

# Working for Tomorrow

THE NEWSLETTER OF THE CENTER FOR WORKERS WITH DISABILITIES

FEDERAL NEWS

THE NEWSLETTER OF THE CENTER FOR WORKERS WITH DISABILITIES

## Article Addresses the Economics of Supported Employment

Robert Cimera examines the costs and benefits of supported employment in the article "The economics of supported employment: What new data tell us," published in the *Journal of Vocational Rehabilitation* 37 (2012) 109-117. The article reviews the literature on supported employment costs and benefits from the 1980s and 1990s, and examines the findings from more recent research on this topic (since 2000). Cimera's review of the literature addresses several key questions, including whether people with disabilities should work competitively in the community; whether supported employment is cost-efficient from the taxpayers' perspective; which is more cost-effective, supported employment or sheltered workshops; and how can supported employment become more effective and efficient. Several of the author's findings are summarized below:

- Taken in total, the recent cost-analysis research (examining costs and benefits from the worker's perspective) finds that individuals with disabilities experience greater monetary benefits than costs when working in the community. Additionally, the cost efficiency of supported employment appears to be increasing over time. Taking inflation into account, the author finds that the relative value of what sheltered employees earned decreased by 40.6 percent since the 1980s while the relative value of wages earned by supported employees increased by 31.2 percent. However, supported employees continue to make wages that are below poverty level.

- In regard to the cost-efficiency of supported employment from the taxpayers' perspective, Cimera finds that there is wide variation in benefit-cost ratios depending on location. Additionally, the costs of supported employment vary over an individual's "employment cycle." At the same time, the author examined 231,204 supported employees served by vocational rehabilitation throughout the United States from 2002 to 2007. He found that supported employees returned an average of \$1.46 per \$1.00 of taxpayer costs.
- On the issue of the cost-effectiveness of supported versus sheltered employment, the author notes the need for a multi-state analysis of the cumulative costs of each type of program. Cost-effectiveness studies from the state of Wisconsin found that supported employment was more cost-effective than sheltered workshops.
- Through the review of the literature, Cimera identifies several strategies that may improve the cost effectiveness of supported employment. These include using natural supports and involving youth with disabilities in community-based transition programs while in high school. A key finding suggests that not referring individuals to sheltered workshops prior to enrolling them in supported employment decreases costs while increasing outcomes.

THE NEWSLETTER OF THE CENTER FOR WORKERS WITH DISABILITIES

In conclusion, the author's review of the cost-accounting literature on supported employment finds that individuals fare better financially from working in the community than in sheltered workshops. However, Cimera notes three important caveats to the findings of the literature review: supported employment is only cost-efficient in relation to sheltered workshops; certain populations of supported employees may not be cost-efficient in some states; and supported employment is only cost-efficient from the taxpayers' and worker's perspectives if supported employees become employed in the community. This JVR article is available from Virginia Commonwealth University Rehabilitation Research and Training Center at [http://www.worksupport.com/documents/economics\\_jvr.pdf](http://www.worksupport.com/documents/economics_jvr.pdf).

# The economics of supported employment: What new data tell us

Robert Evert Cimera

*Kent State University, 405 White Hall, Kent, OH 44242-0001, USA*

*Tel.: +1 330 672 5796; Email: rcimera@kent.edu*

**Abstract.** This paper reviews the literature on the economics of supported employment. By comparing results from research conducted prior to, and after, 2000, several important findings were identified. The first was that individuals with disabilities fare better financially from working in the community than in sheltered workshops, regardless of their disability. This is especially true given that the relative wages earned by supported employees have increased 31.2% since the 1980s while the wages earned by sheltered employees have decreased 40.6% during the same period. Further, supported employment appears to be more cost-effective than sheltered workshops over the entire “employment cycle” and returns a net benefit to taxpayers.

**Keywords:** Supported employment, literature review, cost, benefits, cost-efficiency, cost-effectiveness

## 1. The economics of supported employment: What new data tell us

Even before “supported employment” was officially defined by the Developmental Disability Assistance and Bill of Rights Act of 1984 (PL 98–527), the economics of community-based, competitive employment for individuals with severe disabilities was being investigated and debated [25, 44]. Indeed, prior to 1984 several cost-accounting studies had already been conducted and disseminated in the vocational rehabilitation literature (cf. [4, 5, 26, 46]).

Throughout the 1980s and 1990s, at least thirty other research studies explored issues related to the monetary benefits or costs of supported employment (cf. [2, 24, 34, 42, 48, 51]). Further, studies had been conducted in numerous countries, including Australia [29, 50], Canada [35], and Great Britain [47]. From this extensive body of research, at least three reviews of the literature appeared in 1999 and 2000 [18, 21, 33], conclusions from which have been documented in many articles and

even in testimony to Congress [36, 54]. To say the least, the collection of research on the economics of supported employment is abundant.

However, perhaps more than any other type of analysis, cost-accounting is highly fluid and quickly becomes out-of-date [1]. If only one economic variable changes (e.g., how programs are funded, increases in minimum wage, changes in how subsidies are allocated, decline in the value of the dollar), the conclusions drawn from cost-accounting data can literally become flawed overnight [23, 30]. Consequently, what cost-accounting research indicates in one year is unlikely to be accurate the following year, let alone thirty-two years later.

The purpose of this investigation is to examine and synthesize the recent research (i.e., since 2000) on the monetary cost and benefits of supported employment programs in the United States. It examines what we know about the economics of supported employment, what we thought we once knew, and what we need to figure out in order to increase

rates of competitive employment among people with disabilities. Policy implications and future research are also discussed.

## 2. Questions explored in the supported employment literature

### 2.1. *Should people with disabilities work competitively in their communities?*

When supported employment was still in its infancy, many authors speculated that, while individuals with disabilities were capable of working competitively within their communities, they were better off financially by not doing so [4, 31, 45]. Specifically, these authors indicated that, as a result of working, supported employees would lose their governmental subsidies and that this loss would be greater than the wages actually made.

During the 1980s and 1990s, numerous studies investigated this issue (cf. [5, 24, 27, 28, 32, 34]). The general conclusion drawn from these studies was that people with disabilities benefited more monetarily from working in their community than not working or working in sheltered workshops (i.e., supported employment was cost-efficient from the worker's perspective).

For example, Hill et al. [27] explored data on 214 supported employees in Virginia over a 94-month period. They found that these supported employees received an average of \$13,815 in benefits (i.e., gross wages earned and fringe benefits) and experienced \$7,000 in costs (i.e., forgone wages from sheltered workshops, reduction in governmental subsidies, and taxes withheld). This translated to a benefit-cost ratio of 1.97 (i.e., \$1.97 of benefit per \$1.00 of cost) or a per capita net benefit of \$6,815.

Since 2000, several new studies have explored this same question (cf. [10, 12, 20, 53]). Specifically, Cimera [10] investigated the monetary benefits and costs accrued by 104,213 supported employees with intellectual disabilities from 2002 to 2007. He found that these supported employees averaged a benefit-cost ratio of 4.20 and a monthly net benefit of \$475.35. Similar results were obtained regardless of whether or not supported employees had multiple disabilities. Supported employees without secondary conditions averaged a benefit-cost ratio of 4.27 and a monthly net benefit of \$489.83; whereas, supported employees with secondary conditions averaged benefit-cost ratios of 4.07 and a monthly net benefit of \$454.51.

Cimera and Burgess [20] investigated the monetary benefits and costs of 19,436 supported employees diagnosed with autism spectrum disorder (ASD). Their results were comparable to Cimera [10]. That is, supported employees with ASD incurred greater monetary benefits from working in their communities than monetary costs (i.e., average benefit-cost ratio of 5.28; average monthly net benefit of \$643.20). Further, these results were not significantly influenced by the presence of secondary conditions.

Utilizing identical cost-accounting methodology as previous research, some of these recent studies had two decisive advantages over the research conducted in the 1980s and 1990s. First, they had significantly larger sample sizes. In fact, Cimera [10, 12] and Cimera and Burgess [20] incorporate data on the entire *population* of supported employees who were funded by vocational rehabilitation from 2002 to 2007. So the cost figures presented were not subject to sampling error. Second, the data analyzed came from throughout the United States and its territories, so their findings were not influenced by the variations in programmatic costs that occur between regions [37].

Taken in total, the recent cost-analysis research on the worker's perspective collaborate the findings of studies conducted in the 1980s and 1990s – individuals with disabilities experience greater monetary benefits than costs when working in the community. Further, this cost-efficiency appears to be regardless of type of disability and the presence of secondary conditions. Put simply, working in the community makes economic sense for people with disability regardless of their diagnoses.

When the 1980s and 1990s cost-accounting studies are compared to more contemporary data, a surprising finding immerses – the cost-efficiency of supported employment from the worker's perspective appears to be increasing over time. For example, in 1987, Hill et al., found that 214 supported employees with intellectual disabilities earned an average of \$1.43 per \$1 that they lost as a result of working in the community. As already reported, two decades later, Cimera [10] found this figure to be \$4.20 for the same population. This is an increase of 269.2%.

Given that the methodologies utilized by these authors were analogous, it is likely that this rise in cost-efficiency is primarily the result of the increase in wages earned by supported employees. In the 1980s, supported employees with intellectual disabilities earned an average of \$3.15 per hour [32]. By the 2000s, this figure rose to \$7.15 [10].

Conversely, the hourly wages earned by sheltered employees have remained relatively unchanged over this period. In the 1980s, Lam [34] found that sheltered employees earned \$1.17 per hour. A recent multi-state study [40] found that the average sheltered employees earned \$101 while working 74 hours per month, which corresponds to a mean hourly wage of \$1.36. In other words, over twenty years, the rate of hourly pay experienced by sheltered employees increased by only 19 cents. After adjusting for inflation, these gains disappear; \$1.17 in 1986 would be the equivalent to \$2.29 in 2009. So the relative value of what sheltered employees earned actually *decreased* by 40.6% since the 1980s while the relative value of wages earned by supported employees *increased* by 31.2%

Although, research has consistently shown that supported employment produces more monetary benefits than costs, there is an important caveat to this finding. While the wages earned by supported employees rose continuously over the years and are significantly higher than what can be expected in sheltered workshops, supported employees are still making wages that will not keep them out of poverty. For instance, Cimera [10] found that supported employees with intellectual disabilities only earned an average of \$623.77 per month (i.e., \$7,485.24 annually). Cimera and Burgess [20] found that supported employees with ASD earned \$793.34 per month (i.e., \$9,520.08 annually). According to the U.S. Department of Health and Human Services [55], a family of one living in the 48 contiguous U.S. States needs to earn \$10,830 annually to stay above the "poverty line". On this measure, supported employment doesn't measure up to expectations. Clearly, more needs to be done to develop positions in the community for supported employees that pay a livable wage.

## 2.2. *Is supported employment cost-efficient from the taxpayers' perspective?*

Compared to the worker's perspective, there was far less consensus in the pre-2000 cost-accounting literature regarding whether supported employment is cost-efficient for taxpayers. Some studies found that supported employment generated more monetary benefits than cost (cf. [26–28, 38, 52]). Others found that the opposite was true (cf. [24, 41, 43, 49]).

For instance, Hill and Wehman [26] analyzed the employment outcomes of 90 supported employees placed in the community in Virginia over a 47-month

period. They found that these individuals generated gross benefits of \$620,576 (i.e., per capita gross benefits of \$6,895) and gross costs of \$530,200 (i.e., per capita gross costs of \$5,891) for a net benefit of \$90,376 (i.e., \$1,004 per person) or a benefit-cost ratio of 1.17. In other words, according to Hill and Wehman's data, for every \$1 relinquished, taxpayers received \$1.17 back in the form of taxes paid, reduced governmental subsidies, and decreases in alternative program costs.

Conversely, Rusch et al. [43] examined the benefits and costs of 729 supported employees in Illinois over 48 months and found that these individuals generated a gross benefit to taxpayers of \$6,471,561 (i.e., per capita gross benefit of \$8,877). They also generated a gross cost of \$8,418,448 (i.e., per capita gross cost of \$11,548), for a net *cost* to taxpayers of \$1,946,887 (i.e., \$2,671 per supported employee) and a benefit-cost ratio of 0.77. The explanation for these divergent conclusions becomes clear with two critical findings from studies conducted after 2000.

First, the post-2000 literature determined that the costs of supported employment differed significantly across the country. For instance, Cimera [8] found that within the same state, supported employment program produced wildly divergent benefit-cost ratios ranging from 1.79 to 0.18. Further, when examining the cost of supported employment throughout the United States, Cimera [9] found that rates of cost-efficiency varied dramatically from location to location. Supported employees in Nebraska returned \$2.77 to taxpayers for every dollar of cost, whereas supported employees from Illinois returned only \$0.63. This disparity in cost could explain why pre-2000 studies conducted in Illinois (cf. [39, 43, 49]) produced significantly different results than studies in Virginia (cf. [26, 28, 52]) or New York (cf. [41]).

The second critical finding from the post-2000 literature involves the cost-trend of supported employment, or when in the supported employment process most expenditures occur. Cimera [13] examined the cumulative costs generated by 56 supported employees with intellectual disabilities over one "employment cycle;" that is, the point at which a person enrolls in supported employment to the point at which they exit supported employment or change positions within the community. He found that the costs generated did not occur uniformly from month to month. Instead, initial costs started high (e.g., 11.8% of total costs occurring within the first three months) and then decreased substantially over time (e.g., only 1.1% of total costs occurring during the last three months).

These findings indicate that the period in which costs are analyzed has a marked effect on supported employment's reported cost-efficiency. If a researcher examines the costs of supported employment during the first few months an individual is in the program, supported employment will likely be seen as inefficient (i.e., costs higher than benefits). However, if a researcher analyzes costs at the tail end of the supported employee's vocational cycle, supported employment will likely appear cost-efficient (i.e., benefits higher than costs). Unfortunately, most of the cost-efficiency studies on supported employment do not indicate when during the employment cycle data were gathered. Consequently, it is unclear as to how to interpret their findings. In order to determine supported employment's actual cost-efficiency, the entire employment cycle has to be investigated.

In addition to examining the entire employment cycle, research effectively investigating the cost-efficiency of supported employees from the taxpayers' perspective must also examine data from across the country in order to avoid the regional affects identified earlier. Unfortunately, to date, there has yet to be a national study focusing on the entire employment cycle of a large number of supported employees. However, given what is known about the cost-trend of supported employment, a reasonable approximation of supported employment's cost-efficiency to taxpayers can be ascertained.

As indicated, research has shown that the majority of costs occur during the initial phases of supported employment (e.g., assessment, job development, initial training). Further, costs decrease once follow along services begin [13]. Therefore, if supported employment is cost-efficient while the lion's share of the costs are being accrued, supported employment must also be cost-efficient when per capita costs decrease, since the monetary benefits of supported employment (e.g., reduction in subsidies, taxes paid, and forgone alternative program costs) remain relatively constant.

Cimera [11] examined all 231,204 supported employees served by vocational rehabilitation throughout the United States from 2002 to 2007. He found that supported employees returned an average of \$1.46 per \$1.00 of taxpayer costs. Further, all disability groups examined (e.g., mental illnesses, physical disabilities, autism, sensory impairments, intellectual disabilities, and TBI) were found to cost-efficient. Individuals with "other learning difficulties" returned an average of \$2.20 per dollar of taxpayer cost (i.e., the most cost-efficient group examined), while individuals with TBI

returned \$1.17 (i.e., the least cost-efficient group examined). Moreover, when individuals with and without secondary conditions were examined, Cimera found that, in each analysis, supported employees were cost-efficient from the taxpayers' perspective.

It should be noted that this study only examined costs resulting from services funded by vocational rehabilitation and not costs from follow along services, which are funded by other sources. Yet, vocational rehabilitation tends to fund the "up front" costs of supported employment (e.g., vocational assessment, job development, and initial training) that, as previously discussed, contain the majority of the cumulative costs generated by supported employees throughout their entire employment cycle. Therefore, if supported employment is cost-efficient from the taxpayers' perspective during this period, it must also be cost-efficient if all other, less costly, services were included within the analyses. Even so, the field would gain significantly from a nationwide benefit-cost analysis examining all cumulative costs generated by all supported employees.

### *2.3. Which is more cost-effective, supported employment or sheltered workshops?*

Another issue frequently debated within the supported employment literature is whether supported employment costs less (i.e., is more cost-effective) than programs found in segregated settings, such as sheltered workshops. Prior to 2000, only a handful of studies examined this question (cf. [34, 37, 38]).

For example, Lam [34] compared the costs generated by 50 supported employees and 50 sheltered employees with "developmental disabilities". He found that, overall, individuals generated less cost in supported employment. More precisely, the average per capita cost of supported employment was \$654.42 compared to \$1,345.48 for sheltered workers. However, Lam also determined that, when cost-per-hour-worked was examined, individuals with more significant disabilities were cheaper to serve in segregated settings (\$4.66 versus \$7.53 per hour worked). Because Lam only examined costs during a three-month period, and not during the workers' entire employment cycle, he may have inflated supported employment's costs for reasons previously discussed.

Since 2000, four studies have examined the total cumulative cost generated by supported and sheltered employees from the moment they enter their respective programs to the moment they left or changed positions

in the community [7, 13–15]. In each case, supported employment was more cost-effective than sheltered workshops.

For instance, Cimera [7] examined the cost and outcomes (e.g., wages earned) achieved two groups of 46 supported and sheltered employees who were matched together based upon identical demographics across nine variables (e.g., age, gender, diagnoses, employment status, self-injurious behaviors, offensive behaviors, communication skills, and toileting skills). He found that supported employees generated an average cumulative cost of \$23,459 compared to \$44,433 for sheltered employees. Further, when cost-per-month of service, cost-per-hour worked, and cost-per-dollar earned were compared, supported employees were more cost-effective in the majority of the cases examined. This was also true when the author examined the outcomes of 29 individuals who were in both supported and sheltered employment at the same time. In each analysis, these individuals were more cost-effective when served in community-based settings. The other cost-effectiveness studies [13–15] found similar results – over the entire employment cycle, supported employment is more cost-effective than sheltered workshops.

However, all of the cost-effective studies published since 2000 were conducted in only one state (i.e., Wisconsin). Consequently, their results may be influenced by the regional factors discussed earlier. In order to better explore this question, a multi-state analysis examining the cumulative costs of each program will need to be undertaken.

#### *2.4. How can supported employment become more effective and efficient?*

One topic that has gained considerable attention in the literature since 2000 is how to make supported employment more cost-efficient and cost-effective. Several methods for reducing costs while improving outcomes have been explored.

For instance, Cimera [17] examined the effect of non-disabled coworker involvement in the training of 111 supported employees. He found that while having coworkers train supported employees did not influence cost-efficiency, it did appear to increase the length of time supported employees were employed by 12.36 months.

Another study investigated four supported employment agencies participating in a “natural supports initiative” (NSI) that reimbursed job coaches for fading

support from supported employees by using pre-approved natural supports strategies [16]. Agencies participating in the NSI reduced the cost of training supported employees by 57.6%.

Another method for reducing the costs of supported employment while increasing the outcomes achieved by supported employees appears to be involving students with disabilities in community-based transition programs while in high school. Specifically, Cimera [8] examined two groups of supported employees (i.e., supported employees who had community-based transition experiences in high school versus supported employees who had only in-school transition services). He found that supported employees who had community-based transition services generated 32.4% fewer costs and kept their jobs 3.4 months longer than supported employees who had only in-school transition services.

Finally, not referring individuals to sheltered workshops prior to enrolling them in supported employment has also been found to decrease costs while increasing outcomes. Cimera [6] examined two matched pairs of 9,808 supported employees with intellectual disabilities. One group had previously been in sheltered workshops. The other group had not. Individuals from each group were matched based upon their diagnosis, the presence of secondary conditions, and gender. When these matched pairs were compared, individuals who were not previously in sheltered workshops were found to cost 42.5% less to serve than individuals who had been in a sheltered workshop (i.e., \$4,543 versus \$7,895). Further, individuals who had not been in sheltered workshops earned more per week than their matched pairs who had been in sheltered workshops (\$137.20 versus \$118.55).

Cimera et al. [22] found similar results for individuals with autism spectrum disorder (ASD). Specifically, when examining the costs and outcomes achieved by 430 supported employees with ASD, Cimera et al. found that supported employees with ASD who had not been in sheltered workshops cost 59.8% less to serve than similar supported employees who had been in sheltered workshops (\$2,441 versus \$6,065). Further, they earned significantly more wages per week (\$191.42 versus \$129.36).

The authors speculated that individuals with disabilities learn counter-productive skills or behaviors while in sheltered workshops. These then have to be “unlearned” in order for the worker to be successful in the community, which results in significantly more job coaching. More job coaching results in greater programmatic cost to the taxpayer.

These potential savings are not trivial. In 2006, agencies spent over \$709 million funding supported employment programs [3]. If implemented nationwide, the strategies outlined here, which resulted in a reduction of programmatic costs ranging from 32.4% to 59.8%, could fund between 9,790 and 18,070 additional supported employees throughout their entire employment-cycle without any added funding by taxpayers (e.g., using the \$23,459 figure for cumulative costs found by [8]). Moreover, these additional supported employees would return even more monetary benefits to taxpayers in the form of taxes paid and forgone sheltered workshop costs. In other words, improving supported employment's cost-effectiveness is in everybody's best interests.

Although these studies present promising results, more needs to be done to investigate the issue of decreasing supported employment's costs while improving rates of employment, tenure, and wages earned by supported employees. Among others, areas of future research may include how effective job development strategies can result in better outcomes for supported employees and how private, for-profit, adult service programs perform compared to public, non-profit, programs.

### 3. Discussion

From the analysis of cost-accounting literature on supported employment presented here, several significant findings arise. The first is that individuals with disabilities are far better off financially by working in their communities than working in sheltered workshops. This is of no surprise.

In the 1980s, many authors feared that earning a competitive wage would decrease the amount of subsidies individuals would receive and that there would be a net loss (cf. [4]). However, not only has research consistently found that the monetary benefits of working exceed the corresponding costs by as much as five to one [20], but it also determined that the wages earned by supported employees have increased substantially since the 1980s while the relative wages earned by sheltered employees have decreased. Moreover, some research has even found that the amount of governmental subsidies received actually increases after enrolling in supported employment, perhaps due to the advocacy of job coaches [9, 43].

However, although working in the community is far more financially advantageous than working in

sheltered-setting, the wages currently being earned by supported employees do not allow them to live out of poverty. This is one of supported employment's greatest failings. Employment for the sake of getting out of the house and doing something productive is all well and good; however, people with disabilities need to be able to earn a wage that they can live on. Presently, the average supported employee is unable to do this.

Although the literature investigating the cost-efficiency of supported employment from the taxpayers' perspective is less convincing than from the worker's perspective, recent research strongly suggests that supported employment returns approximately \$1.46 per dollar of taxpayers' cost. Additionally, supported employees, in general, appear to be cost-efficient regardless of their disability and the presence of secondary disabilities. Nonetheless, there are three important caveats to these findings.

The first is that supported employment is only cost-efficient in relation to sheltered workshops. That is, if the savings from not funding sheltered workshops were taken out of the equation, every study reviewed here would have found that supported employment had greater costs than benefits to the taxpayer. Therefore, if the cost-efficiency of sheltered workshops improved or sheltered workshops were no longer an alternative program, the cost-efficiency of supported employment would decrease.

The second caveat is that research has found that certain populations of supported employees may not be cost-efficient in some states. Specifically, Cimera [9] found that individuals with intellectual disabilities are cost-efficient from the taxpayers' perspective in all states except, Indiana, Arizona, Hawaii, Washington, Wisconsin, California, and Illinois. This raises the question of why. What makes some state and localities more cost-efficient at providing supported employment services than others? It also raises the question, "Are there other disabilities (e.g., ASD or TBI) that are not cost-efficient to taxpayers in some states?" Future research will need to address both of these issues.

Finally, supported employment is only cost-efficient from the taxpayers' and worker's perspectives if supported employees become employed in the community. Unfortunately, rates of employment among people with disabilities remain low. Only 33.5% of individuals seeking services from vocational rehabilitation become employed by the time their cases are officially closed [19]. Quite simply, this figure has to be increased. The more people with disabilities who become gainfully



employed within their communities, the greater the benefits to them and the taxpayer.

In addition to finding that supported employment is cost-efficient from the worker's and taxpayers' perspectives, this review of the available literature also suggests that supported employment is more cost-effective than sheltered workshops. This was the case whether cumulative costs, cost-per-hours worked, dollar earned, or month of service were compared. Unfortunately, these findings are based upon data from only one state (i.e., Wisconsin) and, as noted earlier, cost and outcomes of supported employment vary considerably across the United States. Consequently, these findings may not be indicative of programs elsewhere. A multi-state research project will need to be undertaken in order to address this issue with greater certainty.

Moreover, the comparisons between sheltered and supported employment are based upon the populations of individuals presently being served by both programs. It may be that there are individuals with certain disabilities, or combination of disabilities, who are served primarily by sheltered workshops and not supported employment. In other words, perhaps there is a "cream-ing effect" where the most competent workers go into supported employment while those with more limited skills and challenging behaviors enter sheltered workshops. Additional research needs to determine if there are populations who are served more cost-effectively in segregated programs.

Finally, this review examined the literature on methods for reducing supported employment's costs while increasing outcomes achieved by supported employees. Several strategies appear promising, including utilizing natural supports training strategies and having students participate in high school community-based transition programs. However, the most surprising method identified thus far is not having individuals with disabilities in sheltered workshops.

The fact that two nationwide studies found that supported employees who used to be in sheltered workshops cost more to serve and achieve poorer vocational outcomes than supported employees who were never in segregated programs is very telling for policymakers. One would have to conclude that sheltered services are no longer viable training programs that "prepare" individuals with disabilities for competitive employment. The only remaining rationale for their use is in the capacity of adult daycare where participants can earn less now than they could have thirty years ago.

As abundant as the cost-accounting literature on supported employment is, there are considerable holes

that need to be filled. Many of these have already been outlined (e.g., the need for national comparisons between supported and sheltered employees). However, many others remain. For instance, little is known about the employer's cost-accounting perspective. Is it cost-effective for them to hire supported employees compared to more traditional workers? Few studies have examined this critical issue in detail. Further, no recent research has looked at the different models of supported employment (e.g., enclaves, mobile work crews, etc.). Consequently, it is unclear as to which model provides the most effective and efficient services.

However, the holy grail of supported employment cost research is determining why some states and agencies are able to provide very cost-effective and efficient services while other do not. If researchers can ascertain why Nebraskan supported employees, for example, generate an average monthly net benefit of \$481.17 and a benefit-cost ratio of 2.77 while supported employees from Illinois generate an average monthly net *cost* of \$364.88 and a benefit-cost ratio of 0.63, perhaps more individuals with disabilities can become employed with fewer expenditures to the taxpayer. In such a situation, everybody wins. Yet, to date, research in this area is still lacking.

#### 4. Conclusions

In this era of fiscal uncertainty, politicians and policymakers will look even closer at the monetary costs and benefits of human service programs. Programs that can show positive returns on the taxpayers' investment will undoubtedly fare better in budget battles than programs that are not cost-effective or cost-efficient, or have no data one way or another. If supported employment, and workers with disabilities, are to thrive, these issues need to be continuously explored, not just to figure out how cost-effective or cost-efficient programs are, but also how can they become even better.

#### References

- [1] Boardman AE, Greenberg DH, Vining AR, Weimer DL. Cost-benefit analysis: Concepts and practice. Upper Saddle River, NJ: Pearson; 2006.
- [2] Bond GR, Dietzen LL, Vogler K, Katuin CH, McGrew JH, Miller LD. Toward a framework for evaluating cost and benefits of psychiatric rehabilitation: Three case examples. *Journal of Vocational Rehabilitation*. 1995;5:75-88.
- [3] Braddock D, Hemp R, Rizzolo MC. State of the States in Developmental Disabilities, 2008. Boulder, CO: The University of Colorado; 2008.

- [4] Brickey M, Campbell K. Fast food employment for moderately and mildly retarded adults: The McDonald's project. *Mental Retardation*. 1981;19:113-6.
- [5] Cho DW, Schuermann AC. Economic costs and benefits of private gainful employment of the severely handicapped. *Journal of Rehabilitation*. 1980;46(4):28-32.
- [6] Cimera RE. Does Being in Sheltered Workshops Improve the Employment Outcomes of Supported Employees with Intellectual Disabilities? *Journal of Vocational Rehabilitation*. 2011a;35:21-8.
- [7] Cimera RE. Supported versus sheltered employment: Cumulative costs, hours worked, and wages earned. *Journal of Vocational Rehabilitation*. 2011b;35.2:85-92.
- [8] Cimera RE. Can community-based high school transition programs improve the cost-efficiency of supported employment? *Career Development for Exceptional Individuals*. 2010a;33(1):4-12.
- [9] Cimera RE. The national cost-efficiency of supported employees with intellectual disabilities: 2002 to 2007. *American Journal on Intellectual and Developmental Disabilities*. 2010b;115:19-29.
- [10] Cimera RE. The national cost-efficiency of supported employees with intellectual disabilities: The worker's perspective. *Journal of Vocational Rehabilitation*. 2010c;33:123-31.
- [11] Cimera RE. Supported employment's cost-efficiency to taxpayers: 2002 to 2007. *Research and Practice for Persons with Severe Disabilities*. 2009a;34:13-20.
- [12] Cimera RE. The national costs of supported employment to vocational rehabilitation: 2002 to 2006. *Journal of Vocational Rehabilitation*. 2009b;30:1-10.
- [13] Cimera RE. The cost-trends of supported versus sheltered employment. *Journal of Vocational Rehabilitation*. 2008;28:15-20.
- [14] Cimera RE. The cost-effectiveness of supported employment and sheltered workshops in Wisconsin: FY 2002-2005. *Journal of Vocational Rehabilitation*. 2007a;26:153-8.
- [15] Cimera RE. The cumulative cost-effectiveness of supported and sheltered employees with mental retardation. *Research and Practice for Persons with Severe Disabilities*. 2007b;32(4):247-52.
- [16] Cimera RE. Utilizing natural supports to reduce the costs of supported employment. *Research and Practice for Persons with Severe Disabilities*. 2007c;32(3):1-6.
- [17] Cimera RE. Utilizing coworkers as "natural supports": Evidence on cost-efficiency, job retention, and other employment outcomes. *Journal of Disability Policy Studies*. 2001;11:194-201.
- [18] Cimera RE. The cost-efficiency of supported employment programs: A literature review. *Journal of Vocational Rehabilitation*. 2000;14:51-61.
- [19] Cimera RE, Oswald G. An exploration of the costs of services funded by vocational rehabilitation. *Journal of Rehabilitation*. 2009;75:18-26.
- [20] Cimera RE, Burgess S. Do adults with autism benefit monetarily from working in their communities? *Journal of Vocational Rehabilitation*. 2011;34:173-80.
- [21] Cimera RE, Rusch FR. Empirical evidence on the long-term effectiveness of supported employment: A literature review. In: Glidden, LM, editors. *International Research on Mental Retardation* (Vol. 22). San Diego: Academic Press; 1999. pp. 175-226.
- [22] Cimera RE, Wehman P, West M, Burgess S. Do sheltered workshops enhance employment outcomes for adults with autism spectrum disorder? *Autism: The International Journal of Research and Practice*. 2011;16(1):87-94.
- [23] Conley, R. *The economics of mental retardation*. Baltimore: John Hopkins; 1973.
- [24] Conley RW, Rusch FR, McCaughrin WB, Tines J. Benefits and costs of supported employment: An analysis of the Illinois supported employment project. *Journal of Applied Behavior Analysis*. 1989;22:441-7.
- [25] Federal Register. *Developmental Disabilities Assistance and Bill of Rights Act (Public Law 98-527)*, Washington, DC: US, Government Printing Office; 1984.
- [26] Hill M, Wehman P. Cost benefit analysis of placing moderately and severely handicapped individuals in competitive employment. *Journal of the Association for the Severely Handicapped*. 1983;8:30-8.
- [27] Hill ML, Banks PD, Handrich RR, Wehman PH, Hill JW, Shafer MS. Benefit-cost analysis of supported competitive employment for persons with mental retardation. *Research in Developmental Disabilities*. 1987;8:71-89.
- [28] Hill ML, Wehman PH, Kregel J, Banks PD, Metzler HMD. Employment outcomes for people with moderate and severe disabilities: An eight-year longitudinal analysis of supported competitive employment. *Journal of the Association for the Severely Handicapped*. 1987;12:182-9.
- [29] Jaeger J, Berns S, Douglas E, Creech B, Glick B, Kane J. Community-based vocational rehabilitation: Effectiveness and cost impact of a proposed program model. *Australian and New Zealand Journal of Psychiatry*. 2006;40:452-61.
- [30] Johnston MV. Cost-benefit methodologies in rehabilitation. In: Fuhrer, editor. *Rehabilitation outcomes: Analysis and measurement*. Baltimore: Brookes; 1987. pp. 99-113.
- [31] Knapp SF. Financial implications of half- and full-time employment for persons with disabilities: A response to Schloss, Wolf, and Schloss. *Exceptional Children*. 1988;55:181.
- [32] Kregel J, Wehman P, Banks PD. The effects of consumer characteristics and type of employment model on individual outcomes in supported employment. *Journal of Applied Behavior Analysis*. 1989;22:407-15.
- [33] Kregel J, Wehman P, Revell G, Hill J, Cimera R. Supported employment benefit-cost analysis: Preliminary findings. *Journal of Vocational Rehabilitation*. 2000;14:153-61.
- [34] Lam CS. Comparison of sheltered and supported work programs: A pilot study. *Rehabilitation Counseling Bulletin*. 1986;30(2):66-82.
- [35] Latimer EA. Economic impacts of supported employment for persons with severe mental illness. *Canadian Journal of Psychiatry*. 2001;46:496-505.
- [36] Lawhead R. (2005, October). *Testimony to the Senate HELP Committee*. Retrieved October 8, 2008, from <http://help.senate.gov/Hearings/2005.10.20/Lawhead.pdf>.
- [37] Lewis DR, Johnson DR, Bruininks RH, Kallsen LA, Guillery RP. Is supported employment cost-effective in Minnesota? *Journal of Disability Policy Studies*. 1992;3:67-92.
- [38] McCaughrin WB, Ellis WK, Rusch FR, Heal LW. Cost-effectiveness of supported employment. *Mental Retardation*. 1993;31:41-8.
- [39] McCaughrin WB, Rusch FR, Conley RW, Tines J. A benefit-cost analysis of supported employment in Illinois: The first two years. *Journal of Developmental and Physical Disabilities*. 1991;3:129-45.
- [40] NASDDS & HSRI. *Annual Summary Report 2007-2008*. National Core Indicators. Washington, DC: Authors; 2009.

- [41] Noble JH, Conley RW, Banerjee S, Goodman S. Supported employment in New York state: A comparison of benefits and costs. *Journal of Disability Policy Studies*. 1991;2:39-74.
- [42] Rogers ES, Sciarappa K, MacDonald-Wilson K, Danley K. A benefit-cost analysis of a supported employment model for persons with psychiatric disabilities. *Evaluation and Program Planning*. 1995;18:105-15.
- [43] Rusch FR, Conley RW, McCaughrin WB. Benefit-cost analysis of supported employment in Illinois. *Journal of Rehabilitation*. 1993;59:31-6.
- [44] Rusch FR, Hughes C. Historical overviews of supported employment. Rusch, IFR, editor. *Supported employment: Models, methods, and issues*. Sycamore, IL: Sycamore; 1990. pp. 5-14.
- [45] Schloss PJ, Schloss CN, Wolf CW. Financial implications of half- and full-time employment for persons with disabilities. *Exceptional Children*. 1987;54:272-6.
- [46] Schneider K, Rusch FR, Henderson R, Geske T. Competitive employment for mentally retarded persons: Costs vs. benefits. In: Halloran, W (Ed.), *Funding and cost analysis*. University of Illinois: Leadership Training Institute; 1981. pp. 63-82.
- [47] Sheam J, Beyer S, Felce D. The cost-effectiveness of supported employment for people with intellectual disabilities and high support needs: A pilot study. *Journal of Applied Research in Intellectual Disabilities*. 2000;13:29-37.
- [48] Thompson L, Powers G, Houchard B. The wage effects of supported employment. *The Journal of the Association for Persons with Severe Handicaps*. 1992;17:87-94.
- [49] Tines J, Rusch FR, McCaughrin W, Conley RW. Benefit-cost analysis of supported employment in Illinois: A statewide evaluation. *American Journal on Mental Retardation*. 1990;95:44-54.
- [50] Tuckerman P, Smith R, Borland J. The relative cost of employment for people with significant intellectual disability: The Australian experience. *Journal of Vocational Rehabilitation*. 1999;13:109-16.
- [51] Wehman P, Hill JW, Wood W, Parent W. A report on competitive employment histories of persons labeled severely mentally retarded. *Journal of the Association for the Severely Handicapped*. 1987;12:11-7.
- [52] Wehman P, Hill M, Hill J, Brooke V, Pendleton P, Britt C. Competitive employment for persons with mental retardation: A follow-up six years later. *Mental Retardation*. 1985;23:274-81.
- [53] Wehman P, Kregel J, Keyser-Marcus L, Sherron-Targett P, Campbell L, West M, Cifu DX. *Archives of Physical Medicine and Rehabilitation*. 2003;84,192-6.
- [54] Young T. (2005, October). Testimony to the Senate HELP Committee. Retrieved October 8, 2008, from [http://help.senate.gov/Hearings/2005\\_10\\_20/Young.pdf](http://help.senate.gov/Hearings/2005_10_20/Young.pdf).
- [55] U.S. Department of Health and Human Services. The 2009 HHS Poverty Guidelines. Retrieved October 4, 2011, from <http://aspe.hhs.gov/poverty/09poverty.shtml>, 2011.