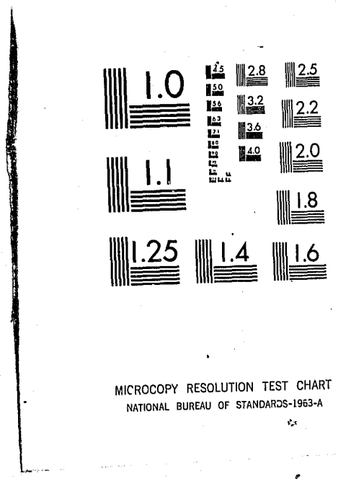

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THE USE OF EVALUATION MODELS FOR DECISION MAKING

Application to the Community Anti-Crime Program

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ABSTRACT

Evaluations are typically designed to provide useful information, including measures of program effectiveness. Although this information is intended to be useful, the general literature on evaluations suggests that instances in which evaluations are explicitly used for decision making are rare. This article discusses the use of decision-theoretic evaluation models, and their applicability in practice as well as in principle. A case study is presented from the evaluation of LEAA's Community Anti-Crime Program, in which a decision analysis based on a decision-theoretic evaluation model influenced a programmatic decision which arose during the conduct of the evaluation.

INTRODUCTION

Decision making in the context of federal or other governmental social programs differs in several respects from other kinds of decisions. Unfortunately, most of these differences tend to complicate the decision process, in comparison to decisions in other contexts. In programmatic decisions, there are often several layers of decision-making authority including the U.S. Congress, the cognizant federal program office, state or metropolitan program offices, and, finally, local projects. Since programs are typically ongoing, decisions are typically not "one shot"; in fact, a series of related decisions are made over time. Snapper and Seaver (1978) discuss some of the complications involved in analyzing such organizationally complex decisions, focusing on the problem of modeling objectives of decision-making entities at different levels.

As Snapper and Seaver (1978) characterize programmatic decision making — generically referred to as the planning process — the initial fundamental decision should specify or prescribe a set of objectives to be achieved by the program. The next decision involves selecting the "best" strategy, presumably based on an analysis to determine which programmatic strategy can be expected to result in maximum achievement given the tradeoffs among objectives. Subsequent decisions are based on evaluative feedback from, say, interim feedback from monitoring the implementation process or the assessment of final, net results. Decisions based on evaluative feedback take into consideration what was initially expected of the program, in regard to achievement of objectives, and the actual results of the program.

The study described here extends the work discussed by Snapper and Seaver (1978) by focusing on project-level decisions based on evaluative feedback, and by presenting an explicit and actually used decision

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analysis based on such feedback. Examples of the use of evaluative information in programmatic decision making are in general not common, and insofar as we are aware the application reported in this article is the first to use decision-theoretic techniques to analyze and directly influence a program decision.

The decision-theoretic evaluation, supported by the National Institute of Law Enforcement and Criminal Justice in the Law Enforcement Assistance Administration (LEAA), is being conducted in the context of the Community Anti-Crime (CAC) Program sponsored by LEAA. This program, in many ways organizationally typical of federal social programs, provides money to local community non-profit organizations to conduct anti-crime activities involving community residents.

A major purpose of the CAC Program is to assist citizens and neighborhood community groups in implementing activities aimed at preventing crime, reducing fear of crime, and revitalizing neighborhoods. The Program pursues this purpose by strengthening and expanding existing community organizations, encouraging the establishment of new organizations, integrating anti-crime efforts with community development activities, and improving communication and cooperation among neighborhood residents and crimial justice officials. In order to accomplish this purpose, the intent is that money be directed to neighborhood or "grassroots" anti-crime activities.

Projects are to undertake multiple activities which may fall into any of the traditional categories of crime prevention activities. Among the more common activities are community organizing, Neighborhood Watch, Operation ID, recreation for youth, and escort services for senior citizens. There are also many innovative activities such as a community theatre (including specific productions by neighborhood youth) and provision of child-care training for teenage mothers. The breadth and diversity of CAC projects funded by LEAA make a blanket description of them — or of their individualized sets of objectives — impossible.

As a part of the larger evaluation of the Community Anti-Crime Program, specific projects are being evaluated using decision-theoretic methods. The evaluation of specific projects is important because a primary purpose of the program is to involve citizens and community organizations in crime prevention. In an innovative approach to funding, the program office (Office of Community Anti-Crime Programs) directly funded local or neighborhood anti-crime projects. In bypassing state or metropolitan organizations, the CAC Program implied that the community-based project itself became a primary unit of analysis. Moreover, the program stresses the importance of community-based decision making, and the need to identify the problems in the neighborhood, to determine which anti-crime strategies are likely to be most effective in resolving these problems, and to assess project effectiveness. A further, unarticulated purpose for projects — as well as for the program office itself — is to enhance attainment of relevant objectives by judicious modifications based on intermediate feedback about results or impacts.

DECISION-THEORETIC EVALUATION

The Basic Methodology

The use of evaluative information in decision making depends critically upon "what happened" compared to "what was expected." A decision-theoretic model for explicitly making this comparison was first proposed by Snapper (1974), and is presented in Edwards, Guttentag, and Snapper (1975) with an illustrative application to the National Institute of Education's Career Education Program.

The basis of the approach is multiattribute utility theory (MAUT) which has been developed as a formally appropriate method for evaluating performance on multiple, possibly conflicting, objectives (Keeney & Raiffa, 1976). As applied to program evaluation, the decision-theoretic approach consists of (1) constructing a MAUT model including the relevant objectives, their relative importance, and specific measures for the objectives; (2) assessing current status and expectations with respect to project performance; and (3) measuring subsequent actual performance.

The approach used here, adapted from Edwards, Guttentag, and Snapper (1975), includes the following steps.*

Step 1: Determine and Structure Objectives. Project-level objectives are specified by the project director and other people working with the local project. A more general application of this methodology would involve objectives being specified by multiple constituencies with particular interest in the program. Because the overall evaluation model (see Snapper & Seaver, 1978) is already quite complex, and because the local project evaluation must be easily understood by the local project director, we have attempted to keep the number of objectives small (usually four to eight) and have avoided hierarchical models.

*Snapper and Seaver (1978) discuss a particular variation of this approach using probabilistic measures and Bayesian procedures for updating measures. The Snapper and Seaver procedure is considerably more difficult to implement, but has some interesting formal properties.

Objectives must be non-overlapping; that is, each must be a conceptually distinct factor on which the project would like to achieve some improvement. By carefully defining objectives, we can usually ensure that independent conditions necessary for the additive MAUT model (see Keeney & Raiffa, 1976) are at least approximately satisfied.

Step 2: Identify Measures for Each Objective. The project objectives must be operationalized with quantifiable measures that provide an indication of status on the objectives. Lack of resources to collect new data has led us to use only existing data such as that collected by the projects themselves and informed judgment as the basis of our measures. Although this restriction on data collection would usually not exist in a large-scale evaluation of an entire program, it does not seriously affect the local project evaluations. This restriction at the local project level means that the evaluations depend on only the information that projects would normally have available, though possibly augmented by direct informed judgment where there are no existing data.

For each objective, with the assistance of local project personnel, we identify one to three measures that appear to be most relevant, and for which data or informed judgment are available.

Step 3: Assess Importance Weights. In this step, the local project director assigns weights to the project objectives that represent the relative importance of going from worst to best on a specified range of the objectives. These weights are ratio weights so that an objective that is twice as important as another will receive a weight that is twice as large. The assigned weights are normalized to sum to one.

Step 4: Assess Current Status and Expectations. At the beginning of the project, the project's current status on each of the objectives must be determined. This is accomplished by using available data or informed judgment to provide the best assessment on each measure. A scale is developed for each measure where 0 represents the current status at the beginning of the project, and 100 represents the best feasible achievement on the measure, in this case defined as a level of achievement to be reached three years in the future. Where there are multiple measures for a single objective, the scores for each measure are averaged to provide an overall score for the objective.

In all instances where informed judgments are used as measures, the initial and primary judgment is that of the project director, since this is the person who would use the evaluation for making decisions. To the extent possible, we also obtain confirmation of these judgments from other sources, e.g., government officials, community leaders, etc.

In addition to the assessment of current status, the project director is also asked to use the same measures to assess how the project is expected to perform over its period of existence, usually two to three years. Using the already defined 0–100 scales, the project director assesses "prior expectations" on a year-by-year basis for how the measures will change given the existence of the project. Using a similar judgmental approach, we also assess how these measures would have changed without the project. Again these judgments are confirmed by outside experts.

Step 5: Measure Subsequent Actual Performance. After an appropriate period of elapsed time, in this case approximately one year, we assess the project's actual performance on each measure. This performance can then be compared with the prior expectations assessed previously. These comparisons, as evaluative feedback to project directors, may suggest some programmatic changes.

This basic approach is being applied to the evaluation of several projects in the CAC Program. The remainder of this article describes the on-going evaluation of one such project, that of the Midwood-Kings Highway Development Corporation (MKDC) in Brooklyn, and the use of the evaluation model and results in a real decision problem that arose during the course of the evaluation.

The Midwood-Kings Highway Development Corporation Evaluation

The approach to the MKDC evaluation involved a visit to the project early in its first year of funding (Year 0). Objectives were elicited from the project staff and tentative measures of objective attainment were identified. Finalization of objectives and an explicit listing of measures of their attainment were obtained from the MKDC Project Director (Richard Shapiro) on a subsequent visit. Listings of the objectives and of their relative importance (as specified by the Project Director) are included as Table 1.

The objectives and weights used here are explicitly those the Project Director ascribes to the project, rather than also including objectives others might have for the project. The overall evaluation of the CAC Program has included such additional objectives (see Snapper & Seaver, 1978). Given the rather wide latitude in what CAC projects are doing, in this part of the evaluation we are only concerned with what the project itself wants to accomplish. Although an external evaluation of the project might want to focus on additional objectives, the primary purpose of this part of the evalution was to provide an evaluation model and results that the Project Director would find helpful in making project decisions. Thus, attention is given to information the Project Director is most likely to use.

The objectives specified by the project differed in

TABLE 1
MKDC CAC PROJECT OBJECTIVES

Number	Objective	Importance Weight
1	Reduce crime	.141
2	Reduce fear of crime	.140
3	Increase police responsiveness	.119
4	Serve community ombudsman role	.126
5	Increase resident involvement	.149
6	Institutionalize organization	.111
7	Provide technical assistance	.104
8	Integrate other social services	.110

TABLE 2
AVAILABLE MEASURES FOR MKDC OBJECTIVES

Objective	Measures/Data
1. Reduce crime	Larceny of motor vehicles Larceny from motor vehicles Burglary
2. Reduce fear of crime	Question 18 MKDC survey Question 24 MKDC survey Housing turnover
3. Increase police responsiveness	Attitudinal survey data MKDC impact judgments
4. Serve community ombudsman role	Complaints processed
5. Increase resident involvement	% blocks organized Block club maintenance % attendance
6. Institutionalize organization	% staff LEAA supported Cumulative MKDC $
7. Provide technical assistance	TA trips/month
8. Integrate other social services	Direct judgment

many ways from those which would be specified by other Program stakeholders, at least in terms of the weighting. For instance, for the purpose of evaluating the CAC Program, LEAA personnel and others have argued that reduction of crime and fear should receive low weights. Their argument is, essentially, that CAC projects could not be expected to have much of an effect on these phenomena, i.e., the range of potential impacts was small. Since weights are related to the range of the objective considered, these differences do not necessarily reflect differences in how valuable crime reduction is. Rather they show the project has a much more optimistic expectation about what can be achieved.

Other objectives specified by LEAA were not represented, at least explicitly. Some objectives, such as mobilization of resources (resident involvement) and integration with social services were cited as relevant and important both by LEAA and by the MKDC project.

The measures identified for each of these objectives were subject to data collection constraints. Though evaluative approaches that involve special data collection could be designed, an advantage of the modeling approach described here is that it is useful even when evaluation is restricted to existing data. This is particularly important for project-level evaluations where evaluation resources and design skills are often quite limited.

The available measures pertaining to each objective are shown in Table 2. A range of data collection modalities is apparent from this list. Data include "hard" statistical series such as crime reports, data collected by special surveys the project has conducted as part of its own management efforts, and (in the case of assessing degree of integration with social services) direct judgments about effectiveness supported by descriptive background information. Where judgmental measures are used, the numerical judgments were those of the Project Director. In addition, these

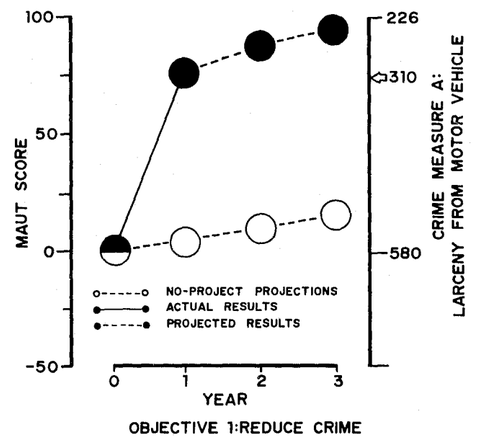

Figure 1. Comparison of Crime Level in Year 1 and Projected Crime Level in Years 2 and 3 With Projected No-Project Crime Level.

judgments were checked qualitatively with other appropriate people including the local precinct captain, staff of state legislators, local community leaders, and city officials.

The evaluation method is illustrated conveniently by considering some representative data and the display of results. Figure 1 shows the results for the first measure of crime reduction: reducing larceny from motor vehicles in the project area. The half-filled circle shows the level of larceny from motor vehicles in Year 0 (June 1977 through May 1978). There were 580 reported instances in that year; with the model we used, that corresponded (by definition) to a MAUT score of zero. The filled circles represent judgmental projections; when actual data are obtained, they are indicated on the display and connected with solid lines. Thus, in Figure 1, the actual data for Year 1 are displayed. In this case, a substantial reduction in larceny from motor vehicles (and a corresponding increase in the MAUT score) is indicated. The dashed lines show the projections for years 2 and 3. These prior expectations will be replaced by estimates based on the actual data, when those data become available in the future.

The dotted lines and open circles in Figure 1 indicate judgments about what would have happened, had there been no project in the area. Clearly, from the point of view of experimental rigor, this type of judgment is not a "control" and it is not intended to be interpreted as such. Instead, it provides a basis for the cognizant project and program staff to compare actual results against what, in their opinion, most likely would have happened. This provides a basis for judgments about the magnitude of effects attributable to the project, and, ultimately, for judgments about whether the project or program is worthwhile. In the example shown here, the projections about "no project" results reflect judgments that there would be an annual 6% decline in crime — based on the assumption that trends in this crime over the past few years in the MKDC area and Brooklyn would continue through the time frame being considered.

The 100-point on the scale in Figure 1 — and for each of the other measures — corresponds to the "maximum plausible" value. In this case, the 100-point corresponded to the projections about asymptotic impact which would be achieved after roughly three years of the project. In other words, the 100-point on the MAUT scale represents the best that the project could probably accomplish, and intermediate levels of attainment are scaled relative to that 100-point and the 0-point. Over this range, a linear utility function was used. Thus, for example, in Figure 1 the reduction to 310 reported larceny cases represents a MAUT score of 76. An advantage of this scoring procedure is that it permits a common interpretation of all scales, as spanning the "maximum plausible range" between initial starting point and realistic prior expectations regarding impacts.

Figures 2 through 5 provide some further illustrative examples of the data from the MKDC project. In each case, there is evidence that the project has in fact made substantial progress over the first year of project operation. Indeed, the data for each of the objectives (and the judgments pertaining to Objective 8) indicate essentially the same degree of objective attainment reflected in the foregoing example.

Figure 6 displays the aggregate results, collapsed across all measures and objectives. An additive combination rule was used in which measures of objectives were equally weighted to arrive at summary measures for each objective. Summary measures for each objective were then aggregated, using the weights indicated in Table 1. The results clearly indicate what each of the separate measures implied individually: the project has been rather successful during the first year; and that, in the opinion of project management, additional increases in effectiveness would occur for each of the following two years for which projections were obtained.

This decision-theoretic evaluation of the MKDC project serves multiple purposes. It provides an assessment of the effectiveness of this particular CAC project. It feeds into the broader evaluation of the CAC Program. And it provides a decision-aiding tool for project management. As a decision-aiding tool, it can be used to project likely results of programmatic changes, and subsequently to assess what actually happened as a result of the change in comparison to prior expectations about the results of the change. In the next section, we describe the application of decision-theoretic models to such interim programmatic decisions.

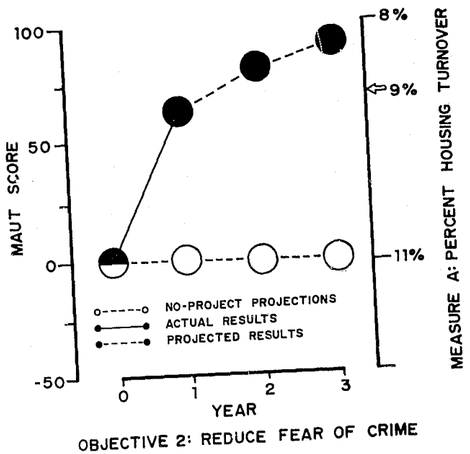

Figure 2. Comparison of Fear of Crime in Year 1 and Projected Fear in Years 2 and 3 With Projected No-Project Fear of Crime.

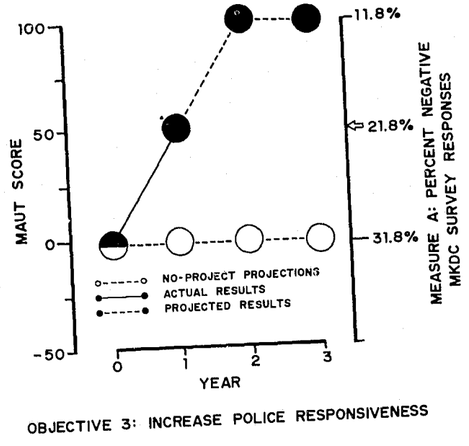

Figure 3. Comparison of Police Responsiveness in Year 1 and Projected Responsiveness in Year 2 and 3 With Projected No-Project Police Responsiveness.

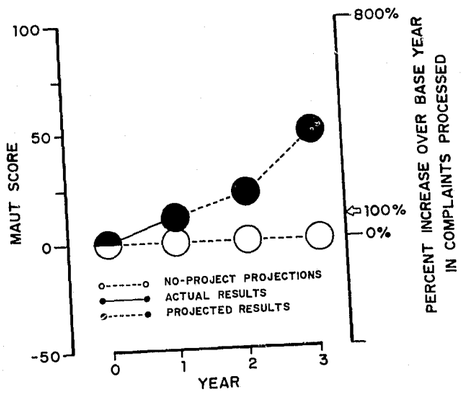

Figure 4. Comparison of MKDC Role as Community Ombudsman in Year 1 and Projected role in Years 2 and 3 With Projected No-Project Role.

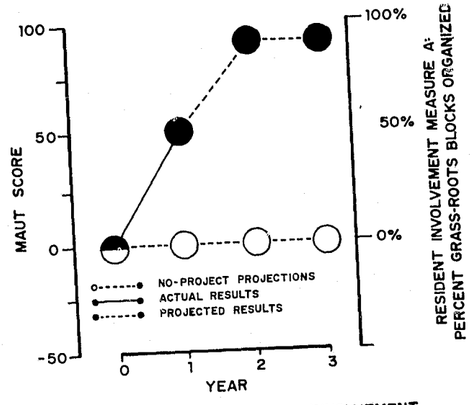

Figure 5. Comparison of Resident Involvement in Year 1 and Projected Involvement in Years 2 and 3 With Projected No-Project Involvement.

DECISION-THEORETIC EVALUATION MODELS FOR PROGRAMMATIC DECISION MAKING

General Use

As mentioned at the beginning of this report, decisions are often iterative over the life of a program. At the outset of the program — when there is little if any experience with the program and its results — decisions are typically based on opinions about what will in fact happen. The method we have been describing illustrates one simple technique for making projections about what will happen, in terms of the attainment of program objectives. It is sometimes alleged that decisions based on evaluations, unlike those made at the outset of the program, are "objective" insofar as they are presumably predicated on "hard" data.

Are decisions based upon actual data in fact more "objective" than those decisions at the outset of the program, based on fuzzy opinions about results? At one extreme, where decisions involve only relatively minor, incremental changes from the programmatic status quo, the data may have rather direct, "objective" implications for how the program may be fine-tuned. At the other extreme, where one is considering rather fundamental changes — as opposed to incremental changes as distinguished by Etzioni (1967) — there will be little if any information about large departures from the programmatic status quo. One is again forced to rely upon essentially subjective estimates about the degree of objective attainment associated with each alternative to the status quo.

Often, the need for a fundamental decision — in which major rather than incremental changes from the status quo are considered — is triggered by the difference between actual effectiveness scores and prior expectations. That is, feedback suggests the need for a reconsideration of programmatic strategy. This situation is illustrated in Figure 7.

The form of the display in Figure 7 is essentially, the same as shown for the MKDC data. The difference is that Figure 7 illustrates the case in which the actual results are markedly lower than the prior expectations for corresponding points in time. Before automatically concluding that such results imply the need to change the program, there are certain judgmental issues to be resolved. Why did the shortfall occur? Were there unrealistic prior expectations, such that the program is in fact performing as well as could be reasonably expected? Was the program simply slow in getting underway, so that if left alone effectiveness scores would begin to approach prior expectations? Are unexpected adverse events responsible for the shortfall, and, if so, would another programmatic alternative prove more robust? Or, is the program simply ill-conceived, and is a fundamental change required?

The decision problem posed by this situation is typical of programmatic decisions made during the life

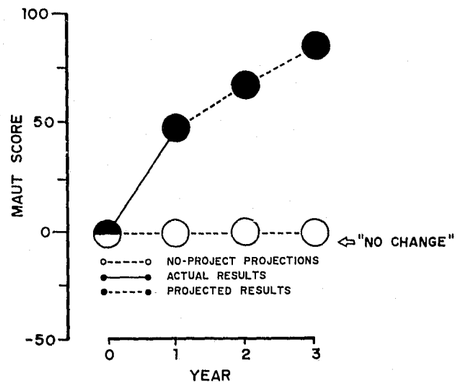

Figure 6. Comparison of Total MAUT Score in Year 1 and Projected Score in Years 2 and 3 With Projected No-Project Scores.

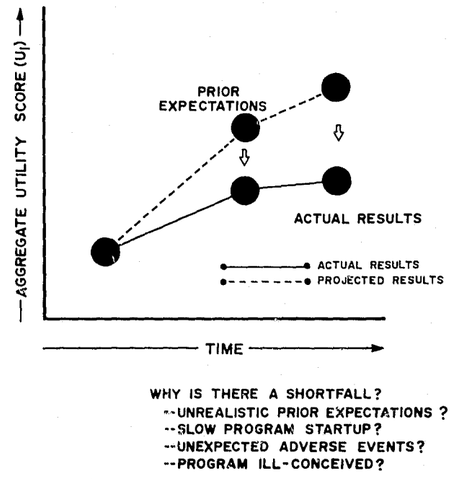

Figure 7. Use of Model: Tracking Results and Comparing Prior Expectations With Actual Results.

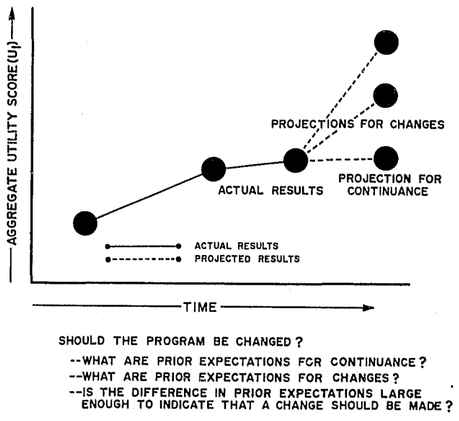

Figure 8. Use of Prior Expectations to Make Projections About Changes in the Program.

of a program. A representation of the generic problem is shown in Figure 8. For simplicity, we consider a decision with only three alternatives: continuation of the program as is, and two variants of the program.

The comparison of the three alternatives is essentially a judgmental matter — despite the fact that data are available for the existing program. In regard to the status quo alternative, the question is: what are the prior expectations for continuance? Will the effectiveness scores increase if the program is allowed to continue (e.g., because adverse circumstances will eventually be overcome), or will scores continue about the same or even decline? Figure 8 illustrates the "straightline" case, but increasing (and decreasing) scores are also plausible.

In regard to changes in the programmatic status quo, what are the prior expectations for alternatives? Two alternatives are illustrated which offer to increase the effectiveness score, though alternatives could also fall short of the status quo. Even if alternatives which are identified have higher prior expectations then continuance of the status quo, a change may not be appropriate if, for example, there are costs not represented in the utility scores for the program. For instance, there may be some high initial start-up costs incurred when a fundamental programmatic change is made.

Thus, the decision-theoretic evaluation model provides a general framework within which various project decisions can be addressed. As a monitoring and feedback mechanism, it can assist in the identification of the need for programmatic change. Other events may also trigger decisions about whether to change programs. Changes in funding level, the nature of the problem being addressed, or defined target population are examples of the kinds of events that may trigger such decisions. Regardless of what triggers the decisions, the potential programmatic changes then can be evaluated and compared within the general framework. In the following section, we describe a particular example of how this process worked in a decision faced by the MKDC project director that occurred during the course of the evaluation.

The MKDC Decision

The decision problem facing MKDC arose not as a result of comparing actual results with prior expectations — since the results above clearly indicate substantial achievement of objectives — but from the occurrence of an outside event that was perceived to have the potential substantially to affect the CAC project. The city of New York had adopted a policy of "coterminality" in which police and other service delivery areas were to become aligned or "coterminous" with community districts.

As a result of coterminality and subsequent political maneuvering, MKDC has been placed in a situation where it is considering expanding its project area. The expansion would encompass all of the area served by the Midwood Civic Action Council (MCAC), one of the five local civic associations that work closely with MKDC. Figure 9 illustrates the potential expansion, showing how MCAC would like to move from the 12th to the 14th community district, leaving MDKC with the question of whether or not to then include this new area in their project target area.

As suggested by Figure 9, the expansion would be roughly 50% both in area and in population served. No additional LEAA funds are available so a primary MKDC concern is the dilution of resources and associated loss of effectiveness. This concern is balanced against the political considerations that make a continued good working relationship with MCAC desirable.

The immediate decision, about whether to support integration of the additional MCAC area into the project, depended on expectations about how significantly the project's effectiveness would be impaired. This decision was analyzed during a full-day working session with the MKDC Project Director, Richard Shapiro. In conducting the analysis, we considered two extreme alternatives: *Full Integration of MCAC* into the project, and *No Integration of MCAC* (i.e., maintenance of the status quo). These two extreme alternatives are represented in Figure 10. Of course, there are a number of intermediary strategies which could be employed, and which might minimize the degradation in effectiveness. As shown in Figure 10, Partial Integration strategies could be identified which minimized the depletion of MKDC resources by requiring MCAC to generate resources itself or from other sources, or by

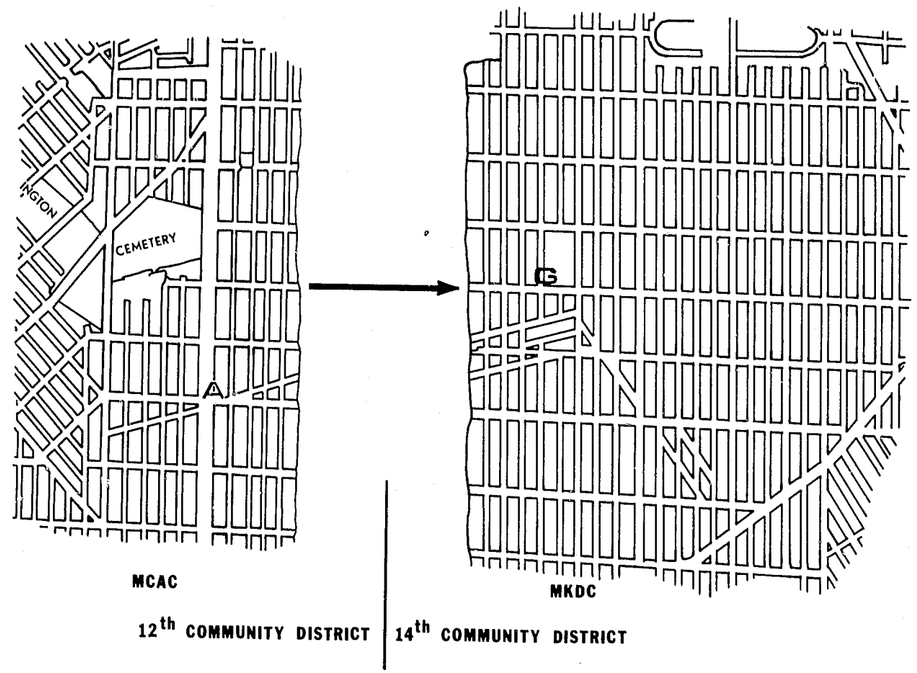

Figure 9. Map of MKDC Project Area and Possible Additional Area.

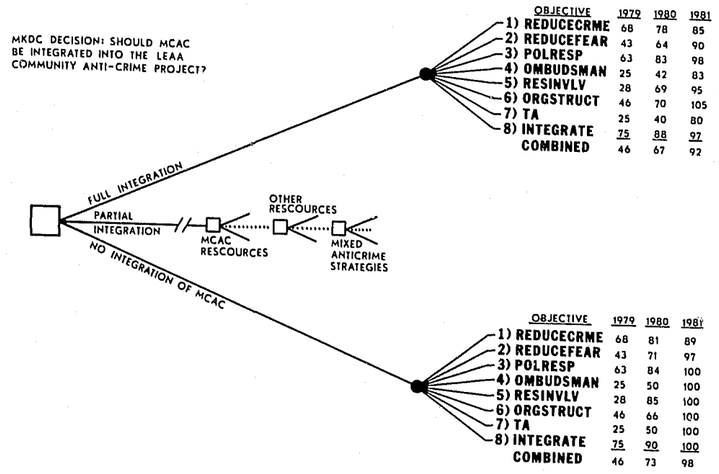

Figure 10. The MKDC Coterminality Decision Problem.

adopting a "mixed" strategy that allocated only the less critical MKDC resources to the MCAC project area.

Only the two extreme alternatives (Full Integration versus No Integration) were considered. To keep the analysis tractable within time constraints, we decided that the fuller analysis of Partial Integration strategies would be conducted provided that a large difference between the two extreme alternatives in fact emerged, causing MKDC to reject outright the full integration of MCAC.

The analysis involved making projections about project effectiveness *within the current MKDC project area* itself for 1980 and 1981. These projections were the judgments of the MKDC Project Director, and were conditional upon the decision. In fact, the evaluation results shown previously as the solid circles in Figure 6 show the effectiveness projections for 1980 and 1981 (years 2 and 3, in that exhibit) based upon the assumption of No Integration. When the Project Director initially made his projections about effectiveness, he implicitly assumed that the project target area would remain fixed. Also, at the time the decision analysis was undertaken, he saw no reason to modify his projections, provided that MCAC was in fact not integrated into the project. The MAUT scores for each objective (and the combined or aggregate scores) for 1979, 1980, and 1981 are shown at the tip of the *No Integration of MCAC branch*.

The Project Director's projections about effectiveness provided that the MCAC area is in fact integrated into the project are shown at the tip of the *Full Integration* branch. The MAUT scores for 1979 ("now") are the same as for *No Integration of MCAC* because at the time of the analysis the effectiveness starting point is of course the same for both alternatives. In 1980 and 1981, however, differences between the two alternatives appear. These are apparent on the objective-by-objective basis, as well as in the combined scores. The projections for 1980 and 1981 were made by the Project Director after careful consideration of how resources would be allocated under *Full Integration* and what that would mean to on-going activities. (Resource constraints did not allow for these judgments to be further checked. However, since the earlier judgments of the Project Director had been confirmed by others, we felt these were adequate for the needed projections.)

A comparison of the combined MAUT scores for 1980 and 1981 shows that there would be an expected six-point drop in effectiveness associated with full integration of MCAC into the project. The magnitude of this drop in effectiveness is shown in Figure 11. The Project Director viewed this drop in effectiveness as much smaller than he had intuitively expected prior to any analysis. He had been initially quite certain that for the good of the project the target area should not be expanded, and had considered expansion primarily for

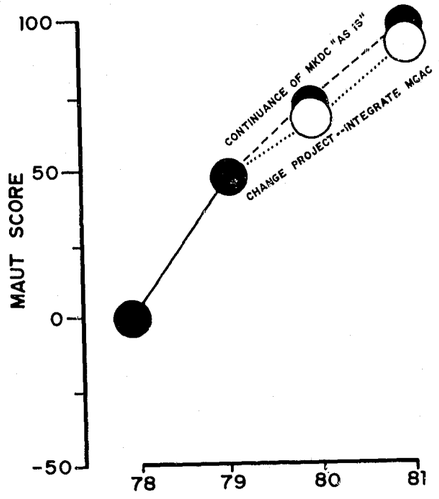

Figure 11. Comparison of Projected MAUT Scores for MKDC Area With and Without Additional MCAC Area.

political reasons. As a result of the analysis, however, he decided that the expected reduction in effectiveness was not large, and was more than offset by other considerations.

Subsequent political activities in New York City delayed implementation of coterminality. At present there is some question as to whether or not coterminality will actually be implemented. MKDC, however, is now considering petitioning LEAA to expand their target area and to integrate MCAC if practicable, regardless of the outcome of the coterminality issue.

The foregoing example illustrates the use of a MAUT evaluation model for actual project-level decision making. It illustrates a case in which evaluative models and data actually influenced a decision. When the analysis was completed and the decision determined, the Project Director and we became immediately aware of some broader implications of the methodology employed, and of the specific MKDC decision problem. They suggested a generic class of federal programmatic decision problems, which can be conveniently presented and are briefly discussed below.

The Decision From a Broader Perspective

In nearly all federally sponsored programs, there is a tradeoff made between the size of individual projects, in terms of their target areas and populations, and the resources (usually monetary) made available to the project. Ideally, resources are allocated among projects differing in target areas in some manner which maximizes overall effectiveness and utility. While the decision-theoretic methods of analyzing this type of

TABLE 3
PROJECT EFFECTIVENESS IN MCAC AREA: FULL INTEGRATION

Objective	1979	1980	1981
Reduce crime	-5	63	76
Reduce fear of crime	10	53	81
Increase police responsiveness	0	63	84
Serve community ombudsman role	10	35	60
Increase resident involvement	15	43	90
Institutionalize organization	na	66	70
Provide technical assistance	0	25	50
Integrate other social services	5	75	90
Combined utility	5	53	78

problem are clear, the analysis itself would be extremely complex.

The MKDC decision really hinged on the availability of resources. It was clear, for example, that even a modest increase in available resources would have meant that there would be no decline in MKDC effectiveness in the original target area. It was also clear that, at a slightly lower funding level, it would not have been possible to expand the target area without resources becoming so diluted as to be ineffective. And at a still lower level of funding, the project would become ineffective even within the original target area. For example, the project would become totally ineffective at the funding level just sufficient to support the absolute minimum project administrative functions, but at which there was no financial support for the anti-crime strategies themselves.

It appeared to us that the dollar range over which a project was able to expand its target area versus becoming largely ineffective was rather small. In the case of MKDC, this range appeared to be roughly between $75,000 (at which level it would be largely ineffectual) and $135,000 (at which level it would be able successfully to expand).

Funding levels of individual projects are often determined by the program office. Specifically, in the case of OCAP, the crucial generic programmatic decision is: how should CAC be expanded? Should new projects be begun to supplement existing projects? Or should existing projects be encouraged to expand the target areas they serve? Presumably the programmatic decision in this regard depends upon the marginal increase in utility associated with expansion as compared to the cost of expansion.

Some indication of how sensitive the decision problem may be is illustrated by the MKDC example. The analysis described above was conducted only from the point of view of the MKDC project and its original target area. But what about the increase in utility associated with the extension of the project into the MCAC area? We also conducted this analysis with the assistance of the MKDC Project Director. As Table 3 shows, the projected increase in utility in the MCAC area itself would be quite significant. At the constant funding level, therefore, a small decrease in utility in the MKDC area itself would be more than compensated for by a relatively large increase in utility in the MCAC area. We must note here, however, the homogeneity of the current and potentially expanded target areas. As the MKDC Project Director noted, expansion into less homogeneous areas is much more difficult because different anti-crime approaches may be needed.

In answering the question we posed above, about whether the emphasis ought to be on funding new programs versus maintaining and expanding existing ones, the MKDC example suggests that at least in some instances expansion of existing projects may be an extremely cost-effective approach to achieving overall programmatic objectives. The basic model developed in conjunction with the MKDC decision problem could in fact be readily extended to encompass the broader, overarching programmatic decision.

DISCUSSION

At the outset of this article, we discussed how programmatic decisions may be based on feedback from evaluations. We also discussed how decisions also depend upon projections about future effectiveness, as well as feedback about past results. The general literature on evaluation research suggests that evaluations are typically not used — and instances of use for decision making are especially rare. The purpose of the present project with LEAA and the evaluation of the CAC program was in part to determine whether — as we have argued — the decision-theoretic approach is in fact useful for aiding the programmatic decision process.

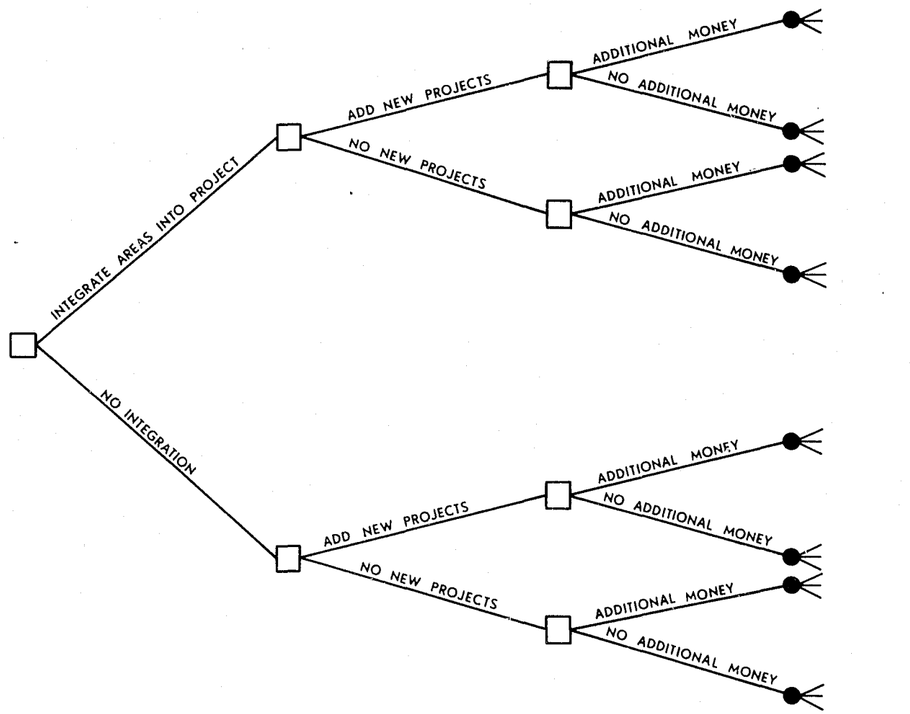

Figure 12. Generic Model of Program-Level Decisions.

One aspect of study focuses on development of the individual project MAUT models, to be used for monitoring of effectiveness by the project staff, and for project-level decision making. As the preceding MKDC case study indicates, these models are in fact useful for these purposes.

At the outset of this article we also mentioned that programmatic decisions are made at several levels. And, as discussed, the MKDC case suggested an analogous type of decision problem at the federal program office level. Although the present analysis does not extend to the implied program office decision, the decision is described briefly because it illustrates a generic class of such decisions. Figure 12 shows the general form of the decision problem, though in somewhat simplified form. This decision problem is more involved than the project decision, because there are contingencies regarding whether new projects should be started up (to augment existing projects, such as MKDC), and whether additional monies should be made available (either to existing projects, or allocated among existing and new projects).

The most problematic issue, however, is probably the matter of amalgamating utilities associated with programmatic benefits across the various areas and target populations to which the program might be extended. Thus, from the viewpoint of the federal program office, the relevant utility in the MKDC decision would be the amalgamation of the MKDC utility and the MCAC utility. For instance, if the program office were making the decision, it would have to decide whether to tradeoff the 6-point loss in MKDC utility against the 50-plus gain in MCAC utility.

Related questions, also implied by Figure 12, are whether or not additional monies should be made available to increase utility over that associated with existing funding levels. At issue is a difficult judgment: whether the marginal increase in utility is sufficient to compensate for the marginal cost. Similarly, judgments about the marginal increase in utility (at various total

program dollar levels) for expanding existing projects versus initiating new ones must be made.

Quite clearly, program personnel recognize that decisions about funding, expanding, or otherswise modifying projects are complex, and that they involve at a minimum the kinds of considerations discussed above. The unique feature of the methodology described in this article is that it can be used both to monitor the effectiveness of programs and to analyze even complex decisions which may arise during planning or in the course of the program itself.

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