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Labor Force Participation and Income of Individuals with Disabilities in Sheltered and Competitive Employment: Cross-Sectional and Longitudinal Analyses of Seven States During the 1980s and 1990s

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**LABOR FORCE PARTICIPATION AND INCOME OF
INDIVIDUALS WITH DISABILITIES IN SHELTERED AND
COMPETITIVE EMPLOYMENT: CROSS-SECTIONAL AND
LONGITUDINAL ANALYSES OF SEVEN STATES DURING
THE 1980s AND 1990s**

PETER BLANCK, HELEN A. SCHATZ & KEVIN M. SCHATZ*

ABSTRACT

The purpose of this investigation was to examine the labor force participation and wages of individuals with disabilities who have transitioned from facility-based (i.e., sheltered) work to employment in integrated and competitive settings. The investigators had access to data from seven states on the labor force participation and wages of more than 3000 individuals with disabilities who have moved from institutional to community placements over the past two decades.

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Among the findings: the majority of individuals in these geographically diverse samples were unemployed over time; sheltered employment prepared some individuals for entry into employment in integrated settings and resulted in substantial gains in earned income and reported higher levels of daily living skills. However, the daily life functioning of many individuals who remained in sheltered employment was comparable to that of those who transitioned to integrated employment. Avenues for future research, and legal and policy analysis are discussed.

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INTRODUCTION

A remarkable shift has occurred in the area of disability employment policy and law. In contrast to prior models of charity, compensation, and medical oversight, contemporary employment policies focus on increasing the labor force participation of qualified persons with disabilities and reducing their dependence on governmental entitlement programs. The modern disability civil rights model, as reflected in the Americans with Disabilities Act of 1990 (ADA), is aimed at increasing the labor force participation of qualified working age adults with disabilities and preventing discrimination in the workplace.¹

Despite the dramatic change in perspective toward disability civil rights, there is little empirical information documenting the work lives of Americans with disabilities and their segregation from or entry into the contemporary workforce. Of course, this information is necessary for policymakers, courts, and persons with disabilities to assess whether the new disability employment policies are effective. In addition, a more complete perspective is gained when information is gathered from a variety of sources.

The purpose of the present investigation is to examine one aspect of disability and employment policy: labor force participation and wages of a large sample of individuals with disabilities who have transitioned from facility-based (i.e., sheltered) work to employment in integrated and competitive settings.

The investigators had access to data from seven states on the labor force participation and wages of more than 3000 individuals with disabilities who have moved from institutional to community living settings over the past two decades. The data illustrate how sheltered employment may be an avenue for community integration, self-sufficiency, and economic empowerment.

1. See 42 U.S.C. § 12101(b) (2000).

The data were used to address the following research questions:

1. What proportion of individuals sampled who have been deinstitutionalized are in sheltered employment or other types of employment?
2. What are the average wages and hours worked by individuals sampled in sheltered employment compared to peers in integrated employment settings?
3. What proportion of individuals sampled in sheltered employment transition to supported and competitive employment?
4. How does the earned income of individuals sampled who transition from sheltered to competitive employment compare before and after transition?
5. To what extent do other factors, such as age, ethnicity, and functioning level affect labor force participation and wages in sheltered employment and in transitioning to competitive employment?
6. To what extent does individual level of functioning in daily life (e.g., adaptive skills) predict employment in sheltered and integrated settings?

The investigation contributes to the examination of the labor force participation of persons with disabilities and related employment policy. Toward that end, Part I of this Article describes the legal and policy backdrop for the investigation as well as prior studies in the area. Part II presents the findings derived from the research questions set out above. This Article concludes with the implications for policymakers, courts, future researchers, and persons with disabilities.

I. INCREASING LABOR FORCE PARTICIPATION:
LEGAL AND POLICY SCHEMES

A. From FLSA to TWWIA

Section 214(c) of the Fair Labor Standards Act of 1938 (FLSA)² establishes the authority of the Secretary of Labor to issue certificates for designated employers to pay less than minimum wage to their employees with disabilities “to prevent curtailment of opportunities for employment ... of individuals (including individuals employed in agriculture) whose earning or productive capacity is impaired by age, physical or mental deficiency, or injury”³ Employment under this certification often is referred to as “sheltered employment.”⁴

Since the FLSA was enacted in 1938, employment opportunities for individuals with disabilities have expanded and federal policy has moved toward integrating rather than segregating individuals with disabilities. Nevertheless, today millions of disabled individuals who are capable of working remain unemployed or

2. 29 U.S.C. § 214(c) (2000) (creating certification for employers of “handicapped workers” to pay subminimum wage).

3. *Id.*; see also *Employment of Workers With Disabilities Under Special Certificates*, 29 C.F.R. § 525.1 (2002) (discussing how the Fair Labor Standards Amendments of 1986 revised the Fair Labor Standards Act of 1938 and provided for certain circumstances in which employers could pay sub-minimum wages to employees with disabilities).

4. See PETER D. BLANCK, *THE AMERICANS WITH DISABILITIES ACT AND THE EMERGING WORKFORCE* 82-83 (1998) (describing sheltered employment as a program of work or work-related training with jobs primarily in nonintegrated group settings such as trash pick-up, greenhouse work, and pamphlet folding with wages usually half of the minimum wage). In supported employment the individual job placement is supported by a job coach who assists in job training and assessment, whereas in competitive employment job placement typically is made without the services of a job coach in an integrated setting where most coworkers are not disabled with at least minimum wages. *Id.* For a review of supported employment research, see John Kregel & Paul Wehman, *Supported Employment: A Decade of Employment Outcomes for Individuals with Disabilities*, in *INTEGRATED EMPLOYMENT: CURRENT STATUS AND FUTURE DIRECTIONS* (William E. Kiernan & Robert Schalock eds., 1997). For a general review of § 214(c) policy, see Michael Morris et al., *Policy Report—Section 214(c) of the Fair Labor Standards Act: Framing Policy Issues*, Law, Health Policy & Disability Center (Apr. 2002), available at http://www.its.uiowa.edu/law/lhpdc/publications/documents/morns/Policy_Report_042002.doc (last visited Jan. 14, 2003).

underemployed. The National Organization on Disability/Harris 2000 Survey of Americans with Disabilities (N.O.D./Harris Survey) reports that 32% of disabled individuals are employed, compared to 81% of individuals without disabilities.⁵ Increasingly, individuals with disabilities are less prepared for competitive employment as, on average, they attain less formal education than individuals without disabilities.⁶

However, not all of the recent information paints a dismal picture for the labor force participation of individuals with disabilities. Researchers Stephen Kaye, Doug Kruse, and Lisa Schur, for instance, report increases in the labor force participation among people aged twenty-one to sixty-four with severe functional limitations who do not consider themselves unable to work.⁷ This line of study is encouraging to those who seek to devise alternative measures of labor force participation.

As a primary means of enhancing their competitive labor force participation, the ADA calls for the elimination of irrational discrimination against qualified individuals with disabilities, including unjustified employment segregation.⁸ Consistent with this goal, the State Vocational Rehabilitation Services Program (VR) no longer considers segregated sheltered employment as an appropriate outcome for their qualified clients.⁹ State VR programs still fund, place, and train their clients in sheltered employment settings as an interim step in their rehabilitation. However, for a state program to receive federal reimbursement for a successful case

5. See National Organization on Disability, *Employment Rates of People with Disabilities* (July 24, 2001) (providing excerpt of N.O.D./Harris Survey), available at <http://www.nod.org> (last visited Jan. 14, 2003).

6. Peter D. Blanck & Helen A. Schartz, *Towards Researching a National Employment Policy for Persons with Disabilities*, in EMERGING WORKFORCE ISSUES: W.I.A., TICKET TO WORK, AND PARTNERSHIPS: A REPORT ON THE 22ND MARY E. SWITZER MEMORIAL SEMINAR 4 (L. Robert McConnell ed., 2001) (reviewing employment and education statistics).

7. For a review of these studies, see Peter Blanck et al., *Is it Time to Declare the ADA a Failed Law?*, in A DISABILITIES POLICY PUZZLE: WHY DECLINING EMPLOYMENT? (David C. Stapleton & Richard V. Burkhauser eds., forthcoming 2003).

8. 42 U.S.C. § 12112(b)(1) (2000).

9. 34 C.F.R. 361.5(b)(33)(ii) (2002) (defining employment outcome as including only employment in integrated settings).

outcome (i.e., case closure), the VR client must be working in an integrated employment setting.¹⁰

Along with changes in state VR approaches, recent federal policy initiatives are aimed at improving the labor force participation of qualified persons with disabilities. One such federal initiative is embodied in the Ticket to Work and Work Incentives Improvement Act of 1999 (TWWIA).¹¹ TWWIA encompasses four basic purposes:

- (1) reducing dependence on cash benefit programs by providing health care and employment training to qualified individuals with disabilities;
- (2) encouraging individual states to allow covered individuals to purchase Medicaid health insurance coverage, thereby allowing them to maintain competitive employment;
- (3) allowing working individuals with disabilities the option of maintaining Medicaid coverage; and
- (4) establishing the Ticket to Work and Self-Sufficiency Program (TWSSP) to encourage individuals with disabilities to seek employment and rehabilitation services to reduce their dependence on cash benefit programs.¹²

Prior to TWWIA, individuals with disabilities applying for Social Security Disability Income (SSDI) or Supplemental Security Income (SSI) benefits were referred to state VR agencies for "necessary vocational rehabilitation services."¹³ State VR agencies

10. *Id.*

11. Ticket to Work and Work Incentives Improvement Act of 1999 (TWWIA), Pub. L. No. 106-170, 113 Stat. 1860 (1999) (codified in scattered sections of 42 U.S.C.), available at http://www.ssa.gov/work/ticket/ticket_info.html (last visited Jan. 7, 2003). See Morris et al., *supra* note 4 (outlining resources that describe TWWIA and other reforms that aim to improve access to employment training and placement services for people with disabilities seeking employment).

12. See TWWIA § 2(b). See generally Peter Blanck et al., *Applicability of the ADA to "Ticket to Work" Employment Networks*, 20 BEHAV. SCI. & L. 621 (2002) [hereinafter Blanck et al., *Applicability of the ADA*]; Peter Blanck et al., *Applicability of the ADA to ENs under TWWIA* (Working Paper presented at Expert Legal Roundtable, Ticket to Work Advisory Panel Meeting, Washington, D.C., May 3, 2002) (forthcoming at <http://www.its.uiowa.edu/law>).

13. ROBERT SILVERSTEIN, FINAL REGULATIONS IMPLEMENTING THE TICKET TO WORK AND

were reimbursed for their services with a single payment after the client was employed in "substantial gainful activity."¹⁴

Under TWWIA, SSDI or SSI recipients receive a "ticket" to purchase services from qualified Employment Networks (ENs)¹⁵ that assist them in attaining gainful employment.¹⁶ Most SSI and SSDI recipients aged eighteen to sixty-four are eligible for the program, with limited exceptions.¹⁷ Once a beneficiary receives a ticket, she has two years to prepare for employment.¹⁸ During the subsequent three years of the Ticket program, a participant is gradually required to work in substantial gainful activity to eliminate payment of SSDI and/or SSI benefits.¹⁹

Under TWWIA, ENs are designated to provide vocational rehabilitation, employment, and other support services to individuals with disabilities to obtain, regain, and maintain self-supporting competitive employment.²⁰ Public and private entities may be certified as an EN.²¹ The Social Security Administration

SELF-SUFFICIENCY PROGRAM (Center on State Systems and Employment (RRTC), 4 Policy Brief No.2, 2002) [hereinafter Policy Brief], available at <http://www.communityinclusion.org/publications/text/pb8text.html>.

14. *Id.* at 3 (noting that private and other public rehabilitation agencies could provide services and be compensated similarly under an "alternate participant program").

15. See 20 C.F.R. § 411.300 (2002). Employment network is defined in the regulations as: any qualified entity that has entered into an agreement with [the Social Security Administration] to function as an EN under the Ticket to Work program and assume responsibility for the coordination and delivery of employment services, vocational rehabilitation services, or other support services to beneficiaries who have assigned their tickets to that EN.

Id.

16. 20 C.F.R. § 411.305 (2002).

17. See Policy Brief, *supra* note 13, at 5, 12 (discussing various exceptions).

18. *Id.* at 15.

19. *Id.* at 16.

20. See 20 C.F.R. § 411.305 (2002). EN services may include case management, job accommodations, job coaching, job training, placement assistance, transportation assistance, and peer mentoring services. See Social Security Administration, EN Contract Request for Proposals (SSA-RFP-01-0010B), at 8 [hereinafter Social Security Administration Request], available at <http://www.eps.gov/EPData/SSA/Synopses/2422/SSA-RFP-02-0010B/RFP-02-0010B.doc>.

21. See C.F.R. § 411.305 (2002); see also The Ticket to Work and Self-Sufficiency Program, 66 Fed. Reg. 67,370, 67,397 (Dec. 28, 2001) (indicating that "family or friends who meet the qualifications to be an EN and are willing to assume this responsibility" may be certified as an EN, but a participant may not serve as his own EN).

reimburses ENs for their services either under an outcome payment or outcome-milestone payment system.²²

In contrast to traditional VR provider reimbursement approaches, ENs are reimbursed by a system of graduated outcome payments, reflecting a portion of the government's savings from the participant's relinquishment of public assistance for competitive labor force participation.²³ Outcome payments are paid to an EN for any month the beneficiary does not draw SSI or SSDI benefits for up to sixty months.²⁴ One question under the Ticket program is how a participant's transition from sheltered to competitive employment is to be gauged under the incentive-based reimbursement scheme.²⁵

B. Fair Labor Standards Act and the § 214(c) Program

The Fair Labor Standards Act (FLSA) of 1938²⁶ established a national minimum wage for employees.²⁷ The Act also established

22. See Social Security Administration Request, *supra* note 20, at 13.

23. See Blanck et al., *Applicability of the ADA*, *supra* note 12.

24. 20 C.F.R. § 411.500(e) (2002). Under an outcome payment system, the EN would receive up to 40% of the client's average monthly government benefit payment for each month up to sixty months that the client was not eligible to receive SSDI because of work. Under the outcome-milestone payment system, the EN receives payments for the client's achievement of major milestones in working towards permanent employment. *Id.* § 411.525.

25. An additional question is whether the ADA is applicable to ENs in terms of the types of services they provide to Ticket holders. See generally Blanck et al., *Applicability of the ADA*, *supra* note 12 (discussing issues related to EN service provision).

26. Fair Labor Standards Act of 1938, 52 Stat. 1068 (codified as amended at 29 U.S.C. § 214 (2000)).

27.

Every employer shall pay to each of his employees who is engaged in commerce or in the production of goods for commerce wages at the following rates-

(1) during the first year from the effective date of this section, not less than 25 cents an hour,

(2) during the next six years from such date, not less than 30 cents an hour,

(3) after the expiration of seven years from such date, not less than 40 cents an hour, or the rate (not less than 30 cents an hour) prescribed in the applicable order of the Administrator issued under section 208, whichever is lower, and

(4) at any time after the effective date of this section, not less than the rate (not in excess of 40 cents an hour) prescribed in the applicable order of the Administrator issued under section 208.

(b) This section shall take effect upon the expiration of one hundred and twenty days from the date of enactment of [this Act].

an exemption from the minimum wage for "handicapped workers."²⁸ Under the exemption, the Administrator of the Wage and Hour Division of the Department of Labor²⁹ may provide employers with certificates exempting them from paying the minimum wage for "the employment of individuals whose earning capacity is impaired by age or physical or mental deficiency or injury."³⁰

In 1966, § 214 of the FLSA was amended to provide a minimum wage for employees under the special certificates. The 1966 amendment established a minimum wage for handicapped workers in sheltered employment at "not less than 50 per centum of [national minimum wage] and which are commensurate with those paid nonhandicapped workers in industry in the vicinity for essentially the same type, quality, and quantity of work."³¹ The 1966 amendments created three classifications of employment activities by handicapped workers, which were exempted from the minimum wage for handicapped workers in sheltered employment.³²

Id. § 206.

28. *Id.* § 214.

29. *See id.* (defining the Administrator for this act and describing when the Administrator can allow sub-minimum wages).

30. *Id.* § 214 (defining the purpose and scope of the exemption as "the extent necessary in order to prevent curtailment of opportunities for employment"). Subsection (2) specifies that the wage will be lower than the minimum wage established by the FLSA "for such period as shall be fixed in such certificates." *Id.* § 214(2).

31. Pub. L. No. 89-601, 80 Stat. 842 (codified as amended at 29 U.S.C. § 214 (2000)).

32. The amendment provides:

(2) The Secretary, pursuant to such regulations as he shall prescribe and upon certification of the State agency administering or supervising the administration of vocational rehabilitation services, may issue special certificates for the employment of-

(A) handicapped workers engaged in work which is incidental to training or evaluation programs, and

(B) multihandicapped individuals and other individuals whose earning capacity is so severely impaired that they are unable to engage in competitive employment at wages which are less than those required by this subsection and which are related to the worker's productivity.

(3)(A) The Secretary may by regulation or order provide for the employment of handicapped clients in work activities centers under special certificates at wages which are less than the minimums applicable under section 206 of this title or prescribed by paragraph (1) of this subsection and which constitute equitable compensation for such clients in work activities centers.

(B) For purposes of this section, the term "work activities centers" shall

The FLSA was amended again in 1986,³³ and the special minimum wage was eliminated.³⁴ In its place, employers who want to employ individuals under the certificate program must establish a minimum wage rate for every employee and job that they perform.³⁵ Employers are to establish these minimum wage rates

mean centers planned and designed exclusively to provide therapeutic activities for handicapped clients whose physical or mental impairment is so severe as to make their productive capacity inconsequential.

Id. § 214(d)(2).

33. Pub. L. No. 99-48b, 100 Stat. 1229 (codified as amended at 29 U.S.C. § 214 (2000)).

The Secretary, to the extent necessary to prevent curtailment of opportunities for employment, shall by regulation or order provide for the employment, under special certificates, of individuals (including individuals employed in agriculture) whose earning or productive capacity is impaired by age, physical or mental deficiency, or injury, at wages which are—

- (A) lower than the minimum wage applicable under section 206 of this title,
- (B) commensurate with those paid to nonhandicapped workers, employed in the vicinity in which the individuals under the certificates are employed, for essentially the same type, quality, and quantity of work, and
- (C) related to the individual's productivity.

Id.

Amendment was needed due to the increased deinstitutionalization of individuals with severe disabilities, and the fact that work activity centers offering employment services comprised more than 55% of certified programs and accounted for nearly 60% of workers working under certificates by 1986. *Id.*; see Policy Brief, *supra* note 13, at 8.

34. See Section 214(c) of the Fair Labor Standards Act: Hearing Before the Subcomm. on Labor Standards, Occupational Health and Safety of the House Comm. on Educ. and Labor, 103rd Cong. 2 (1994) (statement of the Hon. Austin J. Murphy, Chairman, Subcommittee on Labor Standards, Occupational Health and Safety) (implying that the 1986 amendments to the FLSA created expedited appeals process for employees of sheltered workshops in exchange for eliminating the special minimum wage for employers: "In return for employer flexibility, workers in sheltered environments received a right to an expedited hearing on any complaint of inadequate wages."), available at 1994 WL 675148.

35. 29 U.S.C. § 214(c)(2) (1988).

The Secretary shall not issue a certificate under paragraph (1) unless the employer provides written assurances to the Secretary that—

- (A) in the case of individuals paid on an hourly rate basis, wages paid in accordance with paragraph (1) will be reviewed by the employer at periodic intervals at least once every six months, and
- (B) wages paid in accordance with paragraph (1) will be adjusted by the employer at periodic intervals, at least once each year, to reflect changes in the prevailing wage paid to experienced nonhandicapped individuals employed in the locality for essentially the same type of work.
- (3) Notwithstanding paragraph (1), no employer shall be permitted to reduce the hourly wage rate prescribed by certificate under this subsection in effect on June 1, 1986, of any handicapped individual for a period of two years from such date without prior authorization of the Secretary.

based on the prevailing wage for experienced employees without disabilities who perform the same or similar work in the geographic area. The quality and productivity of an employee's work is measured against the experienced employee's productivity and quality of work.³⁶

Thus, assuming the same quality of work, an employee under the certificate program who takes twice as long to complete a job compared to an experienced employee would be paid 50% of the prevailing wage of the experienced employee. If the experienced employee earned \$5.15 per hour, the certificate employee would be paid \$2.575 per hour. The certificate employee's wages would be reduced further if the quality of his work was less than the quality of work completed by the experienced employees.

Employers who want to pay employees with disabilities less than the federal minimum wage or a state minimum wage, whichever is higher, must obtain § 214(c) certificates from the Wage and Hour Division of the Department of Labor.³⁷ Employers must establish a wage rate for each employee and job the employee performs if the employee performs multiple jobs.³⁸

The General Accounting Office (GAO) estimates that during the year 2000, 424,000 employees were paid special minimum wages under § 214(c).³⁹ Based on their 2001 survey of 443 managers from the 5189 work centers sampled, the GAO estimates that more than half of these certificate employees are earning \$2.50 or less per hour compared to the current federal minimum wage of \$5.15 per hour.⁴⁰ The majority (74%) of certificate employees were individuals with mental retardation or another developmental disability.⁴¹

Id.

36. See 29 C.F.R. § 525.12 (2001) (describing how employers determine the appropriate wage under § 214).

37. See *id.* § 525.5.

38. See *id.* § 525.12.

39. GEN. ACCT. OFF., SPECIAL MINIMUM WAGE PROGRAM: CENTERS OFFER EMPLOYMENT AND SUPPORT SERVICES TO WORKERS WITH DISABILITIES, BUT LABOR SHOULD IMPROVE OVERSIGHT 1 (2001) [hereinafter GAO REPORT], available at <http://ohiosilc.org/il/library/employment/d01886.pdf> (last visited Jan. 14, 2003).

40. *Id.* at 4.

41. *Id.* at 3.

C. Sheltered Workshops

Virtually all individuals receiving the special minimum wage are in sheltered workshops. Of the approximately 424,000 employees paid subminimum wages under § 214(c) in the year 2001, 95% were employed in sheltered workshops.⁴²

The Department of Labor (DOL) defines a sheltered workshop as “a nonprofit organization primarily engaged in assisting handicapped workers toward achieving their vocational potential through a controlled work environment and remunerative employment and ordinarily developing individualized goals and providing supportive services.”⁴³ The 2001 GAO Report reveals that more than three-quarters (84.2% of 5600) of the employers authorized to pay employees special minimum wages in the year 2000 were private, nonprofit sheltered work centers.⁴⁴

As mentioned, the legislative purpose of § 214(c) of the FLSA is “to prevent curtailment of opportunities for employment ... of individuals (including individuals employed in agriculture) whose earning or productive capacity is impaired by age, physical or mental deficiency, or injury”⁴⁵ Thus, sheltered workshops have a dual purpose: (1) to prepare some of their clients for entry into integrated employment, and (2) to provide long-term employment for individuals who are not likely to move to integrated employment.⁴⁶

According to the DOL, sheltered workshops prepare “less severely handicapped worker[s]” for competitive employment, while serving

42. *Id.* at 9.

43. ADVISORY COMMITTEE ON SHELTERED WORKSHOPS, U.S. DEPT OF LABOR, THE SHELTERED WORKSHOP: A STATEMENT OF PRINCIPLES 2 (1983) [hereinafter DOL PRINCIPLES].

44. Although the General Accounting Office report refers to “work centers,” these centers are considered sheltered workshops. See GAO REPORT, *supra* note 39, at 2-3.

45. 29 U.S.C. § 214(c)(1) (2000).

46. See 1 U.S. DEPT OF LABOR, SHELTERED WORKSHOP STUDY: A NATIONWIDE REPORT ON SHELTERED WORKSHOPS AND THEIR EMPLOYMENT OF HANDICAPPED INDIVIDUALS 2 (1977) [hereinafter DOL 1977 REPORT] (quoting the Secretary of Labor’s statement to Congress, which elucidates the dual capacity of sheltered workshops).

as a support service and as long-term employment for "the more severely handicapped person who is not likely to function independently in the community."⁴⁷ Although serving a dual purpose, sheltered workshops historically were considered a means for individuals with disabilities to learn vocational skills necessary to obtain integrated employment.⁴⁸ The DOL has established that services to disabled workers in sheltered workshops should take precedence over productivity.⁴⁹

The 2001 GAO Report found that almost all of the sheltered workshops surveyed provided support services, such as additional supervision and transportation, to help their employees obtain and maintain employment.⁵⁰ Many sheltered workshops surveyed provided additional support services, such as speech therapy or psychological counseling.⁵¹ Based on their survey and interviews with managers of sheltered workshops, these workshops report that they will be unable to continue to provide support services for their employees without additional funding, if they are required to pay at least the federal minimum wage.⁵²

The GAO finds that typical work at sheltered workshops involves assembly and service tasks through contracts with state and county government agencies and private businesses.⁵³ Three-quarters (74%) of workers receiving the special minimum wage are persons with mental retardation or a developmental disability, with 12% having mental illness, 5% visual impairments, and 9% other impairments.⁵⁴

There have been several national studies of employers and employees under the § 214(c) program. In 1967, a study of the wage

47. *Id.*

48. STEPHEN T. MURPHY & PATRICIA M. ROGAN, CLOSING THE SHOP: CONVERSION FROM SHELTERED TO INTEGRATED WORK 4 (1995) (discussing historical information and conceptualizing sheltered workshops as "avenues for community entry").

49. DOL PRINCIPLES, *supra* note 43, at 2 ("While production is essential to the successful operation of a workshop and provides a service for handicapped workers, this should be kept subordinate to the needs of the individual.").

50. GAO REPORT, *supra* note 39, at 13.

51. *Id.*

52. *Id.* at 16.

53. *Id.* at 9-10, 14-15.

54. *Id.* at 19.

payments to "handicapped" employees in sheltered workshops, authorized by the DOL, found that the 1966 special minimum wage for handicapped workers in sheltered employment did not result in substantially higher wages for these employees.⁵⁵ Average hourly wages for handicapped clients in sheltered workshops increased from \$0.69 per hour in 1965-66 to only \$0.72 per hour in 1967.⁵⁶ The report concluded that the special minimum wage requirement did not substantially raise the wages of these employees in sheltered workshops because they were either exempt from the special minimum wage⁵⁷ or were already earning more than the special minimum wage.⁵⁸

Another national study of sheltered workshops was authorized by the DOL in 1977. This study included a survey of sheltered workshops (compiled in Volume I) and interviews of individuals in sheltered workshops (Volume II). The survey found that only 12% of sheltered workshop clients transitioned to competitive employment from sheltered workshops.⁵⁹ On average, clients who transitioned to competitive employment did so soon after entering the workshop; they were in the workshop less than a year and were earning \$1.60 or higher per hour in the workshop.⁶⁰ The study found that wages correlated with type of disability. For example, individuals with physical disabilities, including blind persons, earned significantly higher wages than employees with mental retardation.⁶¹

As discussed, the GAO 2001 national study of sheltered workshops surveyed 443 work center managers. These managers estimated that each year only about 5% of employees in sheltered

55. See U.S. DEPT OF LABOR, SHELTERED WORKSHOPS 4 (1967) [hereinafter DOL 1967 REPORT].

56. *Id.*

57. Exemptions included employees in training and evaluation programs, employed in work activity centers, or so severely handicapped that the special minimum wage did not apply.

58. DOL 1967 REPORT, *supra* note 55, at 13.

59. DOL 1977 REPORT, *supra* note 46, at 6.

60. *Id.*

61. *Id.* at 76.

employment progress to employment in the community.⁶² For many, sheltered employment is a career rather than a means to integrated employment.⁶³

D. The Present Investigation: Employment of Individuals with Disabilities

Since the inception of the FLSA, disability policies have undergone dramatic revisions, moving from models of charity and compensation, to medical oversight, and then to civil rights initiatives.⁶⁴ The Rehabilitation Act of 1973 and the ADA established national goals for ensuring that individuals with disabilities experience "equality of opportunity, full participation, independent living, and economic self-sufficiency...."⁶⁵

Contemporary antidiscrimination employment policies are directed toward increasing the labor force participation of qualified persons with disabilities and reducing their dependence on government entitlement programs. The Workforce Investment Act of 1998 (WIA), TWWIA, and the ADA illustrate growing support for enhancing employment opportunities for individuals with disabilities and eliminating discrimination in the workplace.⁶⁶

However, measuring the impact of these new disability employment policies has proven illusive. In part, labor force participation rates vary because studies use different definitions of

62. GAO REPORT, *supra* note 39.

63. *Id.* (reporting that more than 50% of subminimum wage employees had been working at the sheltered employment site for five years or more).

64. Peter Blanck, *Civil War Pensions and Disability*, 62 OHIO ST. L.J. 109 (2001); *see also* Peter Blanck & Michael Millender, *Before Disability Civil Rights: Civil War Pensions and the Politics of Disability in America*, 52 ALA. L. REV. 1, 2-3 (2000); Peter Blanck & Chen Song, *The Americans with Disabilities Act: Civil War Pension Attorneys and Disability Politics*, 35 U. MICH. J.L. 137, 138-39 (2001-2002); Peter Blanck & Chen Song, *With Malice Toward None; With Charity Toward All: Civil War Pensions for Native and Foreign-Born Union Army Veterans*, 11 TRANSNAT'L L. & CONTEMP. PROBS. 1, 5-9 (2001).

65. 42 U.S.C. § 12101(a)(8) (2000).

66. *See* Blanck & Schartz, *supra* note 6, at 1; *see also* EMPLOYMENT, DISABILITY, AND THE AMERICANS WITH DISABILITIES ACT: ISSUES IN LAW, PUBLIC POLICY, AND RESEARCH (Peter D. Blanck ed., 2000).

disability. For instance, varying measures of functional limitations are used in the analysis of national data.⁶⁷

Defining disability in different ways has a substantial effect on the conclusions that researchers and policymakers draw about the employment rates of individuals with disabilities.⁶⁸ The use of multiple-objective and self-reported measures of functional limitations, in addition to measures that capture limitations on an individual's ability to work, are necessary to gain an understanding of why results appear to differ depending upon which measure is employed.

Despite the particular definition of disability used, when individuals with disabilities are employed they are likely to work fewer hours and earn less per hour than their nondisabled colleagues. The 1998 Current Population Survey (CPS) found that employees with disabilities with full-time, year-round employment earned more than \$8000 less than their nondisabled peers (annual earnings of \$29,513 and \$37,961, respectively).⁶⁹ Although 82% of nondisabled employees held full-time jobs, only 64% of employed individuals with disabilities worked full-time employment.⁷⁰

In the context of emerging disability policies, mixed employment outcomes, and high unemployment rates among individuals with disabilities, sheltered workshops as a viable employment outcome have come under considerable criticism. Sheltered workshops have been criticized for lacking effectiveness in moving individuals to employment in integrated settings, financially exploiting their workers, and poor business practices.⁷¹ Reviews of research on sheltered employment suggest that supported employment (e.g.,

67. Douglas Kruse & Lisa Schur, *Employment of People with Disabilities Following the ADA*, 42 INDUS. REL. 31-66 (2003) (reporting increased employment rates from 1990 to 1994 when using functional definition of disability in analysis of Survey of Income and Program Participation (SIPP) data set).

68. Susan Schwochau & Peter Blanck, *Does the ADA Disable the Disabled?—More Comments*, 42 INDUS. REL. 67-77 (2003).

69. Susan Schwochau & Peter Blanck, *The Economics of the Americans with Disabilities Act, Part III: Does the ADA Disable the Disabled?*, 21 BERKELEY J. EMP. & LAB. L. 271, 272 (2000).

70. *Id.*

71. See MURPHY & ROGAN, *supra* note 48, at 17.

competitive employment with the presence of a job coach) may be more effective than sheltered employment in helping individuals with disabilities obtain and maintain competitive employment.⁷²

The present investigation examines the labor force participation and wages of individuals with disabilities who were in sheltered employment before transitioning to employment in integrated and competitive settings. The investigation is based on cross-sectional and longitudinal analyses of existing data from seven states.

The seven state studies that generated these samples were primarily a result of legal consent decrees (e.g., court-endorsed litigation settlements), court orders, or legislative mandates to monitor the effects of deinstitutionalization of individuals with mental retardation or developmental disabilities. The samples represent a cohort from across America with a wide range of ages and functioning levels.

Caution is warranted in applying the findings to other individuals in sheltered employment because the present samples may not be fully representative of all individuals who are or who have participated in sheltered employment. However, given that the GAO reports that three-quarters of persons paid the special minimum wage by sheltered workshops are persons with mental retardation,⁷³ the similar composition of the present sample increases confidence that the investigation's findings are representative of trends found in the larger population.

For purposes of the present investigation, the samples are analyzed cross-sectionally (e.g., sample of cohorts over time) and longitudinally (e.g., sample of the same individuals over time). Using the cross-sectional samples, the following sections describe the earned incomes of individuals within each of the seven states in sheltered employment at two points in time, compared to similar individuals in integrated employment at the same points in time. Using longitudinal data, we examine the earned incomes of

72. See, e.g., Ruth E. Crowther et al., *Helping People with Severe Mental Illness to Obtain Work: Systematic Review*, 322 *BRIT. MED. J.* 204, 207 (2001).

73. GAO REPORT, *supra* note 39, at 19; see also Peter D. Blanck, *Empirical Study of the Employment Provisions of the Americans with Disabilities Act: Methods, Preliminary Findings, and Implications*, 22 *N.M. L. REV.* 119, 239 (1992) (discussing issues of generalizability of findings).

individuals within each state who have transitioned from sheltered to competitive employment compared to individuals who have remained in sheltered work settings.

The longitudinal analyses focus on a comparison of available data at one point (Time 1) for each state, to the most recent available data point (Time 2) for each state. This approach provides a long-term examination of the movement of the same individuals in sheltered employment. Additional analyses examine the individual and combined effects of age, gender, ethnicity, and daily functioning on labor force participation and earned income within these samples.

II. FINDINGS

A. Descriptive Statistics of the Samples

This section provides descriptions of the seven samples used in the analysis.⁷⁴ The samples are categorized by their chronology and the duration of the study. Two of the samples, the Pennsylvania and Connecticut longitudinal studies, provide data spanning the decade from the early 1980s to the early 1990s. Samples from North Carolina, Oklahoma, and California provide analogous data from the early 1990s to 2000. In contrast, samples from Indiana and Kansas provide longitudinal data for one year or two, starting in the late 1990s.

1. The 1980s: Pennsylvania and Connecticut Samples

a. Pennsylvania Longitudinal Study

A study of the effects of the deinstitutionalization of the Pennhurst State School and Hospital, a large state institution in Pennsylvania for individuals diagnosed with mental retardation, provides the oldest data set assessed for this investigation. As a consequence of the United States District Court's orders in

74. See *infra* tbl. 1A: Description of Data Files in Methodological Appendix. For the surveys used in each of the seven states sampled, contact James Conroy at the Center for Outcome Assessment. For a general description of the surveys, see BLANCK, *supra* note 4, at 73-94 (describing the Oklahoma survey).

Haldermann v. Pennhurst State School Hospital,⁷⁵ nearly all the residents of Pennhurst were transferred to supervised community living arrangements (CLAs). The United States Department of Health and Human Services commissioned a study of the effects of this deinstitutionalization.⁷⁶ The present sample includes longitudinal information on 1291 former Pennhurst residents in 1986, when all of the residents had been moved to community placements, and five years later in 1991.

Table 1 shows that the typical former Pennhurst resident was a Caucasian male, in his late thirties, diagnosed as severely mentally retarded. In 1986, he would have been unemployed and experienced difficulty completing daily life functions. In 1991, the typical former Pennhurst resident would have been working an average of thirty hours per week and earning a median wage of \$2.00 per week.

75. 446 F. Supp. 1295 (E.D. Pa. 1977).

76. See JAMES CONROY & V. BRADLEY, *THE PENNHURST LONGITUDINAL STUDY: A REPORT OF FIVE YEARS OF RESEARCH AND ANALYSIS* (1985) (providing analysis of a long-term study of the lives of people with mental retardation).

Table 1
Pennsylvania Longitudinal Study
Background, Functioning, and Employment Measures
(sample size =1291)

Background Measures		
Median age in 1986 (range)	38 (18-59)	
Gender ⁷⁷	62.4% Males	
Race ⁷⁸	77.3% Caucasians, 20.6% African Americans, 1.9% Hispanics	
Functioning Measures		
	1986	1991
Adaptive Behavior Score, median (range)	60.2 (3.1-99.2) ⁷⁹	63.3 (3.1-100)
Challenging Behavior Score, median (range)	19.0 (7-22) ⁸⁰	20.0 (5-22) ⁸¹
Level of mental retardation, median (range)	N.A. ⁸²	Severe (Mild-Profound) ⁸³
General health measure, median (range)	N.A.	N.A.
Employment Measures		
Hours worked per week, median (range)	0.0 (0-7)	30.0 (0-48) ^{84,85}
Earned income per week, median (range)	\$0 (\$0-200) ⁸⁶	\$2.00(\$0-2100) ^{87,88}

77. Based on data from 1991.

78. N = 1289; based on data from 1991.

79. N = 714.

80. N = 714.

81. The distribution of scores in 1986 differs significantly from the distribution of scores in 1991 according to a Wilcoxon Signed-Ranks test, $z = -5.853$, $p < .001$. In other words, scores on the Challenging Behavior Scale were significantly higher in 1991. Higher scores on the Challenging Behavior Scale are preferable, indicating an increased ability to control one's own behavior and a reduction in behavior that is harmful to oneself or others. The specific computations involved in a Wilcoxon Signed-Ranks test can be found in FREDERICK J. GRAVETTER & LARRY B. WALLNAU, *STATISTICS FOR THE BEHAVIORAL SCIENCES* 611-22 (4th ed. 1996).

82. N.A. = not available in the sample.

83. N = 1288.

84. N = 1258.

85. The distribution of hours worked per week was significantly higher in 1991 than in 1986 according to a Wilcoxon Signed-Ranks test, $z = -30.727$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

86. N = 708.

87. N = 1261.

88. The distribution of earned income per week was significantly higher in 1991 than in 1986 according to a Wilcoxon Signed-Ranks test, $z = -6.030$, $p < .001$. See generally GRAVETTER

b. Connecticut Longitudinal Study

Similar in scope to the Pennhurst sample, the Connecticut Longitudinal Study⁸⁹ followed 1350 residents of state institutions in Connecticut from 1985 to 1990. As part of the *Connecticut Ass'n of Retarded Citizens v. Thorne*⁹⁰ consent decree, approximately 600 individuals were transferred from state institutions, state regional centers and private nursing homes to community placements.⁹¹ Three separate studies were conducted over the five-year period from 1985 to 1990 to monitor the effects of deinstitutionalization.⁹² Data are available on a matched (longitudinal) sample of 169 former residents in 1985 and 1990.

Table 2 reveals that the typical Connecticut Longitudinal Study participant was a male, in his late twenties, which is almost ten years younger than the former Pennhurst residents. More likely than not, he would have been diagnosed as profoundly mentally retarded. In 1985, he would have worked ten hours per week, with wages ranging from \$0 to \$15 per week, and would have experienced substantial difficulty completing daily living skills. In 1990, he would have worked an average of thirty hours per week, earning anywhere from \$0 to \$400, and showing some improvement in his daily living skills compared to five years earlier.

& WALLNAU, *supra* note 81, at 611-22.

89. The Connecticut Longitudinal Study is also known as the Mansfield Longitudinal Study.

90. No. H-78-653, 1993 WL 765698 (D. Conn. Feb. 9, 1993).

91. *The Deinstitutionalization of America*, 24 TASH NEWSLETTER (TASH, Baltimore, Md.), Mar. 1998, at n.3, available at <http://www.oaksgroup.org/inst26.htm> (last visited Jan. 14, 2003).

92. *Id.*

Table 2 Connecticut Longitudinal Study Background, Functioning, and Employment Measures (sample size = 169)		
Background Measures		
Median age in 1985 (range)	29 (18-58)	
Gender	56.8% Males	
Race	N.A. ⁹³	
Functioning Measures		
	1985	1990
Adaptive Behavior Score, median (range)	41.7 (1-82)	46.0 (2-86) ⁹⁴
Challenging Behavior Score, median (range)	80.5 (7-100)	83.0 (20-100)
Level of mental retardation, median (range)	58.9% Profound ⁹⁵ (Mild - Profound)	62.7% Profound ⁹⁶ (Mild - Profound)
General health measure, median (range)	N.A. ⁹⁷	N.A.
Employment Measures		
Hours worked per week, median (range)	10 (0-184)	30 (5-60) ^{98, 99}
Earned income per week, median (range)	\$0 (\$0-15)	\$0 (\$0-400) ^{100, 101}

93. N.A. = data not available.

94. The distribution of Adaptive Behavior Scale scores was significantly higher in 1990 than in 1985 according to a Wilcoxon Signed-Ranks test, $z = -4.732$, $p < .001$. Higher scores on the Adaptive Behavior Scale indicate better functioning. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

95. $N = 168$.

96. The distribution of level of mental retardation was significantly higher in 1990 than in 1985 according to a Wilcoxon Signed-Ranks test, $z = -10.557$, $p < .001$. Higher levels of mental retardation indicate more profound retardation. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

97. N.A. = data not available.

98. $N = 166$.

99. The distribution of hours worked per week was significantly higher in 1990 than in 1985 according to a Wilcoxon Signed-Ranks test, $z = -3.535$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

100. $N = 166$.

101. Earned income was significantly higher in 1990 than in 1985 according to a Wilcoxon Signed-Ranks test, $z = -6.493$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

2. The 1990s: North Carolina, Oklahoma, and California Samples

a. North Carolina Longitudinal Study

Data from North Carolina are derived from a different population. In addition to being diagnosed as mentally retarded, these individuals had psychiatric diagnoses or serious legal difficulties that resulted in their placement in psychiatric facilities. They were followed as part of the *Thomas S. by Brooks v. Flaherty*¹⁰² class action litigation. Data are available on 194 participants in 1993 and 1999.

As is evident from Table 3, the typical North Carolina participant was equally likely to be a Caucasian or African-American male in his late thirties. He would have been diagnosed as mildly mentally retarded but evidenced moderate difficulty in completing daily living skills. He would have been unemployed in 1993 and remained unemployed in 1999.

102. 699 F. Supp. 1178 (W.D.N.C. 1988), *aff'd*, 902 F.2d 250 (4th Cir. 1990).

Table 3 North Carolina Longitudinal Study Background, Functioning, and Employment Measures (sample size = 194)		
Background Measures		
Median age in 1993 (range)	39.5 (19-60)	
Gender	64.9% Males	
Race	49.5% Caucasians, 48.5% African Americans, 1.5% Native American, 0.5% Other	
Functioning Measures	1993	1999/2000
Adaptive Behavior Score, median (range)	66.1 (11.6-100)	68.2 (6.6-94.2) ¹⁰³
Challenging Behavior Score, median (range)	90.9 (55.7-100)	90.9 (33.0-100)
Level of mental retardation, median (range)	50.8% Mild ¹⁰⁴ (None - Profound)	55.2% Mild ^{105, 106} (None - Profound)
General health measure, median (range)	N.A. ¹⁰⁷	N.A.
Employment Measures		
Hours worked per week, median (range)	0 (0-40) ¹⁰⁸	0 (0-50) ^{109, 110}
Earned income, median (range)	\$0 (\$0-133)	\$0 (\$0-490)

103. N = 192.

104. N = 181.

105. N = 192.

106. The distribution of level of mental retardation was significantly higher in 1999 than in 1993 according to a Wilcoxon Signed-Ranks test, $z = -2.407$, $p < .05$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

107. N.A. = data not available.

108. N = 187.

109. N = 160.

110. The distribution of earned income was significantly higher in 1999 than in 1993 according to a Wilcoxon Signed-Ranks test, $z = -2.271$, $p < .05$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

b. Oklahoma Longitudinal Study

The Oklahoma sample represents the largest group studied. As a consequence of the litigation and consent decree in *Homeward Bound, Inc. v. Hissom Memorial Center*,¹¹¹ Oklahoma commissioned statewide quality assurance studies of the 520 class members who resided at Hissom on or after May 2, 1985, and others who were similarly situated.¹¹² Data were available on 1764 individuals in 1993 and 2000.

Table 4 reveals the typical Oklahoma participant was a Caucasian male in his mid-thirties in 1993. He would have been diagnosed as severely or profoundly mentally retarded and experienced moderate difficulty in daily living skills. In 1993, he would have been unemployed. In 2000, he would have evidenced an improvement in his ability to complete daily living skills. He would have been more likely to be working, averaging fifteen hours per week and earning approximately \$3 per week.

111. 963 F.2d 1352 (10th Cir. 1987).

112. For a review of the *Hissom* litigation and its results, see JAMES W. CONROY, *THE HISSOM OUTCOMES STUDY: A REPORT ON 6 YEARS OF MOVEMENT INTO SUPPORTED LIVING. THE PEOPLE WHO ONCE LIVED AT HISSOM MEMORIAL CENTER: ARE THEY BETTER OFF?* 1-3 (1995).

Table 4
Oklahoma Longitudinal Study
Background, Functioning, and Employment Measures
(sample size = 1764)

Background Measures		
Median age in 1993 (range)	34 (18-57)	
Gender	55.4% Males	
Race ¹¹³	84.2% Caucasians, 9.0% African Americans, 5.6% Native Americans, 0.2% Oriental, 0.2% Asian, 0.9% Hispanics	
Functioning Measures		
	1993	2000
Adaptive Behavior Score, median (range)	59.7 (0-99.20)	62.0 (0-100) ^{114,115}
Challenging Behavior Score, median (range)	96.9 (21.9-100)	100 (21.9-100) ¹¹⁶
Level of mental retardation, median (range)	53.0% Severe or Profound ¹¹⁷ (None - Profound)	50.9% Severe or Profound ^{118, 119} (None - Profound)
General health measure, median (range)	N.A. ¹²⁰	N.A.
Employment Measures		
Hours worked per week, median (range)	0 (0-150)	15 (0-45) ¹²¹
Earned income per week, median (range)	\$0 (\$0-150) ¹²²	\$3.00(\$0-375) ^{123,124}

113. Based on 1993 data, N = 1759.

114. N = 1753.

115. The distribution of Adaptive Behavior scores was significantly higher in 2000 than in 1993 according to a Wilcoxon Signed-Ranks Test, $z = -4.770$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

116. The distribution of Challenging Behavior scores was significantly higher in 2000 than in 1993 according to a Wilcoxon Signed-Ranks test, $z = -4.872$, $p < .001$. See generally *id.*

117. N = 1511.

118. N = 1622.

119. The distribution of level of mental retardation was significantly lower in 2000 than in 1993 according to a Wilcoxon Signed-Ranks test, $z = -2.082$, $p < .05$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

120. N.A. = not available.

121. The distribution of hours worked was significantly higher in 2000 than in 1993 according to a Wilcoxon Signed-Ranks test, $z = -3.561$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

122. N = 1576.

123. N = 1414.

124. Wages were significantly higher in 2000 than in 1993 according to a Wilcoxon Signed-Ranks test, $z = -19.668$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

c. California Longitudinal Study

The deinstitutionalization of California's Developmental Centers has been characterized as "the most rapid movement of people with mental retardation and other developmental disabilities from institution to community in history."¹²⁵ As part of the *Coffelt v. Department of Developmental Services*¹²⁶ settlement agreement, more than 2000 individuals moved out of California's Developmental Centers and to community living between 1993 and 1999.¹²⁷ Longitudinal data are available on 157 of these individuals in 1994 and 1999.

Table 5 shows that the typical *Coffelt* class member was a Caucasian male who would have been in his late thirties and in good health in 1994. He would have had difficulty performing daily living skills and was likely diagnosed as profoundly mentally retarded. In 1994, class members likely would have been unemployed and remained unemployed in 1999.

125. DEPT OF DEVELOPMENTAL SERV., CALIF. HEALTH AND HUMAN SERV. AGENCY, *QUALITY OF LIFE FOR PERSONS WITH DEVELOPMENTAL DISABILITIES MOVING FROM DEVELOPMENTAL CENTERS INTO THE COMMUNITY 1* (2000).

126. No. 916401 (Super. Ct. S.F. County 1994).

127. See JAMES CONROY & J. SEIDER, *THE COFFELT QUALITY TRACKING PROJECT: THE RESULTS OF FOUR YEARS OF MOVEMENT FROM INSTITUTION TO COMMUNITY, FINAL REPORT (NUMBER 19) OF THE 5-YEAR COFFELT QUALITY TRACKING PROJECT CALIFORNIA DEPARTMENT OF DEVELOPMENTAL SERVICES* (1998).

Table 5 California Longitudinal Study Background, Functioning, and Employment Measures (sample size = 157)		
Background Measures		
Median age in 1994 (range)	38 (18-59)	
Gender	57.3% Males	
Race	70.1% Caucasians, 8.9% African Americans, 0.6% American Indians, 1.9% Filipino, 1.9% Asian, 15.3% Hispanics	
Functioning Measures	1994	1999
Adaptive Behavior Score, median (range)	43.3 (4-91)	42.8 (5-97)
Challenging Behavior Score, median (range)	67.3 (17-100)	82.7 (21-100) ¹²⁸
Level of mental retardation, median (range)	62.2% Profound ¹²⁹ (Mild - Profound)	59.9% Profound (None - Profound)
General health measure, median (range)	4 Good (1-5) ¹³⁰	4 Good (2-5) ¹³¹
Employment Measures		
Hours worked per week, median (range)	0 (0-35)	0 (0-36) ¹³²
Earned income per week, median (range)	\$0 (\$0-120)	\$0 (\$0-42) ¹³³

128. The distribution of Challenging Behavior scores was significantly higher in 1999 than in 1994 according to a Wilcoxon Signed-Ranks test, $z = -5.801$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

129. $N = 156$.

130. General Health Scale: 1 = very poor to 5 = excellent.

131. The distribution of General Health scores was significantly higher in 1999 than in 1994 according to a Wilcoxon Signed-Ranks test, $z = -3.016$, $p < .01$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

132. The distribution of hours worked was significantly lower in 1999 than in 1994 according to a Wilcoxon Signed-Ranks test, $z = -4.227$, $p < .001$. See generally *id.*

133. The distribution of earned income was significantly lower in 1999 than in 1994 according to a Wilcoxon Signed-Ranks test, $z = -3.757$, $p < .001$. See generally *id.*

*3. Short-Term Studies in the 1990s:
Indiana and Kansas Samples*

a. Indiana Longitudinal Study

The closure of two state institutions in Indiana provides information on short-term outcomes for individuals with mental retardation. This study included longitudinal data from 185 individuals in 1998 and again in 2000.

The typical Indiana participant was a Caucasian male in his mid-30s. He would have been diagnosed as severely or profoundly mentally retarded and demonstrated moderate difficulty performing daily living skills. In 2000, he would have been experiencing more difficulty performing daily living skills than in 1998. In both 1998 and 2000, he would have been in good health. In 1998, he would likely have been unemployed and remained unemployed in 2000.

Table 6 Indiana Longitudinal Study Background, Functioning, and Employment Measures (sample size = 185)		
Background Measures		
Median age in 1998 (range)	35 (18-60)	
Gender	64.3% Males	
Race	83.7% Caucasians, 14.1% African Americans, 1.1% Hispanic, 1.1% Multiracial ¹³⁴	
Functioning Measures		
	1998	2000
Adaptive Behavior Scale, median (range)	57.8 (19.3-98.9)	51.9 (11.8-98.4) ¹³⁵
Challenging Behavior Scale, median (range)	75.0 (26.9-100)	76.9 (19.2-100)
Level of mental retardation, median (range)	66.4% Severe or Profound ¹³⁶ (None - Profound)	65.5% Severe or Profound ¹³⁷ (Mild - Profound)
General health measure, median (range)	4 Good (1-5)	4 Good (1-5) ¹³⁸
Employment Measures		
Hours worked per week, median (range)	0 (0-40)	0 (0-40) ¹³⁹
Earned income per week, median (range)	\$0 (\$0-240) ¹⁴⁰	\$0 (\$0-100) ¹⁴¹

134. N = 184.

135. The distribution of Adaptive Behavior scores was significantly lower in 2000 than in 1998 according to a Wilcoxon Signed-Ranks test, $z = -5.043, p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

136. N = 184.

137. N = 180.

138. The distribution of General Health scores was significantly higher in 2000 than in 1998 according to a Wilcoxon Signed-Ranks test, $z = -3.237, p < .01$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

139. The distribution of hours worked was significantly higher in 2000 than in 1998 according to a Wilcoxon Signed-Ranks test, $z = -2.575, p < .05$. See generally *id.*

140. N = 168.

141. N = 132.

b. Kansas Longitudinal Study

Study of the closure of the Winfield State Hospital in Kansas is the sample with the shortest duration. This study followed the residents of the state hospital for one year. Longitudinal data were available on seventy-five individuals in 1997, while they were residents of the state hospital, and in 1998 when they had been placed in the community.

The typical former Winfield resident was a Caucasian male in his mid-forties in 1997. He would have been diagnosed as profoundly mentally retarded and had significant difficulty performing daily living skills. In 1997, he would likely have been unemployed and a resident of the state hospital. By 1998, he would have been living in the community but remained unemployed.

Background Measures		
Median age in 1997 (range)	43.0 (19-63)	
Gender	56.0% Males	
Race	94.7% Caucasians, 4.0% African Americans, 1.3% Hispanics	
Functioning Measures		
	1997	1998
Adaptive Behavior Scale, median (range)	30.0 (12.6-65.3)	31.6 (9.0-63.2)
Challenging Behavior Scale, median (range)	79.1 (34.6-100.0)	85.5 (34.6-100.0) ¹⁴²
Level of mental retardation, median (range)	98.7% Profound (Severe - Profound)	56.3% Profound ^{143, 144} (Severe - Profound)
General health measure, median (range)	4.0 (2-5)	4.0 (2-5) ^{145, 146}
Employment Measures		
Hours worked per week, median (range)	0.0 (0-0)	0.0(0-32)
Earned income per week, median (range)	\$0 (\$0-0)	\$0 (\$0-165)

142. The distribution of level of mental retardation was significantly higher in 1998 than in 1997 according to a Wilcoxon Signed-Ranks test, $z = -4.583$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

143. $N = 48$.

144. The distribution of level of mental retardation was significantly higher in 1998 than in 1997 according to a Wilcoxon Signed-Ranks test, $z = -4.583$, $p < .001$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

145. $N = 74$.

146. The distribution of General Health scores was significantly higher in 1998 than in 1997 according to a Wilcoxon Signed-Ranks test, $z = -2.681$, $p < .01$. See generally GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

B. Cross-Sectional Analyses: Employment Status, Earned Income, and Hours Worked

For each of the seven studies, participants were asked how many hours they worked in their employment settings. The settings were sheltered employment, supported employment, and competitive employment. Participants who did not report any hours in sheltered, supported, or competitive employment were classified as unemployed.¹⁴⁷ Participants who reported hours in employment, but reported no earned income, were also classified as unemployed.¹⁴⁸

For the purposes of analyses, participants were categorized by the most integrated employment setting in which they worked. The following are cross-sectional descriptions of the number of participants in each type of employment setting by sample and year.

1. The 1980s: Pennsylvania and Connecticut Samples

a. Pennsylvania Sample

In general, former Pennhurst residents did not fare well in employment in 1986 or in 1991. See Table 8.¹⁴⁹ In 1986, more than three-quarters (78.5%) of former Pennhurst residents were unemployed. Approximately one-fifth (20.9%) were in sheltered employment and less than 1% were employed in integrated settings. By 1991, more former residents were employed in integrated settings (2.0% in supported employment and 3.3% in competitive employment). However, the majority of the participants were unemployed (91.6%), and a few were in sheltered employment (3.2%).

147. The investigators do not know if these participants were seeking work.

148. See *infra* Methodological Appendix, Section B.2.

149. See *infra* CONROY & BRADLEY, *supra* note 76 (describing the Pennsylvania sample).

Year	Unemployed	Sheltered	Supported	Competitive
1986	1013 (78.5%)	270 (20.9%)	6 (0.5%)	2 (0.2%)
1991	1182 (91.6%)	41 (3.2%)	26 (2.0%)	42 (3.3%)

From 1986 to 1991, participants in the Pennsylvania sample in integrated and nonintegrated settings evidenced increased weekly earned incomes. Individuals in sheltered employment in 1991 averaged \$35 per week, compared to \$8 in 1986. Even adjusting for inflation, median earned income for individuals in sheltered employment in 1991 (\$35.00) was more than three times the median earned income for individuals in sheltered employment in 1986 (\$9.94).¹⁵⁰ See Table 9.

Employment Status	1986 ¹⁵¹	1986 in 1991 dollars	1991 ¹⁵²
Unemployed	\$0.00	\$0.00	\$1.00
Sheltered	\$8.00	\$9.94	\$35.00
Supported	\$14.00	\$17.40	\$56.50
Competitive	\$103.50	\$128.62	\$105.00

In terms of hours worked, participants in the Pennsylvania study in integrated and nonintegrated settings experienced an increase in the average number of hours worked per week. Individuals employed in sheltered settings in 1991 worked an average of thirty hours per week, compared to an average of five hours per week in 1986. See Table 10.

150. *See id.*

151. N = 708.

152. N = 1261.

Employment Status	1986 Hours Worked ¹⁵³	1991 Hours Worked ¹⁵⁴
Unemployed	0.0	30.0 ¹⁵⁵
Sheltered	5.0	30.0
Supported	4.0	30.0
Competitive	6.5	30.0

b. Connecticut Sample

Similar to the results in the Pennsylvania study, the majority of participants in the Connecticut sample were unemployed in 1985 (92.3%).¹⁵⁶ A small proportion was in sheltered employment (7%) and only one participant (< 1%) was employed in an integrated setting.

In contrast to the Pennhurst study, a substantial drop in unemployment occurred and two-thirds (65.7%) of the Connecticut sample were unemployed in 1990. Almost one-fifth of the sample (19.5%) were in sheltered employment and 14.8% were employed in integrated work settings. This trend reflects a substantial movement toward integrated employment compared to five years earlier. See Table 11.

	Unemployed	Sheltered	Supported	Competitive
1985	156 (92.3%)	12 (7.1%)	1 (0.6%)	0 (0%)
1990	111 (65.7%)	33 (19.5%)	24 (14.2%)	1 (0.6%)

153. N = 1291.

154. N = 1258.

155. This includes 466 participants who reported hours worked but \$0 for earned income. See *infra* Methodological Appendix, Section B.2.

156. See *supra* Part II.A.1.b (describing the Connecticut sample).

Similar to the Pennsylvania cohort, participants in integrated and nonintegrated employment in the Connecticut study evidenced increased earned income. Individuals in sheltered employment in 1990 were earning almost 50% more in 1990 (\$9.00) than their colleagues in sheltered employment in 1985 (\$5.00), even when controlling for inflation (\$6.07). See Table 12.

Employment Status	1985	1985 in 1990 dollars ¹⁵⁷	1990
Unemployed	0.00	0.00	0.00
Sheltered	\$5.00	\$6.07	\$9.00
Supported	\$10.00	\$12.15	\$21.50
Competitive	N/A	N/A	\$41.00

Comparing 1985 to 1990, individuals in the Connecticut study experienced little change in the average number of hours worked per week. Participants in all employment categories averaged thirty hours per week in 1990, compared to thirty and twenty-five hours per week in 1985 for sheltered and supported employment, respectively. See Table 13.

Employment Status	1985 Hours Worked	1990 Hours Worked ¹⁵⁸
Unemployed	10 ¹⁵⁹	30 ¹⁶⁰
Sheltered	30	30
Supported	25	30
Competitive	N/A	30

157. Calculated using the Inflation Calculator provided by the Bureau of Labor Statistics, at <http://stats.bls.gov> (last visited Jan. 14, 2003) [hereinafter Inflation Calculator].

158. N = 166.

159. This includes ninety-eight participants who reported hours worked but \$0 for earned income. See *infra* Methodological Appendix, Section B.2.

160. This includes ninety-five participants who reported hours worked but \$0 for earned

2. The 1990s: North Carolina, Oklahoma, and California Samples

a. North Carolina Sample

In 1993, almost three-quarters of participants in the North Carolina study (73.2%) were unemployed.¹⁶¹ Slightly less than one-sixth (16.0%) of the sample were in sheltered employment and about one-tenth (10.8%) were in integrated employment.

By 1999, the percentage of participants who were unemployed and in sheltered employment dropped substantially to 60.8% and 7.7%, down 12.4% and 8.3%, respectively. Percentages in integrated employment rose substantially to 31.5% in 1999 from 10.8% in 1993. See Table 14.

Year	Unemployed	Sheltered	Supported	Competitive
1993	142 (73.2%)	31 (16.0%)	14 (7.2%)	7 (3.6%)
1999	118 (60.8%)	15 (7.7%)	37 (19.1%)	24 (12.4%)

Although many participants in the North Carolina study moved into integrated employment, most were working more hours and earning less income. Individuals in competitive employment in 1999 earned less than individuals in competitive employment in 1993, \$49.50 and \$75.00, respectively. Individuals in sheltered employment evidenced minor gains in earned income from 1993 to 1999. Controlling for inflation, participants in sheltered employment in 1999 earned an average of \$19.16 per week, compared to \$14.86 in 1993. See Table 15.

income. See *id.*

161. See Thomas S. *ex rel.* Brooks v. Flaherty, 699 F. Supp. 1178 (W.D.N.C. 1988), *aff'd*, 902 F.2d 250 (4th Cir. 1990); *supra* Part II.A.2.a (describing the North Carolina sample).

Employment Status	1993 ¹⁶²	1993 in 1999 dollars ¹⁶³	1999 ¹⁶⁴
Unemployed	\$ 0.00	\$ 0.00	\$ 0.00
Sheltered	\$12.89	\$14.86	\$19.16
Supported	\$39.13	\$45.11	\$40.00
Competitive	\$75.00	\$86.47	\$49.50

In hours worked, North Carolina participants in sheltered and competitive employment reported averaging more hours per week in 1999 than in 1993. Individuals in sheltered employment worked an additional eight hours per week in 1999, working an average of twenty-six hours per week in 1999 compared to an average of eighteen hours per week in 1993. See Table 16.

Employment Status	1993 Hours Worked	1999 Hours Worked
Unemployed	0	0
Sheltered	18	26
Supported	10	9
Competitive	10	20

b. Oklahoma Sample

Participants in the Oklahoma study evidenced substantial gains in employment over the course of the study.¹⁶⁵ In 1993, the majority of participants (58.8%) were unemployed, slightly more than a quarter of the sample (27.7%) were in sheltered employment and 13.5% were in integrated employment. Significant improvements in employment were noted by the year 2000, with less than half

162. N = 187.

163. See Inflation Calculator, *supra* note 157.

164. N = 160.

165. See CONROY, *supra* note 112 (describing the Oklahoma sample).

(44.7%) unemployed, almost one-third (30.2%) in sheltered employment and more than a quarter (25.1%) in integrated employment. See Table 17.

Year	Unemployed	Sheltered	Supported	Competitive
1993	1038 (58.8%)	489 (27.7%)	123 (7.0%)	114 (6.5%)
2000	788 (44.7%)	534 (30.3%)	273 (15.5%)	169 (9.6%)

Oklahoma participants in all employment settings evidenced increases in average weekly earned incomes from 1993 to 2000, although average hours worked remained stable. Participants in sheltered employment increased their income four-fold by 2000, averaging \$15.00 per week in 2000, compared to \$3.75 in 1993. See Table 18.

Employment Status	1993 ¹⁶⁶	1993 in 2000 dollars ¹⁶⁷	2000 ¹⁶⁸
Unemployed	0.00	0.00	0.00
Sheltered	\$3.75	\$4.47	\$15.00
Supported	\$12.50	\$12.50	\$58.38
Competitive	\$21.13	\$25.18	\$75.00

For participants in integrated and nonintegrated employment, average hours worked per week did not change from 1993 to 2000. Individuals in sheltered employment averaged thirty hours per week in 1993 and 2000. See Table 19.

166. N = 1576.

167. See Inflation Calculator, *supra* note 157.

168. N = 1414.

Table 19
Oklahoma Sample
Median Weekly Earned Income by Employment Status

Employment Status	1993 Hours Worked	2000 Hours Worked
Unemployed	0	0
Sheltered	30	30
Supported	25	25
Competitive	25	25

c. California Sample

Participants in the California study experienced relatively poor employment outcomes. In 1994, more than three-quarters of participants were unemployed (79.6%).¹⁶⁹ Less than one-fifth (18.5%) were in sheltered employment and only 1.9% were in integrated employment.

By 1999, more than nine out of ten participants (94.3%) in the sample were unemployed. The percentage of individuals in sheltered employment had diminished from 18.5% to 4.5%, and in integrated employment from 1.9% to 1.2%. See Table 20.

Table 20
California Sample
Frequency and Percentage of Employment Status

Year	Unemployed	Sheltered	Supported	Competitive
1994	125 (79.6%)	29 (18.5%)	3 (1.9%)	0 (0%)
1999	148 (94.3%)	7 (4.5%)	1 (0.6%)	1 (0.6%)

From 1994 to 1999, employees in integrated and nonintegrated settings evidenced declines in average weekly earned income when controlling for inflation. Individuals working in sheltered workshops earned an average of \$10.00 per week in both 1994 and 1999. After inflation was calculated, however, these individuals had less earning power in 1999 than they had in 1994. See Table 21.

169. See CONROY & SEIDER, *supra* note 127 (describing the California sample).

Employment Status	1994	1994 in 1999 dollars ¹⁷⁰	1999
Unemployed	\$0.00	\$0.00	\$0.00
Sheltered	\$10.00	\$11.24	\$10.00
Supported	\$30.00	\$33.72	\$22.00
Competitive	N.A.	N.A.	\$20.00

In contrast to the few individuals in supported employment, individuals in sheltered employment experienced a substantial reduction in the average number of hours worked per week from twenty-five in 1994 to ten in 1999. See Table 22.

Employment Status	1994 Hours Worked	1999 Hours Worked
Unemployed	0	0
Sheltered	25	10
Supported	20	36
Competitive	N.A.	10

3. Short-Term Studies in the 1990s: Kansas and Indiana Samples

a. Kansas Sample

Participants in the Kansas study experienced little change in their employment status between 1997 and 1998. In 1997, all of the seventy-four participants sampled were unemployed, residing in the state hospital.¹⁷¹

After one year, only one individual had become employed, and he was employed in a sheltered workshop. Although he was the only participant to enter employment, he fared well in his employment,

170. See Inflation Calculator, *supra* note 157.

171. See *supra* Part II.A.3.b (discussing the Kansas sample).

compared to participants in sheltered employment in other samples. This individual had an average weekly earned income of \$165 and worked an average of thirty-two hours per week. He earned an estimated \$5.15 per hour, which was the minimum wage in 1998.

b. Indiana Sample

Participants in the Indiana study fared better than their peers in Kansas between the years 1998 and 2000. In 1998, nine out of ten Indiana participants (90.3%) were unemployed, 6.5% were in sheltered employment, and 3.3% in competitive employment. By 2000, the unemployment rate dropped to 87.0%. The percentage of individuals in sheltered employment increased to 10.3% while the percentage in integrated employment dropped to 2.7%. See Table 23.

Year	Unemployed	Sheltered	Supported	Competitive
1998	167 (90.3%)	12 (6.5%)	4 (2.2%)	2 (1.1%)
2000	161 (87.0%)	19 (10.3%)	4 (2.2%)	1 (0.5%)

Compared to data from 1998, Indiana participants in sheltered employment in the year 2000 worked more hours (an average of eleven hours in 1998 compared to thirty in 2000), but earned less (an average of \$20.00 compared to \$3.00, respectively). See Tables 24 and 25.

Employment Status	1998 ¹⁷²	1998 in 2000 dollars ¹⁷³	2000 ¹⁷⁴
Unemployed	\$0.00	\$0.00	\$0.00
Sheltered	\$20.00	\$21.13	\$3.00
Supported	\$96.25	\$101.68	\$53.00
Competitive	\$225.00	\$237.70	\$0.00

Employment Status	1998 Hours Worked	2000 Hours Worked
Unemployed	0	0
Sheltered	11.25	30
Supported	16.25	25
Competitive	40	20

C. Longitudinal Analyses: Employment Movement

1. The 1980s: Pennsylvania and Connecticut Samples

a. Pennsylvania Sample

Of the 270 Pennsylvania participants in sheltered employment in 1986, most were unemployed (236 individuals, or 87.4%) in 1991, some remained in sheltered employment (18 individuals, or 6.7%), and a minority (16 individuals, or 5.9%) moved to integrated settings.¹⁷⁵ Participants in sheltered employment in 1986, however, had better employment outcomes than participants who were unemployed in 1986.

Of the 1013 participants who were unemployed in 1986, 92.9% (941 individuals) remained unemployed in 1991, 2.3% (23 individuals) moved to sheltered employment and 4.8% (49 individuals)

172. N = 168.

173. See Inflation Calculator, *supra* note 157.

174. N = 132.

175. See CONROY & BRADLEY, *supra* note 76 (describing the Pennsylvania sample).

acquired employment in integrated settings. Participants who were in integrated employment in 1986 (nine individuals) had the best employment outcomes, with one-third of these participants (three individuals) remaining in integrated employment in 1991. See Table 26.

Status in 1986	Status in 1991				Totals
	Unemployed ¹⁷⁶	Sheltered	Supported	Competitive	
Unemployed ¹⁷⁷	941	23	13	36	1013
Sheltered	236	18	11	5	270
Supported	4	0	2	0	6
Competitive	2	0	0	1	3
Totals	1182	41	26	42	1291

b. Connecticut Sample

Connecticut participants who started in sheltered employment in the year 1985 had better employment outcomes than either their peers who were unemployed or the one participant who was in integrated employment in 1985. Of the twelve participants who were in sheltered employment in 1985, 50% (six individuals) moved to integrated employment, one-third (four individuals) remained in sheltered employment, and 17% (two individuals) were unemployed in 1990.¹⁷⁸

In contrast, of the 156 participants who were unemployed in 1985, 69.9% (109 individuals) remained unemployed, 17.9% (28 individuals) moved to sheltered employment, and 12.2% (19 individuals) found positions in integrated settings in 1990. The one participant who was employed in an integrated setting in 1985 regressed to sheltered employment by 1990. See Table 27.

176. Includes 466 participants who reported hours worked but \$0 for earned income.

177. Includes nineteen participants who reported hours worked but \$0 for earned income.

178. See *supra* Part II.A.1.b.

Status in 1985	Status in 1990				Totals
	Unemployed ¹⁷⁹	Sheltered	Supported	Competitive	
Unemployed ¹⁸⁰	109	28	18	1	156
Sheltered	2	4	6	0	12
Supported	0	1	0	0	1
Competitive	0	0	0	0	0
Totals	111	33	24	1	169

2. The 1990s: North Carolina, Oklahoma, and California Samples

a. North Carolina Sample

North Carolina individuals in sheltered employment in the year 1993 fared better than those who were unemployed, and almost as well as individuals in integrated employment, in obtaining integrated employment by 1999.¹⁸¹ Of the thirty-one individuals in sheltered employment in 1993, almost half (45.2%, or fourteen individuals) obtained employment in integrated settings by 2000, compared to one quarter (26.8%, or thirty-eight individuals) of those who were unemployed, and 42.9% (nine individuals) of those in integrated employment in 1993. Of those in sheltered employment in 1993, 9.7% (three of thirty-one) remained in sheltered employment and 45.2% (fourteen of thirty-one) became unemployed. See Table 28.

179. Includes ninety-five participants who reported hours worked but \$0 for earned income.

180. Includes ninety-eight participants who reported hours worked but \$0 for earned income.

181. See *supra* Part II.A.2.a (describing the North Carolina sample).

Status in 1993	Employment Status in 1999/2000				Totals
	Unemployed ¹⁸²	Sheltered	Supported	Competitive	
Unemployed ¹⁸³	92	12	20	18	142
Sheltered	14	3	11	3	31
Supported	9	0	3	2	14
Competitive	3	0	3	1	7
Totals	118	15	37	24	194

b. Oklahoma Sample

Oklahomans in sheltered employment fared better than those who were unemployed in the year 1993 but worse than those who were already in integrated employment. Of the 489 participants who were in sheltered employment in 1993, 30.7% (150) moved on to integrated employment while 47.4% (232) remained in sheltered employment and 21.9% (107) became unemployed.¹⁸⁴ In contrast, 17% (176) of the 1038 individuals who were unemployed in 1993 moved to integrated employment. Almost half (48.9%, 116 of 237) of the individuals in integrated employment in 1993 remained in integrated employment in 2000. See Table 29.

Status in 1993	Employment Status in 2000				Totals
	Unemployed ¹⁸⁵	Sheltered	Supported	Competitive	
Unemployed ¹⁸⁶	623	239	114	62	1038
Sheltered	107	232	99	51	489
Supported	28	33	35	27	123
Competitive	30	30	25	29	114
Totals	788	534	273	169	1764

182. Includes seven participants who reported hours worked but \$0 for earned income.

183. Includes seven participants who reported hours worked but \$0 for earned income.

184. See, e.g., *supra* Part II.A.2.b (describing the Oklahoma sample).

185. Includes forty-three participants who reported hours worked but \$0 for earned income.

186. Includes 128 participants who reported hours worked but \$0 for earned income.

c. California Sample

Californians in sheltered employment fared no differently than their peers who were unemployed. Of the twenty-nine individuals in sheltered employment in the year 1994, 13.8% (four individuals) remained in sheltered employment while 86.2% (twenty-five individuals) became unemployed by 1999.¹⁸⁷

None of the participants progressed from sheltered employment in 1994 to integrated employment by 1999. Of the 125 participants who were unemployed in 1994, one individual moved to integrated employment, and 2.4% (three individuals) moved to sheltered employment. See Table 30.

Status in 1994	Employment Status in 1999				Totals
	Unemployed ¹⁸⁸	Sheltered	Supported	Competitive	
Unemployed ¹⁸⁹	121	3	0	1	125
Sheltered	25	4	0	0	29
Supported	2	0	1	0	3
Competitive	0	0	0	0	0
Totals	148	7	1	1	157

*3. Short-Term Studies in the 1990s:
Kansas and Indiana Samples*

a. Kansas Sample

Participants in the Kansas sample had no demonstrable change in employment. From 1997 to 1998, one person became employed,

187. See CONROY & SEIDER, *supra* note 127 and accompanying text (discussing the California sample).

188. Includes one participant who reported hours worked but \$0 for earned income.

189. Includes six participants who reported hours worked but \$0 for earned income.

moving from unemployment to sheltered employment.¹⁹⁰ See Table 31.

Status in 1997	Employment Status in 1998				Totals
	Unemployed ¹⁹¹	Sheltered	Supported	Competitive	
Unemployed ¹⁹²	74	1	0	0	75
Sheltered	0	0	0	0	0
Supported	0	0	0	0	0
Competitive	0	0	0	0	0
Totals	74	1	0	0	75

b. Indiana Sample

Indianans in sheltered employment in 1998 fared better than individuals who were unemployed but not as well as individuals in integrated employment. Of the twelve participants in sheltered employment in 1998, three quarters (75%, or nine individuals) were unemployed by 2000, 8.3% (one individual) remained in sheltered employment, and 16.7% (two individuals) moved to integrated employment.¹⁹³

In contrast, one unemployed participant obtained employment in integrated settings by the year 2000, while eighteen (10.8%) progressed to sheltered employment. One-third of individuals in integrated settings in 1998 maintained employment in integrated settings in 2000 (two of six). See Table 32.

190. See *supra* Part II.A.3.b (describing the Kansas sample).

191. Includes three participants who reported hours worked but \$0 for earned income.

192. Includes zero participants who reported hours worked but \$0 for earned income.

193. See *supra* Part II.A.3.a (describing the Indiana sample).

Status in 1998	Employment Status in 2000				Totals
	Unemployed ¹⁹⁴	Sheltered	Supported	Competitive	
Unemployed ¹⁹⁵	148	18	1	0	167
Sheltered	9	1	1	1	12
Supported	4	0	0	0	4
Competitive	0	0	2	0	2
Totals	161	19	4	1	185

D. Categorization of Employment Outcomes as "Improvers," "Stayers," or "Regressors"

To further assess employment changes, participants employed in sheltered settings at Time 1 were classified by their employment outcome at Time 2 as "Improvers," "Stayers," or "Regressors."¹⁹⁶ Individuals who moved from sheltered employment at Time 1 to integrated settings at Time 2 were classified as "Improvers."

Individuals who were in sheltered employment at Time 1 and remained in sheltered employment at Time 2 were classified as "Stayers." Individuals who were in sheltered employment at Time 1 and unemployed at Time 2 were classified as "Regressors." The results of this classification for each sample are presented in Table 33.

For the first year or two after deinstitutionalization, the seven studies demonstrate that few individuals, if any, moved to integrated employment from sheltered settings. In Kansas, none of the participants were in integrated settings at Time 2. In Indiana, only two of twelve individuals in sheltered employment had progressed to integrated employment after two years.

Studies with five year durations evidenced considerable variability in employment movement. In California, none of the

194. Includes one participant who reported hours worked but \$0 for earned income.

195. Includes one participant who reported hours worked but \$0 for earned income.

196. See BLANCK, *supra* note 4, at 123-27 (discussing this model for analysis and related findings); *id.* at 124 (citing similar longitudinal research conducted by Roger J. Stancliffe & Brian H. Abery).

participants moved from sheltered to integrated settings after five years. Similarly, in the Pennsylvania sample only 6% (16 of 270) of the participants progressed from sheltered to integrated employment after five years.

In contrast, 50% (six of twelve) of the participants in the Connecticut sample moved from sheltered to integrated employment from 1985 to 1990.

Longer time durations appear to be associated with greater success in employment outcomes. Thus, between 30 and 45% of individuals from the Oklahoma and North Carolina studies in sheltered employment progressed to integrated employment over a six or seven year period. However, even after more than seven years of living in the community, almost 70% of the former residents of state institutions in Oklahoma were either employed in non-integrated settings or unemployed. See Table 33.

Table 33					
Frequency of Regressors, Stayers and Improvers Across the Seven Samples					
Sample	Time Span	Regressors	Stayers	Improvers	Total
1980s Longitudinal Studies					
Pennsylvania	1986-1991	236	18	16 (5.9%)	270
Connecticut	1985-1990	2	4	6 (50%)	12
1990s Longitudinal Studies					
North Carolina	1993-1999	14	3	14 (45.2%)	31
Oklahoma	1993-2000	107	232	150 (30.7%)	489
California	1994-1999	25	4	0 (0%)	29
Short-term Studies in the 1990s					
Kansas	1997-1998	0	0	0 (0%)	0
Indiana	1998-2000	9	1	2 (16.7%)	12

1. Earned Income of "Improvers," "Stayers," and "Regressors"

Individuals who transitioned to integrated employment experienced a significant increase in their earned incomes associated with the change in employment status. The previous analyses demonstrate the variability in employment outcomes for individuals

in sheltered employment across the seven different samples. In the three samples with sufficient numbers of participants to analyze the data,¹⁹⁷ Improvers consistently earned more than Stayers and Regressors, although the degree of benefit varied with the sample. See Table 34.

In Oklahoma, individuals who progressed through sheltered employment to integrated employment earned an average of \$47.50 more per week (\$47.03 when adjusted for inflation) in 2000 than they earned in sheltered employment in 1993. In contrast, individuals who remained in sheltered employment earned approximately \$15.00 more per week (\$13.94 when adjusted for inflation) in 2000 than they had in 1993.

Improvers in the Pennsylvania and North Carolina samples also increased their earned incomes from Time 1 to Time 2, and substantially more than Stayers. Improvers in Pennsylvania earned \$55 more per week (\$49.52 when adjusted for inflation) working in integrated settings in 1991 than they earned in sheltered settings in 1986. In contrast, Stayers in Pennsylvania earned only \$2.50 more per week (\$1.06 when adjusted for inflation) in 1991 than in 1986.

In the small North Carolina sample, Improvers earned \$22.90 more per week (\$15.40 when adjusted for inflation) working in integrated settings in 1999 than they earned in sheltered employment in 1993. Their peers who remained in sheltered employment actually earned \$6.77 less per week (\$14.54 less when adjusted for inflation) in 1999 than in 1993. Consistent across the samples, individuals who transitioned to integrated employment experienced an economic advantage over those who remained in sheltered employment. See Table 34.

197. Only the Pennsylvania, North Carolina, and Oklahoma samples had sufficient numbers of participants in sheltered employment at Time 1 to analyze differences in earned income at Time 2.

Table 34
Median Change in Weekly Earned Income from Time 1 to Time 2
for Improvers, Stayers and Regressors in Dollars.
(Changes Adjusted for Inflation in Parentheses)¹⁹⁸

Sample	Regressors	Stayers	Improvers
Pennsylvania	0.00 (-0.92)	2.50 (1.06)	55.00 (49.52) ¹⁹⁹
North Carolina	-12.00 (-13.80)	-6.77 (-14.54)	22.90 (15.40) ²⁰⁰
Oklahoma	-1.75 (-2.08)	15.00 (13.94)	47.50 (47.03) ²⁰¹

E. Characteristics of "Improvers," "Stayers," and "Regressors"

This section explores whether there are factors that distinguish Improvers from Stayers and Regressors. Predicting an individual's employability is controversial, especially for individuals with mental retardation who have been historically subjected to unjustified myths and misconceptions about their employment potential.²⁰²

This prediction is complicated further for individuals in sheltered employment because the § 214(c) Special Minimum Wage Program serves two separate populations: (1) to prepare participants for entry into integrated employment, and (2) to provide long-term employment for individuals who are not likely to move to integrated employment.²⁰³

This section attempts to identify factors that may differentiate those individuals who have moved from sheltered employment at

198. Inflation adjusted wages at Time 1 were Time 1 wages expressed in Time 2 dollars. See Inflation Calculator, *supra* note 157.

199. According to a Kruskal-Wallis test, the adjusted wage change of Improvers was significantly greater than the adjusted wage change of both Stayers and Regressors. Regressors and Stayers did not differ significantly from each other. Details of this analysis are presented in the Methodological Appendix, *infra*, Section D.

200. According to a Kruskal-Wallis test, only the adjusted wage change of Improvers was significantly greater than the adjusted wage change of Regressors. For details of this analysis, see *infra* Methodological Appendix, Section D.

201. According to a Kruskal-Wallis test, the adjusted wage change of all groups differed significantly. For details of this analysis, see *infra* Methodological Appendix, Section D.

202. See generally BLANCK, *supra* note 4, at 5-6, 11.

203. See DOL 1977 REPORT, *supra* note 46, at 2 (elucidating the dual capacity of sheltered workshops in preparing "less severely handicapped workers" for competitive employment while also serving as a support service and long term employment for "the more severely handicapped person who is not likely to function independently in the community").

Time 1 to integrated employment at Time 2 (Improvers) from individuals who remained in sheltered employment at Time 2 (Stayers), and those who regressed to unemployment at Time 2 (Regressors).

Table 35 shows the results of a regression analysis with category of employment change (Regressors = -1, Stayers = 0, and Improvers = 1) as the criterion or dependent variable.²⁰⁴ The measures of participant age, gender, race, Adaptive Behavior Scale scores, category of mental retardation, and Challenging Behavior Scale scores are included in the analysis as predictor or independent variables.²⁰⁵

The results of the regression reveal no significant difference²⁰⁶ between Improvers, Stayers, and Regressors on the demographic measures of age, gender, and race for these samples. There is, however, some distinction between employment outcome based on daily life functioning measures.

The only variable to consistently distinguish among Improvers, Stayers, and Regressors across the three samples was scores on the Adaptive Behavior Scale. Consistently, individuals who progressed from sheltered employment to integrated employment exhibited relatively higher levels of daily living skills compared to individuals who remained in sheltered employment and individuals who regressed to unemployment.

In Table 35, β (beta) refers to the standardized regression weights associated with the predictor variables (i.e., the degree of relation between a predictor and the dependent measure).²⁰⁷ For all three samples, the largest β was for the variable Adaptive Behavior Scale score.

204. See also *infra* Methodological Appendix, Section E (explaining the methodology used in the regression analysis).

205. See *id.*

206. Values less than .05 typically are considered statistically significant. See *infra* note 265.

207. See *infra* note 266 and accompanying text.

Table 35
Results of Regression Analysis

Change in Employment Category from Time 1 to Time 2 ²⁰⁸ predicted by:	Sample					
	Oklahoma (N = 462)		Pennsylvania (N = 269)		North Carolina (N = 31)	
	β^{209}	p^{210}	β	p	β	p
Demographic						
Age	.011	.806	-.044	.477	.109	.614
Gender	-.019	.676	-.034	.569	.034	.866
Race	.080	.077	-.005	.931	.116	.565
Functional						
Adaptive Behavior Scale	.325	.000	.283	.000	.379	.114
Mental Retardation	.079	.253	-.009	.901	.136	.552
Challenging Behavior Scale	.082	.073	.090	.131	.076	.720

Although measures of daily adaptive living skills distinguish among Improvers, Stayers, and Regressors, they explain a relatively small part (8-9%) of the variance in determining whether individuals sampled progress to integrated employment or remain in nonintegrated settings.²¹¹

There remains, therefore, considerable overlap in the frequency distribution of Adaptive Behavior Scale scores for Improvers, Stayers, and Regressors.²¹² In other words, a high proportion of individuals with relatively high Adaptive Behavior Scale scores remained in nonintegrated employment settings, despite controlling in the regression model for other demographic measures such as

208. Change in Employment Category from Time 1 to Time 2 refers to the categories of Regressors, Stayers, and Improvers. See *supra* note 204 and accompanying text. For purposes of this analysis, Regressors are coded as -1, Stayers are coded as 0, and Improvers are coded as +1. See *infra* notes 263-65 and accompanying text. The bivariate correlations of the demographic and functional variables with Employment Category Change are presented in Table 6A in the Methodological Appendix, *infra*, Section E. See *infra* notes 263-73 and accompanying text.

209. β is the standardized regression coefficient.

210. p is the level of significance.

211. Pearson product-moment correlations between scores on the Adaptive Behavior Scale and the categorical, employment outcome variable (Regressor, Stayer, Improver) were $r = .303$, $p < .001$ for Pennsylvania; $r = .299$, $p = .102$ for North Carolina; and $r = .284$, $p < .001$ for Oklahoma. See *infra* notes 263-73 and accompanying text (square the r values to calculate variance in employment category change accounted for by Adaptive Behavior scores).

212. See *infra* Methodological Appendix, tbls. 1A-3A.

age, gender, and race.²¹³ Conversely, many individuals progressed to integrated employment settings who had relatively low scores on the Adaptive Behavior Scale, even when controlling for demographic measures in the regression model.²¹⁴

CONCLUSION

The purpose of this investigation was to examine the labor force participation and wages of individuals with disabilities who have transitioned from sheltered to integrated and competitive work. The findings have implications for policymakers, courts, and persons with disabilities.

Although the findings have immediate interest to these constituencies, they are better viewed as a bridge to future study. Researchers need to replicate the findings before conclusive statements may be made about their implications for disability employment policies such as the ADA and TWWIIA.

A. Core Findings

The research questions posed at the outset were addressed empirically and the findings may be summarized as follows:

1. The majority of individuals with disabilities (primarily individuals with mental retardation between the ages of eighteen and sixty-four) in the seven geographically diverse samples, with the exception of the Oklahoma study, were unemployed at the beginning of the studies (Time 1) and the end (Time 2).²¹⁵

The Pennsylvania, California, and Kansas studies revealed unemployment rates greater than 90% at Time 2.²¹⁶ The Indiana study showed an 87% unemployment rate at Time 2.²¹⁷ Studies in

213. *See id.*

214. *See id.*

215. *See supra* Part II.B. tbls. 8, 11, 14, 17, 20, 23.

216. *See id.* tbl. 8 (Pennsylvania: 91.6%); tbl. 20 (California: 94.3%); (Kansas: 99%).

217. *Id.* tbl. 23.

Connecticut and North Carolina had unemployment rates of 65.7% and 60.8%, respectively, at Time 2.²¹⁸ The Oklahoma study was the only study in which participants were more likely to be employed than unemployed at Time 2, finding that only 45% of the participants were unemployed at Time 2.²¹⁹

2. In general, sheltered work prepared some individuals for entry into employment in integrated settings, such as in supported and competitive work.²²⁰

Compared to individuals who were unemployed at Time 1, individuals in sheltered employment at Time 1 had a greater likelihood of being employed in an integrated setting (either in supported or competitive employment) at Time 2.²²¹

3. Although the rates of employment movement varied across the seven studies, substantial numbers of individuals in sheltered workshops did not progress to integrated employment settings over time.²²²

For instance, in the California study, which followed 157 individuals with mental retardation who moved from institutions to community placements, none of the twenty-nine individuals who were in sheltered employment in 1994 were employed in integrated settings in 1999.²²³ In contrast, the study of 169 individuals in Connecticut during the mid-1980s found that six of the twelve (i.e., 50%) of the individuals who were in sheltered employment in 1985 were employed in integrated settings in 1990 (Improvers).²²⁴

218. *Id.* tbl. 11 (Connecticut); tbl. 14 (North Carolina).

219. *Id.* tbl. 17.

220. *See supra* Part II.C.

221. *Id.* tbls. 26-32 (providing statistics for movement in employment status for each sample).

222. *See id.*

223. *See id.* tbls. 20, 30.

224. *See id.* tbl. 27.

4. For those relatively few individuals who transitioned to integrated employment settings, employment in integrated settings resulted in substantial gains in earned income.²²⁵

For example, individuals in the Oklahoma study who were in sheltered employment at Time 1 who then transitioned to integrated employment at Time 2 (Improvers) significantly increased their earned income by \$47.50 per week.²²⁶ In contrast, the Oklahoma participants who remained in sheltered employment at Time 2 (Stayers) evidenced only a \$15 increase in earned income per week over the same period.²²⁷

5. On average, individuals who progressed from sheltered to integrated employment exhibited significantly higher levels of daily living skills (e.g., Adaptive Behavior Scale scores) compared to individuals who remained in sheltered workshops or who became unemployed at Time 2.²²⁸

For the three studies that had sufficient numbers of individuals employed in sheltered settings at Time 1²²⁹ (and therefore capable of correlational analyses), a more integrated employment status at Time 2 was associated with significantly higher scores on the Adaptive Behavior Scale.²³⁰

6. Many individuals who remained in sheltered workshops at Time 2 (Stayers) had Adaptive Behavior Scale scores comparable to those working in integrated settings at Time 2 (Improvers).²³¹ Concomitantly, many individuals who progressed to integrated employment (Improvers) had relatively low daily living skill scores.²³²

225. *See supra* Part II.D.1.

226. *See id.*

227. *See id.*

228. *See supra* Part II.E.

229. *See supra* note 197 (explaining that the Pennsylvania, North Carolina, and Oklahoma samples had sufficient numbers of participants in sheltered employment at Time 1 to analyze differences in earned income at Time 2).

230. *See supra* Part II.E.

231. *See infra* Methodological Appendix, figs. 1A-3A.

232. *See id.*

For instance, in Pennsylvania, more than half (56%) of individuals who remained in sheltered work at Time 2 (Stayers) had Adaptive Behavior Scale scores greater than 90 on a scale of 100.²³³ In comparison, somewhat less than half (44%) of individuals who progressed to integrated employment at Time 2 (Improvers) had Adaptive Behavior Scale scores in the range above 90.²³⁴ These findings suggest that there are individuals who remained in sheltered employment at Time 2 who might have been capable of working in integrated settings.

B. Emerging Issues and Future Research

Additional study is warranted to replicate the findings in this investigation. Alternative measures are needed of disability type and severity (e.g., self-reported and objective measures) to confirm the role of life functioning to employment outcomes.²³⁵ Study is needed of how employment outcomes are enhanced for individuals with disabilities who are capable of progressing to integrated employment, yet who enter or remain in sheltered employment settings.²³⁶

Researchers must examine a range of individual outcomes, in addition to traditional measures such as employment types and income levels.²³⁷ The range of measures may include actual and perceived changes in economic self-sufficiency and self-determination, and actual and perceived changes in the quality of, and satisfaction with work.²³⁸

Other measures related to quality of life include access to goods, services, leisure activities, and technology, as well as financial security, and adequate and affordable health care.²³⁹ In addition,

233. See *infra* Methodological Appendix, fig. 1A.

234. *Id.*

235. See Schwochau & Blanck, *supra* note 69, at 307-08 (discussing the need for and advantages of multiple studies using varying definitions of disability).

236. See *supra* Part II.E.

237. See Blanck & Schartz, *supra* note 6, at 4-10 (describing a new research agenda for assessing the impact of disability policy).

238. *But cf.* Frederick C. Collignon, *Is the ADA Successful? Indications for Tracking Gains*, 549 ANNALS 129, 132-34 (1997) (describing methodological issues that arise when attempting to measure disability).

239. Heather Ritchie & Peter Blanck, *Promise of the Internet for Disability: A Study of*

analysis is needed to assess the impact of the ADA on employment networks (ENs) under the Ticket to Work program, in terms of access to services, training, and job opportunities for persons with different and multiple disabilities.²⁴⁰

Moreover, researchers may examine how employment outcomes are affected by the new policy and legal initiatives (e.g., WIA, TWWIA, and the ADA), and whether these initiatives result in measurable differences over time in employment outcomes. Researchers examining the labor force participation of ADA qualified persons with disabilities should consider the Supreme Court's interpretations of the ADA.²⁴¹

The definition of disability under the ADA not only considers whether an individual is functionally limited in daily life activities, but also whether such limitations exist when taking into account mitigating measures such as medications, prosthetics, and accommodating or self-correcting strategies.²⁴² The legal definition of disability, therefore, affects conclusions regarding the possible effects of the policy initiatives on the employment of qualified individuals with disabilities.²⁴³

Other questions remain. Of those who enter the labor force, what factors contribute to their continuing unemployment or to their retention in sheltered work? To what extent are workplace barriers and negative attitudes an impediment to integrated employment? What forces contribute to work patterns? What role does prior work experience and job training play in ensuring that those with disabilities are viewed by employers as productive, with or without

Online Services and Web Accessibility at Centers for Independent Living, 21 BEHAV. SCI. & L. (forthcoming 2003); see also David Klein et al., *Opening Doors to Education: Iowa School Website Accessibility*, 21 BEHAV. SCI. & L. (forthcoming 2003).

240. See generally Blanck et al., *supra* note 12 (discussing applicability of ADA to public and private ENs).

241. See, e.g., *Toyota Motor Mfg., Ky., Inc. v. Williams*, 534 U.S. 184 (2002); *Sutton v. United Air Lines, Inc.*, 527 U.S. 471 (1999); *Albertson's, Inc. v. Kirkingburg*, 527 U.S. 555 (1999).

242. *Sutton*, 527 U.S. at 482-84 (deciding that mitigating measures must be considered in determining whether an individual is disabled under the ADA); see also *Toyota*, 534 U.S. (deciding that under the ADA disability means a substantial limitation in a major life activity on tasks that are of central importance to daily life).

243. Cf. Schwochau & Blanck, *supra* note 69, at 308-12 (discussing the impact of various viewpoints on the ADA's reasonable accommodation requirement).

the provision of workplace accommodations?²⁴⁴ Finally, what can be done to address the “black hole” findings that reflect the chronic unemployment and underemployment faced by many qualified persons with mental retardation?²⁴⁵

In addition to examining disability employment policy initiatives, study is needed of the economic incentives and disincentives in federal tax policy, which affect the labor force participation of persons with disabilities in general, and of those in sheltered workshops in particular. As discussed, employers who operate sheltered workshops and who want to pay employees with disabilities less than the federal or state minimum wage (whichever is higher), must obtain 214(c) certificates from the Wage and Hour Division of the Department of Labor.²⁴⁶

Individuals in sheltered workshops may be classified as “trainees” or “employees” for tax purposes.²⁴⁷ Generally, the Internal Revenue Service (IRS) has exempted sheltered workshop employers from paying Federal Insurance Contributions Act (FICA) taxes on participant “trainees.”²⁴⁸ Therefore, “trainees” (i.e., those working for a therapeutic purpose versus permanent employees) are not considered eligible for traditional employment benefits.²⁴⁹

The questions—from empirical, legal, and policy perspectives—are: At what point and under what circumstances should an individual with a disability working in a sheltered workshop be considered a “trainee” or “employee” for purposes of federal tax liability?²⁵⁰ How can researchers and policymakers track and assess

244. See 42 U.S.C. § 12111(9) (2000) (defining “reasonable accommodation”).

245. See BLANCK, *supra* note 4, at 139-40 (describing the “black hole” effect).

246. See *supra* note 31 and accompanying text.

247. Rev. Rul. 65-165, 1965-1 C.B. 446 (1965) (discussing classes of individuals working at sheltered workshops; trainees are those working for a therapeutic purpose rather than permanent employment).

248. FICA taxes are typically deducted from an employee’s wages with an amount matched by the employer. For a general review, see Morris et al., *supra* note 4 (discussing tax implications).

249. Rev. Rul. 65-165, 1965-1 C.B. 446 (1965).

250. Cf. Letter from Sigurd R. Nilsen, Director, Education, Workforce, and Income Security Issues, U.S. General Accounting Office, to Michael F. Ginley, Director, Office of Enforcement Policy, Wage and Hour Division, U.S. Department of Labor, Rep. No. GAO-01-471R (Apr. 6, 2001) (regarding “Suggested Changes to Form WH-226, ‘Application for Authority to Employ Workers with Disabilities at Special Minimum Wages’”) (suggesting that the Department of Labor may not be collecting adequate information from § 214(c) employers on their practices

the development of applicable work skills provided by sheltered work settings? What combination of skills and job training are necessary to enhance the employment choices available to qualified persons with disabilities? And, does work in competitive, as opposed to sheltered, employment by qualified individuals with disabilities result in savings to governmental programs such as SSI, as predicted by TWWIA?²⁵¹

The present findings complicate these questions, because many of the individuals sampled who remained in sheltered employment had comparable life skill scores to those working in integrated settings.²⁵² Conversely, many of the individuals sampled who progressed to integrated employment had relatively low skill scores.²⁵³

The findings suggest that work skill and abilities alone do not always predict the transition from sheltered to integrated employment. The transition also may be partially explained by factors other than disability, such as the economic and policy incentives and disincentives,²⁵⁴ as well as the attitudes (negative or positive) of providers, families, coworkers, and the consumers. For this last reason, future study must address attitudes toward employment in various labor markets of qualified individuals with disabilities.²⁵⁵

Of course, in addition to tracking attitudinal changes about disability and employment, research should consider ways to dispel negative myths and prejudices about individuals with disabilities. In passing the Americans with Disabilities Act, Congress acknowledged the long-standing prejudice, discrimination,

and their employees under the program), available at www.access.gao.gov/new.items/dol471r.pdf (last visited Jan. 14, 2003); cf. *id.* (explaining how changes to Form WH-226 could "improve the clarity and consistency of the information collected"); GAO REPORT, *supra* note 39, at 35-37 (making recommendations to the Secretary of Labor on how better to collect data for § 214(c) sheltered workshops).

251. See *supra* notes 11-25 and accompanying text.

252. See *supra* notes 202-14 and accompanying text.

253. See *id.*

254. See generally *supra* note 4 (discussing future policy options to modify the § 214(c) program so that qualified persons with disabilities may transition from sheltered work to integrated employment).

255. See Kevin M. Scharz, Helen A. Scharz & Peter Blanck, *Employment of Persons with Disabilities in Information Technology Jobs: A Literature Review for "I.T. Works"*, 20 BEHAV. SCI. & L. 637 (2002) (discussing research related to attitudes toward persons with disabilities).

and segregation people with disabilities experience in employment and daily life,²⁵⁶ and in recent years the U.S. Supreme Court has repeatedly addressed the issue.

In 1999, in *Olmstead v. L.C.*, the Court concluded that the ADA may require the placement of, and provision of services for, qualified persons with disabilities in the community, rather than in segregated institutional settings.²⁵⁷ Whether the lack of access to integrated employment found in this investigation is a primary reason for discrimination against many qualified persons with disabilities and violative of Title II of the ADA is an open question.²⁵⁸

Nevertheless, as Professor Paul Wehman argues, although the ADA cannot guarantee a job for every person with a disability, it can "provide a framework for improved employer attitudes [and]

256. See 42 U.S.C. § 12101(a) (2000).

257. 527 U.S. 581, 587 (1999); see also BLANCK, *supra* note 4, at 138, 174 (summarizing facts of *Olmstead*, and noting that state and local governmental entities that operate or fund sheltered workshops that unnecessarily segregate qualified persons with disabilities may violate Title II of the ADA); HEALTH CARE FINANCING ADMINISTRATION, GUIDANCE ON OLMSTEAD DECISION AND FACT SHEET: LETTER TO STATE MEDICAID DIRECTORS (2000) (reviewing the *Olmstead* decision), available at <http://cms.hhs.gov/states/letters/smd1140a.asp> (last visited Jan. 14, 2003); OFFICE FOR CIVIL RIGHTS, U.S. DEPT OF HEALTH AND HUMAN SERVS., MOST INTEGRATED SETTING—THE OLMSTEAD DECISION, available at <http://www.os.dhhs.gov/ocr/mis.htm> (last visited Jan. 14, 2003); WENDY FOX-GRACE ET AL., NAT'L CONFERENCE OF STATE LEGISLATURES, THE STATES RESPONSE TO THE OLMSTEAD DECISION: A WORK IN PROGRESS (describing a fifty-state study conducted by the National Conference of State Legislatures to determine responses to *Olmstead*), available at <http://www.ncsl.org/programs/health/forum/olmsreport.htm> (last visited Jan. 14, 2003).

258. For a review of related studies, see BLANCK, *supra* note 4, at 136-40 (reviewing studies of movement in and out of sheltered work). For the view of sheltered work from a disability advocate, see Marta Russell, *The Political Economy of Disablement*, 231 DOLLARS & SENSE, Sept.-Oct. 2000, at 13, available at <http://disweb.org/marta/ped.html> (last visited Jan. 14, 2003). Russell argues:

The traditional sheltered workshop is the prototype for justifying below-minimum wages for disabled people, based on the theory that such workers are not able to keep up with the average widget sorter. Any nonprofit employer is allowed to pay subminimum wage to disabled employees under federal law, if the employer can show that the disabled worker has "reduced productive capacity." About 6300 such U.S. workshops employ more than 391,000 disabled workers, some paying 20 to 30% of the minimum wage; others paying as little as \$11 per week. In reality, workers with disabilities in these workshops know that they are sometimes paid less, not because they lack productive capacity, but because of the nature of segregated employment.

Id. (citations omitted).

reduced discriminatory practices."²⁵⁹ The present findings support this suggestion, showing that some shelter workshop participants attain and retain integrated employment.

C. Closing

The studies illustrated in this investigation help improve dialogue about the employment opportunities available to Americans with disabilities. Development of a cumulative body of research is needed, as no single study or set of studies provides definitive answers.²⁶⁰ This objective will help assess the labor force opportunities available to the next generation of Americans with disabilities.

259. See *Supported Employment: A Critical Analysis of Individual Placement Approaches*, in *SUPPORTED EMPLOYMENT: STRATEGIES FOR INTEGRATION OF WORKERS WITH DISABILITIES* 54-58 (Paul Wehman et al. eds., 1992) (discussing outcomes of the individual approach, including wages, integration, and ongoing support needs).

260. Blanck & Scharz, *supra* note 6, at 9; Schwochau & Blanck, *supra* note 68, at 313.

METHODOLOGICAL APPENDIX

*A. Data Description**1. Overview*

The investigators had access to seven data files that are summarized in Table 1A below. In Table 1A, "State" refers to the state where the data was collected; "Years Used" refers to the years of the two points in time for which data are analyzed; "Total *N*" refers to the number of individuals represented in the data set; "Usable *N*" refers to the number of individuals for which age information was available and who were eighteen or older at the first point in time and sixty-four or younger at the second point in time (these individuals will be referred to as "working-age adults"); and "Years Span" refers to the time between the first and second measurement periods.

Table 1A: Description of Data Files

State	Years Used	Total N	Usable N	Years Span
California (CA)	1994, 1999	178	157	5
Connecticut (CT)	1985, 1990	1471	169	5
Indiana (IN)	1998, 2000	217	185	2
Kansas (KS)	1997, 1998	87	75	1
North Carolina (NC)	1993, 1999	222	194	6
Oklahoma (OK)	1993, 2000	2197	1764	7
Pennsylvania (PA)	1986, 1991	1828	1291	5

2. Reliability Checking

The data files were checked for reliability and internal consistency by performing several analyses. The first check looked for unique identifier variables present at both points in time and checked agreement of these variables. The data files also were checked for consistency of sex and year-of-birth coding. The findings are summarized in Table 2A below.

In Table 2A, "ID Missing" refers to the number of individuals in the data set for which a value for the unique identifier variable is missing; "ID Disagree" refers to the number of individuals for which the unique identifier variable values are discrepant for the two points in time (N.A. indicates that the unique identifier variable was available for only one point in time); "Sex Missing" refers to the number of individuals in the data set for which the coding for sex is missing; "Sex Disagree" refers to the number of individuals for which the sex coding values are discrepant for the two points in time; "YOB Missing" refers to the number of individuals in the data set for which the year-of-birth variable has a missing value; and "YOB Disagree" refers to the number of individuals for which the values of the year-of-birth variables are discrepant for the two points in time (N.A. indicates that the YOB variable was available for only one point in time).

Table 2A: Summary of Data File Reliability

State	Total N	ID Missing	ID Disagree	Sex Missing	Sex Disagree	YOB Missing	YOB Disagree
CA	178	0	N.A.	0	11	178	N.A.
CT	1471	0	N.A.	308	26	1471	N.A.
IN	217	0	N.A.	0	19	4	12
KS	87	0	N.A.	0	3	0	2
NC	222	4	60	0	8	0	16
OK	2197	0	42	0	3	14	38
PA	1828	0	N.A.	1739	8	1740	10

B. Preliminary Analyses**1. Age Screening**

After performing the reliability checks on the data files, the next step in the analysis involved removing all individuals who were not working-age adults from the data file. The number of individuals removed from each data file is summarized in Table 3A below.

Table 3A: Summary of Individuals Removed from Data Files

State	N < 18 at Time 1	N > 64 at Time 2	N other	N removed
CA	11	5	5	21
CT	1033	3	266	1302
IN	15	14	3	32
KS	3	7	2	12
NC	0	27	1	28
OK	127	306	0	433
PA	32	125	380	537

In Table 3A, " $N < 18$ at Time 1" refers to the number of individuals in the file removed because they were under age eighteen during the first measurement period; " $N > 64$ at Time 2" refers to the number of individuals in the file removed because they were over age sixty-four during the second measurement period; " N other" refers to the number of individuals removed because age information was not available or could not be calculated; and " N removed" refers to the total number of individuals removed from the file for age-related reasons.

2. Establishing Employment Categories and Volunteer Screening

Next, each individual's employment status was categorized in each of the data files. The employment categories are: Unemployed, Sheltered, Supportive, and Competitive. Assignment to employment category was determined by the number of hours the individual worked in a sheltered, supportive, or competitive environment, using the following algorithm:

```
IF Hours in Competitive Employment > 0
  THEN Employment Status = Competitive
ELSE IF Hours in Supportive Employment > 0
  THEN Employment Status = Supportive
ELSE IF Hours in Sheltered Employment > 0
  THEN Employment Status = Sheltered
ELSE Employment Status = Unemployed
```

These assignments were made for individuals at both Time 1 and Time 2 for each data file. It was necessary to make revisions to the employment status for some individuals in the Sheltered, Supportive, and Competitive categories with no reported income (i.e., for individuals who reported hours worked in Sheltered, Supportive, or Competitive employment, but reported no income). These "volunteers" were reassigned to the "Unemployed" category.

The number of reassigned individuals for each data set is shown in Table 4A below. The " N Time 1" column shows the number of people initially classified as Sheltered, Supportive, and Competitive

employment for the initial measurement period who were classified as Unemployed because their reported income was \$0. The “N Time 2” shows the number of individuals per data set reclassified as Unemployed during the second measurement period.

State	N Time 1	N Time 2
CA	6	1
CT	95	98
IN	1	8
KS	0	4
NC	7	0
OK	128	43
PA	19	466

3. MR recoding

In some of the data sets, it was necessary to reclassify individuals with regard to level of mental retardation because their recorded value was out of range or not informative (e.g., a coding of “M.R. present” indicates that no level was assigned). These noninformative classifications such as “unknown” were changed to a “system missing” value so that these individuals would be excluded from analyses involving mental retardation (MR) level.

Table 5A summarizes the recodings for the data sets. The “N Time 1” column shows the number of individuals reclassified from the first measurement period, and the “N Time 2” column shows the number of individuals reclassified from the second measurement period. The “N.A.” for Time 1 in Pennsylvania indicates that there was no MR coding for that measurement period.

Table 5A: M.R. Recodings at Time 1 and Time 2

State	N Time 1	N Time 2
CA	1	0
CT	1	0
IN	1	4
KS	0	20
NC	8	2
OK	253	142
PA	N.A.	0

4. Adaptive Behavior Scale Score Recoding

In the Pennsylvania data set, it was necessary to recode the adaptive behavior scores because the maximum score was 128. In the other data sets, the maximum adaptive behavior score was 100. The scores were recoded by multiplying each score by 0.78125 (100/128) to have rescaled values with a maximum of 100.

C. Longitudinal Analyses

To compare changes in each of the functional measures and employment measures over time, the Wilcoxon Signed-Ranks test was used. This nonparametric test was used rather than a dependent-samples *t*-test and medians rather than arithmetic means were reported, because of concerns about outliers in the data.

Details about the computation of the Wilcoxon Signed-Ranks test can be found in many introductory statistics texts.²⁶¹ A normal approximation of the Wilcoxon test statistic was computed to determine the statistical significance of the results. For the longitudinal analyses, an α -level of .05 was used as the criterion for statistical significance.

261. See, e.g., GRAVETTER & WALLNAU, *supra* note 81, at 611-22.

D. Wage Analyses

This analysis was performed to determine whether the wage changes of the Improvers, Stayers, and Regressors differed significantly in the Oklahoma, Pennsylvania, and North Carolina data sets. Because the homogeneity of variance assumption was violated in the Oklahoma sample, nonparametric Kruskal-Wallis analyses were used.

The dependent variable for these analyses was the adjusted wage change. This value was computed by subtracting each person's inflation-adjusted wages²⁶² at Time 1 from their wages at Time 2. The adjusted wages were used to eliminate inflation as a confounding factor.

For the Pennsylvania sample, the adjusted wage change of Improvers was significantly greater than the adjusted wage change of Stayers, $\chi^2 = 11.67$, $df = 1$, $p = .001$, and Regressors, $\chi^2 = 27.16$, $df = 1$, $p < .001$. The adjusted wage change of Regressors and Stayers did not differ significantly, $\chi^2 = 0.19$, $df = 1$, $p = .666$.

For the North Carolina sample, the adjusted wage change of Improvers was significantly greater than the adjusted wage change of Regressors, $\chi^2 = 7.25$, $df = 1$, $p = .007$. The adjusted wage change of Improvers and Stayers did not differ significantly, $\chi^2 = 0.50$, $df = 1$, $p = .480$, nor did the adjusted wage change of Regressors and Stayers, $\chi^2 = 0.00$, $df = 1$, $p = 1.000$.

For the Oklahoma sample, the adjusted wage change of Improvers was significantly greater than the adjusted wage change of Stayers, $\chi^2 = 47.04$, $df = 1$, $p < .001$, and Regressors, $\chi^2 = 85.09$, $df = 1$, $p < .001$. The adjusted wage change of Stayers was significantly greater than the adjusted wage change of Regressors, $\chi^2 = 73.80$, $df = 1$, $p < .001$.

E. Regression Analyses

The regression analyses were performed to determine the influence of the demographic and functional variables on Employment Category Change. The first step in this analysis was

262. Inflation-adjusted wages at Time 1 were Time 1 wages expressed in Time 2 dollars. See Inflation Calculator, *supra* note 157.

to find the simple bivariate correlations between each of the demographic and functional variables with Employment Category Change. Table 6A presents these bivariate correlations.

In the Oklahoma sample, Adaptive Behavior Score and Challenging Behavior Score are positively correlated with Employment Category Change (i.e., Improvers tended to have higher scores). Mental Retardation was negatively correlated with Employment Category Change (i.e., Improvers tended to have lower levels of mental retardation).

In the Pennsylvania sample, Adaptive Behavior Score was positively correlated with Employment Category Change and Mental Retardation was negatively correlated with Employment Category Change. In other words, Improvers tended to have higher Adaptive Behavior Scores and lower levels of mental retardation.

There were no significant correlations in the North Carolina sample; however, the magnitude of the correlation between Adaptive Behavior Score and Employment Category Change was similar to the other samples.

Table 6A Bivariate Correlations from Regression Analysis						
Change in Employment Category from Time 1 to Time 2 ²⁶³ correlated with:	Sample					
	Oklahoma (N = 462)		Pennsylvania (N = 269)		North Carolina (N = 31)	
	<i>r</i> ²⁶⁴	<i>p</i> ²⁶⁵	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Demographic						
Age	.042	.366	-.051	.402	.028	.880
Gender	-.006	.906	-.100	.104	.078	.678
Race	.099	.032	-.038	.532	.173	.352
Functional						
Adaptive Behavior Scale	.284	.000	.303	.000	.299	.102
Mental Retardation	-.180	.000	-.189	.002	-.035	.853
Challenging Behavior Scale	.126	.006	.102	.094	.106	.570

The second step in this analysis was to perform a regression analysis with Employment Category Change as the criterion/dependent variable. The predictor/independent variables were Age, Gender, Race, Adaptive Behavior Scale Score, Mental Retardation level, and Challenging Behavior Scale Score. A simultaneous regression was used in which all predictor variables were entered in a single step in order of decreasing tolerance.²⁶⁶ The simultaneous regression method is referred to as the standard regression.

In this regression model, all predictor variables enter into the regression equation at once and each predictor variable is evaluated in terms of what it adds to the prediction of the criterion variable

263. Change in Employment Category from Time 1 to Time 2 refers to the categories of Regressors, Stayers, and Improvers. For purposes of this analysis, Regressors are coded as -1, Stayers are coded as 0 and Improvers are coded as +1.

264. Pearson product-moment correlation coefficient (takes on values from -1 to +1).

265. Level of significance (takes on values from 0 to 1; values less than .05 typically are considered statistically significant).

266. Tolerance is the proportion of the variance of a variable in the equation that is not accounted for by other independent variables in the equation.

that is different from the predictability provided by the other predictor variables.

Some authors have recommended simultaneous/standard regression as the technique to use unless there is a theoretical reason for using another technique or unless specific hypotheses are being tested.²⁶⁷ Because this was an exploratory analysis, the simultaneous/standard regression technique was used.

For the Oklahoma data set, the ordering of variables was Race, Gender, Challenging Behavior Scale, Age, Mental Retardation level, and Adaptive Behavior Scale. The fit²⁶⁸ for this equation was $R^2 = .097$ and adjusted²⁶⁹ $R^2 = .085$ with a standard error of estimate (s_e) of 0.679.²⁷⁰ The only significant predictor of Employment Category Change was Adaptive Behavior Score with $\beta = .325$, $p < .001$.

For the Pennsylvania data set, the ordering of variables was Challenging Behavior Scale, Gender, Age, Race, Mental Retardation level, and Adaptive Behavior Scale. The fit for this equation was $R^2 = .102$ and adjusted $R^2 = .082$ with $s_e = 0.499$.²⁷¹ The only significant predictor of Employment Category Change was Adaptive Behavior score with $\beta = .283$, $p < .001$.

For the North Carolina data set, the ordering of variables was Sex, Race, Challenging Behavior Scale, Age, Mental Retardation level, and Adaptive Behavior Scale. The fit for this equation was $R^2 = .142$ and adjusted $R^2 = -.072$ ²⁷² with $s_e = 1.000$.²⁷³ None of the

267. See BARBARA G. TABACHNICK & LINDA S. FIDELL, L.S., *USING MULTIVARIATE STATISTICS* 153 (3d ed. 1996).

268. In terms of fit, larger values are better for R^2 and adjusted R^2 ; smaller values are better for s_e .

269. The sample R^2 is a biased estimate of the corresponding population parameter. To get an unbiased estimate of the population parameter, R^2 is adjusted by taking into account the sample size and the number of predictor variables.

270. As an alternative, a stepwise regression was performed. The probability of F to enter the equation was less than or equal to .05, and the probability of F to remove was greater than or equal to .10. The only variable that entered was Adaptive Behavior with $\beta = 0.284$, $p < .001$. The fit for this equation was $R^2 = .081$ and adjusted $R^2 = .079$ with $s_e = 0.682$.

271. As an alternative, a stepwise regression was performed. The probability of F to enter the equation was less than or equal to .05, and the probability of F to remove was greater than or equal to .10. The only variable that entered was Adaptive Behavior with $\beta = 0.303$, $p < .001$. The fit for this equation was $R^2 = .092$ and adjusted $R^2 = .088$ with $s_e = 0.497$.

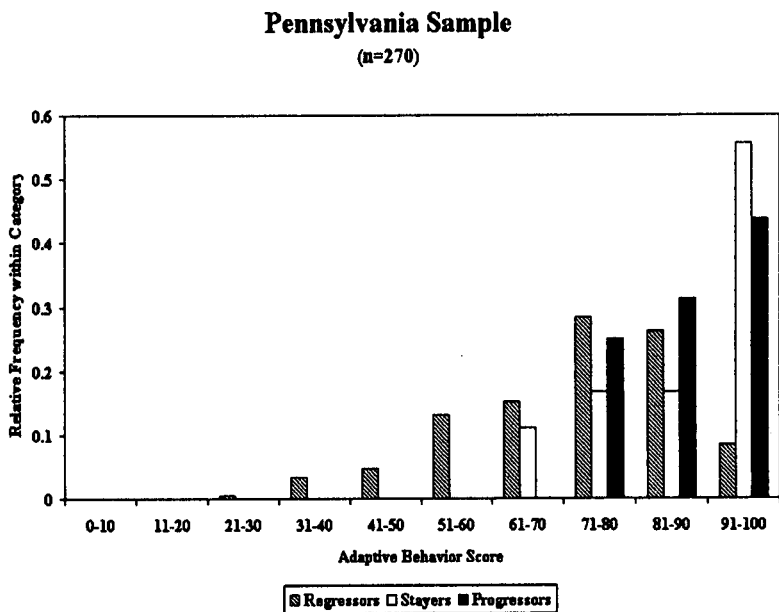
272. This is a spurious negative value resulting from the method by which R^2 is adjusted.

273. As an alternative, a stepwise regression was performed. The probability of F to enter

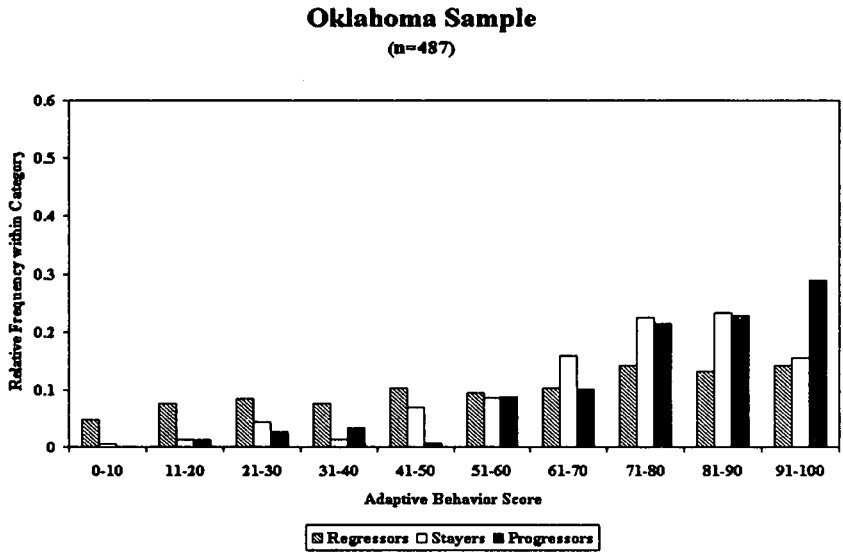
predictor variables were significant predictors of Employment Category Change.

the equation was less than or equal to .05, and the probability of F to remove was greater than or equal to .10. No variables entered into the regression equation so there is no fit to report.

**Figure 1A:
Relative Frequency of Adaptive Behavior Scale Scores
by Employment Change Category:
Pennsylvania Longitudinal Sample**



**Figure 2A:
Relative Frequency of Adaptive Behavior Scale Scores
by Employment Change Category:
Oklahoma Longitudinal Sample**



**Figure 3A:
Relative Frequency of Adaptive Behavior Scale Scores
by Employment Change Category:
North Carolina Longitudinal Sample**

