

Cost/Benefit Analysis

Toward Comprehensive Planning in the Criminal Justice System

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The techniques of cost/benefit analysis are presented in a general way in order to encourage decision-makers in the criminal justice system to adopt a style of thought that will assist them in formulating decisional alternatives. Discussion of the promises and pitfalls of the technique addresses the question of whether the "benefits" of cost/benefit analysis are sufficient to outweigh the "costs" in its adoption. The authors contend that the technique can be quite useful to executives in their quest to manage their organizations toward the achievement of organizational goals because the technique will enable them to identify new programs worthy of experimentation, will encourage the development of an accurate information system, will enhance their ability to base programmatic decisions on community and social indicators, and will better equip them in their relationships with legislators, funding bodies, and interest groups.

THE MAIN FUNCTION of a system of correctional organizations is the same as that of schools and mental hospitals: the processing and, it is hoped, the changing of people. The competition between "processing" and "changing" reflects the debate that rages in each human service institutional system and in the culture as a whole. Is the function of the system—be it school, mental hospital, or correctional facility—to serve sim-

ply as a custodian for its inhabitants, accepting improvement if it occurs, or is it to change the individuals committed to its care, to resocialize them?

There is now a growing emphasis on change and, in each of the human service systems, the older methods of changing, which involved housing the person in some kind of "total institution," are now shifting toward the development of "community-based" program modalities. These new ap-

proaches are infiltrating the barricade between the institution and the surrounding community and are lessening the great social distance between them. School systems, for example, are dealing with issues of "community control." They are bringing paraprofessionals and indigenous people into the classroom. Some institutions of higher education are beginning to provide "external degrees"—i.e., degrees based on competence only rather than competence plus period of residence in the institution. Mental hospitals are trying a variety of techniques for moving people out of the hospital setting, and community mental health facilities are aimed at both

providing a locus for people when they return from the hospital and preventing others from ever becoming hospitalized.

A Cost/Benefit Framework

One significant contribution to this trend is cost/benefit analysis, which has made it possible to calculate the "costs" of institutional care and to evaluate some of the "benefits" received for the cost expended. The tax-paying public is opting for a minimax operation of the people-changing systems—maximum change for minimum cost. Some of the relevant data is displayed in Tables 1 and 2.

TABLE 1
AVERAGE DAILY POPULATION OF OFFENDERS IN CORRECTIONAL SYSTEMS, 1965^a

	Juvenile		Adult		Total	
	No.	%	No.	%	No.	%
In the Community	283,491	82.16	533,889	60.92	817,380	66.92
In Institutions	61,526	17.84	342,523	39.08	404,049	33.08
Total	345,017	100.00	876,412	100.00	1,221,429	100.00

a. Source: *Crime and Delinquency*, January 1967, p. 230.

TABLE 2
ANNUAL EXPENDITURES FOR CORRECTIONAL SYSTEMS, 1965^a

	Juvenile		Adult		Total	
	Amount	%	Amount	%	Amount	%
In the Community	\$ 93,159,382	29.9	\$ 93,122,837	14.9	\$186,282,219	19.9
In Institutions	221,410,413	70.1	532,774,862	85.1	754,185,275	80.1
Total	\$314,569,795	100.0	\$625,897,699	100.0	\$940,467,494	100.0

a. Source: *Crime and Delinquency*, January 1967, p. 230.

Cost/benefit analysis has become quite a popular concept within the last decade. What it can accomplish and how it can be applied to different problems have been much misunderstood. The purpose of this paper is to present the techniques in a general way and then to explore their use specifically for community correction.

There are several points you should keep in mind when thinking about the cost/benefit approach:

First, it is helpful but not magical. It provides for a structure of alternatives but it will not make decisions for the executive.¹

1. See Aaron Wildavsky, "The Political Economy of Efficiency: Cost-Benefit Analysis,

Second, it is not, ultimately, the province of experts. The manipulation of figures, sometimes by formal equations, leads many to believe that only the most highly trained persons are qualified to work with the technique. Although training is helpful, the basic purpose of the system is to present alternatives graphically for the executive who must make a critical decision. It provides him with a quantitative and qualitative way of evaluating some of the programs and problems in his organization.²

Cost/benefit analysis can serve four functions in relationship to decision-making: (1) it becomes a way of thinking about the decision-making process in a more abstract and discrete manner; (2) it becomes a way of developing the information necessary for making better decisions; (3) it becomes a way of systemizing decision-making; and (4) it becomes a way of developing the budget calculi explicit and implicit in decisions. These four functions can enhance the internal operations of an organization or a system; they also have external benefits. Developing some variant of the system internally often permits a more accurate presentation, to legislators, funding bodies, and interest groups, of the cost of accomplishing a particular organizational mission.

Cost/benefit analysis is a rational, formalized way of setting up decisional alternatives.³ Central to the tech-

nique is the attachment of dollar estimates to the cost of undertaking an operation and the attachment of dollar estimates to the benefits. Often, several alternative programs for achieving an organizational goal are compared in this way. Under a cost/benefit analytic system, as under any system, choices between competing alternatives must be made by the executive trying to secure the best return for a given expenditure of money and other resources. In this system he has tangible figures on at least some of the benefits resulting from an assumption of some specific level and distribution of costs.⁴ Of course, alternative assumptions about costs lead to alternative benefit estimates.

The decision-making function is a comparison of costs only in the most fundamental sense. At a higher level, cost/benefit analysis becomes a PPBS system (Planning, Performance, Budgeting System), a continuous operation for the evaluation of intra-organizational operations after decisions have been made.⁵ In many ways, from the simple cost/benefit comparison to a complicated PPBS system, cost factors remain the single most critical

4. See Office of the Vice President, *Handbook for Local Officials* (U.S. Government Printing Office, 1967), p. 279; also, see Wildavsky, *supra* note 1, p. 296.

5. See *Budgeting for National Objectives* (New York: Committee for Economic Development, 1966), pp. 37-38. Also see Samuel M. Greenhouse, "The Planning-Programming-Budgeting System: Rationale, Language and Idea-Relationships," *Social Work Administration: A Response Book*, H. Schatz, ed. (New York: Council on Social Work Education, 1970), pp. 359-62, reprinted from *Public Administration Review*, December 1966, pp. 271-77. "The whole PPBS idea is to facilitate the drawing together, the summation of all agency efforts to meet particular objectives, so that the validity of each program may be compared with other competing programs, potential or existing."

Systems Analysis, and Program Budgeting," *Public Administration Review*, December 1966, p. 298.

2. See Gene H. Fisher, "The Role of Cost-Utility Analysis in Program Budgeting," *Planning, Budgeting: A Systems Approach to Management*, F. J. Lyden and E. G. Miller, eds. (Chicago: Markham, 1969), p. 185.

3. Alice M. Rivlin, *Systematic Thinking for Social Action* (Washington, D.C.: Brookings Institution, 1971).

item. Therefore, as a practical way of understanding the cost/benefit approach more fully and developing such an approach within one's own organization, it is useful to look at an organization's budget as a basic instrument.

Budget Systems as Analytic Tools

Budgets are of many different types and serve many different purposes. Critical to the cost/benefit approach is the ability to break up the traditional line budget and tally all costs related to some goal-directed activity and, hence, to calculate fully the "cost" of performing the activity in question. Very often organizations may have several types of budgets for different purposes. Basic types of budgets and their functions⁶ are as follows:

<i>Budget Type</i>	<i>Budget Function</i>
Line	Management of cash and cash flow
Program or Performance	Executive and management control
PPBS	Information control; goal-directed assignment of funds oriented to present and future

The line budget is the simple, straightforward budget with which most executives are familiar. It lists by "line" the amount of money needed and appropriated for specific items: so much for salaries, for equipment, for capital expenses, etc. The program and performance budgets are somewhat more complex. In each case an

6. See Nathaniel Goodman, "The Catch in Functional Budgeting: To What End?" *Social Work*, July 1969, p. 41. Also, for a good historical overview of the development of budgetary systems, see Allen Schick, "The Road to P.P.B.S.: The Stages of Budget Reform," *Public Administration Review*, December 1966, pp. 243-58.

attempt is made to group expenditures around the particular program or the performance of some task so that the cost will become clear. In the simple budget case, for example, a prison warden might report the amount of money he requires to run a particular prison, listing costs in categories such as personnel, equipment, capital expenses, etc. In the program budget case, he might report the expenditure of funds by department and division. In the performance case, something like the "cost per inmate per day" would be appropriate. The PPBS approach would "nest" each of the other budget styles, as well as a wide range of operating information, and permits considerable flexibility in calculating different types of costs.⁷

One of the complications in moving to program, performance, and PPBS system budgets is the difficulty of including all the costs in relation to a particular item. Often, as people begin to make the calculations for these systems, they ignore capital costs and equipment costs. Moreover, estimating the cost of a particular performance (inmate per day) is not easy. Nevertheless, for someone who wants to begin to think in cost/benefit terms, his own budget is the best place to begin.

To make a wise choice between programs, between persons performing special jobs, etc., one must calculate the benefits as well as identify the costs, and it is generally far more difficult to do the former than the

7. See Goodman, *supra* note 6, p. 42. "The objective of the total system defines the purpose of each of the system's functional parts and of the various sub-systems." According to Greenhouse, *supra* note 5, p. 358, "in PPBS language, a program is a package which encompasses each and every one of the agency's efforts to achieve a particular objective or set of allied objectives."

latter. Most of the time the benefits are assumed and are difficult to quantify.

Whether or not certain forms of benefits and costs are measurable theoretically, some are not being measured when particular government expenditure projects are being considered. When choices are required as they inevitably are, the unmeasured effects should be made explicit, and judgments made regarding their importance. However difficult this may be, there is no alternative, for if these issues are not confronted squarely, the result is a decision that involves some implicit, unrecognized assumption about the significance of these unmeasured (intangible) effects.⁸

Moving to a new decision-making approach is in itself painful, to say nothing of the changes that will result. It may be indicative that, after moving into a PPBS system on a large scale, the federal government retreated somewhat from full commitment. Thus, one should ask: Given a certain cost of introduction, plus the cost of disjuncture, minus a penalty for not keeping current, is it worth it? Are the benefits of introducing this new system sufficient to outweigh the costs? Not all organizations will be able to answer affirmatively. Nevertheless, the questions must be asked.

Some Examples of the Approach

As a way of pinning down the cost/benefit approach, let us consider two examples—one for fire fighting and one for prisons.

Let us assume that we are a community fire department and that we have the usual run of equipment and per-

sonnel. Because of some complaint about the time it takes us to arrive at the scene of fires, we are now re-evaluating our situation. After analysis we know that we can deliver full equipment to the scene of a fire in fifteen minutes at an average cost of \$10,000 per run. This, in fact, is our current situation. Recalculating our budget, we find that it would cost us about \$20,000 per trip to arrive at the scene of a fire, with full equipment, in five minutes. Several estimates are involved here, of course. We have taken the average number of fires, the average run to fires, the cost of personnel, the need for replacement of equipment, etc. These figures are then combined into an estimate of how much it would cost to follow various alternative courses of action. In this case we can arrive at fires ten minutes earlier at an average additional cost of \$1,000 per minute. We have calculated that, under the current system, the average damage to dwellings from fire is \$3,000; hence, spending additional money to improve the speed at which firemen arrive would reduce the amount of damage but not eliminate it entirely. The department may well recommend that homeowners be indemnified for any loss over that amount and that no additional money should be spent for improving the department's "run time."

This example illustrates both the promises and pitfalls of cost/benefit analysis. With the assumptions as stated, the outcomes are reasonably clear; yet, other factors, such as injuries and deaths, are not included. A single death between the five- and fifteen-minute periods could cause a community outcry of serious proportions and would certainly affect the weighting of the factors in a cost/benefit analysis.

8. Burton A. Weisbrod, "Concepts of Costs and Benefits," *Problems in Public Expenditure Analysis*, Samuel B. Chase, Jr., ed. (Washington, D.C.: Brookings Institution, 1968), pp. 261-62.

Let us consider another example, comparing two maximum-security prisons—one in Mexico, the other in the U.S. Each prison has 2,000 inmates; both have similar cross-sections of offenders; both have the same investment in security accoutrements—walls, cells, gates, towers, etc. Moreover, they have the same operational mandates from their governments: no riots and no escapes. The major difference between the two prisons is the cost of operation. The Mexican prison has a staff of fifty; the American, a staff of 400. If we assume that the recidivism rate for the Mexican prison is no higher than the American prison's (it would be difficult to imagine that it could be higher), we realize that the custody of felons is costing the American taxpayer at least eight times more than the Mexican cost. However, the pitfall in this illustration is that the Mexican system relies on the use of inmate guards and conjugal visits for control of the inmate population. The American public would probably oppose the less expensive system on humanitarian and moral-religious grounds. Opponents would argue that a conjugal-visiting system would invalidate the rehabilitative and punishment goals of a prison and would result in certain indirect costs to society—a larger number of unwanted children, increased expenditures for social services, etc. We will not attempt to assess the probable reaction of groups of correction officers, most of whom would be displaced if the "inmate guard" system were implemented.

The examples we have provided show how a cost/benefit approach might work in terms of the internal operations of an organization. Both the style of approach and the poten-

tial pitfalls are illustrated here. We can now move beyond the internal workings of the organization and consider the utility of cost-benefit analysis in a large system.

Policy and Cost/Benefit Analysis

If one leaves the confines of a particular organization and moves to the state and federal levels, the question of how to allocate funds over a broad range of programs, of different types, becomes important. State budget departments and the federal Office of Management and Budget find themselves with these types of problems as a part of their regular task.⁹ The cost/benefit analytic technique is helpful here. As an example of how it might be used, consider the data in Table 3, which gives information on the inmate population compared with the population at large. Basically, the inmate population is 27.6 per cent more poorly educated than the general population and is 30.2 per cent less skilled in jobs. From another perspective, we could say that 27.6 per cent of the inmates would require more education for their educational distribution to approximate that of the population at large, and 30.2 per cent of them would have to be upgraded in job skills for their occupational distribution to resemble that of the general population. If we inspect the education section of the table more closely, we observe that 54.7 per cent of the inmate population had not gone to school beyond the eighth grade (compared with 34 per cent of the

9. *Handbook for Local Officials, op. cit. supra* note 4, p. 279, suggests a major "pay off" for the analyst in the "improved perspective obtained from attempts to identify the true costs and benefits of alternatives that are relevant to the fundamental objectives."

TABLE 3
EDUCATIONAL AND OCCUPATIONAL DISTRIBUTION
OF INMATES AND THE GENERAL POPULATION,
AND THE INDEX OF DISSIMILARITY ^a

Education	Per Cent		Index of Dis- similarity
	General Popu- lation	Inmate Popu- lation	
	A	B	
College			
4 yrs. or more	8.4	1.1	
1-3 yrs.	9.4	4.2	
High School			
4 yrs.	27.5	12.4	
1-3 yrs.	20.7	27.6	6.9%
Elementary			
5-8 yrs.	28.0	40.3	12.3%
0-4 yrs.	6.0	14.4	8.4%
			27.6%
Jobs	A	B	B-A
Prof. and technical	10.4	2.2	
Managers; owners	16.3	4.3	
Clerical and sales	14.2	7.1	
Craftsmen, foremen	20.6	17.6	
Operatives	21.2	25.2	4.0%
Service workers	6.4	11.5	5.1%
Laborers	10.8	31.9	21.1%
			30.2%

a. Source: President's Commission on Law Enforcement and Administration of Justice, *Task Force Report: Corrections* (Washington, D.C.: U.S. Government Printing Office, 1967), pp. 2-3. Index of Dissimilarity calculated by the authors.

general population). For purposes of analysis, let us assume this to be a probability distribution, representing the "chance" that a man of a given educational background would become incarcerated. It is clear, then, that moving a person into the "some high school" category can be an important step. If we could develop a program which would help more

young persons attain high school graduation, we would reduce their probability of eventual incarceration. The same type of analysis would apply to job skills.

Following this mode of thought, the decision-maker would consider whether more money should be appropriated for prison construction or for school construction. He might well calculate that the marginal benefits of an additional year in school outweigh the marginal benefits of an additional cell.

Cost/benefit analysis can be especially helpful if correction moves toward increased reliance on community programs. First, it can help identify, through the analytic process, new areas in which experimentation is desirable rather than simply relying on the old probation/parole system in an expanded form.¹⁰ Second, it will encourage the development of an accurate information system within correction. As the pressure for decisions based on certain types of information increases, the likelihood also increases that such information will be tabulated in some regular and systematic way. Third, cost/benefit analysis will encourage correctional administrators to base some of their program decisions on community and social indicators. While this field technique is in its formative stages and the variables and their validity have not at all been confirmed, we are fairly certain that community correctional programs

10. Wildavsky perceptively notes, *supra* note 1, p. 298, that "because the C/B formula does not always jibe with political realities—that is, it omits political costs and benefits—we can expect it to be twisted out of shape from time to time. Yet C/B analysis may still be important in getting rid of the worst projects. Avoiding the worst where one can't get the best is no small accomplishment."

must differ according to whether certain types of crime have a high or a low incidence in the community.¹¹ As one begins to think through the broad goals of correction, the costs and benefits of programs that seek to *prevent* crime through implementation of a variety of services might well seem preferable to programs that seek only to monitor the offender after he has been released.

In attempting to highlight some of

11. See Wilbur J. Cohen, *Toward a Social Report* (Washington, D.C.: U.S. Government Printing Office, 1969), esp. pp. 55-64.

the ways in which cost/benefit analysis can be useful to the decision-maker in correction, we have placed more emphasis on developing the style and system of thought required by these approaches than on the mathematical processes conventionally associated with the approach. We cannot emphasize too strongly that, although cost figures and estimates are at the heart of the formal property of the analysis, it is the system of thought that should become operative in the correctional field if there is to be any significant progress.