

Can Community-Based High School Transition Programs Improve the Cost-Efficiency of Supported Employment?

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Abstract

This study investigates the potential impact that community-based, high school transition programs have on the cost-efficiency of individuals with disabilities when they become adults. Outcomes achieved by 246 supported employees were compared. Results indicated that supported employees who participated in community-based transition programs in high school were more cost-efficient from the taxpayers' perspective than were individuals who received only in-school transition services or received no transition services at all. Supported employees who received community-based transition services also kept their jobs in the community significantly longer than did individuals from the comparison groups.

Keywords

supported employment, in-school transition, community-based transition, cost efficiency

Cost-efficiency, also called *cost-benefit analysis*, is a method of comparing the monetary outcomes generated by programs or decisions (Johnston, 1987). For example, when trying to determine whether to go on to college, prospective students may weigh all the long-term consequences, including the resulting costs and benefits. Some of the monetary costs of continuing education include the tuition paid to the university and the salary that is forgone while the student is taking courses. Potential monetary benefits may include a higher paying job once the degree is conferred. If the gross benefits outweigh the corresponding gross costs, the decision is said to be *cost-efficient* (Boardman, Greenberg, Vining, & Weimer, 2006).

Over the past 28 years, the cost-efficiency of supported employment has received considerable attention. Numerous studies have investigated the monetary costs and benefits of supported employment from the perspective of the taxpayers, workers, and society in general (cf. Baer, Simmons, Flexer, & Smith, 1995; Cimera, 1998; Conley, Rusch, McCaughrin, & Tines, 1989; Hill & Wehman, 1983; Kregel, Wehman, & Banks, 1989; McCaughrin, Rusch, Conley, & Tines, 1991; Noble, Conley, Banjerjee, & Goodman, 1991; Rogers, Sciarappa, MacDonald-Wilson, & Danley, 1995; Wehman et al., 2003). Others have compared the programmatic costs of supported employment to those generated by sheltered workshops (cf. Cimera, 2007a, 2007b, 2008a, 2008b; Lam, 1986). A few have explored the monetary outcomes businesses experience when they hire

supported employees (cf. Cimera, 2006, 2009a). However, recent research has focused less on merely identifying supported employment's efficiency and moved more toward identifying ways of reducing programmatic costs while increasing the quality of its outcomes (Cimera, 2001, 2007c; Zivolich, Shueman, & Weiner, 1997).

For example, Zivolich et al. (1997) examined the monetary outcomes generated by 59 supported employees who were trained by their nondisabled coworkers in a 6-month period. The authors found that these supported employees returned \$0.74 to \$1.21 for every dollar taxpayers invested in supported employment. The variation in return was attributed to different assumptions inherent within the cost-accounting formulae used.

Cimera (2001) investigated the outcomes achieved by 111 supported employees with mental retardation. He found that having coworkers directly involved in their training lowered programmatic costs. It also increased the length of time supported employees maintained their jobs within the community. Specifically, supported employees who were trained by their coworkers maintained their positions an

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average of 44.51 months compared to 32.15 months for supported employees trained by job coaches.

Finally, Cimera (2007c) examined the impact that using *natural supports* had on the costs of supported employment programs. He determined that agencies in Wisconsin using natural support strategies reduced their programmatic expenditures by 57.6%. Supported employees trained via natural supports acquired services costing taxpayers \$838 per fiscal quarter. This was compared to \$2,444 per fiscal quarter for the average supported employee throughout Wisconsin.

Whether employment is seen as a civil right, a means of improving an individual's quality of life, a process of normalization and acculturation, or merely a way of reducing dependence on governmental subsidies, improving the cost-efficiency of supported employment programs is in everybody's best interests. The more cost-efficient supported employment is, the more individuals with disabilities will be able to experience the monetary and nonmonetary benefits of working within their communities. The more individuals with disabilities who become contributing taxpayers, the stronger the overall economy becomes.

However, implementing natural supports and other training strategies is only one potential way of reducing the costs of supported employment while improving the outcomes achieved by individuals with disabilities (Revell, Kregel, Wehman, & Bond 2000). Certainly other methods exist. For example, it may be that policies and practices conducted in secondary education programs (e.g., providing transition services in the community) may affect the outcomes achieved by students when they are adults. Unfortunately, to date, no study has examined whether such policies or practices affect the monetary costs and benefits of serving individuals with disabilities once they reach adulthood.

To this end, the purpose of this study was to examine the impact that various types of high school transition programs have on the cost-efficiency of supported employment from the taxpayers' perspective. More precisely, this study was performed to determine whether participating in community-based transition programs in high school reduces the costs of services supported employees receive when they are adults. Previous literature has suggested that students who participate in community-based work experiences in high school would have more refined vocational and social skills than do students who receive only in-school transition services (Carter, 2005; Halpern, 1994; Phelps & Hanley-Maxwell, 1997). Furthermore, these skills may enable students to obtain and maintain positions within their community for longer periods of time with fewer services and, thus, generate lower costs to funding agencies (e.g., vocational rehabilitation). Lower program costs and increased tenure would most likely result in greater cost-efficiency to taxpayers; however, no research has verified this hypothesis.

This study explored the monetary benefits and costs generated by 246 supported employees and the vocational outcomes that they achieved (e.g., months employed, wages earned, etc.). Three cohorts were compared: (a) individuals who received no transition services in high school, (b) individuals who had community-based work experiences in high school (e.g., had a paid job or participated in job sampling in the community), and (c) individuals who had individualized education programs (IEPs) in high school but experienced only in-school transition services. Implications of this study's findings and future research are also discussed.

Method

I was contacted by a director of an adult service agency located in a mid-Atlantic state who wished to have a cost-analysis of his agency's vocational programs. As part of this evaluation, the author was given access to information on every individual who recently received supported employment services. Available information included but was not limited to the following: billing records to all funding sources (e.g., Vocational Rehabilitation, Department of Mental Health, etc.), IEPs, assessments, intake reports, case notes, work schedules, and copies of the employee's pay stubs. When needed information was not available within the file, data were gathered directly from the supported employee, guardian, job coach, or case coordinator.

Participants

At the time of the cost-analysis, the participating agency provided supported employment services in nine locations throughout the state. These locations ranged in population from 16,957 to 1,635,974. The average unemployment rate for these areas in 2008 was 6.04%.

Across these nine sites, the adult service agency provided services to a combined total of 254 individuals who completed at least one job cycle (i.e., they obtained and eventually separated from a job in the community). These individuals formed four distinct cohorts.

No transition services. The first cohort contained 185 individuals who received no transition services when they were in high school. This group consisted mainly of individuals who were either diagnosed with their disability after leaving high school (e.g., traumatic brain injury, mental illness, spinal cord injuries); were home schooled; were in high school prior to the 1990 reauthorization of the Individuals With Disabilities Education Act (IDEA; Public Law 101-476), which mandated transition services for students with IEPs; or were in high school after the 1990 reauthorization of IDEA yet, according to their IEPs, still did not receive transition services.

Community-based transition. The second cohort contained 30 individuals who received community-based transition services when they were in high school. Community-based transition services included job shadowing, job sampling, vocational assessments, work adjustment, paid jobs, or any other transition services or activities that occurred in the community as documented by the individual's IEPs.

School-based transition. The third cohort contained 31 individuals who received special education programming that involved transition planning as required by Public Law 101-476; however, none of the goals, services, or activities outlined in their IEPs were performed in the community. That is, all of their transition planning was school based, including vocational assessment, direct instruction, simulations, or job sampling that occurred on school grounds (e.g., in the school's library, general store, or cafeteria).

Unusable. Finally, of the 254 individuals who were enrolled in the participating supported employment programs, 8 did not desire to participate in the study. Data from these individuals are not included within the following analyses.

Demographic information on the individuals who were included in this study can be found in Table 1.

Variables

To calculate the cost-efficiency of supported employees from the taxpayers' perspective, data were gathered on eight variables for each person participating in the study.

Primary disability. The participating adult service agency used diagnostic criteria and coding documented in the *Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition* (DSM-IV; American Psychiatric Association, 2000) when diagnosing all supported employees, with the exception of those individuals with sensory impairments (e.g., vision impaired, hard of hearing, deaf), TBIs, and physical disabilities (e.g., spinal cord injuries, cerebral palsy, and paralysis). These later impairments were diagnosed by medical professionals prior to the individual's enrollment into supported employment. For the purposes of this study, all individuals with psychiatric conditions (e.g., depression, schizophrenia, bi-polar) were categorized as having "mental illnesses."

Presence of secondary disabilities. If supported employees had multiple conditions, their secondary disabilities were coded in the same manner as their primary disability. For the purposes of this study, participating supported employees were classified as either having secondary conditions or not having secondary conditions.

Months employed. The number of months employed was calculated for each supported employee by subtracting the initial hire date from the date of job separation. If a supported employee worked 15 days or more during a month,

Table 1. Demographics of Participants (Entire Population)

Demographic Variables	No Transition	In School	Community
Sample size	185	31	30
Percentage male	50.3	61.3	63.3
Percentage female	49.7	38.7	36.7
Average age in years (SD)	36.24 (12.14)	25.59 (9.72)	23.86 (6.02)
Primary disability (%)			
Mild MR	47.6	45.2	36.7
Moderate MR	6.5	25.8	36.7
Severe MR	0.0	0.0	10.0
Autism	2.7	6.5	10.0
Mental illness	32.4	12.9	6.7
ADHD	1.1	3.2	0.0
Physical disability	1.6	6.5	0.0
Sensory impairment	1.1	0.0	0.0
Traumatic brain injuries	7.0	0.0	0.0
Had secondary disabilities	48.7	35.7	37.9

Note: MR = mental retardation.

they were given credit for a full month's worth of employment. If they worked fewer than 15 days in a month, they were given credit for a half month's worth of employment.

Cost of supported employment services received. The total cost of services received by each supported employee was obtained from billing records sent to various funding sources (e.g., Vocational Rehabilitation, Department of Mental Health, etc.) from the participating adult service agency. Costs include all billable services that the participant received since entering supported employment, including those associated with preplacement (e.g., assessment, job development, etc.), initial training, and follow along. Costs of services not reimbursed by funding agencies, such as participating in job clubs, were not included within this variable. The total cost of all services was then divided by the number of months each supported employee worked in the community.

Cost of vocational services forgone. For this analyses, it was assumed that if an individual was not in supported employment they would have been in sheltered workshops. Such an assumption has been made frequently in the supported employment cost-efficiency literature (cf. Conley & Noble, 1990; Hill & Wehman, 1983; McCaughrin, 1988; Schneider, Rusch, Henderson, & Geske, 1981; Tines, Rusch, McCaughrin, & Conley, 1990). Costs for sheltered workshops (i.e., cost of vocational services forgone) were obtained by state agencies funding sheltered workshops during a separate research project (Cimera, 2008b). During this study, Cimera (2008b) found that the average sheltered employee generated a total cumulative cost to funding

sources of \$31,307.85. Furthermore, sheltered employees received services in sheltered workshops for an average of 62.98 months for a per capita monthly cost to funding agencies of \$497.09.

Taxes paid. Unlike most previous cost-accounting studies that documented taxes withheld or estimated taxes paid (cf. Hill, Wehman, Kregel, Banks, & Metzler, 1987; Lewis, Johnson, Bruininks, Kallsen, & Guillery, 1992; Rusch, Conley, & McCaughrin, 1993; Wehman, Hill, Wood, & Parent, 1987; Wehman, Hill, Hill, Brooke, Pendleton, & Britt, 1985), this study calculated the state and federal income taxes that each supported employee would have actually paid while in supported employment. For the purposes of these calculations, it was assumed that supported employees were single and had no dependents. Total annual taxes paid were divided by the number of months employed.

Changes in governmental subsidies. Included in the data provided to the author was the amount of governmental subsidies (e.g., Supplemental Security Income, Social Security Disability Income, Supplemental Assistance, food stamps) that each supported employee received per month prior to enrolling in supported employment. Data were also provided on the monthly amount of subsidies received while working in the community. Changes in the amount of subsidies received as a result of supported employment were calculated by subtracting the later number from the former.

Tax credits. In previous cost-efficiency studies on supported employment, authors included taxes credited back to employers who hire workers with disabilities (cf. Conley et al., 1989; Hill, Banks, et al., 1987; Tines et al., 1990). However, it was found that none of the employers of the participants of this study applied for available tax credits. Consequently, this variable produced no effect in the calculation of taxpayer cost-efficiency.

Calculating Cost-Efficiency

Cost-efficiency from the taxpayers' perspective was calculated using a formula used by other authors (cf. McCaughrin et al., 1991; Rusch et al., 1993; Tines et al., 1990; Zivolich et al., 1997; see Table 2). Gross monthly benefits were divided by gross monthly costs, thus producing a benefit-cost ratio. Ratios above 1.0 indicate cost-efficiency from the taxpayers' perspective (i.e., benefits exceeded costs). Ratios below 1.0 indicate cost-inefficiency from the taxpayers' perspective (i.e., costs exceeded benefits).

Conversion of Dollar Values

Because this study examined individuals who worked at diverse points in time (i.e., 2006 to 2008), all cost data had to be converted to a common monetary unit. This was necessary

Table 2. Cost-Efficiency Framework From the Perspective of the Taxpayer

Cost-Accounting Variable	Outcome
Taxes paid	Benefit
Change in subsidies ^a	Benefit
Savings from alternative program costs	Benefit
Supported employment operating expenditures	Cost
Tax credits	Cost

a. It should be noted that if the amount of subsidies received increases as a result of supported employment, as was found by Rusch et al. (1993), change in subsidies actually becomes a cost to taxpayers.

because a dollar spent in 2006 does not necessarily equal a dollar spent in 2008. Consequently, all cost data were converted to identical dollars (i.e., 2008 dollars). This was done by multiplying the cost data by the consumers' price index of the base year (fiscal year [FY] 2008) and then dividing the resulting product by the consumers' price index of the year that the dollar value was originally designated (Boardman et al., 2006).

Analyses

This study entitled two primary analyses. The first compared the average cost-efficiency of everybody within each of the three groups of supported employees described earlier (i.e., 185 individuals who experienced no transition planning in high school, 31 individuals who received only in-school transition services, and 30 individuals who participated in community-based transition services). However, because of differences in sample sizes and demographics that would likely affect costs and outcomes (e.g., individuals with no transitions were more likely to be older and have mental illnesses than were individuals in the other transition groups), a second analysis was also undertaken.

Specifically, pairs of supported employees from each of the three groups were matched based on (a) their gender, (b) their age, (c) their primary disability, (d) whether they had a secondary disability, and (e) the adult service provider furnishing the supported employment services (i.e., each of the nine cities had a different vocational center providing services to its community). These variables were selected because of results from previous research that found cost of services, total hours worked, and gross earnings were significantly influenced by the supported employee's gender, disability, presence of a secondary disability, and where they received their services (cf. Cimera, 1998; Cimera, Shumar, Robbins, Dransfield, & Cowan, 2008; Lewis et al., 1992; Thompson, Powers, & Houchar, 1992). Age was also included as a matching variable in an effort to pair individuals with comparable experiences.

Two sets of matched pairs were created. The first compared individuals who received community-based transition

Table 3. Demographics of Participants (by Matched Sample)

Demographic Variable	Matched Pair #1: Community vs. No Transition	Matched Pair #2: Community vs. In School
Sample size (pairs)	21	17
Percentage male	66.7	64.7
Percentage female	33.3	35.3
Average age in years (SD) ^a	25.67 (4.28)	
	25.88 (4.68)	
Primary disability (%)		
Mild MR	47.6	52.9
Moderate MR	38.1	29.4
Autism	4.8	11.8
Mental illness	9.5	5.9
Had secondary disability	28.6	23.5

Note: MR = mental retardation.

a. The top figure indicates the age of supported employees in the matched pairs from the community cohort. The bottom figure indicates the age of supported employees from the comparison group (i.e., no transition on the left, in-school transition on the right).

services in high school to individuals who received no transition services. Twenty-one pairs (i.e., 42 individuals) of supported employees in these two groups had the same gender, primary disability, presence of a secondary disability, received services from the same agency, and were within 3 years of the same age.

The second set of matched pairs compared individuals who received community-based transition services in high school to individuals who received only in-school transition services. Seventeen pairs (i.e., 34 individuals) were found to have the same gender, primary disability, presence of a secondary disability, received services from the same agency, and were within 5 years of the same age. The age range for this second group was extended to 5 years because a sufficient sample could not be identified using a narrower band. Demographics for these two sets of matched pairs are presented in Table 3.

Results

Group Comparisons

For the first analyses, benefit-cost ratios for all supported employees in each of the three transition groups were compared. As indicated in Table 4, individuals who received no transition services generated an average per capita gross monthly benefit to taxpayers of \$619.41. They also generated an average per capita gross monthly cost to taxpayers of \$1,345.02, resulting in a benefit-cost ratio of 0.46. In other words, for every dollar of costs these supported

Table 4. The Monthly per Capita Benefits and Costs of Supported Employment to Taxpayers by Transition Cohort (Entire Sample)

Monetary Benefits and Costs	No Transition	In School	Community
Sample size	185	31	30
Taxes paid	\$2.52	\$2.18	\$0.66
Change in subsidies	\$119.80	\$52.00	\$188.35
Alternative program costs	\$497.09	\$497.09	\$497.09
Gross benefit	\$619.41	\$551.27	\$686.10
Supported employment costs	\$1,345.02	\$979.07	\$940.95
Tax credits	\$0	\$0	\$0
Gross cost	\$1,345.02	\$979.02	\$940.95
Benefit-cost ratio	0.46	0.56	0.73

employees generated, they returned an average of \$0.46 to taxpayers in the form of taxes paid, reduction in subsidies, and savings from alternative programs (i.e., sheltered workshops; see Table 4).

As also indicated in Table 4, individuals who received in-school transition services accumulated an average per capita gross monthly benefit to taxpayers of \$551.27 and a corresponding gross monthly cost of \$979.02, for a benefit-cost ratio of 0.56. Conversely, individuals who received community-based transition services in high school generated \$686.10 in gross benefits and \$940.95 in gross costs, for a benefit-cost ratio of 0.73.

Matched Sample Comparisons

Community-based versus no transition services. As shown in Table 5, when 42 supported employees from the no-transition and community-based-transition cohorts were matched based on their gender, age, disability, presence of a secondary disability, and service provider, it was found that supported employees in community-based cohort generated an average benefit-cost ratio of 0.61. The matched peers from the no-transition cohort, on the other hand, generated an average benefit-cost ratio of 0.41. In 85.7% of the cases, individuals with community-based transition services were more cost-efficient to taxpayers than were individuals who received no transition services. In 14.3% of the cases, individuals with no transition services were more cost-efficient.

Community-based versus in-school transition services. When matched pairs were compared between in-school and community-based groups, we found that the 17 matched peers who received only in-school transition services generated a mean benefit-cost ratio of 0.37. This is compared to 0.59 for individuals with the same demographic backgrounds who received community-based services. In 88.2%

Table 5. The Monthly Per Capita Benefits and Costs of Supported Employment to Taxpayers by Matched Pairs

Monetary Benefits and Costs	No		In	
	Transition	Community	School	Community
Sample size	21	21	17	17
Taxes paid	\$1.05	\$0.52	\$2.16	\$0.64
Change in subsidies	\$92.06	\$163.88	\$78.74	\$104.68
Alternative program costs	\$497.09	\$497.09	\$497.09	\$497.09
Gross benefit	\$590.20	\$661.49	\$577.99	\$602.41
Supported employment costs	\$1,439.50	\$1,084.36	\$1,551.02	\$1,020.03
Tax credits	\$0	\$0	\$0	\$0
Gross cost	\$1,439.50	\$1,084.36	\$1,551.02	\$1,020.03
Benefit-cost ratio	0.41	0.61	0.37	0.59
Percentage of individuals most cost-efficient	14.3	85.7	11.8	88.2

of the matches, the supported employees with community-based transition experiences in high school were more cost-efficient than were their matched peers with only in-school transition experiences. In 11.8% of the cases, the reverse was true (see Table 5).

Statistical Analysis of Outcomes

Because of differences in sample sizes and demographics, statistical analyses were not conducted for the entire samples of all three cohorts. Instead, two-tailed *t* tests for paired samples were conducted on the outcomes achieved by each matched group. As indicated in Table 6, individuals who received services in the community were employed significantly longer than were both their peers with no transition services and those who had only in-school services. Specifically, individuals with community-based transition services were employed an average of 7.32 months versus 3.24 months for individuals with the same demographics but without any transition services, $t(20) = 2.08, p = 0.001$. Individuals with only in-school transition services averaged working for 4.70 months compared to 8.10 months averaged by their matched peers from the community-based cohort, $t(16) = 2.11, p = 0.0006$. No other statistically significant relationships were detected (see Table 6).

Discussion

From the presented research, several salient points arise. The first is that community-based transition programs in

Table 6. Average Monthly Outcomes Achieved by Supported Employees in Each Matched Comparison

Monthly Outcomes	Matched Pairs #1		Matched Pairs #2	
	No Transition	Community	In School	Community
Sample size	21	21	17	17
Gross wages earned	\$457.84	\$418.26	\$481.68	\$427.74
Reduction in subsidies	\$92.06	\$163.88	\$78.74	\$104.68
Cost of SE services	\$1,439.50	\$1,080.36	\$1,551.02	\$1,020.03
Months employed	3.24	7.32*	4.70	8.10**

Note: Individuals were matched by age, gender, primary disability, presence of a secondary disability, and adult service provider. "SE services refers to supported employment services."

* $t(20) = 2.08, p = 0.001$. ** $t(16) = 2.11, p = 0.0006$.

high school appear to increase the cost-efficiency of individuals later on in life. In each of the analyses conducted, individuals who were provided transition services in the community were on average more cost-efficient to taxpayers than were individuals who experienced only in-school transition services or received no transition services at all. Specifically, when the entire sample was compared, individuals with community-based transition services had an average benefit-cost ratio of 0.73. This is compared to individuals with only in-school transition services who had a mean benefit-cost ratio of 0.56 and individuals with no transition services in high school who had a mean benefit-cost ratio of 0.46. When individuals were paired by similar demographics, matched peers from the community-based cohort were more cost-efficient 85.7% of the time when compared to individuals with no transition services and 88.2% of the time when compared to individuals with in-school transition services.

The cause of this greater cost-efficiency appears to involve the number of months employed. In both matched pair comparisons, individuals with community-based services were employed significantly longer than were peers with the same demographics from the in-school and no-transition cohorts. In fact, individuals with community-based transition services worked nearly twice as long as individuals from the other groups did. Specifically, supported employees from the community-based cohort worked an average of 7.32 months compared to 3.24 for individuals with the same demographics from the no-transition cohort and 8.10 months compared to 4.70 months for individuals from the in-school cohort.

To put these findings in a familiar context, in FY 2006 Vocational Rehabilitation (VR) spent \$189,245,184 on supported employees nationally (Cimera, 2009b). According to

Braddock, Hemp, and Rizzolo (2008), \$708,872,399 additional non-VR dollars were spent on supported employment in the same year for a total fiscal outlay of nearly \$900 million. If all of the individuals funded had the same return on investment that the no-transition group displayed in this study, supported employees in FY 2006 would have returned approximately \$413 million to taxpayers in the form of taxes paid, subsidies reduced, and services forgone. However, if all of the individuals funded had the same return on investment as the community-based transition cohort, they would have returned nearly \$656 million to taxpayers.

Stated another way, Cimera (2009b) found that VR spent an average of \$4,688 per supported employee in FY 2006. If all supported employees had the same returns on investment averaged by the community-based cohort presented in this study, an extra 139,931 individuals with disabilities could have been served by VR with only the resulting monetary benefits to taxpayers. Such a reinvestment would have more than doubled the 111,415 individuals presently being served in the community via supported employment (Braddock et al., 2008). It should be noted, however, that the decision to place individuals with disabilities in community-based transition programs should be based on their needs and aspirations. Still, the findings offered here may encourage greater federal and state investment in such programs.

Another critical finding from this study was that none of the groups investigated were cost-efficient from the taxpayer's perspective. Even as an entire sample, the 246 supported employees examined averaged returning only \$0.50 for every \$1.00 that taxpayers fund supported employment.

Although this conclusion is similar to finding of Conley et al. (1989), McCaughrin et al. (1991), and Rusch et al. (1993), it is counter to those reached by other researchers who determined that supported employment was cost-efficient from the taxpayers' perspective (Hill, Banks, et al., 1987; Hill, Wehman, et al., 1987; Zivolich et al., 1997). The reasons for these contradictory findings most likely involve variations in the accounting methodology used. For instance, Hill, Wehman, et al. (1987) and Zivolich et al. (1997) estimated taxes paid by calculating 23% of gross income. This study, however, calculated the actual state and federal taxes that each supported employee would likely pay. Furthermore, this study determined that relatively few individuals made enough gross earnings to pay any state or federal taxes. Indeed, of the 246 individuals in the entire sample, only 6 paid federal taxes for a combined total of \$957.66 per year. Furthermore, only 12 individuals would have paid state taxes for a combined total of \$1,769.32 per year. Most individuals in the study simply earned too little to pay any state or federal taxes.

Many previous authors also assumed that every employer would receive 2 full years of tax credits as a result of hiring supported employees (Hill, Banks, et al., 1987; Hill, Wehman, et al., 1987; Rusch et al., 1993; Zivolich et al.,

1997). However, this study found that no employer of any of the participating supported employees claimed tax credits for hiring workers with disabilities. Such tax credits are usually a percentage of the annual salary of the targeted employee (Conley et al., 1989). It could be that employers did not view such compensation as being significant given how little the supported employees earned. In other words, the amount that employers could have received in tax credits might not have justified their effort of filling out the corresponding forms and submitting the paperwork to the appropriate authorities. This finding not only could explain differences in outcomes reached by other authors, it may also raise considerable issues with the policy of using tax incentives to encourage employers to hire workers with disabilities.

Perhaps the most surprising and pertinent finding of this study involves the efficiency of the programs providing supported employment services. The adult service agency participating in this study provided services in nine different locations. Each of these areas had separate adult service centers that provided supported employment to their local communities. Ancillary analyses of these centers found substantial differences in their cost-efficiency. For instance, supported employees being serviced by the most cost-efficient center generated an average benefit-cost ratio of 1.79. Supported employees being served in the least cost-efficient service provider, on the other hand, generated an average benefit-cost ratio of only 0.18. Future research will need to be conducted to determine the causes for this substantial disparity. If cost-efficient providers use different training or job development strategies, thereby increasing their program's efficiency and improving outcomes of their participants, this information should be disseminated throughout the literature.

Future research will also have to replicate this study in other states and with larger sample sizes. As has been noted by other authors (Lewis et al., 1992), costs of supported employment vary considerably within and between states. So it may be that results documented here do not coincide with what is transpiring elsewhere.

Furthermore, this research did not include people who enrolled in supported employment programs yet did not become successfully employed. Such individuals would lower the average monetary benefits to taxpayers while increasing costs. However, most studies do not include individuals who have yet to be employed in their analyses because they would not technically be supported employees (cf. Cho & Schuermann, 1980; Hill & Wehman, 1983; Tines et al., 1990); consequently, this study is not uniquely disadvantaged in this respect.

Moreover, the cost to taxpayers of providing community-based transition services in high school was not factored into this study's analyses. It may very well be that the resulting costs of providing transition services in the community

outweigh the benefits that are realized later in life. Future research will need to explore these issues.

Finally, results presented here do not include nonmonetary outcomes (e.g., increased happiness or improved quality of life) achieved by supported employees as a consequence of working competitively within their communities. Such outcomes are not within the scope of cost-efficiency research even though they are just as critical as monetary outcomes when evaluating the success of human service programs (Boardman et al., 2006; Cimera & Rusch, 1999).

Conclusions

As the recession in the United States deepens, politicians and policymakers will continue to look for places where they can reduce public expenditures. Unfortunately, human service programs will likely to bear the brunt of these reductions. If supported employment is to continue to provide quality services to as many individuals as possible, advocates and service providers will have to find ways of reducing programmatic costs while maintaining or increasing quality.

The data from this study suggest that one way to improve the cost-efficiency of supported employment to taxpayers is to have individuals with disabilities participate in community-based transition programs when they are in high school. Individuals with such experiences not only were more cost-efficient than were individuals with no transition or in school transition services but they also tended to keep their jobs nearly twice as long. However, this is the first study to explore the connection between type of transition services offered in high school and the cost-efficiency of individuals when they become adults. Additional research is undoubtedly needed.

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