

A BENEFIT-COST ANALYSIS MODEL FOR SOCIAL SERVICE AGENCIES

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A Benefit-Cost Analysis Model for Social Service Agencies

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INTRODUCTION

Current public policy is based on two fundamental principles: equity and efficiency. Equitable programs contribute to balancing the needs and desires of the various groups in society; whereas efficient programs are those that serve to increase the net value of goods and services available to society. Benefit-cost analysis is a tool developed to determine whether a program produces effects that justify the costs incurred to operate the program. The benefit-cost model presented in this monograph requires the reader to:

- 1) understand the concept of an analytical perspective;
- 2) move beyond viewing benefit-cost analysis as a simple ratio of benefits to costs;
- 3) include both monetized and non-monetized benefits in the analysis; and
- 4) consider what is a benefit and what is a cost, and to whom.

Thus, potential users of the proposed model are encouraged to take a broader perspective on the benefits and costs of a program, intervention, or service, rather than reducing the analysis to a simple ratio of benefits to costs.

The purpose of benefit-cost analysis is to determine whether a program's benefits outweigh its costs. The primary issue addressed by a benefit-cost analysis is whether the impacts of a program, intervention, or service are big enough to justify the costs needed to produce them. Benefit-cost analysis depends upon the availability of cost estimates, benefits to program participants, and impact statements, which are the statistically significant mean differences of costs and benefits between the programs, interventions, or services being compared.

Benefit-cost analysis requires both an understanding and use of a number of terms. The more important of these include:

Benefits: Positive outcomes that accrue to program participants such as increased wages, regular job, or reduced use of alternative programs.

Costs: Expenditures associated with a particular program, intervention, or service such as program expenses, forgone market output (that is, opportunity costs), or increased use of complementary programs.

Efficiency: The extent to which there is an increase in the net value of goods and services available to society (that is, being productive with minimum waste).

Equity: The balance between the needs and desires of the various groups in society (that is, fairness).

Impacts: The significant mean differences on selected cost and benefit measures between the groups or conditions being compared.

Monetized: Benefits or costs to which a monetary value can be assigned (for example, wages, taxes paid, reduced public taxes).

Nonmonetized: Benefits to which a monetary value cannot be assigned (for example, improved quality of life or increased satisfaction).

Analytical perspective: Benefit-cost analysis addresses the perspective of different groups in society that are effected by a program, service, or intervention. The three

perspectives used in the benefit-cost model presented include the participant, rest of society (that is, the “taxpayer”), and social (that is, “society as a whole”, which includes the sum benefits and costs generated from the previous two perspectives). The inclusion of these three perspectives in a benefit-cost analysis is necessary since a program effect (such as taxes withheld) can be a benefit to some and at the same time a cost to others.

The benefit-cost analysis model presented on subsequent pages is based on the work of Conley & Noble (1990), Cimera (1998), Cimera and Rusch (1999), Kerachsky et al (1985), Noble & Conley (1987), Rossi, Freeman & Lipsey (1999), Rusch (1990), Rusch, Conley & McCaughlin (1993), Schalock (1995), Schalock and Thornton (1988), Thornton (1984), and Thornton and Maynard (1989).

BENEFIT-COST ANALYSIS MODEL AND PROCEDURAL STEPS

The proposed benefit-cost analysis model reflects the current trend toward using both monetized and non-monetized benefits to evaluate efficiency issues. The suggested approach also allows one to examine which groups in society gain from a program and which groups pay—a concept referred to as “the analytical perspective.” Any public policy or program will affect many groups. A stroke rehabilitation program for example will clearly affect participating consumers and their families and may have long-run effects on agencies and employers in the community. It will also have an impact on government budgets and hence, indirectly affect taxpayers. Each of these groups has a perspective on the policy or program, and each of these perspectives has relevance to decision making. Thus, equity issues need to be addressed in a benefit-cost analysis through the perspectives of specific groups affected by the policy or program. The three most typical analytical perspectives are participant, taxpayer (the “rest of society”), and social (“society as a whole”). These three perspectives, along with their major foci and concerns of each, are summarized in Table 1.

TABLE 1
BENEFIT-COST ANALYTICAL PERSPECTIVES, CONCERNS, AND EXAMPLES

The examination of equity is particularly important for habilitation programs, since one goal of many of these programs is to increase equity by reallocating resources or equalizing opportunities.

Analytical Perspective	Concerns	Example
Participant	Equity Issues	“Does my net income increase?”
Taxpayer (the “rest of society”)	Efficiency Issues	“Does the person cost me more if they work or not?”
Social (includes participants and “society as a whole”)	Efficiency Issues	“Is there a net economic gain if the person joins the labor force?”

In fact, to many consumers, equity concerns dominate efficiency concerns. Additionally, the proposed benefit-cost model is based on the premise that one needs to look at all benefits and costs of a program, even though one may be able to monetize only some. This broader perspective on benefit-cost analysis leads to a more complete analysis, and also minimizes the tendency to reduce benefit-cost analysis to a simple ratio of benefits to monetary cost. Thus, the six sequential steps involved in implementing the proposed model allows one to view the benefit-cost analysis as a process for systematically sorting through the available evidence of the multiple costs and benefits associated with habilitation programs, rather than relying on any single estimate of value or benefit-cost ratio. These steps are summarized in Table 2.

TABLE 2
PROCEDURAL STEPS INVOLVED IN BENEFIT-COST ANALYSIS

1.	Specify the structured comparisons
2.	Define the analytical perspective (Participant, Taxpayer, Social)
3.	List the expected impacts (benefits, costs)
4.	Develop the accounting framework
5.	Estimate benefits and costs (estimate costs; estimate program impacts, include intangible benefits; aggregate the valued benefits and costs)
6.	Present and interpret the results

1. Specify the Structured Comparisons

The first step of a benefit-cost analysis specifies the program being evaluated and the alternative (counterfactual) with which it will be compared. This first step defines the scope and ultimately the results of the benefit-cost analysis. The two most common evaluation designs used in establishing the structured comparisons are the “true experiment” in which program or service recipients are assigned randomly to the two comparison conditions, or the use of intact groups that are roughly equivalent. To ensure equivalence, specifying the structured comparison also requires one to describe core data sets related to recipient characteristics, core service functions, cost estimates, and anticipated outcomes.

2. Define the Analytical Perspectives

Any public policy or program will affect many groups. Each of these groups has a perspective on the policy or program, and each of these perspectives will have direct relevance to decision making. As summarized in Table 1, the three most relevant analytical perspectives include

participant, taxpayer (“rest of society”) and social (“society as a whole”). Table 3 presents an example of how each of these three perspectives view various costs and benefits in reference to a supported employment program.

TABLE 3
DIFFERENT PERSPECTIVES ON COSTS AND OUTCOMES OF A SUPPORTED EMPLOYMENT PROGRAM

Analysis Variable	Participant	Taxpayer	Social
Monetized Costs and Benefit Variables	-----	-----	-----
Operating costs	-	Cost	Cost
Savings in alternative programs	-	Benefit	Benefit
Gross wages	Benefit	-	Benefit
Forgone wages	Cost	-	Cost
Fringe benefits	Benefit	-	Benefit
Taxes withheld	Cost	Benefit	-
Interest on taxes withheld	-	Benefit	-
Taxes refunded	Benefit	Cost	-
Reduction in subsidies	Cost	Benefit	-
Reduction in taxes due to targeted tax credits	-	Cost	Cost
Non-monetized Benefits	-----	-----	-----
Increased self sufficiency	Benefit	-	Benefit
Increased independent living	Benefit	-	Benefit
Increased quality of life	Benefit	-	Benefit

Table 3 illustrates a number of monetized and non-monetized variables that can be considered as either a “cost” or “benefit,” depending upon the analytical perspective taken. For the issue of economic efficiency, the social (that is, “society as a whole”) perspective is relevant. It captures the net effect of the program on the aggregate value of available goods and services by determining the change in the total resources of society caused by the program under evaluation (relative to the alternative comparison). Because the participant and taxpayer perspectives represent mutually exclusive groups that in total represent all of society, only those benefits (or costs) that accrue to one group within society and have no equal offsetting cost (or benefit) to the other group will remain in the social perspective. Consequently, the social net present value calculation will include only the value of outcomes that affect the total amount of resources (goods and services) available to society. The equity implications of the program can then be assessed by examining any net shifts in resources between participants and the rest of society.

The perspective of program participants is particularly important, since it indicates the extent

to which they will benefit from, for example, rehabilitation services. The participant perspective is important from both a benefits and a cost perspective. People want to see valued, person-referenced outcomes from the rehabilitation services received; but in some cases, there are also opportunity costs to the participant associated with program involvement. For example, when one is in school or training, wages and other benefits usually are not available; hence, the person foregoes the opportunity to earn money until after job placement.

It is also useful to consider the perspective of everyone else in society. This group includes all the persons not enrolled as program participants; the perspective captures all effects that do not accrue to the program participant. In particular, it captures the taxes needed to finance the program and any resulting reductions in expenditures for alternative programs. Since the focus of this analytical perspective is often the taxpayer, some benefit-cost analyses refer to this perspective as “taxpayer”.

Depending on the particular concerns of the analyst, other analytical perspectives may also be used. However, since the analysis requires estimates of effects on each perspective, the complexity of the analysis increases rapidly with the number of perspectives, and it is usually preferable to disaggregate society into only the two major perspectives described—participants and the rest of society, with social including the aggregate of the two.

A final word regarding defining the analytical perspective. It is important that when defining or selecting perspectives for an analysis of equity, the groups chosen be mutually exclusive yet, in total, include everyone in society. By defining perspectives in this way, the sum of the valued benefits and costs for each individual perspective will equal the net effect as seen by the perspective of society as a whole. In the proposed benefit-cost model the sum of benefits and costs accruing to program participants and the rest of society will equal the net benefits to society as a whole. It should be noted, however, that this “adding up” property necessitates assuming that a dollar of benefit or cost to one person is equivalent to that of any other person. The perspective of society as a whole would thereby ignore all redistributive questions and focus on aggregate resource use questions. This is a convenient, but not a critical, assumption. The analysis could assume other distributive value systems, giving more or less weight to the resources owned by specific groups in society. However, given the difficulty of defining and using such a system, as well as its inherently controversial nature, the “equal value” system makes the better sense.

3. List the Expected Impacts (Benefits and Costs)

The third procedural step follows directly from defining the structured comparison and developing the analytical perspective. In developing this list of expected impacts, it is important to follow two general rules:

- 1) be as comprehensive as possible when considering the expected impacts and resource

uses of the program; and

- 2) estimate benefits and costs relative to what would have happened under the comparison situation.

An example of these two steps is useful. Refer to Table 4 on the next page for a blank list of anticipated benefits and costs. The analysis involves evaluating the benefits accruing to program participants related to increased output, reduced use of alternative programs, reduced use of transfer programs, and other benefits. Similarly, costs are evaluated as to whether they incur due to regular program costs, forgone market output, or increased use of complementary programs. Working through these benefits and costs is a logical first step in completing a benefit-cost analysis, since the results of listing the anticipated costs and benefits will define the specific data sets the analyst ultimately will need to collect and analyze in order to estimate benefits and costs. Two rules facilitate completing Table 4. First, the analysis needs to be as comprehensive as possible when considering the expected impacts and resource uses of a program, even though not all expected benefits and costs will actually be valued. The analysis should attempt to identify all changes in behavior or outcomes that would lead to a real change in the use or availability of resources. For example, special education programs may produce a change in students' use of a variety of other support service programs. Since a change in the use of such services represents a real change in the use of resources available to society, the effect of this change in behavior should also be included in the expected impacts. It is also important that the benefits and costs that cannot be valued monetarily be identified and accounted for in the framework. Frequently, these are the most important.

The second general rule facilitating the completion of Table 4 is to measure benefit and cost impacts relative to what would have happened under the comparison situation. Each of the identified benefits or costs of a program represents the difference between the expected outcomes or resources of the program or policy being evaluated and those under the specified comparison situation. For example, a vocational program may generate an increase in a participant's lifetime earnings over what their earnings would have been in the absence of the program. Similarly, this program may reduce (relative to the comparison situation) the level at which certain ancillary services have been used. The impacts to be measured as benefits in these examples are the increases in earnings or the reductions in ancillary-service use.

If a particular use of resources would be the same under either the program or the comparison situation, then it should be omitted from the framework. For example, consider the resources involved in transporting participants to a vocational training program. If the alternative is to place them in a non-vocational program that would require the same amount of transportation, then the choice between alternatives would not affect transportation costs. Thus, they could be excluded from the framework, despite the fact that transportation is an expensive cost item. In this way, the framework can be simplified, and analytical resources can be devoted to the critical changes produced by the program.

In summary, the primary purpose of listing the expected impacts is to help organize and

TABLE 4
BENEFIT-COST ACCOUNTING FRAMEWORK TABLE SHELL

Impacts	Analytic Perspective		
	Participant	Taxpayer	Social
Benefits			
1. Increased output			
a.			
b.			
c.			
2. Reduced use of alternative programs			
a.			
b.			
c.			
3. Reduced use of transfer programs			
a.			
b.			
c.			
4. Other benefits			
a.			
b.			
c.			
Costs			
1. Program costs			
a.			
b.			
2. Forgone market output			
3. Increased use of complementary programs			

conduct the benefit-cost analysis and ensure that all the major impacts of the program, service, or intervention are captured accurately in the analysis. This process involves: (1) identifying all changes in resource availability (relative to the comparison situation); (2) assessing whether those changes actually create, save, or use resources or whether they simply redistribute resources among groups; and (3) determining how these changes will affect the various perspectives.

4. Develop the Accounting Framework

Developing the accounting framework is analogous to the previous step. However, in this step, one becomes more specific in establishing a workable framework for assessing the direct resource requirements for the structured comparisons, along with a method for translating these requirements into cost estimates (see Table 4). It is important to remember that the comprehensive accounting framework includes all benefits and costs, regardless of whether or not they can be assigned a monetary value (that is, include both tangible and intangible benefits and costs.)

Developing the accounting framework involves one's understanding of four key concepts: net present value criterion, analytical perspective, assigning value to change, and non-monetized benefits.

Net present value criterion. As noted previously, benefit-cost analysis makes a comparison between two alternatives using the criteria of economic efficiency and equity. The basic technique used to determine economic efficiency is to identify all changes in resource use (including those required to operate the program and those that result from the operations) by the program and then assign dollar values to those changes. The value of these changes are then summed together to yield an estimate of the program's net present value. This criterion reflects the difference between the benefits and costs, where the dollar values of any benefits or costs that occur in future years are adjusted (that is, discounted) to reflect their value in a specified base period. A positive net present value indicates that the resources are being used more efficiently than they would have been under the comparison situation; a negative net present value indicates that the program's resources could have been used more efficiently elsewhere.

Analytical perspective. The net present value criterion is also used to address equity issues. However, instead of aggregating all changes in resource use, the analysis considers the changes from the perspectives of the various groups that are affected by the program: participant, rest-of-society ("taxpayer"), and social. For example, consider the participants enrolled in a supported employment program. Part of the analysis of equity is to ascertain whether this group benefited from their participation in the program; similarly, the analysis also considers whether the taxpayers who fund the program obtained benefits that outweigh the costs. While the analysis can typically identify the major benefits and costs for these groups, it has no special criteria for assessing whether net shifts in resources between these and other groups are desirable. The appropriate criterion will vary, depending on the program under study and the groups affected. Thus, the value of shifts between groups must be determined within the broader context of public policy.

Assigning values to change. Estimating the value of changes in resource use requires a consistent means of assigning values to changes. The proposed benefit-cost model uses an approach based on the concepts that underlie the calculation of the gross national product (GNP). This measure is estimated by aggregating the dollar values of all the goods and services produced, where the dollar values are the market prices of the various items being produced. A potential weakness of using this approach should also be kept in mind: the social value of public services such as education

or welfare programs may be inadequately captured from the amount of dollars spent to provide the services, and they are therefore inadequately represented in the estimated GNP.

Non-monetized benefits. Social programs often generate outcomes that have no observable market value, or whose value is not adequately reflected in the interactions of the marketplace. These outcomes include such things as increased self-concept, enhanced quality of life, and the provision of special opportunities to specific populations in need. Although not monetized, these benefits should be included in the analysis as a net benefit or cost to each analytic perspective.

5. Estimate Benefits and Costs

This step involves five sub-steps:

- estimate program costs;
- estimate program impacts;
- value the program impacts;
- include intangible benefits; and
- aggregate the valued benefits and costs.

Estimate program costs. Most cost-analysis techniques used in benefit-cost analyses use a resource components approach to developing cost estimates. This approach requires a comprehensive listing of all the direct program and supplemental services within an agency or delivery system, the determination and measurement of the specific resources employed within each direct program and supplemental area, and the valuing of these resources in monetary terms. These estimates are determined frequently for overall program costs on the basis of standardized cost data (obtained through the examination of program reports and budget and audited expenditure records) and the number of consumers, consumer days, and hours of service provided by the respective programs.

Estimate program impacts. This sub-step involves estimating the extent to which the outcomes of program recipients differ from those persons in the comparison condition by determining the statistical significance of mean differences on relevant outcome variables. Consistent with the proposed model, the usefulness of the benefit-cost analysis will increase as more “non-monetized” outcomes are measured and included in the analysis.

Value the program impacts. Once the impacts have been measured, the analyst then determines the value of these effects. Using dollar value, in which one simply measures the person’s increased earnings, changes in transfer payment receipts, tax payment, or Medicaid/Medicare benefits, is the most direct method for valuing program impacts. It is essential, however, that these values be expressed in current year values to control or adjust for inflation.

Include intangible benefits. There are two ways in which intangible benefits can be incorporated into the benefit-cost analysis. One is simply evaluate them as to whether they represent

a net benefit (+), cost (-), or neither (0). The second way is to actually refer to the mean values (and their significance) between the two structured comparisons. This second way rests upon a clear conception and measurement of valued, person-referenced outcomes.

Aggregate the valued benefits and costs. This sub-step, which includes producing net present values to the various components of the benefit-cost analysis, involves more than simply summing the estimated value of the benefits. Since almost all programs occur at different points in time, the analyst needs to: (1) adjust for inflation by denominating all values in dollars to a specified base period (through using actual dollar values or shadow prices); (2) calculate equivalent values by discounting those that occur in later years by a factor that reflects the return that these resources could have earned in the interim between the base period and the time of occurrence (the decision rules for doing so need to be stated clearly in the analyst's report); and (3) extrapolate on future impacts by deciding (and including in the analysis) which benefits (or costs) will persist over time, how long they will continue, and at what rate they will persist.

6. Present and Interpret the Results

Much of the value of a benefit-cost analysis stems from the process of organizing and aggregating the data. Therefore, the presentation of the analysis should capture as much of the process as possible. There should be: (1) discussion in the analyst's report regarding each of the above five procedural steps; (2) an indication of the level of certainty that can be attributed to the analysis; (3) a listing of those benefits and costs not included in the analysis; and (4) a summary table that captures the core of the analysis.

AN EXAMPLE

In this section, an example of an actual benefit-cost is presented that demonstrates the critical importance of two of these steps: Step 3 (listing the expected impacts (benefits and costs)) and Step 6 (presenting and interpreting the results). It is anticipated that by discussing these two steps in detail the reader will both understand the proposed benefit-cost model better, and appreciate the complexity of the process. The benefit-cost analysis presented (taken from Kerachsky, Thornton, Bloomenthal, Maynard, & Stephens, 1985) is that of a large employment training program (referred to as STETS) that is described next, followed by a detailed discussion and tabular summaries of Steps 3 and 6.

STRUCTURED TRAINING AND EMPLOYMENT TRANSMITTAL SERVICES (STETS)

The benefit-cost analysis of STETS was designed to address five basic questions:

- Does STETS improve the labor-market performance of participants?
- Does STETS participation help individuals lead more normal life styles?
- In what ways do the characteristics and experiences of participants influence the effectiveness of STETS?
- Does STETS affect the use of alternative programs by participants?
- Do the benefits of STETS exceed the costs?

Evaluation design. An experimental/control design was used, in which individuals were assigned randomly into STETS/non-STETS groups. Each client met the following criteria: (a) between 18 and 24 years of age, inclusive; (b) mental retardation in the moderate, mild, or lower borderline ranges; (c) no unsubsidized full-time employment of 6 or more months in the 2 years preceding intake, and no unsubsidized employment of more than 10 hours per week at the time of intake into the program; and (d) no secondary disability that would make on-the-job training for competitive employment impractical.

Sample and STETS phases. The sample consisted of 437 individuals (226 experimentals and 211 controls) who met the above criteria. STETS involved the following three sequential phases. Phase I involved assessment and work-readiness training, which was limited to 500 hours of paid employment, and occurred in either a sheltered workshop or nonsheltered work setting. In all cases, the participants' wages were paid by the project. Phase II involved a period of on-the-job training in local firms and agencies. During this stage, participants were placed in nonsheltered positions that required at least 30 hours of work per week, and in which, over time, the levels of stress and responsibility were to approach those found in competitive jobs. Wages were paid by either the project or the employers, or some combination of the two. The STETS program provided workers in Phase II with counseling and other support services, and it helped the line supervisors at the host company conduct the training and necessary monitoring activities. Phase III, which included post-placement support services, began after participants had completed Phase II training and were performing their jobs independently. The purpose of this phase of program services was to ensure an orderly transition to work by tracking the progress of participants, by providing up to 6 months of post-placement support services and, if necessary, by developing linkages with other local service agencies.

Cost estimates. The cost accounting framework disaggregated costs into three components: the operating costs of the project, compensation paid to participants while they were in Phase I or II activities, and central administrative costs. The STETS service package cost an average of \$6200 per participant.

Person-referenced outcomes The STETS project focused on 3 general outcome categories and 11 specific variables. These included: (1) employment (percent employed in a regular job or any

paid job); average weekly earnings in regular job; and average weekly earnings in any paid job; (2) training and schooling (percent in any training or any schooling); and (3) income sources (percent receiving SSI or SSDI; average monthly income from SSA or SSDI; percent receiving any case transfers; average weekly personal income). These person-referenced outcomes were collected at months 6, 15 and 22 of the project.

Step 3: List the Expected Impacts (Benefits and Costs)

In developing this list, it is important to follow two general rules: be as comprehensive as possible when considering the expected impacts and resource uses of the program; and estimate benefits and costs relative to what would have happened under the comparison situation. An example from the STETS program is listed as Table 5.

In reading Table 5, please note a number of factors associated with the expected benefits and costs. First, the table lists the three common perspectives (participant, taxpayer, and social). Second, it lists numerous impacts, including program costs, output produced by participants, effects on other programs including residential situation, transfer payments and taxes, transfer administration, and intangibles such as preference for work, increased self-sufficiency, increased variation in participant income, forgone market activity, and increased independent living. Third, note that the individual components are characterized from the three perspectives of being a net benefit (+), a net cost (-), or neither (0). Identifying and sorting out the various types of potential effects from the three analytical perspectives, the process requires careful consideration of the interactions of outcomes among these different perspectives. The impacts to be measured as benefits in these examples are the increases in earnings or the reductions in ancillary-service use.

As discussed earlier, if a particular use of resources would be the same under either the program or the comparison situation, then it should be omitted from the framework. For example,

TABLE 5
EXPECTED BENEFITS AND COSTS MATRIX BY ANALYTICAL

Impact Categories	Analytical Perspective		
	Taxpayer	Participant	Social
I. Program costs			
Project operations	-	0	-
Payments to participants	-	+	-
Central administration	-	0	0

Impact Categories	Analytical Perspective		
	Taxpayer	Participant	Social
II. Output produced by participants			
Phase I and Phase 2 output	+	0	+
Output forgone while in STETS	-	-	0
Increased out-of-program output	+	+	0
III. Other programs			
Reduced use of:			
Sheltered workshops	+	0	+
Work-activity centers	+	0	+
School	+	0	+
Job-training programs	+	0	+
Case-management services	+	0	+
Counseling services	+	0	+
Social/recreational services	+	0	+
Transportation services	+	0	+
IV. Residential situation			
Reduced use of:			
Institutions	+	0	+
Group homes	+	0	+
Foster homes	+	0	+
Semi-independent residential programs	+	0	+
V. Transfer payments and taxes			
Reduced SSI/SSDI	0	-	+
Reduced other welfare	0	-	+
Reduced Medicaid/Medicare	0	-	+
Increased taxes	0	-	+
VI. Transfer administration			
Reduced use of SSI/SSDI	+	0	+
Reduced use of other welfare	+	0	+
Reduced use of Medicaid/Medicare	+	0	+
VII. Intangibles			
Preferences for work	+	+	+
Increased self-sufficiency	+	+	+
Increased variation in participant income	-	-	-
Forgone non-market activity	-	-	0

consider the resources involved in transporting participants to a vocational training program. If the alternative is to place them in a non-vocational program that would require the same amount of transportation, then the choice between alternatives would not effect transportation costs. Thus, they could be excluded from the framework, despite the fact that transportation is an expensive cost item. In this way, the framework can be simplified, and analytical resources can be devoted to the critical changes produced by the program.

As reflected in Table 5, the primary purpose of listing the expected impacts is to help organize and conduct the benefit-cost analysis and ensure that all the major impacts of the program, service, or intervention are captured accurately in the analysis. The results of this process are discussed in Step 6 and summarized in Table 6.

Step 6: Present and Interpret the Results

Much of the value of benefit-cost analysis stems from the process of organizing and aggregating the data. Therefore, the presentation and interpretation of the results need to capture as much of the process as possible. Table 6 summarizes the estimated benefits and costs (in current dollars) of STETS per participant during the observation period.

The estimates presented in Table 6 suggests that STETS created a cost of \$6232 per participant to the taxpayer during the 22-month observation period (the sum of section I), while measured social benefits (increased output by participants and the reduced use of other training, service, residential, and transfer programs) totaled only \$5193 per participant (the sum of sections II through VI). Thus, about 83% of the initial investment was offset during the 22-month observation period. Participants benefited from their participation, receiving in-program compensation that more than offset their tax payments and their reduced use of transfers. Nonparticipant taxpayers incurred the costs for operating STETS and for participant compensation. They received substantial benefits (primarily from the increased output produced by participants in STETS and the reduction in their use of sheltered workshops, other job-training programs, and transfer programs); but these benefits offset only two-thirds of the costs incurred by nonparticipants. However, the trends are important: if the earnings and reduced alternative program benefits continued for as little as 7 months beyond the 22-month point, social benefits would exceed social costs.

The STETS program was also intended to enhance the economic and social self-sufficiency of participants. As shown in Table 6, the measured impacts indicated that STETS did improve the activities and opportunities that were expected to generate intangible benefits. The increased income ties were available to participants. However, the analysis found limited evidence of changes in such intangibles as self-sufficiency and independence. In part, such limited evidence reflects the inadequacies of the measures and the difficulty in measuring these concepts (Kerachsky et al., 1985). It may also mean that self-sufficiency responds slowly to changes in opportunities. Finally there was

TABLE 6
STETS BENEFIT-COST ANALYSIS

Impacts	Analytic Perspective		
	Taxpayer	Participant	Social
I. Program costs			
Project operations	-\$6,050	\$0	-\$6,050
Payments to participants	0	3,094	-3,094
Central administration	-182	0	-182
<i>Total costs</i>	<i>-6,232</i>	<i>3,094</i>	<i>-9,326</i>
II. Output produced by participants			
Phase 1 and Phase 2 output	3,434	0	3,434
Forgone output while in STETS	-425	-425	0
Increased out-of-program output	268	268	0
III. Other programs - Reduced use of:			
Sheltered workshops	767	0	767
Secondary vocational school	428	0	428
Other school	112	0	112
Job-training programs	434	0	434
IV. Residential programs - Reduced use of:			
Institutions	174	0	174
Group homes	72	0	72
Foster homes	7	0	7
Semi-independent residential programs	-114	0	-114
V. Transfer payments and taxes			
Reduced SSI/SSDI	0	-264	264
Reduced other welfare	0	-82	82
Reduced Medicaid/Medicare	0	-232	232
Increased taxes	0	-249	249
VI. Transfer administration			
Reduced use of SSI/SSDI	16	0	16
Reduced use of other welfare	8	0	8
Reduced use of Medicaid/Medicare	12	0	12
VII. Intangibles			
Preferences for work	+	+	+
Increased self-sufficiency	+	+	+
Increased variation in participant income	-	-	-
Forgone non-market activity	-	-	-
Increased independent living	+	+	+
<i>Total benefits</i>	<i>5,193</i>	<i>-984</i>	<i>6,177</i>
Net present value (benefits less costs)	-\$1,038	\$2,111	-\$3,149

no measure of overall increase in satisfaction, other than the fact that many participants appeared to remain voluntarily in their jobs.

SUMMARY

In summary, the benefit-cost evaluation model presented in this monograph differs from a cost-efficiency evaluation model that first converts all the program's benefits and costs into monetary units, and second calculates a simple benefit-cost ratio by dividing gross benefits by gross costs (Cimera & Rusch, 1999). In contrast, the model presented uses both monetized and non-monetized benefits to evaluate efficiency and equity issues. A key aspect of the model is that benefit-cost analysis should be viewed as a broad process whereby one looks at all the benefits and costs of a program. This view is helpful to stakeholders and minimizes the tendency to view benefit-cost analysis as a simple ratio of benefits to costs, which is seldom the case in rehabilitation programs.

Although benefit-cost analysis is potentially a powerful tool for evaluating the benefits and costs of rehabilitation and social programs, there are a number of controversial issues surrounding its use, including:

- Difficulty in establishing the alternative or counterfactual comparison group(s) against which the program is being compared.
- No consensus on the time frame for establishing benefits.
- Its numerous assumptions and estimates regarding costs and impacts.
- Controversy involved in incorporating the non-monetized effects that are often a central concern of human service programs.
- The considerable time and resources needed to complete a thorough benefit-cost analysis.

Despite these concerns and potential problems, the current zeitgeist requires that we do benefit-cost analysis, if the analysis is consistent with the questions we are asking, and the program's capability to accomplish the task. The advantage of the model proposed in this monograph is that it results in its users taking a broader perspective on the benefits and costs of a program, intervention, or service, rather than reducing the analysis to a simple ratio of benefits to cost. In that sense, it reflects better the interactive nature of costs and benefits in most human service programs.

REFERENCES

- Bates, J. M. (1997). Measuring predetermined socioeconomic 'inputs' when assessing the efficiency of educational outputs. Applied Economics, 29, 85-93.
- Blanck, P. D. (1995). Assessing five years of employment integration and economic opportunity under the Americans with Disabilities Act, Mental and Physical Disability Law Reporter, 19, 384-392.
- Cimera, R. E. (1998). Are individuals with severe mental retardation and multiple disabilities cost-efficient to serve via supported employment programs? Mental Retardation, 36 (4), 280-292.
- Cimera, R. E. & Rusch, F. R. (1999). The cost-efficiency of supported employment programs: A review of the literature. International Review of Research in Mental Retardation, 22, 175-225.
- Conley, R.W., & Noble, J.H. (1990). Benefit-cost analysis of supported employment. In F. Rusch (Ed.), Supported employment: Models, methods, and issues (pp. 271-288). Sycamore, IL: Sycamore Publishing.
- Johnston, M. V. (1987). Cost-benefit methodologies in rehabilitation. In M. J. Fuhrer (Ed.), Rehabilitation outcomes: Analysis and measurement (pp. 99-113). Baltimore: Paul H. Brookes.
- Kerachsky, S., Thornton, C., Bloomenthal, A., Maynard, R. & Stephens, S. (1985). Impacts of transitional employment for mentally retarded young adults: Results of the STETS demonstration. Princeton, NJ: Mathematica Policy Research.
- Lewis, D. R., Johnson, D. R., Bruininks, R. H., Kallsen, L. A. & Guilley, R. P. (1992). Is supported employment cost-effective in Minnesota? Journal of Disability Policy Studies, 3 (1), 67-92.
- Noble, J. H., & Conley, R. (1987). Accumulating evidence on the benefits and costs of supported and transitional employment for persons with severe disabilities. Journal of the Association for Persons with Severe Handicaps, 12 (3), 163-174.
- Reed, S. K., Hennessy, K.D., Mitchell, O.S. & Babigian, H. M. (1994). A mental health capitation program: II. Cost-benefit analysis. Hospital and Community Psychiatry, 45 (11), 1097-1103.
- Ridenour, M. (1996). Performance accountability systems: Services and costs—setting the stage. Government Services Newsletter, 10 (3), 2-3.
- Rogers, E. S., Sciarappa, K., MacDonald-Wilson, K., & Danley, K. (1995). A benefit-cost analysis of a supported employment model for persons with psychiatric disabilities. Evaluation and Program Planning, 18 (2), 105-115. (6th ed.). Thousand Oaks, CA: Sage Publications.
- Rusch, F. R., Conley, R.W., & McGaughlin, W. B. (1993, April/May/June). Benefit-cost analysis of supported employment programs in Illinois. Journal of Rehabilitation, 31-36.
- Schalock, R. L. (1995). Outcome-based evaluation. New York: Plenum Publishing Company.
- Schalock, R. L. (in press). Outcome-based evaluation (2nd Ed.). New York: Plenum Publishing Company.

- Schalock, R. L. & Thornton, C. (1988). Program evaluation: A field guide for administrators. New York: Plenum Press.
- Stancliffe, R. J. & Lakin, K. C. (1998). Analysis of expenditures and outcomes of residential alternatives for persons with developmental disabilities. American Journal on Mental Retardation, 102 (6), 552-568.
- Thornton, C. (1984). Benefit-cost analysis of social programs: The case of deinstitutionalization and education programs. In R. Brunininks (Ed.), Living and learning in the least restrictive environment (pp. 225-243). Baltimore: Paul H. Brookes.
- Thornton, C. & Maynard, R. (1989). The economics of transitional employment and supported employment. In M. Berkowitz and M. A. Hill (Eds.), Disability and the labor market (pp. 150-167). New York: ILR Press.

