

# The national cost-efficiency of supported employees with intellectual disabilities: The worker's perspective

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Revised/Accepted: March 2010

**Abstract.** This study explored the outcomes achieved by 104,213 individuals with intellectual disabilities who were served by state vocational rehabilitation agencies and wished to be enrolled in supported employment. Result found that 62.08% of participants became employed within their community via supported employment and that these individuals, on average, received greater monetary benefits from working (i.e., wages earned) than monetary costs (i.e., taxes paid, forgone wages, reduction in governmental subsidies). Further, this result was found regardless of the number of disabling conditions present and the state in which they received services. However, employment outcomes (i.e., rates of employment, wages earned, hours worked, and cost efficiency) varied significantly between states.

**Keywords:** Supported employment, cost-efficiency, worker's perspective, outcome

## 1. Introduction

When community-based, competitive employment for individuals with severe disabilities was first being introduced in the academic literature during the late-1970s and early-1980s [1, 4, 21, 32, 33], some authors questioned whether such activity was fiscally appropriate [3, 5, 16, 27]. Specifically, many of these authors pointed out that, while individuals with intellectual and other disabilities could perform the tasks required for meaningful employment, they may not actually benefit monetarily from being competitively employed.

For instance, Lam [16] examined the monetary outcomes achieved by 50 sheltered and 50 supported employees with intellectual disabilities. He concluded that sheltered employees generated more annual wages than supported employees (\$1392.44 versus \$1389.28, respectively). Moreover, individuals with moderate to severe intellectual disabilities were particularly better off financially by working in sheltered workshops

than in their communities (\$977.52 versus \$501.48 in annual wages, respectively). This finding was also found by Brickey and Campbell [3] who determined that individuals with disabilities would have greater net income working in sheltered workshops or being unemployed than working in the community. Similarly, Schloss et al. [27] speculated that being employed part-time in the community produced more disposable income than being employed full-time or unemployed. These and other authors speculated that workers employed in the community would likely lose much, if not all, of their governmental benefits and that without these benefits, being employed would produce a net cost to the worker (i.e., they would have less income after working than before becoming employed).

However, since the mid-1980s, numerous cost-efficiency studies have examined economic outcomes of supported employment from the worker's perspective [13, 14, 23, 31]. The vast majority of these have

found that, while supported employees may lose governmental subsidies as a result of working within their communities, the competitive wages that they earn more than make up for these economic losses. In other words, supported employees generated a net monetary benefit as a result of working in their communities [7, 9, 15].

For instance, Hill et al. [12] investigated the monetary costs and benefits that 214 supported employees incurred as a result of being employed. These authors calculated that the average supported employee generated a total monetary benefit of \$13,815 (i.e., gross wages plus fringe benefits) and a total monetary cost of \$7000 (i.e., reduction in governmental subsidies, taxes withheld, and wages that these individuals could have earned in sheltered workshops) for a net benefit of \$6815 (gross benefits minus gross costs) and a benefit-cost ratio of 1.97 (gross benefits divided by gross costs). Stated a different way, Hill et al. concluded that for every dollar individuals with disabilities gave up as a result of becoming supported employees, they gained \$1.97 in fringe benefits and wages earned. As many as a dozen studies have arrived at similar conclusions [8, 10, 11, 19, 26, 29].

Yet as well explored as the cost-efficiency literature is from the supported employees' perspective, several weaknesses exist within this body of work. First, most of the available studies are out-of-date. Indeed, the most recent cost-efficiency analysis conducted from the perspective of supported employee's with intellectual disabilities was published over a decade ago [8]. Given that economic variables (e.g., minimum wage, taxes rates, how governmental subsidies are allocated) have changed over the past twelve years, it is reasonable to assume that results determined in the 1980s and 1990s may not be indicative of results calculated with contemporary data.

Second, most of the previous cost-accounting studies were conducted using relatively small sample sizes. For instance, Cho and Schermann [5] examined data from 34 individuals. Wehman et al. [31] had 167 participants. Cimera [8] had 111. These samples may not accurately reflect outcomes achieved by supported employees as a population.

Further, nearly all of the previous cost-efficiency studies from the supported employee's perspective were conducted utilizing localized data. Indeed, the majority of the available literature is derived from data collected in either Illinois [8, 10, 19, 20, 26, 29] or Virginia [12, 13, 31]. Numerous studies have identified variations in employment outcomes between states [2, 18,

25]. Therefore, previous studies conducted in one state may not be predictive of outcomes achieved by supported employees in other states or across the entire country.

The present study sought to address these weaknesses and extend the literature in several ways. Rather than presenting data on a relatively small sample of supported employees from one state, the research presented here explored the monetary costs and benefits actualized by all 104,213 individuals with intellectual disabilities funded by state vocational rehabilitation agencies throughout the entire United States and its territories from 2002 to 2007 who wished to be enrolled in supported employment. It also provides updated data on the employment outcomes achieved by supported employees from which policymakers may make informed decisions. To this end, this study explored four questions.

First, "Is supported employment cost-efficient from the workers' perspective?" In other words, do the monetary benefits of working within the community (i.e., wages earned) outweigh the corresponding costs (i.e., reduction in governmental subsidies, taxes paid, forgone wages that could have been earned in sheltered workshops)?

Second, "Did employment outcomes achieved by supported employees with intellectual disabilities improve from 2002 to 2007?" Specifically, this study sought to determine whether rates of employment, wages earned, hours worked, and cost-efficiency (as measured by net benefit and benefit-cost ratios) increased for supported employees with intellectual disabilities from 2002 to 2007.

Third, "Did employment outcomes differ between individuals with and without secondary conditions?" Previous research has explored this topic. For instance, both Cimera [8] and Noble et al. [23] both found that individuals with even severe or multiple disabilities generated a net monetary benefit as the result of being in supported employment. However, as stated previously, these studies are dated and may no longer accurately reflect contemporary outcomes.

Finally, "Did employment outcomes (i.e., rates of employment, wages earned, hours worked, and cost-efficiency) achieved by supported employees with intellectual disabilities vary from state to state?" Recent evidence has suggested that cost of supported employment fluctuates significantly across and within states [6, 18]. However, there has yet to be a nationwide examination of cost-efficiency from the workers' perspective.

## 2. Methodology

### 2.1. Source of data

When individuals apply for services through each state's vocational rehabilitation agencies, as well as when their case is officially closed, certified rehabilitation counselors (CRCs) enter data into a computerized data system (i.e., the "911 database"). Data detail the person's demographics (e.g., age, disability, gender, etc.), services that they receive (e.g., job development, counseling, job training, etc.), employment outcome achieved (e.g., wages earned, hours worked, whether they were successfully employed), and other information. These data are then cross-checked for discrepancies and potential errors by two computer programs, RSA\_ERA and RSA Edit Program (Rehabilitation Services Administration, 2004).

### 2.2. Participants

From 2002 to 2007, 3,782,314 consumers of services from state vocational rehabilitation agencies had their cases closed. In nearly a quarter of a million of these cases (i.e., 231,204), supported employment was

indicated as the individual's vocational goal on their Individual Plan for Employment (IPE). The present study focused upon 104,213 of these individuals who had "mental retardation" (the term used by RSA when data were collected) as either their primary or secondary disability. Their demographics can be found in Table 1.

### 2.3. Variables

#### 2.3.1. Intellectual disability

When somebody applied for services through state-operated vocational rehabilitation agencies, counselors document the applicant's primary and secondary disabilities, if appropriate. For the purposes of the present study, individuals were said to have an intellectual disability if either their primary or secondary conditions were listed as being caused by "mental retardation".

#### 2.3.2. State vocational rehabilitation agencies

Each state and territory in the United States has at least one government-operated vocational rehabilitation programs. Some states have two programs – one that provides services for individuals with vision impairments and another that serves individuals with all other conditions. When available, both types of state

Table 1  
Demographics of VR consumers with intellectual disabilities (in %) who wished to become supported employees: 2002 to 2007

	Year N	2002 (17,280)	2003 (17,482)	2004 (17,541)	2005 (17,497)	2006 (17,549)	2007 (16,864)	2002–2007 (104,213)
Characteristics								
Male		57.3	56.9	56.9	57.0	56.2	57.0	56.9
Female		42.3	43.1	43.1	43.0	43.8	43.0	43.1
Age (in years)		37.06	32.09	33.99	33.94	32.39	n/a	33.89
White		70.7	69.7	73.0	73.2	72.8	71.2	71.8
African American		21.5	22.7	23.3	24.1	24.7	26.3	23.8
Native American		1.0	1.0	1.0	1.2	1.2	1.3	1.1
Asian		1.8	1.5	1.6	1.7	1.6	1.8	1.7
Pacific Islander		0.4	0.5	0.3	0.5	0.5	0.4	0.4
Hispanic or Latino		8.5	8.5	9.5	9.1	8.7	8.5	8.8
Had secondary diagnosis		46.9	46.6	46.9	47.6	47.6	49.3	47.5
Successfully employed		63.37	61.27	60.52	61.04	62.85	63.48	62.08
Reason for unsuccessful case closure								
Unable to locate		5.00	5.24	5.39	5.90	6.31	5.86	5.62
Disability too significant		1.82	1.69	1.82	1.69	1.53	1.61	1.69
Declined further services		11.26	11.23	11.38	11.67	11.52	11.33	11.40
Death		0.31	0.38	0.31	0.34	0.32	0.28	0.32
Individual in institution		0.39	0.39	0.50	0.42	0.43	0.33	0.41
Transferred to another agency		3.07	3.35	3.26	2.85	2.59	2.78	2.98
Failure to cooperate		5.14	5.92	6.15	6.08	5.73	5.76	5.80
Transportation not feasible		0.18	0.32	0.32	0.30	0.29	0.22	0.27
Extended services not available		0.55	0.22	0.29	0.22	0.17	0.14	0.27
Sheltered workshop		0.71	0.67	0.55	0.42	0.31	0.26	0.49
All other reasons		8.19	9.30	9.53	9.08	7.94	7.95	8.67

Note: Ns in parentheses. Individuals could identify themselves as members of multiple ethnicities. Consequently, the cumulative percentages do not equal 100. Further, age was not available for supported employees whose cases were closed in 2007. n/a: Age could not be calculated for individuals who had their cases closed in 2007 due to insufficient data.

vocational rehabilitation agencies furnished data for the present study. However, 99.997% of the 104,213 supported employees with intellectual disabilities comprising the data for this study originated from agencies serving individuals with general conditions. Only 297 of the supported employees investigated here were served by agencies for the blind.

### 2.3.3. *Successfully employed, hours worked, and wages earned*

At the time cases were officially closed, vocational rehabilitation counselors documented whether the individual was competitively employed in the community (i.e., “successfully employed”). When individuals were successfully employed, counselors also indicated the average number of hours they worked per week and the amount of gross wages they earned per month.

### 2.3.4. *Taxes paid*

From the gross wages earned documented in the 911 database, it was possible to estimate the actual taxes paid per month by each supported employee. Estimations were based upon the assumption that supported employees were single, declared no other dependents but themselves, and claimed only standard deductions. Taxes calculated included: Federal income tax, Medicare, Social Security, and state income taxes (when appropriate). Taxes were calculated using 2007 tax tables furnished online by each state’s Department of Revenue. Social Security and Medicare were calculated as being 6.2% and 1.45% of gross wages, respectively (Tax Form Processing LLC, 2009).

### 2.3.5. *Forgone wages*

For the purposes of this study, it was assumed that participants would have entered sheltered workshops if they could not enroll in supported employment. Therefore, the wages that could have been earned in sheltered workshops are considered forgone wages. According to a recent multi-state study, in 2007–2008, the average sheltered employee worked 74 hours and earned \$101 in gross wages per month [22]. Subtracting deductions for Social Security and Medicare, it was assumed that individuals would have earned a net wage of \$93.27 per month had they chosen sheltered workshops rather than supported employment. No federal or state income taxes would have been deducted given how little sheltered employees earned.

### 2.3.6. *Changes in subsidies received*

At intake, vocational rehabilitation counselors documented how much each individual received in

governmental subsidies per month. They also recorded this data at the time cases were closed. By subtracting the amount of subsidies received at closure from the amount of subsidies received at application, it was possible to determine how much subsidies changed as a result of supported employment. Types of governmental subsidies documented included: Supplemental Security Income (SSI), Social Security Disability Insurance (SSDI), Temporary Assistance for Needy Families (TANF), and “All other Public Support”, which included General Assistance, Veteran’s Disability Benefits, and Workers’ Compensation.

### 2.3.7. *Cost efficiency*

Cost efficiency is a method for comparing the monetary benefits of a decision to the corresponding monetary costs. A decision is said to be cost-efficient if it generates a net benefit (i.e., gross benefits minus gross costs) or a benefit-cost ratio greater than 1.00 (i.e., gross benefits divided by gross costs). For the purposes of the present study, supported employment’s primary monetary benefit to workers was the wages that they earned. The monetary costs included forgone wages, taxes paid, and reduction in subsidies as a result of becoming competitively employed. It should be noted that if the amount of subsidies received increased after an individual became employed, this change would be considered a benefit of supported employment, rather than a cost.

## 2.4. *Conversion of dollar values*

Because the value of a dollar changes substantially over time, the monetary benefits and costs presented here had to be converted to identical monetary units. To accomplish this, dollar values (e.g., wages earned) were multiplied by the consumers’ price index (CPI) for the base year (i.e., 2008) and then were divided by the CPI of the year from which the dollar value originated [17]. For example, a dollar earned in 2005 would have been multiplied by 2008’s CPI (i.e., 215.303) and then divided by the CPI for 2005 (i.e., 195.3) indicating that a 2005 dollar would be worth \$1.10 in 2008 dollars. All monetary figures presented here are in 2008 dollars unless otherwise noted.

## 3. Results

### 3.1. *Question 1: Is supported employment cost-efficient from the workers’ perspective?*

In order to determine the cost-efficiency of supported employment from the workers’ perspective, the

Table 2  
Average outcomes achieved by all successfully employed individuals with intellectual disabilities (2002 to 2007)

Outcome	2002 (10,950)	2003 (10,711)	2004 (10,616)	2005 (10,680)	2006 (11,030)	2007 (10,705)	2002–2007 (64,692)
Hours worked per week	22.13	21.92	21.62	21.63	21.94	21.54	21.80
Wages earned per month	\$650.96	\$637.67	\$612.27	\$607.25	\$617.68	\$616.75	\$623.77
Monthly net benefit	\$481.74	\$483.60	\$474.60	\$462.02	\$472.76	\$477.39	\$475.35
Benefit-cost ratio	3.85	4.14	4.45	4.18	4.26	4.43	4.20

Notes: Population size of successfully employed supported employees in parentheses. All dollar values are presented in 2008 dollars. Minimum wage for FY 2002–2006 was \$5.15. In FY 2007 it was \$5.85.

monetary benefits and costs of being employed via supported employment were compared. From 2002 to 2007, 104,213 individuals with intellectual disabilities being served by VR agencies indicated that they wished to be employed via supported employment programs. Of these 104,213 job seekers, 64,692 individuals became successfully employed in the community via supported employment at the time their cases were closed. As can be seen in the last column of Table 2, these successfully employed individuals generated an average monthly net benefit of \$475.35 and a benefit-cost ratio of 4.20. Stated another way, for every dollar supported employees with intellectual disabilities relinquished as a result of working within their communities, they earned an average of \$4.20.

### 3.2. Question 2: Did employment outcomes achieved by supported employees with intellectual disabilities improve from 2002 to 2007?

As can also be seen in Table 2, outcomes achieved by individuals with intellectual disabilities who were successfully employed when their cases were closed remained relatively consistent from 2002 to 2007. Cost-efficiency, as measured by benefit-cost ratios, fluctuated slightly from a low of 3.85 in 2002 to a high of 4.45 in 2004. However, all other employment outcomes (i.e., rate of successful employment, hours worked per week, and wages earned per month) remained nearly identical over this period.

### 3.3. Question 3: Did employment outcomes differ between individuals with and without secondary conditions?

Of the 104,213 individuals with intellectual disabilities served by state vocational rehabilitation agencies from 2002 to 2007, 47.5% (49,501) had secondary conditions. As shown in Table 3, 59.2% of individuals with secondary conditions were employed within

Table 3  
Average outcomes achieved by supported employees with intellectual disabilities by presence of secondary disabling conditions

Outcomes	Had secondary conditions (49,501)	No secondary conditions (54,712)
Successfully employed	59.2%	64.2%
Hours worked per week	21.08	22.31
Wages earned per month	\$602.68	\$636.46
Monthly net benefit	\$454.51	\$489.83
Benefit-cost ratio	4.07	4.27

Note: Population size of all supported employees with and without secondary conditions in parentheses. However, data presented on hours worked, wages earned, net benefits, and benefit-cost ratios were calculated from only individuals who became successfully employed in their communities via supported employment. All dollar values are presented in 2008 dollars.

their communities at the time their cases were officially closed. This is compared to 64.2% for individuals without secondary conditions. Table 3 documents other employment outcomes achieved by these two groups.

### 3.4. Question 4: Did employment outcomes achieved by supported employees with intellectual disabilities vary from state to state?

Although the average supported employee with intellectual disabilities was cost-efficient in all states and U.S. territories (mean benefit-cost ratio of 4.20 and mean monthly net benefit of \$475.35), there were considerable variations in cost-efficiency between locations. For instance, the mean benefit-cost ratio for supported employees with intellectual disabilities served in Washington was 13.54 (the highest of all the states). The mean benefit-cost ratio for individuals served in Wisconsin, however, was 1.86 (the lowest of all the states). Rates of successful employment also varied significantly, from a high of 97.33% in Washington to 37.14% in Oklahoma. These and other outcomes are presented by location in Table 4.

Table 4  
Average outcomes achieved by supported employees with intellectual disabilities by state/territory (2002 to 2007)

State/territory	N	Successfully employed (%)	For successfully employed			
			Hours worked per week	Monthly wages	Monthly net benefit	Benefit-cost ratio
Washington	487	97.33	16.75	\$605.77	\$561.04	13.54
Wyoming	458	77.95	17.61	\$501.46	\$454.04	10.57
South Carolina	596	63.42	27.24	\$761.81	\$660.16	7.49
Delaware	274	61.31	23.68	\$775.65	\$668.23	7.22
Nebraska	618	65.70	20.69	\$544.74	\$464.63	6.80
Oklahoma	1,979	37.14	26.81	\$768.57	\$641.70	6.06
New Jersey	1,369	76.99	23.75	\$795.86	\$659.12	5.82
New York	10,970	63.04	22.08	\$661.67	\$546.09	5.72
Nevada	417	58.51	26.58	\$799.18	\$658.89	5.70
Louisiana	1,995	42.31	25.96	\$693.32	\$566.80	5.48
Dist. of Columbia	69	52.17	28.76	\$1,016.28	\$830.15	5.46
Puerto Rico	730	77.53	21.49	\$518.08	\$420.22	5.29
Virginia	3,243	74.78	17.71	\$496.88	\$403.02	5.29
Arkansas	247	65.99	20.74	\$559.45	\$452.69	5.24
Alabama	1,860	65.54	24.19	\$648.15	\$524.45	5.24
Indiana	6,198	54.26	19.25	\$563.65	\$450.86	5.00
North Dakota	280	61.79	21.88	\$580.79	\$459.69	4.80
Maine	217	70.51	13.57	\$404.52	\$315.15	4.53
Mississippi	1,177	64.06	21.48	\$564.06	\$436.92	4.44
Connecticut	351	68.09	20.88	\$736.31	\$567.17	4.35
Oregon	766	61.88	17.80	\$578.01	\$445.23	4.35
Guam	3	66.67	32.00	\$678.00	\$520.74	4.31
Pennsylvania	2,047	79.38	22.40	\$661.50	\$501.65	4.14
Virgin Islands	29	51.72	24.51	\$710.41	\$534.62	4.04
Utah	529	74.67	18.59	\$497.04	\$372.55	3.99
Missouri	3,149	74.15	23.78	\$700.46	\$521.60	3.92
Georgia	2,338	55.52	25.09	\$716.11	\$532.96	3.91
Maryland	1,396	75.50	21.99	\$652.27	\$484.88	3.90
North Carolina	7,264	53.78	19.46	\$558.96	\$411.22	3.78
American Samoa	2	100.00	40.00	\$549.18	\$401.77	3.73
California	16,923	62.29	27.01	\$725.77	\$529.68	3.70
Massachusetts	269	73.61	18.03	\$828.11	\$603.73	3.69
Kansas	716	59.64	19.63	\$543.04	\$387.89	3.50
Ohio	3,481	59.38	24.08	\$708.98	\$506.28	3.50
Montana	376	68.88	17.72	\$472.27	\$331.85	3.36
Texas	4,961	50.70	22.12	\$618.14	\$431.59	3.31
Kentucky	1,880	68.35	18.13	\$534.74	\$372.95	3.31
New Mexico	637	66.56	14.69	\$382.92	\$262.26	3.17
Florida	5,027	45.30	21.26	\$610.25	\$409.37	3.04
Vermont	940	80.11	14.69	\$503.83	\$337.90	3.04
Colorado	839	64.24	17.26	\$531.50	\$356.11	3.03
Michigan	3,701	64.20	17.65	\$455.30	\$297.64	2.89
Minnesota	1,800	72.22	21.90	\$619.25	\$403.90	2.88
Alaska	184	74.46	15.58	\$519.10	\$337.56	2.86
South Dakota	765	67.58	17.35	\$441.52	\$282.35	2.77
Arizona	559	54.03	21.10	\$560.43	\$355.26	2.73
Hawaii	71	66.20	15.93	\$469.06	\$296.84	2.72
Iowa	1,998	57.96	18.31	\$530.71	\$323.88	2.57
Illinois	1,757	62.83	18.33	\$552.11	\$324.87	2.43
Idaho	854	71.66	15.21	\$401.13	\$231.13	2.36
New Hampshire	326	76.69	15.50	\$463.74	\$264.22	2.32
West Virginia	544	72.98	13.74	\$352.09	\$189.79	2.17
Tennessee	2,970	68.79	17.82	\$467.23	\$233.31	2.00
Rhode Island	474	72.36	15.38	\$510.21	\$249.75	1.96
Wisconsin	1,103	96.19	16.14	\$470.34	\$217.92	1.86

Note: N refers to the total population of individuals with intellectual disabilities served by each state's vocational rehabilitation agencies who wished to become supported employees. However, data presented on hours worked, wages earned, net benefits, and benefit-cost ratios were calculated from only individuals who became successfully employed in their communities via supported employment. All dollar values are presented in 2008 dollars.

#### 4. Discussion

This study explored the employment outcomes achieved by individuals with intellectual disabilities served by state-operated vocational rehabilitation agencies from 2002 to 2007. Data on 104,213 individuals from throughout the United States and its territories were examined. From the analyses conducted, several significant findings arose.

The first significant finding was that supported employment was cost efficient from the workers' perspective. That is, on average, individuals with intellectual disabilities who became successfully employed within their communities gained greater monetary benefits (i.e., wages earned) than the resulting monetary costs (i.e., forgone wages, taxes paid, reduction in subsidies). This result had been found by other authors [10, 12, 13, 29].

This study also found that supported employees with intellectual disabilities were cost-efficient regardless of the number of their disabling conditions. Specifically, both individuals with and without secondary conditions generated positive net benefits as a result of being employed in the community ( $M = \$454.51$  and  $\$489.83$ , respectively). Further, rates of employment, wages earned, and number of hours worked did not vary substantially between these two groups. Similar conclusions were reached by previous authors [8, 13, 23].

Supported employment was also found to be cost efficient regardless of the worker's state of residence. In all 50 states, 4 U.S. territories, and the District of Columbia, supported employment provided individuals with intellectual disabilities greater monetary benefits than corresponding monetary costs. However, cost efficiency varied considerably throughout the country. For example, in Washington supported employees generated an average benefit-cost ratio of 13.54 and a monthly net benefit of  $\$561.04$ . In Wisconsin, on the other hand, supported employees generated an average benefit-cost ratio of 1.86 and a monthly net benefit of  $\$217.92$ .

States also varied dramatically on other employment outcomes. For example, in Wisconsin, 96.19% of supported employees with intellectual disabilities were employed when their cases were closed. In Oklahoma the employment rate was 37.14%. With regard to hours worked, supported employees in South Carolina worked an average of 27.24 hours per week, whereas supported employees in Maine worked an average of 13.57 hours.

Reasons for these variations cannot be explained here. Perhaps region economic conditions influenced these results. Perhaps there were differences in pol-

icy, funding, or the preparation of service providers. Future research will need to determine why some states produced exceptional outcomes, while others did not.

Another finding of potential significance involved the amount of wages earned by supported employees with intellectual disabilities. Specifically, from 2002 to 2007 supported employees earned an average of  $\$623.77$  per month (prior to taxes), or  $\$7,485.24$  per year, which is well below the poverty line of  $\$13,690$  for a family of two in the 48 contiguous United States (U.S. Department of Health and Human Services, 2009). Moreover, employment outcomes achieved by supported employees did not improve significantly from 2002 to 2007. Rates of employment, wages earned, hours worked, and cost efficiency all remained relatively consistent during this period.

If supported employment is going to be a viable employment option that promotes both fiscal and physical independence, supported employees must be able to earn a livable wage. To accomplish this, they will require jobs paying more than the  $\$7.15$  an hour (and work more than 21.8 hours per week) found here for the average supported employee. Future research will need to investigate methods of job development and support strategies that may increase the economic outcomes achieved by supported employees.

Another interesting finding from the presented data involved the change in wages experienced by both supported and sheltered employees. Specifically, in the mid-1980s, Lam [16] determined that sheltered employees earned  $\$1.17$  per hour. Data utilized here from 2007 to 2008 found that sheltered employees earned  $\$1.36$  per hour [22]. In other words, wages earned by sheltered employees appear to have increased only 16.2% over twenty-one years. Wages earned by supported employees, on the other hand, have increased 299.4% from the  $\$1.79$  per hour identified by Lam [16] to the  $\$7.15$  found here.

This increase in wages earned by supported employees explains the differences in results found in the 1980s and here. For instance, in Virginia during the mid-1980s, supported employees with intellectual disabilities generated an average benefit-cost ratio of 1.43 [13]. From 2002 to 2007, supported employees from Virginia generated an average benefit-cost ratio of 5.29. Unless the wages earned by sheltered employees increases in the future, the cost-efficiency of supported employment will likely continue to increase from the worker's perspective.

Taken in total, findings from this research support the inclusion of people with intellectual disabilities within the competitive workforce. Even individuals

with multiple conditions benefited monetarily from being employed within their communities. However, this study also identified many areas of concern. For instance, for several states, the employment rate of individuals with intellectual disabilities was exceedingly low. In Oklahoma, for example, less than four out of ten participants who wanted to be in supported employment eventually found a job in the community. Moreover, even for the participants who were fortunate enough to become employed, the wages that they earned would keep them in poverty.

It should be noted that the analyses presented here apply only to individuals served by state vocational rehabilitation agencies. Persons with intellectual disabilities served by other programs (e.g., Departments of Mental Health) may produce considerably different outcomes. Further, calculations of cost efficiency presented here did not include monetary benefits associated with fringe benefits that may have been given to some supported employees. The reason for this omission was that I was unable to determine how many supported employees received fringe benefits. Moreover, determining the monetary value of fringe benefits that range from free food to life insurance is problematic. So the present study focused upon variables that were more easily identifiable and quantifiable.

Another limitation to this study is that individuals with intellectual disabilities are a very diverse population. Individuals with mild impairments may obtain different outcomes than individuals with more profound disabilities, as has been found by other authors [8, 12, 23]. Though this study attempted to investigate severity of condition by comparing individuals with multiple diagnoses to those with only intellectual disabilities, this may not have addressed the issue. Future analyses will need to explore the affects that different degrees of intellectual disabilities have on cost-efficiency.

## 5. Conclusions

The fundamental purpose of this study was to determine whether individuals with intellectual disabilities should choose supported employment as their vocational option. Based upon the data presented here, the answer appears to be "it depends". Certainly, individuals working in their communities via supported employment generated more monetary benefits than monetary costs. Further, workers would earn far more in the community than they would in sheltered workshops. This was regardless of the presence of multiple

disabilities. However, in some states, less than half of participants were able to become competitively employed. For those who remain unemployed, the benefits of supported employment (both monetary and non-monetary) remain an unrealized dream.

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