

The Cumulative Cost-Effectiveness of Supported and Sheltered Employees With Mental Retardation

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This study investigated the cumulative costs generated by supported and sheltered employees with mental retardation throughout one "employment cycle," that is, from the moment they entered their respective programs to when they exited or stopped receiving services. Data indicate that supported employees acquired services costing funding sources a total of \$6,619 over 5.98 fiscal quarters or a per fiscal quarter cost of \$1,107. In comparison, sheltered employees acquired services costing funding sources a total of \$19,388 over 6.22 fiscal quarters or a per fiscal quarter cost of \$3,117.

DESCRIPTORS: cost-effectiveness, supported employment, sheltered employment, mental retardation

Cost-effectiveness is a method of comparing the economic expenditures resulting from a certain outcome that can be arrived at by two or more programs or options (Levin & McEwan, 2000). For instance, a parent might compare all of the fiscal outlays associated with sending her daughter to University A versus University B (e.g., the cost of tuition, living in the dorms, gas money for coming home on the weekends, and so forth). Provided that both universities can produce the same outcome (e.g., a graduate who has earned a BA in special education), the university that produces this outcome at the lowest cost to the parent is said to be the most "cost-effective." The fact that one university might have a better reputation or that the other has a more picturesque campus by a beach does not enter into the analysis, although such variables might be considered during the final decision-making process. Cost-effectiveness therefore only concerns itself with the monetary costs associated with one option relative to another and does not factor in resulting benefits (Conley, 1973).

Although there have been more than 20 studies that have explored the monetary outcomes of supported and sheltered employment since the 1980s (Cimera, 2000; Kregel, Wehman, Revell, Hill, & Cimera, 2000), few have compared the actual *cost-effectiveness* of these two programs (cf. Lam, 1986; Lewis, Johnson, Bruininks, Kallsen, & Guillery, 1992; McCaughrin, Ellis, Rusch, &

Heal, 1993). That is, few studies have looked at the costs of supported employment and compared them to the costs of sheltered employment for individuals with the same disabling condition (e.g., mental retardation).

Further, none of the available cost-effectiveness studies have examined the *complete* costs generated by individuals throughout the entire time they receive services. In other words, no study has ever examined the total cumulative costs of services that an individual with mental retardation receives from the moment they enter their program to the moment they stop receiving services. Instead, previously published studies have only examined expenditures that occurred during a very brief period individuals receive services.

For example, Lam (1986) compared the costs generated by 50 supported employees and 50 sheltered workers with developmental disabilities. He found that individuals were generally cheaper to serve in the community than in workshops (i.e., \$654 versus \$1,345 per person, respectively). Unfortunately, his analysis only involved data from one fiscal quarter. Further, it is unclear whether this period occurred during the initial job training phase when costs for supported employment are high or during follow along when supports are being faded and costs decrease (Cimera, 2008). Without knowing when in the supported employment process the costs were incurred, interpreting Lam's results become problematic.

Examining programs over such brief periods is much like saying University A is cheaper during the first semester of freshmen year; therefore, it must be cheaper over the entire college career of its students. This may or may not be accurate. Perhaps students at University B tend to graduate in 4 years whereas students at University A typically take five, thus making University B more cost-effective *over the long term*. That is, to accurately measure a program's cost-effectiveness, the total costs generated by program participants must be examined. Without examining the complete *cumulative* costs of each option, it is impossible to determine which one is truly the most cost-effective.

The importance of investigating the costs of supported and sheltered employment throughout the duration its participants use these programs cannot be understated. Significant amounts of federal, state, and local dollars

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are being allocated to these programs in the hopes of helping individuals with disabilities become gainfully employed. In fact, over a half of a billion dollars was allocated to supported employment and sheltered workshops in FY 2002 alone (Braddock, Rizzolo, & Hemp, 2004; Rusch & Braddock, 2004). Without examining the cumulative costs of each program, policymakers and politicians are missing vital data and, as a consequence, cannot allocate these funds wisely. Without allocating resources to the most efficient program, the number of workers with disabilities may be artificially restricted—thus, fewer individuals with disabilities will enjoy the benefits of being employed.

The purpose of the present study is to extend the literature in the field by determining whether supported employment is more cost-effective than sheltered employment over an entire “employment cycle,” that is, from the moment that participants entered their program to when they exited, changed jobs in the community, or otherwise stopped receiving services. The present study sought to determine which program (i.e., sheltered versus supported employment) arrives at the same outcome (i.e., an individual with mental retardation who is employed) at the lowest cumulative costs to funding agencies. To accomplish this, the costs generated by 56 supported employees and 171 sheltered employees with mental retardation are compared. Implications of findings and areas for future research are also discussed.

Methods

Participant Selection

Fifty-six supported employees and 171 sheltered employees participated in the present study. Criteria for selection included the following: (a) the employees had entered and eventually exited their respective programs, lost their job within the community, or otherwise stopped receiving services between FY 2000 to FY 2005; (b) the employees had a primary diagnosis of mental retardation; and (c) the employees were classified by their VR counselor as having “most significant” disabilities.

The Division of Vocational Rehabilitation defined “most significant disability” as a “...severe mental or physical impairment ... that seriously limits three or more functional capacities in terms of an employment outcome and whose vocational rehabilitation requires multiple services over an extended period of time” (DVR, 2007, p. 1). Examples of functional capacities include communication, self-help, and skills needed for living within the community.

All of the participants of this study were enrolled in one of four adult service agencies that provide programming for individuals with developmental disabilities. These agencies were selected for involvement in the present study because they provided both sheltered and supported employment services as well as their

willingness to furnish complete billing records on all of the services received by participants of their programs. No attempt was made to insure that these agencies were representative of other agencies throughout the state or country. The 227 employees comprising this study include all individuals served by these four agencies who meet the criterion outlined above and for whom complete data existed. No participants were excluded from the present study.

Data and Data Collection

Data for the present study originated directly from billing records sent by the participating adult service agencies to various funding sources (e.g., Vocational Rehabilitation, Department of Mental Health, Department of MRDD, etc.) that reimbursed the adult service agencies for the services they provided. These billing records were obtained electronically and contained (a) a case identification number for each employee so that the costs of the services that they utilized could be tracked from billing period to billing period, (b) a documentation of the employees’ primary disability and its severity, and (c) the total cost of all employment-related services for which the agencies billed funding sources each fiscal quarter that the employee was receiving services.

Conversion of Dollar Values

Because the value of the dollar fluctuates over time, the costs of services received by study participants had to be converted to identical units. For instance, the costs of services obtained in FY 2001 could not be directly compared to the costs of services obtained in FY 2004 given that the value of FY 2001 dollars and FY 2004 dollars are different. Consequently, all of the costs of services received by supported and sheltered employees were converted to FY 2006 dollars.

This was accomplished by multiplying the dollar value by the consumers’ price index (CPI) of the base year and then dividing the resulting product by the CPI of the year that the dollar value was originally designated (Boardman, Greenberg, Vining, & Weimer, 2006; Levin & McEwan, 2000). For example, to convert \$5,000 worth of services obtained in FY 2001 to FY 2006 dollars, \$5,000 would be multiplied by FY 2006’s CPI (i.e., 201.6). The product (i.e., 1,008,000) would be then divided by the CPI of FY 2001 (i.e., 177.1). The result indicates that \$5,000 of FY 2001 dollars is the equivalent of \$5,691.70 in FY 2006 dollars.¹

Defining “Employment Cycle”

The present study sought to determine the total cost of services that individuals with mental retardation receive while in supported and sheltered employment

¹ The CPIs that were utilized for these computations were annual averages disseminated by the U.S. Bureau of Labor Statistics. They can be obtained at www.bls.gov/home.htm.

programs. An individual's "employment cycle" began when they enrolled in their respective program (i.e., supported employment or sheltered employment). The costs of services received by each individual were tallied until the individual (a) left the program (and thus were no longer receiving services through that program), (b) stopped receiving services, or (c) changed positions within the community.

For instance, a supported employee's employment cycle would begin when they first enter the supported employment program. Typically, this involves a vocational assessment, followed by attempts made by job coaches to identify a position in the community that matches the individual's needs and desires (Rogan, Banks, & Herberin, 2003). The supported employee would then obtain a position in the community where they would work for a competitive wage. Their employment cycle would continue until the person separated from their position in the community (e.g., got fired, quit, let go by the employer). For the purposes of the present study, employment cycles could also end if the supported employee retained their position within the community but refused additional services from the job coaches.

For sheltered employees, employment cycles also began when they enrolled in their program. Their employment cycle ended when the individual left the sheltered workshop for another program (e.g., supported employment, work adjustment, other day programs) or stopped attending the sheltered workshop for a period longer than 90 days, at which time their case was closed by the adult service agency.

Calculation of Cost-Effectiveness

Cost-effectiveness was determined by calculating the total costs of all services (in 2006 dollars) that each worker received throughout their employment cycle. These costs were then averaged by program. Because the mean employment cycles experienced by sheltered and supported employees were not identical (6.22 fiscal quarters versus 5.98 fiscal quarters), a per fiscal quarter cost-comparison was also made.

Results

This study investigated the cumulative cost-effectiveness of sheltered and supported employment programs. Data from 56 supported employees and 171 sheltered workers with "most significant" mental retardation were compared throughout their entire employment cycle. These data indicated that supported employees who participated in this study received services for an average of 5.98 fiscal quarters (approximately 17.94 months). During this time, they acquired services averaging a total of \$6,619. This is a per fiscal quarter cost of \$1,107. Sheltered employees, on the other hand, were in their programs for slightly longer (6.22 fiscal quarters or approximately 18.66 months). The total average cost of

all the services that they received was also higher, at \$19,388 or \$3,117 per fiscal quarter.

Discussion

The present study investigated the cost of services that 56 supported employees and 171 sheltered employees with "most significant" mental retardation received throughout their "employment cycle" (i.e., from the time they entered their program until they left their job or otherwise no longer received services). Data indicate that the *cumulative* costs of supported employment are 65.9% cheaper than those of sheltered workshops (i.e., \$6,619 versus \$19,388, respectively).

However, sheltered employees received services for longer periods than did supported employees. Specifically, sheltered employees averaged receiving services for 6.22 fiscal quarters compared to 5.98 fiscal quarters for supported employees. When adjusted for this variance, supported employment was still 64.5% more cost-effective than sheltered workshops (i.e., \$1,107 versus \$3,117 per fiscal quarter, respectively).

Stated another way: for every individual who was funded in sheltered workshops, nearly three (i.e., 2.82) supported employees could have been funded in the community. Given that there were approximately 483,000 individuals being served in sheltered settings in FY 2002 at a cost to the federal government of \$488 million (Braddock et al., 2004; Rusch & Braddock, 2004), these individuals could have been served in the community for slightly less than \$314 million—if the present study's findings were applicable across the country and all of these individuals wished to be served in the community.

However, these findings must be kept in context. For example, sheltered employees might have begun working in a sheltered workshop almost immediately after enrolling in that program. Supported employees, on the other hand, may have had to wait while they were assessed and a suitable job match was found—activities that would generate costs to funding agencies but result in no direct benefits to the yet-to-be placed supported employee. Thus, advocates for sheltered workshops might correctly point out that while their programs are significantly more expensive than supported employment, they are able to get individuals with disabilities "working" from day one, without the delays that supported employees typically experience as the result of assessment and job development (Leach, 2002; Targett, Wehman, McKinley, & Young, 2004).

Further, the number of hours worked by each group of participants is unknown. It may very well be that sheltered employees worked 40 hr per week while supported employees worked only 10. In such a scenario, sheltered employment would be more cost-effective *per hour worked* than supported employment (i.e., \$485 versus \$662, respectively).

However, advocates of supported employment may counter that sheltered workshops typically do not provide individuals with disabilities with any genuine vocational experiences (Bellamy, Rhodes, Bourbeau, & Mank, 1986; McGaughey, Kiernan, McNally, Gilmore, & Keith, 1995; Rusch & Braddock, 2004; Test, 2004; Wehman & Kregel, 1995). For instance, sheltered employees might spend their days performing repetitive nonmeaningful work, such as sorting bolts or folding paper. Moreover, although sheltered employees might be physically at the workshop for 40 hr a week, they are likely to experience considerable downtime between tasks, especially if the workshop is in-between subcontracted jobs (Bellamy et al., 1986; Hagner & Dileo, 1993). Supported employees would most likely not experience such delays.

Additionally, by definition, sheltered employees are continually supervised (Rosen, Bussone, Dukunchak, & Cramp, 1993; Visier, 1998). These supervisors then bill a funding source (e.g., Department of Mental Health) for every unit of time that the sheltered employee is present. Thus, it is impossible to participate in a sheltered workshop without generating costs to the agency and taxpayer. Furthermore, the costs generated by sheltered employees continue on for as long as they participate in sheltered programming (Cimera, 2008).

The costs of supported employment, on the other hand, are not necessarily influenced by the number of hours that the supported employee works in the community. For example, a supported employee might work 20 hr a week but only generate 10 hr worth of costs as a result of receiving job coaching and other assistance. Moreover, supported employees may eventually stop receiving services from job coaches all together (i.e., "graduate" from supported employment). Thus, they would accumulate no additional costs to funding agencies, but still retain their employment within the community.

Lastly, there is the issue of "skimming." That is, although all participants had the same primary condition (i.e., mental retardation) and were classified as having the same degree of disability (i.e., "most significant"), there is no assurance that the supported and sheltered employees had identical abilities. It could very well be that individuals with greater limitations were served in sheltered workshops, whereas individuals with more advanced vocational abilities were served in supported employment. Thus, comparisons between the two groups may be flawed. This weakness, however, is not limited to this particular study. Given that it is impossible to quantify every variable that could affect cost-effectiveness, let alone find sets of supported and sheltered employees who have identical abilities, every study that attempts to compare sheltered and supported employees might be comparing apples and oranges (Heal, McCaughrin, & Tines, 1989; Revell, Kregel, Wehman, & Bond, 2000).

As with determining which college to send a high school graduate, in the end, the decision of which pro-

gram to fund may come down to nonmonetary variables (e.g., dignity of risk and inclusion within the community versus the perceived safety of services in highly structured and supervised environments). Still, given the budgetary restraints faced by funding agencies and the sheer number of people with disabilities who wish to be employed, any discussion regarding the funding of vocational programs for individuals with disabilities must include some element of cost. The data presented here are the first attempt to analyze these costs over the entire employment cycle. Future inquiries will undoubtedly need to be undertaken.

For example, the data presented within this study were gathered in only one state, and although they were collected from multiple adult service agencies, the method of funding human service programs varies from state to state (McGrew, Johannesen, Griss, Born, & Katuin, 2005; O'Brien & Revell, 2005). Further, Lewis et al. (1992) found that costs of services for supported employment vary widely from agency to agency. Consequently, the results of this study may have been different had the data been gathered in another locale. For this reason, a larger, multistate study will need to be conducted to determine the true national longitudinal costs of supported employment and sheltered workshops.

Also, this study only presented the monetary costs of supported employment and sheltered workshops. It did not disclose the monetary benefits of these programs (e.g., the taxes paid by workers with disabilities). So it may be that, had the monetary benefits been factored into the analysis, sheltered employment might have been more *cost-efficient* than supported employment. That is, they might have produced a greater net benefit to taxpayers than supported employment. However, this is doubtful given the overwhelming amount of research that suggests supported employment produced more monetary benefits to all stakeholders (e.g., the employee, the taxpayer, and the society in general) than sheltered workshops (Baer, Simmons, Flexer, & Smith, 1995; Cimera, 1998; Conley, Rusch, McCaughrin, & Tines, 1989; Hill, Banks, Handrich, Wehman, Hill, & Shafer, 1987; Larson et al., 2007; Rusch, Conley, & McCaughrin, 1993).

Further, only the costs generated by individuals with "most significant" mental retardation were examined. Its findings cannot be generalized to other populations, such as individuals with milder mental retardation or individuals with psychiatric conditions, whom have been found to produce differing degrees of cost-effectiveness (Cimera, 2007; Noble, Conley, Banjerjee, & Goodman, 1991).

Finally, the present study did not investigate whether the supported and sheltered employees were satisfied with their programs or the outcomes that these programs helped them achieve. This is a critical question to address. The costs generated by a program are secondary to the program accomplishing its stated goal. If

programs do not match the needs and wishes of their participants, they should not be funded regardless of how cost-effective they are.

Without understanding these and other financial implications of funding sheltered or supported employment, politicians and policymakers are unable to make informed decisions. Although there are certainly non-monetary factors to be considered (e.g., the emotional and physical well-being of program participants), allocating funds to less cost-effective programs results in fewer individuals with disabilities enjoying both the monetary and nonmonetary benefits of working.

Conclusions

After examining the cumulative cost of services received by 56 supported employees and 171 sheltered employees with "most significant" mental retardation, this study suggests that supported employment is significantly cheaper than sheltered workshops. Specifically, when the costs of each group of employees were examined from the time they enter their respective programs to the time they exited, change jobs, or otherwise stop receiving services, supported employment cost 65.9% less than did sheltered workshops. However, sheltered workers received services for a longer duration than did supported employees (i.e., 6.22 fiscal quarters versus 5.98 fiscal quarters). When adjusted for this variance, supported employees were still 64.5% more cost-effective than sheltered workers (i.e., \$1,107 versus \$3,117 per fiscal quarter, respectively).

References

- Baer, R., Simmons, T., Flexer, R., & Smith, C. (1995). A study of the costs and benefits of supported employees with severe physical and multiple disabilities. *Journal of Rehabilitation Administration, 18*, 46-57.
- Bellamy, G. T., Rhodes, L. E., Bourbeau, P. E., & Mank, D. M. (1986). Mental retardation services in sheltered workshops and day activity programs. In F. R. Rusch (Ed.), *Competitive employment issues and strategies* (pp. 257-272). Baltimore: Brookes.
- Boardman, A. E., Greenberg, D. H., Vining, A. R., & Weimer, D. L. (2006). *Cost-benefit analysis: Concepts and practice* (3rd ed.). Upper Saddle River, NJ: Pearson.
- Braddock, D., Rizzolo, M. C., & Hemp, R. (2004). The state of the states in developmental disabilities. *Mental Retardation, 42*, 317-320.
- Cimera, R. E. (1998). Are individuals with severe or multiple disabilities cost-efficient to serve via supported employment? *Mental Retardation, 36*, 280-292.
- Cimera, R. E. (2000). The cost-efficiency of supported employment programs: A literature review. *Journal of Vocational Rehabilitation, 14*, 51-61.
- Cimera, R. E. (2007). The costs of supported employment in Wisconsin: FY 2002-FY 2005. *Journal of Vocational Rehabilitation, 26*, 97-104.
- Cimera, R. E. (2008). A cost-trend analysis of supported and sheltered employees with mental retardation. *Journal of Vocational Rehabilitation, 28*, 15-20.
- Conley, R. (1973). *The economics of mental retardation*. Boston: Allyn and Bacon.
- Conley, R. W., Rusch, F. R., McCaughrin, W. B., & Tines, J. (1989). Benefits and costs of supported employment: An analysis of the Illinois supported employment project. *Journal of Applied Behavior Analysis, 22*, 441-447.
- Division of Vocational Rehabilitation. (2007). *DVR policy on order of selection*. Retrieved November 8, 2007, from [http://dwd.wisconsin.gov/dvr/state_plans/fy08/4_11\(c\)\(3\).pdf](http://dwd.wisconsin.gov/dvr/state_plans/fy08/4_11(c)(3).pdf).
- Hagner, D., & Dileo, D. (1993). *Working together: Workplace culture, supported employment, and persons with disabilities*. Cambridge, MA: Brookline.
- Heal, L. W., McCaughrin, W. B., & Tines, J. J. (1989). Methodological nuances and pitfalls of benefit-cost analysis: A critique. *Research in Developmental Disabilities, 10*, 201-212.
- Hill, M. L., Banks, P. D., Handrich, R. R., Wehman, P. H., Hill, J. W., & Shafer, M. S. (1987). Benefit-cost analysis of supported competitive employment for persons with mental retardation. *Research in Developmental Disabilities, 8*, 71-89.
- Kregel, J., Wehman, P., Revell, G., Hill, J., & Cimera, R. (2000). Supported employment benefit-cost analysis: Preliminary findings. *Journal of Vocational Rehabilitation, 14*, 153-161.
- Lam, C. S. (1986). Comparison of sheltered and supported work programs: A pilot study. *Rehabilitation Counseling Bulletin, 30*, 66-82.
- Larson, J. E., Barr, L. K., Corrigan, P. W., Kuwabara, S. A., Boyle, M. G., & Glenn, T. L. (2007). Perspectives on benefits and costs of work from individuals with psychiatric disabilities. *Journal of Vocational Rehabilitation, 26*, 71-77.
- Leach, S. (2002). *A supported employment workbook: Using individual profiling and job matching*. Kingsley: London.
- Levin, H. M., & McEwan, P. J. (2000). *Cost-effectiveness analysis: Methods and applications*. Sage: Thousand Oaks.
- Lewis, D. R., Johnson, D. R., Bruininks, R. H., Kallsen, L. A., & Guillery, R. P. (1992). Is supported employment cost-effective in Minnesota? *Journal of Disability Policy Studies, 3*, 67-92.
- McCaughrin, W. B., Ellis, W. K., Rusch, F. R., & Heal, L. W. (1993). Cost-effectiveness of supported employment. *Mental Retardation, 31*, 41-48.
- McGaughey, M. J., Kiernan, W. E., McNally, L. C., Gilmore, D. S., & Keith, G. R. (1995). Beyond the workshop: National trends in integrated and segregated day and employment services. *Journal of the Association for Persons with Severe Handicaps, 20*, 270-285.
- McGrew, J. H., Johannesen, J. K., Griss, M. E., Born, D. L., & Katuin, C. (2005). Performance-based funding of supported employment: A multi-site controlled trial. *Journal of Vocational Rehabilitation, 23*, 81-100.
- Noble, J. H., Conley, R. W., Banjerjee, S., & Goodman, S. (1991). Supported employment in New York state: A comparison of benefits and costs. *Journal of Disability Policy Studies, 2*, 39-74.
- O'Brien, D., & Revell, G. (2005). The milestone payment system: Results based funding in vocational rehabilitation. *Journal of Vocational Rehabilitation, 23*, 101-114.
- Revell, G., Kregel, J., Wehman, P., & Bond, G. R. (2000). Cost-effectiveness of supported employment programs: What we need to do to improve outcomes. *Journal of Vocational Rehabilitation, 14*, 173-178.
- Rogan, P., Banks, B., & Herberin, M. H. (2003). Supported employment and workplace support: A qualitative study. *Journal of Vocational Rehabilitation, 19*, 5-18.
- Rosen, M., Bussone, A., Dukunchak, P., & Cramp, J. (1993). Sheltered employment and the second generation workshop. *Journal of Rehabilitation, 59*, 30-34.
- Rusch, F. R., & Braddock, D. (2004). Adult day programs versus supported employment (1988-2002): Spending and service practices of mental retardation and developmental disabilities state agencies. *Research and Practice for Persons with Severe Disabilities, 29*, 237-242.

- Rusch, F. R., Conley, R. W., & McCaughrin, W. B. (1993). Benefit-cost analysis of supported employment in Illinois. *Journal of Rehabilitation, 59*, 31-36.
- Targett, P., Wehman, P., McKinley, W. O., & Young, C. (2004). Functional vocational assessment for individuals with spinal cord injury. *Journal of Vocational Rehabilitation, 22*, 149-161.
- Test, D. W. (2004). Invited Commentary on Rusch and Braddock: One person at a time. *Research and Practice for Persons with Severe Disabilities, 29*, 248-252.
- Visier, L. (1998). Sheltered employment for persons with disabilities. *International Labour Review, 137*, 347-366.
- Wehman, P., & Kregel, J. (1995). At the crossroads: Supported employment a decade later. *Journal of the Association for Persons with Severe Handicaps, 20*, 286-299.

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