it is of benefit to policy advisors and program coordinators to incorporate an evaluation strategy in the early stages of program planning.

This document introduces cost and efficiency evaluation and outlines the standards expected of this type of research.

WHAT IS A COST AND EFFICIENCY EVALUATION?

Cost and efficiency evaluations inform effective decision making by identifying the costs and benefits associated with policies, programs, initiatives, interventions and/or operations.[1] They assist individuals to determine the level of funding required for a given project, the cost-effectiveness of one program versus another, the level of benefit derived from a given investment and the efficiency with which clientele and agency resources are being used (Department of Finance, 1991). The outcome of a cost and efficiency evaluation can have important consequences for future spending priorities, decisions about the direction of initiatives and the level of accountability available for public funded initiatives (Marsh, 2010).

This document provides a brief introduction to cost and efficiency evaluations and aims to assist individuals and agencies by describing the principles and measures on which this method of evaluation is based. In particular, it considers:

- What are cost and efficiency evaluations used for?
- Why should a cost and efficiency evaluation be conducted?
- When should a cost and efficiency evaluation be conducted?
- What types of cost and efficiency evaluation are available?
- Why hasn't cost and efficiency evaluation typically been used in criminal justice research and are things starting to change?

Within a criminal justice context, cost and efficiency evaluations are more than merely an accounting exercise. They require rigorous and systematic calculations conducted with respect to social welfare outcomes (Chelfin, 2010). As outlined in this document, a high level of technical knowledge is required to appropriately conduct a cost and efficiency evaluation. Therefore, it is strongly recommended that where individuals and agencies do not possess this level of expertise they engage a trained professional to undertake this type of research. Readers seeking a more in-depth understanding than is provided in this overview should refer to the resources listed at the end of this document or contact Queensland Treasury.

WHAT ARE COST AND EFFICIENCY EVALUATIONS USED FOR?

Cost and efficiency evaluations are used to determine whether the financial costs incurred through the implementation and maintenance of a program are justified by the subsequent benefits of the program (Rossi, Lipsey & Freeman, 2004). Rossi and colleagues identify four ways in which the outcomes of cost and efficiency evaluations may be used by decision makers:

1. to determine how limited funds are best divided among a range of programs found to be similarly effective at addressing the same issue
2. to identify those programs that are likely to produce the biggest returns for the money invested
3. to determine how changes in current funding agreements may maximise the financial efficiency of existing programs
4. to determine which, out of a number of alternative programs, should receive funding.

WHY SHOULD A COST AND EFFICIENCY EVALUATION BE CONDUCTED?

Funding is often scarce and dependent on the demonstrated effectiveness of a program given a set level of expenditure. Conducting a cost and efficiency evaluation allows advocates and administrators to

[1] Hereafter collectively referred to as programs

demonstrate, in a rigorous and systematic way, the reasons why a program should receive funding, over other available alternatives, and what level of funding a program should receive (Rossi et al., 2004).

WHEN SHOULD A COST AND EFFICIENCY EVALUATION BE CONDUCTED?

Cost and efficiency evaluations can be conducted prior to program implementation (*ex ante* efficiency evaluation) or once a program has been implemented and demonstrated to be effective (*ex post* efficiency evaluation) (Rossi et al., 2004).

Ex ante efficiency evaluations are calculated using the estimated costs and benefits of a program (Rossi et al., 2004). These estimates may be derived from pilot research which demonstrates the potential costs and benefits of a program, the identified costs and benefits associated with similar programs, or based on evaluators' expertise. The accuracy of these estimates determines the extent to which e*x ante* efficiency evaluations over- or underestimate the costs and benefits associated with a program. Therefore, it is important that estimates are based on the most accurate and reliable information and assumptions available at the time. *Ex ante* efficiency evaluations are likely to be of most use to decision makers when the costs of implementing a program are high and the expected benefits will take a long time to materialise (e.g., parenting programs for every parent of a child engaged by the criminal justice system) or if, once implemented, the program will be difficult to abandon or alter (e.g., plan to build 2 new prisons) (Rossi et al., 2004).

Ex post efficiency evaluations are calculated using the actual costs and benefits of a program and, therefore, are typically carried out in conjunction with, or immediately following, an outcome evaluation[2] (Rossi et al., 2004). In this type of analysis, program outcomes can be understood in absolute or comparative (or both) terms. Program evaluations conducted in absolute terms reflect the cost of achieving a specific outcome (e.g., 10 lives saved) or the cost of producing a set level of financial saving. Program evaluations conducted in comparative terms identify the cost-efficiencies of one program over some alternative. *Ex post* efficiency evaluations are likely to be of most use when decision makers need to decide how funding should be allocated across programs or available alternatives.

A cost and efficiency evaluation should not be used when (Rossi et al., 2004):

- the program produces only minimal benefits or achieves near total effectiveness
- the analysis is to be conducted by persons untrained in this method of analysis
- assigning economic values to the program outcomes would obscure the meaning of those outcomes
- stakeholders disagree on the costs and benefits of a program
- the analysis relies on a number of untested assumptions
- the outcomes of the analysis are likely to vary widely depending on the way in which specific costs and/or benefits are calculated.

WHAT TYPE OF COST AND EFFICIENCY EVALUATIONS ARE AVAILABLE?

There are a number of cost and efficiency evaluations available. The approaches described here include:

- financial analysis
- cost-saving analysis
- cost-effectiveness analysis
- cost-benefit analysis.

[2] For further information regarding outcome evaluations see *Criminal Justice Evaluation Framework (CJEF): Conducting effective outcome evaluations*.

Cost-effectiveness and cost-benefit analysis are described in particular detail as they are likely to be of most relevance to criminal justice research.

Financial analysis

Financial analysis (also referred to as budget analysis, financial statement analysis and accounting analysis) provides detailed information on funding sources and expenses for the purpose of demonstrating or estimating the impact of a program on an agency's budget. In particular, a financial analysis considers whether the projected or actual revenue allocated to the program is sufficient to cover expenditures. Where a program is expected to generate funding, a financial analysis will also identify whether the program is commercially viable (i.e., profitable) or whether there is a need for government to provide funding support.

This analysis does not include a measurement of the benefits, efficiency, or effectiveness of a program, cash flows attributed to parties other than the individual agency, or unpriced costs and benefits. This analysis can be used to inform budget projections and/or to improve knowledge about the costs associated with replicating a program elsewhere (Dossetor, 2011). That said, there is an extension of this technique which allows evaluators to determine the program costs of achieving a particular outcome.

Textbox 1 provides an example of items which may be included in a generic financial analysis. It is important, however, that only those costs relevant to the decision making context in which the evaluation is conducted are considered. For more information see the template for financial analysis of agency Budget proposals provided on the Queensland Treasury website (www.treasury.qld.gov.au) or consult with your agency's finance section.

ITEMS WHICH MAY BE INCLUDED IN FINANCIAL ANALYSIS

(adapted from *Guidelines for Costing of Government Activities, 1991*)

Assessment of Full Costs

Full cost includes the value of all resources used in the provision of a service. It includes all direct and indirect costs and capital costs. The following items would be included in a full cost analysis:

- labour (direct and indirect)
    - direct: e.g., salaries, wages, allowances, penalty payments, overtime, annual leave bonuses, long service leave, separation payments and employer superannuation costs
    - indirect: e.g., registry, library and audit services
- materials and services (direct and indirect)
    - e.g., stores, computer services and contract services
- accommodation costs
    - e.g., rent, repairs and maintenance, cleaning and utility charges
    - assets, and cash required in day-to-day running of the program

Assessment of Fixed and Variable Costs

Fixed cost includes those elements of full costs which remain constant over time. Variable cost includes those components of full costs which vary with the level of outputs (e.g., costs dependent on the number of persons engaged by the program at any given time).

Assessment of Direct Costs

Direct cost includes only those costs which are directly relevant to a specific program (e.g., dedicated staff wages).

Assessment of Indirect Costs

Indirect costs are those necessary for the functioning of the organisation as a whole but which are not directly related to a specific program (e.g., cost of training and recruitment of program staff by the agency's HR department).

Assessment of Capital Costs

Capital costs are the costs of assets required to provide the capacity to produce the program (e.g., cost of acquiring assets used in the production of program materials, cost of producing program materials, and cash used in day to day operations).

COST-SAVINGS ANALYSIS

Cost-savings analysis is restricted to the direct costs and benefits realised by a program's funding body (AIC, 2003). Benefits are expressed as dollars and should include a differentiation between cashable savings (i.e., when the level of resources needed to achieve a given outcome are reduced) and non-cashable savings (i.e., when the level of resources remains fixed but the quality of outcomes is improved). This kind of analysis is used by governments to determine whether funded programs are viable and justified in financial terms (i.e., whether they pay for themselves) (AIC, 2003).

COST-BENEFIT ANALYSIS

Cost-benefit analysis is a quantitative tool designed to provide a comprehensive economic evaluation of the financial, environmental, and social costs and benefits associated with a program when compared with one or more available alternatives. It includes estimating costs and benefits which may not usually be the subject of market transactions (e.g., lives lost) but which nevertheless demand the use of real resources. A cost-benefit analysis 'adds rigour to a programme evaluation because, among other things, it makes explicit the links between inputs (costs) and outcomes (benefits), clarifies the underlying assumptions and points to gaps in information' (Department of Finance and Administration, 2006:4).

Difficulties can arise in calculating the costs and benefits associated with a particular program. For example, not all identified costs and benefits may be relevant to the evaluation. Similarly, while there may be multiple alternatives to the primary program available, not all of these alternatives may be appropriate or feasible in a particular context. It is important that program stakeholders are engaged to identify those features or alternatives most appropriate for inclusion in the analysis.

Furthermore, information pertaining to costs and benefits may be insufficient or unavailable. Where identified costs and benefits cannot be calculated, it is important that they are acknowledged within the evaluation and their potential or estimated impact on the calculations described (e.g., is the resulting calculation likely to be an under- or over- estimate of the costs and benefits of the program). Where it is possible to estimate costs or benefits for which the true monetary value is unknown, it is important that these estimates are made in a systematic way and in accordance with established accounting principles. Some ways in which typically 'unpriced' outcomes are assigned a monetary value include:[3]

- **revealed preference** – use of a proxy measure to determine costs (e.g., calculating the total cost of break and enter offences and the proportion of drug abusers charged with these offences may serve as a proxy measure for crime costs associated with drug abuse)

[3] For a detailed introduction to approaches to systematically estimating costs and benefits within a criminal justice field see Cheflin (2010).

- **stated preference** – ask individuals how much they would be willing to spend to guarantee an outcome; the average value is the cost assigned to that outcome

Estimating costs and benefits, as opposed to relying on actual data, has several limitations because it is largely subjective, can be imprecise, and does not always allow for a meaningful comparison across different outcomes (e.g., it may not be appropriate to compare the ratio of lives saved to the number of offenders diverted from court on the basis of benefits per dollar spent) (Rossie et al., 2004). Furthermore, the use of cost-benefit analysis in the criminal justice context is largely considered to be in its infancy and therefore methods for assigning costs to outcomes, such as improved public safety, victims' pain and suffering, or a reduced fear of crime, are still developing and hotly debated (Roman, Dunworth, & March, 2010).

Once the monetary values have been assigned to all the costs and benefits associated with a particular program, it is possible to calculate a cost benefit ratio (AIC, 2001). This is done by dividing the monetary value assigned to program outcomes by the costs of producing that outcome. This ratio represents the extent of financial benefit received for every dollar contributed towards the program. For example, the High Scope/ Perry Preschool program, which tracked children from low socio-economic backgrounds over 37 years, reported a cost-benefit ratio of 16:1 (Dossetor, 2011). This means that for every dollar invested in the program, 16 dollars in benefits was recouped, more than half of which were from a reduction in crimes against the community (Roman et al., 2010).

It is important to test the extent to which the cost-benefit ratio assigned to a program is sensitive to changes in the way in which costs and benefits are calculated or the assumptions made. Decision makers may be more or less willing to invest in a program when giving regard to the assumptions which inform its potential impact or its capacity to produce cost efficient outcomes.

Given the high level of technical skill required to conduct cost-benefit analyses in a systematic, rigorous and specific manner, the need to make appropriate assumptions and to appropriately estimate monetary values, and to test the impact of changes to estimates and assumptions on the calculated efficiency of a program, it is strongly recommended that a trained professional be engaged to conduct this type of evaluation. This expert should have experience in conducting cost-benefit analyses as well as a good understanding of the limitations of outcome evaluations conducted within the criminal justice system, and of the difficulties associated with quantifying components of the system. This is because the quality of an outcome evaluation impacts directly on the degree of confidence an evaluator can have in cost-benefit calculations made on the basis of these outcomes.

Finally, the advantage of cost-benefit analyses over other techniques is that they facilitate comparison across programs that do not produce the same outcomes by reducing outcomes to a common denominator – namely monetary values. That said, there are disadvantages associated with conducting a cost-benefit analysis, including the controversy which may surround assigning monetary values to social outcomes (e.g., placing a monetary value on human life) (Rossi et al., 2004).

COST-EFFECTIVENESS ANALYSIS

Cost-effectiveness analysis allows the evaluator to determine the financial cost of achieving benefits for which it is difficult to assign a monetary value (e.g., community satisfaction, lives saved). It can also be used to determine the level of benefit that is likely to be obtained given a set level of expenditure. Cost-effectiveness analysis is typically used to compare two or more programs that produce the same outcomes (e.g., reducing drug addiction) (Rossi et al., 2004). It is possible to use cost-effectiveness analysis to compare programs which produce different outcomes, but only if these outcomes can be reduced to a common denominator (e.g., lives saved, number of clients served).

In order to conduct a cost-effectiveness analysis it is necessary to identify all the costs associated with a program (e.g., implementation, administration, target participants' costs, costs to other agencies) to produce some desired outcome. These costs are then compared to the cost of producing the same outcome using a different program or approach (Dossetor, 2011). The identified costs must always be expressed in monetary terms and must be derived from a single accounting perspective. That is, the cost to the individual of participating in a program should not be included in the same analysis as the cost to the State of administering the program. This is because factors identified as costs in one perspective may be identified as benefits in another. That said, multiple cost-effectiveness analyses relevant to many different perspectives can be conducted and presented in a single report. These different perspectives can then be compared based on cost-effectiveness ratios. Finally, where a program produces multiple benefits (even from the same perspective), a cost-effectiveness analysis should be conducted for each benefit and no attempt should be made to create a single aggregate measure (AIC, 2003).

The disadvantage of conducting cost-effectiveness analysis is that it is unable to take in to consideration (Marsh, 2010):

- whether the cost of a single intervention was appropriate in the context of potentially multiple outcomes
    - e.g., following participation in a drug rehabilitation program an individual may experience improved job prospects, permanent housing opportunities, enhanced social relationships, better health outcomes and a general improvement in quality of life. Cost-effectiveness analysis cannot produce a single cost-benefit ratio which accounts for the combined impact of these benefits.
- whether programs that produce the same outcomes differ with respect to the quality of that outcome
    - e.g., a higher number of students may graduate from literacy program A than program B for a lesser cost. However graduates from program B may have a better quality education than graduates from program A.

It is worth noting that comprehensive guides for ex ante and ex post cost-effectiveness and cost-benefit evaluations have been developed by the UK and Canadian Governments (Dossetor, 2011). These guides were developed for the purpose of standardising the way that cost and efficiency analyses are conducted in each country and, in the UK, to assist applicants meet the requirements to obtain Crime Reduction Program funding. Reference to both these guides is provided at the end of this document (Dhiri & Brand, 1999; Hornick, Paetsch & Bertrand, 2000). Dossetor (2011:4) reports that the Australian Government Department of Finance and Deregulation does provide guidance on 'conducting more comprehensive cost-benefit analyses to improve policy decisions, as well as allow post-evaluation of a project or program, although application of this framework to rigorously assess criminal justice interventions has thus far been limited.' For more information see the Department's website www.finance.gov.au

WHY HASN'T COST AND EFFICIENCY EVALUATION TYPICALLY BEEN USED IN CRIMINAL JUSTICE RESEARCH AND ARE THINGS STARTING TO CHANGE?

Cost and efficiency evaluations have not typically been conducted in criminal justice contexts. Some authors have attributed this to the fact evaluators in the criminal justice field tend to be trained in social science methodologies rather than financial analysis; others have suggested that the nature of interventions and

outcomes, and of the political context in which evaluations occur, do not lend themselves to cost and efficiency analysis. Marsh (2010) and Chaflin (2010) argue that the shortage of rigorous cost and efficiency evaluations in the criminal justice context is a product of the lack of formal guidance provided to evaluators on key methodological issues. As a consequence there is often limited information available on the costings of various components of interventions within the criminal justice system.

In an effort to standardise approaches to cost and efficiency evaluations in the criminal justice context, Marsh (2010:5) proposes the following framework for judging the quality of economic studies:

1. studies should transparently report the costs included in the analysis
2. a bottom-up approach to measuring costs provides a more detailed and accurate understanding of the costs of implementing an intervention
3. studies should employ standard outcome measures and transparently report which measures have been adopted within the constraints of the specific evaluation
4. a good quality economic evaluation should be based on good quality experimental and quasi-experimental research
5. the perspective adopted when valuing intervention effects should be clearly reported
6. an adjustment should be made for inflation, to translate cost and benefit estimates into real terms
7. estimates of future costs and benefits should be discounted to take account of time preference and to calculate the net present value [4]of an intervention
8. many estimates used in economic evaluations are uncertain, meaning that sensitivity analysis should be conducted.

Similarly, Dossetor (2011:14) provides an 11-point checklist for evaluating the rigour of cost and efficiency evaluations:

1. Is there a well-defined question?
2. Is there a comprehensive description of alternatives?
3. Are all important and relevant costs and outcomes for each alternative identified?
4. Has effectiveness been established?
5. Are costs and outcomes measured accurately?
6. Are costs and outcomes valued credibly?
7. Are costs and outcomes adjusted for differential timing?
8. Is there an incremental analysis of costs and consequences?
9. Were sensitivity analyses conducted to investigate uncertainty in estimates of cost or consequences?
10. How far do study results include all issues of concern to users?
11. Are the results able to be generalised?

By standardising what is included in cost and efficiency analyses and the way that costs and benefits are measured in criminal justice contexts, we will be better able to compare cost-benefit ratios across a range of evaluations. Comparisons across different evaluations which have been conducted will enable decision makers to make better informed decisions regarding the level of funding required for a given project, the cost-effectiveness of one program versus another, the level of benefit derived from a given investment and the efficiency with which clientele and agency resources are being used.

[4] Net present value refers to the sum of all ingoing and outgoing cash flow over the course of a program, adjusted to reflect the impact of inflation and other factors that change the comparable value of money.

In addition to standardising the methodological approach to cost and efficiency evaluations within criminal justice contexts, the nature of this context will force future evaluators to go beyond a simple analysis of the monetary values assigned to features of a program when conducting this type of analysis. In particular, evaluators are starting to recognise the importance of distinguishing between high and low quality outcomes, unintended costs and benefits of a program (even beyond the target audience), and the need for clear definitions of benefits and their realisation when undertaking calculations as part of cost and efficiency evaluations. That is, in the future, determinations of program efficiency will come to reflect the financial savings produced as a function of the quality of program inputs, outputs, and outcomes.

MORE QUESTIONS ABOUT EVALUATING?

If you are having trouble establishing a good evaluation framework or have any questions about cost and efficiency evaluation please contact Criminal Justice Research, Department of the Premier and Cabinet (Ph: 32278436), Queensland Treasury, or consult the references listed below.

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