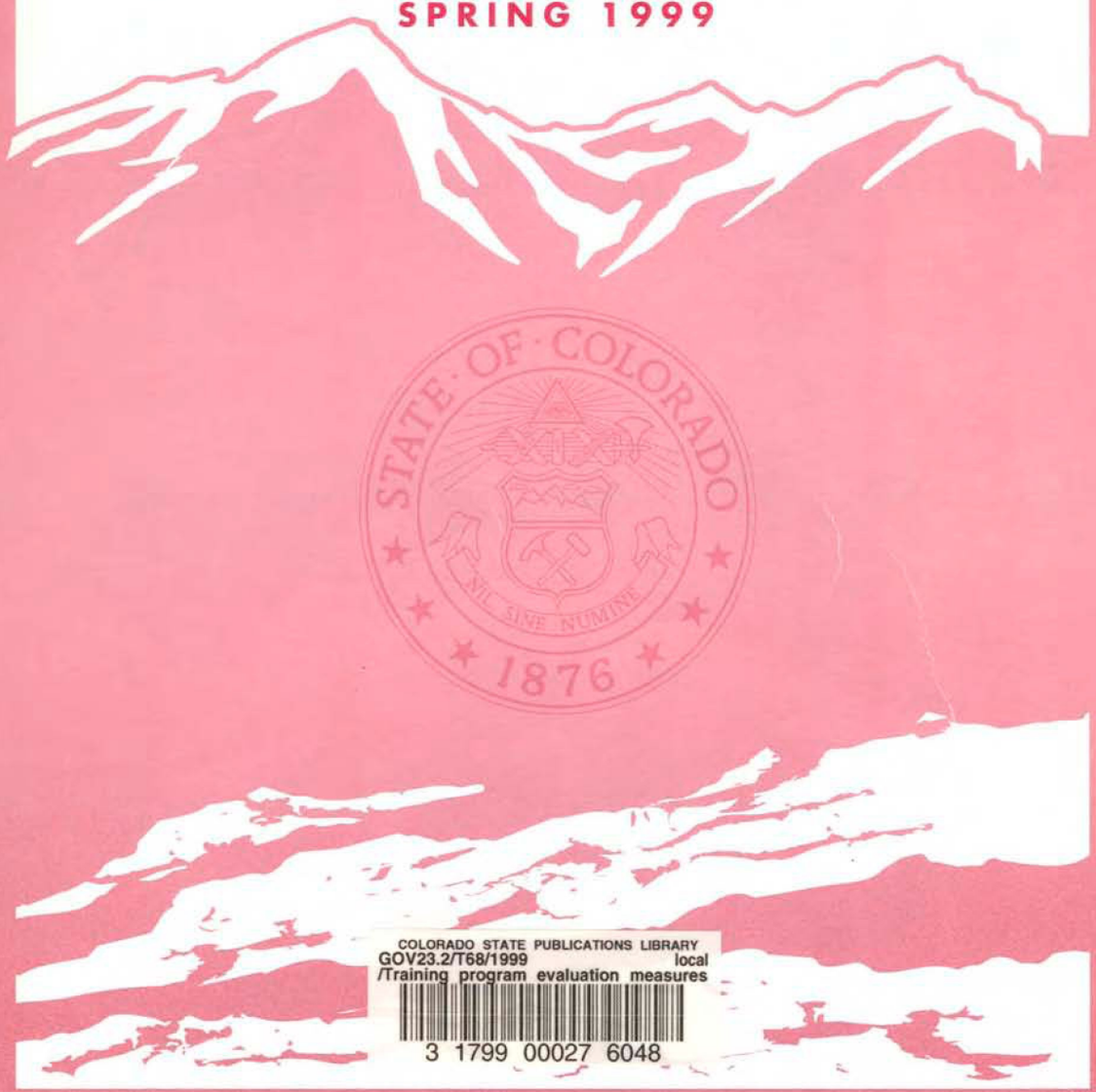
STATE OF COLORADO

Training Program Evaluation Measures

A Resource Guide for Colorado's Workforce Centers

SPRING 1999



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Training Program Evaluation Measures

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EXECUTIVE SUMMARY

In May of 1998, the Workforce Coordinating Council of the Office of the Governor retained BBC Research & Consulting (BBC) to examine current performance measures and prepare recommendations for return on investment measures for five types of State and Federal programs operating in Colorado. BBC interviewed State officials, reviewed State reports and conducted a comprehensive literature review to complete this study. This report summarizes the findings and recommendations of that research for the following programs:

- Job Training Partnership Act,
- Carl Perkins Vocational Program,
- Adult Basic Education,
- Vocational Rehabilitation Program, and
- Colorado FIRST Customized Training Program.

The goals of this research were to identify current evaluation systems for each program, and to identify means of improving or implementing systems to measure the return on investment. An additional goal of this study was to recommend common evaluation measures across programs where possible.

Before analyzing each program, it is necessary to understand the potential goals and means of program evaluations. These are introduced in the following section, and discussed in more detail in the main report.

Background on Program Evaluation Approaches

Programs can be evaluated based on a wide variety of goals and measurement objectives. Depending on these objectives, different evaluation tools will be appropriate.

Program evaluation goals. The first step in "evaluating" a program is to determine the objective of the evaluation. A program can be evaluated with any of several goals in mind.

- ***Net impact of program.*** Answers the question of "would trainees be 'better off' if they had not joined the program and instead either found other training or pursued other vocational endeavors?" This type of analysis is necessary to develop a true return on investment calculation because it compares outcomes that occurred because of the program against outcomes that would have occurred without the program.

- ***Gross impact of program.*** Answers the question of "are enrollees 'better off' after completing the program than they were before entering the program?" (Note that this is a different analysis question than the question above for that measures net impacts of programs). This level of evaluation implicitly assumes that the program passes the first test above.

- ***Program efficiency.*** Answers the question of "is the training being offered in a way to maximize the benefits to trainees?" This level of evaluation implicitly assumes that the program passes the first two tests above, and is more of an optimization exercise than an evaluation of the program's utility.

- ***Program output.*** This level of evaluation essentially measures the amount of "service" provided by the program, without regard for the eventual usefulness of the service to the trainee. This implicitly assumes that the program passes all three of the other tests.

Definition of beneficiaries. Another decision that affects the outcome of a program evaluation is the perspective of the evaluator. For example, a program that charges no entry costs or tuition is considered a success to a trainee if he or she can obtain a salary increase that justifies the time spent in the program. But if the State is funding the program, the State may not consider that same program a success if the salary increases among participants is too small to justify the resources spent on the program.

For the purpose of this report, we consider the goal of the evaluation to be an analysis of the benefit of the program to society as a whole, as measured by the tax dollars infused into the program relative to the benefits derived by it. This is a broader perspective than merely analyzing the impact of the programs on the direct beneficiaries (i.e., the trainees or the client firms), but it is a necessary perspective to determine whether the program is a sound investment for the State.

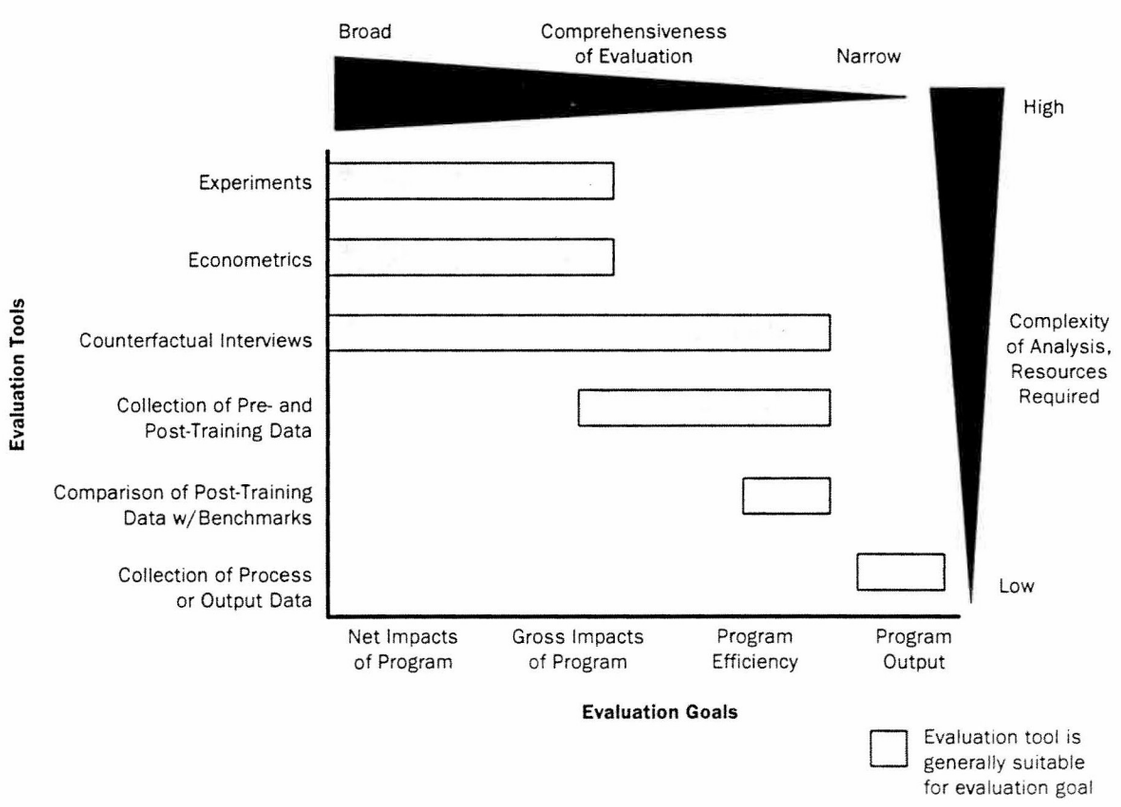
Evaluation Tools

Several types of analytical techniques can be used in evaluations. Certain approaches are more appropriate than others for addressing the various research questions described above. In descending order of value (as measured by their appropriateness for determining the net impact of programs), methods of evaluating training programs include:

1. Experiments
2. Econometric analyses
3. Counterfactual interviews
4. Collection and analysis of pre- and post-training data
5. Collection and analysis of post-training data compared with benchmarks
6. Collection and analysis of process or output data

Only the first three methods are usually appropriate for determining return on investment. These methods are available to address the broader research questions on the impact of programs, while the latter approaches are generally more suited to measuring program efficiency or output. This general relationship is presented in Exhibit ES-1 below.

EXHIBIT ES-1.
Relation of Evaluation Tools to Evaluation Goals



Source: BBC Research & Consulting.

Program Analyses

The balance of the Executive Summary summarizes our examination of return on investment analysis for each of the five programs and discusses common measures or themes in evaluating these programs. These summaries are necessarily concise; full discussions of each program are provided in the body of the report.

JTPA. The Job Training Partnership Act (JTPA) is a Federally-funded program for low-income youth and adults, displaced workers, Native Americans and migrant and seasonal farm workers. JTPA is administered by the Colorado Department of Labor and Employment which allocates a portion of training funds through local Service Delivery Agencies (SDAs). JTPA also includes Jobs Corps, a national program for economically disadvantaged youth. Job Corps and the Native American and farm worker programs are administered by the Federal government. The other JTPA programs are administered by the states. The State-administered JTPA programs will be replaced by programs authorized by the recently enacted Workforce Investment Act of 1998. Relevant program information is provided in Exhibit ES-2.

EXHIBIT ES-2.
Overview of JTPA Programs

1998 Funding: $22.4 million for programs for adult training programs, youth summer training and employment programs, youth employment programs and dislocated worker programs.

Number of clients served: 15,473 persons participating in one or more programs in Program Year 1998 (excludes participants in National Reserve Grant-funded programs).

Existing evaluation measures:

Measure	Population	1996 Colorado Average	1996 U.S. Average
Follow-up weekly earnings	adults	$328	$301
Follow-up employment rate	adults	66 percent	62 percent
Follow-up weekly earnings	welfare adults	$304	$284
Follow-up employment rate	welfare adults	62 percent	57 percent
Positive termination rate	youths	76 percent	78 percent
Program termination employment rate	dislocated workers	85 percent	71 percent
Follow-up employment rate	dislocated workers	80 percent	72 percent
Program termination wage replacement rate	dislocated workers	95 percent	93 percent
Follow-up average wage replacement rate	dislocated workers	98 percent	95 percent

Source: BBC Research & Consulting from program documents.

Current evaluation system. Given the size and scope of this program, a number of performance measures are in place or have been recommended for JTPA programs. For adults, follow-up employment and earnings levels are routinely recorded. Slightly different

measures are in place for youth to account for school as an alternative to employment. By these measures, Colorado's JTPA programs measure up well against comparable states and national averages.

Evaluation measures for return on investment. Because the JTPA program is Federally funded with no State match requirement, any benefits that accrue to the State result in net positive benefits to the State. Therefore, return on investment is positive from the State's viewpoint so long as any positive outcome is observed (excluding potential indirect effects arising from the interactions of State and Federal tax policies).

If the State wishes to examine the net impact of the program based on all costs, rather than just the State's costs, comparing specific components of the JTPA program to determine which types of programs generate the most favorable return on investment would be useful. Potential components of this financial return on investment analysis include incremental tax revenues, changes in public assistance, and perhaps quantification of selected social benefits that affect State expenditures, such as reduced crime or other second-order effects. Potential means of conducting the evaluations are experiments, econometric analysis, and (to a limited extent) counterfactual interviewing of trainees. Some national studies have already addressed this question on a national level, and to the extent that Colorado's programs and trainees are similar to the national profile, these studies may be sufficient to consider additional investment in Colorado JTPA programs.

Carl Perkins. The Carl D. Perkins Vocational and Applied Technology Education Act is Federal legislation that provides funds for vocational-technical education programs at the secondary and post-secondary levels. The Carl D. Perkins funds are directed to programs that provide academic and occupational skills to participants, and meet the following mandates: programs must be of sufficient size, scope, and quality; integrate academic and vocational education; and provide equitable participation for special populations. The purpose of the Act is to equip a workforce with the academic and vocational skills needed to compete in a technologically advanced society. In practice, Perkins funds are used for a variety of purposes and generally augment programs or initiatives that are primarily funded from other sources. Perkins funds make up approximately 10 percent of the funding for career and vocational programs at both the secondary education and post-secondary education levels. Relevant program information is provided in Exhibit ES-3.

EXHIBIT ES-3.
Overview of Carl Perkins Funds

1998 Funding: $13.4 million in Basic Grants, plus $1.4 million in Tech Prep Grants.

Number of clients served: Perkins funds augment state and local funds for secondary and post-secondary vocational education. Total 1996-1997 secondary enrollment was 68,929, and post-secondary enrollment was 48,089.

Existing evaluation measures provided by institutions receiving Perkins funds (not provided by the State overall):

Achievement of Basic and Advanced Academic Skills
Attainment of General Occupational Skills
Attainment of Specific Occupational Competencies
Successful Program Persistence and Completion
High School Graduation or its Equivalent
Continuation of Education or Job Placement
Client Satisfaction
Sex/Ethnicity Equity
Equal Access for Special Populations

Source: BBC Research & Consulting from program documents.

Current evaluation system. Federal requirements call for performance measures to be collected for the programs that receive Perkins funds. For the most part, these measures provide information on the programs funded by Perkins, but do not isolate the impact of Perkins funds on the programs. (Recall that Perkins funds typically supplement funds from other sources.)

The State of Colorado has established nine other performance measures that are reported by each organization that receives Perkins funds. As above, these measures are useful in examining the performance of Perkins- and State-funded programs overall, but do not evaluate whether the incremental program funding provided by the Perkins Act significantly affects those programs.

Evaluation measures for return on investment. As noted above, the Perkins Act funds represent a relatively small portion of total vocational education funds. This blending of Federal funds as a supplement to local and State sources presents challenges to effectively evaluating the impact of Perkins funds. It is difficult to isolate the impact of Perkins funds when they represent only a small portion of overall vocational education program funds.

It is therefore worthwhile to determine the impact of the funded programs as a whole, before undertaking an analysis of the incremental funding provided by the Perkins Act. Because this level of analysis requires an understanding of the net impacts of the program (as opposed to gross impacts, program efficiency, or program output), it is therefore necessary to conduct rigorous analyses using defined experiments, econometric analyses, or counterfactual interviewing.

BBC recommends a three-step evaluation process:

- First, what value is provided by the programs that receive Perkins funding (independent of the fact that they receive Perkins funds)?

- Second, what is the impact of the Perkins funding on the operations and utility of those programs? In other words, beyond the additional funding, how has the Perkins Act affected the delivery of vocational education? How does this impact affect students in the program, in terms of the nine performance measures defined by the state?

- Third, what is the return on investment of Perkins funds, in terms of dollars spent through the program and the benefit to society that results?

The determination of the societal impact of Perkins Acts funds is a function of both the societal impact of the programs funded and the incremental impact of Perkins funds on the programs.

Adult Basic Education. Adult Basic Education is a Federally funded program that funds efforts to provide a variety of core skills to Colorado residents. These efforts include General Equivalency Degrees, literacy training, U.S. citizenship training, English as a Second Language, basic skills such as mathematics and social sciences, and life skills required to maintain a household. The Adult Basic Education (ABE) program does not provide training services with internal staff. Instead, the program solicits proposals from third-party providers on a time-specific basis, and provides funding to those providers in accordance with program goals. The providers that have received funding include schools, community colleges, jails, churches and community-based organizations.

Relevant program information is provided in Exhibit ES-4.

EXHIBIT ES-4.
Overview of Adult Basic Education

1998 Funding:	$3.2 million
Number of clients served:	Approximately 15,000 currently enrolled as of late 1998, with an additional 5,000 on waiting lists for enrollment.

Existing evaluation measures:

Measures are defined in terms of educational output through the program, such as attainment of GEDs and standardized English-language proficiency measures. No economic or employment measures are currently in place.

Source: BBC Research & Consulting from program documents.

Current evaluation system. Current outcome measures for the program are usually defined in terms of educational outcomes rather than vocational or economic outcomes. For example, success in the ESL program is generally measured in terms of enhanced English language skills based on standardized proficiency measures rather than in terms of the economic rewards of having specific levels of English language skills. This measurement philosophy is probably related to the program's roots in the Department of Education rather than the Department of Labor. As such, no formal evaluation system exists that addresses impacts of the program on employment, wages, or other measures commonly cited in the other programs in this report.

Evaluation measures for return on investment. As with JTPA and (to some extent) Carl Perkins funds, all ABE funding is provided by the Federal government, so the return on investment to the State is positive if any positive outcomes arise from the program. A comprehensive return on investment model will include Federal governmental costs, even if those costs are not borne directly by the State.

Another key issue that must be considered prior to evaluating the ABE is the overall goal of the program. Based on BBC's review of existing ABE performance measures, it appears that the success of ABE programs is generally based on learning outcomes, as opposed to economic outcomes. This is a legitimate view if the learning is truly the goal of the program. If, however, the program is intended to make students more employable, some attention must be given to employment outcome measures. While current evaluations often make a qualitative link between skills attainment and economic opportunity, this link has not been explored in depth within the context of the program.

Examination of return on investment in terms of employment outcomes can be accomplished via a number of approaches. Econometric approaches using existing earnings data and skills level data could be informative, using measures standard for other training programs such as employment status, wages, and job retention. For ABE program elements, it is particularly important to determine the net impact of the program as opposed to the gross impacts, program efficiencies, or program outputs. The presence of alternative training sources, and the proclivity of non-ABE students to use those sources, should be examined to identify whether or not the training is merely subsidizing learning activities that would occur without the program. At the same time, it should be recognized that the net impacts of certain ABE program elements is difficult to define. For example, citizenship attainment and the successful learning of basic life skills may enhance trainees' quality of life, but are somewhat removed from the realm of vocational training. A pure economic evaluation of the programs may not capture all of the social benefits of these and other program elements.

Overall, the Adult Basic Education program is a relatively poor candidate for development of a comprehensive return on investment model. The nature of the various program elements — citizenship, literacy, basic life skills, English language skills and others — carry societal benefits that range beyond employment or other economic measures, and many of those societal benefits are difficult to quantify. Other, more sophisticated research techniques would be needed to place economic value on these types of benefits (contingent valuation, for example).

Vocational Rehabilitation Program. Colorado's Vocational Rehabilitation Program is a State and Federally-authorized program that is operated by the Colorado Division of Vocational Rehabilitation. The program assists individuals with disabilities in obtaining and maintaining employment. Relevant program information is provided in Exhibit ES-5.

EXHIBIT ES-5.
Overview of Vocational Rehabilitation

1998 Funding: $31.6 million

Number of clients served: In FY 1996-1997, a total of 2,543 trainees found employment upon completion of the Vocational Rehabilitation program. This represented approximately 65 percent of the trainees that actually completed an Individualized Written Rehabilitation Program plan.

Existing evaluation measures:

State-developed payback model: Estimates that successful program completers will produce enough increased income taxes and decreased public assistance in seven years to offset per-trainee costs to operate the program.

State Fiscal Years	FY 96-97	FY 95-96	FY 94-95
Percent of applicants who:			
Become eligible/Those who apply	82.5%	84.2%	83.2%
Start IWRP/Become eligible	81.0%	76.8%	77.9%
Complete IWRP/Start IWRP	75.2%	71.0%	66.5%
Successfully employed/Complete IWRP	65.1%	65.7%	61.0%
Cost per successful employment	$12,404	$12,897	$13,375

	Federal FY 96-97 Colorado	U.S.
Percent of applicants eventually employed per IWRP prepared	67.7	65.9
Program cost per employment outcome	$13,964	$12,988

Source: BBC Research & Consulting from program documents.

Current evaluation system. A number of current measures are used to examine various aspects of the program, many of which relate to program outputs and program efficiency rather than the net impact of the program. The primary existing measures that can support an analysis of program net impacts are measures of employment outcomes and the current determination of a governmental payback period using a model of earnings, public assistance expenditures and program costs.

Evaluation measures for return on investment. The primary societal benefit of this program is the provision of training to disabled persons sufficient to allow for productive employment. The key to determining the extent of this benefit is the determination of the probable employment outcomes that participants would have experienced had they not completed the training program. An experiment-based or econometric comparison of employment outcomes for persons participating in the program versus a similar population not participating is quite feasible, and is an essential element of determining overall return on investment.

The State also currently operates a payback model that compares the per-trainee cost of the program with the increased taxes and decreased public assistance expenditures for program completers. This model is a valuable tool in determining overall return on investment, but may be well-served by augmented data from the trainee outcome research suggested above.

Colorado FIRST Customized Training Program. The Colorado FIRST program is a State-authorized program that provides job-specific training programs for employers (known as "customized training" due to the fact that training curricula are custom-designed for each employer). The program is targeted toward firms that are either relocating or expanding into Colorado, or firms already located in Colorado that are expanding their operations. Colorado FIRST provides individuals with training for specific newly created jobs, thereby assisting both the individual and the employer. Because the program targets firms relocating or expanding from outside Colorado, Colorado FIRST is often included as part of an economic incentive package to draw new employers into the state.

Relevant program information is provided in Exhibit ES-6.

EXHIBIT ES-6.
Overview of Colorado FIRST

1998 Funding: $3.6 million

Number of clients served: The program's direct clients are firms rather than employees. In FY 1997 the program served 65 firms, which trained an average of 109 employees each.

Existing evaluation measures:

State-developed payback model: Estimates that each dollar invested in the program returns approximately five dollars in increased income taxes generated by trainees during a ten-year payback period.

Source: BBC Research & Consulting from program documents.

Current evaluation system. The program uses a number of performance measures to evaluate program efficiency and output, such as the number of firms served, the size distribution of firms served, and the locations of client firms within the state. These measures don't necessarily measure the effectiveness of the program, but rather the manner in which the program is being implemented.

The primary measure of program effectiveness currently used is an internally developed payback model. The model compares the overall annual program costs to the additional income taxes generated by the wage increments experienced by employees who receive training through the program. The model assumes that Colorado FIRST is solely responsible for the creation of new jobs by the client firms, and that the training (and wage increments) would not have occurred without Colorado FIRST. The initial increase in wages for employees that are reported by the firms participating in the program are assumed to continue for 10 years, with some attrition of employees over this period.

Evaluation measures for return on investment. The Colorado FIRST program serves multiple goals. A stated goal of the program is to promote economic expansion in the state through incentives for firms to expand or relocate into Colorado. To achieve this goal, the program provides training subsidies to expanding and relocating firms, which in turn pass the benefits to their employees in the form of customized training. Societal benefits are thus measured in terms of economic benefits to individuals receiving the training and to firms who hire the trained workers, and (if desired by the citizenry) economic growth in the state.

The net impacts of the program need to be measured for each of these components before return on investment can be calculated. Benefits to employees can be measured in much the same way as for other training programs, though particular emphasis should be placed on determining whether the employees would have been hired by the expanding firm even if the training hadn't been provided by the State. Retention is also a measure of particular importance that is not currently tracked.

Economic benefits to firms are measured more directly. Since these firms are receiving subsidies to conduct the training, the value of the subsidy defines the maximum benefit they are receiving since it can be presumed that they would have self-funded the training even without the program if the value of the training exceeded its cost.

To a great extent, both of the above measures are also dependent on the decision of the firm to relocate or expand in the first place, which could have been impacted by the existence of the program. Detailed post-training interviews with firms and additional data collection on the Colorado FIRST training subsidy relative to other aspects of the incentive package may be useful in better answering this question.

The net impacts of the program on trainee wages and retention, on firms' training costs, and on the decision of firms to expand or relocate into Colorado can be included into the program's existing tax payback model to estimate overall return on investment. This model currently compares the direct cost of the program with the incremental tax revenues created by wage increases of individuals completing the training (although an incremental

improvement can be made by better understanding the impacts of retention on employees wages), but does not account for the impacts of the program on firms' training investments and firms' decisions to relocate or expand in Colorado.

Common Evaluation Measures and Themes Across Programs

Each of the five programs described above have unique goals and clientele. Because of these differences, the State should be very cautious in attempting to compare programs' performances against one another, even where common measures are adopted. It is far more important to evaluate the success of each program in meeting its own objectives than to compare it to other programs with differing objectives and differing clientele. Forced cross-program comparisons can be misleading when evaluating the success of a program.

While cross-program comparisons are not always meaningful where program goals and clientele are different, the five programs have a common theme: they provide training services to their clients. This common theme implies that, to some extent, common evaluation frameworks can be applied, even if particular measures are not meaningful across the entire spectrum of programs. BBC's findings of this common framework include the following:

- Evaluation frameworks should examine net impacts of programs rather than gross impacts, which simply examine selected measures of trainees before and after they enter the program. This approach does not account for the fact that trainees' situations might have changed even without the program, either through the completion of a different mode of training or through employment. Program efficiency and program output measures are also commonly cited as "evaluation measures," but the use of these measures implicitly assumes that the program has a positive net impact.

- The evaluation of a program's net impact depends to a great extent on the perspective one takes when evaluating the program. Most programs described in this report are solely funded by Federal dollars. The State must consider whether its evaluations will measure the success of each program relative to its total cost, or simply its cost to the State.

- The goals of a program should be clearly understood before a thorough evaluation is possible. This report approaches each program using economic and employment enhancements as the primary goal of the program. In some cases, such as Adult Basic Education programs, this may not be the primary goal of the program.

- Some benefits (and costs) of programs are difficult or even inappropriate to quantify in economic terms. For example, some benefits of citizenship attainment may lie in a person's increased participation in the democratic process. Even if this participation has no readily quantifiable economic value associated with it, it may be in society's best interest to encourage it.

- Where economic and employment impacts could be measured, certain common measures existed across (most) programs. These included wage gains, employment rates and retention. These appear to be commonly accepted measures for considering training program impacts, though as mentioned above, the differences in program structures and goals renders cross-program comparisons of such measures inappropriate in many cases.

SECTION I.
Introduction

In May of 1998, the Workforce Coordinating Council of the Office of the Governor retained BBC Research & Consulting to examine current performance measures and prepare recommendations for return on investment measures for five types of State and Federal programs operating in Colorado. This report summarizes the findings and recommendations of that research for the following programs:

- Job Training Partnership Act,
- Carl Perkins Vocational Program,
- Adult Basic Education,
- Vocational Rehabilitation Program, and
- Colorado FIRST Customized Training Program.

Purpose of Study

The goal of this research was to examine current performance measures and to identify means of improving or implementing systems to measure the return on investment of each program. Return on investment was considered from several different perspectives, including financial return on investment to the State Treasury. Return on investment is also examined from a broader societal perspective.

A secondary goal of this study was to recommend common evaluation measures across programs where possible.

This report was prepared prior to the implementation of the Workforce Investment Act, which may have a significant effect on the scope, operation, and organizational structure of the programs described in the report.

Organization of This Report

This report is organized around the individual programs reviewed in this study. For example, Section III presents BBC's review of current performance evaluation and recommendations for new approaches for JTPA programs. Sections IV through VII provide this analysis for each of the other programs.

Section II presents BBC's groundwork for the assessment of current and potential approaches to evaluation and return on investment calculations. In this section, we provide a comprehensive review of the many different approaches to program evaluation and return on investment analysis that have been applied to employment training programs. This framework is essential to reviewing the performance assessment measures and techniques currently applied for the five programs examined in this study. We urge the reader to start by reading Section II before turning to any of the sections pertaining to specific programs.

This study was based in part on a review of existing employment training program evaluation literature. Appendices A through E to this report summarize some of the more important contributions to this literature.

SECTION II.
Program Evaluation Goals and Methodology

Programs can be evaluated based on a wide variety of goals and measurement objectives. Depending on these objectives, different evaluation tools will be appropriate. This section provides a brief discussion of the different types of goals and evaluation methodologies that can be prescribed for a program, and the differing uses of each. While this discussion can be applied to any type of program, it will be conducted in the context of evaluating training programs. This discussion provides a basic backdrop for the specific program analyses described in Sections III through VI. A more in-depth discussion of evaluation tools and goals is provided in Appendix F of this report.

Program Evaluation Goals

The first step in "evaluating" a program is to determine the objective of the evaluation. A program can be evaluated with any of several goals in mind.

- **Net impact of program.** One could have the objective of determining whether the program should or should not exist (i.e., would trainees be "better off" if they had not joined the program and instead either found other training or pursued other vocational endeavors?). This type of analysis is necessary to develop a true return on investment calculation because it compares outcomes that occurred because of the program against outcomes that would have occurred without the program.

- **Gross impact of program.** One could take the approach of determining whether the program added value to those who did enroll relative to their situation before entering the program (i.e., are enrollees "better off" after completing the program than they were before entering the program, based on what they learned in the program?). This level of evaluation implicitly assumes that the program passes the first test above, and assumes that the trainees' situations would not have improved if they had not entered the program.

- **Program efficiency.** One can evaluate the program from a program efficiency standpoint, in terms of optimizing the service it provides to trainees. For example, this level of program evaluation might examine the curriculum of a training program to determine whether particular courses are used by graduates in their jobs. This level of evaluation implicitly assumes that the program passes the first two tests above, and is more of an optimization exercise than an evaluation of the program's utility.

- **Program output.** One can evaluate the program from a service efficiency or service volume standpoint by merely measuring the volume of trainees that enter the program or the proportion that complete the program curriculum. This level of evaluation essentially measures the amount of "service" provided by the program, without regard for the eventual usefulness of the service to the trainee. This level of evaluation implicitly assumes that the program passes all three of the other tests.

The first test above is the most basic question of a true program evaluation, because it is the only one of the four tests that comprehensively measure whether the program actually improved the situation of the program beneficiaries. This report therefore addresses the first question above as its primary goal.

Definition of Beneficiaries

Another decision that affects the outcome of a program evaluation is the perspective of the evaluator. For example, a program that charges no entry costs or tuition is considered a success to a trainee if he or she can obtain a salary increase that justifies the time spent in the program. But if the State is funding the program, the State may not consider that same program a success if the salary increases among participants is too small to justify the resources spent on the program.

It is important to select a perspective from which to evaluate programs. In each of the following program analyses, we list all potential significant beneficiaries, but analyze evaluation tools from the perspective of society as a whole. (However, to do so, it is necessary first to measure the effects of the program on the trainees.) In essence, the evaluation question from this perspective is "Does this program produce economic and social outcomes that increase tax revenues more than the program costs in tax expenditures?"

In many cases, this question cannot be definitively answered due to the broad range of a program's impacts. For example, a program that improves a person's ability to become employed may decrease crime rates if that person is deterred from crime by the attraction of a stable job. Where these indirect effects may be significant, they are discussed.

Evaluation Tools

Several types of analytical techniques can be used in evaluations. The major categories are discussed below; strengths and weaknesses of these are described in Appendix F.

Experiments. The conduct of actual experiments is often the most rigorous analytical tool. This approach involves separating similar potential trainees into two groups: control groups (which do not receive the training) and experimental groups (which do receive the training). Each group is then tracked to determine the differences in ultimate outcomes according to relevant measures such as wages, employment, and job retention. There are several significant challenges to conducting valid experiment based research, but it is one of the few means available to quantitatively analyze the net impact of programs.

Econometric analysis. Econometric analysis is a statistically based parallel to experimental analysis. Instead of defining two groups and then tracking those groups over time, as in experimental analysis, groups are defined from existing data and a retrospective analysis is conducted. Econometric analysis can be used to assess program net impacts as well as program gross impacts.

Counterfactual interviews. Sometimes it is not possible to perform experiments or econometric studies to determine the effect of a particular program. One approach that remains is to interview program participants to obtain their perceptions of what changed because of the program. Essentially, this approach is a qualitative means of approximating an experimental approach, and can be used to gain insights (if not quantitative data) regarding the net or gross impact of programs.

Pre- and post-training data comparisons. Evaluators can collect data from new entrants into a training program (e.g., wages of last job, employment history), and then, at some interval after completion of the program, collect similar data for those same people. These "before and after" comparisons are useful in evaluating the gross impact of programs, and in some instances, evaluating program efficiency.

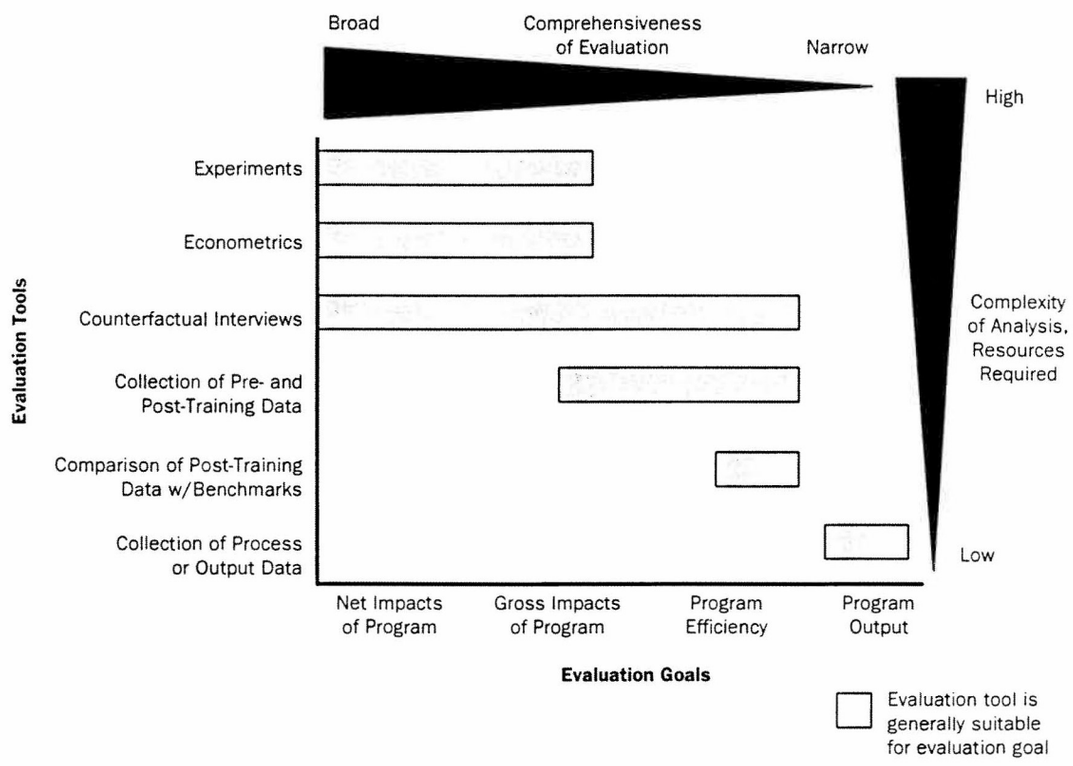
Comparison of post-training data with benchmarks. In some instances, it may not be practical or meaningful to collect pre-training data. For example, previous employment history may not be relevant for trainees entering a specialized field of training. In those cases, evaluations are sometimes measured solely in terms of the trainees' accomplishments upon completing the program. As with pre- and post-training comparisons, these types of analyses may provide some insight into the gross impact of programs, and can be used to evaluate program efficiency.

Process or output data collection. Some performance measures simply track the output of a program, such as the number of people completing the training or attaining a proficiency standard, certificate, or diploma. These measures can be useful in assessing the efficiency of a program, but are not always meaningful in assessing whether the program's services are of value. Often, output figures are often a function of the program's size rather than its value. When combined with program entry figures, process or output data can provide some level of insight into program efficiency; otherwise, these figures simply measure program "output" in terms of graduates or other measures, without a critical analysis as to whether the program's output is beneficial to its supposed beneficiaries.

Relative Costs and Benefits of Evaluation Tools

In general, evaluation tools that measure the net impact of programs are the most time- and resource-intensive among the methods discussed above, since those tools are examining a more complex question than the tools required to examine (for example) program outputs. Exhibit II-1 presents this relationship graphically.

EXHIBIT II-1.
Relation of Evaluation Tools to Evaluation Goals



Source: BBC Research & Consulting.

Summary

In descending order of value, methods of evaluating training programs include:

1. Experiments
2. Econometric analyses
3. Counterfactual interviews
4. Collection and analysis of pre- and post-training data

5. Collection and analysis of post-training data compared with benchmarks

6. Collection and analysis of process or output data

Only the first three methods are usually appropriate for determining return on investment. Other approaches may provide some information to evaluate relative performance of programs among different organizations or over time.

SECTION III.
Job Training Partnership Act

The Job Training Partnership Act (JTPA) is a Federally funded program for low-income youth and adults, displaced workers, Native Americans and migrant and seasonal farm workers. JTPA is administered by the Colorado Department of Labor and Employment which allocates a portion of training funds through local Service Delivery Areas (SDAs). JTPA also includes Jobs Corps, a national program for economically disadvantaged youth. Job Corps and the Native American and farm worker programs are administered by the Federal government. The other JTPA programs are administered by the states. The State-administered JTPA programs will eventually be replaced by programs authorized by the recently enacted Workforce Investment Act of 1998.

Program Description

Overview. Two principles guide the State-run JTPA programs: responsiveness to local conditions and decision-making by local business, education and community representatives. Every state is currently divided into service delivery areas (SDAs), each of which is overseen by a private industry council (PIC). PICs are composed of representatives from private industry, educational institutions, organized labor, rehabilitation agencies, community-based organizations and economic development agencies. There are nine SDAs in Colorado, eight that serve urban areas, and one that covers rural areas of the state not already served by an SDA.

Each PIC, working with local elected officials, selects a local plan administrator. The plan administrator for the area may be the PIC itself, a local government entity within the SDA or a non-profit organization. The plan administrator selects service providers to provide training and other employment-related services to program participants.

Program authority. These programs are authorized by the Job Training Partnership Act, a Federal law enacted in 1982 and implemented in 1984.

Beneficiaries of the program. The beneficiaries of State-run JTPA programs include the following:

- Individuals who complete the training are direct beneficiaries of the program. They include economically disadvantaged adults, economically disadvantaged youth and dislocated workers.
- Firms may benefit from receiving trained workers, though that outcome is not a priority for the program.
- Other economic benefits may result when employment opportunities are expanded for workers. The State economy may benefit when dislocated or economically disadvantaged workers are matched with programs and ultimately employment opportunities. National studies have also found evidence that program participants have lower arrest rates.

Program coverage and clientele. The State of Colorado administers four separate JTPA programs: adult training; summer youth employment and training; youth employment; and dislocated worker services.

Location. JTPA program services are provided throughout the state. The eight urban SDAs include the following: Adams County, Arapahoe-Douglas Counties, Boulder County, Denver County, El Paso-Teller Counties, Larimer County, Weld County and a Tri-County area including Jefferson, Park and Gilpin counties. The ninth SDA provides rural job training programs across the state, and serves those areas that are not already served by an urban SDA.

Budget. JTPA program years run from July of the named year to June of the following year. The following amounts were allotted for JTPA programs in Colorado for Program Year 1998:

- $7.1 million for Title II-A Adult Training Programs;
- $6.3 million for Title II-B Youth Summer Training and Employment Programs;
- $955,207 for the Title II-C Youth Employment Program; and
- $7 million for the Title III Dislocated Worker Program.

The Title III funding excludes funding held back for National Reserve Grants, which are not under State control.

Program operations. Program operations can be divided into the following target categories: adults, summer and year-round youth, and dislocated workers. The intensity of services varies and can range from a few hour session devoted to developing a resume to a two year full-time training program.

Title II-A Adults. All participants in Title II-A Adult Training Programs undergo initial assessments. Individual training plans are then developed. These plans prescribe a combination of services that may include employment counseling, work experience, basic skills training, on-the-job training, classroom training and job placement assistance.

Title II-B Summer Youths. The Title II-B Summer Youth Employment and Training Program offers activities that are designed to improve employability, academic performance, school retention and completion. Each participant receives one or more of the following services: employment counseling, remedial education, work experience and job placement assistance. Economically disadvantaged young people ages 14 through 21 are eligible to participate in this program.

Title II-C Youths. Title II-C Youth Employment Program participants must be 16 to 21 years old and may be in school or out of school. Program participants receive a combination of services including employment counseling, work experience, private-sector internships, occupational skills training, basic skills training, on-the-job training, and job placement assistance.

Title III Dislocated Workers. The Title III Dislocated Workers Program serves individuals who have been terminated or laid off or who have been unemployed for a long period and have limited opportunity for reemployment in the same occupation. The JTPA Title III program includes both worker readjustment services and retraining services. Readjustment services include assessment, career counseling, provision of labor market information, employment testing and job placement assistance. Retraining services include occupational skills training, adult basic education, English-as-a-Second-Language instruction and entrepreneurial training.

In Colorado, companies are required to notify employees 60 days in advance of plant closures. The JTPA program typically becomes involved when the company notifies its employees of a closure. This notification takes place through a WARN notice which JTPA receives. At that time, JTPA offers its services to the employer and if the employer wants assistance, JTPA will hold workshops at the company explaining various services available under Title III. Participation in JTPA programs is strictly voluntary for dislocated workers.

Outcomes Analysis

Potential desirable outcomes of the JTPA program. As previously discussed, JTPA programs have three distinct beneficiaries. The potential outcomes of each are discussed below.

- ***Individuals.*** The desired outcomes for the adult and dislocated worker programs are job placement, job retention and achievement of sufficient earnings to meet the individual's obligations. For participants in the summer youth program, enhanced future employability is the primary objective.

- ***Firms.*** Firms may benefit from a more skilled workforce. For example, JTPA works with dislocated workers to either retrain or improve their existing skills. This investment benefits firms by providing workers with occupational skills.

- *Economy.* The State and taxpayers benefit from increased economic opportunities available to youth and adult residents. Two examples of potential economic benefits include increased income taxes (generated through increased earnings) and reductions in public assistance.

Existing evaluation measures. The Job Training Partnership Act called for the Secretary of Labor to establish national performance standards in order to monitor the impact of JTPA programs. The national standards for core outcomes of each JTPA program are summarized below.

Title II-A Adults. The weekly earnings and employment rates of program participants are measured 13 weeks after program termination. Exhibits III-1 and III-2 show performance in Colorado relative to five nearby states and the nation as a whole.

EXHIBIT III-1.
Title IIA — Adults
Follow-Up Weekly Earnings
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1992	$239	$245	$238	$219	$232	$262	$246
1993	$264	$276	$260	$236	$259	$276	$249
1994	$286	$285	$289	$230	$285	$287	$284
1995	$297	$295	$283	$239	$277	$331	$286
1996	$328	$326	$308	$253	$272	$334	$301

Source: JTPA reports.

Exhibit III-I shows that follow-up weekly earnings in Colorado were $328 in 1996 — up 37 percent from 1992. Of the six states in Exhibit III-1, Colorado reported the second highest follow-up earnings, behind Utah. Follow-up earnings in Colorado exceeded those reported for the nation as a whole.

EXHIBIT III-2.
Title IIA — Adults
Follow-Up Employment Rate
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1992	66%	70%	65%	73%	62%	68%	60%
1993	61%	63%	66%	78%	57%	59%	62%
1994	64%	71%	69%	75%	52%	71%	60%
1995	62%	76%	62%	74%	61%	72%	63%
1996	66%	69%	63%	72%	57%	77%	62%

Source: JTPA reports.

As shown above, the follow-up employment rate in Colorado was 66 percent in 1996 – reflecting no change from the 1992 employment rate. This rate is higher than the national rate of 62 percent, though two other nearby states (South Dakota and Utah) recorded even higher figures.

Title II-A Welfare Adults. Follow-up weekly earnings and employment rates are collected for adults who were welfare recipients at the time they entered the adult training program. Exhibits III-3 and III-4 depict follow-up employment and weekly earnings for this population.

EXHIBIT III-3.
Title IIA — Welfare Adults
Follow-Up Weekly Earnings
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1992	$228	$227	$210	$191	$188	$233	$231
1993	$262	$267	$240	$220	$190	$246	$233
1994	$266	$282	$260	$227	N/A	$254	$267
1995	$279	$276	$273	$231	$240	$281	$273
1996	$304	$312	$287	$230	$234	$300	$284

Source: JTPA reports.

As shown above, the follow-up earnings for welfare recipients in Colorado increased from $228 in 1992 to $304 in 1996 – an increase of 33 percent. Of the six states compared above, Colorado reported the second highest follow-up earnings for these individuals in 1996, and exceeded the nation as a whole.

EXHIBIT III-4.
Title IIA — Welfare Adults
Follow-Up Employment Rate
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1992	58%	68%	55%	64%	49%	55%	52%
1993	55%	68%	56%	74%	56%	42%	54%
1994	58%	71%	62%	65%	N/A	66%	53%
1995	57%	75%	53%	64%	51%	69%	55%
1996	62%	70%	66%	63%	58%	75%	57%

Source: JTPA reports.

Exhibit III-4 shows that 62 percent of participants in Colorado were employed during the follow-up period – up from 58 percent in 1992. The follow-up employment rate for Colorado exceeded the national rate for each year between 1992 and 1996. Relative to five surrounding states, however, Colorado fell behind all states except Wyoming.

Title II-C Youth. The youth "entered employment rate" or "positive termination rate" represents the number of youths who entered employment as a percentage of the number of youths who terminated the program, excluding those who remained in or returned to school. Exhibit III-5 compares Colorado's performance with five other states in the region and the nation as a whole.

EXHIBIT III-5.
Title IIC — Youth
Positive Termination Rate
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1992	66%	82%	84%	82%	68%	65%	73%
1993	73%	82%	70%	72%	65%	66%	74%
1994	78%	89%	77%	59%	67%	76%	74%
1995	75%	86%	71%	72%	71%	80%	76%
1996	76%	83%	80%	84%	76%	74%	78%

Source: JTPA reports.

In Colorado, 76 percent of participants entered employment in 1996 – up from 66 percent in 1992. Relative to five other states in the region, Colorado's positive termination rate is lower than four states, but higher than Utah (which reported a 74 percent positive termination rate). Colorado's 1996 positive termination rate is slightly below the national rate of 78 percent.

The youth "employability enhancement rate" represents the number of youths who attained at least one of the following employability enhancements by program termination:

- completion of secondary or post-secondary education;
- participation in non-Title II training;
- certification of occupational skill attainment; or
- return to full-time school for drop-outs.

Title III Dislocated Workers. The "entered employment rate" or "program termination employment rate" for dislocated workers represents the number of participants who obtained employment as a percentage of those who completed and dropped out of the program. Individuals who were recalled or retained by the original employer after receipt of a lay-off notice are excluded. Exhibit III-6 summarizes this data for six states and the nation as a whole.

EXHIBIT III-6.
Title III — Dislocated Workers
Program Termination Employment Rate
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1992	75%	83%	82%	81%	71%	73%	69%
1993	68%	92%	81%	80%	73%	76%	68%
1994	83%	88%	70%	80%	70%	55%	71%
1995	81%	75%	84%	74%	68%	69%	72%
1996	85%	85%	78%	80%	73%	88%	71%

Source: JTPA reports.

As shown above, 85 percent of dislocated workers obtained employment following participation in the program – up from 75 percent in 1992. Relative to the other states in the region, this rate is as high or higher than all states except Utah, which reported an 88 percent termination employment rate. Colorado has consistently exceeded the national rate.

In addition to the employment rate at program termination, states also report the employment rate for a follow-up period. The following exhibit compares follow-up employment rates for states in the region, and the nation as a whole.

EXHIBIT III-7.
Title III — Dislocated Workers
Follow-Up Employment Rate
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1992	80%	77%	76%	83%	62%	68%	69%
1993	78%	81%	76%	86%	57%	80%	69%
1994	84%	81%	89%	84%	52%	82%	73%
1995	87%	73%	88%	79%	61%	73%	74%
1996	80%	83%	86%	84%	57%	85%	72%

Source: JTPA reports.

Colorado reported that 80 percent of dislocated worker participants were employed during a follow-up period. This rate is the same as the 1992 rate, but down from 1995, when there was an 87 percent follow-up employment rate. In 1996, Colorado's rate was below four of the five other states, but higher than the overall national rate.

Beginning in 1994, states have been reporting the wage replacement rates at program termination and for a follow-up period. Exhibits III-8 and III-9 summarize this information.

EXHIBIT III-8.
Title III — Dislocated Workers
Program Termination Wage Replacement Rate
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1994	92%	98%	97%	88%	87%	79%	91%
1995	91%	101%	90%	105%	93%	84%	92%
1996	95%	95%	95%	92%	91%	89%	93%

Source: JTPA reports.

Exhibit III-8 shows that the wage replacement rate for Colorado participants was 95 percent (of their previous wages) in 1996. This rate is comparable or higher than the five other states, and the nation as a whole.

EXHIBIT III-9.
Title III — Dislocated Workers
Follow-Up Average Wage Replacement Rate
Comparison of State and National Average Performance

Year	Colorado	Montana	North Dakota	South Dakota	Wyoming	Utah	National Average Performance
1994	91%	92%	110%	96%	87%	81%	93%
1995	101%	98%	97%	103%	87%	85%	96%
1996	98%	103%	97%	98%	94%	95%	95%

Source: JTPA reports.

In addition to reporting wage replacement rates at the time of program termination, states also monitor these rates for a follow-up period. In Colorado, the wage replacement rate in 1996 was 98 percent.

For each dislocated worker project, the State of Colorado submits a Dislocated Worker Special Projects Report (DWSPR) to the U.S. Department of Labor. This report contains the following information, which is specific to a particular dislocation:

- Terminee outcomes (e.g., number of terminees who entered unsubsidized employment or transferred to another program);
- Terminee characteristics (including gender, age, race and education status);
- Performance measures (including average weeks participated, hourly wage pre-program and at termination);
- Follow-up information (including employment rate and average hourly wage at follow-up).

State-identified potential evaluation measures. In addition to the nationally mandated performance measures, each SDA includes self-defined performance goals in its biennial job training plan.

States are permitted to make adjustments to national performance standards to account for local economic factors; characteristics of the population being served; demonstrated difficulties in serving the population; and types of services to be provided.

Proposed performance measures. In response to the consolidation of programs under the Workforce Investment Act, the Workforce Development Performance Measures Initiative developed a "menu" of voluntary performance measures for use by workforce development agencies. The menu contains the following 24 measures.

- ***Entered Employment Rate.*** Reflects the number of individuals entering employment divided by all individuals who have completed services or left without completing. Data are obtained through UI wage records, program data and other sources.

- ***Annual Earnings Gains.*** These are calculated separately for individuals who were labor market attached and not labor market attached. Data are obtained through UI wage records.

- ***Employment Retention.*** The average duration of retention in the labor market is calculated by using UI wage records and other follow-up mechanisms.

- ***Post Employment Ratio of Self Sufficiency.*** This ratio of average annual earnings is calculated by comparing the average annual earnings of participants with a national index. Various data sources are used, including UI wage records and SSI.

- ***Basic Skills Attainment.*** This measure represents the percentage of individuals (over 16) who have earned their GED/High School Diploma, Certificates of Initial Mastery, or other certificates of attainment.

- ***Occupational Skills Attainment.*** The percentage of exiting participants who receive some type of occupational credential, such as post-secondary degrees or certificates, apprenticeship registry, or a degree or certificate at the post-secondary level.

- ***Transition Success Rate.*** This measure compares the participants exiting basic skills or occupational training who receive jobs (or go on to further education) with the total number of participants exiting basic skills or occupational training.

- ***Job Openings Fill Rate.*** This calculates the rate at which WDS applicants were hired into jobs (where WDS staff were assisting the employer).

- ***Customer Satisfaction.*** Satisfaction is assessed by surveying three groups: employers, jobseekers and internal customers.

- ***Employment Rate.*** Using UI wage records and program data, the rate is calculated by taking the number of individuals in employment divided by all individuals who have completed, left without completing, or are still receiving services.

- ***Starting Wage at Entered Employment.*** The source of these data includes self-reports by the individual, their employer, or program data bases.

- ***Reduction or Closure of TANF Grant.*** This measure looks at the number of TANF participants who, through their employment, received enough money to reduce their TANF grants or eliminate them altogether.

- ***Reduction of Benefit Duration.*** This measure compares the average duration of UI benefits paid to claimants receiving WDS services with the duration of payment to all UI recipients.

- ***Participation Equity Rate.*** This statistic compares the proportion of the target population who receive services with the proportion of the target population in the general population.

- ***Diversity of Occupations.*** This measures the distribution of job listings in the labor market area.

- ***Information/Service Access Compared to Community.*** This measure calculates a ratio of workforce development services available through a One-Stop center with similar services in the community.

- ***Information/Services Accessed/Received by Job Seeker and Customers.*** This measure calculates the number of jobseekers who access information services at a workforce center or other access points.

- ***Cycle Time to First Service.*** This measure calculates the number of days from intake to the first date that the service is provided.

- ***Information/Service Access Compared to Fixed Federal List.*** This statistic includes the number of services or products available through one-stop centers divided by the total number of such products and services identified on Federal lists.

- ***Employers Using WDS.*** This measure is comprised of usage and repeat usage.

- ***Administrative Data Shared Among Agencies.*** This measure calculates the percentage of program administrators who have access to each administrative data system.

- ***Return on Investment.*** This compares the total program and administrative costs to the increase or decrease in earnings and public support payments.

- ***Time to positive outcome by service cluster.*** The sum of days each successful completer is in the cluster divided by the number of participants in the service cluster who are successful completers. Service clusters include Basic Adult Education Skills, Occupational Skills and Employment/ Reemployment.

- ***System Penetration Rate.*** This measure compares the number of individuals who have a need for services and received them with the total population of jobseekers who have the same needs. This measure gets at the actual receipt of services.

Evaluation measures used or recommended in analyses of other vocational education programs. Based on the literature review summarized in Appendix C, the number of existing and potential measures for JTPA programs is vast. The national evaluations performed control group experiments focusing on wages and employment measures. Some states compared participants to non-participants to measure the net impact of the program on wages and employment. However, the majority of measures, including the measures proposed by the Workforce Development Performance Measures Initiative (WDPM), rely on post-program and "throughput" data.

The following measures have been identified as possible measures of program performance and/or effectiveness. These measures are categorized based on their implementation or recommended use within the context of the referenced source. The same measures could be grouped differently if applied via different methodologies. (Please see the Appendices to this report for further details on the referenced studies.)

- *Control group experiments*
  - Employment rate (National JTPA Study, GAO)
  - Average earnings rates (National JTPA Study, GAO)
  - GED/High School Diploma attainment (National JTPA Study)
  - Reductions in welfare benefits distributed to youths or adults (National JTPA Study)
  - Impact on criminal activity of youth, as measured by arrest rates (National JTPA Study)
- *Econometric analysis*
  - Net impact of employment as compared to non-participants (Washington and Utah)
  - Net impact on wages as compared to non-participants (Washington and Utah)

- *Pre and post data for trainee*
  - Annual earnings gains (WDPM)
  - Return on public investment. This is a ratio of participant net gains to direct public costs per participant. (State of Washington and WDPM)
  - Decreases in public assistance (State of Florida and WDPM)
  - Reduction in benefit duration (WDPM)
  - Trainee earnings (or earnings plus public assistance decrease) versus cost of program (State of Florida)
- *Post data*
  - Entered employment rate (WDPM)
  - Employment retention (WDPM)
  - Percentage of former participants employed during a follow-up period (Washington and Florida)
  - Placement into full-time jobs (State of Florida)
  - Post-employment ratio of self-sufficiency (WDPM)
  - Transition success rate (WDPM)
  - Job openings fill rate (WDPM)
  - Customer satisfaction (WDPM)
  - Median wages or annual full-time earnings for a follow-up period (Washington and Florida)
  - Starting wages at entered employment (WDPM)
  - Percentage of former participants who were employed in an area related to training (State of Washington)
  - Percent of former participants who were satisfied with the overall quality of the program (State of Washington)
  - Percent of employers who were satisfied with the quality of the work of new employees who had recently completed the program (State of Washington)
  - State licensing exam results (GAO report on Tech-Prep)

- Basic skills attainment as measured by GED or High School diploma receipt (WDPM)
- Occupational skills attainment as measured by occupational credentials (WDPM)

- ***Process or output data***
  - Number of program exiters (State of Florida)
  - Total participants (Colorado Quarterly Reports)
  - Total participants terminated (Colorado Quarterly Report)
  - Total entered employment (Colorado Quarterly Report)
  - Participation equity rate (WDPM)
  - Diversity of occupations (WDPM)
  - Services accessed compared to community (WDPM)
  - Services accessed by job seekers (WDPM)
  - Cycle time to first service (WDPM)
  - Information/service access compared to fixed Federal list (WDPM)
  - Employers using Workforce Development System (WDPM)
  - Administrative data shared among agencies (WDPM)
  - System penetration rate (WDPM)

Summary and Recommendations of Outcome Measures

The number of existing and proposed approaches to measuring performance of the JTPA program is vast. However, when it comes to effectively evaluating the net impact of the program or measuring return on investment from the perspective of the State of Colorado, only a few of these approaches are useful.

As discussed previously, post-participation data do not provide information on what would have happened without the program or what other non-participating individuals achieved without the program. While process and output data can be useful in assessing efficiency and improving program operations, these data do not facilitate a discussion of the programs' relative performance and cannot answer return on investment (ROI) questions. In sum, neither of these approaches is useful in assessing whether the program is worth the cost or whether there is a positive return on investment.

BBC recommends a more narrow set of evaluation approaches and measures to provide meaningful evaluation of the JTPA program. We first discuss approaches to evaluating the benefits and costs of the program to individuals participating in the program. This type of analysis, described in Step 1 below, is necessary to answer the question, "Is this program worthwhile?" In Step 2, we examine approaches to determining the return on investment from the perspective of the State Treasury. Much of the information necessary to answer ROI questions is developed through answering the first question as to net benefits to society as a whole; only the accounting stance differs.

Step 1. Measurement of the program's impacts on participating individuals. The primary objective of JTPA is to improve employment opportunities for economically disadvantaged and work-dislocated individuals. In order to examine whether there is a positive return on society's investment in the JTPA program, one must examine benefits accruing to the individual participants that would not have occurred absent the program. While increases in earnings and decreases in public assistance due to the training are the key potential benefits examined, there may be other positive outcomes of the training as well. For example, one national study identifies a reduction in arrest rates as a desirable outcome. Even though these types of outcome are not easily quantifiable, they still may comprise a relatively large portion of the benefits identified in a comprehensive program evaluation.

Option 1: Experiments. The first and preferred option for evaluating individual outcomes is through experimental strategies. Randomly assigned "control" and "treatment" groups permit an understanding of the impact of a program in the labor market. While experimental strategies are not feasible for every program nor every population, the limited use of such studies would provide valuable information on the impact of the program on individuals' wages and employment. (A detailed discussion of the use of experiments in evaluating employment training programs can be found in Section II and the Appendices to this report.)

BBC recommends that the State consider performing an experimental study of the effects of JTPA on Title II-A adult participants. Using the national JTPA study as a model, the State could randomly select several local sites to participate in the study.

While this type of evaluation is rigorous, it would provide important information on the long-term outcomes enjoyed by program participants. The disadvantages of this approach include high costs and administrative burdens associated with carrying out the experiments. To the extent that the test populations in nationally conducted experiments (described earlier) do not differ from the program recipients in Colorado, national studies may be appropriate proxies for Colorado-specific studies.

Option 2: Econometric analyses. If the experimental approach is not pursued, a second option is to conduct econometric analyses. BBC suggests that there are two types of econometric approaches: one utilizes an external comparison group, and the other relies on internal comparisons of program participants.

The first approach compares a group of participants with a statistically defined group of non-participants, known as the "comparison group." For example, Title III presents an opportunity to compare dislocated workers who access JTPA services versus those who do not. This program is conducive to an external comparison for two reasons. First, participation is voluntary and a natural comparison group will be created by individuals choosing not to participate. Second, since the majority of Title III services are targeted to large dislocations, the participants and non-participants are comparable in terms of their geographical circumstances and local labor market.

Using social security wage records, all dislocated workers can be tracked for an extended period – two years, for example – to assess the wages of participants versus non-participants. One of the advantages to this approach is that the data exist; however, intergovernmental barriers may exist which could impede data access and retrieval. Further, this type of analysis requires extensive data on participants and also a large number of participants.

Performing an econometric analysis may be applicable to other adult programs as well; however, it is less useful for youth programs since more variation exists in their labor force options and it may be more difficult to control for these types of factors.

Another type of econometric analysis does not require the use of an external comparison group. Program administrators could create comparison groups from within the group of participants. The purpose of this type of analysis is to evaluate whether individual participant performance affects long-term outcomes. In other words, do "high performers" (measured by those increasing their scores on skills tests between entering the program and exiting, for example) out-perform their low-performing peers after exiting the program? Does performance in absorbing the relevant skills have any relationship to future earnings or employment outcomes? Similarly, do those who complete the program have better outcomes in the job market than those who do not complete the training? In each of these cases, one would need to control for the attributes of trainees at time of entry to the program (e.g., prior employment experience or education levels).

The advantage of this approach is that it is simpler in terms of data requirements. Program administrators would be required to develop internal records to track participants (including those who drop out of the training program), and would need to identify the indices that best match how well a student absorbed the training. These could include grades, scores on pre- and post-training skills tests, or other achievement measures.

The expectation is that effective training programs will have a strong relationship between individual performance and future outcomes even after controlling for the pre-training attributes of individuals entering the programs. If those who became highly trained in a set of skills through the program did no better in the job market than those who did not become well-trained or dropped out of the program, one might question the program's effectiveness in achieving positive outcomes for participants. This type of approach benefits administrators by allowing them to assess relative performance among programs.

Option 3: Pre- and post-training program data. The least desirable option for evaluating individual outcomes is to gather before and after data for program participants. A before-after comparison provides some information on what happened to the participant following participation in the program. Post-training employment and earnings data should be examined for a number of years by tracking UI wage records or conducting participant surveys.

The disadvantage to this approach is that it attributes all differences in a participant's circumstances to the training. Without a control group, this assumption is difficult to verify. However, this approach may be better than no data at all in examining program outcomes. It is far better than solely collecting post-program data or process or output data.

Step 2. Fiscal return on investment. Calculating return on investment to the State Treasury first requires an answer to the question posed above: "What benefits accrue to the program participant that would not have occurred without the training program?" As noted above, one national study identifies a reduction in arrest rates as a desirable outcome. While it may be challenging to examine the impact of reduced crime, arrest rates and other types of difficult-to-quantify benefits, some estimates may be necessary to obtain a full picture of the return on investment.

Because the JTPA program is Federally funded with no State match requirement, any revenues that accrue to the State result in net positive financial benefits to the State. (It is not possible to calculate a rate of return when the investment is zero. One can say that a State Treasury benefits by having the Federally funded program if the program results in any additional revenues going into State coffers or any reductions in State expenditures.)

It may be that examination of another type of return on the investment question may be useful for the State. If the JTPA program were to substantially increase trainees' earnings above what would have occurred without the program, and the magnitude of this return is large relative to the government investment in the program, the State could consider augmenting this type of training with additional State funds. To answer this question, the State would need to examine the financial return to the State Treasury per dollar of total government investment in the program. In other words, potential financial return on investment to the State from additional State investment in these programs might be estimated by examining current returns to the State per dollar of Federal investment in JTPA programs in Colorado. To the extent that Colorado's program and trainees are similar to a typical national profile, the large body of existing national-level research may be sufficient for this evaluation rather than the completion of parallel state-level research.

This type of analysis may also provide the State a basis for comparing specific components of the JTPA program or other training programs to determine which types of programs generate the most favorable return on investment. This may assist the State in identifying which programs are working well and those that need improvement or restructuring. Such information may also help in redirecting any state resources between different types of programs.

SECTION IV.
Carl D. Perkins Vocational Education Act

The Carl D. Perkins Vocational and Applied Technology Education Act is Federal legislation that provides over a billion dollars nationally in funds for vocational-technical education programs at the secondary and post-secondary levels. Funds are directed to programs that provide academic and occupational skills to participants, including "special populations." The purpose of the Act is to equip a workforce with the academic and vocational skills needed to compete in a technologically advanced society.

Program Description

Overview. Vocational-technical education programs are organized sequences of courses which prepare individuals for employment in current or emerging occupations requiring preparation other than a college degree. Vocational education programs emphasize the need to integrate classroom and on-the-job learning.

The Perkins Act mandates that programs provide students with strong experience in and understanding of all aspects of the industry they are preparing to enter. Vocational education programs take place in various industries, with a specific emphasis on "emerging" or high-demand fields such as mechanical engineering technology, automotive technology and health occupations.

The U.S. Department of Education's Office of Vocational and Adult Education (OVAE) administers the Perkins Act. State Boards for Vocational Education apply for State Basic Grants by submitting a State plan to the OVAE. In Colorado, the sole State agency authorized to administer vocational education and distribute Federal funds is the State Board for Community Colleges and Occupational Education (SBCCOE). This is a nine-member Governor-appointed Board with two non-voting members representing students and faculty.

The State Board awards sub-grants to "eligible recipients" which include local education agencies (secondary schools) and post-secondary institutions. Eligible recipients must qualify for a minimum amount of Perkins dollars, which amounts to $15,000 for

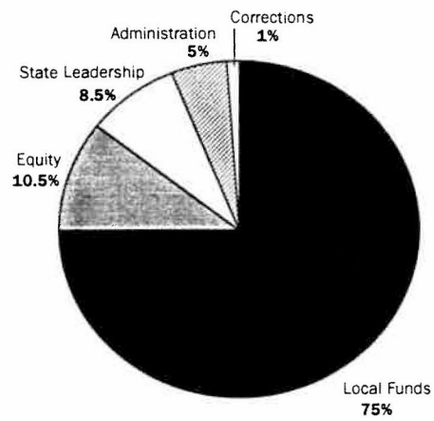
secondary institutions and $50,000 for post-secondary institutions. However, secondary institutions that don't meet the minimum limits can enter into a consortium with other institutions to meet this requirement.

States allocate funds to post-secondary schools based upon the number of enrolled Pell grant recipients and the number of Bureau of Indian Affairs recipients (as compared to the total number of qualified recipients in the state). The funding formula for secondary schools is based upon the percentage of Title I funds directed to local education agencies, the number of students with handicaps who have individualized educational programs, and the number of students in schools and adults in programs in local education agencies.

Basic Grants. States receive the majority of funding in the form of Basic Grants that are based upon a formula that includes the states' population in certain age groups as well as their respective per capita income. In FY 1999, Basic Grants totaled more than $1 billion dollars, of which Colorado received $13.4 million dollars for Basic Grants. Exhibit IV-1 demonstrates the distribution of funds.

EXHIBIT IV-1.
Breakdown of Federal Carl Perkins Fund

The Carl Perkins legislation requires that 75 percent of funds go toward program improvement and 25 percent be distributed among administration, corrections, leadership and equity.



Source: The Colorado Community College and Occupational Education System: Colorado Federal Fund Distribution, Carl D. Perkins FY 1999.

The statute requires states to allocate 25 percent of the Basic Grant to the following activities:

- ***10.5 percent for equity programs.*** The statute requires a distribution ratio of 7 percent for single parents programs and 3 percent for equity programs. Each state can allot the remaining .5 percent to either program.

  Of the $1.4 million Colorado received in FY 1999 for equity programs, about $880,000 was distributed to single parents/displaced homemakers/pregnant single women programs. These grants provide for instruction, career guidance and counseling, and supportive services such as child care. About 1,200 persons are served by these grants in FY 1999.

The remaining $474,000 was distributed to gender equity programs. Gender equity grants fund programs, guidance and counseling, and other activities to eliminate gender bias and stereotyping in secondary and post-secondary occupational education.

- ***8.5 percent for State leadership.*** This supports professional development, curriculum development, program assessment, vocational student organizations and partnerships between educational, business, and community-based organizations. In Colorado, 90 percent of leadership funds, slightly more than $1 million, was distributed internally within CCCOES for the purpose of supporting staff and meeting Perkins mandates. The remaining 10 percent, or approximately $113,000, was distributed to the field.

- ***5 percent for administration.*** Colorado received almost $670,000 for administrative uses, which are used to develop and implement performance standards, perform State assessments, and conduct program evaluation.

- ***1 percent for corrections.*** Colorado received about $134,000 for corrections programs, which it distributed to the Department of Corrections and the Division of Youth Services. Department of Corrections programs that target soon-to-be-released or job-ready individuals are given funding preference.

Local sub-grants. Of the total Basic Grant allotment, states must allocate 75 percent to the local level (local education agencies, area vocational-technical schools, and post-secondary institutions) for program improvement. States are required by the legislation to use the following criteria in distributing basic grants: programs must be of sufficient size, scope and quality; programs must demonstrate integration of academic and vocational education; and programs must serve special populations.

State Boards determine what percentage of these local funds will go to secondary and post-secondary schools. In Colorado, the SBCCOE authorized a 60 percent distribution to the post-secondary schools and 40 percent to secondary schools in FY 1999.

Colorado distributed $3.9 million in FY 1999 to secondary school districts and secondary consortiums. In total, there were 58 eligible recipients for secondary formula funds. Colorado distributed over $5.9 million to post-secondary institutions. Twenty institutions were funded through post-secondary formula funds. Funds are used at the secondary and post-secondary levels for many purposes, including program improvement, supplementary services to special populations, curriculum and equipment upgrades, staff development and in-service training, school-to-career resources, and career guidance and counseling.

Tech Prep Grants. A lesser amount of Perkins funds is distributed to states for special programs, which primarily include "Tech Prep" grants. Tech Prep is a planned sequence of study in a technical field which begins in ninth grade and continues through two years at the community college.

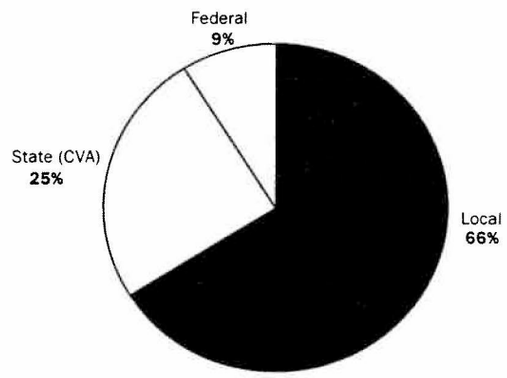
About $103 million dollars in Tech Prep grants were distributed to states in FY 1999, of which Colorado received $1.4 million. Of that amount, the State uses five percent for administration and additional support for statewide activities. The purpose of statewide Tech Prep projects is to support the curriculum expansion efforts for new and developing Tech Prep models.

Program authority. The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 is a reauthorized, amended, and renamed version of the Carl D. Perkins Vocational Education Act of 1984.

Federal Perkins funds represent a relatively small proportion of total funding for career and technical programs at both the secondary and post-secondary levels. To better understand the extent to which local and State sources overshadow Federal funds, it is useful to compare the funding sources for secondary and post-secondary programs. The most recent year for which these numbers are available is FY 1995. Exhibit IV-2 illustrates the various funding sources for secondary vocational education.

EXHIBIT IV-2.
Secondary Sources of Support, 1994-1999

Among secondary sources of support, Federal funds represent less than 10 percent.

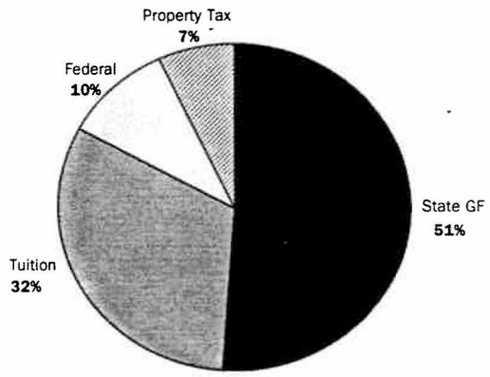


Source: Colorado Community College and Educational System, "Profiles of Career and Technical Education in Colorado," 1996-97.

The Federal contribution for secondary career and technical programs, at $5.6 million, was slightly less than ten percent of total State and local expenditures which totaled almost $60 million in FY 1995. The Colorado Vocational Act, funded by the Colorado General Assembly, provided over $15.1 million in FY 1995. Local support accounted for almost $40 million. Exhibit IV-3 illustrates the various funding sources for post-secondary vocational education.

EXHIBIT IV-3.
Post-Secondary Funding Sources

Federal funds represented about 10 percent of total post-secondary funds in 1994-95.



Source: Colorado Community College and Educational System, "Profiles of Career and Technical Education in Colorado," 1996-97.

The Federal Perkins contribution for post-secondary programs, at $8.4 million in FY 1995, was also about 10 percent of total funds for technical and career programs. Of the $85.2 million total funds, a little more than half came from State general funds, 32 percent from tuition, and 7 percent from local property taxes.

Beneficiaries of the program. Carl Perkins Funds provide supplementary funding to vocational programs whose core funding is provided from other sources. A primary goal of these funds is to increase access of "special populations" to vocational training programs. As such, the primary beneficiaries are as follows:

- **"Special populations."** Minorities, women, disabled persons, and other groups designated as "special populations" are beneficiaries to the extent that Carl Perkins Funds increase their access to, and quality of, vocational training.

- **Other vocational training students.** The bulk of Carl Perkins funding supplements programs that are funded via other sources. Assuming that the supplemental funding increases the overall quality or scope of training in those programs, all enrolled students will benefit.

- **Hiring firms.** To the extent that Carl Perkins Funds increase the number of students receiving training and/or the quality of training received, firms that hire trainees will benefit from the increased skills that their new employees acquire.

Program operations. The main operating features include application and approval for funding at both the State and local levels. Other operational features include program monitoring and evaluation.

Approval of local plans. Under the Perkins program, secondary and post-secondary institutions submit an application to the State Board for approval. In some states, including Colorado, the State Boards handle both secondary and post-secondary; in others, there are separate agencies.

All vocational programs in Colorado are required to submit a local plan in order to receive State funds. The criteria for receiving Basic Grant funding include, among other things, a demonstration that the program responds to labor market demand, serves special populations, integrates academic and vocational education, and meets standards for size, scope and quality of programs.

A more streamlined version of the local application for funds is provided for renewals. These continuations are submitted to the State on an annual basis. The State Board reviews the applications and determines whether they satisfy the above requirements, as well as other funding formula requirements as defined by the Act.

Approval of State plans. State Boards are required to submit State plans on an annual basis, although amendments are being accepted for years 1997 through 1999. These State plans are reviewed by the U.S. Department of Education, which determines whether the State plans meet the statutory requirements for funding.

Colorado submits an Annual Performance Report to the Department of Education to comply with legislative requirements. This report includes various program statistics for vocational education programs, including data on enrollment figures, enrollment by gender, number of completers and distribution by program area. In addition to these statistics, the report contains program descriptions which include program goals, significant achievements and impacts.

Program monitoring and evaluation. State Boards are required to annually evaluate the effectiveness of their programs based upon the measures and standards as defined in the Perkins Act. In Colorado, every program is monitored on an annual basis and evaluated on a five-year basis.

The monitoring responsibilities are divided among the Colorado Community College and Occupational Educational System and the eligible recipients. The eligible recipients are responsible for areas such as effectiveness and quality, outcomes, fiscal and program documentation, and program data for equity programs. The monitoring at the State level includes several tasks, such as reviewing and approving/disapproving local plans; conducting program reviews; conducting on-site reviews; and collecting and reviewing annual performance reports.

Current Program Statistics

The Act requires each state to develop and implement a statewide system of standards and performance measures for secondary and post-secondary vocational education programs. Among these are general output statistics which are intended to measure how program resources are being used. Evaluation measures, used to determine the impact of the program, are discussed later in the section.

Colorado, like other states, collects information on the number of total enrollees and a breakdown by sub-populations, number of program completers, number of "eligible recipients" funded, and the number of special populations served. Some of these program statistics are discussed below.

Secondary enrollment and completion rates. In FY 1996-97, a total of 68,929 individuals enrolled in vocational education programs. The male/female split was 48 percent and 52 percent, respectively. There were 17,102 completers in this period, which represents about a quarter of total enrollees. Approximately 19,000 individuals — or about 28 percent — were classified as disadvantaged, disabled or limited English proficiency.[1]

Post-secondary enrollment and completion rates. In FY 1996-97, 48,089 individuals were enrolled in vocational education in a post-secondary institution. The male/female split was 52 percent and 48 percent, respectively. There were 6,148 completers — or 13 percent of the total enrollees. Approximately 27 percent of total enrollees were classified as disadvantaged, disabled or limited English proficient.[2] 1,367 individuals participated through a correctional program.

Follow-up results for secondary students. The largest percentage of secondary completers continue their education (35 percent). The next largest category, at 30 percent, finds employment related to their training. Just nine percent were employed in a job unrelated to their training.

Follow-up results for post-secondary students. The largest percentage of post-secondary student completers (67 percent) find employment related to their training. About 13 percent are employed in unrelated work and 10 percent continue their education.

Current Performance Measures

The State of Colorado has established nine performance measures to be used in its annual performance reports from funded organizations. These performance measures evaluate Perkins-funded programs, but do not evaluate the actual impact of Perkins funds in instances where those funds supplement other funding sources for the programs. Each organization receiving Perkins funds defines its own numeric performance standard based on either state guidelines or that organization's own past performance. As of 1997, statewide figures are not presented in the annual Carl D. Perkins Federal Colorado Vocational Education Annual Performance Report prepared by the Colorado Community College and Occupational Education System.

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[1] National 1993-1994 figures for all vocational education programs indicate that slightly less than 30 percent of students are economically disadvantaged, 3 percent have limited English proficiency, and 6 percent are disabled. Some students may be included in more than one group, which overstates the sum of these figures.

[2] Same as Footnote 1.

- ***Achievement of Basic and Advanced Academic Skills.*** Measures academic skills, which include basic skills (e.g., reading, writing, and speaking), thinking skills (e.g., reasoning and problem solving), and personal qualities (e.g., responsibility and self-esteem).

- ***Attainment of General Occupational Skills.*** Measures workplace competencies (i.e., the individual demonstrates interpersonal skills, knowledge of resources and ability to use technology).

- ***Attainment of Specific Occupational Competencies.*** Examines specific occupational skills related to training area.

- ***Successful Program Persistence and Completion.*** Measures the extent to which individuals follow through with their training.

- ***High School Graduation or its Equivalent.*** This measure is only used at the secondary level.

- ***Continuation of Education or Job Placement.*** Measures extent to which program completers continue their education or find jobs.

- ***Client Satisfaction.*** Examines satisfaction among currently enrolled students, alumni and employers.

- ***Sex/Ethnicity Equity.*** Measures equity based upon gender and ethnicity by disaggregating data in the above standards and by looking at program enrollment data by sex and ethnicity.

- ***Equal Access for Special Populations.*** Measures access by disaggregating data in each of the above standards and by looking at enrollment data by special population groups.

Each program is required to provide evidence to the State on the methods and instruments it uses to measure some or all of these standards and measures. The eligible recipients are required to produce data on these performance measures during the five-year evaluations. However, the State is required by legislation to only collect – not evaluate – these data.

Evaluation measures used or recommended in analyses of other vocational education programs. A review of existing evaluations and studies on vocational education and Carl D. Perkins revealed that the majority of identified measures focused on skills attainment, wages and placement following participation in vocational education programs. Some of these include "before and after" comparisons. Other common performance measures include a variety of process or output data which describe, among other things, enrollment, participation and completion characteristics. These measures are summarized below.

- ***Pre- and post-tests of skills***

  - Basic skill attainment, including comparisons of program participants and non-participants in grades, dropout rates and continuing education (Colorado Performance Measures)

  - Occupational skill attainment, including comparisons between program participants and non-participants in work readiness (Colorado Performance Measures)

- ***Post-program data***

  - Placement into continuing education or the military (Colorado and U.S. Department of Labor)

  - Wage and earnings (Department of Labor)

  - Client satisfaction (Colorado)

- ***Process or output data***

  - Program participation, retention and completion rates (Colorado, GAO)

  - Sex/Ethnicity Equity (Colorado)

  - Equal access for special populations (Colorado)

  - High school graduation or its equivalent (Colorado)

These measures may be somewhat useful in assessing performance of vocational education programs in general. However, each measure fails to evaluate the impact of the vocational training or, more specifically, Perkins funds compared with what would have occurred without these programs.

Because each state is allowed to define its own performance standards and evaluation measures, little direct comparison is available between states or to a national "average." While many states have common themes such as placement, academic gains, and development of occupational skills, the combination of measures that define each state's performance standards differ. Also, where states have nominally similar elements of performance standards, the means of measuring those standards often differ, as illustrated by the following examples:

- Idaho includes equity and access as a performance measure. However, performance is measured in different ways than for the sex/ethnicity measure in Colorado. For example, sex equity/access in Colorado is measured in terms of the rates at which males and females meet the other

listed performance standards, while equity in Idaho is measured in terms of student/instructor ratios, dissemination of education information, and the development of student career plans.

- Kansas and Colorado both state that gains in basic and advanced academic skills are performance goals. However, Kansas defines these skills as performance in math, reading, comprehension, and writing. Colorado defines these skills, as basic skills defined by the Secretary of Education, plus thinking skills and personal qualities.

- Wyoming's performance standard of "competency attainment" is measured via performance against course competency checklists for each course. Colorado's performance standard of "attainment of occupational competencies" is also measured against locally developed assessment standards, but it is not clear that Wyoming's competency checklists are equivalent to Colorado's assessment standards.

- Utah defines successful placement as employment, military service, or additional education for at least one month within the first nine months of program completion, whereas Colorado defines the same measure less specifically, as entry into follow-on education, training, employment or military service upon completion of the program.

Such differences in the selection and definition of performance standards make a comprehensive comparison between states difficult.

Potential impact of Perkins funds. One way to look at the outcomes attributable to Perkins funds is to ask what would have happened without these funds. Based on interviews with program administrators, the following were identified as potential positive effects directly attributable to Perkins funds and mandates.

- The Perkins requirements may have accelerated the emphasis on the development of local plans. These plans are required to demonstrate an awareness and responsiveness to local labor market conditions. Arguably, these requirements better ensure that the programs respond to local labor market conditions.

- Performance data requirements may have accelerated the collection of performance data by local schools and programs. Without these requirements, local education agencies and post-secondary institutions would not have been required to collect such data.

- Perkins' requirements to serve special populations may have resulted in providing funds targeted toward special populations that might not otherwise be available.

- The legislation requires that funds be allocated to special programs such as single parents, displaced homemakers and single pregnant women. No other programs are required to serve such programs; thus, this requirement

may provide funds for special programs that otherwise would not have been funded.

- The issue of gender equity was raised in the Perkins Act. The requirement that specific funds go toward equity programs may have increased awareness of equity as an issue which benefits other programs, and it may have redirected funds to such programs that otherwise would not have been allocated.

- The legislation requires that one percent of funds go toward corrections programs. No other vocational programs are required to provide services to this population; therefore, the Perkins dollars may be the only source for correctional funding.

- The Perkins Act possibly increases the total funding of Vocational Education over what the State and local school districts and post-secondary institutions would have done. This is not clear and probably varies by school district.

- Tech Prep probably advances the integration of secondary and post-secondary education programs and may have funded programming that would not have otherwise been available.

The above list presents a number of hypotheses and researchable questions, rather than conclusions.

Summary and Recommendations of Outcome Measures

The Perkins Act funds represent a relatively small portion of total vocational education funds. This blending of Federal funds with local and State sources presents challenges to effectively evaluating the impact of Perkins funds. As the State of Washington's evaluation suggests (see Appendix B), the most common performance measures used to evaluate the effectiveness of Perkins funds are neither appropriate nor informative. It is difficult – if not impossible – to isolate the impact of Perkins funds when they only represent a small proportion of overall vocational education program funds.

Thus, evaluating the vocational education program as a whole (rather than isolating Perkins funds) may be a first step to understanding the effect of any additional funding provided through Perkins. Certain inferences can be made about the utility of Perkins funds once this program evaluation has been performed. In other words, a positive return on investment from vocational education as a whole implies that there is likely a positive return on investment from the additional funding provided through Perkins (if, in fact, Perkins increases the total amount of funds devoted to vocational education). However, the

degree of return on investment may vary for each additional increment of funding, so a second analysis is necessary to determine the degree of payback afforded by the increase in program funding provided by Perkins Funds.

BBC recommends a three-step evaluation process. First, what value is provided by the programs that receive Perkins funding? Second, what is the impact of the Perkins funding on the operations and utility of those programs? In other words, beyond the additional funding, how has the Perkins Act affected the delivery of vocational education? Third, how do these impacts relate to the state's investment in the program, in light of the fact that the funding source is Federal and not the State's own coffers?

Step 1. Return on investment for vocational education as a whole. The State and local levels are currently collecting data on participation and completion rates and post-training earnings, employment and placement. These data do not capture what would have happened in the absence of such funds or programs. There is no comparison of outcomes for program participants and non-participants.

The most effective means of evaluating the program's impact requires the use of a control group in which one group receives services and another group does not. This type of experimental study would inform administrators about the employment and earnings impacts that the program had on participants that they would not have otherwise experienced without taking the program. However, the logistical and administrative requirements can impose significant burdens on program evaluators and can also raise ethical questions with respect to the program's withholding of services. In addition, this may not be practical with certain vocational education programs where individuals may merely enroll in classes with little or no "program" involvement. Even so, the benefits of such an experiment can provide valuable information on the long-term consequences of participating in vocational education versus not participating.

An alternate approach to conducting experiments is an econometric approach. Econometric studies statistically create a control group without random assignment of program applicants to a "treatment group" and a "control group." These studies require data on individuals who enter the training program and individuals who do not, ideally including pre-training data in addition to post-training employment outcomes.

An alternative econometric approach, which would only require data for individuals who entered vocational education programs, may be possible. Program administrators would obtain pre-training data for all entrants and then collect data on skills attainment and other performance indices for individuals participating in the program. (For example, if grades in these courses indicate how well individuals have absorbed the training, then grades would be compiled.) Individuals who exit the vocational education programs would be identified in these databases. Finally, employment outcomes would be tracked for all entrants to the vocational training programs whether or not they completed the programs. With these data, it may be possible to detect whether students who are well-trained in specific job skills upon program completion have better employment outcomes than students who are less well-trained or did not complete the training.

If experiments or econometric analyses are not feasible, post-program employment data coupled with detailed interviews of program participants may provide some indication of program outcomes. Using this evaluation approach, program participants would be interviewed at entry, exit and for a follow-up period. Customer satisfaction interviews may already be providing some of this information. Data on employment and earnings would also be collected. This approach has a number of limitations, most particularly the possible bias of interviewees, but it offers a less resource-intensive (if less rigorous) approach to achieving the same evaluation goals as the experimental and econometric approaches.

Questions to be answered in this step of the analysis include:

- What would the participant have done without the program (e.g., become employed or participated in another program)?
- How does the individual assess the value of his/her vocational education training?
- Is the individual currently employed?
- If so, how long did it take to find employment?
- What is the individual doing? Is it related to training?
- What is the individual earning? What type of benefits does the individual receive?
- What additional training did you receive? If any, describe the type of training and why the individual received it?

Particular measures that might be used in this evaluation are linked to the common concepts used by several states to evaluate vocational programs: academic progress, development of occupational skills, placement, retention, and other factors.

Step 2. Incremental effects of Perkins. The above analyses could lead to return on investment estimates for vocational education as a whole. Alone, they would not indicate the effect of Perkins funds. Remaining questions include:

- Does Perkins provide funds which enable local educational institutions to serve more students than they would have served without the funds or offer them different types of classes or more intense courses?
- Does Perkins simply substitute for local or State funds that would have been spent if the additional Perkins funding were not available?
- Have the requirements that come with Perkins dollars changed how the State or local education providers implement vocational education programs?

The most straightforward evaluation approach available to answer these questions is conducting counterfactual interviews with State and local officials. These interviews would probe each of the above questions.

The Perkins-specific issue of increasing access to special populations will need to be examined in parallel to the above analysis of the incremental effects of Perkins funds. Colorado's existing measure of examining the participation of special populations should be sufficient for this purpose, but, as with other programs, there appears to be no baseline analysis to compare participation against, i.e., answering the question of whether participation would be lower without Perkins funding.

Step 3. Fiscal return on investment to the State of Colorado. Perkins provides an addition to State funding for vocational education, with little or no additional financial investment required by the State. If the Perkins funds provide any additional benefits that would have not occurred without the Perkins Act, then there will be positive returns to the State (as there was no State cost). To the extent that Perkins funds are linked to the provision of "matching" State funds or a "maintenance of effort" by the State, it is appropriate to assess whether the programs funded by the matching funds (not the Perkins funds) provide a positive return to the state in ultimate tax revenues or other measures.

SECTION V.
Adult Basic Education Program

Adult Basic Education is a Federally funded program that funds efforts to provide a variety of core skills to Colorado residents. These efforts include General Equivalency Degrees, literacy training, U.S. citizenship training, English as a Second Language, basic skills in areas such as mathematics and social sciences, and life skills required to maintain a household.

Program Description

Overview. Adult Basic Education funds outside providers on a competitive basis to provide any or all of a variety of training programs, with an emphasis on providing a continuum of training. Trainees are expected to progress through a variety of programs beginning with a combination of English as a Second Language (if necessary) and life skills training, and progressing through literacy training, basic education including math and social sciences, the U.S. citizenship test (if necessary), and culminating in the completion of the five components of the GED test. The program's top priority at the current time is English as a Second Language; current law requires that no more than 20 percent of program funds be used to support GED training and testing.

In FY 1997, the State budget for the Adult Basic Education Program was $3.2 million, all of which was derived from Federal funds. Of this amount, approximately 85 percent is passed through the State government to third-party training providers, and the remainder is retained for administration and professional development.

According to the current program administrator, the budget has ranged from approximately $2.7 million to $3.2 million over the previous 10 years. The program administrator reported that the State of Colorado does not augment the Federal funding for this project, though apparently most other states voluntarily match the Federal funding at varying levels.

Program authority. The Adult Basic Education program was first authorized in 1967 as part of the Economic Opportunity Act. The program was later re-authorized by the Adult Education Act in the early 1970s. Funding flows from the U.S. Department of Education to the Colorado Department of Education, Office of Adult Education. The Office of Adult Education currently oversees all aspects of the program, though recent legislation in 1998 has created an opportunity for funds to flow to other departments or offices within the State government. As of this time, it is not clear whether the administration of all or part of the program will be diverted from the Office of Adult Education.

Beneficiaries of the program. There are two specific types of beneficiaries of the program.

- **Individuals who receive training through the program.** Individuals who complete the training are direct beneficiaries of the program, as they obtain skills that expand their economic opportunities and potentially improve their quality of life.

- **State citizens.** People entering the ABE program often have limited economic opportunities due to language barriers, literacy limitations, lack of educational credentials or other issues. As such, these people may be more likely than the average Colorado resident to be receiving public assistance in housing, household maintenance or other areas. Expanding economic opportunities for these individuals may lessen their dependence on public assistance, lowering all other citizens' tax burdens.

Program operations. The operating features of the Adult Basic Education program include the funding of third-party service providers, intake of trainees, and administrative aspects such as budgeting training hours and recording training hours and accomplishments.

Funding of third-party providers. The Adult Basic Education program does not provide training services with internal staff. Instead, the program solicits proposals from third-party providers on a time-specific basis and provides funding to those providers in accordance with program goals. The providers that have received funding are diverse in nature and structure, and include schools, community colleges, jails, churches and community-based organizations. In the past, proposals and funding decisions were made on an annual basis, but the program currently awards one, two, or three-year contracts at the discretion of the proposal evaluation team.

Proposals by third-party providers are evaluated by a team of reviewers, including program staff, Department of Education staff, and outside parties. A recently implemented proposal evaluation system includes the following factors and weights on each proposal evaluation (100 points total):

- 10 points – proposer's review of the area's demographics and the need for proposed training services

- 10 points – proposer's needs assessment for services in terms of training outcomes

- 35 points – instructional plan to define services offered
- 8 points – documentation of collaborative efforts with other area resources
- 8 points – instructor preparation system
- 8 points – staff development program
- 8 points – marketing/advertising plan
- 8 points – regionalization of services relative to other providers
- 5 points – financial plan

Ideally, the Adult Basic Education program will provide no more than 15 percent of each third-party provider's total funding. However, this is not a requirement, and in several instances the program provides the bulk of an organization's funding.

For the current fiscal year, program funding has been provided to 39 third-party training providers. According to the program administrator, the western slope, the San Luis Valley, and the Arkansas Valley are currently underserved and efforts are being made to increase participation in the funding competition from organizations in those areas.

Program intake. Individuals may be placed in contact with the Adult Basic Education program through a number of channels, but the primary intake channels are word of mouth through current providers (often via trainees already in the system), radio and television advertising in local areas, and via churches and health centers.

According to the program administrator, approximately 80 nationalities and ethnic groups have received training in the program. The Spanish-speaking population is growing and currently constitutes approximately one-third of overall trainees. Immigrants from eastern Asian countries make up the second-largest component of the English as a Second Language and citizenship programs. Additionally, the 16 to 21 year-old student population is increasing rapidly.

Budgeting and tracking of training hours. Approximately 15,000 students are enrolled in Adult Basic Education courses at the current time. A waiting list of approximately 5,000 students also exists, most of whom are in the Denver Metro Area. However, the disproportionately large waiting list in Denver is due more to the types of training needed and offered rather than the area being underserved. According to the program administrator, the training continuum is usually shorter in the rural areas, which allows more students to complete training in those areas relative to the total number of hours of training offered. Currently, the program budget allows for 12 hours of training per enrolled individual, regardless of the point in the continuum of services where that individual enters the system (with ESL as the first step and completion of the GED as the last step).

Current Performance Measures

The program uses several performance measures to determine the outputs of the program in terms of clients, geographic distribution and other measures. Note that these measures do not evaluate the effectiveness of the program from a client viewpoint, but rather measure how and where the program's resources are used. Measures of the outcome of the program are presented later in this section.

Location of clients. The program does not track the location of students around the state as a performance measure, though informal tracking of the location of service providers does occur.

Number of students and hours of instruction. The program serves approximately 15,000 students per year, a number which has remained relatively constant over the past ten years.

Integrally linked with the number of students is the number of instructional hours provided through the program. This figure has also remained relatively constant over the past 10 years at approximately 12 hours per student. According to the program administrator, the goals of the program are better served in some cases by providing more hours of instruction to fewer students. This variability in individual needs and goals makes the number of instruction hours a more appropriate measure of performance than the actual number of students that receive instruction.

Program completion statistics. Certain elements of the program involve training for which an externally defined "graduation" can be measured. These include the award of a GED diploma and the conferral of U.S. citizenship. In all other types of training, the curriculum is fluid and completion of the training is not a precisely measurable event. The program currently offers certificates of accomplishment for selected blocs of training, but this system is currently quite limited in scope and is not comprehensive.

Outcomes Analysis

Potential desirable outcomes of the Adult Basic Education Program. As discussed earlier, the Adult Basic Education program may have three direct potential beneficiaries: individuals who receive training, and the citizenry of the state as a whole.

- **Tangible economic benefits to trainees.** On an individual basis, a desirable outcome of Adult Basic Education programs is increased economic opportunity for those who receive training. Presumably, this increased economic opportunity could result in increased wages.

- **Intangible quality of life benefits to trainees.** Another potential benefit to individuals is quality of life improvements in non-economic terms. Training in life skills, English language skills, and other areas may generate benefits for individuals that are not reflected in economic terms such as increased wages.

- **Tangible benefits to state citizens and taxpayers.** To the extent that adult basic education programs increase the economic opportunities available to state residents, they also provide economic benefits to all taxpayers The direct effect of this increase is twofold. First, increased wages generate increased income taxes for the State government. Second, because entrants into the program are often lacking the basic skills necessary to succeed in a job, these entrants may be more likely to be collecting public assistance of some sort. Increased wages may in turn decrease the trainee's dependence on public assistance.

Existing evaluation metrics. The program's management team has attempted to implement certain measures to quantitatively evaluate certain outcomes of the program, but have not had success in implementing a sustainable, comprehensive model. Follow-up surveys of pre- and post-training salary differentials and follow-up surveys of subsequent educational attainment have not been successful. (This may be due in part to the relatively low number of hours of training provided to each individual and to the differing skill levels that students bring into the program.) Therefore, no model currently exists within the program to evaluate the outcomes of the program from a training perspective, and no direct comparison of outcomes for Colorado's program relative to other states is available.

As part of the grant application process, applicants must provide a description of the outcomes of their training programs. Outcome measures are not prescribed by the Adult Basic Education program, but rather are selected and self-reported by the applicants. However, these measures do provide some insight into measures of success as defined by the practitioners of Adult Basic Education training organizations.

Two recent grant applications that received high scores from the grant evaluators were reviewed to examine their reported program outcome measures. This review revealed that outcomes are typically characterized in two ways:

- For ESL and other literacy-based program elements, educational outcomes appear to be the common measure of program value, rather than vocational or economic outcomes (i.e., success was measured in terms of English language skills based on standardized proficiency measures, rather than in terms of the economic rewards of having specific levels of English language skills). While this is certainly a valid means of measuring progress in skills, it is not particularly relevant to the analysis of return on investment.

- For other types of training, proficiency measures may not be available in a manner that is meaningful for a return on investment calculation. For example, citizenship attainment and the successful learning of basic life skills are discussed qualitatively in terms of their benefits to trainees' quality of life, but are somewhat removed from the realm of vocational training. One reported outcome of the attainment of citizenship was whether the new citizens subsequently registered to vote. There may be approaches to place an economic value on being registered to vote, but we have not found them through this study.

In summary, outcome measures for the program are defined as educational outcomes rather than economic outcomes. While these measures may serve the purposes of the program administrator, and may reflect the perceived function of the program in the view of its practitioners, these measures at best only provide inputs to an assessment of economic outcomes and the return on investment of the program. No direct reporting of economic outcomes of the program is available.

Evaluation measures used in analyses of other adult basic education programs. A review of existing evaluations and reports on adult basic education revealed that most evaluations rely on post-training data or process or output data to measure program success. Additionally, most post-training data evaluations examined progress on a learning basis and not in terms of economic outcomes. Nearly all evaluation measures relate to the trainee's accounting stance as opposed to that of employers or society (though some exceptions were noted).

- Post-training outcome measures (skill-related)
  - educational attainment measured by the number of participants continuing on to higher education
  - standardized assessments/basic skills attainment
  - student reports of skill attainment
  - literacy outcomes
  - teacher reports of competency gains
  - student satisfaction with skills
- Post-training outcome measures (employment-related)
  - students' assessments of whether programs helped them improve their employment situation
  - net employment gains
  - median wages
  - employer satisfaction
  - cost-benefit evaluation of participants to show the return on public investment
  - number of previously unemployed persons now with jobs
  - job improvements
  - number of participants taken off public assistance rolls

- Process or output measures
  - retention in program
  - program completion
  - number of participants becoming U.S. citizens
  - recruiting of students
  - extent to which programs are at full-capacity
  - unit costs
  - geographic distribution of services

Summary and Recommendations of Outcome Measures

In order to calculate the fiscal impact of the program on the state's citizenry as a whole, it is first necessary to ascertain the impacts of the program on the individuals completing the training and on the firms that (may) ultimately hire those individuals. However, due to the combination of relatively small training investments per individual, and the difficult to quantify nature of many aspects of ABE programs, a true quantification of the impacts of the program are difficult to develop.

Step 1. Economic value of the training to the individual. A key decision that must be made prior to considering recommendations for individual outcome measures is the overall goal of the program. Based on BBC's review of existing performance measures, it appears that most program administrators evaluate the success of their program based on learning outcomes, rather than employment or economic outcomes. This is a legitimate view if learning is truly the ultimate goal of the program. However, if the program is intended to make students more employable, some attention must be given to employment outcome measures: employment rates, wages, and retention. As described below, these measures should be developed in a way to compare the net impact of the program (i.e., were the trainees "better off" after completing the program than they would have been if they hadn't entered the program at all?).

Experiments and econometric analyses. As described in Section II, the ideal way to measure the impact of the program is by conducting experiments on a population of ABE students and a control population that closely resembles the students in terms of demographics, background and skills. A controlled experiment using pre- and post-training measures such as income and employment status would be useful in determining whether the skills attained by the students has an eventual impact on their economic status (or alternately, whether the group that doesn't undergo the training attains the program-taught skills via channels other than the program). A control population resembling ABE students might be simpler to identify than would control populations for other types of training programs.

Econometric studies are another option, particularly for analysis of English as a Second Language training. National and statewide data sets exist on language ability, citizenship status, high school graduate status and earnings.

Either approach would significantly increase the understanding of Adult Basic Education's impact on students' economic prospects, as little ongoing research is being conducted on this topic as part of the ABE program, either in Colorado or at other levels.

Market prices for similar training. There are private language schools in which language training is entirely paid for by the student. Adjusting for the number of hours of training and other qualitative differences, this private sector price information may generate a useful estimate of the value of such training when subsidized or provided for free through a Federally funded program. If the aggregate cost of the language training component of Adult Basic Education is more than the value of the service in the private marketplace, then one could conclude that there is a negative return on the Federal government's investment in this part of the program. Market prices may also be available for other types of training provided under Adult Basic Education.

It is important to note that market price, alone, may understate the true economic value of such training to society as a whole. There may be a number of benefits that accrue to individuals other than the person undertaking training. These "positive externalities" are not reflected in the market price of the training. In the event that government subsidies induce individuals to undertake training that they would not have otherwise done, more positive externalities are generated. A contributing factor to this measure is an understanding of clients' ability to pay for these services in the private sector, and an understanding of the availability of these services in the private sector. Government-subsidized service provision may be justified in areas that cannot support a private-sector presence.

Step 2. Economic value of the training to the firm. It may be appropriate to examine the economic value of Adult Basic Education training to the employer, as all of the potential increases in productivity from the training of the employee may not be reflected in higher wages for the employee. There may be other benefits to the employer such as improved retention rates for trained employees.

An extensive evaluation of Adult Basic Education's impacts on firms, conducted by the Colorado Workplace Learning Initiative, concluded that benefits to firms are not easily quantified. According to this research, long-term employee retention rates were the only quantitative measures that were meaningful. Other measures were judged to be inappropriate for significant proportions of the wide variety of firms that employ ABE students, and the study ultimately relied on subjective measures of employee and employer satisfaction with the results of the training in regard to employment.

This conclusion regarding quantitative measures is similar to the conclusion that BBC reached when considering firm outcome measurements for other types of training programs. Any measurement of increased productivity of a firm's workforce presents unique challenges. The complexity of the relationship between employee training and the productivity of a firm's workforce does not allow one to quantify the effect of a relatively

small per-employee investment in training in a program such as Adult Basic Education. This type of analysis is difficult for programs that invest hundreds or thousands of hours of training in an employee. It may be impossible for a program that invests an average of 12 hours per employee.

Step 3. Fiscal return on investment analyses. The Adult Basic Education program is a relatively poor candidate for development of a comprehensive return on the investment model. The nature of the various program elements – citizenship, literacy, basic life skills, English language skills and others – carry societal benefits that range beyond employment or other economic measures, and many of those societal benefits are difficult to quantify. Not all of these benefits accrue to the individual, so market-based price information may understate the value of such training. Some of the positive externalities are not priced in the marketplace. For example, society as a whole may place a value on a greater percentage of residents being citizens of the U.S. and participants in the political process. Other, more sophisticated research techniques would be needed to place economic value on these types of benefits (contingent valuation, for example).

We also conclude that it is not realistic to attempt to calculate a financial return on investment of these programs to the Federal or State government. The per-person level of training is so small, and the links between the training and increased earnings and tax revenues and decreased public assistance expenditures is so tenuous, that the current Adult Basic Education program probably defies a meaningful analysis of financial return on investment.

SECTION VI.
Vocational Rehabilitation Program

Colorado's Vocational Rehabilitation Program is a State and Federally authorized program that is operated by the Colorado Division of Vocational Rehabilitation. The program assists individuals with disabilities in obtaining and maintaining employment.

Program Description

Overview. Colorado's Vocational Rehabilitation Program provides eligible individuals with disabilities with a variety of services (including training services) designed to enable them to become productive members of Colorado's work force. These services are provided to individuals with physical or mental disabilities that meet the criteria set forth in the Federal Rehabilitation Act.

Colorado's Vocational Rehabilitation program focuses on employment, not medical treatment or medical rehabilitation. Program participants have often received those types of treatment before entering the vocational program.

Federal statute states that Federal funds can comprise no more than 78.7 percent of total program funds. At least 21.3 percent of program funds must come from State and local sources. In Fiscal Year 1997, the budget for the Colorado Vocational Rehabilitation program was $35.2 million. Of these funds, 76.2 percent were Federal funds, 15.1 percent were from State General Funds and 8.7 percent were donated funds. The State funds are part of the State's annual appropriation.

Program authority. Colorado's Vocational Rehabilitation Program is a State/Federal Program that began in 1924. This program has been modified many times, most recently as part of the Workforce Investment Act of 1998. Federal funding authority comes from the Rehabilitation Act – Titles I, VI and VII – through the U.S. Department of Education.

Beneficiaries of the program. There are three specific types of beneficiaries of this program.

- **Individuals who receive training through the program.** Individuals with disabilities are the primary direct beneficiaries. As a result of the vocational rehabilitation services they receive from this program, participants are able to obtain gainful employment which might not otherwise be available. These are also important benefits to society as a whole.

- **State citizens.** Increased employment for disabled persons may reduce public assistance rolls and generate tax revenues, which can be measured against program costs to ascertain return on investment to the State or Federal Treasuries.

- **Employers who hire trainees.** Employers around the state who gain increased access to willing, capable workers may also benefit from the program.

The benefits derived by firms is not a direct goal of the program, because the goal of vocational rehabilitation may be less focused toward providing the trainee with unique skills to set himself or herself apart from untrained workers than on eliminating barriers or perceived barriers to employment. Thus, the impacts of this program on firms may be more tenuous in many instances than the impacts of other types of training programs. To the extent that a goal of the program is to assist firms in obtaining trained employees, analyses of firm impacts may be worthwhile; however, the perceived focus on individuals as clients, combined with the nature of the clientele, may not justify the administrative and analytical burden of doing so. Benefits to firms will therefore not be considered further, and the focus will center on benefits to individual clients and to governmental return on investment.

Program operations. The operational features of Colorado's Vocational Rehabilitation Program include intake and eligibility determination of applicants, development of an Individualized Written Rehabilitation Program[1] (IWRP) and provision of vocational services based on IWRP.

Program intake. Applicants are referred to the program from various sources, including the State's school districts, the medical community, the Social Security Administration and various components of the Colorado Division of Social Services. The medical community is the largest source of referrals to this program.

Eligibility determination. Applicants' eligibility is determined by applying criteria set forth in the Federal Rehabilitation Act. This criteria states the following:

- Individuals must have disabilities that are a barrier to employment and can benefit from employment.

- If an agency reaches a point at which all eligible persons cannot be served, persons with the most significant disabilities must be given first priority.

[1] Effective August 1998, plan is now called Individual Plan for Employment (IPE).

- Eligible persons must be given choices in terms of employment goals, services and service providers.

IWRP developed. After eligibility is determined, a rehabilitation counselor works with the participant to develop the IWRP. This plan sets forth the participant's employment goal and the services needed to achieve that goal.

Services provided. Services are provided based on the IWRP. These services may be provided over a period of anywhere from a few months to several years, depending on the severity of the participant's disability. Services provided include the following:

- evaluation and diagnostic services provided to determine the services needed for the individual to become employable;

- physical and mental restoration services provided to correct or substantially modify an individual's physical or mental condition;

- training services, including vocational training; academic training; personal and vocational adjustment training; job coaching; on-the-job training; job seeking skills training; and books, tools, and other training materials;

- specialized services for individuals who are blind, deaf, and deaf-blind including interpreter services, note-taking services, and reader services; and

- rehabilitation technology services, including assistive technology devices, assistive technology services, and rehabilitation engineering services to address barriers encountered by an individual in attaining employment.

Employment placement. Participants are referred to employers at the completion of their IWRP. Job counselors employed by the program identify and maintain a listing of jobs available at any given time. Participants may be referred to any employer. Referrals are generally made after training is completed. Participants are not generally trained for a specific job, but may be trained for a specific occupation.

Follow-up. Each participant's rehabilitation counselor provides follow-up services after employment to ensure that the employment situation is stable.

Program expenditures. For the 1996-97 Fiscal Year, total program expenditures were $31.5 million. The majority of the program budget (54.7 percent) is spent on purchasing consumer services, as shown in Exhibit VI-1. Consumer services represent services purchased from outside vendors. CVR contracts with approximately 3,000 vendors for training, diagnostic and other specialized services utilized to assist individuals achieve their employment goals. These vendors include local colleges, trade schools and numerous small businesses. (Almost all of these vendors are based in Colorado.)

The costs of direct counseling and placement services accounts for 33.9 percent of the program budget. The balance goes for operating expenses (8.2 percent) and administration costs (3.2 percent).

EXHIBIT VI-1.
Vocational Rehabilitation Program, FY 1996-1997

	Program Dollars	Percent of Total
Purchase Consumer Services	$17,260,967	54.7%
Direct Counseling, Guidance & Placements	$10,697,382	33.9%
Operations	$2,587,567	8.2%
Administration	$1,009,782	3.2%
Total	$31,555,698	100.0%

Source: Colorado Division of Vocational Rehabilitation.

Current Performance Measures

There are several performance measures that indicate program outputs. These include the number of placements, the primary disability of persons successfully employed, the geographic employment distribution, and other measures recommended at the Federal level. These measures indicate how program resources are used and do not evaluate program effectiveness from a client viewpoint. Current outcome measurements are discussed later in this section.

Federal performance benchmarks. The Colorado Vocational Rehabilitation program has adopted the following benchmarks and performance measurements. These measurements include comparisons of:

- number of Applicants who become eligible with number of applicants who applied;
- number of Participants who started IWRP with number who became eligible;
- number of Participants who completed an IWRP with the number of those who started IWRP; and
- number of Participants successfully employed with number who completed IWRP.

Various measures that are collected are presented in Exhibits VI-2.

EXHIBIT VI-2.
Employment

	FY 96-97	FY 95-96	FY 94-95
Individual attaining gainful employment	2,543	2,171	1,812
Percent change over prior year	17%	20%	7%
Percent of applicants who:			
Become eligible/Those who apply	82.5%	84.2%	83.2%
Start IWRP/Become eligible	81.0%	76.8%	77.9%
Complete IWRP/Start IWRP	75.2%	71.0%	66.5%
Successfully employed/Complete IWRP	65.1%	65.7%	61.0%
Cost per successful employment	$12,404	$12,897	$13,375

Source: Colorado Division of Vocational Rehabilitation.

Primary disability of persons successfully employed. The Program also collects statistics on the primary disability of program participants who are successfully employed through the program. Individuals with mental disorder or some type of orthopedic disability comprise 43.4 percent of the persons employed through this program. Client breakouts by disability type are presented in Exhibit VI-3.

EXHIBIT VI-3.
Primary Disability of Individuals Employed
1996-97 Fiscal Year

Primary Disability	Number of Persons	Percent
Mental Emotional Disorders	569	22.4%
Orthopedic	545	21.4
Developmentally Disabled	344	13.5
Nervous System	327	12.9
Visual Impairments	251	9.9
Hearing Impairments	176	6.9
Impairments Resulting from TBI	114	4.5
Respiratory, Digestive Genitourinary	100	3.9
Absence of Extremity	33	1.3
Cardiac Circulatory	17	.7
Other	67	2.6
Total	2,543	100.0%

Source: Colorado Division of Vocational Rehabilitation.

Geographic distribution of persons employed. As shown in Exhibit VI-4, Denver County participants accounted for 15.9 percent of the individuals successfully employed during the 1996-97 Fiscal Year. El Paso and Jefferson Counties followed with 10.2 percent and 9.3 percent, respectively, of those successfully employed.

EXHIBIT VI-4.
Geographic Distribution of Persons Employed
1996-97 Fiscal Year

County	Number of Persons Employed	Percent of Total Employed
Denver	405	15.9%
El Paso	260	10.2
Jefferson	237	9.3
Adams	203	8.0
Boulder	203	8.0
Pueblo	175	6.9
Arapahoe	157	6.2
Other Southeastern Counties	178	7.0
Other Northeastern Counties	189	7.4
Other Western Slope Counties	536	21.1
Total	2,543	100.0%

Source: Colorado Division of Vocational Rehabilitation.

Overall numbers of participants. Exhibit VI-5 shows recent trends in the overall number of trainees who gained employment after completion of the program.

EXHIBIT VI-5.
Successful Employment — Past Performance

Fiscal Year	Persons Employed
91-92	2,372
92-93	2,243
93-94	1,940
94-95	1,812
95-96	2,171
96-97	2,544

Source: Colorado Division of Vocational Rehabilitation.

Efficiency comparisons. Certain interstate and national-level comparisons are collected in Colorado to assess the efficiency with which services are provided. These measures do not evaluate the program itself, but rather the efficiency with which services are provided. Comparisons are provided below for Federal Fiscal Year 1995-1996. Differences between the Colorado client base and the national client base for vocational rehabilitation services may affect comparisons; for example, 81 percent of Colorado's "successful outcomes" were classified as "severe cases," relative to on 78 percent on a national average.

EXHIBIT VI-6.
Performance Measures for Vocational Rehabilitation

Efficiency Measure	Colorado	U.S. Average
Percent of expenditures spent for customer services	48.9	53.6
Percent of staff assigned to counseling	93.6	85.4
Percent of customers employed per plan prepared	67.7	65.9
Program cost per employment outcome	$13,964	$12,988

Certain of these measures differ from the figures reported in Exhibit VI-2 because Exhibit VI-6 measures outcomes for Federal Fiscal Year 1995-1996 (October through September), while Exhibit VI-2 presents figures from State Fiscal Years (July through June).

Outcome Analysis

Potential desirable outcomes of the Vocational Rehabilitation Program. The mission of Colorado's Vocational Rehabilitation Program is to assist individuals in obtaining employment who have disabilities that are barriers to employment. Other potential benefits of this program are reduction of public assistance payments and increased incomes (and income tax revenues).

Existing evaluation metrics. Employment outcomes constitute the Vocational Rehabilitation Program's primary evaluation measure. A successful employment is recorded after a participant has been on the job for 90 days. New Federal statutes now require tracking of participants for one year after the case is closed. The Colorado Division of Vocational Rehabilitation also retains starting salary data of participants successfully employed. Retention rates and salary information are obtained by submitting former trainees' social security numbers to the Colorado Department of Labor and Employment.

Existing payback model. The Division uses a payback model that estimates the number of years that it takes for participants employed after two years to provide increased income taxes and decreased public assistance expenditures to cover the per-trainee vocational rehabilitation program costs for the year the participant attained employment. These calculations are based on estimates and data received from the Colorado Department of Labor and Employment, and studies conducted by the State Auditor's Office. The Division calculated that it will take 7 years from the date of case closure for the program costs to be recovered using the aforementioned computation.

The Colorado Division of Rehabilitation is in the process of developing a method for more accurately computing return on investment. This project and the accompanying report are scheduled to be completed in April 1999.

Evaluation measures used or recommended in analyses of other vocational rehabilitation programs. Nearly all measures currently in place to evaluate vocational rehabilitation programs at the national or state levels fall into one of two types of evaluations: process or output measures or post-training tracking and data. A summary of the research literature that was reviewed is provided in Appendix E.

Process or output measures are quite common, as illustrated by the following examples:

- average administrative cost per program participant,
- completion rates,
- rehabilitations per 100,000 population, and
- clients served per 100,000 population.

Post-training tracking primarily focuses on employment and income-related measures for this program. Examples of such measures identified in the literature review include:

- clients competitively employed at closure (i.e., job placement measures),
- average weekly hours worked at closure,
- average weekly wage of clients employed,
- rehabilitated clients with earnings above poverty level,

- rehabilitated clients with earnings above minimum wage, and
- rehabilitated clients working more than 20 hours per week.

A review of the Veteran Benefits Administration's vocational rehabilitation program by the General Accounting Office included recommendations for the use of counterfactual evidence to consider the effects of the program:[2]

> "[the VBA should] focus on the extent to which the education that was provided to the veteran would not have otherwise been available."

Return on investment models in use in other states. Other states besides Colorado employ cost/benefit or return on investment models to evaluate their vocational rehabilitation programs. A simple model that was recommended to the study team was constructed by the West Virginia Rehabilitation Research Center, and is apparently being used by several states at the current time. This model is similar in concept to the payback model used by Colorado. The model examines the difference in income taxes and public assistance payments generated by completion of the vocational rehabilitation program, then compares that figure to the per-trainee cost of the program to generate return on investment figures for the program. This model assumes that all changes in earnings and public assistance are due to the trainees' participation in the program.

Summary and Recommendations of Outcome Measures

Outcome measures are considered in light of their benefit to the state's citizens, in terms of the payback of the program to taxpayers in terms of removing persons from public assistance and adding them to the taxpaying workforce. To measure the overall impact, it is first necessary to measure the actual impact of the program on trainees. After the impact on these individuals is known, an analysis of the fiscal return on investment of the program for the state as a whole can be undertaken.

Step 1. Measuring the impact of the program on trainees. Existing outcome measurements – placements in jobs – appear to be the appropriate measure for this analysis, since that is the desired outcome of the program for individuals. In terms of measuring the impact, it is important to understand the placement rates for program graduates versus their work status if they had not entered the program.

As described in Section II, the ideal means of measuring the true impact of a training program is to conduct in-depth experiments comparing each individual outcome of training program graduates to the outcomes of a control group that did not receive the training. In the case of the Vocational Rehabilitation program, such an approach may not be desirable, both from a resource cost standpoint and due to the potential difficulty in identifying an appropriate control group. Conducting a study in which program applicants are randomly assigned to treatment versus non-treatment (control) groups may not be possible given the mission of this program. These limitations impede the ability to conduct any in-depth experiments, whether they relate to all outcomes or a single outcome.

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2 The Veteran's Program is different from the Colorado Vocational Rehabilitation but also services disabled populations.

Econometric approaches may be a viable option for certain applications if data can be collected regarding disability status. A strong advantage of employing some level of econometric analysis is that it provides an insight into the potential vocational and societal outcomes of persons who might be eligible for the program but did not enter it. Such control data provides a more fruitful analysis than merely examining pre-training and post-training measures for the program clientele, since it incorporates an examination of what the program clientele might have accomplished absent the program. However, it is not clear that such data are available in a format that would allow easy integration with Social Security data, unemployment records, or other data sources that would provide information on income levels and disability status.

Another econometric approach is to examine outcomes for persons entering the program, including those who do not complete the program. If the econometric analysis can successfully account for the differences in disability status entering the program, it may be instructive to examine whether individuals who complete the training program achieve better employment outcomes than those who do not complete the training program. This analysis would require tracking outcomes for individuals who do not complete the training.

A very straightforward evaluation option would be a combination of counterfactual interviewing and pre- versus post-training data collection. Entrance interviews could focus on the entrants' perceived expectations of the outcomes of the training program and on their alternative plans if they had not entered the training program. Data including pre-training income levels and sources and reliance on public assistance could also be collected at this time. Post-training interviews could be conducted at a set period of time after completion of the training to ascertain employment, retention, public assistance income and other relevant measures. The use of pre- versus post-training comparisons is particularly important considering the client population, since the pre-training vocational prospects of the clientele may be quite variable and, in some cases, quite limited, depending on the nature of the person's disabilities. In some cases, training may make the difference between being able to work and not work.

Step 2. Fiscal return on investment to the State or Federal government. Additional tax revenues (based on earnings), changes in public assistance payments and per-trainee program costs are the primary inputs to a financial return on investment model. The existing model used by Colorado embraces most of the required elements of such a model, and much of the required data is already collected. However, such a model may tend to overstate the impact of the program unless post-training data are benchmarked with data from a control group that did not complete this training program. A full development of individual outcomes, as described above, should include parallel development of outcomes for a similar group of disabled persons who did not undertake training through the Vocational Rehabilitation program. As discussed earlier, such a control group may be difficult to develop, given the demographics of the client population. It may be possible to compare those who completed the program with those who entered the program but did not complete it. Alternatively, a combination of pre- and post-training data for program participants plus counterfactual interviews may provide sufficient information to determine outcomes absent the program. For example, the counter-factual interviews would probe whether there are other training options for these individuals.

Even if a control group cannot be properly identified and tracked, some improvements can be made to the current payback model. The Colorado Vocational Rehabilitation Program does little tracking of participants after their file is closed out, which generally occurs 90 days after employment commences. The current model estimates that participants have to be employed approximately 7 years for the costs of rehabilitation services to be recovered through income tax revenues and reduction in public assistance costs, but the program doesn't maintain data that indicate how many participants are actually employed for that length of time. While developing employment data after that point would certainly place an added burden on present staff, it is essential to evaluating return on investment.

Note: A new Federal statute now requires tracking (of participants) for one year after case is closed.

SECTION VII.
Colorado FIRST Customized Training Program

The Colorado FIRST program is a State-authorized program that provides job-specific training programs for employers (known as "customized training" due to the fact that training curricula are custom-designed for each employer). The program is targeted toward firms that are either relocating or expanding into Colorado, or firms already located in Colorado that are expanding their operations.

Program Description

Overview. Colorado FIRST provides individuals with training specific to actual newly created jobs, thereby assisting both the individual and the employer. Because the program targets firms relocating or expanding from outside Colorado, Colorado FIRST is often included as part of an economic incentive package to draw new employers into the state.

Colorado FIRST differs from most other types of training programs because trainees are taught to perform a specific job for a specific company. The employer is the nominal recipient of the program, and its commitment to create new jobs and train new employees is a condition under which the State provides the program.

In FY 1997, the budget for the Program was $3.6 million. This represented an increase of approximately $500,000 from the previous year. Additionally, some proportion of previous years' funding was administratively redirected to the Existing Industries training program, a similar program which is independent of Colorado FIRST but administered through the same lines of authority.

Program authority. The Colorado FIRST Program was created in 1984 by State statute (House Bill 84-1177). The program is jointly operated by the Colorado Community College Occupational Education System (CCCOES) and the Governor's Office of Business

Development. Funding is derived solely from the State of Colorado, and program funding is reviewed and renewed on an annual basis. No Federal funds are appropriated. Program funds are channeled solely through CCCOES.

Beneficiaries of the program. There are three specific types of beneficiaries of the program.

- **Individuals who receive training through the program.** Individuals who complete the training are direct beneficiaries of the program, as they learn job-specific skills and put those skills to use in a new job upon completion of training.

- **Client companies.** Relocating and expanding companies benefit from the program as they receive State assistance in acquiring trained workers to staff their expansion in Colorado.

- **State citizens.** The use of Colorado FIRST as an economic incentive to out-of-state companies to relocate or expand into Colorado may result in increased economic growth in the state as a whole. To the extent that citizens desire growth and its attendant increases in tax base and consumer choice, all citizens benefit from this growth.

The program's emphasis is on training employees in new or expanding firms, with an emphasis on manufacturing. Colorado FIRST provides training for all types of jobs except retail, seasonal, temporary or tourism-related jobs. The program differs from most other training programs operating in the state in that economic development and the use of the program as an incentive to attract firms and promote business expansion is a major objective of the program.

Program operations. The operating features of the Colorado FIRST program include recruitment of participating firms, placement of individuals in the training programs, and per-employee training budgets.

Program intake. Firms may be placed in contact with the Colorado FIRST customized training program through a number of channels, including any of the State's community colleges, local economic developers, the Colorado Community College and Occupational Education System, or any of the various components of the Office of Business Development. In practice, local community colleges are the primary intake channel for program clients.

Upon application and verification of program eligibility requirements, Colorado FIRST staff work with the client firm and community college staff to assess training needs and design a training program. In certain instances, trainers outside the community college system may also be utilized. Most training is conducted on-site at the employer's facility.

Services are generally provided through the State's network of 17 community colleges. Exhibit VII-1 provides a map of the locations of community colleges in Colorado.

Individuals receiving training. Individuals who receive training are recommended by the firm that is receiving the training award. Individuals typically enter the training program after joining the client firm as an employee. While it is not necessary that the firm actually retain specific trainees upon completion of the training (e.g., certain trainees that did not satisfactorily complete the training), program funding is based on the number of jobs created and the number of employees trained.

Training cost and budget. Colorado FIRST requires that employers share in the cost of conducting training, but the proportion of costs absorbed by the employer is negotiable. The program generally pays 25 to 50 percent of overall training costs, while the employer pays the remaining costs. This proportion varies according to a number of factors, primarily the type of training that is required. If the company does not create the jobs for which the training funds were allocated, the employer must reimburse the Colorado FIRST program for all training costs. Funds are provided to the training provider, usually a community college, upon commencement of training, and the community college then passes the funds to the employer when the training is complete.

No statutory limit exists for training costs on a per-firm or per-trainee basis. Interviews with program administrators indicate that, where possible, training costs are maintained within the range of $200 to $1,000 per trainee. In order to maximize accessibility to the program, and to keep program oversubscription to a minimum, the informal policy is to target a per-trainee training cost of $400.

Overall budget. In FY 1992-1993 (the latest year for which comparative data are available), Colorado ranked 23rd in overall budget among the 41 states that had budgets for customized training programs. All states rely on State funding for their programs in one of three forms: direct appropriations similar to Colorado's funding mechanism, dedicated revenue flows, or bond-funded training on a project-specific basis. In per capita expenditures, Colorado ranked 25th.

Current Performance Measures

The program uses several performance measures to determine the outputs of the program in terms of clients, geographic distribution, and other measures. Note that these measures do not evaluate the effectiveness of the program from a client viewpoint, but rather measure how and where the program's resources are used. Measures of the outcome of the program are presented later in this section.

Location of firms. The program's geographic area is the entire state. Data for most of the history of the program are shown in Exhibit VII-2, and indicate that approximately 75 percent of training funds are awarded to firms located in Denver and Colorado Springs. These cities contain slightly less than 70 percent of the state's population. Another 7 percent of funds are awarded to firms in Pueblo, and about 14 percent of funds are awarded to firms on the Eastern Plains. The remaining 5 percent of funds are awarded to Western Slope firms. (Detailed geographic data for the most recent program year are not available.)

A primary performance goal of the program is to ensure that 20 percent of training funds are allotted to firms in rural areas of the state. In FY 1997, this figure was 19.7 percent.

Number of firms. Until the mid-1990s, the program generally served fewer than 40 firms per year. Budget increases have allowed the program to serve 65 firms in the most recent fiscal year.

Size of firms. Exhibit VII-3 is the size distribution of firms receiving Colorado FIRST training awards in Fiscal Year 1996. Because the program targets firms creating 10 or more new jobs, small firms are underrepresented in the program relative to their numbers in the overall economy. The average firm receiving training in Fiscal Year 1997 trained 109 persons, up from 96 persons in Fiscal Year 1996. Program administrators report that the administrative fees of implementing a training program for small firms adding small numbers of employees renders training inefficient with respect to the State's resources. Program administrators have implemented cluster training of small businesses, which has significantly increased the number of small businesses participating in the program.

EXHIBIT VII-1.
Program Utilization by Geography

Service Area	Program Dollars Received by Area Firms	Percent of Total Dollars
FY 1986-1996		
Denver	$7,235,173	46.9%
Colorado Springs	4,314,572	28.0
Pueblo	996,782	6.5
Southeastern Colorado	306,704	2.0
Northeastern Colorado	1,801,777	11.7
Western Slope	773,944	5.0
Total	$15,428,952	100.0%
FY 1995-1996		
Denver	$2,477,270	50.8%
Colorado Springs	1,557,866	32.0
Pueblo	60,270	1.2
Southeastern Colorado	102,936	2.1
Northeaster Colorado	590,570	12.1
Western Slope	84,522	1.7
Total	$4,873,434	100.0%

Source: Colorado FIRST Program.

Oversubscription of the program. Colorado's customized employee training programs are oversubscribed. The CCCOES maintains a first-come, first-served waiting list of firms that have applied for training assistance. Though the size of the waiting list varies, it currently appears to be in the range of up to 50 percent based on the number of firms

served. (However, some firms on the waiting list may be planning training for the upcoming fiscal year, and thus not "waiting" for service, but merely planning ahead.) This waiting list suggests unmet demand for the program. Additionally, the program has never been formally marketed throughout the state, and potential demand could be much higher with additional outreach.

EXHIBIT VII-2.
Program Utilization by Firm Size, FY 1997
Colorado FIRST* Program

Firm Size Category (Employees)	Number of Firms Served	Percent of Total	Statewide Firm Distribution**	Firm Distribution**
1 - 9	5	7.7%	57.5%	44.7%
10 - 19	6	9.2	19.2	18.0
20 - 49	19	29.2	11.5	14.7
50 - 99	11	16.9	7.6	11.8
100+	24	36.9	4.3	10.8
	65	100.0%	100.0%	100.0%

* Pre-training employment figures.
** From 1994 County Business Patterns.

Source: Colorado FIRST Program.

Outcomes Analysis

Potential desirable outcomes of the Colorado FIRST Program. The Colorado FIRST program differs in structure from many other types of training programs because it attempts to serve the interests of both individual job seekers and employers needing trained workers. Another major use of customized training programs is their utility as economic development tools in creating new jobs in the state. In broad terms, there are three categories of potential positive outcomes from the program.

- On an individual basis, a desirable outcome of customized training programs may be to increase the employability of individual job seekers, in much the same fashion as other types of training programs (though individuals entering customized training programs may differ from entrants to other training programs in terms of existing skills and education levels).

- Customized training programs may improve the business operations of employers by facilitating the match between available trained workers and available job openings. This increased efficiency may lead to increased profitability for the firms and to further expansion in the future.

- On a broad economic level, customized training programs are often used as an economic development incentive to firms considering expansion or relocation into the state. If an offer of customized training serves as a catalyst for an outside firm to create jobs in Colorado, the program promotes economic growth in the state.

Existing evaluation metrics. Several evaluation measures are available to measure the outcomes of the program for the three types of beneficiaries of the program.

Payback model. Colorado FIRST program administrators have developed a payback model to determine the impact of Colorado FIRST on 10-year downstream tax revenues relative to program expenditures. This model provides insights into the two primary outcome measures associated with the program:

- wage increases by workers who complete the program and join the expanding or relocating company (individuals as beneficiaries of the program); and

- payback of program costs to the State via increased State income tax revenues derived from new jobs and higher paying jobs (the overall economy as a beneficiary of the program).

The model compares the average wages of workers prior to entry into the program with their average wages after completion of the program. If the post-training wages are higher, the incremental wage increase produces additional State income tax revenue for the State.

As with most other studies of customized training programs, there was no research on whether the training would have occurred without the program, or whether the firm would have expanded or relocated into Colorado anyway without the program. The model does not include any accounting for the impact of Colorado FIRST on a firms' decisions to expand or locate in Colorado.

For FY 1997, the model indicated a ten-year return of nearly $5.00 for each dollar invested (not discounted for inflation). This payback ratio is higher than the $2.50 to $3.50 range estimated by California State University, Northridge, in 1995 as a return for the State of California's Employment Training Program (a close equivalent to Colorado FIRST); however, critical assumptions may differ between the two payback models, which makes direct comparisons tenuous.

Decreases in unemployment and public assistance. Another potential benefit of the program to individuals and to the overall economy is the decrease in unemployment and public assistance caused by the creation of new jobs. Again, there is no research to show that Colorado FIRST is fully responsible for the creation of new jobs, but in FY 1997, 14 percent of individuals receiving training through the program were unemployed, and slightly less than two percent of participants were receiving public assistance at the time training began. These statistics alone do not necessarily indicate impact of the program because these individuals may have become employed without the program. Alternatively, the participating firm may have hired these individuals without the training program.

Program demand. A de facto evaluation measure of the program's value to firms is its desirability among potential clients. As stated earlier, the Colorado FIRST program is currently heavily oversubscribed. This does not necessarily imply a value or lack of value among individuals using the program or for the Colorado economy overall, but it does imply that, from the client firms' point of view, the program is effective.

Evaluation measures used or recommended in analyses of other customized training programs. Relatively little research exists on customized training programs such as Colorado FIRST. Also, because of the multi-client nature of customized training programs, evaluation metrics may differ from those used for other types of training programs. Based on the literature review summarized in Appendix A, the following measures can be identified as potential measures of program effectiveness.

- Pre- versus post-training evaluation measures
  - pre-training versus post-training wage differential (input into Colorado FIRST payback model); and
  - additional tax revenues created by increased employee incomes (Colorado FIRST payback model).
- Post-training measures
  - long-term labor market participation rates of training graduates (Cal State-Northridge);
  - numbers of employers of training graduates as a measure of employment stability (Cal State-Northridge);
  - workers' earnings increases over time (Cal State-Northridge, 1991 Current Population Survey);
  - the impact of training funds on firms' own training investments (Michigan Job Opportunity analysis); and
  - firms' productivity (Michigan Job Opportunity analysis).
- Process or output measures
  - geographic distribution of training funds, particularly the ability of funds to grow jobs in rural areas (Kansas, Inc.).

Exhibit VII-3 describes the evaluation metrics used in selected existing studies to determine the value of various customized training programs. Most evaluation measures are aimed at the individuals entering the program as opposed to the firm that receives the trained employees or overall economic development goals.

EXHIBIT VII-3.
Evaluation Metrics from Existing Research

Beneficiary Category	Identified Measures from Existing Studies
individual benefits for trained workers	pre-training versus post-training wage differential (input into Colorado FIRST payback model);
	long-term labor market participation rates of training graduates (Cal State-Northridge);
	numbers of employers of training graduates as a measure of employment stability (Cal State-Northridge);
	workers' earnings increases over time (Cal State-Northridge, 1991 Current Population Survey); and
	the impact of training funds on firms own training investments (Michigan Job Opportunity analysis).
benefits for firms receiving trained workers	firms' productivity (Michigan Job Opportunity analysis)
overall economic development benefit based on recruitment of out-of-state firms	additional tax revenues created by increased employee incomes (Colorado FIRST payback model); and
	geographic distribution of training funds, particularly the ability of funds to grow jobs in rural areas (Kansas, Inc.).

Summary and Recommendations of Outcome Measures

Outcome measures relate to the three types of beneficiaries discussed earlier: the individuals who receive the training, the firms for whom employees are trained, and the state's citizens. An understanding of the benefits to the first two groups is a necessary component of understanding the benefit to the state's citizenry as a whole. Benefits to the citizenry as a whole must also be measured in terms of the program's ability to foster growth in the state (based on the assumption that growth is desirable to the state's citizens), and the economic value of the program relative to the tax dollars used to support the program.

Step 1. Economic benefits to individuals. Program managers currently collect overall pre- and post-training hourly wage levels for training participants. Pre-training wage levels are collected from individuals as they enter the program, and are assumed to be zero for unemployed persons. Post-training wage levels are provided by the client firms as part of the application process for Colorado FIRST funds. These measures appear to constitute an effective and efficient measurement of the gross outcomes for individuals who

complete the training, though information on outcomes for individuals absent the program is necessary to determine the true impact that the program had on wage levels and other outcomes.

While the impact on trainees would ideally be determined by experiments or econometric analyses comparing trainees to similarly situated workers who did not receive training through Colorado FIRST, such an analysis would be very difficult. It would not be possible to randomly assign individuals to training through Colorado FIRST and a "control group." The relatively small number of individuals trained each year through the program, and the wide variety of types of training and employment circumstances, would also make econometric analyses difficult.

A more productive approach to analyzing the effect of the Colorado FIRST program may be the combination of detailed interviews with firm managers and trainees and additional data on outcomes for the employee. The key question in this analysis is whether the training would have occurred absent the Colorado FIRST program, either by the firm's initiative or the employee's. Interviews with firm managers and trainees may shed some additional light on these issues. Interviews with firm managers may also better identify whether these jobs would have been created absent the program.

In addition, additional data on trainees after completing training would be valuable in determining impact of the program. Currently, data collection ends when the employee joins the firm. There is no information on earnings after initial hiring and no information after the employee departs for another job. However, use of UI records may allow the State to track these individuals after training, including new jobs they may take upon leaving the employer that invested in the training. While these data, alone, do not identify what outcomes for employees would have been but for the program, such information would provide a better picture of long-term effects of the training than is now the case.

Step 2. Economic benefits to firms. Firm outcome measurements are not currently compiled for the Colorado FIRST program, in part due to the complexity of isolating the impacts of the program from other factors that affect the success of a company.

From an economist's point of view, analysis of economic benefits to firms may be simplified in the following manner. If the value of the training to the firm were worth at least the full cost of the training (unsubsidized by Colorado FIRST), then one might conclude that the firm would have undertaken this investment without the Colorado FIRST program. This places a maximum value on the economic benefit of the Colorado FIRST program to the firm which is equivalent to the cost paid by Colorado FIRST. (While training may be worth much more to the firm than what the firm must spend on it, the value of the Colorado FIRST program lies in the subsidy provided to the firm since it can choose to obtain the value of training without Colorado FIRST.)

Step 3. Economic value of Colorado FIRST as an incentive for relocation or expansion. In addition to the benefits provided by the infusion of trained workers into the workforce, and the benefit of providing trained employees to growing firms, the Colorado FIRST program is also a recruitment tool for businesses considering expansion or relocation into the state.

While it may be difficult to prove with certainty that Colorado FIRST did or did not affect a firm's decision to expand or to relocate into Colorado or to provide the training, detailed pre-training interviews should be conducted with these firms to obtain more information on these decisions. These interviews and other quantitative data may assist in better understanding the role of Colorado FIRST as an incentive tool and the lasting effects of that role in cases where it is successful. Suggested data include:

- examination of the relative proportion of Colorado FIRST incentives to other parts of the incentive package;
- examination of the size of Colorado FIRST incentives relative to the overall scale of the expanding or relocating company;
- in the case of expanding firms, monitoring of the sustenance of the growth recorded in the expansion;
- examination of the relative proportion of expanding firms receiving training funds versus relocating firms (which is already being done); and
- relative size of training incentive packages offered by the Colorado FIRST program relative to packages offered by competing states.

It is recognized that firms did not have to address the question of whether they would have expanded or relocated to Colorado without the program, simply because the program already exists. The data collected in this area of research may be informative, but will likely not be sufficiently quantifiable to include in return on investment calculations.

Step 4. Fiscal return on investment analysis. Colorado FIRST program administrators currently operate a tax payback model which compares the direct cost of the program with the incremental tax revenues created by wage increases of individuals completing the training (impacts of training subsidies to firms and impacts of recruitment of firms are not included). The model:

- estimates tax revenue increments from individuals' pre-training versus post-training wage increments, and total wages of the newly created jobs for individuals who were unemployed prior to receiving the training;
- assumes that the benefit of the program with respect to individuals' wages ceases to exist if the individual leaves the client firm;
- does not include the impacts of indirect or induced job creation generated by the new or expanding firm; and
- does not include any other tax revenues associated with increased firm productivity or relocation of firms to the state.

In other words, the model attempts to quantify the effect of the program on individuals (Step 1), but does not include the effects on firms' productivity (Step 2) or the impact of the program on firms' decisions to expand or relocate into Colorado. While the

impact of the Colorado FIRST program on firms' decisions to locate or expand in Colorado is unclear, it is possible that the program may, in some instances, serve as the deciding factor for a particular firm, in which case the impact of the program is larger than merely the wage increments of the direct jobs created by the firm. These limitations of the model may lead to an understatement of the impacts of the program.

In contrast to the conservative assumptions listed above, the model necessarily makes other assumptions that may overstate the contribution of the program:

- the model assumes that Colorado FIRST is solely responsible for the creation of new jobs by the client firms;

- the model assumes that the training would not have occurred (and the wage increments subsequently not realized) were it not for the Colorado FIRST program;

- the model assumes that all wage increases are due to the impact of the Colorado FIRST program, and would not have occurred otherwise; and

- wage increases in existing jobs will persist over the ten-year evaluation period for those persons who remain with the hiring firm throughout that period (though the model assumes a 13.5 percent attrition rate among employees, and does not include the possibility that the training results in increased wages in subsequent jobs for those who leave the client firm).

The last two of these assumptions can be tested by examining selected outcomes for individuals who participate in the program, as described in Step 1. The first two assumptions would be difficult to prove or disprove even with extensive research. However, they are the key assumptions in determining the overall value of the program.

More precise estimates of trainee graduates' long-term labor participation rates, employment tenures at the client firm, and wage growth can be used to more accurately convey the long-term outcomes of the program on the Colorado economy through the use of the existing model, even if one must still make assumptions concerning whether these benefits are solely attributable to the program. In sum, the current model of the Colorado FIRST program can be expanded in scope and improved, even though it is superior to the other program outcome assessments currently conducted for other employment training programs in Colorado.

SECTION VIII.
Common Evaluation Measures and Themes Across Programs

Each of the five programs described above have unique goals and clientele. Because of these differences, the State should be very cautious in attempting to compare programs' performances against one another. It is far more important to evaluate the success of each program in meeting its own stated objectives than to compare it to other programs with differing objectives and differing circumstances. Forced cross-program comparisons can be misleading when evaluating the success of a program.

While cross-program comparisons are not always meaningful where programs have differing goals and clientele, the five programs have a common theme: they provide training services to their clients. This common theme implies that, to some extent, common evaluation frameworks can be applied, even if particular measures are not meaningful across the entire spectrum of programs. BBC's findings of this common framework include the following:

- Evaluation frameworks should take a "with-without" view of the impacts of the program, rather than a "before-after" view. A common theme identified in our analyses and our review of research literature was a temptation for program administrators to measure the program's effects as the difference between clients' economic characteristics prior to the training and their characteristics after the training. While this may measure to some extent a gross impact of the program, this approach does not take into account the possibility that gains (or losses) could have been incurred during the same time period even without the program.

- The evaluation of a program's success depends to a great extent on the perspective one takes when evaluating the program. From the State's perspective, a program that is totally funded by the Federal government is successful if any positive benefit occurs within the state, because the State has no investment. This report takes the perspective of society as a whole

when offering recommendations, and also considers governmental perspectives from a financial return on investment viewpoint. Overall, the perspective to be taken in evaluating a program depends in large part on the objectives of the program.

- The goals of a program should be clearly understood before a thorough evaluation is possible. This report approaches each program using economic and employment enhancements as the primary goal of the program. In some cases, such as Adult Basic Education programs, it appears that most evaluations identify skills attainment or learning as the desired outcomes of the program. Thus, evaluating a program solely on its impacts on economic enhancements may not always be appropriate.

- Some benefits (and costs) of programs are difficult or even inappropriate to quantify in economic terms. For example, some benefits of citizenship attainment may lie in a person's increased participation in the democratic process. Even if this participation has no readily quantifiable economic value associated with it, it may be in society's best interest to encourage it. Overall, economic summaries of program impacts are necessarily incomplete in most cases.

- Where economic and employment impacts could be measured, certain common measures existed across (most) programs. These included income effects, employment rates and retention. These appear to be commonly accepted measures for considering training program impacts, though as mentioned above, the differences in program structures and goals renders cross-program comparisons of such measures inappropriate.

APPENDIX A.
JTPA Literature Review

Source

"Reforming the Federal Job Training Programs: How Congress Can Avoid Previous Failures," by Mark Wilson, Heritage Foundation, FYI No. 151, September 30, 1997.

Identified Measures

The measures used to evaluate JTPA Title II-A programs include average earnings and employment rates as compared to non-participants.

Summary

In this paper, Wilson argues that most job training programs have not been subject to any rigorous evaluation. In the cases where programs have been evaluated, the results show that such programs do not work. The federal government has spent over $10 billion on job training programs, funding more than 60 programs across six federal agencies. Wilson cites the 1993 National JTPA Study, conducted by the Department of Labor, which reported the following for JTPA, Title II-A programs.

- The program had no statistically significant effects on the average earnings of young men or women, nor did it have significant effects on women's employment.
- Training targeted to adult women on welfare and high school dropouts had no statistically significant effect on later earnings.
- The program had a significant negative effect on the earnings of young males and no effect on their employment.

- Participants were re-employed at significantly lower wages than non-participants. However, the average employment rate for program participants was 9 percent higher than for non-participating dislocated workers.

- Finally, the total administrative costs could not be determined because most agencies do not adequately track them.

One of Wilson's recommendations is to implement control group evaluations and rigorous performance measures at the state and national levels. These will inform Congress, states and taxpayers which programs are working. He also recommends a greater emphasis on job search and job placement assistance. The failure of the new Workforce Investment Act to require state control groups is one of the legislation's major weaknesses.

Source

"Job Training Partnership Act: Long-Term Earnings and Employment Outcomes," (Letter Report, 03/04/96, GAO/HEHS-96-40).

Identified Measures

The study looks at both participants' earnings and employment for a period of five years and compares participants with non-participants.

Summary

This report analyzes the effects of JTPA on long-term earnings and long-term employment rates for JTPA participants, and compares these against the earnings and employment for non-participants.

The report finds no statistically significant effect of JTPA on earnings or employment after five years. While the JTPA participants' earnings or employment rates may have been higher than the control group initially, those differences were either eliminated or statistically insignificant by the fifth year.

The study looked at the effects of JTPA on four target groups: adult men, adult women, male youths and female youths. Within each of these groups, the annual earnings increased over five years. However, the non-participants also experienced similar increases over that period. By the fifth year, there was no significant difference in earnings for the JTPA participants over the non-participants.

Similarly, employment rates for JTPA participants were not significantly different than those for non-participants five years after assignment to JTPA. For adult men and women participants and non-participants, employment rates peaked during the initial year of assignment and declined in subsequent years to a level below that of the initial year.

Male youths, including both participants and non-participants, also saw a declining employment rate over the five-year period; however, their fifth year employment rate did not drop below their first year rate. The employment rate for female youths declined over the first four years, and then rose slightly in the fifth year.

Source

"Employment Training Programs: Varied Purposes and Varied Performance," State of Florida, Office of Program Policy Analysis and Government Accountability, Report No. 95-24, January 9, 1996.

Identified Measures

Program performance is assessed based on the following: employment, wages, and use of public assistance. The study also evaluates economic outcomes by measuring the returns on program expenditures.

Summary

This review assesses the performance of major programs in the state of Florida's employment training system. Of the $1 billion that the state spends on employment and training programs, JTPA IIA and III account for approximately $85 million, or 9 percent of expenditures.

The Title IIA program is intended to increase employment and earnings for economically disadvantaged adults. Of the almost 7,900 participants who left the program in 1993-94, 60 percent were placed in employment. The cost per placement was $12,756. Seventy-two percent of those placed were still employed in the follow-up period. The average annual full-time earnings for participants still employed through December 1994 were $16,657.

The Title III program serves dislocated workers. Title III participants were more likely to be working full-time and earned more than Title IIA recipients. Of the nearly 5,400 participants leaving the program, nearly 71 percent were placed – most in full-time jobs. Seventy-five percent of those placed were still employed during the follow-up period. The average annual full-time earnings for Title III participants working full-time during the follow-up period was $22,110.

The Florida study shows that the JTPA participants who complete a vocational education program worked more and earned more than other participants (in 1993-94).

The study observed that poor program performance may be due to a lack of standards for participants' long-term outcomes. Focusing only on short-term outcomes, such as participation rates, initial placements and short-term follow-ups leave out long-term employment outcomes.

The study also found that 1993-94 participants of employment training programs contributed to the state's economy. They earned approximately $806 million in their first year, compared to the $627 million spent on the programs. Increased employment and the resulting economic independence results in significant savings in public assistance. A study by Florida TaxWatch found that employment assistance programs yielded positive returns on program expenditures. Participants' earnings, decreases in public assistance, and greater taxes paid generated $11.7 million in savings for JTPA IIA.

Source

"Employment Training: Successful Projects Share Common Strategy," (Letter Report, 05/07/96, GAO/HEHS-96-108).

Identified Measures

The measures used in this study include program completion rates, job placement and retention, and placement wages.

Summary

In this 1996 report, the GAO identified successful employment training projects targeted to economically disadvantaged adults. Six projects were selected based upon their outstanding results measured by performance indicators such as completion rates, job placement and retention rates, and placement wages. Below are three projects for which JTPA was the primary funding source.

Arapahoe County Employment and Training Division, Aurora, Colorado. Arapahoe measures its performance by enrollment statistics, job placement rates, follow-up employment rates, and follow-up earning rates. In 1994, 57 percent of all adults leaving the program found employment. A higher percentage of individuals who completed occupational training – 69 percent – were placed. The average placement hourly wage was $7.09.

Center for Employment Training, Reno, Nevada (CET). The ultimate goal for each participant is permanent, unsubsidized job placement with good benefits. In 1994, the placement rate for program finishers was 92 percent.

The Private Industry Council (TPIC), Portland, Oregon. "Successful participants" are defined as those who obtain self-sufficiency; therefore, the minimum starting wage goal is $7 per hour. Outcomes for the adult training employment programs include the number of clients served and placement, retention, and starting salary rates. Of the 355 participants who left during the program year, about 68 percent were employed. The percentage increases to 77 percent for those participants who completed occupational skills training.

Each of the projects were very different in terms of their size, funding and client characteristics. However, they shared a common strategy for preparing clients for self-sufficiency. This strategy incorporates four key features: ensuring participant readiness and commitment to training and employment; removing barriers that could stand in the way of completing the program, getting or keeping a job; improving clients' employability skills focusing on employer needs, like dependability, promptness, and conflict resolution; and, linking occupational skills training with the local labor market.

Source

"Evaluating JTPA Programs for Economically Disadvantaged Adults: A Case Study of Utah and General Findings," by William R. Bowman, Annapolis Economic Research, Annapolis, 1993.

Identified Measures

The measures used include employment and earnings for participants over time as compared to non-participants.

Summary

A 1993 study found that JTPA program participants had positive long-term program outcomes. The study used Unemployment Insurance (UI) wage records to track Title II-A participants' employment and earnings history for a four-year period. The theory of "human capital" – based on the concept that an individual's earnings and employment reflect prior investments in school and work – support the use of UI wage records.

The findings, which compared program participants with non-participants, included the following:

- Utah participants who were placed in unsubsidized jobs were significantly more likely to be employed two years after their original enrollment than were non-participants.

- Earnings for both men and women participants were higher than non-participants. Women's earnings were $1,000 higher than non-participants and men's earnings were over $1,300 higher than non-participants.

Source

"Welfare to Work: Measuring Outcomes for JOBS Participants," (Letter Report, 04/17/95, GAO/HEHS-95-86).

Identified Measures

This study distinguishes between two types of indicators: outcome and process. Process indicators include program statistics such as participation numbers, while outcome indicators include the number of participants who begin employment, hourly wages at hire, the number leaving AFDC, and the number still employed during a follow-up period.

Summary

This 1995 GAO report finds that the Department of Health and Human Services does not know whether the Job Opportunities and Basic Skills Training (JOBS) program is reducing welfare dependency. This is because HHS doesn't have enough information on program outcomes, such as number of participants entering employment and leaving welfare each year.

The report finds that HHS only gathers information on participation, not on outcomes. States are only accountable for these process goals; their failure to meet them may result in reduced federal funding. HHS does not track participants over time, nor do they provide annual statistics on the percentage of participants who became employed.

States do a better job of monitoring outcomes than the federal government with almost all states using some form of participant outcomes to manage individual programs.

- The most common outcome indicators used by states are the number of participants entering employment and the hourly wages at hire (49 and 42 states, respectively).
- 33 states gather data on the number of participants no longer receiving AFDC due to employment.
- About half of the states gather information on job retention rates (26 states), number of participants with reductions in AFDC due to employment (24) and educational/training achievement (24).

The report concludes by stating the importance of developing effective outcome indicators and goals as a way to "refocus JOBS on the ultimate goals of employment and independence from welfare." The first step to developing outcome indicators and performance goals is to reach consensus among stakeholders over the objectives of the program. Agreement over objectives is difficult to achieve. Eighty percent of JOBS directors, for example, believed that the main objective was to prepare and place participants in employment that will allow them to be self-sufficient (and leave AFDC). The other 20 percent defined the objective as getting participants into any job, even if it didn't allow them to leave AFDC.

Source

"Job Training Partnership Act: Labor Title IV Initiatives Could Improve Relations with Native Americans," (Letter Report, 03/04/94, GAO/HEHS-94-67).

Identified Measures

The primary outcome used is the positive termination rate among program "terminees." The positive termination rate reflects the percentage of people who, upon leaving the program, either completed a major level of education or moved on to one of the following: employment; further education or training; or military service.

Summary

This 1994 GAO report addresses Title IV funds under JTPA which target Native Americans. Native American employment and training programs are administered by the Division of Indian and Native American Programs, an office within the Department of Labor. The report selected seven grantees and reviewed program records for a valid sample of 1991 terminees.

Participant characteristics. Eighty-six percent of participants were not in the labor force at the time of application. Sixty-three percent of participants were adults; 53 percent were female. A quarter of participants were receiving cash welfare and more than half had at least one barrier to employment.

Outcomes achieved. The primary outcome used is the positive termination rate among program "terminees." The positive termination rate reflects the percentage of people who, upon leaving the program, achieved one of the following: obtaining employment; continuing education or training; entering the military; or completing a major level of education.

About 61 percent of 1991 terminees obtained a job or had another positive outcome. The positive termination rate, however, varied considerably among project sites, ranging from 38 percent to 85 percent.

The report also looked at the amount of dollars spent on training at each of the program sites. Training expenditures include costs associated with classroom training, on-the-job training, participant allowances, classroom equipment and supplies, and other expenses. The seven grantees spent an average of 40 percent of 1991 expenditures on training (this increased to 65 percent with the new definition of training in the 1992 amendments). However, this percentage varied considerably among programs, ranging from 14 percent to 60 percent.

The wide variance in training expenditures is due to different program needs which depend upon geographic and economic conditions. The length of time that clients access services, and the intensity of those services impact the difference in training expenditures.

Source

"Washington's Workforce Training System: Recommendations for Efficiency and Effectiveness," Workforce Training and Education Coordinating Board, Olympia, December 30, 1997.

Identified Measures

The performance measures used for JTPA Title IIA, IIB, IIC and III include the following:

- Percentage of former participants employed one year after leaving the program;
- Median wages 7 to 9 months after leaving the program;
- Percentage of former participants who were employed in an area related to their job;
- Participant and employer satisfaction;
- Net impact on employment (as compared to non-participants);
- Net impact on wages (as compared to non-participants); and
- Return on public investment which is a ratio of participant net lifetime gains to direct public costs per participant.

Summary

A 1997 study by the Workforce Training and Education Board (WTECB) evaluated the state's workforce training and education programs.

Title III Outcomes. Eighty-four percent of former participants were employed one year after leaving the program with a median wage of $13.43 in 1995-96. Almost 60 percent were employed in an area related to their training. About 80 percent of former participants reported that they were satisfied with their program. The net impact on employment as compared to non-participants was +8.5 percent. The ratio of participant net gains to direct public costs was 8 to 1.

Title IIA Outcomes. Eighty-one percent of former participants were employed one year after leaving the program with a median wage of $7.54. Seventy-five percent of former participants found employment in an area related to their training. Eighty-six percent of former participants were satisfied with the program. The net impact on employment was +6.4 percent and the ratio of participant net gains to direct public costs was 3 to 2.

Title IIC Outcomes. Sixty-three percent of former participants were employed one year after leaving the program with a high percentage of former participants in jobs related to their training (70% of former participants). The median wage was slightly more than $6.00. Most former participants reported that they were satisfied with the programs (94 percent in 1994-95.) The net impact on employment and wages was +6.8 percent and +4.9 percent, respectively. The ratio of participant net gains to direct public costs was 8 to 1.

One of the WTECB's recommendations include defining program completer. Currently, there is no such definition in Washington. As a result, there are no measures of completion rates. Further, the lack of a definition prohibits any comparison of completers versus those who leave before completion.

WTECB also recommends shifting to performance-based funding whereby the SDA's would be required to grant and sustain contracts with service providers based upon the provider's performance record. The WTECB also recommends improved integration between work and vocational training.

JTPA Title II participants who completed at least 10 college credits were found to have a larger net increase in earnings than other participants. For this reason, WTECB recommends that JTPA Title II-A offer participants the opportunity to enter and complete certificate or degree programs, whenever appropriate.

Source

"Evaluating Job Training Programs in the United States: Evidence and Explanations," by W. Norton Grubb, National Center for Research in Vocational Education, University of California at Berkeley, May 1995.

Identified Measures

The National JTPA study assessed the program in terms of its impact on the following:

- attainment of GED or high school diploma;
- reduction of welfare benefits; and
- impact on arrest rates.

Summary

This monograph reviews the effectiveness of job training programs in the United States. The preferred methodology of recent evaluations utilizes random assignment with a random sample and control group. This experimental methodology eliminates the chance that non-program related factors will impact findings. It also eliminates all selection effects, maturation effects, and regression to the mean effects.

The disadvantages to this approach are that it somehow treats evaluation as a statistical "problem" rather than a programmatic one. Also, experiments can and do degrade into quasi-experiments because of non-random behavior of groups.

The random assignment evaluation of JTPA suggests that programs have statistically significant effects on certain populations (females over males, adults over youths); however, these effects have been so small that they don't have any influence on moving people out of poverty. In some cases, with male youths for example, the effects have been negative.

Another way of asking if programs like JTPA are "worth it" is to compare the outcomes to the costs through a cost-benefit analysis. Typically, these describe differences in outcomes between enrollees and a control group. The additional earnings of enrollees, or the reduction in welfare benefits represent the benefits. Other benefits could be prevention of crime or drug/alcohol abuse.

Costs are calculated differently for enrollees and society. The JTPA Study found that the benefits outweigh the costs for both society and enrollees for adult women and men. The program resulted in net losses for participants and enrollees where youth are involved, with losses of almost $3,000 for young males.

Source

"Revamping America's Training Programs: A Prescription for Change," by Anita Hattiangadi, Employment Policy Foundation, 1997.

Identified Measures

- Impact of Title IIA programs on earnings and employment (National JTPA Study and GAO Study).
- Program impact on criminal activity of youths, as measured by arrest rates of youths with prior arrests (National JTPA Study).
- Impact on welfare, as measured by reductions in AFDC or food stamp benefits distributed to youths or adults (National JTPA Study).

Summary

This policy paper discusses the new training reform legislation and argues that it will not improve job training programs. Summaries of the 1986 National JTPA Study and 1996 GAO Study are included.

National JTPA Study. This study evaluated the impact of Title IIA on employment and earnings. The study used randomly assigned treatment and control groups from 16 volunteering Service Delivery Areas. The study found modest increases in earnings through a follow-up period (of two and a half years). The earnings increases did not make up for the cost of providing services, nor were they sufficient to move people out of poverty.

The study found no positive effects on the earnings of out-of-school youths (and even negative effects for male youths). Program costs exceeded perceived benefits. It also had no positive effect on arrest rates of youths without prior arrests. The study found that the arrest rate for male youths without prior arrests actually increased by 10 percent.

GAO Study. Using a five-year follow-up period, the GAO found no statistically significant effects on wages or employment.

Recommendations. The report's recommendations include the following:

- Services should be provided through the private sector and funded by the federal government through job training vouchers.
- Serve the most trainable individuals and serve others through extended income supplements that reward work.
- Expand job search and placement services using private firms funded through vouchers.

APPENDIX B.
Carl D. Perkins Literature Review

Source

"Employment Training Programs: Varied Purposes and Varied Performance," State of Florida, Office of Program Policy Analysis and Government Accountability, Report No. 95-24, January 9, 1996.

Identified Measures

The outcomes include the number of participants exiting, the percentage of exiting participants that completed a program, the percent of completers employed, the percentage employed full-time, and the annual full-time earnings. The study also evaluates economic outcomes by measuring the returns on program expenditures. Additional tax revenues resulting from greater incomes, and a reduction in public assistance benefit the state economy.

Summary

This review assesses the performance of major programs in the state of Florida's employment training system. The state of Florida spends almost $1 billion on eight employment training programs which serve over a million people. Vocational education accounts for the majority of expenditures and participants in the state's employment training system. Vocational education expenditures for FY 1993-94 were approximately $736 million, or 76 percent of total expenditures. Vocational education programs served more than 885,000 participants.

Of the approximately 224,600 individuals who left a vocational education program in 1993-94, 28 percent completed a program. Completers are defined as those individuals who finished a sequence of courses leading to a certificate or degree. Among all of the program completers, 72 percent were employed during a follow-up period. The average

annual income for program completers working full-time was about $21,400. About 12 percent of vocational education completers used public assistance and 21 percent continued their education at follow-up.

Among the individual programs, there is a wide variance in completion and employment measures. For example, the completion rates ranged from a low of 20 percent for high school program completers to a high of 55 percent for community college certificate program completers. The percentage of completers who found full-time employment also varied from a low of 19 percent for high school program participants to a high of 57 percent for community college degree recipients. Annual earnings range from a low of $12,000 for high school vocational completers to a high of $27,000 for community college degree program completers.

Source

"Vocational Education: 2-Year Colleges Improve Programs, Maintain Access for Special Populations," (Letter Report, 07/26/95, GAO/HEHS-95-163).

Identified Measures

This GAO report describes the most common performance measures as being placement rates and program completion rates. Other common measures include program retention rates, state licensing exam results, and employer satisfaction.

Summary

The GAO compared student participation and changes in vocational education programs between the 1991 and 1994 school years. The report attempts to measure the impact of 1990 Perkins Amendments on integrating vocational and academic instruction and easing the transition from school to work (through Tech Prep).

The GAO found that Perkins' emphasis on enhancing the quality of vocational education has had mixed results. While community colleges were largely implementing tech-prep programs, there was no change between 1991 and 1994 in the extent to which colleges were integrating academic and vocational learning.

Between these time periods, however, colleges moved "aggressively" to use quality measures in their program assessments. The report did not evaluate these measures per se, but rather focused on colleges' move to implement such measures in an attempt to improve program quality. The most common measures – used by over 90% of colleges – were placement rates and program completion rates. Other common measures included program retention rates, state licensing exam results, and employer satisfaction.

Source

"Washington's Workforce Training System: Recommendations for Efficiency and Effectiveness," Workforce Training and Education Coordinating Board, Olympia, December 30, 1997.

Identified Measures

The common measures used to evaluate Perkins programs include participation, completion, and performance.

Summary

A 1997 study by the Workforce Training and Education Board (WTECB) evaluated the state's workforce training and education programs.

WTECB found that the common performance measures used to evaluate Carl D. Perkins programs are inappropriate measures. These measures – participation, completion, and performance – are not useful because Carl Perkins only represents supplemental funding. This funding is not restricted to separately identifiable groups of individuals. Carl Perkins funding for post-secondary education, for example, supplements basic vocational-technical education; therefore, it's impossible to "disentangle" the numbers or draw conclusions about the impact of Perkins funds.

Furthermore, the means by which Washington measures the number of participants is not effective. Secondary vocational education counts any student who takes a single vocational education course as a vocational participant. This method over-estimates the number of true vocational education participants, and "makes it impossible to calculate a meaningful completion rate for secondary vocational education."

WTECB recommends that students be counted only when they completed vocational credits above and beyond the minimum required for graduation. Participants who complete a series of courses should be counted as "completers."

Source

"Workforce Development Performance Measurement: Options for Performance Measures," Issue Paper prepared for Employment and Training Administration, U.S. Department of Labor, March 1997.

Identified Measures

The Workforce Development Performance Measures Policy Committee identifies the following as appropriate performance measures:

- Employment outcomes (e.g. entered employment, post-program employment or employment retention);
- Wage and earnings outcomes;
- Skill attainment (e.g. occupational skills and basic skills);
- Welfare reduction;
- Learning gains;
- Customer satisfaction;
- Cost measures (e.g. cost per outcome, return on investment);
- Employer outcomes; and
- Economy-wide measures.

Summary

This 1997 report, developed for the Employment and Training Administration, was written to assist the Workforce Development Performance Measures Policy Committee in developing performance measures for workforce development programs.

The report classifies education and training as "intensive services." Examples of appropriate measures are listed above.

The report discusses the advantages and disadvantages of various outcome measures. It concludes by recommending that measures and outcomes should include cost-efficiency measures and long-term outcomes, as well as short-term outcomes, intermediate outcomes, and process measures.

Source

"Educator, Student and Employer Priorities for Tech Prep Student Outcomes," by Debra Bragg, National Center for Research in Vocational Education, Berkeley, 1997.

Identified Measures

In addition to the commonly used compliance-oriented measures (e.g., enrollment, completion, and job placement), the study identifies performance outcomes used by states. These include ACT scores, work attitude, GPAs in certain subjects, dropout rates, participation rates in career development and applied academic courses, and continuing education into community colleges.

Summary

The study looks at Tech Prep evaluations at two levels: national Tech Prep evaluations and state level evaluations.

Formal program evaluation and outcomes assessment for Tech Prep has focused on compliance-oriented measures required by the government, such as enrollment, program completion, and job placement. While these may be helpful in understanding the scope and scale of Tech-Prep, they don't foster an understanding of the way programs should operate and benefit students.

A review of the 1992 national evaluation of Tech Prep education, conducted by the U.S. Department of Education and its contractor, Mathematica Policy Research (MPR), looked at how local and state programs are being evaluated. Although all states reported annual monitoring of Tech Prep, the national evaluation goes on to document that very few local consortia were actively collecting data on student outcomes or engaging in formal evaluations. The national evaluation focused on participation and completion outcomes; however, the number of local consortia able to provide such estimates was extremely limited making the results "meaningless."

The national evaluation's focus on compliance-oriented measures – and its apparent focus on accountability measures – leaves out other important factors, such as technical and academic competency attainment or employability skills. These outcomes are useful as they inform practitioners about the effectiveness and quality of the curricula.

The next segment of the study looks at how individual states are evaluating Tech Prep. Overall, 28 of 33 responding states reported that they engage local consortia in data collection. Some states conducted internal evaluations while others contracted with third-parties, including universities or private consulting firms. These third-party evaluations were usually more comprehensive and rigorous than internal evaluations conducted by state agencies.

Evaluations of other states revealed the following:

- In Illinois, findings (Roegge & Evans, 1995) showed that Tech Prep students obtained significantly higher scores on the ACT than pre-Tech Prep students. Moreover, the Tech Prep students had a more "anticipatory attitude toward work" than their non-Tech Prep peers.

- In Rhode Island, one study compared Tech Prep students with non-Tech Prep students. Tech Prep students had higher GPAs in math, science and communications than non-Tech Prep students (but prior to participation, the Tech Prep students had lower scores than the non-Tech Prep students).

- Similarly, Rhode Island compared these two groups and found lower dropout rates for Tech Prep students than for non-Tech Prep students. Also, Tech Prep students had higher average scores in advanced skills reading and math than non-Tech Prep students.

- In Washington state, the Northwest Regional Education Laboratory (NWREL) found a higher participation rate in career development and applied academic courses for Tech Prep than for non-Tech prep. It also found a higher percentage of Tech Prep continuing on to community colleges than non-Tech Prep students.

Finally, the study recommends that outcomes should be broad and represent the various stakeholders' priorities.

Source

"Vocational Education Performance Standards," by Susan Imel, ERIC Digest No. 96, 1990.

Identified Measures

The study identifies the following three types of outcomes as well as the types of measures used for each outcome.

- Labor Market outcomes (include job placement, earnings, and duration of employment and unemployment are the main indicators of labor market performance;
- Learning outcomes through occupational competency tests; and
- Access outcomes look at the number of different types of students enrolled in programs relative to their numbers in the larger population.

Summary

This ERIC Digest looks at the options for establishing vocational education standards currently under consideration. It examines outcome measures, proposes approaches, and discusses potential issues and challenges in establishing performance standards.

The three most commonly used outcome measures are labor market, learning, and access. These reflect the "broadly accepted definition" of the main objectives of vocational education: preparing students for employment.

Labor market outcomes. Job placement, earnings, and duration of employment and unemployment are the main indicators of labor market performance.

- ***Disadvantages.*** Labor market outcomes have several disadvantages, including the following: a potential bias from school personnel; a potential disregard for economic and personal factors that affect employment (outside the control of vocational education); a focus on placement encourages admission of only those who can be placed; and an emphasis on measuring gross effects of participation rather than net effect.

Learning outcomes. The most common way to measure what students learned in school is through occupational competency tests. These tests are designed to look at mastery of skills and knowledge found in specific jobs.

- ***Disadvantages.*** The disadvantages associated with learning outcomes includes the following: test scores reflect economic and social factors; schools can coach students on test-taking strategies; tests don't always show

how a person would function at work; and they can encourage emphasis on highly specialized skills (OTA 1989).

- ***Advantage.*** Learning outcomes are beneficial since test scores provide important indications of program effectiveness.

Access outcomes. Traditional efforts look at the number of different types of students enrolled in programs relative to their numbers in the larger population.

- ***Disadvantages.*** Access outcomes deflects attention away from the policy concern that students acquire skills necessary to compete effectively in the labor market.

Imel suggests that a combination of these measures is effective since no one outcome measure sufficiently judges the quality of vocational education programs.

Due to the diverse clientele and goals, establishing a system of performance standards is difficult. However, developing performance standards can produce positive effects, including the following: fostering school-based improvement; helping monitor policies and improving schools; and enabling vocational education to be a part of education reform.

Source

"Divers or Dabblers: Participation Patterns of Vocational/Technical Students in Illinois High Schools," by C.A. Roegge and J.W. Flesher, the *Journal of Industrial Teacher Education*, 1995, Volume 32, No. 3, pp. 30-44.

Identified Measures

The report looks at program participation characteristics, such as the representation of special populations in vocational education.

Summary

This report attempts to assess the effects of vocational education participation in thirteen (13) schools in Illinois. A major obstacle is coming up with a definition of "vocational student" or "vocational education completer." Students participate in vocational education for various reasons, and their levels of concentration vary considerably, from one-course takers to completers of entire sequences of courses.

The purpose of the study was to develop a course-taking profile of vocational education students in Illinois. Among the various objectives, the study sought to refine the definition of vocational program completers[1]. One method is to use "key courses" to identify program completion. A key course is any course that comes at the end of a sequence. The problem with this approach, however, is that some key courses are the only course in a sequence. Use of this approach should limit key courses to only those sequences that have 2-3 courses. Other findings are described below.

Program Participation. Overall, about 68% of students in the sample completed a vocational *sequence*. A sequence was defined as two consecutive vocational courses within a specific program, in which one course is a prerequisite for the next course. Over 90% of students took more than one vocational course. The average number of vocational courses was slightly more than eight.

Special Populations. The most significantly represented special populations were academically disadvantaged (37%), economically disadvantaged (5%) and learning disabled (8%). Overall, 83% of the special populations students were program sequence completers, compared to 65% for the total sample.

[1] The sample group of students was a random selection of members of the graduating class of 1992 who had participated in at least one vocational education course while in high school.

Source

"Occupation-Specific Versus General Education and Training," by John Bishop, *The Annals of The American Academy of Political and Social Science*, Volume 562, March 1998.

Identified Measures

"Success on the job" is measured in one study by asking employers what impact various employee abilities had on wages and productivity. Economic benefits can be measured by earnings (for participants versus non-participants) and the impact of the program on dropout rates.

Summary

Productivity derives directly from social abilities (such as good work habits and people skills) and cognitive skills that are job-specific. It does not derive from general academic skills such as reading, writing and mathematics. There is a greater need for vocational training due to the rapid obsolescence of skills and employer's reluctance to hire inexperienced workers.

The abilities that predict success on the job include occupational skills, academic ability, ability to learn, work habits, people skills, and leadership. Occupational skills were found to be the only ability that had large positive effects on relative wage rates. Academic and people skills had no effect on wage rates and leadership had modest effects on wage rates. Work habits and the ability to learn new job skills had the largest impacts on productivity; however, they had significant negative relationships with wage rates.

The economic benefits of post-secondary vocational education are significant. Workers who earned associates degrees or completed some college education made more than high school graduates. Vocational education also lowers dropout rates.

Graduates of vocational training programs in secondary schools are paid substantially more than other high school graduates who didn't attend college. However, this benefit diminishes with time.

Source

"Accountability in Workforce Training," by Brian Stecher and Lawrence Hanser, Santa Monica: RAND, 1995.

Identified Measures

This paper evaluates the effectiveness of the following outcomes: placement, skill attainment/improvement, and program participation.

Summary

This issue paper discusses Perkins' requirements to measure outcomes and focuses on the validity and effectiveness of certain outcomes. In discussing the changing policy context, it suggests that the possible abandonment of Perkins may result in negative outcomes for accountability among other workforce training programs.

Placement. The importance associated with particular outcomes affects system operations and can create incentives that may threaten the quality of the training. Given the goals of job training programs (employment), the most natural outcomes are those associated with labor force entry. Examples include initial employment, wage levels, continuing employment, advancement, and employee/employer satisfaction.

The problem with these placement outcomes is that they may lead to invalid conclusions and actions. External factors, such as economic downturns or fluctuations in the local labor market may be the true reason for poor placement rates. Placement outcomes may also adversely affect selection of trainees (with an emphasis on the most "employable") and selection of occupations and skills that are the focus of training.

Skill attainment/improvement. Rather than focusing solely on placement and initial labor market outcomes, the study recommends focusing on skills as the essential outcome. The health of the local and state economies may be better served by such measures. General workforce skills, such as time management, teamwork, and understanding of technologies and systems might be more effective in fostering economic productivity.

Skills should be monitored not only in terms of attainment, but perhaps more importantly, in terms of improvement. This will create incentives to serve different students, including those that may start out with very low skills but demonstrate an ability to improve substantially.

Program participation. Another common set of outcomes is defined in terms of program participation. Examples of useful measures include program and course enrollment, continuation, and completion. Measuring program completion, however, has its downsides. For example, some students may learn all the skills they need prior to completion. If they depart prior to completion for the purpose of employment, they should not be measured as a negative outcome. Rather, the program produced a favorable outcome: employment.

The system works best when the programs are accountable to many constituents, including students, the local business community, and the state. Also, the program outcomes are important; the choice of outcomes affects system operations and has the ability to distort performance. Multiple outcomes are the most effective and balanced approach.

APPENDIX C.
Adult Basic Education Literature Review

Source

"National Evaluation of Adult Education Programs, Fourth Report: Learner Outcomes and Program Results," by Malcolm B. Young, Nicholas Fitzgerald and Mark A. Morgan, Development Associates, Inc., December 1994.

Identified Measures

This report presents findings on literacy outcomes, educational attainment and employment-related outcomes. Literacy outcomes are measured by performance on standardized tests. Educational attainment is measured by the number of participants completing secondary education and continuing on to higher education. Employment-related outcomes are assessed by calculating net employment gains and understanding client perceptions of benefits that can be attributed to the program.

Summary

Client outcomes can be grouped into three categories: literacy, educational attainment and employment-related outcomes.

Literacy gains. ESL, ABE and ASE clients taking pre- and post-tests made significant improvements in their reading achievement.

Educational attainment. Adult education helped somewhere between 11 and 30 percent of ASE clients complete their secondary education.

Employment-related outcomes. Adult education resulted in a net gain of 6 percent in employment; ESL clients reported the most benefits.

Source

"Adult Education: Measuring Program Results Has Been Challenging," (Chapter Report, 09/08/95, GAO/HEHS-95-153).

Identified Measures

The Adult Education Act currently requires states to measure educational outcomes by standardized assessments, such as the Comprehensive Adult Student Assessment System. States also typically measure program performance by participant data and other performance statistics. At the program level, administrators measure success by high school completion, GED attainment, and employment rates.

The Department of Education has recently developed model indicators and has provided examples of measures that could be used to quantify those outcomes. The indicators cover student outcomes as well as program quality outcomes (e.g., planning, curriculum and staff development). Student outcomes (including program completion and basic skills attainment) can be measured by standardized test scores, teacher reports of competency gains, or student reports of attainment.

Summary

In this report, the GAO examines the State Grant Program and how well it measures accountability for quality and results. The State Grant program was selected since it represents the largest program funded under the Adult Education Act (AEA). The GAO found that the State Grant Program has had difficulty measuring results and ensuring accountability for three reasons: lack of clearly defined objectives; questionable validity of assessments; and weak student data.

Lack of clearly defined objectives. The State Grant Program's objectives are broadly defined to include high school attainment, citizenship and employment. States have developed a variety of ways to measure results. Some program officials feel that the program "lacks a coherent vision of the skills and knowledge adults need to be considered literate." Others want the federal government to more clearly define the types of results expected from state programs.

Validity of assessments. While some states use common assessments, there is disagreement over the validity of such assessments as a way to measure student outcomes. Furthermore, there is a lack of research confirming the long-term retention of learning gains in adult education programs. Administrators and experts alike agreed that no one test sufficiently measures student performance.

Poor data quality. The lack of accurate and consistent data further hampers accountability. States are required to submit annual statistical reports to the Department of Education. These include data such as number of students served, their demographic characteristics, student progress, and the number of students who don't complete the programs. The Department of Education and state officials acknowledged that the data has significant problems, including double counting, undercounting, and missing data.

In an attempt to improve accountability, the Department of Education has developed eight model indicators. These indicators address student outcomes, recruiting, retention and other quality indicators. States are required to use some indicators, and a review of states revealed that most states had adopted some or all of the indicators. States differed widely, however, in how they measured indicators.

Source

"National Evaluation of Adult Education Programs: Analysis and Highlights," from the U.S. Department of Education web page.

Identified Measures

In addition to participation characteristics, this paper summarizes the following measures used in the National Evaluation, including: completion, retention, the extent to which programs are at full-capacity, unit costs and geographic distribution of services.

Summary

This four-year study of programs funded by the Adult Education Act describes enrollee characteristics and their achievement outcomes. The major findings of the study are as follows:

- English as a Second Language (ESL) is the emerging focus of adult education. Forty-six (46) percent of new clients enrolled in ESL.
- Thirty percent (30%) of new clients enrolled in Adult Secondary Education (ASE) and the remaining 24% enrolled in Adult Basic Education (ABE).
- ESL participants account for 76% of total hours of instruction, ASE for 13% and ABE for 11%. ESL clients stay longer and receive more intensive instruction.
- In 1990, the Adult Education Act supported about 2,800 local programs. The programs in urban areas are larger (eight times) than programs located outside metropolitan areas. However, most programs are located outside metropolitan areas (representing 86% of all programs).
- The geographical distribution of clients is heaviest in the western states (40% of clients) which reflects the increasing demand for ESL.
- Adult education programs (not including ESL) are not operating at full-capacity. During peak seasons, the program is operating at 70% capacity.
- Retention and completion rates vary between programs. ASE clients report the highest completion rate; 39% of the group report successful completion as the reason for leaving the program. ABE clients have the lowest retention rates and fewest hours.
- Literacy test scores show modest increases in all three programs of about one grade level.

- The wide variances in program size, staff qualifications, and methods result in varying program costs. Small, rural programs are less likely to meet professional standards. Curriculum and instruction varies considerably from program to program.

- Unit costs vary by program: ESL cost-per-hour is $4.28; ASE is $5.11, and ABE is $6.11. However, the average expenditures for ESL students are more than twice the averages for ABE and ASE students, reflecting the longer number of hours needed to complete an ESL program.

- Local programs lack basic management data needed for program improvement. As a small number of programs maintain client-specific records, the accuracy of data is questionable. Further, local programs reported valid test scores for only three percent of a client sample.

The above findings suggest the need for the following changes:

- States should have more flexibility in distributing and spending federal funds.

- Greater focus needs to be placed on improving retention and completion rates.

- Adult education programs should place greater emphasis on relevance of program to the workplace.

- States need to develop better performance indicators that improve their ability to evaluate program participation, completion and effectiveness. Performance measures need to be developed to facilitate program improvement.

- Adult education services should be provided more effectively. Rather than dispersing services through many local programs, strategies such as formulating partnerships and consortia, and distance learning should be pursued.

Source

"Washington's Workforce Training System: Recommendations for Efficiency and Effectiveness," Workforce Training and Education Coordinating Board. Olympia, Washington, 1997.

Identified Measures

The outcome evaluation used the following measures: employment, median wages, client and employer satisfaction. A net impact evaluation was performed to compare employment rates and wages for participants versus non-participants. A cost-benefit evaluation of participants was used to show the return on public investment.

Summary

A 1997 study by the Workforce Training and Education Board (WTECB) evaluated the state's workforce training and education programs, including Adult Education and Basic Skills. The number of program participants served by community and technical colleges between 1995 and 1996 was almost 65,000. The annual completion rates are not known since the program has no definition of program completer.

The report's recommendations outline the need for "substantial improvement" in Adult Basic Education at the state's community and technical colleges. The recommendations specific to Adult Basic Skills education include the following:

- Develop and propose work-related program performance goals.
- Integrate literacy with vocational training and workplace experience.
- Coordinate Adult Basic Skills programs. There are six programs addressing adult literacy in the state with separate appropriations. The WTECB recommends that the State Board for Community and Technical Colleges write a new State Plan in 1998. Moreover, the WTECB recommends continued efforts to administer programs effectively and efficiently.
- There is no definition of program completer for Adult Basic Skills which makes it impossible to provide a measure of completion rates. Nor does it allow a comparison of results for completers versus those that leave before completion. The WTECB recommends that basic skills providers include a measure of whether or not the participants completed their education as measured by time or their level of basic skills competency (preferred).

Other general recommendations for the entire system focus on improving the state's one-stop career center and greater investment in job-linked training.

Source

"Understanding Federal Training and Employment Programs," National Commission for Employment Policy, Washington D.C. 1993.

Identified Measures

State annual performance reports measure outcomes in the following ways: GED test-passers; high school diploma-earners; entry into another education or training program; number of participants becoming U.S. citizens; number of previously unemployed persons now with jobs; and job improvements or salary increases.

Summary

This report primarily describes the authority and overview of various federal programs; however, it also summarizes some of the outcomes gathered from state annual performance reports.

In 1992-93, states reported serving almost 3.9 million adults in adult education programs. Of that total, 34% were enrolled in ABE programs; 26% in ASE; and 40% in ESL. Adult education students overall receive a median of 58 hours of instruction over 24 weeks.

The federal appropriation for fiscal year 1993 was about $255 million. State contributions account for the majority (75%) of total expenditures on adult education programs.

According to the National Evaluation of Adult Education Programs (NAVE), adult education participants experience statistically significant increases in a reading comprehension test. Thirty-two (32) percent report that programs helped them improve their employment situation. State annual performance reports indicated outcomes in the following areas:

- GED test-passers (241,800 participants)
- High school diploma-earners (72,800)
- Entry into another education or training program (203,000)
- Number of participants becoming U.S. citizens (26,900)
- Number of previously unemployed persons now with jobs (114,500)
- Job improvements or salary increases (95,300)
- Number of participants taken off public assistance rolls (53,000)

Source

"Cost Study Report: Working Paper Prepared as Part of Adult Education Programs," by Malcolm B. Young, Development Associates, December 1993.

Identified Measures

This report focused on the costs associated with adult education programs; however, these were merely described, not used to measure program effectiveness.

Summary

This working paper studies the costs associated with operating 12 local programs during February and March, 1993. Information was collected on cash and non-cash costs by instructional component, the sources of cash and non-cash resources, and the number of hours of instruction provided to adult education clients.

Estimates of service costs were presented for 12 programs, breaking service costs out into the following categories: instructional costs; direct client support service costs; program support and administration costs; and non-cash costs.

The mean cash costs of instruction per client hour was $4.57, although it varied considerably by instructional component. The cash costs per client hour of instruction were as follows: ESL ranged from $0.44 to $8.12; ABE from $2.64 to $9.58; and ASE from $2.43 to $7.81.

States provided 55 percent of the cash resources of adult education programs, federal Adult Education Act funds accounted for nearly 25 percent of funds, other federal programs accounted for about 6 percent, and local and other sources accounted for 14 percent.

Source

"ESL Instruction in Adult Education: Findings from a National Evaluation," by Nicholas B. Fitzgerald, ERIC Digest, July 1995.

Identified Measures

- Self-reports showed that 60 percent of ESL clients felt that participation helped them improve their basic English skills.
- Participants gained 5 scale score points on standardized achievement tests (CASAS) after 120 hours of instruction.
- English language ability improved after completing the program. These improvements were attributed to cost-per-seat hour and total hours of instruction.
- Enhanced employability for 35 percent of ESL clients (six months after exit).
- Increased interest in continuing education for 24 percent of clients.

Summary

This summary highlights the findings from the national evaluation of adult education programs. ESL clients enjoy considerable benefits from ESL instruction; however, the demand for ESL services is higher than other adult education program areas. This demand is often unmet and most ESL clients must wait longer for ESL than adult basic education or adult secondary education. They have the highest rates of participation in adult education, and demand exceeds the capacity of the system.

Source

Jones, Stan (1997). Measuring Adult Basic Skills: A Literature Review. In Albert Tuijnman, Irwin Kirsch and Daniel Wagner (Eds.), Adult Basic Skills (pp. 115-138). Cresskill, New Jersey: Hampton Press, Inc.

Summary

This chapter reviews and critiques the principal techniques for measuring adult basic skills and literacy. The author asserts that techniques providing a profile of skills are superior to all other techniques, particularly those that categorize individuals as literate or illiterate.

The techniques are categorized as being direct or indirect measures. Surveys using direct measures focus on the respondents ability to carry out specific literacy tasks. Some techniques involve classifying respondents as literate or illiterate. Indirect measures, on the other hand, consist of self-evaluation whereby respondents report on their own abilities.

Indirect measures. Asking individuals to describe their literacy or their satisfaction with their skills is a widely used measurement technique. However, there is little research supporting that such techniques are effective in adult literacy. In one survey, respondents were asked to rate their reading and writing skills on a five point scale. Another question addressed the respondent's satisfaction with their skills.

Although these surveys are a "poor substitute for direct measures," they do provide information relating to the impact of different skill levels on everyday life. For example, an individual who has low levels of skill may report that they confront significant difficulties in daily life. This demonstrates that skills are directly related to an individual's ability to effectively function in society.

Additional research is needed in order to evaluate the validity and reliability of these approaches. For now, there is no evidence supporting that indirect measures are a useful approach to measuring literacy skill.

Direct measures. Unlike indirect measures which rely on self-assessments, direct measures require respondents to actually carry out the task. There are three primary models used to measure literacy: competency models, item models, and skill models.

Competency models are generally focused on categorizing individuals as literate or illiterate based upon their ability to perform certain tasks. Individuals who fail at performing a significant number of tasks are defined as illiterate. In the Survival Literacy Study (1970), respondents' ability to complete a task (filling out forms) was used to categorize respondents into literate and illiterate groups. The proportion of literate individuals among the respondents was used to extrapolate the proportion of literate and illiterate individuals in the entire population.

According to the author, it is not appropriate to assume a relationship between the results of a test and other literacy tasks. In other words, the respondents' ability to perform a task such as filling out forms merely reflects his ability to complete that specific task. It does not reflect the level of literacy among the respondents, nor should it be used to extrapolate onto the general population.

Some approaches, like the item model, seek to provide a profile of literacy abilities in a population. Respondents are asked to perform specific tasks, like reading a medicine label. The collective score of all respondents with respect to this task are compiled to provide a profile of literacy abilities in a population. The results might show that 70 percent of respondents were able to correctly answer a question relating to the task of reading a medicine label.

This approach does not attempt to make any generalizations beyond the test itself. In other words, an ability to read and understand a medicine label is not representative of any other reading tasks; it does not indicate that 70 percent of the population is functionally literate, nor that a certain percentage of the population will be able to read complex graphs, for example.

The third – and most superior approach – assembles tasks into a test following an ability model. Tasks are chosen because they represent different levels of difficulty; for example, the test might measure the respondent's ability to perform tasks along a continuum of difficulty. One such model, the Item Response Theory (IRT), estimates the probability that individuals can answer items of particular difficulty. This approach doesn't result in literate and illiterate categories; but rather, characterizes level of reading ability.

Source

"Evaluating Workplace Education Program Effectiveness," by Jennifer Burkhart, Colorado Department of Education, 1996.

Identified Measures

This report describes a four level model (Kirkpatrick, 1959) that is commonly used to evaluate training in business. The four levels include:

- Level One: the measurement of the training participants' reactions to training at the time of training. This can be assessed through interviews or group discussion.

- Level Two: the measurement of learning the content of the training material. Level two can be assessed through comprehension checks used in conjunction with assessment measures, oral and written examinations, or skills laboratories.

- Level Three: the measurement of the use of new skills taught in training on the job. Standardized skills assessments or customized assessments can be used to assess student performance.

- Level Four: the measurement of the observable business results or the return on investment as a result of training.

Summary

This report merely describes this four level approach and states that all levels should be used in evaluating program effectiveness. Level four involves the most time and resources and remits the most data in terms of training impact to business. However, this is seldom used in adult programs, because, for one reason, it requires an evaluation of the individual after they have left training. Most programs are unable to perform this type of evaluation.

Source

"Workplace Learning Associated with Increased Employee Retention," in Workforce Skills (Newsletter), Colorado Community College and Occupational Education System, Fall 1997.

Identified Measures

- Retention rates for newly hired employees involved in workplace learning programs versus newly hired employees who did not participate in training.
- Improvements in communication, as reported by supervisors who referred employees for training.
- Improvements in awareness of safety, quality and productivity.
- Improvements in self-esteem.

Summary

This article summarizes the findings of an EXCEL Corporation study. The study found that program participants are 2.5 times more likely to stay at their employer than their non-participant counterparts.

Interviews with participants revealed that employees are more able to resolve problems on the job as a result of training. Supervisors reported the following gains as a result of training: 75 percent of participants demonstrated improved communication skills; 55 percent demonstrated increased awareness of safety, quality and productivity; 80 percent demonstrated improved self-esteem; and 10 percent demonstrated improved "promotability."

Source

"Approaches to Assessment in Workplace Literacy Programs: Meeting the Needs of all the Clients," by Eunice N. Askov, *Journal of Reading*, April 1994.

Identified Measures

This article describes appropriate assessment instruments that should be used for various clients involved in workplace literacy.

Summary

Meeting the assessment needs of various clients within workplace literacy programs requires the use of different tools. The clients, including employees, unions, management, and providers, all have different goals and thus, different assessments should be used.

The worker wants to improve literacy skills so that they can advance to another job. The extent to which they are achieving this goal can be measured through portfolios, alternative assessments (such as reading job-related materials) and participatory approaches, where both learner and teacher plan the assessment together.

The union is mostly interested in general welfare and workforce development. Assessments geared toward union objectives include attitude scales, structured interviews, retrospective interviews, and self-rating scales.

Management is typically concerned that employees are mastering job-related basic skills which are needed to result in improved performance. Curriculum-based and criterion-based assessments (such as the Comprehensive Adult Student Assessment System) are useful in measuring worker competencies.

Providers can use job-related reading materials to assess the reading abilities of workers. Another common assessment tool includes standardized tests, such as the Tests of Adult Basic Education (TABE).

Source

"Documenting Training Effectiveness in Terms of Worker Performance and Adaptability," by Wayne Cascio, University of Colorado at Denver, 1994.

Identified Measures

The working paper outlines Kirkpatrick's (1959) four levels of criteria.

- Reaction criteria measures a trainee's feelings about the program.
- Learning criteria measures skill or concept competency or mastery.
- Behavior criteria measures how much of the learned material has been transferred to the job. A common measure of behavior is a standardized performance appraisal form (like the Behaviorally Anchored Rating Scale).
- Results criteria measure changes that result in productivity improvements. Examples include lower absenteeism, cost reduction and increased morale.

Source

"Evaluation Report of the Colorado Community College and Occupational Education System National Workplace Literacy Program Grant," Institute for the Study of Adult Literacy, Penn State, University Park, Pennsylvania.

Identified Measures

The Kirkpatrick model was used as guidance for the evaluation design. This model uses four levels of evaluation: stakeholder satisfaction, mastery of skills taught, transfer of instruction to the job, and impact on the organization.

- Stakeholder satisfaction was measured through anonymous questionnaires as well as structured interviews.
- Mastery of basic skills was measured through customized assessments.
- Transfer of learning from the classroom to the job was assessed for ESL participants through action cards, daily logs, group action and ESL conversation logs. Transfer of knowledge information was also obtained from supervisors and managers through surveys and interviews.
- The organizational impact was measured through a questionnaire for supervisors and managers. They perceived positive organizational impacts from improved worker flexibility, improved customer service, improved learning environment on the job, and improved employee retention.

In addition, questionnaires can be used to determine the following: promotability, worker feelings, worker benefits, and the supervisors' level of satisfaction with the program.

Summary

The Grant involves six front-range community colleges. Most workers are released from their job to attend training either on-the-clock or else they are paid for the time they spend in training.

This evaluation report provides data obtained through structured interviews with training directors/supervisors, learners, and project staff. In addition to interviews, the external evaluator visited classes at various sites and provided feedback on the instruction.

Source

"Power Evaluation: Level Four Evaluation That Works," by Mary Crabbe Gershwin and Virginia M. Rich, presented at the National Workplace Learning Conference, Milwaukee, Wisconsin, April 28, 1997.

Identified Measures

- Reaction, or how participants feel about the program, can be measured through smile sheets, interviews, focus groups and surveys.
- Learning, or the extent to which participants improved their knowledge, skills and/or attitudes can be measured by paper and pencil test for knowledge and attitude. A performance test can be used to test for skills.
- Behavior, or the extent to which participants' behavior changed and extent to which they transferred their knowledge back to their jobs can be measured by student reports, supervisor and instructor reports.
- A results-approach looks at final results in terms of quantity, quality, safety, sales, costs, profits, and ROI. The use of a control group is practical and cost-benefit analyses should be considered. Methods of measurement include company data, interviews, surveys, focus groups and observations.

Summary

The presentation focused on, among other things, describing the limitations of traditional program impact models and describing the key steps to developing credible and useful evaluation.

Kirkpatrick's four-level evaluation model is used. In addition to describing the levels (see above), the presenter also discusses some of the limitations of the typical evaluation models. The ROI evaluation, for example, is limited in that factors other than training may impact results. Not every result is quantifiable. Further, results take different lengths of time to appear (and disappear). Finally, having numbers does not necessarily mean the same thing as having credible and useful data.

When constructing evaluations, it is important to ask the following questions: what constitutes a meaningful impact; what do stakeholders want to know about the impact; and what information will be required?

APPENDIX D.
Vocational Rehabilitation Literature Review

Source

Veteran Benefits Administration: Focusing on Results in Vocational Rehabilitation and Education Programs (Testimony, 06/05/97, GAO/T-HEHS-97-148).

Identified Measures

The GAO reported on job placement and rehabilitation measures. A veteran is classified as rehabilitated once they find a suitable job and hold it for at least 60 days.

Summary

The GAO found that the Veteran Benefits Administration (VBA) has not emphasized its legislative mandate to find jobs for disabled veterans. It has instead focused on sending participants to training, most often in higher education. This emphasis has resulted in extremely low job placement and rehabilitation rates. In addition, the VBA has not focused on assessing program effectiveness.

In its 1996 analysis, the GAO found that 92 percent of veterans who received a plan went from the evaluation and planning phase into training programs, while 4 percent went directly into employment services phase. About 90 percent of the veterans entering training were enrolled in a university or college. Only 9 percent were enrolled in vocational/technical schools or participating in on-the-job training or other types of training programs.

The program is not effective in finding suitable jobs. In its 1996 review, the GAO found that 74,000 veterans were eligible for services between 1991 and 1995. Of those, about half were still receiving program services at the time of the GAO review (1996). Forty percent dropped out before or after receiving a plan, and only 8 percent of the eligible veterans were rehabilitated.

The GAO testified in 1997 that the VBA did not include in its strategic plan a description of how it intended to assess program effectiveness (in terms of helping veterans get and keep suitable employment). The final version of the strategic plan included results-oriented performance goals; however, it did not include any discussion about how VBA plans to measure the overall effectiveness of the program.

Source

"Vocational Rehabilitation: Opportunities to Improve Program Effectiveness" (Testimony, 02/04/98, GAO/T-HEHS-98-87).

Identified Measures

In accordance with the Results Act, the VBA has identified specific goals and measures that are primarily process-oriented with a focus on timeliness and claims processing. The performance measures used to assess progress in meeting these goals include:

- percentage of individuals who file claims for benefits but fail to pursue claims;
- average number of days required to complete processing of claims for benefits;
- percentage of veterans found to be entitled to services who go on to develop their rehabilitation plans;
- percentage of veterans who become employable and then acquire and maintain suitable employment;
- percentage of eligible participants who use their educational benefits;
- percentage of the time VBA determines correct amounts of educational assistance payments;
- average number of days required to complete processing of claims; and
- average administrative cost per program participant.

Summary

The Government Performance and Results Act of 1993 (GPRA) requires agencies to set goals, measure performance, and report on accomplishments. In short, agencies are supposed to focus on results, not just on program operations. In its 1995 strategic planning process, the VBA identified the goals and performance measures that would be used to track progress in meeting goals. The goals focused on improving efficiency, customer satisfaction and measuring program outcomes (through completion rates).

The GAO reported that most of these goals and measures are process-oriented, and the VBA needs to focus more on results-oriented goals and measures. For example, the VBA needs to measure how well it helps veterans obtain suitable employment. Another results-oriented goal would focus on the extent to which the education that was provided to the veteran would not have otherwise been available.

Source

"Vocational Rehabilitation Department Annual Accountability Report: Fiscal Year 1996-1997," South Carolina Vocational Rehabilitation Department, October 14, 1997.

Identified Measures

Basic service program. Efficiency measures include the average cost per rehabilitation and the average cost per client served. Effectiveness measures include the following:

- Rehabilitations per 100,000 population;
- Clients served per 100,000 population;
- Clients competitively employed at closure;
- Average weekly hours worked at closure;
- Average weekly wage of clients employed;
- Rehabilitated clients with earnings above poverty level;
- Rehabilitated clients with earnings above minimum wage; and
- Rehabilitated clients working more than 20 hours per week.

The second program under the SCVRD is the Disability Determination Program. The performance measures include the following:

- number of claims produced for each FTE, equal to or greater than the national average;
- cost for each claim produced at or below the national average;
- cost per case for medical services at or below the national average;
- claim processing time at or below an average of 90 days; and
- documentation accuracy of greater than 90 percent.

Summary

The mission of the South Carolina Vocational Rehabilitation Department (SCVRD) is to enable disabled South Carolinians to prepare for, achieve and maintain competitive employment. The Basic Service Program is the largest program, with program costs of over $50 million. The Disability Determination Program (at $19 million) serves individuals seeking assistance under Social Security and SSI disability programs. The Program evaluates and processes claims for total and permanent disability benefits.

The Basic Service Program placed more than 8,000 people with disabilities into competitive employment in 1996-97. The Accountability Report notes that these new taxpayers quickly pay for the state's investment in them, paying back more than three dollars for every vocational dollar spent.

The performance measures (see above) are used to compare SCVRD with the national average. The SCRVD exceeded the national averages for both the Basic Service Program and the Disability Determination Program.

APPENDIX E.
Colorado FIRST Literature Review

Source

U.S. Department of Commerce, Bureau of the Census, 1991 Current Population Survey.

Identified Measures

This study looked at workers' earnings increases over time.

Summary

An analysis of income and training data reported in the 1991 Current Population Survey found that, combined with the training required to obtain a job, formal company training programs to improve the skills of workers have more of an impact on increasing workers' earnings than does any other source of training.

While this analysis did not examine customized training in particular, it used changes in workers' earnings as a measure of job-specific training utility. (However, it appears to focus on internal company training offered to existing employees, which differs from the customized training model of training available workers to become employees.)

Source

"Accounting for Training: An Analysis of the Outcomes of California Employment Training Panel Programs," by Richard Moore, Daniel Blake and G. Michael Phillips, California State University, Northridge, School of Business Administration and Economics, July 5, 1995.

Identified Measures

The measures used in this evaluation included the following: the long-term labor market participation rates of training graduates; and the number of employers of training graduates as a measure of employment stability.

Summary

A 1995 study by California State University, Northridge, attempted to measure the labor market outcomes of 1989-1992 ETP program graduates through 1993, and to measure the impact of ETP programs on the California economy. ETP is California's equivalent of Colorado FIRST. The study made the following conclusions:

- Workers who complete ETP training are more likely to remain in the California labor market than are program dropouts or workers not involved in ETP programs.
- Workers who complete ETP training are less likely to have multiple employers in subsequent years, indicating more job stability.
- Workers who complete ETP training have larger earnings increases in subsequent years.
- The study estimated that the ETP program returns about $2.50 to $3.50 in added productivity for every dollar invested over a twelve-year payback period.

Source

"Kansas Workforce Employment and Training Programs: Do They Function as a System?" by Elizabeth Stella, Charles Krider and Anthony Redwood, Institute for Public Policy and Business Research, The University of Kansas, December 1994.

Identified Measures

The geographic distribution of training funds was the principal measure used in this evaluation.

Summary

Kansas, Inc., the public/private organization that provides economic development planning and evaluation services in Kansas, conducted a study in 1994 to assess Kansas workforce and training programs. Certain of the study's conclusions included:

- Training needs in rural areas may not be met without government assistance, and rural training may be necessary to avoid outmigration to urban centers.
- The study's analysis of existing training resources indicated that federal programs are not targeted at increasing competitiveness of firms. It concluded that the predominant emphasis of federally mandated employment and training programs is on the marginal workforce, those who are unemployed or underemployed, or out of the labor force because they are discouraged, or who are on the bubble of employment and unemployment because of skill obsolescence and other factors.
- One conclusion of the study was that the State did not have enough emphasis on training or retraining for persons already in the workforce. Kansas' equivalent of Colorado FIRST and the Existing Industries program ("KIT" and "KIR" in Kansas) were seen as the only efforts focused on needs of employers and persons currently in the workforce. The study concluded that these efforts were "woefully underfunded." Total KIT/KIR funding in FY 1994 was $2.5 million, or $1.00 per capita, equivalent to the current funding level for Colorado FIRST and the Existing Industries program in FY 1996 ($3.7 million or $0.98 per capita). Additionally, large training projects in Kansas were steered toward the State of Kansas Investment in Lifelong Learning (SKILL) Program, which provides financing for training through tax exempt, public purpose bonds issued through the Kansas Development Finance Authority. The SKILL program thus relieved the KIT/KIR program of large projects.

Source

"Are Training Subsidies for Firms Effective? - The Michigan Experience," Industrial and Labor Relations Review, July 1993, Volume 46, No. 4.

Identified Measures

The measures used in this evaluation included the impact of training funds on firms' own training investments and firms' productivity.

Summary

A 1993 study of Michigan's Job Opportunity Bank-Upgrade Program examined training efforts at companies that received grants from the program versus companies that did not receive grants. The study authors came to the following conclusions:

- Firms that did not receive grants did not increase their training, whereas firms that did receive grants offered nearly triple the training time in the year of the grant as in the years immediately preceding or following.

- Grants stimulated training investments by firms. A state investment of $6 to $7 in grants, produced an average of one hour of training at an average wage of $9 to $10 per hour.

- Firms receiving grants experienced noticeable productivity gains, both during the year of the grant and in subsequent years.

- The authors found that barriers exist to employers in providing training. The authors concluded that these barriers might include initial financing costs or the fact that employers do not have "guarantees" that trainees will remain with the firm. Either or both of these barriers could be adequate reason for government intervention.

APPENDIX F.
Background on Program Evaluation

Measurement of outcomes and evaluation of training programs have the dual objectives of assessing whether benefits of programs are worth the cost and whether certain programs can be improved. As demonstrated in this report, the outcomes measurement systems currently in place for employment training programs do not allow one to answer the first question and often limit the ability to answer the second. This makes it difficult to eliminate or redirect resources for poorly performing programs, as well as identify and expand well-performing programs.

The background on program evaluation presented in this section of the report provides the framework for assessing the outcome measures currently used and suggesting new types of measures and evaluation approaches. We begin by discussing return on investment evaluations and then turning to systems that measure programs' relative performance.

Return on Investment Analyses

Types of questions answered by return on investment analyses. Program evaluation often seeks to answer the question:

> Is the cost of a particular training program worth what the individual trainee and society get out of the program? In other words, is there a positive return on investment? Is the world (or U.S., Colorado, individual, firm ...) better off with this investment made or without the investment?

This type of analysis is helpful in identifying the programs that should be continued and those that should be discontinued or restructured to be more effective.

If this type of question can be answered, a more sophisticated set of questions emerges. For example, it is useful to ask the questions:

- If more resources were invested in a program, would the incremental returns be worth the extra cost?

- Which of several similar programs are most effective (e.g., generate the greatest return on investment), and should we redirect resources from one program to another?"

- Have changes to the program increased or decreased the return on investment?

Calculation of return on investment. A "rate of return" can be calculated as the annual benefits divided by the total cost of a program. For example, if an individual's wages increased $100 per year because of a $1,000 investment the individual made in training, and no other benefits occurred for that individual, the rate of return would be 10 percent. This example becomes more complicated when there are multiple investments at different points in time or when the benefits vary by year. Future benefits must also be discounted to a "present value" to account for the time value of money. Nevertheless, the concept of rate of return still applies.

"Return on investment" may also be a comparison of the aggregate amount of present and future benefits (discounting future benefits to today's dollars) with the total cost of training. "Net benefits" of a program can be calculated by subtracting total costs from the total benefits. "Net benefits" that are greater than zero indicate that the returns from the program exceed program costs. Net benefits that are less than zero suggest that the returns from the program fall short of program costs.

Quantification and classification of benefits. The return on investment concept assumes that all costs and benefits can be quantified in terms of dollars. This assumption may be valid when analyzing increases in wages resulting from training. However, there may be other benefits that are much more difficult to quantify in economic terms. Additionally, some benefits may be specific to an individual or group, and will not be relevant to persons outside that group. Training could be intended to reduce social costs, for example, reducing rates of crime, delinquency, illness, substance abuse and many other destructive behaviors. As LaLonde (1995) demonstrates, the value of reductions in these behaviors can be a substantial component of the net benefits associated with a training program.

Quantification of benefits. The full range of benefits of some types of training may not be easily measurable in economic terms. As an example, one component of the Adult Basic Education program is training for the attainment of U.S. citizenship. While some economic benefits may be tied to the attainment of citizenship and can be estimated, other benefits may not be so easily quantifiable. Participation in the democratic process may be a real outcome of citizenship training, but the techniques required to quantify the economic value of that benefit may be too involved for the purposes of evaluating the program on that basis. Similarly, some of the benefits of training programs relate to improvement in the

quality of life of the individual, but not income earning potential. Even though these types of benefits are not easily quantified, they should be at least qualitatively recognized in performing any type of program evaluation.

Different types of performance indicators may be needed to capture these effects. For instance, the above example may require tracking the number of new citizens rather than the dollar value of the increase in citizens, or attainment of levels of reading proficiency rather than simply the increase in earnings from improved reading skills.

Classification of benefits. In addition to "quality of life" benefits described above, other benefits may exist that are readily quantifiable, but that exist only for some subset of the parties directly involved in the training, or even for parties that are not directly involved. For example, completion of a training program and commensurate employment may make a trainee less likely to commit crimes, which represents a benefit to society as a whole but cannot be attributed to a particular person. As another example, a person who completes an English language course may teach his or her children language skills, conferring any economic advantages of the skill attainment to them. To a great extent, the decision on whether or not to include these indirect or related effects depends on the "accounting stance" used for the return on investment analysis.

Accounting stance. "Accounting stance" refers to the selection of perspective for the evaluation or return on investment calculations. The selection of accounting stance determines which types of questions can be answered. Multiple choices of accounting stance may be necessary to fully evaluate all dimensions of a single program. Choices include:

- ***Society as a whole.*** Choosing society as a whole as the accounting stance would mean that all of the benefits and all of the costs could enter the evaluation calculations. (There are certain exceptions to this described later in this section.) This accounting stance is most appropriate when determining whether the nation should invest in a particular training program.

- ***Colorado residents as a whole.*** This accounting stance differs from the "State government" accounting stance as it counts all benefits and costs accruing to residents and businesses in the state. This perspective is appropriate if the State were to examine whether training programs were worthwhile from a state-wide "societal" perspective. It differs from the "society as a whole" perspective identified above because only benefits and costs to residents and businesses within the state are recognized. Residents of the state may not pay anything extra in the short term to accept a Federally funded program. If so, any Federally funded program that generates even small benefits may be worthwhile when this accounting stance is used.

- ***Colorado State government.*** One could only count the financial benefits and expenditures for Colorado State government in the calculations. This approach differs substantially from the "Colorado residents as a whole" accounting stance. In effect, this accounting stance treats State government

as a "business" with a financial return from investing in Colorado residents' training. For example, increased earnings for Colorado residents are not counted as benefits, only State taxes collected from this increase in earnings are recognized. Likewise, any reductions in State expenditures for social programs as a result of the training program would be counted. This selection of accounting stance would be appropriate if one were interested in examining whether State expenditures on a program were offset by increased tax revenues (or reduced costs) accruing to the State. The State has a model that attempts to do just that for the Colorado FIRST program.

- *The firm.* For some types of training, the accounting stance might be the firm employing the newly trained employee. If a training program is designed to assist firms, one important perspective is the program's impact on the firm. This is the accounting stance used when individual firms decide whether to provide training to employees.

- *Trainee.* Finally, the accounting stance could be the individual trainee. This choice of accounting stance would be appropriate for determining whether the increase in job opportunities and wages for the individual was worth his or her investment of time and perhaps money for a training program.

The selection of accounting stance affects the types of benefits and costs to be included in a return on investment analysis. If the accounting stance is the treasury of the State of Colorado, benefits might be limited to additional tax dollars collected or any decreases in costs of social services that occur as a result of the training. Continuing with this example, this assessment of return to the State Treasury would need to recognize the fact that some of the individuals trained may move to other states after the training and not contribute to the tax base of the State.

For the purposes of this study, the accounting stance for the analysis of the five programs described in Sections III through VII is a societal accounting stance, assuming that broader societal costs and benefits are of interest, but focused primarily on the impact of the program on its prime beneficiaries. Governmental fiscal return on investment is also examined (i.e., does the program produce a net decrease in governmental expenditures versus revenues?) In many instances, it is necessary to examine the effects of the program on the clients (individuals or firms) as a preliminary step in defining fiscal return on investment.

Accounting stance is a very important concept that explains why certain groups may enter training programs (or administer training programs) that research may have found to generate a negative return on investment from a societal perspective. If there is no cost to the individual, the individual may enter a training program even though he or she may have very low expectations of the increase in job prospects or wages. Because the investment may be zero for the individual, any returns generate net positive benefits. (This assumes that there is no opportunity cost to the individual for his or her time invested in training.) Similarly, states may administer Federally funded programs that produce net negative social benefits because these programs are "free" from the perspective of the states.

Quantification and classification of costs. When calculating return on investment, the same quantification and classification issues discussed for program benefits arise for the costs of the training. Some costs may be difficult to measure in economic terms, and other costs may be dependent on the accounting stance of the analysis. One of the costs recognized in an assessment of return on investment is the direct cost of providing the training. However, this cost is not included if it is paid by a group outside the perspective of the particular accounting stance. If the accounting stance is the State Treasury and the program is entirely Federally funded, there may be no cost from the perspective of the State. In this case, Federally funded programs that generate any benefits to Colorado residents and to the State Treasury are beneficial to the State Treasury.

Depending upon the accounting stance, costs may also include any wages given up by the individual to undertake the training. Whether any stipends paid to the individual trainee are counted as a cost also depends upon the accounting stance. (If the perspective is society as a whole, stipends are usually not treated as a cost but rather a simple transfer of wealth from one part of society to another.)

"With and without" comparisons. The outcomes of any program can only be examined if one compares what occurred with the program versus what would have occurred without the program. For costs, this assessment is usually very straightforward. The cost of training is incurred with the program and not incurred without the program.

For benefits, the "with and without" comparisons can be very complicated. Not all of the increases in employability and wages of a trainee may be due to the training. If the individual had not entered a training program, he or she might have obtained a job where other opportunities for skills enhancement were present. The key question would be whether the training program led to better jobs and wages compared to what would have happened if the trainees had not entered the program. The following hypothetical example illustrates this process:

- Assume that 200 people wanted to enter a training program, but there were only funds to train 100. The program administrator flipped a coin to see who would enter the program and who would not (this almost never happens which defines why this is a hypothetical example).

- The program administrator collects information on employment status and wages for all 200 program applicants.

- Two years later, the program administrator collects information on employment status and wages for the 100 individuals who went through training and the 100 who did not.

- Assume that the unemployment rate of the group that went through the training dropped by 5 percentage points after the training and that average wages were $16,000 a year, $1,000 higher than the $15,000 in annual wages prior to training. The training cost $2,000 per participant.

Many evaluations of training programs stop at this point. Evaluators would calculate return on investment as the value of the increase in employment after the training (5 percent times average annual wages of $16,000 or $800 plus the $1,000 increase in annual wages for those who were previously employed). This yields a 90 percent annual return on investment when annual benefits are divided by the program cost, high by anyone's standards. (This example assumes that the increases in employability and wages continue indefinitely.)

The above assessment of return on investment could wildly miss the mark, however, because it did not compare the group that went through training with the group that did not. The results change if a "with and without" analysis is conducted:

- Assume for this example that the unemployment rate of individuals who did not enter training also decreased by 5 percentage points. The return on investment calculation would then need to ignore as a benefit the decrease in unemployment of those entering the training program, because that did not appear to be attributable to the program.

- Also assume that wages increased by $900 per year. The increase in earnings due to the training would then only be $100 per year in this example. Therefore, the simplified return on investment calculation would be $100 in increased wages divided by a program cost of $2,000, or 5 percent.

Analytical techniques. There are two analytical techniques that answer "with and without" types of questions:

- Experiments

- Econometric analyses

Sometimes, neither of these approaches is possible. In these cases, "counterfactual interviews" may provide some insights into "with and without" types of questions.

Experiments. The experimental approach requires random assignment of individuals to "treatment" and "control" groups.

A common example of this type of study is testing the effectiveness of new drugs. Participants in the experiment are randomly assigned to take a new drug or a "placebo." The placebo may be a sugar pill that looks the same as the drug. These trials may be "double blind" where the staff collecting outcomes information for the participants may not know who is taking the new drug and who is taking a placebo. The effect of the drug is based upon a comparison of the response of those taking the drug to those taking the placebo. This assessment design results in estimates of net effects for the drug that are different from "before and after" analyses of individuals using a new drug. This is because the group using the placebo usually reports some improvement in medical condition. The control group also reports some level of side effects from the placebo.

Of course, assessment of training programs cannot be as pure in design as medical trials.

- Opportunities to randomize are hard to come by. Randomization may be unethical because it arbitrarily denies treatment to members of the control group who may be more deserving than some members of the treatment group.

- Assignments to treatment and control groups may be manipulated by administrators (consciously or not), creating "contamination bias."

- Individuals assigned to control groups may nevertheless gain access to the program, leading to "crossover bias."

- Individuals assigned to control groups may obtain similar training through other programs or private initiatives, creating "substitution bias."

- Programs that involve several sequences of events (e.g., selection, evaluation, different training paths, etc.) may only exhibit truly random treatment versus control groups at the entry point to training and not beyond.

These issues become much more complex if multiple outcomes are of interest. Different randomization designs are necessary to evaluate different outcomes such as wages or unemployment.

Finally, experiments may not be able to answer the question of how program costs and benefits would change if programs expanded or contracted.

Econometric analyses. Econometric studies compare program participants to a statistically defined "comparison group" of individuals who did not participate in training. While experimental techniques control for the problem of selection bias and other selection issues by randomly assigning individuals to a treatment or non-treatment group, econometrics addresses this problem through intensive data collection and advanced statistical techniques.

Using multi-variate regression analysis, econometric studies attempt to statistically model all of the important characteristics of individuals (e.g., age, education) that would lead them to experience different employment outcomes (e.g., wage levels, employment status). Ideally, if all of the other factors that can explain differences between program participants and non-participants are controlled for, the researcher can isolate the effect of the training program. Outcomes not pertaining to employment can be examined this way as well.

Not only do these studies require a relatively large number of participants and non-participants to be included in the models, they also demand a large quantity of data on the important characteristics of individual participants and non-participants. Even the most sophisticated econometric studies cannot offer the general guarantee of comparability between participants and non-participants that is available from a properly randomized experiment.

Some econometric studies necessarily define the control group as the treatment group before treatment occurs. For example, if national legislation raised the legal drinking age for all states, there would be no valid control group. The studies would be required to statistically control for other changes that occurred before and after the change in drinking legislation in order to isolate the effect of the new law.

Counterfactual interviews. Sometimes it is not possible to perform experiments or econometric studies to determine the effect of a particular program. One approach that remains is to interview program participants to obtain their perceptions of what changed because of the program. Carefully constructed questions would probe the issue of "if the program had not existed, what would you have done...." In essence, this type of study is a qualitative "with and without" analysis that depends upon the ability of the program participant to accurately assess and reveal what life would be like without participation in the training.

These techniques are subject to numerous problems such as lack of knowledge on the part of the person interviewed and/or incentives for the individual to over or under-state the effects of a program. Nevertheless, carefully constructed studies may provide some insights into the effect of a program. It is possible to make return on investment estimates based upon these studies.

Tannenwald (1982), for example, demonstrates how these comparisons might be improved through the explicit introduction of the necessary causal links. He improves on the simple before-after comparison by asking employers to specifically identify employment changes that occurred as a consequence of the training program he evaluates. The obvious and important weakness of this design is that there is little incentive for program participants to answer such questions honestly. If they have any reason to suspect that their answers might be used in an evaluation of the program, or worse, of their participation, they have every incentive to overstate the program's impact.

Other research approaches. Although not explicitly answering the "with and without" question, some insights into the return on investment from a program can be gleaned from collecting pre- and post-training data for individuals participating in training. These data may be particularly useful when other information suggests that, without the training, the employment situation for the individual would be the same as before entering training.

Summary of approaches to examining return on investment. Three research approaches can be used to examine "with and without" questions necessary to calculate return on any investment in training:

- experiments,
- econometric analyses, and
- counterfactual interviews.

In some cases, pre- and post-training data on employment and wages for the individual trainee may also yield some insights into return on investment.

As the balance of this report demonstrates, none of the programs studied includes "with and without" comparisons as part of the outcomes analyses conducted by program administrators at the State or local levels. At best, they only provide pre-and post-training data for trainees.

This is not surprising, especially at the State and local levels. There are important limitations to each of these approaches.

First, it may be difficult to detect benefits from many training programs because they are relatively limited in scope and would presumably produce relatively small benefits per participant. It is easy for other factors contributing to changes in employment status and wages are to swamp the effects of training programs. The most widely accepted estimates of the value of an additional year of education range from 6 to 8 percent of annual income. As an example, a year of education might reasonably be expected to increase an annual income of $20,000 by between $1,200 and $1,600. Many training programs do not provide the equivalent of a year of schooling. Therefore, it is unrealistic to expect most training to increase trainee annual incomes by this amount. Small effects from any type of program are often difficult to detect through any of the three evaluation approaches described above, especially if the data set is relatively small or the other effects are relatively large.

Further, the demands of a well-designed experiment or econometric analysis are large. Randomization of selection for the program may simply not be possible, thereby eliminating experiments as an evaluation option. Econometric analyses require large amounts of information on program participants and non-participants. Therefore, these evaluations usually are not appropriate for local program administrators to design. Most studies using these techniques have taken place at the national level or across several states. The role of the local program administrator in these studies is to execute the experiment and/or collect data for participants and non-participants.

Systems that Measure Programs' Relative Performance

Another type of performance evaluation generally cannot answer the types of questions presented above, but simply tries to determine whether programs meet a certain "standard," whether some groups administer the program better than others, or whether the performance of programs is improving or declining. The types of performance measures used for most of the programs studied in this report generally fall into this category.

- Pre- and post-training data for trainees
- Comparison of post-training data with benchmarks
- process or output data

Pre- and post-training data. Training program administrators sometimes collect information from training applicants before training begins that can be compared with data collected some time after program completion. For example, post-training data are

collected 13 months after completion of training for some training programs and 24 months after for others. Changes in employment status (e.g., percentage of individuals currently employed), changes in wages and changes in other indicators (e.g., percentage of individuals obtaining public assistance) are calculated from these pre- and post-training data.

With the major assumption that any changes in these performance indicators are a direct result of training, one can determine whether the individual trainee, the State of Colorado and/or society are better off after the training. As discussed above, this assumption may not be valid. A return on investment calculation may be misleading if there is no attempt to conduct a "with and without" analysis.

Analysis of pre- and post-training data may also be useful to examine the following types of questions:

- Is performance of the program improving relative to previous years?
- Is one organization implementing the program more effectively than other organizations?
- Has a change in the program improved its effectiveness?

It is necessary to assume that other conditions are constant in order to answer these questions solely from data collected on trainees. For example, overall labor market conditions may be improving, leading to better performance indices for a training program. Attributing the increase in performance measures to better implementation of the program may be misleading. These same issues apply when comparing implementation of the program across organizations.

Comparison of post-training data with benchmarks. Some training programs do not collect data on trainees prior to entering training. In some instances, such data collection is impractical or nonsensical. For example, collecting employment status and wage levels for fifteen year-olds entering high school vocational education programs may not provide any meaningful information in making post-training comparisons for these students. Nevertheless, post-training data can still be useful when comparing performance of programs over time or between different organizations implementing the program. Often, the State of Colorado or a local training provider must compare themselves to national standards based on post-training data.

All of the limitations of pre- and post-training data discussed previously also apply here.

Data on program processes or output. Some performance measures track the "volume" or "output" of a training program. Number of trainees that successfully complete the training program is the most common example of an output measure of relative performance. When examined alone, these types of data are generally the least useful when assessing relative performance or value of training programs.

Summary

In descending order of value, methods of evaluating training programs include:

1. Experiments
2. Econometric analyses
3. Counterfactual interviews
4. Collection and analysis of pre- and post-training data
5. Collection and analysis of post-training data compared with benchmarks
6. Collection and analysis of process or output data

Only the first three methods are usually appropriate for determining return on investment. Other approaches may provide some information to evaluate relative performance of programs among different organizations or over time.

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