

# ▼ **A Cost-Benefit Analysis of the Employment of People with Disabilities in Florida: Final Report**

## ▼ **Prepared for:**

The Able Trust

## **Prepared by:**

Derek E. Hemenway, M.S.

Faranak Rohani, Ph.D.

Assessment & Evaluation

The Educational Services Program

Florida State University

251 Sliger Building

Tallahassee, Florida 32306-2800

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## EXECUTIVE SUMMARY

In July 1999, The Able Trust contracted with Educational Services Program of Florida State University to conduct a cost-benefit analysis of employment for individuals with disabilities in Florida. Data for the study were obtained from the Florida Division of Vocational Rehabilitation, the Social Security Administration, and the Florida Agency for Health Care Administration. Estimated costs and benefits of vocational rehabilitation services were based on an analysis of 29,475 individuals who had participated in Florida's vocational rehabilitation program and had been closed from the program during the federal fiscal year of 1998, with 9,598 of that total having closed with a successful employment outcome. Some highlights of the study follow.

*What is the cost of unemployment for persons with disabilities?*

The cost of unemployment for Floridians with disabilities was estimated at \$8.1–\$10.5 billion annually. This estimate includes annual costs of approximately \$2.6–\$5 billion in lost productivity, \$3.9 billion in Social Security payments, and \$1.6 billion in public funds spent on health care and medical services for Floridians with disabilities.

*What is the cost of vocational rehabilitation services for persons with disabilities? What is the cost of placing and maintaining persons with disabilities in employment?*

The average costs of vocational rehabilitation services were estimated at \$1,895 for purchased services; \$826 for counseling, guidance, and placement; \$196 for administrative expenses for a total of \$2,917 per closed case; or a total cost for 29,475 closed cases of \$86 million. The average cost of placing and maintaining clients in employment was estimated at \$5,010 per case for a total cost for 9,598 rehabilitated clients of \$48 million. Total program

expenditures of Florida's vocational rehabilitation program were reported at over \$115 million in FY 1998.

*What are the benefits of vocational rehabilitation services for persons with disabilities?*

Overall, clients of the vocational rehabilitation system whose cases were closed during FY 1998 (N=29,475) had an average increase in annual earnings of \$3,011 over their reported earnings at the time of application to the program, or a total increase in earnings of \$88.8 million. Among these, clients who completed program services and obtained successful employment outcomes (N=9,598) gained an average of \$10,407 in annual earnings over preprogram earnings, earning an estimated total of \$126,958,364 in annual earnings in FY 1998.

Benefits to the public sector included reduced public assistance use and increased tax contributions. Public assistance payments decreased among all vocational rehabilitation clients in closed cases by about \$15 monthly per case, or by an annualized \$179 per case for a total of \$5.3 million in FY 1998. The reduction in administrative costs associated with administering public assistance payments was estimated as 10% of the total reduction in public assistance payments, equaling about \$18 per case or almost than \$527,000 in FY 1998. The average annual increase in state and federal tax contributions among all clients in closed cases was estimated at 23% of the increase in earnings, equal to about \$693 per case or an increase of over \$20.4 million in FY 1998.<sup>1</sup> The longevity of benefits was also estimated, since benefits will continue to accrue over the work life of clients. Based on the initial earnings gain of \$3,011, for example, over a 30-year work life, the average increase in earnings for clients in closed cases is estimated

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<sup>1</sup>The percentages used in estimating the reductions administration costs of public assistance and increased tax contributions are commonly used in cost-benefit studies of vocational rehabilitation programs (Sav, 1989; Zilovich, Shueman, & Weiner, 1997).

at \$46,291 more than the total amount they might have made over their work life had they not received services.<sup>2</sup>

#### Average Costs and Benefits of Vocational Rehabilitation in Florida, FY 1998

Category		
<u>Costs</u>	<u>Annual</u>	
Case services	\$1,895	
Counseling, guidance, and placement	\$826	
Administrative	\$196	
Total average cost	\$2,917	
<u>Benefits</u>	<u>Annual</u>	<u>30-Year Work Life</u>
Increased earnings	\$3,011	\$46,291
Increased tax contributions	\$693	\$10,647
Reductions in public assistance use	\$179	\$2,747
Reductions in public assistance costs	\$18	\$275

In calculating a benefit-cost ratio, costs and benefits were analyzed from the perspective of society.<sup>3</sup> The results of the analysis indicate that for every dollar spent on vocational rehabilitation services, 16 dollars are returned to society. Benefits to the public sector include reduced public assistance use and increased tax contributions, as well as increased consumer spending and economic stimulation resulting from increased earnings of program participants. Thus, federally funded vocational rehabilitation services provide significant benefits to society at a nominal cost to Florida taxpayers.

<sup>2</sup>Present values of estimated work-life benefits were calculated using a 5% discount rate.

<sup>3</sup>All estimated costs were included in calculating a benefit-cost ratio since they are costs borne by society, while benefits included earnings gains and reductions in public assistance costs over the work life of clients. Reductions in public assistance use and increased tax contributions were not included in calculating the ratio since they are a loss of income for participants of the program although they benefit the public sector.

## INTRODUCTION

The number of Americans with disabilities has increased dramatically over the last several years. Almost one in five Americans<sup>4</sup> and more than 10% of all Floridians has a disability.<sup>5</sup> Individuals with disabilities, however, continue to have lower employment rates and lower incomes. More than 80% of Americans between the ages of 21 and 64 with no disability are employed, while 77% of those with a disability and only 26% of those with a severe disability are employed.<sup>6</sup> Providing services to help find jobs for individuals with disabilities continues to be a priority for public and private disability advocacy organizations.

The state of Florida has traditionally designated its federally funded vocational rehabilitation program as responsible for providing employment-related services to individuals with disabilities. During the last decade, greater public interest in the welfare of individuals with disabilities has led to the establishment of public/private and nonprofit organizations to assist them in achieving employment. One such organization, The Able Trust, has provided funding and employment-related services for individuals with disabilities in Florida since its 1990 inception by the Florida Legislature.

### ***Purpose of the Study***

In December 1998, The Able Trust published the results of a study conducted by Oppenheim Research, aimed toward developing a database on Floridians with disabilities. One of its findings was that disability data in Florida is out of date and incomplete.<sup>7</sup> The report also posed the following question: “*What is the potential savings and economic benefit to Florida*

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<sup>4</sup>See LaPlante & Carlson, 1996; Kraus, Stoddard, & Gilmartin, 1996; McNeil, 1997.

<sup>5</sup>United States Bureau of the Census, 1990, 1999a.

<sup>6</sup>Stoddard, Jans, Ripple, & Kraus, 1998.

<sup>7</sup>See Hemenway, King, & Rohani, 1998.

*taxpayers if working age persons with disabilities do receive [vocational rehabilitation] services and benefits in terms of an employment outcome?”*

In July 1999, The Able Trust contracted with the Educational Services Program of Florida State University to conduct a cost-benefit analysis of employment for Floridians with disabilities, given the limitations of the available data. The goal of this study is to analyze and publicize the cost-benefits derived from the vocational rehabilitation and employment of people with disabilities. This study addresses both the general question addressed by the Oppenheim report and the following specific questions:

- 1. What are the costs of unemployment of persons with disabilities?**
- 2. What are the costs of vocational rehabilitation services for persons with disabilities?**
- 3. What are the costs of placing and maintaining persons with disabilities in employment?**
- 4. What are the earnings benefits and other benefits of vocational rehabilitation services for persons with disabilities?**

The population examined in this study includes both employed and unemployed working-age (16–64) individuals with disabilities in Florida. Costs and benefits include primarily those to federal, state, and municipal governments, in terms of public funds used or saved, and are projected for a 30-year period.



## BACKGROUND

Cost-benefit analysis has long been a part of public program evaluation. As early as the 1920s, the federal government was evaluating public programs using techniques derived from the field of economics. Although cost-benefit analysis is often associated with other types of economic evaluation, it mainly refers to the comparison of a program's monetary costs and benefits in order to determine its efficiency, i.e., to determine if its benefits are greater than its costs, or to compare it to other alternative uses of resources. It is beyond the scope of this report to present an extended discussion of cost-benefit methodology.<sup>8</sup> However, its theory, concepts, and techniques are briefly outlined.

Cost-benefit analysis is based on several economic concepts. The rationale for its use centers on the need for government intervention in the free-market model when it fails to sustain conditions of *perfect competition*. Perfect, or pure, competition refers to the free-market system reaching an ideal state in which nothing else can be done to the market (i.e., reallocating or redistributing resources, goods, or services) to make someone better off without making someone else worse off.<sup>9</sup> When the conditions of perfect competition hold, the free-market system is thought to be efficient, or the most effective, for balancing supply and demand and reflecting the desires of producers and consumers. However, there are no means inherent in the market system that can ensure that resources, goods, or services will be distributed equitably without being influenced by the wealth or income of buyers or sellers. The free-market model suggests that government intervention is necessary under market failure when conditions of perfect

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<sup>8</sup>For more information on cost-benefit analysis, see Gramlich (1981) and Thompson (1980).

<sup>9</sup>This state is commonly known as "Pareto efficiency" in the terminology of economics.

competition do not hold or when the market system fails to distribute resources equitably. The economic rationale for the evaluation of public programs, then, is to determine the most efficient alternatives for government intervention in the form of policies or programs when they are needed to move the market back toward the state of perfect competition.

Cost-benefit analysis also derives its name from economics. The terms “cost” and “benefit” have somewhat different meanings when used by economists than they do when commonly used. Economists generally view costs as “the measure of value a society places on the use of its resources” (Klees & Wells, 1978). Economists distinguish between different types of costs. A general economic meaning of cost that underlies much of economic analysis is the concept of *opportunity cost*, which refers to the resources used (the opportunities foregone or sacrificed) in choosing a certain use for a resource. Another cost concept used in this study refers to the difference between private and social costs or benefits; that is, costs borne by or benefits accruing to individual participants as compared to those of all members of society. In between private and social costs or benefits are costs borne by or benefits accruing to taxpayers and government.

Benefits refer to the utility of the outcomes of the project to which resources were allocated. Although benefits are typically conceived of in monetary terms, the economic meaning of benefits (and of costs) is not limited to only those benefits that can be given a monetary value. Costs and benefits also include a distinction between monetary or tangible costs and benefits, and nonmonetary or intangible costs and benefits. At an individual level, for example, nonmonetary benefits might include factors such as increased well-being or knowledge gained by program participants, while nonmonetary costs might include loss of free time due to program participation. Finally, if the length of time of a program is a factor in an analysis, both

costs and benefits must be adjusted, or discounted, to reflect the true present and future costs and benefits of the program.

Cost-benefit analysis and other economic research methods have been used to evaluate employment programs for individuals with disabilities since the 1920s. Early cost-benefit studies conducted by the federal vocational rehabilitation program generally maintained a 10-to-1 ratio of benefits to costs (Berkowitz, 1988). It was not until the 1960s and 1970s that economists and social scientists began to look at the vocational rehabilitation program more closely (Conley, 1969, 1973, 1975; Bellante, 1971; Noble, 1977).

Conley (1969) established the basic model for cost-benefit analysis in evaluating vocational rehabilitation programs by analyzing cost and earnings data obtained from the “R-300” databases at the federal Rehabilitation Services Administration (RSA). A similar study by Bellante (1971) was conducted on Florida’s vocational rehabilitation system. These basic models assess costs and benefits primarily from the R-300 data and other data obtained from the federal RSA or state-level vocational rehabilitation agencies. Costs included reported figures for case services and overhead. Benefits included the difference between preprogram and postprogram earnings, increased tax contributions, and reductions in public-assistance payments and costs. These types of analyses also controlled for a variety of demographic and disability-related variables to arrive at cost-benefit estimates for specific groups.

Later studies in the 1970s and 1980s built upon the models developed by Conley (1969) and others while simultaneously attempting to address the shortcomings of those analyses. Collingnon (1988) illustrates the use of such cost-benefit models used in state-level evaluation. During this period researchers used a wide variety of approaches, assumptions, and data; yet most studies consistently found high benefits-to-costs ratios. However, such studies still

contained weaknesses and inaccuracies in earnings and cost data. Researchers increasingly began to question the use of or the reliance upon cost-benefit methodology in evaluating vocational rehabilitation programs. Noble (1977) presents a comprehensive summary and critique of cost-benefit analyses of vocational rehabilitation. Since this period, the number of cost-benefit studies of vocational rehabilitation programs has decreased somewhat.

Several researchers have attempted to address the shortcomings of the existing cost-benefit models. Dean and Dolan (1987, 1991) developed techniques to address the deficiencies found in the available economic data on vocational rehabilitation services, such as using comparison or control groups, using longitudinal earnings data, and enhancing cost and earnings data through the use of augmented databases. Misra, Bua-lam, and Majumder (1992) designed a study using work-life expectancy tables to more accurately estimate the long-term earnings of vocational rehabilitation clients. Despite the variety of methods, most studies—even those using conservative methods—have typically found greater benefits than costs (Rhodes, Ramsing, & Hill, 1987).

During the 1980s, several cost-benefit studies of supported employment programs were conducted. A number of these studies were examined and summarized by Noble and Conley (1987). Many studies using similar strategies in estimating costs and benefits found that low initial benefits-to-costs ratios for supported employment programs gradually increased over time (Hill, Wehman, Kregel, Banks, & Metzler, 1987; Conley, Rusch, McCaughrin, & Tines, 1989; Zilovich, Shueman, & Weiner, 1997). Sav (1989) presents a simplified methodology used in cost-benefit analyses of transitional and supported employment programs (see also Rogers, Sciarappa, MacDonald-Wilson, & Danley, 1995). As with the Conley (1969) model, cost-benefit studies of supported employment typically include costs such as overhead,

administrative, and other program costs, while benefits include increased earnings, increased tax contributions, and reductions in public assistance use. Benefits in supported employment cost-benefit studies also often include reductions in alternative programs costs.

This cost-benefit analysis of employment for Floridians with disabilities is based generally on the models previously discussed. Specifically, it borrows from the methodology used by Bellante (1971), Gibbs (1988), Sav (1989), and Misra et al. (1992). The next sections detail the data, methods, and estimates of costs of unemployment, costs of vocational rehabilitation services, and benefits of services and employment for Floridians with disabilities.

## METHODS AND FINDINGS

This section describes the methods used to calculate costs and benefits and findings in response to the research questions. Both average and total findings are reported. Results of the cost-benefit analysis are reported in the *Analysis of Costs and Benefits* section. Impacts of costs and benefits and limitations to the study are examined in the final section titled *Discussion*.

### **Data**

This study relied on data from a variety of sources. Data from the Social Security Administration and from the Florida Agency for Health Care Administration were used in estimating the costs of unemployment. Data on disability populations were obtained from the U.S. Bureau of the Census and other sources.

The primary data used in estimating the costs and benefits of vocational rehabilitation were obtained from a summary of the R-911 statistics report annually submitted by the Florida Division of Vocational Rehabilitation (DVR) to the RSA. R-911 databases contain data on individuals who were clients of a state's vocational rehabilitation system during each federal fiscal year. The data used in this study were for federal Fiscal Year (FY) 1998, the most recent fiscal year available. The R-911 form replaces the R-300 data commonly used previously in cost-benefit studies, as discussed in the previous section. A total of 29,475 clients were closed from Florida's vocational rehabilitation program in FY 1998.<sup>10</sup> Among these clients, a total of

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<sup>10</sup>The closure of a case refers to the termination of services for a client due to a variety of reasons including ineligibility, death, relocation, inability to locate, or rehabilitation. A case closed as rehabilitated indicates that a client completed his or her service plan with a positive employment outcome.

9,598 were closed as rehabilitated. Most clients were receiving some form of public assistance at the time of entry into the program, and most reduced their use of public assistance funds by the time of closure. Other data on vocational rehabilitation costs were obtained from expenditure reports from the DVR. Table 1 below depicts background characteristics of clients from the R-911 data set.

**Table 1: Employment and Income Status of Clients in Closed Cases (N=29,475)**

	At Application	At Closure
Monthly Public Support	\$3,105,918	\$2,666,965
Weekly Earnings	\$734,570	\$2,441,507
Competitive Employment	3,303	9,413

## ***Research Questions***

### **1. What are the costs of unemployment of persons with disabilities?**

The cost to society of the unemployment of persons with disabilities can be seen as an opportunity cost that consists of the foregone or sacrificed productivity (lost output) of each individual as a result of his or her disability. Bellante (1971) estimated the cost of unemployment in Florida as lost output. Bellante began calculating lost output by first determining the number of individuals with disabilities eligible for vocational rehabilitation services. He then calculated lost output as a function of both the number of individuals with disabilities who are eligible for vocational rehabilitation services and the difference between total earnings at closure (the earnings of those who had received rehabilitation) and total earnings at acceptance (the earnings for individuals who had not received rehabilitation) (p. 35).

Bellante's method can be adapted in this study to estimate the cost of lost output and the resulting cost of unemployment. The total number of Floridians aged 16–64 potentially eligible for vocational rehabilitation services but not served was estimated to be 230,000 in 1990, out of a population potentially eligible for services of over 600,000 (Hemenway, King, & Rohani, 1998,

p. 28). The R-911 summary reported overall average annual earnings among clients who completed services with a positive employment outcome to be \$2,820 at the time of application and \$13,227 after closure. Using these figures, the lost output attributable to unemployment is approximately \$2.4 billion  $[230,000 \times (\$13,227 - \$2,820)]$ . With a current estimated population of about 1.5 million Floridians with disabilities, however, the number of Floridians eligible for but not receiving vocational rehabilitation services is most likely greater than 230,000, with a resulting higher rate of lost output. For example, if 500,000 Floridians were eligible for but not receiving vocational rehabilitation services, the resulting lost output would be over \$5 billion.

Many individuals with disabilities rely on Social Security benefits as their primary source of income.<sup>11</sup> Data from the Social Security Administration (1999) indicate that 281,910 disabled workers in Florida received benefits under the Disability Insurance program (SSDI) in December 1998. Disabled workers receiving benefits under this program received an average of \$739 a month. Total SSDI payments to disabled workers and their dependents in Florida were \$228 million in December 1998. An estimated 266,325 disabled and blind Floridians received benefits under the Supplemental Security Income (SSI) program in December 1998, with an average payment of \$359. SSI payments to disabled and blind Floridians, therefore, are approximately \$95.6 million. Thus, costs of Social Security benefits to Floridians with disabilities and/or their dependents were approximately \$323 million in December 1998. This gives an estimated annual cost of SSI and SSDI programs for individuals with disabilities in Florida of \$3.9 billion.

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<sup>11</sup>In this analysis, the costs of Social Security disability payments were limited to working-age individuals with disabilities; however, it should be noted that the majority of recipients of disability assistance benefits continue to receive Social Security benefits under the retirement program after they pass the age of 65 (Hennessey, Muller, & Scott, 1995).



Trupin, Rice, and Max (1995) examined the costs of medical services for Americans with disabilities. They estimated that medical expenditures for people with disabilities were almost \$283 billion in 1993, and that per capita expenditures were over four times as much for people with disabilities than for those without. They also found that working-age people (18–64) with disabilities have *over a third* (37%) of their health care costs paid by Medicare (9%), Medicaid (16%), and other public sources (12%), compared to only 11% of persons with no disability. Per capita medical expenditures for working-age individuals with disabilities (18–64) averaged \$4,238 for persons with disabilities but only \$1,099 for persons with no disability. Thus, for each working-age individual with a disability, an estimated average of \$1,568 dollars of public funds was spent in medical costs. Current population projections indicate that individuals 16 to 64 years old make up about 60% of Florida’s population, while in 1990 they accounted for about 75% (U.S. Bureau of the Census, 1990, 1999b). If it is assumed that about 65% of Floridians with disabilities are of working age, or approximately 1 million individuals, then a conservative estimate of \$1.6 billion in public funds annually are spent to provide medical and health care to eligible Floridians with disabilities. This can be compared with total public expenditures on health care annually in Florida of around \$20 billion and overall public and private costs annually in Florida of about \$50 billion (Agency for Health Care Administration, 1998). Max, Rice, and Trupin (1995), however, estimated that nationally individuals with disabilities account for nearly half of medical expenditures. This suggests that public funds spent on medical costs for individuals with disabilities in Florida are much greater.

If the above estimates are added, a total estimated cost range of unemployment for Floridians with disabilities is from \$8.1 to \$10.5 billion. Table 2 illustrates the costs of unemployment of Floridians with disabilities. These estimates appear to be consistent with other

estimates of the costs of disability. The overall costs of disability nationally have been estimated to be in the hundreds of billions of dollars. For example, Berkowitz and Greene (1989) estimated the national costs of disability for working-age adults with disabilities at \$169.4 billion in 1986. This figure included expenditures for both public and private medical programs (such as Medicare, Medicaid, and private health insurance), transfer payments (such as Social Security), and direct service expenditures (such as for rehabilitative services or employment assistance). More recently, Max et al. (1995) estimated medical expenditures for people with disabilities nationally to be \$282.8 billion in 1993. *It should be kept in mind, however, that the bulk of the costs of public programs such as Social Security or Medicaid and Medicare for individuals with disabilities is borne by the federal government.*

**Table 2: Estimated Annual Costs of Unemployment for Floridians with Disabilities**

<i>Category</i>	<i>Estimated Cost</i>
Lost output resulting from unemployment	\$2.6–\$5+ billion
Social Security payments	\$3.9 billion
Medical payments (public)	\$1.6 billion (\$1,568 per person)
Total	\$8.1–\$10.5 billion

## **2. What are the costs of vocational rehabilitation services for persons with disabilities?**

Vocational rehabilitation program costs were calculated using cost figures available from the FY 1998 R-911 summary and from reports on FY 1998 expenditures for Florida's vocational rehabilitation program. Based on the available cost data, average and total costs were estimated for closed cases. Costs reported on the R-911 summary were only for the cost of purchased services and did not include in-house overhead costs such as counseling, placement, and administration. Costs for these categories were estimated using data from expenditure reports.

Expenditures for Florida's vocational rehabilitation program were \$115,740,909 in FY 1998. During that period, the program served a grand total of 66,808 clients whose statuses included application, evaluation, and planning; those actively receiving services; and those

whose cases were closed by the end of the year. Thus, an overall average expenditure per client could be estimated at \$1,732. This figure, however, underestimates the actual average cost for closed cases, since costs increase as a client advances through the program. The average cost for closed cases, then, is best estimated by calculating average expenditures for each cost category and then summing the categories to obtain an estimated total average cost. A total of 29,475 cases were closed during the same year, with 9,598 closures that resulted in positive employment outcomes. According to R-911 data, over \$55 million were spent on purchased services for closed cases. According to FY 1998 expenditure data, over \$33 million were spent on in-house counseling, guidance, and placement services for 40,331 clients, and more than \$13 million were spent on administrative costs overall for 66,808 clients. If averages are calculated for each category and summed, the average cost of each closed case can be estimated at \$2,917, with total costs for closed cases at almost \$86 million. Table 3 illustrates such cost estimates.

**Table 3: Estimated Average Cost of Closed Cases**

<b>Cost category</b>		<b>Average cost</b>
a. average cost of purchased services	\$55,848,162 / 29,475	\$1,894.76
b. average cost of counseling, guidance, and placement	\$33,319,785 / 40,331	\$826.16
c. average administrative cost	\$13,098,546 / 66,808	\$196.06
d. estimated average cost of closed case	(a+b+c)	\$2,916.98

While public assistance payments (transfer payments) were included as a cost of unemployment, they were not counted as a cost of vocational rehabilitation programs. Income support or medical care programs available to individuals with disabilities, such as SSI, SSDI, and Medicaid, should not be counted as costs of vocational rehabilitation since they do not represent expenditures directly incurred as a result of providing services (Greenberg & Appenzeller, 1998). Moreover, Conley et al. (1989) pointed out that the government would incur these costs whether or not vocational rehabilitation programs were available.

Other opportunity costs not included in this analysis should also be noted. For individuals who are able to work, the loss of any potential earnings due to participating in a vocational rehabilitation program would be an opportunity cost from the participants' perspective. Also, the resources that are not available for other programs or services because of allocating them to vocational rehabilitation services can be thought of as an opportunity cost.

### **3. What are the costs of placing and maintaining persons with disabilities in employment?**

Of the total closed cases in FY 1998, only those closed as rehabilitated had positive employment outcomes at closure. A total of 9,598 cases were closed as rehabilitated. Dividing total annual expenditures by this number gives an average of \$12,059 cost per rehabilitated client. This figure overestimates the actual average cost of rehabilitated cases since much of annual expenditures is spent on the costs of other types of cases. Expenditures on purchased services for cases closed as rehabilitated were over \$38 million, for an average cost of \$3,988. If average expenditures for other cost categories are added to this figure, the average cost of cases closed as rehabilitated is \$5,010. This figure is almost twice the average cost of all closed cases, but as the next section details, tangible benefits for rehabilitated clients are much greater than for other closed cases. Total estimated costs of cases closed as rehabilitated are approximately \$48 million. However, individuals whose cases are closed as not rehabilitated often find employment at a later time. More exact estimates of the cost of employment, therefore, are difficult to make, since there is no reliable data on the long-term employment outcomes of cases closed as not rehabilitated.<sup>12</sup>

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<sup>12</sup> See also *Limitations* at the end of this document.

**Table 4: Estimated Average Cost of Closed Cases with Positive Employment Outcomes (Rehabilitated)**

Cost category		Average cost
a. average cost of purchased services	\$38,277,244 / 9,598	\$3,988.04
b. average cost of counseling, guidance, and placement	\$33,319,785 / 40,331	\$826.16
c. average administrative cost	\$13,098,546 / 66,808	\$196.06
d. estimated average cost of successfully closed case	(a+b+c)	\$5,010.26

#### **4. What are the earnings benefits and other benefits of vocational rehabilitation services for persons with disabilities?**

The measurable benefits of vocational rehabilitation services include gains in earnings, reductions in public assistance payments and costs, and increased tax contributions. Depending upon one's viewpoint as a program participant, taxpayer, or in general as a member of society, however, these benefits may sometimes be considered as neutral benefits or even as costs. These exceptions are discussed more in the next section, *Analysis of Costs and Benefits*.

Benefits were calculated principally using the difference between earnings at application and earnings at closure for clients in closed cases as reported in the R-911 summary. The postprogram earnings of clients whose cases were closed as not rehabilitated were assumed to be zero, as reported in the R-911 summary. Reductions in public assistance payments and costs as a result of employment for individuals with disabilities can also be a benefit of vocational rehabilitation services. Using R-911 data, in this analysis, the reduction in the amounts of public assistance used was calculated as the difference between public support at application and public support at closure. The reduction in administrative costs of public assistance was estimated as 10% of total public assistance reductions (Zilovich et al., 1997).

Once individuals with disabilities find employment or increase their earnings as a result of receiving vocational rehabilitation services, they also increase the amount of taxes that they pay. In order to calculate average tax contributions, Sav (1989) in a cost-benefit analysis of transitional employment programs notes that "the effective tax rate for low-wage workers is

approximately 23 percent of their total income . . . postprogram taxes may be estimated by applying this rate to the estimated postprogram earnings of participants” (p. 49). This tax rate has also been used in other similar studies (for example, see Hill et al., 1987).

**Table 5: Estimated Benefits of Individuals in Closed Cases (N=29,475)**

<b>Benefit Category</b>	<b>Average Annual Benefits</b>	<b>Total Annual Benefits</b>
a. gain in earnings	\$3,011.32	\$88,760,724
b. reduction in public assistance payments	\$178.71	\$5,267,436
c. reduction in public assistance costs	\$17.87	\$526,744
c. increased tax contributions	\$692.60	\$20,414,967

Table 5 illustrates the costs of vocational rehabilitation services for individuals in closed cases. The total amount of weekly earnings of individuals at the time of application for all closed cases (N=29,475) was \$734,570. Subtracting this amount from \$2,441,507, the total weekly earnings at the time of closure for individuals in all closed cases results in a difference of over \$1.7 million. Annualizing this figure for 52 weeks gives a total annual earnings increase of \$88.8 million, or an average annual earnings increase of \$3,011. The total amount of public support received monthly at the time of acceptance for all closed cases was \$3,105,918. Public support decreased by about 13% to \$2,666,965 at closure, for a difference of almost \$439,000, or an estimated annual savings of \$5.3 million. This gives an average annual savings of about \$178 for each closed case. Reductions in public assistance costs were estimated as 10% of public assistance reductions, equal to almost \$527,000 annually or approximately \$18 per closed case. Finally, increased tax contributions were estimated as 23% of earnings increases, equal to \$20.4 million annually, or about \$693 annually per closed case.

Compared to individuals in other closed cases, rehabilitated clients realized greater earnings benefits and subsequently greater increases in tax contributions, as well as greater decreases in public assistance use. Weekly earnings at the time of application for clients who completed program services and were gainfully employed (N=9,598) totaled \$520,595, which

increased to a total of \$2,441,507 at the time of closure, for a difference of \$1.9 million, or a total annual increase in earnings among these clients of about \$99.9 million. This gives an average annual earnings increase for rehabilitated clients of about \$10,407. Individuals whose cases were closed as rehabilitated received an annual average of \$2,820 at application but almost 5 times that amount at closure, at \$13,228. They earned an estimated average of \$7.18 per hour at the time of application, which increased to \$7.49 at the time of closure. They worked an average of 8 hours a week at application, compared to an average of 34 hours per week at closure. Rehabilitated clients received a total of \$1,037,296 in public support at the time of acceptance for services. This amount decreased to \$848,474 at closure, for a difference of about \$189,000, or an average annual savings of \$236 for each rehabilitated client. The reductions in public assistance costs were estimated at \$24 annually per rehabilitated client. Increased tax contributions were estimated at \$2,394 per rehabilitated client.

The benefits of vocational rehabilitation services to individuals with disabilities do not accrue only for a single year. Many individuals who gain greater earnings, use less public assistance, and contribute more taxes as a result of vocational rehabilitation services could continue to do so for the remainder of their work life. Thus, the longevity of benefits for each closed case occur over the work life of the individual. The longevity of benefits in this analysis was estimated based on work-life expectancy. The work-life expectancy of successfully rehabilitated clients was assumed to be 30 years. Gibbs (1988) estimated the average work life of successful rehabilitants as 30 years, by subtracting the average age of most rehabilitants (35 years) from the assumed age of retirement (65 years). This assumption, however, may make estimated benefits somewhat conservative, because successfully rehabilitated clients could continue to receive benefits during retirement as a result of working—benefits they might not

have accrued if they had not received rehabilitation services. However, benefits are also affected by factors such as inflation, cyclical unemployment, mortality, and demographic variables. In this analysis, benefits were not adjusted for any of these factors.

In order to arrive at an estimate of work-life benefits, it is necessary to calculate the present value of each 30-year benefits stream. In other words, based on the estimated annual benefits of vocational rehabilitation as discussed above, what will the stream of future benefits be worth in terms of today's dollars? The present value of the benefit stream represents the future benefits discounted at some rate to convert them into today's dollars (Sav, 1989).<sup>13</sup> For example, if the average earnings gain for individuals in closed cases was \$3011.32, it might be assumed that over the estimated work life of 30 years, the total earnings gain could be \$90,340 (\$3011.32 x 30). This figure must be discounted, however, to arrive at a true estimate of its present value. Calculating the present value of this benefits stream using a 5% discount rate, a total of \$46,291 more (at today's value) could be earned by each employed client over his or her work life than would have been received based on prior earnings. Using a discount rate of 10% gives an average work-life earnings gain of \$28,387. Although there is a lack of consensus among researchers regarding appropriate discount rates, rates of 3% to 10% are commonly used for discounting in cost-benefit analyses of vocational rehabilitation programs. Present values of 30-year work-life benefits in this study were based on a discount rate of 5%. Table 6 illustrates the range of estimated work-life benefits for closed cases. Please note again that these estimates have not been adjusted for factors that might influence long-term benefits, such as inflation, unemployment, or mortality.

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<sup>13</sup>Present values are determined using a standard formula:  
 $PV = b/(1+r)^0 + b/(1+r)^1 + b/(1+r)^2 \cdots b/(1+r)^n$  where b=benefits, r=discount rate, and y=year 0-n.



**Table 6: Estimated Benefits of Closed Cases Over 30-Year Work-Life Benefits**

<b>Benefits of All Closed Cases</b>	<b>Average Benefits</b>
a. gain in earnings	\$46,291
b. reduction in public assistance payments	\$2,747
c. reduction in public assistance costs	\$275
d. increased tax contributions	\$10,647

As with costs, not all benefits were included in this analysis. There are other outcomes of vocational rehabilitation and the employment of individuals with disabilities that can be seen as indirect benefits. These include outcomes such as increased consumer spending and resulting increased sales tax contributions and other tax revenues. These benefits are difficult to estimate, however, as there is no reliable data source on such information for individuals with disabilities in Florida. There are also several intangible or nonmonetary outcomes that can be seen as benefits to both program participants and taxpayers. Economists describe these types of benefits using the concept of utility, or the measure of a participant's happiness or satisfaction. In addition to employment, these benefits can include

- increased educational attainment,
- access to equipment or resources needed for independence,
- improved self-image and greater self-esteem,
- improved communication and interpersonal skills,
- improved job-related skills,
- improved self-sufficiency and decreased dependency upon other forms of support, and
- overall increased quality of life.

### ***Analysis of Costs and Benefits***

Table 7 illustrates how the costs and benefits previously estimated in this study are analyzed in a cost-benefit analysis. It presents costs and benefits from the perspectives of

participants, taxpayers, and society-at-large, i.e., both participants and taxpayers (see Gramlich, 1981; Zilovich et al. 1997). A minus (-) sign represents a cost, a plus (+) symbol represents a benefit, and a neutral (0) symbol means that an item is neither a cost nor a benefit.

**Table 7: Benefits and Costs of Employment Services for Individuals with Disabilities**

	Participants	Taxpayers	Society
<b>Costs</b>			
Case services	0	-	-
Counseling, guidance, and placement	0	-	-
Administrative	0	-	-
<b>Benefits</b>			
Increased earnings	+	0	+
Increased tax contributions	-	+	0
Reductions in public assistance use	-	+	0
Reductions in public assistance costs	0	+	+

As Table 7 illustrates, costs and benefits are perceived differently depending upon the perspective. For example, costs such as case services and overhead are not incurred by participants but are paid by taxpayers, and therefore represent costs to society; earnings directly benefit participants but not taxpayers. Thus, the net effect of increased earnings on society is a benefit. Similarly, taxpayers benefit through increased tax contributions and reductions in public assistance payments and costs, but for participants both increased taxes as well as public assistance reductions are “disbenefits” or negative benefits.<sup>14</sup> Reductions in public assistance administrative costs, however, are a neutral outcome for participants but benefits to taxpayers and society. In the cost-benefit analysis portion of this study, costs and benefits will be analyzed from the perspective of society to obtain the most accurate cost-benefit estimates. Table 8

<sup>14</sup>The reduction in public assistance payments and increased taxes are negative benefits for participants since increased taxes represent a cost to participants while reduced public assistance payments represent lost income (Zilovich et al., 1997; Sav, 1989). Moreover, in economic terms, public assistance payments (transfer payments) represent a redistribution of funds rather than an overall savings of funds. The administrative costs saved, however, represent a savings to society.

presents the actual costs and benefits of Florida's vocational rehabilitation program as estimated previously.

**Table 8: Average Costs and Benefits of Employment Services for Floridians with Disabilities**

	Participants	Taxpayers	Society
<b>Costs</b>			
Case services	0	-\$1,894.76	-\$1,894.76
Counseling, guidance, and placement	0	-\$826.16	-\$826.16
Administrative	0	-\$196.06	-\$196.06
Total average cost	0	-\$2916.98	-\$2916.98
<b>Benefits</b>			
Increased earnings	+\$3,011.32	0	+\$3,011.32
Increased tax contributions	-\$692.60	+\$692.60	0
Reductions in public assistance use	-\$178.68	+\$178.68	0
Reductions in public assistance costs	0	+\$17.87	+\$17.87
Total average annual benefits	+\$2,140.04	+\$889.15	+\$3,029.19
Estimated 30-year work-life benefits in today's dollars <sup>15</sup>	+\$32,898	+\$13,668	+\$46,566

Cost-benefit analysis has traditionally used three measures of efficiency for analyzing the present values of a program's costs and benefits: net present value, internal rate of return, and benefit-cost ratio. The net present value of a program refers to the difference resulting from its costs minus its benefits. The internal rate of return of a program refers to the discount rate at which the program's benefits equal its costs (expressed as a percentage). The benefit-cost ratio of a program is simply the ratio of benefits to costs. When monetary values for benefits are not available, a cost-effectiveness ratio can be developed between the cost of a program and its outcome. This study uses the benefit-cost ratio method in order to arrive at an estimate of benefits per dollar invested.

Table 9 illustrates benefit-cost ratios of Florida's vocational rehabilitation program based on the average costs and benefits estimated from FY 1998 data. As discussed previously, other similar studies have used discount rates for calculating present values of benefit streams ranging

<sup>15</sup>Work-life benefits were calculated using a 5% discount rate.

from 3% to 10%. In this study, present values were calculated using a base discount rate of 5%. A sensitivity analysis was then performed using discount rates of 3% and 10%, a rate commonly used in government program evaluation in general (Sav, 1989). A benefit-cost ratio of 16 to 1 was found using 5%, while ratios of 10 to 1 and 20 to 1 were found using 10% and 3%, respectively.

**Table 9: Cost-Benefit Analysis of Florida's Vocational Rehabilitation Program, FY 1998**

Discount Rate	r=10%	r=5%	r=3%
Present Value of Costs	\$2,916.98	\$2,916.98	\$2,916.98
Present Value of Benefits	\$28,555.92	\$46,566.07	\$59,373.46
Benefits-to-Costs Ratio (PVb/PVc):	9.79	15.96	20.35

## ***Discussion***

### **Impact Analysis**

The preceding sections of this report have illustrated the benefits that vocational rehabilitation services can provide for a comparatively nominal cost. Using cost-benefit analysis procedures, it is estimated that for every dollar spent on vocational rehabilitation services, \$16 are returned to society. As previously discussed, however, it cannot be assumed that all sectors of society directly benefit from these outcomes; rather, each benefit may affect one segment of society which in turn indirectly benefits other sectors. For example, increased earnings are a benefit for program participants (individuals who received vocational rehabilitation services), but do not directly benefit taxpayers. However, increased earnings lead to increased tax contributions among program participants, which is a benefit to taxpayers. Increases in earnings also stimulate the economy through increased consumer spending and purchasing of goods and services.

Table 10 illustrates the economic impacts of the increased earnings of clients of the vocational rehabilitation system. Effects were estimated using IMPLAN, a software package for

economic impact analysis. Using county-level economic data on over 500 industries, IMPLAN allows for estimates of direct, indirect, and induced effects of increased spending in each industry. Direct effects include changes in economic activity due to changes or increases in spending and investment; indirect and induced effects refer to secondary effects, such as economic growth or decline, that occur as a result of direct effects. Based on the overall increase in annual earnings among vocational rehabilitation clients in closed cases of \$88.8 million in FY 1998, almost \$60 million in direct output, \$16.2 million in indirect output, and \$27 million in induced output will be generated, for a total of \$103.2 million in output. Economic stimulation resulting from increased earnings will also be responsible for generating an estimated 1,483 jobs, including 876 in direct employment, 209 in indirect employment, and 398 in induced employment.

**Table 10: Economic Impacts of Increased Earnings of Vocational Rehabilitation Clients**

Effect	Output	Employment (Jobs Created)
Direct	\$59,805,374	876
Indirect	\$16,209,630	209
Induced	\$27,190,421	398
Total	\$103,205,427	1,483

A distinction must be made between costs and benefits for Florida taxpayers as opposed to federal taxpayers. Costs or benefits are borne by or are gained differently depending upon which perspective is taken. For example, the majority of dollars saved through public assistance reductions are in fact returned to the federal government, since programs that offer public support to individuals with disabilities, such as SSI, SSDI, Medicaid, and Medicare, are funded primarily through federal dollars. Dollars returned to the federal government are not a direct economic benefit to Florida. Similarly, only a portion of increased tax contributions go directly to the state of Florida as revenue.

Costs of the vocational rehabilitation program, however, are borne primarily by the federal government; states pay about 20% of the costs, while the federal government contributes the remaining 80%. In the case of the vocational rehabilitation program, then, federal dollars are essentially “free money” to the state of Florida, since the state’s portion of the cost of the program is returned in terms of benefits. Although data adequate enough to estimate both state and federal costs and benefits were not available for this analysis, it may be useful to approximate the value to taxpayers of Florida’s investment in vocational rehabilitation. Florida paid around \$24 million of the total expenditures of almost \$116 million in FY 1998. If it is assumed that the state of Florida receives about 10–15% of the benefits of clients in closed cases, i.e., 10–15% of reductions in public assistance payments and costs and of increased tax contributions as shown in Table 5, then Florida taxpayers could enjoy direct annual benefits in the range of \$2.6–\$3.9 million, or as much as \$40–\$60 million over the work life of clients. Moreover, Florida would also benefit from increased consumer spending and economic stimulation resulting from the increased earnings of clients employed after services, as well as the numerous intangible benefits of vocational rehabilitation services.<sup>16</sup>

### **Limitations**

It is important to keep in mind the limitations inherent in estimating costs and benefits. Rhodes et al. (1987) outlined some technical problems common to cost-benefit analysis in general. These include the use of nonexperimental methods (no comparison or control groups) and a lack of adequate data; attempting to account for all costs and benefits (including intangible ones), converting costs and benefits to dollar measures, and reducing them down to a single ratio or outcome measure; and the difficulty of selecting an appropriate discount rate (pp. 178–79).

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<sup>16</sup>In an analysis of public-sector benefits of vocational rehabilitation, Bellante (1971) found that Florida taxpayers received a better return than federal taxpayers.

Noble (1977) addressed many of these limitations in relation to cost-benefit analysis of vocational rehabilitation programs.

In addition to the issues mentioned above, other specific problems are encountered in cost-benefit analyses of employment programs for individuals with disabilities. Vocational rehabilitation cost data have often been considered to be deficient in a number of respects. Benefits and earnings data also have weaknesses. Many clients begin vocational rehabilitation programs having little or no earnings (zero earnings at application). Other clients are not accepted for services, drop out, or are terminated from the program before being employed (zero earnings at closure). Additionally, difficulties are encountered in estimating the work-life benefits of clients. These issues are discussed in the following paragraphs.

*1. Deficiencies in cost and earnings data*

In addition to making cost and benefit estimates less reliable, the lack of adequate data generally limits researchers from being able to examine the actual contribution of vocational rehabilitation services in terms of employment outcomes and other benefits. In attempting to account for the actual effects on earnings and benefits attributable to vocational rehabilitation, Misra et al. (1992) assumed that only 80% rather than 100% of benefits were attributable to vocational rehabilitation, and therefore they used only 80% of benefits in their analysis. Dean and Dolan (1991) discussed the effects of the lack of information on service-specific costs, costs of services provided directly by counselors, and costs of “similar benefits”—services that a client receives (and which thus have an effect his or her employment outcome) but which are not paid for by the vocational rehabilitation program.

## 2. *Zero earnings reported at acceptance*

Many clients of vocational rehabilitation report little or no earnings at the time of application into the program. Zero earnings reported at application or referral “often misrepresent the employment history and/or earnings potential that clients bring with them. . . .” (Dean & Dolan, 1987, p. 16). Thus, the assumption of zero earnings at application for these clients may overestimate the amount of earnings and benefits that are gained by their participation in a vocational rehabilitation program.

## 3. *Zero earnings at closure*

Many clients of vocational rehabilitation are not successfully placed in employment; they may drop out of the program before being fully rehabilitated. This analysis follows Bellante (1971) in this case in assuming a zero difference between earnings at referral and earnings at closure. Additionally, data from the R-911 summary used in this analysis showed that only rehabilitated clients had positive postprogram earnings in FY 1998. In fact, the benefits accrued to clients with no reported postprogram earnings may be greater than zero, especially long-term benefits. Dean and Dolan (1991) pointed out that clients who are not placed in employment may find employment later or may benefit from vocational rehabilitation services in other ways.

## 4. *Longevity of benefits*

Another problem in estimating the costs and benefits of employment programs for individuals with disabilities concerns the longevity of benefits. Many studies assume that the work life for clients continues until retirement at age 65. This assumption, however, may overestimate the benefits accrued since not all clients would work until retirement. Misra et al. (1992) used work-life tables based on census data to more accurately estimate the work life of clients. As discussed above, this study uses a 30-year work-life estimate based on the method



used by Gibbs (1988), which assumes retirement at 65. Additionally, no adjustments were made to account for factors that could influence employment, such as cyclical unemployment, mortality, or demographic or disability statuses during the 30-year period.

### **Conclusions**

As the previous section indicates, there are several limitations to this analysis that should be kept in mind when making conclusions about the costs and benefits of vocational rehabilitation services. Despite these limitations, however, the methods used in this study allow for relatively accurate estimations of costs and benefits given the available data; indeed, benefits may actually be conservatively estimated. Moreover, findings of similar studies indicate that even the most conservative analyses typically find high benefits-to-costs ratios for such programs. The results of this study indicate that for every dollar spent on vocational rehabilitation services, \$16 dollars are returned to society. Benefits of vocational rehabilitation services include increased earnings, reduced public assistance use and costs, and increased tax contributions. Other benefits include increased consumer spending and economic stimulation occurring as a result of increased earnings of clients. It can be concluded that vocational rehabilitation services provide significant benefits to society at a low cost to Florida taxpayers.

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