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ADA Study and Commentary

**EMPLOYMENT INTEGRATION, ECONOMIC OPPORTUNITY, AND THE
AMERICANS WITH
DISABILITIES ACT: EMPIRICAL STUDY FROM 1990-1993**

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INTRODUCTION

The Americans with Disabilities Act of 1990 (ADA) reflects a dramatic shift in American public policy toward the employment of persons with disabilities. The ADA has played a significant role in enhancing labor force participation of persons with disabilities and in reducing dependence on government entitlement programs. Despite these advancements, those critical of the potential impact of the ADA on the labor market argue that there is little "definitive evidence" that ADA-mandated accommodation measures result in larger numbers of qualified persons with disabilities participating in the workplace.¹

This Article begins to address these concerns by presenting preliminary findings from an ongoing empirical investigation² of employment integration, economic opportunity, and the ADA.³ Begun in 1989, the investigation explores the implementation of the employment provisions of the ADA as set forth in Title I of the Act.⁴ The investigation follows the lives of some 4000 adults and children with mental retardation⁵ by collecting information on individual, economic, health, and legal measures.⁶

Systematic information on the lives of persons with disabilities is lacking.⁷ The promise of the ADA to integrate into society roughly 49 million Americans⁸ makes this lack of information

¹ Sherwin Rosen, Disability Accommodation and the Labor Market, in *Disability and Work: Incentives, Rights, and Opportunities* 18, 22 (Carolyn L. Weaver ed., 1991).

² Earlier parts of this series are: Peter D. Blanck, *The Americans with Disabilities Act: Putting the Employment Provisions to Work*, White Paper of the Annenberg Washington Program (1993) [hereinafter *Annenberg White Paper*] (discussing earlier findings and the need for communication to effectuate ADA implementation); 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 (1992) [hereinafter *Empirical Study*] (discussing baseline findings and methodological issues); Peter D. Blanck, *On Integrating Persons with Mental Retardation: The ADA and ADR*, 22 N.M. L. Rev. 259 (1992) [hereinafter *ADA and ADR*] (discussing alternative dispute resolution and the ADA); Peter D. Blanck, *The Emerging Work Force: Empirical Study of the Americans with Disabilities Act*, 16 J. Corp. L. 693 (1991) [hereinafter *Emerging Work Force*] (discussing findings and Civil Rights Act of 1991).

³ See Robert Rosenthal & Ralph L. Rosnow, *Primer of Method for the Behavioral Sciences* 17-21 (1975) (describing descriptive, relational and experimental research).

⁴ 42 U.S.C. §§ 12101-12117 (Supp. IV 1992); 47 U.S.C. §§ 225, 611 (Supp. IV 1992).

⁵ The number of participants was 2080 in 1990 and 3704 in 1993. All analyses herein are longitudinal on a matched sample and future analyses will focus on cross-sectional trends. See *infra* notes 82-84 and accompanying text (describing components of the study). This project is an evaluation of a social experiment in the sense of Campbell's influential article, *Reforms as Experiments*, which suggests that a new program's effectiveness is often determined on a trial and error basis. Donald T. Campbell, *Reforms as Experiments*, 24 *Am. Psychologist* 409 (1967); see also James W. Conroy & Valerie J. Bradley, *The Pennhurst Longitudinal Study* 86 (1985) (providing analysis of a long-term study of the lives of people with mental retardation).

⁶ This Article uses the term "empirical research" to denote any systematic attempt to gather scientifically quantitative or qualitative information. This gathering includes questionnaire, survey, interview, and observational data collection techniques. See *Empirical Study*, *supra* note 2, at 156-60.

⁷ For an overview of how the ADA applies to persons with mental disabilities, see generally Bonnie Milstein et al., *The Americans With Disabilities Act: A Breathtaking Promise for People With Mental Disabilities*, 24 *Clearinghouse Rev.* 1240 (1991).

John M. McNeil, U.S. Bureau of the Census, *Current Population Reports, Americans with Disabilities: 1991-1992, Data From the Survey of Income and Program Participation 5* (Pub No. P70-33, 1993) (presenting data on the disability status of noninstitutionalized persons in the United States); cf. Jane West, *The Evolution of Disability Rights, in Implementing the Americans With Disabilities Act: Rights and Responsibilities of All Americans*, 3, 3 (Lawrence O. Gostin & Henry A. Beyer eds., 1993) [hereinafter *Rights and Responsibilities*] (stating that the ADA seeks to establish full participation and independent living as national goals for persons with disabilities).

troubling.⁹ Dramatic changes are occurring in public attitudes and behaviors toward individuals with disabilities in employment, governmental services, telecommunications, and public accommodations.¹⁰ Yet these changes have not been adequately documented and communicated. This step is necessary if effective implementation of the ADA is to occur.¹¹

Joseph Shapiro elegantly summarized many of these changes:

Never has the world of disabled people changed so fast. Rapid advances in technology, new civil rights protections, a generation of better-educated disabled students out of "mainstreamed" classrooms, a new group consciousness, and political activism mean more disabled people are seeking jobs and greater daily participation in American life. But prejudice, society's low expectations, and an antiquated welfare and social service system frustrate these burgeoning attempts at independence. As a result, the new aspirations of people with disabilities have gone unnoticed and misunderstood by mainstream America.¹²

The present investigation is part of an effort to substitute information for the myriad of myths and misconceptions about persons with disabilities.¹³ Not only is communicating information about people with disabilities critical to the implementation of the ADA, it is instrumental to discussing quality of life issues for all Americans.¹⁴ Policy makers, the private sector, and courts benefit greatly from this information.¹⁵ Implementation of the ADA poses many challenges that may be addressed through the empirical study of people with disabilities who grapple with the law on a daily basis.¹⁶ This investigation has three related goals: to foster a meaningful dialogue about the ADA;¹⁷ to raise awareness about the lives, capabilities, and needs of people with

⁹ For a review, see Jane West, Introduction-Implementing the Act: Where We Begin, 69 *Milbank Q.* 1, 3-6 (1994) (concluding that the limited data on persons with disabilities often raises more questions than they answer). See also National Academy of Social Insurance, Preliminary Status Report of the Disability Policy Panel 135 (1994) (calling for basic data to evaluate the prevalence of disability in the American population).

¹⁰ See generally Annenberg White Paper, supra note 2; Peter D. Blanck, Communications Technology for Everyone: Implications for the Classroom and Beyond, White Paper of the Annenberg Washington Program (1994).

¹¹ Cf. McNeil, supra note 8, at 8 (presenting data on the disability status of noninstitutionalized persons in the United States).

¹² Joseph P. Shapiro, No Pity: People with Disabilities Forging a New Civil Rights Movement 4 (1993) (discussing societal and self-perceptions of persons with disabilities).

¹³ See ADA Watch Year One: A Report to the President and the Congress on Progress, in National Council on Disability, Implementing the Americans with Disabilities Act 3 (1993) [hereinafter ADA Watch] (reflecting early experiences in implementing ADA). See generally Peter D. Blanck, Disabilities Act Getting a Bad Rap, *Middlesex News* (Framingham, Mass.), Oct. 12, 1992; Annenberg White Paper, supra note 2, at 10 (emphasizing discussion of ADA issues with adequate information); Bureau of Nat'l Affairs, Sensitivity to People with Disabilities: Training Managers to Comply with the Americans with Disabilities Act 8 (1991) (noting that some see employers' fears about the cost of ADA compliance as "a smoke screen for the fear of the unknown").

¹⁴ See Shapiro, supra note 12, at 6-7 (citing national survey data regarding effect of disabled population on society as a whole); McNeil, supra note 8, at 3 (estimating the number of people with disabilities to be 48.9 million, or 19.4% of the total U.S. population of 251.8 million, excluding persons living in nursing homes or other institutions); Peter D. Blanck, The Americans with Disabilities Act and Health Care Reform-Access and Partnerships, Presentation to the President's Committee on Mental Retardation (Apr. 24, 1994) (discussing health care reform issues for persons with mental retardation).

¹⁵ Lauren B. Edelman, Legal Ambiguity and Symbolic Structure- Organizational Mediation of Civil Rights Law, 97 *Am. J. of Soc.* 1531, 1533 (1992) (noting empirical studies showing the mixed picture of the benefits of equal employment and affirmative action law).

¹⁶ *Id.* Critical study of employment law has shown that "those responsible for formulating, interpreting, and enforcing the law are part of the dominant class and that they use their authority to construct law in a way that preserves the status quo while giving the appearance of change." *Id.*; cf. infra notes 143-47 and accompanying text (noting the importance of the self- advocacy movement to the field of mental retardation and the implementation of ADA, in contrast to prior studies showing that beneficiaries of laws often are not involved in implementation of those laws).

¹⁷ See generally Emerging Work Force, supra note 2, at 702 (defining consumers and users of the ADA); Francine S. Hall & Elizabeth L. Hall, The ADA: Going Beyond the Law, 8 *Acad. Mgmt. Exec. J.* 17 (1994) (presenting a model for communicating

disabilities; and to forestall or minimize disputes about ADA implementation by providing an information base to improve communication.¹⁸

To date, the literature in this area does not adequately address these issues. Although criticism of the ADA by the press and academia is abundant, little effort has been devoted to communicating the import of the law.¹⁹ This Article²⁰ addresses ADA implementation issues through an empirical study of its effects on its actual and intended beneficiaries. The premise of this Article is that empirical research models are crucial to establishing individual, organizational, and legal rights under the ADA.²¹ There is no denying that the ADA warrants such attention: It is the most comprehensive federal civil rights law addressing discrimination against one-fifth of the American population in all aspects of their daily lives.²² It is perhaps the most significant federal law since the Civil Rights Act of 1964.²³

A. Overview of the Investigation

The empirical information described in this Article is based on studies of approximately 1100 adults with mental retardation living in Oklahoma.²⁴ Pilot testing of the investigation began in 1989. Data collection first began in 1990, two-and-a-half years before the July 26, 1992 effective date of Title I of the ADA.²⁵ Earlier articles in the series describe an array of interdisciplinary

information about the ADA); Deborah A. Pape & Vilia M. Tarvydas, Responsible and Responsive Rehabilitation Consultation on the ADA: The Importance of Training for Psychologists, 38 Rehabilitation Psychol. 117 (1993) (same).

¹⁸ Annenberg White Paper, supra note 2, at 23; Theodore Eisenberg, Testing the Selection Effect: A New Theoretical Framework with Empirical Tests, 19 J. Legal Stud. 337, 337-58 (1990) (showing relatively low likelihood of plaintiffs prevailing in Title VII litigation); ABA Commission on Mental and Physical Disability Law and Commission on Legal Problems of the Elderly, Targeting Disability Needs: A Guide to the Americans With Disabilities Act for Dispute Resolution Programs 3 (1994) (suggesting that the ADA presents significant opportunities for informal dispute resolution); cf. David Frum, Oh, My Aching Back (Head), Forbes, Nov. 8, 1993, at 64 (arguing that the ADA is doing little for people with disabilities and "a great deal for lawyers and malingerers").

¹⁹ See Empirical Study, supra note 2, at 170-96 (reviewing critiques).

²⁰ See, e.g., Edward H. Yelin, The Recent History and Immediate Future of Employment Among Persons with Disabilities, 69 Milbank Q. 129, 143-46 (1991) (calling for further research to assist in the implementation of the ADA and to monitor its effects on the employment of persons with disabilities); Edelman, supra note 15, at 1532 (arguing that organizations "construct the meaning of compliance [with the law] and thus mediate the impact of law on society").

²¹ See also David M. Engel, Law, Culture, and Children with Disabilities: Educational Rights and the Construction of Difference, 1991 Duke L.J. 166, 180-203 (discussing the cultural context of law and a 1975 empirical study of Education for All Handicapped Children Act); Craig Haney, Psychology and Legal Change, 17 Law & Hum. Behav. 371, 382-83 (1993) (arguing for empirical and methodological creativity in addressing important social problems and change). See generally ADA Watch, supra note 13 (finding that additional research is needed to determine the full impact of the ADA).

²² The 1964 Civil Rights Act does not address discrimination on the basis of a disability. The Rehabilitation Act of 1973 prohibits discrimination against persons with disabilities but applies only to federal contractors and recipients of federal grants. The Rehabilitation Act does not apply to providers of public accommodations or to private sector employers. See Elizabeth C. Morin, American with Disabilities 1990: Social Integration through Employment, 40 Cath. U. L. Rev. 189, 201-02 (1990) (comparing the ADA with other legislation); see also West, supra note 9, at xi, xvi (noting that "the [ADA] and most of its predecessor legislation is about rights-and rights are based on values, not knowledge").

²³ See Henry H. Perritt, Jr., Americans with Disabilities Handbook 1, 1 (1990) (noting that Title I is the most significant labor and employment legislation in a decade); Bonnie P. Tucker, The Americans with Disabilities Act: An Overview, 1989 U. Ill. L. Rev. 923, 923 (quoting Senator Harkin's statement that the Act is the "Emancipation Proclamation" for Americans with disabilities).

²⁴ See Empirical Study, supra note 2, at 161 (describing study). There were 1110 "matched case" adults in the present investigation (roughly 70%). Information on the 469 "matched" children participants is not set forth herein.

²⁵ See, e.g., Perritt, supra note 23, at vii (arguing for adequate data development about the implementation of the ADA and suggesting proactive employer approaches to reducing future liability under the Act); Barbara Presley Noble, Data on Disabilities, True and False, N.Y. Times, July 19, 1992, § 3, at 23 (same).

information collected from participants each year since 1990.²⁶

This Article sets forth the first longitudinal analyses of the information collected from 1990 to 1993. It focuses on changes in the social and economic positions of adult participants as indicators of progress made since ADA implementation. There are two types of outcome variables: (1) employment integration-defined as the degree of integration in employment setting, and (2) economic opportunity-defined by income level measures.²⁷ The analyses examine employment integration and economic opportunity for these participants before and during the initial implementation period of Title I of the ADA, a time when other individual and societal factors changed dramatically.²⁸ These exploratory analyses are meant to stimulate discussion of the issues and provide an empirically-based approach for examining employment integration and economic opportunity for other persons with disabilities.²⁹

To accomplish its goals, this Article presents a descriptive model or framework for the empirical study of employment integration and economic opportunity under the ADA. The model is developed from prior studies of persons with disabilities³⁰ and is presented as Figure 1.³¹

Figure 1
MODEL OF EMPLOYMENT INTEGRATION AND ECONOMIC OPPORTUNITY

Capabilities & Qualifications

Adaptive Skills

Health Status

Equipment/Accommodation Needs

Personal Background

Age

Gender

Race

Employment Integration &

Economic Opportunity

Job Advancement

²⁶ See also Mitchell P. LaPlante, *The Demographics of Disability*, 69 *Milbank Q.* 55, 60-63 (1991) (discussing researchers' demographic estimates of persons with disabilities); Gerben DeJong & Raymond Lifchez, *Physical Disability and Public Policy*, *Sci. Am.*, June 1983, at 43 (stressing the need for longitudinal research by noting that "[m]ost surveys of health and disability provide only an instantaneous view of disability in the U.S."); Dean B. McFarlin et al., *Integrating the Disabled into the Work Force: A Survey of Fortune 500 Company Attitudes and Practices*, 4 *Employee Resp. & Rts. J.* 107, 110 (1991) (describing results from surveys designed to test hiring practices for employees with disabilities and exposure to employees with disabilities).

²⁷ Additional analyses are performed to predict the participants' 1993 earned income. See *infra* notes 218-23 and accompanying text.

²⁸ See Shapiro, *supra* note 12, at 4. Cf. Wilma Randle, *After a Year, ADA's Impact Is Barely Felt*, *Chi. Trib.*, July 26, 1993, § 4, at 1 (noting that the current unemployment figure for minorities with disabilities is approximately 90%).

²⁹ The analyses complement the case-by-case approach for monitoring ADA implementation followed by the Equal Employment Opportunity Commission (EEOC). The EEOC is responsible for enforcing Title I of the ADA. See Lisa A. Lavelle, *The Duty to Accommodate: Will Title I of the Americans with Disabilities Act Emancipate Individuals With Disabilities Only to Disable Small Businesses?*, 66 *Notre Dame L. Rev.* 1135, 1142 (1991) ("In drafting the ADA regulations, the EEOC used the Rehabilitation Act regulations and case law to establish parameters which they intended to serve as guidelines for the case by case inquiries that determinations under the ADA may require.").

³⁰ See *Empirical Study*, *supra* note 2, at 237-41; *CARF Standards Manual for Organizations Serving People with Disabilities* 162 (1993) [hereinafter *CARF Standards*] (defining integration as "[participation in the mainstream of life]"). Participation means that the individual has social relationships with community members without disabilities and, furthermore, that the individual has access to general public resources. *Id.*

³¹ See *infra* notes 76-162 and accompanying text (detailing the component measures of the model).

Monthly Income

Inclusion Factors

Living Arrangement
Job/Life Satisfaction & Choice

Legal Factors

ADA Composite
Title I
Title II
Title III

Empowerment Factors

Self-Advocacy
Family & Government Support
Job/Skill Educational Goals

Several factors in the model are used to predict employment integration and economic opportunity. The predictor variables include measures of the participants' personal backgrounds, capabilities and qualifications, inclusion and empowerment in society, and perceptions of ADA implementation.³²

Five preliminary findings of this investigation derived from the descriptive model may be summarized:

1. Employment Integration: From 1990 to 1993, the majority of participants remain in the same type of employment (59%), one-quarter (25%) are engaged in more integrated employment settings, and approximately one-sixth (16%) regress into less integrated employment settings. Women, relative to men, show substantial gains in integrated employment and declines in marginal unemployment rates.
2. Economic Opportunity: Although from 1990 to 1993 the average monthly gross income of all participants rises significantly, younger participants show particularly substantial increases in income and integrated employment.
3. Individual Growth: From 1990 to 1993, participants improve substantially in their capabilities and qualifications, level of inclusion and empowerment in society, and level of accessibility to society as defined by the ADA. A consistently strong predictor of employment integration is degree of independence and integration in living setting.
4. Black Hole Effect: Almost ninety percent of those participants not employed or employed in non-integrated settings in 1990 remain in these settings in 1993.
5. Power of the Research Model: The independent factors in the model in combination and alone predict employment integration and economic opportunity.

The next Part provides a brief overview of Title I of the ADA and its relevance to the present investigation. Part II presents the descriptive model of employment integration and economic opportunity, and Part III describes the preliminary findings of the test of the model. The final Part discusses the implications of the investigation for examining employment integration, economic opportunity, and ADA implementation.

I. TITLE I OF THE ADA

Title I prohibits covered entities³³ from discriminating against a qualified person with a disability

³²Id. The model enables exploration of issues central to the understanding of employment integration and economic opportunity, such as trends in integrated employment, inclusion, and empowerment evidenced prior to and during ADA implementation. Also examined are the effects of the participants' personal backgrounds, capabilities, and qualifications. See *infra* Part III.

³³42 U.S.C. § 12111(2) (Supp. IV 1992) (stating that "'covered entity' means an employer, employment agency, labor organization, or joint labor-management committee").

in any aspect of employment, including hiring, advancement, compensation, or training.³⁴ Discrimination under Title I includes the failure to provide reasonable accommodations to a qualified person with a disability, unless doing so creates an undue hardship on the entity.³⁵ As found in prior analyses of Title VII of the Civil Rights Act of 1964, however, there is great ambiguity in the concept of "discrimination" with regard to compliance with the law of the ADA.³⁶

The purpose here is to examine the relevance of several provisions of Title I to the development of a research model.³⁷ This discussion is warranted for several reasons. First, many of the terms in Title I remain undefined and practically vague.³⁸ The interpretation and implementation of the law must be guided by accurate information. This is crucial to persons with disabilities and entities covered by the Act. Second, unlike the implementation of earlier civil rights laws, the ADA primarily regulates procedures for compliance with the Act, rather than mandating substantive or "affirmative" results for the integration into society of persons with disabilities.³⁹ Thus, for an individual with a severe disability to prevail on an ADA claim, the individual often must assume the historically identified "role of the victim," regardless of the claim's merits.⁴⁰ An

³⁴ Id. § 12112(a).

³⁵ Id. § 12112(b).

³⁶ See, e.g., Edelman, *supra* note 15, at 1536 (discussing the difficulty of defining discrimination under Title VII because of its ambiguous language); Kristin Bumiller, *Victims in the Shadow of the Law: A Critique of Legal Protection*, 12 *Signs: J. Women Culture & Soc'y* 421, 433 (1987) (discussing the need for individuals who suffer discrimination to assume the role of victim before filing a claim); Patricia DeMichele & Vicki Gottlich, *Using Titles II and III of the Americans with Disabilities Act as Part of a Legal Services Practice*, 27 *Clearinghouse Rev.* 1099-2000 (stating that the definition of discrimination depends on adequate description of comparison groups); see also 42 U.S.C. § 12112(a) (Supp. IV 1992) (defining discrimination as "not making reasonable accommodations to the known physical or mental limitations of an otherwise qualified individual with a disability"); cf. Monica E. McFadden, *Insurance Benefits Under the ADA: Discrimination or Business as Usual?*, 28 *Tort & Ins. L.J.* 480, 484 (arguing that the ADA is clear about what constitutes discrimination).

³⁷ Although this Article focuses on the import of empirical study to the implementation of Title I, political, legal, and social agendas and compromises certainly contribute to the shaping of the law. See Arlene Mayersen, *The History of the ADA: A Movement Perspective*, in *Rights and Responsibilities*, *supra* note 8, at 17, 17 (describing the many divergent groups responsible for passage of the ADA); Sara D. Watson, *A Study in Legislative Strategy: The Passage of the ADA*, in *Rights and Responsibilities*, *supra* note 8, at 25, 26-33 (describing the "evolution of the movement"). Although the members and needs of the disability community are diverse, this Article focuses solely on persons with mental retardation. This approach complements the view that the parameters for interpreting Title I will be developed on a case-by-case basis with primary reference to the EEOC regulations, the Rehabilitation Act regulations, and case law. 29 C.F.R. § 1630 (1991).

³⁸ See Jane West, *The Social and Policy Context of the Act*, 69 *Milbank Q.* 3, 20-21 (1991) (asserting similar premise with regard to the Rehabilitation Act of 1973); Bonnie P. Tucker, *Section 504 of the Rehabilitation Act After Ten Years of Enforcement: The Past and the Future*, 1989 *U. Ill. L. Rev.* 845, 877, 915 (arguing that failures of § 504 of the Rehabilitation Act are attributable to inadequate enforcement and lack of definition of the Act's key terms); see also Shapiro, *supra* note 12, at 4-5 (noting historic political compromise of ADA by scores of participating groups); Edelman, *supra* note 15, at 1532 (stating that vague and controversial laws like the ADA leave more room for covered entities to define compliance with the law); ADA, 1991 *Rights Act Will Pose Big Problems for Employers*, Former EEOC Counsel Asserts, *Daily Lab. Rep. (BNA)* (May 20, 1993), available in LEXIS, 1993 DLR 96 d7, at *2 (arguing that the combination of the ambiguous language in the Act and EEOC avoidance of addressing the relationship between the ADA, workers' compensation, health insurance, and collective bargaining leads to greater litigation under the Act); Peter T. Killborn, *Major Shift Likely as Law Bans Bias Toward Disabled*, *N.Y. Times*, July 12, 1992, § 1, at 1 ("Congress deliberately left central provisions of the [ADA] vague."); Mervyn Rothstein, *For the Disabled, Some Progress*, *N.Y. Times*, Oct. 24, 1993, § 2, at 2 (stating that the ADA remains vague and that "critics charge that its vagueness can hinder enforcement").

³⁹ Edelman, *supra* note 15, at 1532 (reviewing compliance with the Civil Rights Act of 1964, concluding that "[l]aws that regulate the employment relation tend to set forth broad and often ambiguous principles that give organizations wide latitude to construct the meaning of compliance in a way that responds to both environmental demands and managerial interests").

⁴⁰ See Bumiller, *supra* note 36, at 432 (arguing that in civil rights litigation the claimant's choice often is to assume a victim status and a negative self-image of powerlessness); see also *infra* notes 285-88 and accompanying text (discussing Title I claims filed with the EEOC in 1993).

understanding of the procedural and substantive fairness of the ADA for persons with different types of disabilities (e.g., physical versus mental) is necessary for effective implementation of the Act.⁴¹ Studies of Title VII of the Civil Rights Act of 1964 show that while it may have "produced positive social change, its legal strategies put unacceptable burdens on disadvantaged groups with little promise of success."⁴²

Third, the enforcement mechanisms of Title I are guided primarily by reliance on good faith efforts by covered entities to comply with monitoring by various federal agencies, such as the Equal Employment Opportunity Commission (EEOC) and the Justice Department. In the absence of strong enforcement mechanisms, attempts at proactive good faith compliance are enhanced by informative data, rather than by retroactive judicial interpretations of the Act made on a case-by-case basis.⁴³ The potential value of empirical study lies in its ability to assist in prospective evaluations of ADA implementation.⁴⁴

A. Who Are Persons with Disabilities?

Persons with disabilities encompass a wide range of individuals.⁴⁵ A person with a disability has a known physical or mental condition or impairment that "substantially limits major life activities,"⁴⁶ "a record of" a physical or mental condition, or is "regarded as" having such a condition.⁴⁷ Although the majority of participants in this investigation are covered by the ADA,⁴⁸ the present investigation sets forth a framework that may prove useful in addressing more focused questions regarding the nature of an individual's disability and its relation to

⁴¹ See, e.g., Michael J. Saks & Peter D. Blanck, *Justice Improved: The Unrecognized Benefit of Sampling and Aggregation in the Trial of Mass Torts*, 44 *Stan. L. Rev.* 815, 826-34 (1992) (discussing procedural and substantive fairness in mass tort litigation).

⁴² Bumiller, *supra* note 36, at 439 ("The gap between the symbolic life of the law and the ineffectiveness of the law in action imposes a cost borne by the intended beneficiaries of civil rights policies.").

⁴³ See Peter D. Blanck, *Communicating the Americans with Disabilities Act: Transcending Compliance: A Case Report of Sears, Roebuck and Co., Annenberg Washington Program Report* (1994) (discussing ADA compliance programs); Edelman, *supra* note 15, at 1532 (identifying theory of interplay between organizations and their legal environments).

⁴⁴ See Edelman, *supra* note 15, at 1538 (noting that the ambiguity in Title VII requires judicial clarification, thereby leaving organizations much room for interpretation until judges provide guidance); see also Brian T. McMahon, *Lessons from Litigation: The Employment Experience of Person with Disabilities During the First Year of ADA Title I*, NARPPS J. (forthcoming 1994) (manuscript on file with author) (examining ADA claims filed during first effective year).

⁴⁵ The ADA's definition of disability is the same as that used in the Rehabilitation Act of 1973. 29 U.S.C. §§ 791-796 (1988). For a review and comparison of the Rehabilitation Act, see Perritt, *supra* note 23, at 95-108; Ronald A. Lindsay, *Discrimination Against the Disabled: The Impact of the New Federal Legislation*, 15 *Employee Rel. L.J.* 333, 334 (1989-90).

⁴⁶ Whether an individual has a covered disability is a question of standing under the ADA. See *Thomasina V. Rogers & Sandra Ziegler, Qualified Individual with a Disability: What You Must Show at Hiring, for Standing, and for Decisions on the Merits, in A Mock Trial: Prosecuting and Defending an Americans with Disabilities Act Lawsuit 1, 10-12* (ABA Div. for Prof. Educ. ed., 1992) (discussing standing issues). Employers must make reasonable accommodations for a job applicant's or an employee's "known" physical or mental limitations. Questions may arise as to the employer's "knowledge" of the potential employee's level of disability and the impact of this knowledge on the hiring decision. See generally James M. Zappa, Note, *The Americans with Disabilities Act of 1990: Improving Judicial Determinations of Whether an Individual is "Substantially Limited"*, 75 *Minn. L. Rev.* 1303, 1305-06 (1991) (asserting that the ADA's definition of "disability" is not enlightening because it refers to specific conditions and impairments to clarify what the term does not include, without addressing the rationale behind these exclusions).

⁴⁷ 42 U.S.C. § 12102(2) (Supp. IV 1992); 29 C.F.R. § 1630.2(g) (1991). Title I protects a "qualified individual with a disability" from discrimination. See also H.R. Rep. No. 485, 101st Cong., 2d Sess., pt. 2, at 52 (1990) (noting, for example, that a person with mental retardation has limitations on the major life activity of learning); S. Rep. No. 116, 101st Cong., 2d Sess. 21-22 (1989) (same).

⁴⁸ 42 U.S.C. § 12102(2) (Supp. IV 1992); 29 C.F.R. § 1630.2(g) (1991). Title I protects a "qualified individual with a disability" from discrimination. See also H.R. Rep. No. 485, 101st Cong., 2d Sess., pt. 2, at 52 (1990) (noting, for example, that a person with mental retardation has limitations on the major life activity of learning); S. Rep. No. 116, 101st Cong., 2d Sess. 21-22 (1989) (same).

employment integration and economic opportunity.

Questions such as the following arise and are framed by the model set forth in Figure 1 above: What constitutes a substantial limitation on the major life activity of work (e.g., quality of health status alone)?⁴⁹ How may substantial limitations on major life activities change over time for individuals with different disabilities (e.g., changes in capabilities and qualifications with age)? How do the living environments of individuals with disabilities support or limit their ability to attain and retain work (e.g., import of independent living arrangements, and degree of family and government supports)?⁵⁰

In addressing these and other questions, the descriptive framework is consistent with the recent shift in the definition of mental retardation and of disability generally; that is, from viewing these conditions as static (identified by absolute traits) to a function of the capabilities of the person and the environment (highlighted in the model by factors such as "capabilities and qualifications" and "inclusion").⁵¹

B. Who Are Qualified Persons with Disabilities?

The concept of a "qualified individual with a disability" is central to the ADA's goal of economic equality for persons with disabilities. Policy makers, courts, and others have interpreted this phrase since its use in the Rehabilitation Act of 1973.⁵² An individual with a disability is "qualified" under the ADA⁵³ if the individual satisfies the prerequisites for the job, such as educational background or employment experience,⁵⁴ and can perform "essential job functions."⁵⁵

⁴⁹ For example, in *Mowatt v. Transportation Unlimited, Inc.* the Eighth Circuit held, under the Rehabilitation Act, that a truck driver who was unable to perform his job for the defendant was not substantially limited in a major life activity because he could not show he was unable to drive truck for another company. 984 F.2d 230, 231-32 (8th Cir. 1992). In fact, he was currently employed as a truck driver. *Id.* Substantial limitations must be defined to enable litigants bringing an ADA claim to establish standing before a court. *Id.* See Rogers & Ziegler, *supra* note 46, at 10.

⁵⁰ The focus of the substantial limitation determination is on the capabilities and qualifications of the individuals—that is, whether an individual is qualified to perform the job. However, in the absence of systematic empirical information it is difficult to determine the extent of a disabling condition, especially for those persons with borderline mental retardation, or relatively less severe or less visible conditions who otherwise function well in work and society. Peter D. Blanck & Robert Folberg, *The Americans with Disabilities Act: Emerging Issues for Ophthalmologists*, 101 *Ophthalmology* 1635, 1635 (1994). To meet the definition of a person with disabilities under the ADA, the individual must first possess some impairment that substantially limits a major life activity, reveal a record of mild mental retardation, or be regarded as having mild mental retardation. See 42 U.S.C. § 12102(2) (Supp. IV 1992). In the case of an individual with mild mental retardation, the individual then must demonstrate that he or she can perform the essential functions of the job. See also Perritt, *supra* note 23, at 35 (noting a "Catch 22" because if persons with disabilities are "too disabled," or they cannot perform the essential functions of the job, they therefore may not be covered by the Act). The model allows for analyses of employment integration and opportunity, statistically controlling for individual capabilities and qualifications (e.g., in regression analyses). See *infra* notes 87-123 and accompanying text.

⁵¹ See Ellis, *supra* note 48, at 1781-82 (reviewing new definition); Donald L. MacMillan et al., *Conceptual and Psychometric Concerns About the 1992 AAMR Definition of Mental Retardation*, 98 *Am. J. Mental Retardation* 325, 325 (1993) (arguing that the new definition represents a "radical departure from previous definitions"); see also *infra* notes 107-54 and accompanying text (discussing capability, inclusion, and empowerment factors).

⁵² For an overview of the Rehabilitation Act, see West, *supra* note 8, at 11-12 (stating that § 504 of Rehabilitation Act is a building block for the ADA). See Rogers & Ziegler, *supra* note 46, at 10 (discussing cases considering qualifications on the merits).

⁵³ 29 C.F.R. § 1630.2(m) (1991).

⁵⁴ *Id.* This procedure is analogous to the determination of whether the individual is "otherwise qualified" for the job under the Rehabilitation Act (citing S. Rep. No. 116, *supra* note 47, at 33; H.R. Rep. No. 485, *supra* note 47, at 64-65).

⁵⁵ Essential functions are those that an employee must be able to perform either without aid or with the assistance of a reasonable accommodation. 29 C.F.R. § 1630.2(n) (1991); see also S. Rep. No. 116, *supra* note 47, at 26 (discussing essential functions);

But little empirical study of the concept of "qualification" has been conducted, particularly as it applies to persons with different disabilities.⁵⁶ Adequate information on the relation between the type of disabling condition and the "qualifications" required to perform certain jobs or work functions is just emerging.⁵⁷ Prior study shows that the reform potential of Title VII of the Civil Rights Act of 1964 was limited because many qualified persons covered by the law tended not to understand, and therefore not to pursue, their rights and remedies under the law.⁵⁸

In establishing employment "qualifications" and essential job functions, the applicant's experience and skills are considered with or without the provision of appropriate accommodations.⁵⁹ For many persons with disabilities, however, employment decisions often are not based on individual skills and qualifications but on myths about individual potential.⁶⁰ The model explores the usefulness of relevant skill measures (e.g., "capabilities and qualifications"), as well as other nonlegally relevant forces (e.g., age, gender, and race), for defining the term "qualified individual with a disability" in the employment context.⁶¹

C. What are Reasonable Accommodations?

H.R. Rep. No. 485, supra note 47, at 55, pt. 3, at 33 (same). This step ensures that qualified persons with disabilities are not denied employment because they cannot perform "marginal functions" of the job. 29 C.F.R. § 1630.2(n) (citing H.R. Rep. No. 485, supra note 47, at 55). To guide employers, the EEOC set forth three factors for determining whether a job function is essential: (1) the job position exists primarily to perform that function; (2) there are minimal number of other employees available to perform that job function; and (3) the degree of skill or specialization required to perform the job function. 29 C.F.R. § 1630.2(n). Employers consider these factors in determining whether a job function is essential, typically on a case-by-case basis. The framework herein may guide employer evaluation of the three factors.

⁵⁶ See, e.g., C. Geoffrey Weirich, Reasonable Accommodation Under the Americans with Disabilities Act, 7 Lab. Law. 27 (1991) (discussing the need for employers to understand the ADA requirements for compliance with the reasonable accommodation provision of the Act).

⁵⁷ The ADA provides that "no covered entity shall discriminate against a qualified individual with a disability because of the disability of such individual in regard to job application procedures, the hiring, advancement, or discharge of employees, employee compensation, job training, and other terms, conditions, and privileges of employment." 42 U.S.C. § 12112(a) (Supp. IV 1992). See also *Henchey v. Town of North Greenbush*, 831 F. Supp. 960, 966-68 (N.D.N.Y. 1993) (holding that under the Rehabilitation Act an evidentiary finding at trial is necessary to determine qualifications, essential job functions, and appropriateness of reasonable accommodations); Peter D. Blanck, *The Americans with Disabilities Act: Issues for Back and Spine-Related Disability*, 19 Spine 103 (1994) [hereinafter *Back and Spine-Related Disability*] (discussing back-related disability under the ADA, job calibration, and assessment of employee qualifications).

⁵⁸ See generally Kristin Bumiller, *The Civil Rights Society* 98-117 (1988) (showing that the reform potential of employment and affirmative action law is limited); Bumiller, supra note 36, at 421-34 (same); see also Edelman, supra note 15, at 1533 (summarizing studies on implementation of Title VII law); infra notes 285-88 and accompanying text (discussing 1993 Title I claims).

⁵⁹ Because employers must determine an employee's qualifications at the time of the hiring decision, systematic information about essential job functions is particularly important. 29 C.F.R. § 1630.2(m) (1991).

⁶⁰ This is true even though Title I requires employers to make decisions about the qualifications of a potential employee at the time of hiring. See Zappa, supra note 46, at 1322 n.95 ("Congress acknowledged that society's accumulated myths and fears about disability and disease are as handicapping as are the physical limitations that flow from actual impairment.") (quoting *School Board of Nassau County v. Arline*, 480 U.S. 273, 274 (1987)).

⁶¹ The descriptive analyses in the model are not meant to suggest that a particular group of participants under study are more or less qualified to perform a particular job. Instead, the descriptive and exploratory analyses set forth the needs, skills, and concerns of this large sample of persons with disabilities. In the long run, information of this type may be useful to employers and employees in tailoring jobs to fit the needs of otherwise qualified employees with disabilities. See Empirical Study, supra note 2, at 207-08 (warning that generalizations from profiles must be made with extreme caution). Such analyses may help support both the entry of qualified persons with disabilities into the work force and their job retention and advancement consistent with the mandate of the Civil Rights Act of 1991. See *Emerging Workforce*, supra note 2, at 799-800 (describing the mission of the Glass Ceiling Commission established by the Civil Rights Act of 1991); see also McMahon, supra note 44, at 3 (noting that most ADA complaints were filed by current employees during the course of the study).

Title I requires employers to "reasonably accommodate" the needs of qualified persons with disabilities.⁶² Reasonable accommodations⁶³ ensure equal opportunity to the application process (e.g., by providing job application forms in alternative formats such as Braille and large print), enable qualified employees with disabilities to perform essential job functions (e.g., by providing adaptive equipment or flexible work schedules), and enable employees with disabilities to enjoy the same benefits as employees without disabilities (e.g., by providing equitable health and life insurance and benefit plans).⁶⁴ There is a developing body of information on the nature and cost of reasonable accommodations in the workplace.⁶⁵ Preliminary findings for persons with mental retardation suggest that workplace accommodations are often inexpensive and not burdensome to employers.⁶⁶

The research model here focuses primarily on a specific type of reasonable accommodation, the adaptive equipment needs for these participants.⁶⁷ The appropriateness of many types of accommodations for persons with mental retardation, however, is becoming increasingly difficult to assess without the guidance of empirical information.⁶⁸ This is also true, for example,

⁶² 42 U.S.C. § 12111(8) (Supp. IV 1992); 29 C.F.R. § 1630.2(o) (1991); see also Lavelle, *supra* note 29, at 1171-84 (discussing reasonable accommodations); Jeffrey O. Cooper, *Overcoming Barriers to Employment: The Meaning of Reasonable Accommodation and Undue Hardship in the Americans with Disabilities Act*, 139 U. Pa. L. Rev. 1423, 1430 (1991)(same).

⁶³ See 29 C.F.R. § 1630.2(o) (1991)(defining reasonable accommodations).

⁶⁴ One developing type of reasonable accommodation is personal assistance services (PAS). See Judith E. Heumann, *Building Our Own Boats: A Personal Perspective on Disability Policy*, in *Rights and Responsibilities*, *supra* note 8, at 251, 253-54 (discussing personal assistance services). Other developing issues related to accommodation requirements are universal access and design issues in both the workplace and public accommodations. *Id.* at 254- 55.

⁶⁵ See Watson, *supra* note 37, at 29 (stating that few comparative studies of reasonable accommodations were available to support passage of the ADA).

⁶⁶ See Thomas Baffuto & Elizabeth M. Boggs, *What ADA Has Meant and What it Can Mean for People with Mental Retardation*, *Am. Rehabilitation*, Winter 1990-91, at 10, 10-14 (reviewing cost-effective approaches by companies that obviate the need for special accommodations each time an employee with a disability is hired); Tucker, *supra* note 23, at 930 (citing results of 1982 Berkeley Planning Study that found that 22% of persons with disabilities require special accommodations; of these accommodations, 51% were achieved at no expense and 30% were achieved at under \$500 per worker); see also McMahon, *supra* note 44 (finding that during the first effective year, concerns about ADA accommodation matters appeared to be exaggerated relative to overall compliance trends).

Prior research indicates that for many employers the provision of accommodations has not proven to be costly, controversial, or an "undue hardship." See also Blanck, *supra* note 43, at 10 (study showing that at Sears 69% of all accommodations require no cost and average cost per accommodation is \$121). Stanley S. Herr, *The ADA in International and Development Disabilities Perspectives*, in *Rights and Responsibilities*, *supra* note 8, 229, 238 (noting implications of ADA for persons with mental retardation and the potential costs of accommodating these individuals). See generally U.S. Gen. Accounting Office, *Persons with Disabilities: Reports on Costs of Accommodations* (Pub. No. GAO/HRD-90-44BR, 1990) (providing summaries of various studies of accommodation costs); Lawrence P. Postol & David D. Kadue, *An Employer's Guide to the ADA-From Job Qualifications to Reasonable Accommodations*, 24 *John Marshall L. Rev.* 693, 713 (1991) (giving examples of reasonable accommodations including a telephone headset with a \$49.95 price tag, a \$45.00 lighting system, and a \$26.95 timer with an indicator light) (citation omitted); Carolyn Lochead, *Many Rules in New Law Left Vague on Purpose*, *S.F. Chron.*, Nov. 14, 1991, at A8 (giving examples of reasonable accommodations provided by Job Accommodations Network (JAN)).

Title I limits an employer's obligation to provide reasonable accommodations to qualified employees if those accommodations impose an undue hardship. 42 U.S.C. § 12112(b)(5)(A) (Supp. IV 1992); 29 C.F.R. § 1630.2(p) (1991) (specifying an accommodation change that would be unduly costly, extensive, or disruptive, or that would fundamentally alter the nature of the business). However, little information exists to define the undue hardship provision. In cases in which the individual provides or pays the cost associated with accommodation, the employer is obligated to allow the individual to use that accommodation. 29 C.F.R. § 1630.2(p). Many of the participants in this investigation receive job coaching from the State Developmental Disabilities Department Community Integrated Employment Programs. *Id.*

⁶⁷ See *infra* notes 121-23 and accompanying text (outlining the adaptive equipment factor). More information is needed about the nature and cost of accommodations in the workplace. See Postol & Kadue, *supra* note 66, at 713.

⁶⁸ Assistive technology is defined as the use of commercial or custom designed devices and related technical services that enhance the capabilities of individuals with disabilities. CARF Standards, *supra* note 30, at 159.

for those accommodations involving job coaching or personal assistive services.⁶⁹ Moreover, employee skills, level of workplace involvement and self-advocacy, assistive technology, and job requirements change dramatically with time.⁷⁰ Empirical study can help to assess the long-term effectiveness of accommodations, which in turn can lead to enhanced and cost-effective services and technology for employees with different disabilities.⁷¹

I). How is Title I to be Monitored and Enforced?

Effective monitoring and enforcement of Title I also must be guided by empirical information. For instance, information summarized in databases will help identify the appropriate range and cost of reasonable accommodations or job advancement patterns. Systematic study can address improvements in the lives of persons with disabilities, changes in public attitudes and behavior, and structural changes in the economy resulting from the implementation of the ADA. The model explores the independent and combined effects of personal background, skill, inclusion, empowerment, and ADA-accessibility factors on employment integration and economic opportunity.

The model framework and the empirical study begin to address enforcement-related questions such as how will "the shadow of the law" affect employers' ability to maintain a qualified work force?⁷² In what ways will the ADA enhance employment opportunity and economic growth for qualified women and men, younger and older workers, workers from different ethnic groups, and workers with varying disabilities?⁷³ How will our increasingly global economy affect

⁶⁹ This is why the study gathers data directly from individuals covered by the ADA. Many examples of accommodations have been discussed and summarized elsewhere. See Empirical Study, *supra* note 2, at 132; 29 C.F.R. § 1630.2(o) (1991) (listing examples of potential accommodations). Employers are obligated to make reasonable accommodations for services and programs connected with employment (e.g., counseling services) and nonwork common-area facilities provided by the employer (e.g., cafeterias). 29 C.F.R. § 1630.2(o) (listing examples of nonwork facilities such as lounges and auditoriums). Nonwork services also could include transportation provisions, and if provided, they must be accessible to all individuals. *Id.* Some common accommodations include permitting use of accrued paid leave, making employer-provided transportation accessible, providing personal assistants, and restructuring nonessential job functions. *Id.*

⁷⁰ The burden remains on the plaintiff with a disability to show that the individual is covered by the Act and is otherwise qualified. *Chandler v. City of Dallas*, 2 F.3d 1385, 1394 & n.43 (1993) (outlining the burden of proof). Employers also may require individuals to provide documentation of need for requested accommodations when their need is not obvious. This requirement underscores the importance of developing data on the magnitude and scope of requested reasonable accommodations. For many persons with severe mental retardation, it is difficult to separate essential job accommodations that do not impact on both personal and job-related interests. The appendix to the EEOC regulations lists examples of accommodations that are not necessarily job-related such as wheelchairs or eyeglasses. 29 C.F.R. § 1630 app. (1991). For many persons with severe disabilities, similar accommodations are required for assistance in daily and job-related activities (e.g., a person serving as a page turner for an employee with a disability of the hands). See also Shapiro, *supra* note 12, at 232-33 (discussing issues related to personal assistive services at forefront of ADA); Heumann, *supra* note 64, at 253-54 (discussing personal assistance services).

⁷¹ For example, accommodations at the workplace could translate into new and universally accessible consumer products in the home. See generally Blanck, *supra* note 43.

⁷² See Edelman, *supra* note 15, at 1569 (concluding that much of a law's effect occurs in its shadow).

⁷³ The aim of the Civil Rights Act of 1991 is to provide effective deterrence and compensation for the victims of discrimination. Civil Rights Act of 1991, Pub. L. No. 102-166, § 3(1) & (4), 105 Stat. 1071, 1071 (1991). The 1991 Act establishes a "Glass Ceiling Commission" to study issues facing women and minorities in the workplace, such as executive promotion practices, training programs to enhance employment advancement, and the barriers to advancement in employment. *Id.* § 203(a), 105 Stat. at 1082. The Commission will conduct research into the manner in which promotion and hiring decisions are made for women and minorities and compile a synthesis of available research on programs and practices that have led to the advancement of women and minorities in the workplace. *Id.* For a review of the Civil Rights Act of 1991, see Emerging Work Force, *supra* note 2, at 799-802.

employment integration and the rights of persons with severe disabilities in this country and abroad?⁷⁴ And, how will the EEOC and the courts ultimately assess compliance with the law?⁷⁵ This investigation is meant to stimulate a body of research that helps inform policy makers, researchers, the disability community, courts, and others about these emerging questions.

II. A MODEL FOR THE STUDY OF EMPLOYMENT INTEGRATION, ECONOMIC OPPORTUNITY, AND THE ADA

This Part presents information on the development of the descriptive research model.⁷⁶ The model identifies several measures that need to be studied to achieve a systematic understanding of employment integration, economic opportunity, and ADA implementation.

Several working assumptions guide the model:⁷⁷ (1) valid descriptions of the concept of disability require interdisciplinary analyses; (2) disability is a function of limitations in skills or capabilities but must be defined within the context of the individual's living environment and level of support from that environment;⁷⁸ (3) for all people, specific disabilities coexist with individual strengths and capabilities; and (4) with appropriate supports, the functioning of persons with disabilities improves.⁷⁹ These assumptions, which are consistent with emerging views and research on disability,⁸⁰ [FN80] focus on individual strengths and capabilities, on the importance of living and working in integrated settings, and on the importance of appropriate access to supports and services.⁸¹

The model, illustrated in Figure 1, allows for the following preliminary analyses of employment integration and economic opportunity: (1) over time- from 1990 to 1993, reflecting a period before and after initial Title I implementation; (2) on a "matched" set of participants-based on

⁷⁴ The aim of the Civil Rights Act of 1991 is to provide effective deterrence and compensation for the victims of discrimination. Civil Rights Act of 1991, Pub. L. No. 102-166, § 3(1) & (4), 105 Stat. 1071, 1071 (1991). The 1991 Act establishes a "Glass Ceiling Commission" to study issues facing women and minorities in the workplace, such as executive promotion practices, training programs to enhance employment advancement, and the barriers to advancement in employment. *Id.* § 203(a), 105 Stat. at 1082. The Commission will conduct research into the manner in which promotion and hiring decisions are made for women and minorities and compile a synthesis of available research on programs and practices that have led to the advancement of women and minorities in the workplace. *Id.* For a review of the Civil Rights Act of 1991, see *Emerging Work Force*, supra note 2, at 799-802.

⁷⁵ See *infra* notes 285-88 and accompanying text (discussing trends in 1993 ADA complaints filed with the EEOC). Although the Civil Rights Act of 1991 strengthens the ban on discrimination in employment against people with disabilities, it limits compensatory and punitive damages in cases of intentional discrimination in small firms (15 to 100 employees) to \$50,000 and in larger firms (more than 500 employees) to \$300,000. 42 U.S.C. § 1981a(b)(3) (Supp. IV 1992). The Civil Rights Act of 1991 provides for the right to a jury trial in ADA cases. *Id.* § 1981a(c).

⁷⁶ See *Empirical Study*, supra note 2, at 125-37.

⁷⁷ These principles are derived from AAMR, supra note 48, at 1. They are consistent with the recent multidimensional approach to broaden the conceptualization of mental retardation, avoid reliance on standardized tests, define disability, and relate individual needs to appropriate levels of support in society. *Id.* at 23.

⁷⁸ See *infra* notes 209-17 and accompanying text (finding in Table 6 that skill and integrated living predict integrated employment); see also Chai R. Feldblum, *Antidiscrimination Requirements of the ADA*, in *Rights and Responsibilities*, supra note 8, at 35, 36 (noting that discrimination under the ADA "must be viewed in the context of the interaction between social realities and choices and the individual's disability, rather than in the context of the individual's disability per se").

⁷⁹ See *infra* notes 169-81 and accompanying text (showing improvements in life functioning found in Table 3).

⁸⁰ AAMR, supra note 48, at 135; Louis Rowitz, *Prologue to: Mental Retardation in the Year 2000*, at 5 (Louis Rowitz ed., 1992) (discussing the changing paradigms of disability).

⁸¹ AAMR, supra note 48, at 135.

information collected annually from the participating adults;⁸² (3) from an interdisciplinary perspective-information derived from various research methods and disciplines; and (4) in ways consistent with the major goals of the ADA- exploration of the ADA's goals of equality and opportunity, full participation, independent living, and economic self-sufficiency.⁸³ The model explores the relationship of employment integration and economic opportunity with combinations of the independent measures set forth in Figure 1.⁸⁴

A. The Model Components

There are two major types of dependent measures in the model. The first is a measure of employment integration, as assessed by employment category in 1993 and by changes in employment category from 1990 to 1993 (employment movement).⁸⁵ The second dependent measure, economic opportunity, is defined by measures of earned income in 1993 and by changes in gross monthly income from 1990 to 1993 (economic growth).⁸⁶

1. Employment Integration

Four categories of employment type are defined and arranged from less to more integrated as follows:⁸⁷ (1) no employment-no actual employment and minimal employment training; (2) sheltered employment-program of work or work-related training in a nonintegrated group setting; wages are paid but they are usually half of the minimum wage;⁸⁸ (3) supported employment-job placement program supported with services of a job coach;⁸⁹ at least minimum wages are paid; and (4) competitive employment-job placement is made primarily without the

⁸² Earlier studies in this series also examined the behavior and attitudes of the employers and employment providers for these participants. See generally Empirical Study, *supra* note 2, at 218-36.

⁸³ ADA Watch, *supra* note 13, at 7.

⁸⁴ See Empirical Study, *supra* note 2, at 182-85 (describing the measures).

⁸⁵ Questions concerning the quality of the movement and the extent to which quality of movement and placement relates to long-term independence in work and daily living warrant additional study. See Barbara Altman & Peter J. Cunningham, Dynamic Process of Movement in Residential Settings, 98 Am. J. Mental Retardation 304, 304 (1993) (finding great mobility among living settings for persons with mental retardation and citing studies emphasizing the quality of the movement and long-term outcomes); Paul Wehman & John Kregel, Supported Employment: Growth and Impact, in Supported Employment: Strategies for Integration of Workers with Disabilities 3-6 (Paul Wehman et al. eds., 1992) [hereinafter Supported Employment] (reviewing supported employment programs and integrated work programs for persons with disabilities).

⁸⁶ Gross monthly income includes income support payments and employment wages. Data collected in 1993 and thereafter separate earned income levels from governmental support payment programs for the participants. See *infra* notes 218-22 and accompanying text (discussing findings in Table 7 regression analysis).

⁸⁷ See Empirical Study, *supra* note 2, at 165-66 (describing the four levels of employment involvement); see also The State Supported Employment Services Program, 34 C.F.R. §§ 252, 254 (1991) (explaining that integrated settings involve job sites where co-workers are not disabled and individuals with disabilities are not part of a group of other individuals with disabilities). For more detailed discussion of the four employment types, see Empirical Study, *supra* note 2, at 165-66 & nn.279-81.

⁸⁸ *Id.* at 166 & n.279 (including jobs such as pamphlet folding, trash pickup, greenhouse work, and processing of wool fiber); see also National Council on the Handicapped, Toward Independence app. at B-75 to B-76 (1986) [hereinafter Toward Independence] (portraying sheltered employment as noncompetitive and nonintegrated work). Most sheltered workshops provide vocational and rehabilitation services such as evaluation, training, and placement services. *Id.* at B-81. Under the Fair Labor Standards Act, sheltered workshops may pay persons with disabilities a lower rate than the statutory minimum wage, but not less than 50% of minimum wage unless exempted by the Act. *Id.* at B-85; see also Shapiro, *supra* note 12, at 143 (stating that the absence of nondisabled co-workers in a sheltered workshop is confirmation of a prejudiced opinion that people with disabilities cannot work); John Kregel, The Subtle and Silent Points of Program Evaluation: An Illustration from Supported Employment, 2 J. Voc. Rehab. 53, 53-54 (1992) (stating that the ADA and consumer empowerment movement focused scrutiny on appropriateness of sheltered workshop programs).

⁸⁹ See Empirical Study, *supra* note 2, at 166 & n.280 (including job placement, training, skills assessment, and assistance in job retention among the job coaches responsibilities).

services of a job coach; at least minimum wages are paid.⁹⁰

Table 1 shows employment movement among the four categories of employment from 1990 to 1993 and reports cell percentages and sample sizes.⁹¹

TABLE 1
EMPLOYMENT MOVEMENT: SAMPLE SIZES

		Employment Status in 1993				Row Total
		None	Sheltered	Supported	Competitive	
Employment Status In 1990	None	22% (241)	13% (143)	1% (8)	1% (10)	36% (402)
	Sheltered	10% (115)	36% (405)	6% (71)	3% (37)	57% (628)
	Supported	0% (4)	3% (29)	0% (5)	1% (7)	4% (45)
	Competitive	1% (7)	1% (11)	1% (8)	1% (9)	3% (35)
	Column Total	33% (367)	53% (588)	8% (92)	6% (63)	100% (1110)

Note: Reported above are percentages of participants in a particular cell with sample sizes in parentheses. 59% no change; 25% improve; 16% regress.

Examination of the findings in the diagonal cells in Table 1 (i.e., the four cells in which no employment movement occurred) is a useful starting point for analysis. The top left cell shows that 241 of 1110 participants (22%) were not employed in 1990 and remained unemployed in 1993. Thirty-six percent (36%) of the participants remained in nonintegrated sheltered workshops during this time.⁹² By contrast, less than 1% of the participants in supported or competitive employment in 1990 were in these programs in 1993.

⁹⁰ Supported employment is paid employment for persons with disabilities who are unlikely to find competitive work above the minimum wage. Frank R. Rusch & Carolyn Hughes, Overview of Supported Employment, 122 J. Applied Behav. Analysis 351, 351 (1989). These individuals also need support to perform in the work environment. Id. Supported employment generally is conducted at a variety of workplaces where individuals with disabilities can receive adequate supervision. Id. Competitive work occurs when an individual averages at least 20 hours per week for each pay period. Id. at 352. See also Empirical Study, supra note 2, at 166 & n.281 (discussing supported employment). Competitive employment most often is found in private industry where the worker with a disability is relatively independent of support services. Michael S. Shafer et al., Competitive Employment and Workers with Mental Retardation: Analysis of Employers' Perceptions and Experiences, 92 Am. J. Mental Retardation 304, 304-11 (1987) (stating that competitive and supported employment are effective means for rehabilitating workers with mental retardation).

⁹¹ In each cell of Table 1, hypothetical weights are assigned to the various cells to calibrate employment movement and integration. These weights range from -3 to +3, reflecting the magnitude of potential movement over time from one employment category to another category as follows: 0 for no employment, 1 for sheltered employment, 2 for supported employment, and 3 for competitive employment. For example, if a participant was not employed in 1990 and not employed in 1993, the score for employment movement or degree of integration over time is 0 (i.e., no change). If a participant was not employed in 1990 but attained competitive employment in 1993, the score for employment movement would be +3. Likewise, if a participant was in supported employment in 1990 (+2) and in sheltered employment in 1993 (+1), employment movement would be considered to have regressed and be coded at -1. The cell weights allow the model to illustrate over time the magnitude of employment integration for these participants. As summarized below in Table 8, examination of the findings in the diagonal of Table 1 illustrates the percentages of participants showing no change in their employment category. Although the sample size is relatively large for this type of investigation, many analytical cells or groupings are relatively small. Therefore, the findings must be interpreted with caution. Empirical Study, supra note 2, at 239.

⁹² See infra notes 234-41 and accompanying text (describing, in Table 9, nonintegrated employment as a "black hole" for many people with disabilities and the implications of these findings, concluding that the ADA requires a limited and transitional role for sheltered employment, in contrast to the current trends showing sheltered employment as a long-term employment solution for otherwise qualified persons with disabilities).

Thus, from 1990 to 1993 the majority of the 1110 participants showed no change in their employment category (59%), while one-quarter (25%) improved their employment category, and approximately one-sixth (16%) regressed.⁹³ Moreover, more than half of the participants (58%) have remained in nonintegrated employment settings (not employed or in sheltered workshops), while only 1% of the participants were retained in more integrated settings (in supported and competitive employment).

Other trends in Table 1 are of interest. From 1990 to 1993, relative unemployment levels for all participants decreased (absolute drop of 3%, from 36% in 1990 to 33% in 1993).⁹⁴ By contrast, according to labor force data from the State of Oklahoma on 1.5 million individuals, the state unemployment rate increased from 5.6% in 1990 to 6% in 1993.⁹⁵ During this period the average Oklahoma unemployment rate was 6%. Also, from 1990 to 1993 the national unemployment rate increased from 5.5% to 6.8%, with average unemployment at 6.6%.⁹⁶

Analyses of the marginal changes in unemployment levels from 1990 to 1993 show particularly substantial decreases in unemployment for women and minority participants.⁹⁷ The column and row totals in Table 1 also show that in 1990, 3% of the participants were in competitive employment and that by 1993 this group nearly doubled in size to almost 6%. The same pattern is evidenced for supported employment programs, with participation increasing from 4% in 1990 to 8% in 1993.⁹⁸ Lastly, Table 1 illustrates that employment movement from the category of unemployed in 1990, to sheltered workshop employment in 1993, was most common (143

⁹³ Cf. *infra* Tables 8 and 9 and accompanying text (showing relative percentage changes from 1990 employment status).

⁹⁴ See *infra* note 97 (explaining Chi Square test of changes in marginal unemployment rates); cf. Richard Butler & James J. Heckman, *The Government's Impact on the Labor Market Status of Black Americans: A Critical Review*, in *Equal Rights and Industrial Relations* 235, 244-46 (Leonard J. Hausman et al. eds., 1977) (discussing general differences in the unemployment rate of blacks and whites and noting changes made as labor force composition changes); Edelman, *supra* note 15, at 1534 (citing other studies showing work-force position and advancement of women and minorities).

⁹⁵ The 1994 Harris Survey of Americans with Disabilities commissioned by the National Organization on Disability shows an increase in the unemployment rate of working age adults with disabilities between 1986 and 1994. In 1986, the unemployment was 66%. By 1994 the unemployment rate increased to 68%. Louis Harris & Assocs., *Survey of Americans with Disabilities 37* (1994) [hereinafter Harris Poll-1994].

⁹⁶ Oklahoma Employment Sec. Comm'n, *Economic Research and Analysis Div.* (1994) [hereinafter *Oklahoma Labor Force*] (data on file with author); see also McNeil, *supra* note 8, at 4 (providing data from 1991-92 showing that the employment rate for persons without disabilities was 81% while the rate for persons with severe disabilities was 23%).

⁹⁷ A Chi Square test assessed changes in marginal unemployment rates with the following results: (1) For all participants ($n = 1110$), unemployment rates decline significantly (Chi Square = 4.27, $p = .04$, reduction from 36% to 33%); (2) for all women ($n = 479$), unemployment rates decline significantly (Chi Square = 10.57, $p = .002$, reduction from 36% to 29%); (3) for all men ($n = 631$), unemployment rates do not change significantly (Chi Square = 0.02, $p = .89$, reduction from 37% to 36%); (4) for all minorities ($n = 170$), unemployment rates show declining trend (Chi Square = 2.57, $p = .11$, reduction from 42% to 35%); and (5) for all nonminorities ($n = 925$), unemployment rates show declining trend (Chi Square = 1.88, $p = .17$, reduction from 35% to 33%). For a discussion of Chi Square test, see Rosenthal & Rosnow, *supra* note 3, at 74-82. See also Mark L. Hill et al., *Benefit-Cost Analysis of Supported Competitive Employment for Persons with Mental Retardation*, 8 *Research in Developmental Disabilities* 71 (1987) (summarizing literature on unemployment rates among adults with mental retardation and showing benefit-cost analysis of supported or competitive employment program); Stephen A. Richardson et al., *Job Histories in Open Employment of a Population of Young Adults with Mental Retardation*, 92 *Am. J. Mental Retardation* 483, 483-91 (1988) (stating that mentally handicapped males without job training are more likely to be unemployed than similarly situated females); McNeil, *supra* note 8, at 8-9 (citing data from 1991-1992 showing that overall disability rates were higher among women than men, but mental disability rates generally were higher among men than women).

⁹⁸ Cf. Wehman & Kregel, *supra* note 85, at 15 (showing growth in numbers of supported employment participants for all persons with disabilities in Oklahoma during fiscal years 1986-1988-FY 86, 0 participants; FY 87, 20 participants; FY 88, 78 participants).

participants, or 13% of the total).⁹⁹

2. Economic Opportunity and Changes in Income

National census data from 1991 to 1992, collected prior to the effective date of Title I of the ADA, show that persons with disabilities are more likely to have relatively lower incomes.¹⁰⁰ The present model examines both the participants' earned income in 1993 and changes in their average gross monthly income from 1990 to 1993 (from employment and other sources such as Supplemental Security Income (SSI), controlling for inflation) and relates them to other independent variables.¹⁰¹ This design facilitates analyses of economic growth and opportunity during the initial implementation phase of Title I.¹⁰² In addition, the relationship between income levels and other measures in the model, such as capabilities and qualifications, may be analyzed.¹⁰³

3. Personal Background Measures

⁹⁹ For more detailed findings of relative percentage change in employment status, see *infra* Table 9 and accompanying text (discussing the "black hole effect" and recognizing that the majority of participants remain unemployed or in sheltered workshops).

¹⁰⁰ McNeil, *supra* note 8, at 11.

¹⁰¹ The EEOC estimates that positive economic effects are likely to result from Title I in the form of minimal costs to employers for reasonable accommodations, increased productivity gains and tax revenues, and decreased support and social welfare payments. 56 Fed. Reg. 8583 (1991). With respect to the analysis of wages of employees with disabilities, research shows that the real wages of employees with disabilities are only 71% of nondisabled employees with a comparable education. *Id.* at 8581 (citing Robert Flaveman & Barbara Wolfe, *The Economic Well-Being of the Disabled, 1962-84*, 25 *J. Hum. Resources* 32-54 (1990)); William G. Johnson & James Lambrinos, *Employment Discrimination, Soc.*, Mar.-Apr. 1983, at 47-50. Wage disparities are greater when the educational levels of employees with disabilities are lower. 56 Fed. Reg. 8583 (stating that employees with disabilities with less than 12 years of education earned less than one-third the income earned by employees without disabilities and that 35% of the difference between the wages of persons with and without disabilities is due to discrimination)(citing Flaveman & Wolfe, *supra*, at 32-54; Johnson & Lambrinos, *supra*, at 47-50); cf. Donald J. McCrone & Richard J. Flardy, *Civil Rights and the Achievement of Racial Economic Equality, 1948-1975*, 22 *Am. J. Pol. Sci.* 1, 1-17 (1978) (discussing their longitudinal study of the impact of civil rights laws on income levels of African-Americans and white Americans).

The findings of this investigation from 1990 showed that average monthly gross income increased with integration in employment. Empirical Study, *supra* note 2, at 193-96; see also John Kregel et al., *The Effects of Consumer Characteristics and Type of Employment Model on Individual Outcomes in Supported Employment*, 22 *J. Applied Behav. Analysis* 407, 413 (1989) (discussing longitudinal data showing higher wages in more integrated employment). The 1990 findings showed that the average gross monthly incomes of participants in more independent living settings were higher than those residing in less integrated settings. See Empirical Study, *supra* note 2, at 193 (stating that unemployed participants residing in institutions are likely to receive Supplemental Security Income (SSI) benefits as their primary monthly income). A shortcoming of the baseline analyses is that, without controlling for the severity of disability, it is not clear whether income disparity is due to disincentives in the disability benefit system, to the functional limitations of the participants, or to both. Cf. Dennis L. Poole, *Competitive Employment of Persons with Severe Physical Disabilities: A Multivariate Analysis*, *J. Rehab.*, Jan./Feb./ Mar. 1987, at 20, 20 (noting that SSI and Social Security Disability Insurance (SSDI) often reduce or eliminate the beneficiary's motivation to work).

¹⁰² One shortcoming of the 1990 financial data in this investigation is that only monthly gross income was tabulated. Beginning with the 1993 data collection efforts, the investigation examines earned income from employment and income support from governmental or other sources separately. The present results may be influenced by differences in income support levels among persons with different levels of disability. Partial correlation analyses begin to address this issue. See *infra* note 192 and accompanying text (describing partial correlation analysis).

¹⁰³ The 1990 findings for income are based on results with varying cell sample sizes. It is apparent that the group with the highest monthly gross and earned incomes is comprised of participants who reside in integrated settings (i.e., in independent or group home living) and are competitively employed. Additional studies are needed to understand the relationship between relative support service costs for persons with disabilities and varying degrees of integrated employment and living types. See generally David L. Braddock et al., *The State of the States in Developmental Disabilities* (Mar. 1994) (unpublished manuscript, on file with the author) (estimating the number of persons with developmental disabilities who receive income supports).

Personal background variables refer to the participants' age, gender, and minority status.¹⁰⁴ The model describes the relationship between each of the background variables and employment integration and economic opportunity. Personal background variables alone should not predict employment integration or economic opportunity for qualified persons with disabilities.¹⁰⁵ Recent studies, however, point to the emerging relationship of gender, race, and disability to possible workforce participation and advancement.¹⁰⁶

4. Capabilities and Qualifications

Individual capabilities and qualifications are defined as the interaction between intellectual, physical, and social functioning and the demands of the environment.¹⁰⁷ The ADA stands for the proposition that "a person's disabilities have little to do with his or her inabilities. Often it is society's reactions to the person with disabilities or society's structural barriers that disable the person."¹⁰⁸

In the model, two measures comprise the capabilities and qualifications composite factor: (1) adaptive skill scores, and (2) general health status.¹⁰⁹ These two measures reflect one working definition of the term "qualified" within the meaning of Title I. Although central to most legal disputes involving the ADA,¹¹⁰ there is little prospective research devoted to defining the term

¹⁰⁴ Based on the participating sample size of 1110, the demographics are as follows: 83% (n = 925) white and 17% (n = 184) minority. The demographics within minority status are: (% (n = 103) African-American; 6% (n = 62) American Indian; 1.3% (n = 14) Hispanic; .3% (n = 3) Oriental- American; and .2% (n = 2) Asian-American. The analyses on file with the author, and future analyses, will focus on the relation of employment movement and income as mediated by gender and race.

¹⁰⁵ See ADA Watch, *supra* note 13, at 5 ("Minorities with disabilities, overrepresented in the disability community, are significantly under-reached by current ADA information and technical assistance efforts."); Morin, *supra* note 22, at 201 ("[W]hile Title VII requires employers to hire or promote individuals protected by the Civil Rights Act of 1964, which does not cover individuals with disabilities, Title I [of the ADA] requires employers to hire or promote [qualified] individuals with disabilities and to accommodate those individuals' disabilities."); cf. 42 U.S.C. § 12117 (Supp. IV 1992) (explaining enforcement of ADA and Civil Rights Act of 1964); 29 C.F.R. § 1630.1(c)(2) (same for EEOC regulations). See also John J. Donohue & James J. Heckman, *Re-Evaluating Federal Civil Rights Policy*, 79 *Geo. L.J.* 1713, 1713-22 (citing studies showing employment discrimination based on race and stating that purpose of Title VII is to increase employment opportunities for African-Americans); David L. Rose, *Twenty-Five Years Later: Where Do We Stand on Equal Opportunity Employment Law Enforcement?*, 42 *Vand. L. Rev.* 1121, 1126-27 (1989) (suggesting that custom, inertia, and informal practices contribute to patterns of discrimination for African Americans and women).

¹⁰⁶ See William J. Hanna & Elizabeth Rogovsky, *On the Situation of African-American Women with Physical Disabilities*, 23 *J. Applied Rehab. Counseling* 39-45 (1992) (analyzing the 1984 Census Bureau's survey on health and disability, interviews with women with physical disabilities, and a 1988 questionnaire on attitudes toward people with disabilities, finding that only 25% of black women with disabilities were employed full time, as compared to 77% of white men, 44% of white women, and 57% of black men with disabilities); McNeil, *supra* note 8, at 10 (supplying data from 1991-1992 showing differences among races and ethnicity groups in severe disability prevalence rate); Daniel J. Reschly & Susan M. Ward, *Use of Adaptive Behavior Measures and Overrepresentation of Black Students in Programs for Students with Mild Mental Retardation*, 96 *Am. J. Mental Retardation* 257, 257-68 (1991) (summarizing studies showing overrepresentation of minority students in special education classes versus mainstreamed classrooms; arguing that much of the debate over educational placement has been about allegedly biased intelligence testing; and asserting that the use of adaptive behavior measures may be necessary to ensure valid classification and placement for students with mild mental retardation). See West, *supra* note 9, at 5 (citing studies on the status of persons with disabilities in the 1980s).

¹⁰⁷ AAMR, *supra* note 48, at 11.

¹⁰⁸ Preface, in *Rights and Responsibilities*, *supra* note 8, at xiii ("The mandate of civil rights law is to destroy those negative reactions and dismantle those barriers in order to restore equal opportunity and full participation in daily life activities with dignity, not charity.").

¹⁰⁹ A principal components factor analysis is used to develop the conceptual grouping, combining these two measures into a single factor score. The adaptive equipment or accommodation measure does not load highly on this factor. Cf. *Empirical Study*, *supra* note 2, at 183-84 (discussing principal components analysis).

¹¹⁰ See, e.g., *Daubert v. U.S. Postal Serv.*, 733 F.2d 1367 (10th Cir. 1984) (ruling that an employee with a back injury was not "otherwise qualified" because of inability to do heavy lifting); *Diaz v. U.S. Postal Serv.*, 658 F. Supp. 484 (E.D. Cal. 1987)

"qualified."¹¹¹ To date, the most common approach has been to define "qualifications" retroactively, on a case-by-case basis.¹¹²

The adaptive skill measure contains items that assess an individual's functioning and developmental growth.¹¹³ For each participant an adaptive skill score is generated,¹¹⁴ reflecting abilities in employment, self-care, personal and environmental mobility, communication skills, and the participant's opportunities for interaction with family, friends, and the general public.¹¹⁵ Other assessments in the measure include scores on abilities in attention, comprehension of instructions, initiative, job complexity, money handling, reading, and writing.¹¹⁶

The health status measure assesses the general health status and medical needs of the

(ruling that an employee with a back injury was "otherwise qualified" because he could perform the job's essential functions); *Rosiak v. U.S. Dep't of the Army*, 670 F. Supp. 444 (M.D. Pa. 1987) (holding that a carpenter unable to work around cement fumes was not "otherwise qualified"), *aff'd*, 845 F.2d 1014 (3d Cir. 1988).

¹¹¹ A search of the case law and literature on the ADA from 1990 to 1993 reveals continuing concerns about an increase in litigation due to the lack of definitional parameters. See, e.g., Thomas H. Barnard, *The Americans with Disabilities Act: Nightmare for Employers and Dream for Lawyers?*, 64 *St. John's L. Rev.* 229, 242-45 (1990) (concluding that the ADA will result in considerable litigation to determine who is "qualified"); Kim F. Ebert & Joseph M. Perkins, *New Era in Employment Litigation: Overview of Americans with Disabilities Act*, 34 *Res Gestae* 318, 319-20 (1991) (arguing that the ADA invites extensive litigation over definition of the term "qualified").

¹¹² 29 C.F.R. § 1630.5 (1991); Lavelle, *supra* note 29, at 1142 (discussing case-by-case basis).

¹¹³ For a review of the adaptive skill assessment measure, see *Empirical Study*, *supra* note 2, at 182-88; see also AAMR, *supra* note 48, at 38; Reschly & Ward, *supra* note 106, at 257-68 (concluding that discussions of comparisons of measures of general intellectual functioning (e.g., IQ measures) and indices of adaptive behavior must proceed with caution and consider factors related to degree of mental retardation, and summarizing case law on the role of intelligence testing and adaptive behavior scoring in classification and placement of students with mild mental retardation).

¹¹⁴ Adaptive behavior scores are assessed by in-person interviews conducted with the participating adults and, where appropriate, with their support personnel. See *Empirical Study*, *supra* note 2, at 185-88 & nn.337-45 (describing the "process" of research).

¹¹⁵ There are many adaptive skill dimensions that may be developed, including communication, writing, and reading. See *Empirical Study*, *supra* note 2, at 164 (describing employment-related and daily-living aspects of the adaptive skill). Adaptive skill is analyzed as an index of these and other dimensions, such as skills related to job complexity and money handling, that reflect relevant employment and independent living skills.

¹¹⁶ See *id.* at 163-64 (considering other abilities, such as body balance, food preparation, interaction with others, purchasing, sense of direction, table clearing, toileting, communication, and walking). Studies suggest that a single measure best reflects individual skill scores. See, e.g., Stephan Arndt, *General Measure of Adaptive Behavior*, 85 *Am. J. Mental Deficiency* 554, 554-56 (1981) (explaining that adaptive behavior can be reliably measured using a single general score); cf. Douglas K. Determan et al., *Assessment of Basic Cognitive Abilities in Relation to Cognitive Deficits*, 97 *Am. J. Mental Retardation* 251-86 (1992) (arguing that research in mental retardation should not be based on a single measure and that adaptive behavior, cognitive, and IQ measures are needed to assess cognitive abilities); Timothy Z. Keith et al., *The Relation Between Adaptive Behavior and Intelligence: Alternative Explanations*, 25 *J. Sch. Psychol.* 31, 31-43 (1987) (explaining that adaptive behavior and intelligence are separate but related concepts); cf. MacMillan et al., *supra* note 51, at 329-30 (finding adaptive-skill measure to be unreliable).

A summed score or index of skill (ranging from 0 to 100) for each participant is used in the analyses. See Michael Thackrey, *A Principal Components Analysis of the Comprehensive Test of Adaptive Behavior*, 96 *Am. J. Mental Retardation* 213, 215 (1991) (showing that six indices of behavior under Comprehensive Test of Adaptive Behavior are measures of a single general factor); Reschly & Ward, *supra* note 106, at 265 (discussing how to use adaptive behavior measures in decisions regarding classification, job placement, and education development for students with mental retardation); David Aanes & Marilyn Moen, *Adaptive Behavior Changes of Group Homes Residents*, 14 *Mental Retardation* 36, 40 (1976) (discussing implications of adaptive behavior scores in individual programming and evaluation of community services). Two other composite scores of adaptive behavior that are related to employment and self-care abilities have been discussed. See *Empirical Study*, *supra* note 2, at 182-91 (finding a strong positive relation between skill and degree of integration in employment showing that adaptive behavior scores increase as living arrangement becomes more integrated); cf. Frank K. Schmidt, *The Problem of Group Differences in Ability Test Scores in Employment Selection*, 33 *J. Voc. Behav.* 272, 287 (1988) (showing that differences on standardized employment tests lead to lower job-selection rates for minorities and concluding that no standardized test of skill is a "magic bullet that will solve the problem created by group differences in average measured mental ability").

participants.¹¹⁷ For persons with mental retardation, health status alone often relates to the need for supports and services and the opportunity for integrated work.¹¹⁸ Yet many persons with mental retardation and good health status face limitations in employment integration and advancement as a result of discrimination.¹¹⁹ The model explores the relationships among health status, employment integration, and economic opportunity.¹²⁰

The equipment/accommodation needs¹²¹ measure is a preliminary index of reasonable accommodations required for these participants.¹²² Although more sophisticated measures are warranted, little attention has been devoted to assessing the relationship of equipment/accommodation needs to employment integration or economic opportunity.¹²³

5. *Inclusion Factors*

Full inclusion into society for persons with disabilities is a major goal of the ADA. Inclusion in employment brings opportunity and participation.¹²⁴ The model measures inclusion in two

¹¹⁷ The specific needs assessed by the measure include: (1) general urgency of need for medical care, (2) prior contact with medical personnel, and (3) prior difficulty in receiving medical services. Empirical Study, *supra* note 2, at 191. Data also were collected on the participants' history and frequency of seizure activity, medication schedule, and medication management. This Article does not analyze those data.

¹¹⁸ The 1990 findings showed a positive relationship between health status and employment integration. See generally *id.* at 192 & n.356. People with mental retardation often face a loss of access to adequate health care services when they move from institutional to community-based settings. See generally David Braddock, Community Mental Health and Mental Retardation Services in the United States: A Comparative Study of Resource Allocation, 149 *Am. J. Psychiatry* 175 (1992) (finding that roughly 80% of persons with mental retardation in community-based settings return to institutional settings); Theodore Kastner et al., Policy Issues in Health Care Reform for People with Mental Retardation, Presentation at the President's Committee on Mental Retardation Presidential Forum: The President's Reforms and People with Mental Retardation in the 21st Century (Apr. 24, 1994) (transcript available from author) (discussing relation of ADA to health care reform). The present analyses continue this exploration.

¹¹⁹ See AAMR, *supra* note 48, at 61; Paula M. Minihan & Deborah H. Dean, Meeting the Needs for Health Services of Persons with Mental Retardation Living in the Community, 80 *Am. J. Pub. Health* 1043, 1046-48 (1990) (discussing how ADA-related barriers to health care could include negative attitudes by health care providers towards people with mental retardation).

¹²⁰ See AAMR, *supra* note 48, at 68 (noting acute need for research on the health status of persons with mental retardation living in the community). Empirical studies of the relationship between the ADA and health care reform are lacking. The health insurance working group of the President's Committee on Employment of People with Disabilities recently identified the need for empirical information on the health care of people with disabilities as a major factor required to implement the ADA. President's Comm. on Employment of People with Disabilities, Americans with Disabilities Employment Summit: Health Insurance Working Group Issue Paper (Apr. 1993) (on file with the author). See also Institute on Medicine, Disability in America: Toward a National Agenda (1991) (identifying empirical research as crucial to reducing the social costs of disability).

¹²¹ This term is also related to the concept of "assistive technology services" set forth in the Developmental Disabilities Assistance and Bill of Rights Act, Pub. L. No. 101-496, § 102(29), 104 Stat. 1191, 1194(1991).

¹²² The physical equipment needs assessed include wheelchairs, walkers, braces, canes, communication devices, hearing aids, and eyeglasses. Also assessed was the need for protective helmets that are designed for participants who have a history of challenging behaviors. These analyses are not included here. See Empirical Study, *supra* note 2, at 179-80. Although this index may prove to be related to other adaptive equipment or accommodation needs, Title I does not necessarily require an employer to provide solely personal use items, such as hearing aids or eyeglasses, as part of its obligation to provide reasonable accommodations to qualified employees. The purpose here is to stimulate the analysis of the types of equipment accommodations that employers may need to provide employment for qualified participants with disabilities.

¹²³ The 1990 findings suggested that participants' adaptive equipment needs were met in the large majority of cases. See *id.* at 180-81 (stating that adaptive equipment is needed by 7% of the participants and that 83 of 1255 participants required adaptive equipment that they were not receiving). The baseline finding may be contrasted with the 1986 Harris Poll result showing that almost one-quarter of those surveyed not working or working part-time did not need adaptive equipment accommodations to help them work. Louis Harris & Assocs., *The ICD Survey of Disabled American: Bringing Disabled Americans into the Mainstream* 73-74 (1986).

¹²⁴ Tucker, *supra* note 38, at 889-90 (noting the contribution of workers with disabilities and citing President's Comm. on Employment and the Handicapped, Special Report: Disability and Employment, Facts about Costs and Benefits 7 (1980)); The

ways: (1) degree of integration and independence in living arrangement (the integration aspect), and (2) satisfaction and choice with employment and daily living (the consumer measure).

Integrated and independent living is central to civil rights for people with disabilities.¹²⁵ Jane West commented that:

[T]his consciousness of independent living that has evolved over the last 2 decades has been a significant contributor to the development of a sense of disability community and a call for civil rights reforms.... The independent living consciousness has shepherded in a gradual shift in policy focus from custody to cure to care to rights.¹²⁶

In fact, people with mental retardation who live in integrated settings show significant advancements in capabilities and participation in society.¹²⁷

The four categories of living type examined range from less to more integrated (i.e., from custodial to more independent)¹²⁸ and include: (1) institutional residences-participants residing in large state-run facilities;¹²⁹ (2) family homes-participants residing in their birth home, a relative's home, or in an adult companion home;¹³⁰ (3) group homes-participants residing with four to twelve other adults with mental retardation in a structured setting, receiving varying degrees of support from state and private agencies;¹³¹ and (4) semi-independent or supported living homes-participants residing alone in their own home, receiving varying levels of support from state and private agencies.¹³²

Table 2 shows the trends in living type from 1990 to 1993.

Arc, *The Employment of People with Mental Retardation and the ADA: Issues and Barriers* (Working paper, May 1993) (citing studies).

¹²⁵ Heumann, *supra* note 64, at 257 ("The key force behind a rethinking of policy toward persons with disabilities has been the independent living movement."); West, *supra* note 8, at 9 (discussing the importance of independent living).

¹²⁶ West, *supra* note 8, at 9. Title II (state and governmental services) and Title III (public accommodations) of the ADA cover discrimination in housing against persons with disabilities. For a review, see Milstein et al., *supra* note 7, at 137.

¹²⁷ See Empirical Study, *supra* note 2, at 160 (discussing integration of persons with mental retardation); AAMR, *supra* note 48, at 114 (summarizing research); Carol A. Howland et al., *Independent Living Centers and Private Sector Rehabilitationists: A Dynamic Partnership for Implementing the ADA*, 8 NARPPS J. 75, 75 (1993) (discussing how independent living improves empowerment, inclusion, and self-sufficiency); see also *Lelsz v. Kavanagh*, 673 F. Supp. 828, 842 (N.D. Tex. 1987) (reflecting the ADA view that "[n]o longer are mentally retarded persons shackled by notions that they cannot learn and grow, that they are eternal children, that they have no ability to care for themselves, or that they cannot live dignified and productive lives").

¹²⁸ For more detailed discussion of the four living types, see Empirical Study, *supra* note 2, at 161 & nn. 259-60.

¹²⁹ See *Homeward Bound v. Hissom*, No. 85-C-437-E, 1987 WL 27104, at *14-* 34, (N.D. Okla. July 24, 1987) (discussing deinstitutionalization of persons with mental retardation); Empirical Study, *supra* note 2, at 175 & n.311 (discussing institutional litigation in Oklahoma and possible effect on sample under study); Herr, *supra* note 66, at 241 (discussing Oklahoma litigation and relevance to ADA). The institutional facilities were certified as Intermediate Care Facilities for the Mentally Retarded (ICF/MR). The services must be at federally mandated levels to receive funds to support their activities.

¹³⁰ Empirical Study, *supra* note 2, at 166.

¹³¹ *Id.* at 161.

¹³² *Id.* See generally Altman & Cunningham, *supra* note 85, at 304-05 (noting the study of movement from less to more integrated and independent living settings).

TABLE 2
LIVING ARRANGEMENT MOVEMENT: SAMPLE SIZES

		Living Arrangement in 1993				Row Total
		Institution	Family/Foster	Group	Independent	
Living Arrangement In 1990	Institution	54% (600)	1% (6)	4% (40)	13% (145)	72% (791)
	Family/Foster	0% (4)	3% (28)	1% (7)	1% (7)	4% (46)
	Group	1% (15)	0% (5)	17% (184)	4% (40)	22% (244)
	Independent	0% (0)	0% (0)	1% (15)	1% (7)	2% (22)
	Column Total	56% (619)	4% (39)	22% (246)	18% (199)	100% (1103)

Note: Reported;
74% no change; 22% improve; 4% regress

The top left cell of Table 2 shows that 54% of the participants lived in institutional residences in 1990 and in 1993. Only 1% of the participants were in independent living settings in 1990 and in 1993. Examination of the diagonal cells in Table 2 shows that from 1990 to 1993, 74% of the participants showed no change in living category, 22% improved their degree of independence of living, and 4% regressed.¹³³ From 1990 to 1993, therefore, almost six times as many participants moved into more integrated living settings as compared to those who regressed.¹³⁴

Moreover, as the column and row totals show, the percentage of participants in institutional living dropped substantially, from 72% in 1990 to 56% in 1993, and the percentage of participants in independent living increased substantially (from 2% to 18%).¹³⁵ Nevertheless, in 1993 the majority of participants continued to live in either institutional (56%) or group home settings (22%).

The second inclusion component, the consumer measure, is based on participants' views of their employment and daily living needs and opportunities and is obtained from a subset of

¹³³ The 1990 baseline findings showed that the majority of participants residing in institutional settings are either not employed or employed in nonintegrated sheltered workshops. Empirical Study, supra note 2, at 173. This finding is consistent with an earlier empirical study. Robert L. Schalock et al., Placement into Nonsheltered Employment: Findings From National Employment Surveys, 94 Am. J. Mental Retardation 80, 83 (1989) (stating that approximately 68% of 65,000 persons with mental retardation surveyed were placed in sheltered employment). This initial finding underscores the need for large numbers of qualified institutional participants to be afforded integrated employment. Cf. ADA & ADR, supra note 2, at 261 (discussing trend toward integrated employment settings, ADA and ADR).

¹³⁴ Table 2 also uses the hypothetical weights assigned to the various cells to calibrate degree of change in independence in living over time. The weights range from -3 to +3, reflecting the magnitude of movement toward inclusion and independence over time. Living arrangement category is coded as follows: 0 for institutional residences, 1 for family or foster care, 2 for group homes, and 3 for independent living.

¹³⁵ A Chi Square test assessed changes in marginal rates of institutional living from 1990 to 1993, with the results as follows: (1) For all participants (n = 1103), rates decline significantly (Chi Square = 140.88, p = .0001, reduction from 72% to 56%); (2) for all women (n = 478), rates decline significantly (Chi Square = 51.38, p = .0001, reduction from 64% to 50%); (3) for all men (n = 625), rates decline significantly (Chi Square = 90.13, p = .0001, reduction from 77% to 61%); (4) for all minorities (n = 169), rates decline (Chi Square = 20.57, p = .0001, reduction from 79% to 65%); and (5) for all nonminorities (n = 919), rates decline (Chi Square = 118.42, p = .0001, reduction from 70% to 55%). For discussion of Chi Square test, see supra note 97. These results reflect the national trend toward deinstitutionalization. See ADA & ADR, supra note 2, at 260 (citing legal cases in support).

participants willing to respond directly to the research interviewers.¹³⁶ The study examines the relationship of satisfaction and choice in work and daily life to employment integration and economic opportunity.¹³⁷ The ADA reflects a policy of equal opportunity, full participation, and choice in life, rejecting the traditional role of "patient" for persons with disabilities. The Act thereby reflects a consumer-driven approach to civil rights.¹³⁸ Prior research shows that inclusion into society results in enhanced personal satisfaction and perceptions of choice and control in life.¹³⁹ Persons with mental retardation report that enhanced choice in life stimulates their growth and development.¹⁴⁰

5. *Empowerment Factors*

Three measures¹⁴¹ explore the concept of empowerment.¹⁴² The self-advocacy measure reflects the participants' contact and participation with self-advocacy programs from 1990 to 1993.¹⁴³ Self-advocacy is

teaching people with a disability how to advocate for themselves and to learn how to speak out for what they believe in. It teaches the individuals how to make decisions and choices that affect their lives so that they can become more independent along with learning about their rights [and]... responsibilities.¹⁴⁴

Self-advocacy in the field of mental retardation is a crucial means for ensuring full participation

¹³⁶ See Empirical Study, supra note 2, at 153-56 (noting methodological and ethical issues confronted when interviewing actual consumers of the ADA). Satisfaction and choice are assessed through the use of a consumer interview. See id. at 166-67 & n.283 (discussing methodological difficulties with a consumer satisfaction measure for this sample). The 1990 baseline findings showed that employment satisfaction and choice were somewhat lower for participants residing in less integrated settings and that, for these participants, satisfaction did not increase as employment type became more integrated. Conversely, satisfaction is positive and substantial for those residing and working in more integrated settings. See id. at 216 (discussing the positive correlation of integrated work setting with age, living arrangement, and satisfaction of participants).

¹³⁷ Future studies may examine individual and social perceptions related to ADA implementation. For example, to what extent are the self-images of persons with disabilities enhanced or diminished as a result of experiences with ADA implementation or compliance? Cf. Bumiller, supra note 36, at 439 (noting that antidiscrimination laws often produce a victim status that negatively affects self-image of those covered in the shadow of the law).

¹³⁸ See West, supra note 8, at 9 (discussing attitudes toward and perceptions of persons with disabilities).

¹³⁹ See Wendy Parent, Quality of Life and Consumer Choice, in *The ADA Mandate for Social Change* 19, 20 (1993) ("The opportunity for an individual to make choices and participate in life decisions improves his or her quality of life and the outcomes achieved, while also positively influencing his or her dignity, self-worth, and independence.").

¹⁴⁰ See AAMR, supra note 48, at 94; Parent, supra note 139, at 27 (citing studies by Moseley (1988) and by Conte, Murphy, and Nisbet (1989) on persons with mental retardation).

¹⁴¹ As was true for the capabilities and qualifications composite, many other measures could be used to assess this factor. A principal components analysis was used to combine these measures into a composite score. Cf. Empirical Study, supra note 2, at 172 & n.303 (discussing principal components factor analysis).

¹⁴² See 137 Cong. Rec. SI 1,107 (daily ed. July 26, 1991) (statement of Sen. Flarkin) [hereinafter Flarkin] ("[T]he clearly implied promise of ADA is that all Americans with disabilities will be empowered to fulfill their potential as equal, as prosperous and as welcome members of the mainstream."); Justin W. Dart, Jr., *The ADA: A Promise To Be Kept*, in *Rights and Responsibilities*, supra note 8, xxi, xxiv-xxv (discussing "empowerment policy").

¹⁴³ See Empirical Study, supra note 2, at 197 n.372 (discussing "People First," which is a self-advocacy group present in almost every state).

¹⁴⁴ See David Braddock, *Responding to the Self-Advocacy Movement*, AAMR News & Notes, July/Aug. 1993, at 2 (noting that the self-advocacy movement is now organized in almost every state). See also American Ass'n on Mental Retardation, *Policy Positions on Legislative & Social Issues* 8-10 (1994) (discussing need for individuals with disabilities to speak for themselves in making lifestyle choices); Thomas J. Zirpoli et al., *Partners in Policymaking: Empowering People*, 14 *J. Assoc. for Persons with Severe Handicaps* 163, 163 (1989) (explaining program designed to provide information and training for self-advocates); Patricia H. Crist & Virginia C. Stoffel, *The Americans with Disabilities Act of 1990 and Employees with Mental Impairments: Personal Efficacy and the Environment*, 46 *Am. J. Occupational Therapy* 434-42 (1992) (identifying psychological components that determine whether persons with mental disabilities are likely to engage in self-advocacy and seek out competitive employment).

in society.¹⁴⁵

The analyses examine the amount of meaningful contact by these participants with self-advocacy organizations (e.g., involvement with "People First").¹⁴⁶ Participants also are asked about their contact with state advocacy programs, their sponsorship of meetings, their work with local self-advocacy groups, their participation in civic organizations, and voter registration and voting behavior.¹⁴⁷

The participants' family and governmental supports also are assessed.¹⁴⁸ Studies show that the use of cost-effective and "natural supports"¹⁴⁹ in homes, employment, and communities empower persons with disabilities.¹⁵⁰ Appropriate supports substantially improve the capabilities and functioning of persons with mental retardation.¹⁵¹ Family and governmental supports are crucial to employment integration and economic opportunity because they provide "a more natural, efficient, and on-going basis for enhancing a person's independence/interdependence, productivity, community integration, and satisfaction."¹⁵²

Education and training, which are critical to employment integration and economic opportunity, are becoming increasingly individualized and coordinated across many disciplines for persons with different disabilities.¹⁵³ To assess job or skill educational goals, the model uses a measure consisting of work, self-care, recreation, independent living, communication, social skills, and

¹⁴⁵ See Michael D. West & Wendy S. Parent, *Consumer Choice & Empowerment in Supported Employment*, in *Supported Employment*, supra note 85, at 29, 38-40 (discussing common empowerment issues for persons with mental retardation).

¹⁴⁶ See *Empirical Study*, supra note 2, at 196-98 (assessing the participants' general civil involvement and citizenship activities); see also *CARF Standards*, supra note 30, at 159 (defining advocacy); West & Parent, supra note 145, at 29-32 (discussing empowerment issues).

¹⁴⁷ See Harkin, supra note 142, at S11107 (discussing empowerment); Shapiro, supra note 12, at 195-207 (discussing the self-advocacy movement for persons with mental retardation); Dart, supra note 142, at xxvi ("United advocacy is the fundamental basis of power for any group in any form of society. Real-life empowerment occurs only through the consistent advocacy, action, and vigilance of those who seek it.").

¹⁴⁸ For example, the investigation assesses the degree of contact with and support from family and case managers. This limited measure is not meant to be compared to the new functional definition of mental retardation based on intensities of supports, e.g., intermittent, limited, extensive, or pervasive support. See AAMR, supra note 48, at 26; see also 136 Cong. Rec. H2447 (daily ed. May 17, 1990) (statement by Rep. Miller)

("Society has made [people with disabilities] invisible by shutting them away in segregated facilities, by erecting structural barriers that literally keep them out of buildings and off public transportation, and denying them access to education and job opportunities—actions that have made it easy to ignore the needs and the rights of disabled individuals.");

ADA Watch, supra note 13, at 5 ("The role of traditional governmental activities in support of people with disabilities and the application of previously existing disability laws are being affected by the ADA."); Kerri Melda & John Agosta, *Human Servs. Research Inst., Policy Brief on Family Support: Results of a National Study, Families Do Make a Difference (1992)* (on file with author) (reporting survey of role of family support programs).

¹⁴⁹ See, e.g., *CARF Standards*, supra note 30, at 162 ("[Natural supports] ... assist the person served to attain the goals of independence and productivity and ... facilitate ... integration into the community. Natural supports are provided by persons who are not paid staff of a service provider, but may be planned, facilitated, or coordinated in partnership with such a provider.").

¹⁵⁰ Shapiro, supra note 12, at 232-36 (discussing the importance of family involvement); AAMR, supra note 48, at 101 (same).

¹⁵¹ AAMR, supra note 48, at 101-03 (noting that this belief is exemplified by the current emphasis on supported employment programs).

¹⁵² *Id.* at 101 (noting that the rehabilitation profession emphasizes personal satisfaction, individual choices, decisions, and empowerment, while recognizing the need for fiscal and programmatic accountability). Family support programs can be private (e.g., from employers or insurers), informal (e.g., from neighbors, extended family, and community members), or public (e.g., state or federal family support program, general welfare program, or disability related program).

¹⁵³ See *id.* at 109 (proposing standards for natural supports).

citizenship factors.¹⁵⁴

6. *Legal factors (ADA Composite)*

The ADA composite measure examines the participants' perceptions of their access to employment and daily life opportunities.¹⁵⁵ For instance, the study solicits participants' perceptions of employment accessibility (ADA Title I issues).¹⁵⁶ Participants also are asked about their access to educational and governmental training services, as well as to public transportation (ADA Title II issues).¹⁵⁷ Finally, participants are asked about access to public accommodations (ADA Title III issues).¹⁵⁸

A. *Method and Design*

Earlier articles in this series set forth the investigation's research methods.¹⁵⁹ The empirical information is derived from questionnaire, interview, and observational measures collected on an annual basis.¹⁶⁰ The research team pilot-tested measures in the model and assessed their reliability and validity. The team videotaped and reviewed interviews between researchers and participants to standardize the interview process. The research team explored drop-out rates and selection problems and examined ethical issues, including confidentiality, informed consent, privacy, and participant dignity.¹⁶¹ The investigation attempted to balance the complex issues

¹⁵⁴ The relationships among the empowerment measures pose an interesting topic for future study. For example, a positive relationship between self-advocacy and support factors might indicate that as participants receive enhanced governmental and family supports, they become more independent and self-advocating. The findings from 1990 to 1993 show a positive relation between supports and participation in self-advocacy ($r = .26, p < .0001$).

¹⁵⁵ The research interviewers assess whether disabilities limit the participants' opportunities, examining areas relevant to employment including access to employment, education, and transportation, and physical access to buildings. Empirical Study, supra note 2, at 167-68. The measure combines information about the impact of Titles I, II, and III of the ADA. See id. at 219-20 (providing a review of 1990 baseline findings).

¹⁵⁶ The ratings made by the observers on the physical quality and accessibility measures include: (1) attractiveness of neighborhood and residence and (2) accessibility to the site grounds and residence, both overall and on a room-by-room basis. It is important to note that "many [of the] 'environmental' measures [employed here] are ... sensitive to the characteristics of the [participants] living in the [residence] being rated." Conroy & Bradley, supra note 5, at 159; see also Empirical Study, supra note 2, at 205-06 (discussing relevant findings). Title I requires employers to ensure that employees with disabilities have physical access to equal educational and employment services and other elements that make it possible to find and retain a job. See supra notes 33-75 and accompanying text (discussing Title I provisions). Studies also show that accessibility in the home relates to the ability to adapt to accommodations in the work setting. Conroy & Bradley, supra note 5, at 155-56. The 1990 findings show that independence in living relates to enhanced perceptions of satisfaction and inclusion in daily life and in employment. Empirical Study, supra note 2, at 201-02.

¹⁵⁷ Title II of the ADA covers state and local agency services, as well as public transportation services. 42 U.S.C. §§ 12131-12165 (Supp. IV 1992). Lack of access to education and transportation often forecloses the possibility of employment for many people with disabilities. See Empirical Study, supra note 2, at 202-07 (discussing findings on accessibility of the participants' living and employment settings). For example, a person with mental retardation who does not have access to a job coach to assist in learning job skills may never reach the "qualified" threshold. Id. The 1990 findings show that access to transportation was more limited for participants employed in less integrated settings. See id. at 203-04.

¹⁵⁸ 28 C.F.R. § 36 (1993). Title III requires public accommodations to make reasonable modifications so that they may be accessible to persons with disabilities. In balancing accessibility to public accommodations with the cost concerns of businesses, the ADA establishes a less rigorous standard for required modifications of existing facilities than for new facilities. The definition of "undue burden" in Title III is analogous to the definition of undue hardship provided under Title I. See Empirical Study, supra note 2, at 135-36. The 1990 findings showed that physical access to buildings was more limited for participants residing in more integrated living settings prior to the ADA. However, as employment type became more integrated, participants residing in integrated settings experienced greater physical accessibility to public buildings. See id. at 204. For a review of Title III, see Wendy E. Parmet, Title III-Public Accommodations, in Rights and Responsibilities, supra note 8, at 123.

¹⁵⁹ See Empirical Study, supra note 2, at 146-71; Emerging Work Force, supra note 2, at 724-32.

¹⁶⁰ See Empirical Study, supra note 2, at 156-60 (describing data collection methods).

¹⁶¹ See id. at 154-55; Robert Rosenthal & Peter D. Blanck, Science and Ethics in Conducting, Analyzing, and Reporting Social Science Research: Implications for Social Scientists, Judges, and Lawyers, 68 Ind. L.J. 1209, 1221 (1993) (exploring issues in

involved in conducting longitudinal research with the development of meaningful information on the participants' lives.¹⁶²

III. PRELIMINARY EMPIRICAL FINDINGS

This Part sets forth the preliminary findings of the model. The findings are descriptive, presenting a view of participants' backgrounds, attitudes, and behaviors relevant to employment integration, economic opportunity, and the ADA. They are also exploratory, documenting relationships among measures in the model prior to and after the implementation of Title I. Thus, the findings may be used to identify basic relationships among variables, to provide insight into previously unexamined relationships, or to develop additional hypotheses and refine subsequent empirical models.

Interpretations of the findings focus on the general magnitude and direction of trends in the data.¹⁶³ Where appropriate, statistical testing techniques¹⁶⁴ provide an estimate of the relationship among the measures.¹⁶⁵ Nevertheless, causal inferences and generalizations about the findings to other persons with different disabilities must be made with caution.¹⁶⁶

B. Findings Prior to and After the Implementation of Title I

The design of this investigation allows for the study of change during a revolutionary period for these participants.¹⁶⁷ Table 3 presents changes in the measures from 1990 to 1993. Presented for each measure are the sample size ("n"), the score on that variable in 1990 and 1993, the test of the difference in the scores for 1990 and 1993 (reflected by the t- test, and the associated effect size correlation, "r"), and the statistical significance of the change (reflected by the "p" value).¹⁶⁸

social science research of legal processes). See generally C. Donald Morris et al., Determining the Capability of Individuals with Mental Retardation to Give Informed Consent, 98 Am. J. Mental Retardation 263 (1993) (finding that ability to provide informed consent related to level of intellectual functioning).

¹⁶² See generally Empirical Study, supra note 2, at 146-70.

¹⁶³ See Rosenthal & Blanck, supra note 161, at 1221. See generally Robert Rosenthal & Donald B. Rubin, A Simple, General Purpose Display of Magnitude of Experimental Effect, 74 J. Educ. Psychol. 166 (1982) (discussing the use of statistical methods to demonstrate the increase in predictive power and the real world importance of findings).

¹⁶⁴ Several statistical analyses are performed on the dependent measures including: correlational analyses, chi square tests, t-tests, and multiple regressions to measure the impact of various measures on the participants' level of integrated employment and income. See generally Robert Rosenthal & Ralph L. Rosnow, Essentials of Behavioral Research: Methods and Data Analysis (1990) (discussing statistical tests).

¹⁶⁵ Correlational and regression analyses do not isolate the "causes" and "effects" of this relationship. See Peter D. Blanck et al., The Measure of the Judge, 75 Iowa L. Rev. 653, 669 (1990) [hereinafter Blanck, Judge Measure] (discussing the use of correlational analyses in field research); Peter D. Blanck, Calibrating the Scales of Justice: Studying Judges' Behavior in Bench Trials, 68 Ind. L.J. 1119, 1168-72 (1993) [hereinafter Blanck, Scales of Justice] (providing an empirical study of the "scales of justice" in Iowa bench trials).

¹⁶⁶ The findings are a bridge to more focused empirical studies. See Empirical Study, supra note 2, at 239. Consistent with the exploratory nature of the analyses, the research team reviewed and assessed for accuracy individual matched cases from the aggregate data set. The team dropped income information for seven participants and coded the information as "missing" because even though the participants had monthly income changes of \$1200 or greater, they had not reported employment for 1990 or 1993. Furthermore, income information for six participants reporting hourly earned incomes of \$15 or more was initially coded as weekly income, when it should have been coded as monthly income. Therefore, the reported income from employment for these individuals was divided by four. See Thomas D. Cook & Donald T. Campbell, Quasi- Experimentation: Design & Analysis Issues for Field Settings 10-11 (1979) (revealing that this investigation was not a well-controlled experiment so causal language and interpretation were not appropriate); Rosenthal & Blanck, supra note 161, at 1217-18 (discussing data-dropping).

¹⁶⁷ Cf. Edelman, supra note 15, at 1569 (calling for more empirical study of civil rights laws generally).

¹⁶⁸ For a discussion of the computation of the effect size correlation, see Robert Rosenthal, Essentials of Behavioral Research 22 (2d ed. 1992) (defining effect size as the degree to which the relationship studied differs from zero). Using principal components analyses, the study developed a composite measure for capabilities and qualifications, empowerment, and ADA legal variables.

Table 3 shows significant changes on each measure from 1990 to 1993. Participants attain more integrated employment¹⁶⁹ and show significantly higher monthly gross incomes.¹⁷⁰ Along with improvements in adaptive skill and health status, individual capabilities and qualifications improve.¹⁷¹ The number of participants needing adaptive equipment decreases, and the participants' level of social inclusion is enhanced. Living arrangements become more integrated,¹⁷² and perceptions of satisfaction and choice in work and daily life improve.¹⁷³

These analyses reduced the number of variables required to describe behavior. Principal components analysis applies to studies of complex behavior when the goal is to generate hypotheses and descriptions in the spirit of exploratory data analysis. The conceptual grouping or "composite" then is used as a measure in the model. Future research needs to replicate these analyses as well as employ other measures in the exploration of employment integration, economic opportunity, and the implementation of the ADA.

¹⁶⁹ Employment category is coded from 0 = no employment to 3 = competitive employment. See supra note 91 and accompanying text. See generally John McDonnell et al., *An Analysis of the Procedural Components of Supported Employment Programs Associated with Employment Outcomes*, 22 *J. Applied Behav. Analysis* 417 (1989) (suggesting a growing need for competitive-employment positions for persons with mental retardation); Harris Poll-1994, supra note 95, at 37 (discussing changing unemployment rates of working-age adults between 1986 and 1994).

¹⁷⁰ In all analyses involving income (whether gross or earned), actual dollar amounts are transformed into "log dollars" using the natural log function. Researchers find that a distribution of earnings (such as the one here) often is skewed, with median earnings lower than the mean of the earnings. See Ernest R. Berndt, *The Practice of Econometrics: Classic and Contemporary* 161 (1991) (discussing practice of using log dollars). Compared to other distributions, the log-normal distribution better "fits" the data on earnings and reduces the influence of extreme values that often make the use of some standard statistical techniques unreliable. *Id.* The log transformation also reduces errors associated with large income values and usually is employed in similar sociological or economic research. See, e.g., Hubert M. Blalock, Jr., *Social Statistics* 427-29 (2d ed. 1986) (describing "diminishing returns effects" in models requiring transformation); Ronald J. Wonnacott & Thomas H. Wonnacott, *Econometrics* 123 (1979) (illustrating how nonlinear models require log transformation). Median monthly gross income, in terms of actual dollars, increased from \$63 in 1990 to \$387.50 in 1993. This large increase is attributable mostly to the corresponding decrease in overall unemployment rates.

Standard linear regression analyses such as that in Tables 6 and 7 infra require that the data be "normal" as opposed to skewed. For the present data set, the log transformation does produce a more "normal" distribution as tested by the Kolmogorov-Smirnov Goodness of Fit (K-S) test for income differences. The K-S statistic for testing lack of fit (i.e., z statistic) for difference in income from 1990-1993 was 7.48 and for difference in log-income from 1990-1993 was 6.90. For consistency, the log transformation was also used on the 1993 earned income from wages (reported in Table 7, infra). The z statistic for the K-S test showed no improvement resulting from the log transformation of 1993 earned income alone: z = 8.90 for 1993 earned income, and z = 8.97 for log 1993 earned income. The inflation rate from 1990 to 1993 based on the consumer price index was approximately 10.5%. When 1993 earned income levels are corrected for inflation (i.e., multiplied by .895), participants still show a statistically significant increase in their monthly gross incomes [$t(889) = 6.14$, $p < .001$]. The regression model described in notes 218-22 and accompanying text examines changes in monthly gross income over time. Adjustments for inflation are made through the intercept term in the model.

The 1994 Harris survey shows that 40% of adults with disabilities live in households with annual incomes of less than \$15,000. In 1986, 50% of adults with disabilities lived similarly. Harris Poll-1994, supra note 95, at 135. In addition, more adults with disabilities live in households with annual income in excess of \$35,000 in 1994 (20%) as compared to 1986 (12%). *Id.* These findings may be skewed, however, because the Harris survey fails to account for inflation.

¹⁷¹ Adaptive skill scores range from 0 to 100. Health status scores range from -4 to 10. See supra notes 113-20 and accompanying text; cf. Harris Poll-1994, supra note 95, at 93 (showing that satisfaction levels of persons with disabilities remained relatively constant between 1986 (69% satisfied, 24% dissatisfied) and 1994 (67% satisfied, 24% dissatisfied)). In addition, 63% of persons with disabilities in 1994 perceive that the quality of life for people with disabilities has improved. *Id.* at 110.

¹⁷² See also Table 2, supra (showing that the percentage of participants in independent living increases from 2% in 1990 to 18% in 1993). Living arrangement is coded from zero for institutional living to three for independent living. Cf. Empirical Study, supra note 2, at 160-61 & n. 255 (discussing the impact of a court order to deinstitutionalize a state-run institution and the prevalence of independent living in the state).

¹⁷³ Scores range from 13 to 42 on the satisfaction and choice scale. Cf. Michael L. Wehmeyer & Christina A. Metzler, *How Self-Determined are People with Mental Retardation?: The National Consumer Survey*, 99 *Am. J. Mental Retardation* (forthcoming 1994) (finding that people with mental retardation perceive themselves as having fewer choices and control in daily life than respondents without disabilities and suggesting the importance of the ADA to foster choice, control, and independence in life).

TABLE 3
TESTING DIFFERENCES FROM 1990-1993
PRE-VERSUS POST-EFFECTIVE DATE OF TITLE I OF THE ADA

Variable	n ^a	Score ^b		t-value	r ^c
		1990	1993		
Employment Integration					
Employment Category	1110	.74	.87	5.04	.15
Monthly Income (log dollars) ^d	890	4.59	5.21	11.44	.36
Capabilities/Qualifications					
Adaptive Skills	1089	51.8	54.8	9.16	.27
Health Status	1110	7.5	7.9	6.11	.18
Equipment/Accommodation	1110	.93	.97	4.12	.12
Inclusion Factors					
Living Arrangement	1103	.54	1.02	14.22	.39
Job/Life Satisfaction & Choice	257	33.9	37.4	13.15	.63
Empowerment Factors					
Self-Advocacy	1104	.15	.32	9.33	.27
Family & Government	1097	15.0	17.2	8.80	.26
Job/Skill Educational Goals	1067	9.9	5.7	-14.55	.41
Legal Factors					
ADA Composite ^e	1110	.17	.45	8.61	.25
Title I	1110	.85	.94	7.33	.21
Title II	1110	.86	.93	5.37	.16
Title III	1110	.75	.88	8.52	.25

The proportion of participants involved in self-advocacy activities more than doubles (i.e., 15% in 1990 to 32% in 1993).¹⁷⁴ As daily life and work become integrated, independent, and supported, individuals with disabilities appear to focus greater attention on self-advocacy involvement.¹⁷⁵ This result is consistent with the growing self-advocacy movement for persons

^a n= sample size.

^b Higher scores indicate more integrated employment and higher income, higher adaptive skills and health status, fewer equipment/accommodation needs, more integrated living arrangement, higher job/life satisfaction and choice, more self-advocacy, family & government support and job/skill educational goals, and more integrated opportunities as defined by the ADA

^c r = Effect size correlation on score between 1990 and 1993. All rs are significant at p < .001

^d 1993 gross monthly income information is derived from the addition of two sources: (1) weekly employment income (multiplied by 4), and (2) monthly

^e Composite score comprised of first principal component for Titles I-III.

¹⁷⁴ Cf. AAMR, supra note 48, at 2 (citing the Longhurst study which states that the number of participants in the self-advocacy movement has increased substantially in the last several years); Harris Poll-1994, supra note 95, at 119 (showing 27% of persons with disabilities participated in group or organized activity on behalf of people with disabilities). Of those individuals aged 25 to 60, 40% claim such involvement. Id. In addition, the number of persons with disabilities who feel a strong sense of common identity with other individuals with disabilities increased from 40% in 1986 to 54% in 1994. Id at 117.

¹⁷⁵ The findings show that involvement in self-advocacy is relatively greater for older participants (r = .08, p = .01), women (r = .08, p = .01), those with higher capabilities and qualifications composite scores (r = .40, p = .0001), those in more integrated living (r = .45, p = .0001), and those reporting more satisfaction in work and daily life (r = .26, p = .0001). Although

with mental retardation¹⁷⁶ and with the spirit of choice and involvement embodied in the ADA.¹⁷⁷ Further analysis of these trends in self-advocacy is warranted because the movement's major objectives are closely related to the goals of the ADA: namely, support for independent living, fair wages, empowering changes in laws, and equitable modifications to entitlement programs.¹⁷⁸

Family and governmental supports also improve,¹⁷⁹ reflecting increased involvement by families in mainstreamed education, independent living, and competitive employment.¹⁸⁰ At the same time, however, job and life skill educational goals for these participants decrease.¹⁸¹ The latter finding may illustrate the belief that as participants become more "qualified" and independent, they require lower levels of involvement in traditional vocational training programs.

The findings for the ADA composite measure,¹⁸² as well as for the separate Title I, II, and III measures, suggest that the participants perceive work, education, transportation, and public accommodations as increasingly accessible.¹⁸³ The findings for the individual title measures of the ADA illustrate the proportion of participants reporting enhanced accessibility. In Title I, reported accessibility increased from 85% to 94%. In Title II, this measure increased from 86% to 93%), and for Title III, the increase was from 75% to 88%.¹⁸⁴ Studies of prior employment discrimination claims suggest that perceptions of discrimination depend to some extent on the perception of one's rights.¹⁸⁵ In this way, analyses of perceptions of the ADA by persons with

self-advocacy involvement is apparently unrelated to the ADA composite measure, self-advocacy involvement is greater for those reporting accessibility barriers identified under Title I of the ADA ($r = -.05, p = .07$).

¹⁷⁶ See AAMR, *supra* note 48, at 2 (citing the Longhurst Study).

¹⁷⁷ See, e.g., Shapiro, *supra* note 12, at 181-207 (discussing need for integration and empowerment of persons with disabilities).

¹⁷⁸ See AAMR, *supra* note 48, at 2 (citing Longhurst Study); cf. Table 4 *infra* (demonstrating that those more involved in self-advocacy obtain integrated employment).

¹⁷⁹ Scores range from 0 to 38.

¹⁸⁰ See *Emerging Workforce*, *supra* note 2, at 750.

¹⁸¹ Scores range from 0 to 80.

¹⁸² Computed as the first principal component. See *supra* note 168 and accompanying text (describing the use of principal components analysis to generate composite scores).

¹⁸³ The score reflects a standardized composite. The 1994 Harris data show that more persons with disabilities believe access to employment opportunities has improved since 1990 than believe it has regressed (44% vs. 28%). Harris Poll-1994, *supra* note 95, at 110. For public transportation the percentages are 60% and 13%, respectively, and for public facilities the percentages are 75% and 6%, respectively. *Id.*

¹⁸⁴ This finding also is reflected by the effect size correlations in Table 3 *supra*, and text accompanying notes 167-86. One reason for the relatively high proportion of participants reporting enhanced accessibility may be the self-selecting nature of these particular respondents (i.e., those who have experienced access in daily life).

The GAO report on the effect of the ADA on access to goods and services concluded that many businesses have begun to improve in this respect. Important barriers remain, however, including insufficient signs with raised print or Braille, insufficient assistive devices for persons with hearing impairments in hotel rooms, inaccessible showers, tubs, toilets, and sinks in hotel rooms, and public telephones with no text telephone or amplification systems. Half the businesses examined in the report failed to remove any barriers and half had no plans to remove them in the future. Contributing to this incomplete compliance is the difficulty many businesses are experiencing in obtaining assurance that they are in compliance with the ADA. The result is continuing uncertainty regarding how they are to comply. The report concludes that the demand for technical assistance exceeds the resources of both the federal and local governments. U. S. Gen. Accounting Office, *Americans with Disabilities Act: Effects of the Law on Access to Goods and Services*, (Pub. No. GAO/PEMD- 94-14, 1994).

¹⁸⁵ John J. Donohue III & Peter Siegelman, *The Changing Nature of Employment Discrimination*, 43 *Stan. L. Rev.* 983, 993 ("To raise a bone fide claim of employment discrimination, a worker must first perceive that discrimination has occurred.")

According to the 1994 Harris survey, 35% of adults with disabilities mistakenly believe that no law granting more protection to people with disabilities has been passed since 1990. Harris Poll-1994, *supra* note 95, at 122. Only 42% are aware that such laws have been passed. *Id.* Approximately 40% have either read or heard about the ADA. *Id.* Although these figures show a low

disabilities may contribute to more effective implementation of the Act.¹⁸⁶

A. Predicting Employment Integration and Economic Opportunity: Correlational Analyses

This section examines the predictive value of the measures using correlational analyses. Table 4 presents the bivariate or simple correlations between the independent variables and both the 1993 employment category measure and the earned income measure. A positive correlation indicates that a more integrated employment category or higher income level is associated with a higher or more integrated score on that independent measure. The left column of Table 4 shows that the majority of independent measures, assessed from 1990 to 1993, are useful for predicting 1993 employment category.

level of awareness, they also show a marked improvement since 1991, when only 16% of adults with disabilities were aware of the ADA. *Id.*

¹⁸⁶ See Blanck, *supra* note 10; see also Shapiro, *supra* note 12, at 233- 34 (discussing universal design); Melinda Henneberger, Technology Revolution Reaches the Retarded, *N.Y. Times*, Sept. 7, 1993, at A1 (discussing the increased role of assistive technology in independent living, education, and employment); Timothy L. O'Brien, A PC Revolution: Aided by Computers Many of the Disabled Form Own Businesses, *Wall St. J.*, Oct. 8, 1993, at 1. Information is necessary on the extent to which perceptions of the law by persons with disabilities and others effect compliance with the law. Cf. Edelman, *supra* note 15, at 1569 (noting similar shadow-of-the-law effect in Title VII law).

TABLE 4
EMPLOYMENT CATEGORY AND EARNED INCOME IN 1993:
SIMPLE CORRELATIONS

Variable	Employment Category	Earned Income
Personal Background		
Age	.05	.04
Female	Qg***	-.01
Minority	-.02	.03
Capabilities & Qualifications Composite³		
Adaptive Skill	49****	^^****
Health Status	51****	gg****
Equipment/Accommodation	23****	28****
	-.02	.03
Inclusion Factors		
Living Arrangement	4g****	43****
Job/Life Satisfaction & Choice	27***	31****
Empowerment Composite^b		
Self-Advocacy	22****	30****
Family & Government Support	22****	33****
Job/Skill Educational Goals	2g****	1^****
	-.00	-.05
Legal Factors		
ADA Composite ⁰	13****	- 21****
Title I	16****	- 21****
Title II	-.05*	13****
Title III	11****	18****

Note: Presented above are Pearson correlations. All variables reflect scores averaged over years 1990 and 1993. Earned income is based on log dollars. A positive correlation indicates that more integrated employment category and higher earned incomes are associated with higher or more integrated scores on the various factors. A negative correlation would indicate the converse.

* = statistical significance assessed at $p \leq .10$; ** = $p \leq .05$ ***. = $p \leq .01$; ****. = $p \leq .001$. Significance levels are a function of the magnitude of the effect and sample size.

Women, compared to men, experienced more integrated employment in 1993 ($r = .08$). A better understanding of these gender differences will require additional empirical investigation and analysis, such as separate analyses performed by type of job attained.

The results also indicate that neither age nor minority status alone predicts an individual's employment category. However, participants with a higher capabilities and qualifications composite score, particularly those with higher adaptive skills ($r = .51$) and better health status

^a Composite score comprised of first principal component for adaptive skills and health status.

^b Composite score comprised of first principal component for self-advocacy, family and government support, and job/skill educational

^c Composite score comprised of first principal component scores for Titles I-III.

($r=.33$), are in more integrated employment in 1993.¹⁸⁷ There is no relationship between adaptive equipment needs and the type of employment held in 1993.

Examination of the inclusion factors shows that participants in integrated employment are more likely to reside in integrated living ($r=.46$). Participants in integrated employment are also more satisfied with their job and daily life activities ($r=.17$). This finding is consistent with studies showing that integrated employment activities for employees with disabilities result in increased self-esteem.¹⁸⁸

Participants in integrated employment show higher scores on the empowerment composite measure ($r=.31$), are more involved with self-advocacy ($r=.31$), and receive more family and government support for their employment activities ($r=.16$). Participants in integrated employment also have lower scores on the ADA composite measure ($r=-.13$), perceiving less accessibility in employment, governmental services, and public accommodations. Thus, participants engaged in more integrated, community-based activities are more likely to report problems of accessibility to work and daily life.¹⁸⁹

The right column of Table 4 shows that several independent measures are useful for predicting 1993 earned income levels.¹⁹⁰ Noticeably, the personal background measures—age, gender, and race—do not predict 1993 income levels. Participants with higher incomes, however, score higher on the capabilities and qualifications composite measure ($r=.55$); this is true particularly for those with higher adaptive skills ($r=.66$) and better health status ($r=.28$).

Consistent with the findings for the employment category, participants with higher incomes live in more integrated settings ($r=.43$) and report greater choice and satisfaction with their jobs and their lives ($r=.31$). Participants with higher incomes also show greater levels of empowerment ($r=.30$), are more involved in self-advocacy ($r=.33$), and receive more family and government supports ($r=.15$). Finally, participants with greater incomes report less accessibility to employment, governmental services, and public accommodations (ADA composite score, $r=-.21$).¹⁹¹

Table 5 presents the correlations between the independent measures and employment movement and gross income differences (from 1990-1993).¹⁹² [FN192]

¹⁸⁷ The pattern is not shown for the measure of adaptive equipment or accommodation needs ($r=-.02$). This preliminary finding is consistent with the suggestion that employers may not base hiring decisions of qualified persons solely on their adaptive equipment or accommodation needs. Cf. Empirical Study, *supra* note 2, at 239 (demonstrating parallel baseline findings and noting generalizations of findings limited by measures in the model). See also McNeil, *supra* note 8, at 13 (outlining census data from 1991-1992 that show a negative relation between earnings and disability severity).

¹⁸⁸ See, e.g., Mary Sinnott-Oswald et al., Supported and Sheltered Employment: Quality of Life Issues Among Workers with Disabilities, 26 *Educ. & Training in Mental Retardation* 388, 388-97 (1991) (noting that self-esteem relates to competitive employment).

¹⁸⁹ See *supra* note 143 (showing other findings for self-advocacy); *infra* notes 284-89 and accompanying text (discussing implications of Title I dispute avoidance and resolution).

¹⁹⁰ Consistent with predictions, integration in 1993 employment category relates strongly to 1993 earned income levels ($r=.62$, $p < .0001$).

¹⁹¹ Cf. Haveman & Wolfe, *supra* note 101, at 49, 55 (analyzing wages in sheltered and supported employment programs).

¹⁹² Cf. Haveman & Wolfe, *supra* note 101, at 49, 55 (analyzing wages in sheltered and supported employment programs).

TABLE 5
EMPLOYMENT MOVEMENT AND INCOME DIFFERENCES (1990-1993):
SIMPLE CORRELATIONS

Variable	Employment Movement	Income Differences
Personal Background		
Age	-.05-	.24****
Female	.10	-.02
Minority	-.01	.05
Capabilities & Qualifications Composite³		
Adaptive Skill	.22****	.09****
Health Status	.24****	-.04
Equipment/Accommodation	-.03	-.01
Inclusion Factors		
Living Arrangement	.28****	.05
Job/Life Satisfaction & Choice	.03	.10
Empowerment Composite^b		
Self-Advocacy	.20****	.05
Family & Government Support	.08**	.20****
Job/Skill Educational Goals	-.05	.03
Legal Factors		
ADA Composite ⁰	-.02	.09****
Title I	-.04	-.06*
Title II	.02	.20****
Title III	-.03	.07**

Note: Presented above are Pearson correlations. All variables reflect scores averaged over years 1990 and 1993, except for Employment Movement (positive change) and Income Difference (positive change based on log dollars). A positive correlation indicates that more integrated employment and higher incomes are associated with higher or more integrated scores on the various factors. A negative correlation would indicate the converse.

* = statistical significance assessed at $p \leq .10$; ** = $p \leq .05$; *** = $p \leq .01$; **** = $p \leq .001$. Significance levels are a function of the magnitude of the effect and sample size.

As the left column of Table 5 shows, several variables in the model predict employment movement. Younger and female participants show relatively more integrated employment movement ($r = -.05$, $r = .10$, respectively).¹⁹³ [FN193] Again, further study is needed concerning

^a Composite score comprised of first principal component for adaptive skills and health status.

^b Composite score comprised of first principal component for self-advocacy, family and government support, and job/skill educational goals.

^c Composite score comprised of first principal component scores for Titles I-III.

¹⁹³ Cf. Edelman, supra note 15, at 1534 (citing studies of women and minorities regarding employment advancement and improvements in wages over time).

job advancement for gender and age categories, especially on the issue of how job type influences job advancement differently for men and women. Degree of employment movement is not related to minority status alone ($r = -.01$).¹⁹⁴

Integrated employment movement is predicted by higher scores on the capabilities and qualifications composite ($r = .12$),¹⁹⁵ by higher skill scores ($r = .07$), and by higher health status ($r = .14$).¹⁹⁶ Also, integrated employment movement is greater for those in more independent living ($r = .16$), supporting the view that independent living is central to full inclusion into society for many persons with disabilities.¹⁹⁷

The empowerment composite measure and two of its three submeasures predict employment movement (for empowerment composite, $r = .10$). Those participants involved with self-advocacy show more integrated employment movement ($r = .08$), supporting the trend illustrated in Table 3 above—namely, that levels of participation in self-advocacy increase significantly from 1990 to 1993.¹⁹⁸ Participants showing more integrated employment movement also tend to receive more family and governmental support ($r = .08$).¹⁹⁹ The degree of integrated employment movement does not relate to satisfaction and choice in work and daily life.

Although 1993 employment category appears to be a strong predictor of the ADA composite measure, the findings for employment movement do not offer the same insight ($r = -.02$).²⁰⁰ The perceived impact of the Act during this initial phase-in period may be less important to actual job

¹⁹⁴ Cf. Hanna & Rogovsky, *supra* note 106, at 43-44 (arguing that "the changes in discrimination [against minorities and women with disabilities that] may occur as a result of the passage of the Americans with Disabilities Act are not likely to be fully corrective"); Stephen Labaton, Benefits Are Refused More Often to Disabled Blacks, *Study Finds*, N.Y. Times, May 11, 1992, at A1, A12 (summarizing congressional study that blacks are more likely than whites to be rejected for federal disability benefits).

¹⁹⁵ The mean of z-scores for adaptive skill and health status comprise the capabilities and qualifications composite. See *supra* notes 107-20 and accompanying text (outlining the capabilities and qualifications composite measure).

¹⁹⁶ The finding that integration in employment relates to skill may be viewed in conjunction with the 1990 findings, which show, when controlling for skill, that persons with severe mental retardation may work effectively in competitive job settings. Cf. Empirical Study, *supra* note 2, at 215 (showing parallel baseline findings). See also Conroy & Bradley, *supra* note 5, at 316-17 (stating that longitudinal data indicates that those residing in the community evidence significantly greater gains in adaptive skill scores than those residing in institutions); McDonnell et al., *supra* note 169, at 425 (describing work marginally associated with empirical study that shows employability of persons with disabilities); Michael S. Shafer et al., Employment Retention and Career Movement Among Individuals with Mental Retardation Working in Supported Employment, 29 *Mental Retardation* 103, 108-09 (1991) (finding that, when controlling for adaptive-behavior scores, persons with severe disabilities are employed effectively over time in integrated settings). The term "severely disabled" is open to various interpretations. One standard definition refers to individuals who comprise the lowest functioning 1% of the population. See Pat Rogan & Stephen Murphy, Supported Employment & Vocational Rehabilitation: Merger or Misadventure?, *J. Rehab.*, Apr./May/June 1991, at 39,40 (citing other studies).

¹⁹⁷ See generally Beverly Lozano, Independent Living: Relation Among Training, Skills, and Success, 98 *Am. J. Mental Retardation* 249 (1993) (reporting the results of a seven-year study showing that individuals receiving greater independent living services and skills training were more likely to live independently); Julie A. Racino & Judith E. Heumann, Independent Living and Community Life, *Generations: Aging & Disabilities* 45 (Winter 1992) (discussing the relationship of independent living to the development of a sense of personal empowerment for people with disabilities); West, *supra* note 8, at 3 (discussing the importance of integration).

¹⁹⁸ Cf. Crist & Stoffel, *supra* note 144, at 435 ("To be successfully employed, one must view oneself as employable.").

¹⁹⁹ See, e.g., Robert L. Schalock et al., Post-secondary Community Placement of Handicapped Students: A Five-year Follow-up, 9 *Learning Disability Q.* 297, 297-98 (1986) (explaining that persons with learning disabilities and mental retardation were more successful in employment training programs when their families were involved with the development of the programs). Participants in integrated employment settings tend to receive (and likely require) fewer job and skill vocational training and educational goals ($r = -.05$, not significant).

²⁰⁰ *££ Edelman, supra* note 15, at 1534 (citing studies of women and minorities in employment advancement and improvements in wages over time, "albeit not necessarily in response to the law [of Title VII]").

integration than are the attitudes of employers and others about people with disabilities.²⁰¹ This suggestion is consistent with studies finding that "much of a law's initial effect occurs in its shadow." Over time, entities covered by the ADA may institutionalize the law's goals through "good faith" attempts at compliance.²⁰²

The right column of Table 5 reveals that several variables in the model predict changes in gross income for these participants. Younger participants show greater increases in gross monthly income ($r=-.14$).²⁰³ Women and minorities show no relative gains in income levels. Although there is no relationship between changes in gross income levels and the capabilities and qualifications composite score, gross income changes predict higher adaptive skill scores ($r=.09$).²⁰⁴ Those with relatively better health status²⁰⁵ and those with fewer equipment needs do not show such income gains.

Participants scoring higher on the empowerment composite show substantial gains in gross income ($r=.10$). This is true particularly for those receiving greater family and governmental supports ($r=.10$). Consistent with the findings for 1993 earned income, advances in gross income from 1990 to 1993 relate to increased reporting of accessibility problems, as defined by the ADA composite ($r=-.09$).²⁰⁶

²⁰¹ Cf. *id.* at 1535 n.6 (discussing a study of interplay between organizations and their legal environments based on nationwide data from 346 organizations and finding that organizations sensitive to their legal environments tend to conform, first symbolically, then institutionally, to legal norms to achieve legitimacy). "[B]y influencing organizations' environments, law has an important indirect effect on organizational behavior that goes significantly beyond the direct effect of law and legal sanctions." *Id.* An alternative explanation for the lack of a finding between the ADA composite and employment movement from 1990 to 1993 is that other forces independent of the ADA affect changes in employment and economic growth.

²⁰² *Id.* at 1569. See also John J. Donohue III, *Further Thoughts on Employment Discrimination Legislation: A Reply to Judge Posner*, 136 U. Pa. L. Rev. 523, 539 n.62 (1987) (suggesting that if Title VII stimulated favorable attitudinal changes, there would be additional benefits in reducing discrimination); Donohue & Heckman, *supra* note 105, at 1717 (noting that the Civil Rights Act of 1964 "at first, may not have changed the attitudes, but it appears to have altered the behavior, of discriminatory employers"); James J. Heckman & Brook S. Poyner, *Determining the Impact of Federal Antidiscrimination Policy on the Economic Status of Blacks: A Study of South Carolina*, 79 Am. Econ. Rev. 138, 173-74 (1989) (concluding that the federal government, through Title VII of the Civil Rights Act of 1964 and Executive Order 11246, was an agent of change in integrating the textile work force). Perceptions of ADA-related accessibility, as measured by the ADA composite did not relate solely to the age, gender, or minority status of the participants. Cf. Donohue & Siegelman, *supra* note 185, at 993-94 (claiming that because of raised expectations of equal treatment, women may be more likely to categorize their experiences as discriminatory).

²⁰³ There is also a trend of minority participants showing relative increases in gross monthly income from 1990 to 1993 ($r=.05$). Cf. Lynn A. Karoly, *The Trend in Inequality Among Families, Individuals, and Workers in the United States: A Twenty-five Year Perspective*, in *Uneven Tides* 54, 63 (Sheldon Danziger & Peter Gottschalf eds., 1993) (noting that real median income for men in 1989 was 10% below the 1973 peak and, depending on methodology, real median income for women grew 10-30% in the same period; also noting that women have experienced significant real wage gains over the past 25 years, with black men and women experiencing higher gains than white men and women from 1973 to 1989).

²⁰⁴ Higher skill levels relate to both integrated employment movement and economic growth for these participants ($r=.07$ and $.09$, respectively). Study is needed to explore the relation between earned income levels and the particular type of skill of persons with and without disabilities in comparable jobs. See *infra* Table 7. If effectively implemented, the ADA likely will increase the variability in economic growth for persons with disabilities. Economic equality is a major goal of the ADA.

²⁰⁵ Cf. *Toward Independence*, *supra* note 88, at 27 (noting that some governmental support programs discourage employment and encourage dependence); Shapiro, *supra* note 12, at 261 ("Social Security and Medicaid are based on out-of-date assumptions that severely disabled people simply need support payments to be attended by family or in a nursing home because they are close to death and can expect little more.").

²⁰⁶ See *infra* notes 192-207 and accompanying text (showing partial correlational findings and discussing employment movement and income differences, controlling for individual capabilities and qualifications). This finding also may echo Donohue and Siegelman's suggestion that a positive relationship exists among economic forces, income levels, and the ability to file a successful Title VII employment discrimination claim. Donohue & Siegelman, *supra* note 185, at 1001. Thus, with economic growth and awareness of the law of the ADA, the number of successful ADA lawsuits may rise. *Id.* (arguing that integrated

C. Predicting Employment Integration and Economic Opportunity: Regression Analyses

After examining the usefulness of the simple correlations, regression analyses were conducted to explore the overall predictive power of the model.²⁰⁷ The two primary regression analyses presented here assess the relationship between a set of predictor measures (the independent variables) and employment category in 1993 and earned income level in 1993 (the dependent variables).²⁰⁸

Table 6 shows the findings for the test of the model predicting degree of integration in 1993 employment category.

work forces produce litigation because historically, minorities and women have had no benchmark against which to measure equitable treatment).

²⁰⁷ Because of the reduced sample size and the results of the principal components factor analyses, *supra* note 168, the preliminary regression analysis presentation in the body of this Article excludes adaptive equipment and job/life satisfaction and choice variables. Standard regression diagnostics from the SAS Computer Program revealed no multicollinearity among the independent variables, and which data outliers could be dropped or adjusted. Exploratory regressions with the smaller sample sizes were performed with the job/life satisfaction and choice, adaptive equipment or accommodation needs variables, and the other 10 independent measures for both the employment category and earned income. For the employment category, with the addition of the consumer satisfaction variable, the $R^2=.235$, $F(11, 226) = 6.32$, $p < .001$, showed satisfaction to be a non-significant contributor ($p=.87$). The addition of equipment or accommodation needs variable the $R^2=.322$, $F(11, 1006) = 43.48$, $p < .001$ needs to be a nonsignificant contributor ($p=.79$). For income, the addition of the consumer satisfaction variable, the $R^2=.212$, $F(11, 210) = 5.15$, $p=.0001$; with the addition of adaptive equipment or accommodation needs variable the $R^2=.458$, $F(11, 907) = 69.67$, $p=.0001$.

²⁰⁸ See Empirical Study, *supra* note 2, at 213-17 (reviewing regression techniques); Cohen & Cohen, *supra* note 192, at 7 (explaining that multiple regression analyses describe relationships that characterize a complex set of variables in which a single dependent variable is predicted from scores on two or more predictor or independent variables); McDonnell et al., *supra* note 169, at 422-23 (describing the use of regression analysis similar to this project); J.S. Trach & Frank R. Rusch, Supported Employment Program Evaluations: Evaluating Degree of Implementation and Selected Outcomes, 94 *Am. J. Mental Retardation* 134, 138 (1989) (calling for multiple regression analyses similar to that conducted herein).

The independent variables in the linear regression models used to examine the findings here are entered simultaneously into the regression equation. This approach is more conservative statistically as opposed to using a step-wise or hierarchical regression model, because it places greater emphasis on the conceptual development of the working model than on the magnitude of the statistical effects. This strategy avoids bias as to the conceptual ordering or placement of independent variables in the regression model. Nevertheless, in many instances a sample size of participants as large as the present one often yields statistical significance for even the most conservative of approaches. Thus, the focus herein is on trends, directions, and magnitudes of the effects that appear. See Rosenthal & Blanck, *supra* note 161, at 1219-20 (evaluating aggregation issues). The independent measures chosen in the exploratory regressions were designed to represent each participant's status during the time period of the investigation (e.g., average health status or adaptive skill from 1990 to 1993). An alternative approach for future study is to examine relationships among the changes over time in independent and dependent measures.

TABLEÓ
TEST OF THE MODEL:
PREDICTING EMPLOYMENT CATEGORY (1993)

Variable	Regression Coefficient	t-value	p-value	Explained Variance ^o
Personal Background				
Age	-.005	-1.87	.07	.3%
Female	.08	2.00	.05	.4%
Minority	.04	0.74	.46	.1%
Capabilities & Qualifications				
Adaptive Skills	.009	9.32	.0001	8%
Health Status	.04	3.33	.001	1%
Inclusion Factor³				
Living Arrangement	.17	5.69	.0001	3%
Empowerment Factor				
Self-Advocacy	.04	0.73	.47	.1%
Family & Government Support	.005	1.34	.19	.2%
Job/Skill Educational Goals	-.000	-0.06	.96	0%
ADA Composite^b				
	-.04	-1.80	.08	.3%

For this model, $R^2 = .322$, $F(10,1007) = 47.86$, $p < .0001$

The test uses ten predictor variables: age, gender, race, adaptive skill, health status, living arrangement, self-advocacy, family and government support, job or skill educational goals, and the ADA composite. The dependent measure is degree of integration in 1993 employment category.²⁰⁹ A positive relationship between the dependent variable and a particular independent measure suggests that a higher level of integrated employment is associated with the independent variable.²¹⁰

The multiple R or R² for this regression equation is significant at less than the .0001 level.²¹¹

^o Explained variance is the square partial correlation, which is the unique variance accounted for by each variable after adjusting for the effects of all other variables in the model.

^a Job/life satisfaction & choice composite was tested separately because of reduced sample size and found not to contribute significantly to the model.

^b Composite score comprised of first principal component for Titles I-III

²⁰⁹ See supra note 91 (describing theoretical weights assigned to employment categories).

²¹⁰ Many combinations of these measures could be employed as variables in regression equations. The purpose of presenting this sample regression analysis is to illustrate how the composite measures here are useful for modeling aspects of the employment integration and opportunity. Cf. M.W. Brown & S.H.C. Du Toit, Models for Learning Data, in Best Methods for the Analysis of Change 47, 50 (Linda M. Collins & John L. Horn eds., 1991) [hereinafter Best Methods] (reviewing statistical aspects of longitudinal field investigations).

²¹¹ In the presentation of the findings, the Multiple R (R²) represents the relationship between the degree of integration in employment type and the set of predictor demographic and composite measures. R takes on values only between 0 and 1, with the former indicating no relationship and the latter indicating a perfect relationship between the variables. The F and t tests describe the level of confidence for the assertion that the linear relationship between the set of predictor and criterion variables is not zero in the sample population. See Cohen & Cohen, supra note 192, at 49-50, 104 (indicating that df refers to the "degrees of freedom" required for statistical significance testing). All tests of significance are two-tailed. "NS" refers to the result being

The finding suggests that the equation consisting of these independent variables explains approximately thirty-two percent (32%) of the variation in 1993 employment category for these participants.²¹² This preliminary test of the model serves as an exploratory point of comparison for future study. Presently, no baseline comparisons exist that assess the predictive power of this model. Other experimental studies show that effect sizes can be of practical importance even when they are so small as to have $R^2 = .00$.²¹³ The practical importance of the findings must be assessed therefore by additional studies.²¹⁴

The individual findings of the regression show that participants in more integrated employment in 1993 tend to be younger, women, have higher adaptive skills, and better health status. Also, these participants live in more integrated settings and report greater ADA-related accessibility limitations in work and daily life.

The findings illustrate that when performing multivariate analysis, as opposed to bivariate correlational analyses alone (as shown in Tables 4 & 5), a more enriched analysis emerges. The regression reveals that several combinations of the individual variables predict 1993 employment category. As the right column of Table 6 shows, adaptive skill, health status, and the degree of independence in living most strongly predict degree of integration in 1993 employment (combined explained variance is 12%), when controlling for the other variables in the model.²¹⁵ This finding suggests that these three variables, particularly adaptive skill, enhance the predictability of degree of integration in employment category. The more externally-driven empowerment variables, on the other hand, do not aid in the predictability of employment category.²¹⁶ At this preliminary stage of ADA implementation, other structural forces in or

statistically not significant at the $p < .10$ level, for a two-tailed test. Cf. Blanck, Judge Measure, *supra* note 165, at 672 n.85 (using statistical tools in an empirically based framework to study the courtroom behavior on trial results); Blanck, Scales of Justice, *supra* note 165 (same, but focusing on empirical study of Iowa bench trials); Rosenthal & Blanck, *supra* note 161, at 1224-25.

²¹² See Cohen & Cohen, *supra* note 192, at 3 (noting that regression yields measures of the magnitude of the whole relationship among the independent variables and their relationship to the dependent variable, e.g., integration in employment).

²¹³ See Rosenthal & Blanck, *supra* note 161, at 1224 (noting that this hypothetical finding of $R^2 = .00$, by way of example, is related to an experimental treatment method that reduces death rates by as much as 7 per 100 lives lost).

²¹⁴ See *id.* at 227-28 (arguing for ethical imperative of meta-analysis and replication of social science research).

²¹⁵ The explained variance for each independent variable represents the contribution of each variable in the model, controlling for the effects of the other variables. See Cohen & Cohen, *supra* note 192, at 39-43; Blanck, Scales of Justice, *supra* note 165, at 1155 n.179 (using similar model to calibrate trial judges' behavior). For the individual variables in the model, a conservative estimate of explained variance is computed by dividing the sum of squares (Type II in SAS computer program) by the corrected total sum of squares. Type II sum of squares reflects the variance accounted for, assuming the variable in question is entered last in the regression equation. The combined individual explained variance will be less than the total explained variance. Nevertheless, caution must be used in relying on standardized skill measures alone to predict the individual explained variance in employment integration. See Empirical Study, *supra* note 2, at 216-17.

Regressions also were conducted testing employment movement from 1990 to 1993. The same 10 predictor variables were used: age, gender, race, adaptive skill, health status, living arrangement, self-advocacy, family and government support, job or skill educational goals, and the ADA composite. The dependent measure is the degree of employment movement from 1990 to 1993. The R^2 for the regression equation is statistically significant: $R^2 = .054$, $F(10, 1007) = 5.70$, $p < .001$. The finding suggests that this combination of variables predicts employment movement for these participants. The R^2 here is small and explains only roughly five percent of the variance. The individual findings of this regression show that integrated employment movement from 1990 to 1993 is greater for participants who are younger, women, in better health, live in more integrated settings, and receive less job or skill educational goals. The ADA composite measure does not predict employment movement when controlling for the other measures in the model.

²¹⁶ Cf. Shapiro, *supra* note 12, at 180 (stating that changes will occur not by the law alone).

outside the shadow of the law may be better predictors of employment integration.²¹⁷

The second regression analysis assesses the relationship between the same ten predictor measures and the participants' earned income in 1993.²¹⁸ Table 7 illustrates the results of this regression.²¹⁹

²¹⁷ Closer examination of the findings for the ADA composite, analyzed separately for those participants not employed versus those in some form of employment (e.g., sheltered, supported, or competitive), show that 76% of those unemployed report no ADA-related accessibility problems, as compared to 54% of those in some form of employment reporting no problems (Chi Square test = 50.34, $p < .001$). This finding supports the suggestion that for many people with disabilities the experience of employment itself heightens the awareness of ADA-related accessibility barriers in work and daily life. Cf. Donohue & Sielegman, *supra* note 185, at 1033 ("[Employment integration] has not come about through direct changes in the law itself or the ways the courts have interpreted it [but rather] the nature of the protection provided by antidiscrimination legislation has been shaped by the behavior of plaintiffs, defendants, and the economy at large."); Edelman, *supra* note 15, at 1569 (asserting that "much of law's effect occurs in its shadow").

²¹⁸ See generally Empirical Study, *supra* note 2, at 213-15 (reviewing applicable regression techniques for this project); Cohen & Cohen, *supra* note 192.

²¹⁹ In actual dollars, earned monthly income in 1993 for these participants ranged from \$0 to \$900. The actual mean monthly earned income for those not employed was \$11 (86% earning no income), for those in sheltered workshops \$67 (24% earning no income), for those in supported employment \$150 (14% earning no income), and for those in competitive employment \$257 (3% earning no income).

TABLE 7
TEST OF THE MODEL:
PREDICTING MONTHLY EARNED INCOME (1993 LOG DOLLARS)²¹

Variable	Regression Coefficient Antilog ^b	t-value	p-value	Explained Variance ⁰
Personal Background				
Age	0.99	-2.00	.05	.4%
Female	0.96	-0.40	.69	0%
Minority	1.19	1.11	.27	.1%
Capabilities & Qualifications				
Adaptive Skill	1.05	18.29	.0001	27%
Health Status	0.97	-1.05	.30	.1%
Inclusion Factor^d				
Living Arrangement	1.10	1.23	.22	.2%
Empowerment Factor				
Self-Advocacy	1.16	1.08	.28	.1%
Family & Government Support	1.00	-0.31	.76	0%
Job/Skill Educational Goals	0.97	-2.51	.02	.7%
ADA Composite⁶	0.75	-5.16	.0001	3%

For this model, $R^2 = .4573$, $F(10,908) = 76.50$, $p < .001$

The explanatory power of the R^2 is again substantial: It is significant at less than the .001 level²²⁰ and predicts forty-six percent (46%) of the variance in the model.²²¹ Several independent measures predict 1993 earned income when controlling for the other measures in the model. Younger participants, with higher skill scores, receiving fewer job or skill educational goals,

^a Monthly earned income (actual) from employment ranged from \$0 to \$900, with a mean of \$66. The regression analysis uses log dollars.

^b For each unit change in the independent variables, the corresponding 1993 income should be multiplied by the 'regression coefficient antilog.' A regression coefficient antilog of 1.0 signifies no effect. Antilogs above 1.0 indicate a positive increase in income associated with an increase in the independent variable. Antilogs below 1.0 indicate a corresponding decrease in income.

^c Explained variance is the squared partial correlation, which is the unique variance accounted for by each variable after adjusting for the effects of all other variables in the model.

^d Job/life satisfaction & choice composite was tested separately because of reduced sample size and found significant (regression coefficient antilog = 1.15, $t = 3.06$, $p = .003$). However, the predictive value of the overall model was decreased ($R^2 = .21$).

^e Composite score comprised of first principal component for Titles I-III. FNe. Explained variance is the squared partial correlation, which is the unique variance accounted for by each variable after adjusting for the effects of all other variables in the model.

²²⁰ This test reflects findings for those individuals reporting 1993 wages and income. Again, because of reduced sample size and the results of the principal components factor analyses, supra note 168, the job or life satisfaction, choice, and equipment or accommodation variables are excluded from the regression analyses presented in this Article. An exploratory regression with the smaller sample sizes was performed with the job or life satisfaction, choice variables, and the other 10 independent measures for 1993 earned income. With the addition of the consumer satisfaction variable, the $R^2 = .213$, $F(11, 210) = 5.15$, $p < .001$, when controlling for the other variables the satisfaction and choice variable predicts 1993 earned income, $t = 3.06$, $p = .003$. Another exploratory regression including the original 10 independent measures and the equipment or accommodation needs variable showed $R^2 = .458$, $F(11, 907) = 69.67$, $p < .001$, and showed the equipment/accommodation variable to be a nonsignificant contributor ($p = .28$).

²²¹ See Cohen & Cohen, supra note 192, at 3.

and reporting limited accessibility in employment and daily life, earned more income in 1993.²²² The right column of Table 7 shows that adaptive skill alone strongly predicts 1993 earned income (explained variance is 27%) when taking into account the other variables in the model. Skill level is thus a much stronger predictor of earned income than it is of the degree of integration in employment.

Together, the findings of the correlational and regression analyses show predictive relationships on measures relevant to an improved understanding of employment integration and economic opportunity for these participants. The analyses begin to identify factors that may help predict changes in both measures during ADA implementation.²²³ The variables tested in combination and separately explain a good deal of the complexity in predicting employment integration and economic opportunity in the model.

I). Summary Profiles of Improvers, Regressors, and Stayers

In prior articles in this investigation, descriptive analyses were used to highlight the "profiles" of participants in the four employment categories-not employed, sheltered workshop, supported employment, and competitive employment.²²⁴ This section describes the profiles of those participants showing improvement, regression, or no change in employment integration from 1990 to 1993.²²⁵ The profiles do not represent a prescriptive list of the measures necessary to predict a participant's employment movement.²²⁶ Rather, they provide a description of the

²²² The pattern of findings is consistent with those found for predicting changes in monthly gross income; that is, participants experiencing economic advancement are younger, have higher skill levels, and perceive accessibility limitations in employment and life activities. See *infra* note 223.

²²³ The findings of the regression are not meant to suggest a hard and fast method for establishing the employment potential of various persons with disabilities. Instead, the goal is to demonstrate a framework to aid in the description of persons with disabilities in varying types of employment settings. The analyses highlight the complexity of the study of behavior of persons with disabilities.

A regression test of changes in monthly gross income from 1990 to 1993 also was conducted. In actual dollars, gross monthly income in 1993 (income from employment and entitlements) for these participants ranged from \$0 to \$1851. The actual mean monthly gross income for those not employed was \$221 (2% earning no income), for those in sheltered workshops was \$363 (2% earning on income), for those in supported employment was \$466 (4% earning no income), and for those in competitive employment was \$598 (0% earning no income). For related analyses for earned income, see *supra* note 220 and accompanying text (additional findings on file with author).

This regression test uses the same 10 independent predictor variables as in Table 7. The R² for the test is statistically significant: R²=.0482, F (10, 813) = 4.12, p=.0001, suggesting that the combination of variables predicts income differences for these participants. The test reflects findings for only those individuals reporting wages and income. The results also show that the monthly gross incomes of younger participants increase over time. Those with increasing incomes have higher skill scores and score lower on the ADA composite measure. Thus, income advances are evidenced by young and "qualified" participants who perceive accessibility barriers in employment and everyday life. The findings are consistent with studies of employment discrimination litigation showing that younger qualified individuals experience less economic discrimination than do older individuals. See Donohue & Siegelman, *supra* note 185, at 993.

²²⁴ See Empirical Study, *supra* note 2, at 162,208-13.

²²⁵ Future tests of the model will examine several data years simultaneously to assess more detailed trends over time. See, e.g., Rosenthal, *supra* note 168, at 95-97 (discussing cross-lag statistical analysis over time); Kenneth Jones, *The Application of Time Series Methods to Moderate Span Longitudinal Data*, in *Best Methods*, *supra* note 210, at 75, 75-87 (discussing time series methods to analyze longitudinal data).

²²⁶ This is due to the exploratory nature of the analyses, which are sometimes based on relatively small and uneven cell sample sizes. Any interpretation or generalization of these profiles to other samples, or to other persons with disabilities covered by the ADA, must be made with extreme caution. Predicting a person's employability is itself controversial, especially for persons with mental retardation. See Rogan & Murphy, *supra* note 196, at 39-42 (noting that profiles may reflect the quality of existing services more than they predict employment potential); Empirical Study, *supra* note 2, at 162 (same). The profiles are not meant to suggest the bases for job selection criteria as set forth in 29 C.F.R. § 1630.10.

preliminary findings about employment integration and economic opportunity under the ADA.²²⁷

Table 8 summarizes the findings for the three categories of participants: "improvers," "stayers," and "regressors."²²⁸

²²⁷ The correlations in Table 4 more precisely identify the magnitude of the findings.

²²⁸ The Chi Square statistic tests differences between the three groups. See Rosenthal & Rosnow, *supra* note 3, at 74; *Empirical Study*, *supra* note 2, at 208-13.

TABLE 8
SUMMARY EMPLOYMENT PROFILES OF PARTICIPANTS:
IMPROVERS, STAYERS, AND REGRESSORS

Variable	Improvers	Stayers	Regressors	p-value from Chi Square test ⁶
Total (%)	276 (25%)	660 (59%)	174 (16%)	
Personal Background				
Age (% above median)	49%	55%	54%	.24
Female	46%	46%	28%	.001
Minority	15%	16%	16%	.98
Capabilities & Qualifications³				
Adaptive Skill High	55%	47%	54%	.06
Health Status High	59%	49%	44%	.003
Equipment/Accommodation Satisfied	89%	92%	91%	.57
Inclusion Factors				
Living Arrangement Integrated ¹³	57%	43%	38%	.001
Job/Life Satisfaction & Choice High	50%	47%	59%	.43
Empowerment Factors				
Self-Advocacy Involvement	48%	35%	40%	.001
Family & Government Support High	61%	48%	50%	.003
Job/Skill Educational Goals High	50%	46%	50%	.49
Legal Factors Satisfied				
ADA Composite Score High ^c	61%	61%	65%	.56
Title I	79%	80%	84%	.40
Title II	79%	80%	79%	.85
Title III	68%	66%	75%	.08
Employment Category Integrated¹¹	45%	2%	32%	.001
Monthly Income High	52%	50%	50%	.88

Several trends emerge. First, although the majority of participants (59%) remain in the same employment category over the period, 25% of the participants improve while 16% regress. However, substantially more men (12%) than women (28%) regress in their employment category.²²⁹ This finding highlights the suggestion that women relative to men made (or at least retained) substantial advances in employment integration over the 1990 to 1993 period.²³⁰

⁶ Chi Square tet with two degrees of freedom

^a Composite score comprised of first principal component for adaptive skills and health status. A median-split defined low and high score categories for the measures in the model.

^b Institutional living = low integration; family, group, & independent = high integration.

^c Composite score comprised of first principal component for Titles I-III.

^d Not employed & sheltered employment = low integration; supported and competitive employment = high integration.

²²⁹ See infra notes 246-50 and accompanying text (discussing the implications of findings for advancement of women with disabilities in the professions). But see supra notes 92-99 and accompanying text (noting that marginal unemployment rates decline overall, particularly for women and minorities).

²³⁰ The findings also show that gender is not related to capabilities and qualifications scores or to health status. However, women are more likely to reside in integrated settings ($r = .12$, $p = .0001$) and score higher on the empowerment composite ($r = .07$, $p = .03$).

Consistent with earlier findings, "improvers" have higher skill scores²³¹ and better health status. They also live more independently than regressors, are more involved in self-advocacy, and receive more family and governmental support. Additionally, a high proportion of improvers move up from integrated job categories (45%). Stayers, on the other hand, overwhelmingly remain in nonintegrated employment settings (98%).²³² Thus, the majority of those not experiencing any employment movement stay in the "black hole" of nonintegrated work settings, leading to a possible cycle of failure, segregation, and personal frustration.²³³

Table 9 highlights the "black hole" observation that many qualified persons with disabilities stagnate in nonintegrated employment settings.

TABLE 9
EMPLOYMENT MOVEMENT:
RELATIVE PERCENTAGE CHANGE FROM 1990 STATUS

1990 Employment Status	1993 Employment Status			
		Nonintegrated ²¹	Integrated ¹³	Row Total
Nonintegrated		88% (904)	12% (126)	100% (1030)
Integrated		64% (51)	36% (29)	100% (80)

$X^2(1) = 31.78, / \gg < .001$ (test of symmetry)

Table 9 displays the relative percentage change in participants' employment status from 1990 to 1993. Employment is categorized as nonintegrated (none or sheltered) or integrated (supported or competitive).

Eighty-eight percent (88%) of those participants in nonintegrated settings in 1990 remained in those settings in 1993 (the "black hole effect").²³⁴ The comparatively low "survival rates" for those in integrated employment-36% of those in integrated settings in 1990 remained in this category in 1993-amplifies this problematic finding.²³⁵

²³¹ Cf. Findings for Table 7, supra (showing that participants with higher adaptive skill earned more income in 1993). Note that "regressors" also show relatively high levels of adaptive skill (54% show high skill).

²³² Furthermore, the participants tending to be in more integrated employment settings are those who either have improved (45%) or regressed (32%). Cf. Altman & Cunningham, supra note 85, at 305 (noting dynamic nature generally of movement by persons with mental retardation in residential settings).

²³³ Shapiro, supra note 12, at 183. See also Parent, supra note 139, at 27 (citing Moseley's 1988 study for the proposition that individuals with severe mental retardation who were previously in sheltered employment and moved to supported employment are more satisfied). Joseph Shapiro accurately outlined the societal consequences of this "black hole" when he wrote: "When disabled people are herded into sheltered workshops to earn below-minimum-wage salaries for piecework, employers lose the impetus to hire good workers, and taxpayers foot the bill." Shapiro, supra note 12, at 183.

^a None and sheltered workshop status

^b Supported and competitive status

²³⁴ Cf. Kathryn Flaring & David Lovett, A Study of the Social and Vocational Adjustment of Young Adults with Mental Retardation, 25 Educ. & Training in Mental Retardation 52, 52 (1990) (finding that 57% of 58 participants with mental retardation were placed in sheltered workshops and paid below minimum wage).

²³⁵ Cf. Kathryn Flaring & David Lovett, A Study of the Social and Vocational Adjustment of Young Adults with Mental Retardation, 25 Educ. & Training in Mental Retardation 52, 52 (1990) (finding that 57% of 58 participants with mental retardation were placed in sheltered workshops and paid below minimum wage).

Table 9 also shows that 64% of the participants in integrated employment in 1990 regressed to nonintegrated settings by 1993.²³⁶ At the same time, only 12% of those in nonintegrated employment in 1990 moved to integrated employment by 1993. The findings are consistent with studies suggesting that persons with disabilities experience high levels of movement in and out of the competitive labor market.²³⁷

Lastly, empirical study is crucial to assess the relation among ADA implementation, "black hole" unemployment trends for persons with disabilities, and the subsequent filing and resolution of discrimination claims with the EEOC.²³⁸ Donohue and Siegelman have analyzed the changing nature of employment discrimination litigation from 1970 to 1989. They conclude that, prior to ADA implementation, worsening employment conditions, reflected by higher unemployment rates, led to the filing of more employment discrimination lawsuits.²³⁹ The high unemployment levels and low rates of integrated employment revealed in Donohue and Siegelman's investigation suggest the need for further empirical study in the present context. Ultimately, such analyses may foster dialogue about ADA implementation so that Title I discrimination disputes may be avoided or resolved without resort to costly litigation.²⁴⁰ This dialogue will become increasingly important, given the rising numbers of young, qualified, and independent persons with disabilities in the emerging workforce highlighted in the present investigation.²⁴¹

IV. IMPLICATIONS

This Article is part of a series describing an empirical investigation of employment integration, economic opportunity, and the ADA. The investigation is exploratory with many of the preliminary findings refined here. The changing views of policy makers, employers, and the disabled community regarding the integration of persons with disabilities into the mainstream of society influences the scope of this longitudinal investigation.²⁴²

One long-term goal of the investigation is to refine the descriptive model to include persons with other disabilities, living in rural and urban settings, and participating in different types of

²³⁶ The investigation conducted separate analyses to explore the relative percentage changes from 1990 to 1993 in living status for these participants. The following trends emerged: (1) 76% of those in institutional living in 1990 still remained in 1993; (2) 61% of those in family or foster living in 1990 still remained in 1993; (3) 75% of those in group homes in 1990 still remained in 1993; and (4) 32% of those in independent living in 1990 still remained in 1993 (analyses on file with author).

²³⁷ This is particularly true when appropriate supports and services are not provided. See Shafer et al., *supra* note 196, at 106-09 (tracking 302 individuals with mental retardation and finding (1) that 30% of these individuals were employed in their original employment category 24 months following initial placement, and (2) that there was no significant relation between level of retardation and employment status 24 months after placement).

²³⁸ See *infra* notes 284-89 and accompanying text (discussing trends in the filing of ADA claims and urging further study).

²³⁹ Donohue & Siegelman, *supra* note 185, at 987-88 (suggesting that the availability of employment serves as an alternative to litigation, but not analyzing ADA claims).

²⁴⁰ See *supra* text accompanying notes 7-15 (showing the need for empirical study of ADA); Mark K. O'Melveny, *The Americans with Disabilities Act and Collective Bargaining Agreements: Reasonable Accommodation or Irreconcilable Conflicts*, 82 Ky. L.J. 219, 225-26 (1994) (arguing that the best way to resolve ADA disputes is through full communication among all parties).

²⁴¹ Cf. Donohue & Siegelman, *supra* note 185, at 992-93 (citing studies showing that younger, well-educated women are more likely to report employment discrimination); Peter Kuhn, *Sex Discrimination in Labor Markets: The Role of Statistical Evidence*, 77 Am. Econ. Rev. 567, 568 (1987) (study of same).

²⁴² See generally Empirical Study, *supra* note 2.

employment.²⁴³ It is clear from the experience with the 1964 Civil Rights Act that laws alone cannot guarantee integration.²⁴⁴ Future analyses must explore, for example, the extent to which individuals with severe disabilities are forced to assume a victim status, rather than the one of empowerment and inclusion envisioned by the law.²⁴⁵

A. Five Central Findings

The investigation sets forth five central findings. These core findings have implications for members of the disability community, employers, policy makers, and courts.

1. Employment Integration. The findings show that from 1990 to 1993, the majority of participants remain in the same type of employment category (59%), while one-quarter (25%) move to more integrated employment settings and approximately one-sixth (16%) regress into less integrated employment settings. Women, relative to men, show substantial gains in integrated employment and significant declines in marginal unemployment rates.²⁴⁶ Relative unemployment levels for all participants decline, and the proportion of participants in competitive employment increase significantly. The regression analyses show that higher skills and capabilities, better health status, and independence in living predict greater employment integration in 1993 for these participants.

In the United States, current estimates of unemployment levels for persons with disabilities range from fifty to ninety percent.²⁴⁷ The lack of access to integrated and competitive employment opportunities is a primary reason for discrimination against qualified persons with disabilities. The implementation of Title I is a major policy step toward reducing chronic unemployment for millions of qualified persons with disabilities. Title I is also a tool that affords qualified individuals with disabilities the opportunity to experience job stability and advancement without hitting a "glass ceiling."²⁴⁸

Paul Wehman argues that while the ADA cannot guarantee a job for every person with a disability, it can "provide a framework for improved employer attitudes [and] reduced discriminatory practices."²⁴⁹ The findings from the research model support this suggestion, showing that those participants attaining integrated employment in 1993 demonstrated a high degree of skill and independence. However, participants in more integrated employment settings also are more likely to report limited accessibility to work and daily life activities. This suggests that there may be important differences in what policy makers, researchers, and others know about ADA implementation and what is actually happening in the disability community.²⁵⁰

²⁴³ See, e.g., Watson, *supra* note 37, at 32 (noting that people with disabilities are even less homogenous than other minority groups).

²⁴⁴ Shapiro, *supra* note 12, at 180-81.

²⁴⁵ Cf. Bumiller, *supra* note 36, at 433 (discussing the need for individuals who suffer discrimination to assume the role of victim before filing a claim).

²⁴⁶ E.g., finding herein that women's marginal unemployment rates decline from 36% to 29%.

²⁴⁷ See Paul Wehman, *Employment Opportunities and Career Development*, in *The ADA Mandate for Social Change* 145, 154 (Paul Wehman ed., 1993) [hereinafter *ADA Mandate*] (providing estimate of unemployment levels); Harris Poll-1994, *supra* note 95, at 37 (outlining number of persons with disabilities in the work force).

²⁴⁸]. See *Supported Employment: A Critical Analysis of Individual Placement Approaches*, in *Supported Employment*, *supra* note 85, at 49, 54-58 (discussing outcomes of the individual approach, including wages, integration, and ongoing support needs).

Despite being subjected to the continued reality of structural and attitudinal discrimination, the post-ADA pioneers of the disability community may be even more likely to assert their civil rights in the future.

2. Economic Opportunity. From 1990 to 1993 the gross incomes of all participants increase significantly. The rise in gross income requires further examination; for example, comparison is needed of changes in the gross incomes of similarly situated persons without disabilities.

Younger participants show particularly substantial increases in gross and earned income and in degree of integrated employment. But the strongest independent predictor of 1993 earned income is skill level, which accounts for more than half of the predictive power of the regression model. Yet, inclusion factors, such as independence in living and job or life satisfaction, and empowerment factors, such as self-advocacy and family support, also predict 1993 earned income levels. At the same time, participants with higher 1993 earned incomes report more limited accessibility to work and daily life activities.

Title I is meant to foster integrated employment opportunities that pay fair wages to qualified employees with disabilities. The findings support the conclusion of others that earned income is a critical factor affecting the satisfaction and quality of life for persons with disabilities.²⁵¹ Yet prior research also shows significant wage disparities between people with and without disabilities in comparable jobs.²⁵² Over time, these income disparities often act as disincentives for many qualified individuals with disabilities to work. The findings here may reflect this trend, showing that participants with higher 1993 earned incomes report more limited access to competitive work, even controlling for, among other variable, individual skill levels.

3. Individual Growth. From 1990 to 1993, participants improve substantially in their capabilities and qualifications, level of inclusion and empowerment in society, and level of accessibility to society. Three comparative findings are of particular relevance to ADA implementation: (1) the proportion of participants involved in self-advocacy programs increases dramatically, roughly two-fold; (2) the reported need for adaptive equipment accommodations decreases; and (3) reported accessibility to work and daily life, as defined by Titles I, II, and III of the Act, increases. These findings illustrate encouraging trends on a variety of indicators related to the core goals of the ADA, such as equal opportunity, access, and satisfaction with work and daily life.

The goal of the ADA is to eliminate the segregation faced by individuals with disabilities throughout society. Even prior to the ADA, progress was made toward this goal. For instance, the number of persons with mental retardation living in segregated institutions declined from 195,000 in 1967 to 88,000 in 1989.²⁵³ Although ADA implementation may accelerate the trend toward community integration, the present findings demonstrate that more work is needed.²⁵⁴ In

²⁵¹ Id. at 53. Harris Poll-1994, supra note 95, at 108. Adults with disabilities perceive insufficient finances as their most serious problem (67%- problem; 40%-major problem). The next most frequently cited problems are lack of full social life (51%) and inadequate health insurance (26%). Id.

²⁵² See Emerging Work Force, supra note 2, at 754, 774.

²⁵³ For a review, see Steven J. Taylor & Robert Bogdan, Promises Made and Promises To Be Broken, in ADA Mandate, supra note 247, at 255.

²⁵⁴ The investigation assumes that all individuals with disabilities are capable of and have a right to integrated living.

particular, although integrated living is a strong predictor of employment integration and economic growth, the majority of participants continue to live in nonintegrated settings. At the same time, however, from 1990 to 1993 the number of participants residing independently in the community increased nine-fold.²⁵⁵

4. Black Hole Effect. Eighty-eight percent of those participants not employed or employed in nonintegrated settings in 1990 remained in these settings in 1993. In addition, the majority of persons in integrated employment in 1990 regressed to nonintegrated settings by 1993 (64%). A relatively small proportion of participants in nonintegrated settings in 1990 moved to integrated settings by 1993 (12%). Roughly one-third of those participants in integrated employment in 1990 remained in that setting in 1993 (36%). Substantially more men than women regress in the degree of employment integration.

The findings reflect the problems of chronic unemployment and underemployment faced by many qualified persons with disabilities. Enhanced strategies are needed to assist the millions of qualified persons with disabilities entering the work force. Evaluation and placement services are needed to identify qualified individuals with disabilities and prepare them for competitive employment.²⁵⁶ Job retention and advancement strategies are needed to help individuals with disabilities keep jobs and achieve their full potential. These strategies require input from individuals with disabilities, their families, employers, and others.

5. Power of the Research Model. For these participants, the individual factors in the model, in combination and alone, predict aspects of employment integration and economic opportunity. There is more to be learned about how the model variables work together and how they independently predict employment integration and economic opportunity in the context of ADA implementation.²⁵⁷ The developing empirical research cannot yet inform policy makers, researchers, the disability community, employers, and others about many of the complex issues related to ADA implementation. The primary means for addressing the emerging questions is to replicate existing empirical studies and to develop new ones. Together, these studies can provide more cumulative and informed views.

B. Next Steps

Assessing true employment integration is, of course, a monumental task.²⁵⁸ No law, even one as

²⁵⁵ See also Preliminary Status Report, *supra* note 9, at 120 (summarizing national trend for treatment of persons with mental illness from institutional to community based care).

²⁵⁶ See Pamela S. Wolfe, Supported Employment: A Review of Group Models, in Supported Employment, *supra* note 85, at 63, 64-65 (providing list of studies reviewed for group model analysis). Harris survey data from 1994 indicate that a majority of employed adults with disabilities found employment through personal contacts (52%). Harris Poll-1994, *supra* note 95, at 50. Only 12% found employment through employment placement services that are mainstreamed and specialized for people with disabilities. *Id.* This disparity indicates the need for increased effort at improving current employment placement services for adults with disabilities; it could also demonstrate a reality common to the search for employment by all people, with or without disabilities.

²⁵⁷ See, e.g., Vocational Integration, in Supported Employment, *supra* note 85, at 241, 245 (discussing model of vocational integration for persons with disabilities). Note that "power" does not refer here to the concept of statistical power, but rather to the potential usefulness of the model.

²⁵⁸ Thirty years after the passage of the Civil Rights Act of 1964, scholars continue to assess whether positive changes are attributable to the law. See, e.g., Butler & Heckman, *supra* note 94, at 235 (arguing that there is little evidence that government antidiscrimination policy has any impact on eliminating black and white wage differentials); Heckman & Poyner, *supra* note 202, at 167-73 (concluding that federal policy was a significant factor in the gains for black citizens in South Carolina); Richard A.

far-reaching as the ADA, is likely the sole reason for social change.²⁵⁹ Researchers must assess whether actual change or merely the appearance of change is occurring as a result of the ADA.²⁶⁰ The five central findings illustrate that many factors are involved in explaining a substantial amount of information about employment integration and economic opportunity.²⁶¹

The five central findings illustrate also that for many of these participants with disabilities, employment integration is a function of experience in, and attempts at, competitive work. At the same time, the findings show the stagnation facing many qualified participant "stayers," that is, young participants with high skill scores in nonintegrated work settings.²⁶² The findings also support previous research showing the high degree of unemployment and movement of qualified individuals in and out of the labor market.²⁶³ In addition, they may reflect the reality that, after the passage of the ADA, many qualified persons with disabilities are subject to the same economic conditions, cycles and pressures as people without disabilities.²⁶⁴

The present findings support previous studies showing rising income levels for persons with disabilities since the mid-1980s.²⁶⁵ However, gains in income for persons with disabilities are often unevenly distributed, with nonwhites remaining relatively worse off²⁶⁶ The National Council on Disability finds that individuals who are members of minority groups and who have disabilities often experience double discrimination or even triple discrimination and that it is

Posner, *The Efficiency and Efficacy of Title VII*, 136 U. Pa. L. Rev. 513, 519-20 (1987) (arguing that the most responsible conclusion is that Title VII effects are unknown); Rose, *supra* note 105, at 1169 (noting that it is probably not possible to prove that the Civil Rights Act is responsible for positive changes).

²⁵⁹ Cf. Edelman, *supra* note 15, at 1545 ("Legal change engenders a process of institutionalization whereby new forms of compliance are diffused among organizations and gradually become ritualized elements of organizational governance.").

²⁶⁰ *Id.* at 1539 (concluding that Title VII leaves open the possibility for covered entities to create the appearance of compliance without actual change to the composition of their work force).

²⁶¹ Although the findings show dramatic changes from 1990 to 1993 on many of the measures, after 1993 changes may occur at a less dramatic pace. Cf. Cook & Campbell, *supra* note 166, at 137-46 (noting regression discontinuity design effects over time). In the absence of empirical information, changes will be guided increasingly by case-by-case judicial interpretations of the Act. See Edelman, *supra* note 15, at 1547, 1569 (noting that compliance with Title VII law will not follow a perfectly linear pattern); see also BNA Daily Labor Report, 1993 DLR 89 d8 (May 11, 1993) (noting that discrimination charges filed with the EEOC in 1993 were 20% higher than during the same time in the previous year, that the vast majority of the new charges were brought under the ADA, and that discriminatory discharge was the leading issue alleged in the ADA claims). This situation may be exacerbated because the EEOC has played a "passive role" in employment discrimination lawsuits filed prior to the passage of the ADA. Donohue & Siegelman, *supra* note 185, at 1000.

²⁶² Participants either improving or regressing in employment tend to move in or out of integrated employment settings. See Table 8. See also Table 9 (showing unique explained variance of several independent measures accounting for employment integration and earned income while statistically holding constant adaptive skill level). Cf. Richard J. Herrnstein & Charles Murray, *The Bell Curve: Intelligence and Class Structure in American Life* 162-66 (1994) (arguing that "smarter workers are typically more productive workers" and men out of the workforce because of physical disability tend toward low cognitive ability).

²⁶³ See Shafer et al., *supra* note 196, at 106 (showing that after one year, only 50% of supported employees still worked for their original employer).

²⁶⁴ The implementation of Title I actually may make it possible to better predict employment integration and economic growth for persons with disabilities because the range of opportunity is less restricted than it was before the Act became law. The findings suggest that the "shadow" of the ADA already may have increased the variability of opportunities and options. The availability of opportunities for these participants, both good and not as good, makes it possible to better predict the relation among the measures with employment integration and economic opportunity. Further analyses of these trends over time will help monitor the impact of the ADA.

²⁶⁵ See West, *supra* note 8, at 4 (citing studies). Future time-series analyses will further address this question.

²⁶⁶ *Id.*

difficult to discern the causes of this discrimination.²⁶⁷

Additional study is required to determine relative rates of income increases for women, minorities, and other disadvantaged groups with disabilities.²⁶⁸ The present findings do not suggest gross income disparities during the period between 1990 and 1993 based on gender or race alone.²⁶⁹ Comparative studies of persons who are members of minority groups with and without disabilities in similar jobs are needed.²⁷⁰ Careful assessment must continue of the economic growth, or lack of growth, experienced by persons who are members of minority groups with and without disabilities.²⁷¹

Preliminary research by others also suggests a declining trend in labor market opportunities for low-skilled workers with disabilities in the 1980s.²⁷² Interdisciplinary study addressing the economic factors and structural changes in the labor market that influence employment integration and economic opportunity for persons with and without disabilities is needed. These analyses should include factors such as (1) types of jobs attained (entry level, service-related, or production); (2) geographic differences in job markets and seasonal hiring patterns; (3) turnover, retention, wage, and promotion rates; (4) availability of transportation to work; and (5) the provision of work-related benefits, such as health and life insurance, and pension plan participation.²⁷³

Many economic and social benefits and challenges associated with the ADA remain to be

²⁶⁷ See ADA Watch, *supra* note 13, at 63. ADA Watch also reports that minorities with disabilities have higher unemployment rates, lower participation in disability programs, and tend not to know their rights under nondiscrimination laws. *Id.* Future analyses in the present investigation will explore these trends for these participants.

²⁶⁸ See generally Zirpoli et al., *supra* note 144 (finding that African-American women with disabilities are disproportionately disadvantaged in employment opportunities). In the present investigation, minority participants tended to be relatively younger, compared to nonminority participants ($r = -.07$, $p = .015$, $n = 1095$: intercorrelations among independent measures available from author). Sub-group demographics and trends in employment integration need further study before any definitive conclusions can be drawn. See, e.g., Philip G. Wilson et al., *Analysis of Minority-Status Supported Employees in Relation to Placement Approach and Selected Outcomes*, 29 *Mental Retardation* 329, 331 (1991) (finding that minority-status supported employees were younger, had higher skill scores, and earned more wages per month than did nonminority supported employees).

²⁶⁹ See *supra* Tables 4 & 5 and accompanying text.

²⁷⁰ E.g., Interpretive Guidance on Title I of the Americans with Disabilities Act, 56 Fed. Reg. 35,740 (July 26, 1991) (complementing case-by-case approach set forth by EEOC for resolving ADA discrimination claims). See generally Steven J. Rubinsky, *The Use of the McCarron-Dial Work Evaluation System to Predict Success in Sheltered, Supported, and Competitive Employment Settings*, 24 *Voc. Eval. & Work Adjustment Bull.* 129 (1991) (finding a significant positive relation between intellectual abilities and degree of integration in employment).

²⁷¹ 29 C.F.R. § 1630 app. (1991) (stating that the ADA is about enabling all persons with disabilities to compete in the workplace based on performance standards and requirements identical to those that a covered entity expects of persons who do not have disabilities, subject to reasonable accommodation). There is debate as to whether people with disabilities, like those without disabilities, should have the "choice" to work. Wehman, *supra* note 247, at 54.

²⁷² Preliminary Status Report, *supra* note 9, at 109-10 (summarizing research using earnings levels of workers as a measure of the demand for their services, and concluding that "workers with limited skills who also have disabilities are doubly disadvantaged").

Professors Krueger and Kruse propose a comparative study to investigate the labor market effects of computer skills held by people with severe disabilities, specifically spinal cord injuries. The results of the survey of people with disabilities would be compared with the results of a survey of persons without disabilities in the same employment area. Completion of the investigation is anticipated in early 1995. See Alan Krueger & Douglas Kruse, *Severe Disability, Labor Market Outcomes, and Computer Skills* (1994) (unpublished manuscript, on file with the author).

²⁷³ Subsequent analyses in this project examine wage data of Oklahomans without disabilities in comparable jobs. See Oklahoma Employment Sec. Comm'n, *Oklahoma Wage Survey* (1993) (data on file with author).

discovered and need to be documented.²⁷⁴ Adequate economic data examining the effect of the population of young, qualified persons with disabilities able to join the work force is not available.²⁷⁵ This study highlights an "emerging workforce" of young, qualified participants with disabilities, reflecting a new generation of persons who have experienced mainstreamed education and whose families have advocated for their rights.²⁷⁶

Another area of concern focuses on individuals with disabilities who are currently employed but who are not reasonably accommodated under the ADA.²⁷⁷ For persons with mental retardation and other disabilities, providing reasonable accommodations in the workplace is not a one-time initiative. The process requires an ongoing adjustment to the needs of the employee and the employer.²⁷⁸

The findings for the ADA composite measure foreshadow the need for further study of strategies

²⁷⁴ See, e.g., Back & Spine-Related Disability, *supra* note 57, at 101 (noting that the most common ADA claim involves a back or spine disability, the economic implications of these disabilities, and their relationship to the ADA); Peter D. Blanck, Commentary: ADA-Separating Fact From Fiction, 31 FYI 4 (1993) (illustrating the benefits of emerging technology to people with and without disabilities and new consumerism of people with disabilities); Peter D. Blanck, Emphasize the Facts About Disabilities Act, Des Moines Reg., Oct. 19, 1993, at 7A (same); cf. Edelman, *supra* note 15, at 1534-35 (noting unintended positive effects of law). See generally Jack A. Stark & Tammi L. Goldsbury, Analysis of Labor and Economics: Needs for the Next Decade, 26 Mental Retardation 363 (1988).

²⁷⁵ See NISF1 Update, New Directions (Nat'l Ass'n of State Directors of Developmental Disabilities Servs., Alexandria, Va.) June 1991, at 1, 8 (stating that in 1990, 15,000 persons with severe disabilities were employed under the National Industries for the Severely Handicapped programs, earning almost \$50 million in wages); Kathleen Teltsch, As the Labor Pool Dwindles, Doors Open for the Disabled, N.Y. Times, June 22, 1989, § A, at 1 (quoting Senator Harkin's estimate that the ADA would help find jobs for 8.2 million persons with disabilities); see also ADA Watch, *supra* note 13, at 65-67 (stating that the data collected by the Social Security Administration, such as the Survey of Disability and Work and the Survey of Income and Program Participation (SIPP), are inadequate); National Council on Disability, Meeting the Unique Needs of Minorities with Disabilities: A Report to the President and to Congress 17, 49 (1993) (finding a lack of "hard data" on minority persons with disabilities and recommending research with sampling techniques that allow analysis of smaller samples). See generally Jon Fortune et al., Job Placement Results of a Profoundly Rural State Using Job Training and Partnership Act and a Sheltered Workshop, 9 Int'l J. Rehab. Res. 269 (1986).

A goal of this investigation is to present a framework that allows replication of the findings here with other populations of persons with disabilities. Study of the ADA is a task that involves assessment of social, psychological, political, economic, and other individual and group variables. It is misleading to suggest that the present research shows a "cause and effect" relationship between the ADA and the integration into society of persons with disabilities. Prior critiques of the law assert broadly that the law is not helping those it was intended to help or that it is a boon for employment litigation. But study is needed of the thousands of potential lawsuits that were not brought because of the Act and those that were resolved without resort to litigation, particularly in light of the potential savings full employment of persons with disabilities could bring to the United States. See Paul Wehman & Mark Hill, Competitive Employment for Persons with Mental Retardation, in *Economics, Industry and Disability: A Look Ahead* 287-98 (William E. Kiernan & Robert L. Schalock eds., 1989) (citing an eight year study of 214 employees with mental retardation in competitive employment that showed the program generated total public savings of almost \$3 million, saving taxpayers approximately \$1 million after subtracting project expenditures; savings are based on reductions in supplemental social security insurance payments and increases in taxes paid by the employed individuals). See generally John M. McNeil, Work Status, Earnings, and Rehabilitation of Persons With Disabilities, in *Disability in the United States: A Portrait from National Data* 133, 156 (Susan Thompson-Hoffman & Inez F. Storck eds., 1991).

²⁷⁶ See Shapiro, *supra* note 12, at 4; Killborn, *supra* note 38, at 1 (describing generational effects of the emerging work force comprised of young people with disabilities); see generally Paul Wehman & Wendy Parent, Critical Issues in Planning Vocational Services in the 1990s, in *Mental Retardation in the Year 2000*, at 258 (Louis Rowitz ed., 1992) (discussing research involving workers with mental retardation).

²⁷⁷ See Parmet, *supra* note 158, at 125 (explaining that ADA employs a temporal view of discrimination and is an involving process, unlike prior antidiscrimination laws); see also Peter D. Blanck, Communications Technology for Everyone, Annenberg Washington Program Conference and Report (1994) (discussing ways to use emerging technology to comply with ADA).

²⁷⁸ See West, *supra* note 8, at 6 (discussing process of accommodation); see also Edelman, *supra* note 15, at 1535 (arguing that under Title VII law, covered entities must demonstrate compliance but minimize the law's restriction of managerial power and effectiveness). See generally Ellen D. Cook et al., Tax Incentives for Complying with Title III of the Americans with Disabilities Act, Taxes, Feb. 1994, at 63 (discussing relation of ADA to tax code).

to support job retention for qualified persons with disabilities, particularly strategies that transcend "mere compliance" with the law.²⁷⁹ These strategies are necessary because they may provide employers with the economic incentive to supply accommodations and the ability to view persons with disabilities as having the potential for long-term work associations.²⁸⁰ This will in turn improve the opportunities for employment integration that are available to qualified persons with disabilities.²⁸¹

Empirical information is just emerging on the long-term economic value of particular ADA compliance practices by employers. Detailed information is becoming available on the costs and benefits of accommodating persons with mental, versus physical, disabilities.²⁸² Empirical information can provide feedback to employers and potential employees about effective ADA implementation in different business sectors, such as retail or production, thereby reducing the likelihood of costly litigation on the subject.²⁸³

In contrast to the implementation history of Title VII, litigation need not be the primary means for employers to define "the boundaries of compliance" under the ADA.²⁸⁴ Initial analyses of the

²⁷⁹ See Blanck, *supra* note 43 (showing economic benefits to companies of transcending mere compliance with the law); Shafer et al., *supra* note 196, at 103. The results of a 24-month analysis of supported employment retention for a sample of 302 individuals showed supported employees experience regular movement in and out of the labor force-30% employed in original employment, 20% employed in subsequent employment, and 31% lost employment and returned to referral pool. *Id.*

²⁸⁰ See Empirical Study, *supra* note 2, at 219-20 (showing rates of tenure of employees with mental retardation); Elmer C. Bartels, *Employment and the Public Vocational Rehabilitation Program*, in *Rights and Responsibilities*, *supra* note 8, at 75, 77 (noting that rehabilitation programs assist people with severe mental disabilities to enter the work force and to become more economically independent); Paul Wehman, *Supported Employment: Toward Equal Employment Opportunity for Persons with Severe Disabilities*, 26 *Mental Retardation* 357, 357-61 (1988) (urging greater emphasis on serving persons with severe disabilities); cf. Janet W. Hill et al., *Differential Reasons for Job Separation of Previously Employed Persons with Mental Retardation*, 24 *Mental Retardation* 347, 347-51 (1986) (reporting that, in a longitudinal review of 250 supported competitive employment placements, approximately 42% of all placements were terminated due to employee resignations, layoffs, or firings).

²⁸¹ See Shafer et al., *supra* note 196, at 109. For the related results of this project covering employment providers, see Empirical Study, *supra* note 2, at 196-209. A side effect of the present investigation is the documentation of the emerging expectations for the law, both those that are realistic and those that are beyond the scope of the ADA. Cf. Yelin, *supra* note 20, at 146 (calling for new research because "the EEOC must have a more contemporary model of work upon which to base its enforcement of ADA's employment provisions"); Saks & Blanck, *supra* note 41, at 815 (stressing the importance of empirical study for resolving complex litigation). It is difficult to aggregate much of the data on persons with disabilities because of differing definitions of disabilities, divergent sources of data, and inconsistent survey methods. *Toward Independence*, *supra* note 88, at 3-4 (recommending that the Bureau of Census incorporate questions that assess numbers of persons with disabilities to provide a data base for policy planning and service delivery); Empirical Study, *supra* note 2, at 35-38 (calling for development of data collection methods on the behavior of individuals with disabilities and attitudes and perceptions of individuals without disabilities). See generally Louis Harris & Assocs., *The ICD Survey of Disabled Americans: Bringing Disabled Americans into the Mainstream* (1986) (showing results from a telephone survey of 1000 persons with disabilities); Louis Harris & Assocs., *The ICD Survey II: Employing Disabled Americans* (1987) (revealing a need for studies that develop the definitional criteria of disability, to facilitate demographic studies of persons with disabilities and allow persons with disabilities to speak for themselves).

²⁸² See generally Peter D. Blanck et al., *Implementing Reasonable Accommodations Using ADR Under the ADA: A Case of a White Collar Employee with Bipolar Mental Illness*, 18 *Mental & Physical Disability L. Rep.*, at 458 (1994) (analyzing an actual case); Teltsch, *supra* note 275, at 1 (noting efforts of large companies to hire persons with disabilities); Blanck, *supra* note 10.

²⁸³ Cf. Edelman, *supra* note 15, at 1539 (noting that under Title VII, weak enforcement mechanisms and ambiguous terms provide inadequate and inconsistent feedback to covered entities about compliance with the law).

²⁸⁴ See Junda Woo, *Self-Policing Can Pay Off for Companies*, *Wall St. J.*, Sept. 8, 1993, at B5 (suggesting that proactive attempts at compliance with laws like the ADA are advantageous to many businesses); see also Wendy S. Tien, Note, *Compulsory Arbitration of ADA Claims: Disabling the Disabled*, 77 *Minn. L. Rev.* 1443, 1445-47 (1993) (discussing the role of arbitration in resolving ADA claims); cf. Edelman, *supra* note 15, at 1540 ("Lawsuits are a primary means of defining the boundaries of compliance").

complaints filed with the EEOC in 1993, the first effective year of Title I, may support this suggestion. The most common type of Title I claim filed with the EEOC in 1993 involved the discharge or termination of individuals with back and spine impairments (e.g., workers' compensation type claims).²⁸⁵ Of the approximately 14,000 Title I claims filed in 1993, roughly thirty-one percent involved a back and spine related disability, with less than one percent of all claims involving mental retardation.²⁸⁶

By contrast, approximately nine percent of the claims filed in Title I's first effective year involved a sensory disability concerning either visual or hearing impairment, eleven percent involved serious life-threatening conditions such as HIV, cancer, or diabetes, and thirty-one percent involved mental illness or neurological disability.²⁸⁷

Moreover, of all the complaints filed with the EEOC, roughly thirty-seven percent involved an employee discharge or layoff, sixteen percent involved an accommodation, twenty-two percent involved conditions of employment such as benefits, wages, and promotions, and only nine percent involved a hiring decision.²⁸⁸ Thus, roughly seventy-five percent of the Title I claims filed in 1993 involved traditional employment law litigation issues, while only twenty-five percent involved issues of workforce entry and integration.

These trends, in light of the present findings, suggest several implications and possibilities for future study. First, perhaps optimistically, during initial Title I implementation large numbers of qualified but unemployed or underemployed individuals with severe disabilities may have pursued methods other than formal litigation to attain and retain integrated employment. Alternative methods for gaining access to jobs may involve programs on self-advocacy or informal dispute resolution.²⁸⁹

Second, and less optimistically, the initial pattern of EEOC filings may suggest that the majority of individuals with severe disabilities did not or could not avail themselves of their ADA rights. Either they failed to perceive or chose not to report many of the barriers the ADA was designed to eliminate. A general lack of awareness of the ADA among adults with disabilities may worsen this situation.

Legislation introduced in Congress to encourage mediation of charges filed under Title VII of the Civil Rights Act of 1964 and the ADA reflects a growing concern about increased litigation under the ADA. The Employment Dispute Resolution Act of 1994 (S. 2327), proposed by Sen. John Danforth of Missouri, would prohibit parties from litigating a dispute without first attempting to resolve it by mediation when either party believes that mediation could achieve a settlement. Danforth Introduces Mediation Bill for Discrimination Claims, Wash. Insider (BNA) (July 29, 1994), available in LEXIS, BNA Library, BNAWI file.²⁸⁵ See McMahon, supra note 44 (analyzing 1993 Title I complaints filed with EEOC by disability type and employment claim; orthopedic discharge cases accounted for 9% of all claims); Back and Spine-Related Disability, supra note 57, at 103-04 (discussing ADA and back disability).

²⁸⁶ See generally Equal Employment Opportunity Commission, National Database Charge Receipt Listing at 55, (Aug. 8, 1993) (outlining the breakdown of 1993 title filings. Approximately 73 complaints involved persons with mental retardation, resulting in 49 EEOC charges); McMahon, supra note 44 (same).

²⁸⁷ McMahon, supra note 44 (discussing the breakdown of 1993 title filings).

²⁸⁸ See Back and Spine-Related Disability, supra note 57, at 103; McMahon, supra note 44 (noting the breakdown of 1993 title filings). According to the Daily Labor Report, of the charges filed with the EEOC between the effective date of the ADA through June 30, 1994, 50% alleged illegal discharges, 25% involved failure to provide reasonable accommodations, and 11% charged hiring violations. Disabilities Act: Greater Activism, Awareness Mark ADA as Law Extends to Small Employers, Daily Lab. Rep. (BNA) (July 26, 1994), available in LEXIS, 1994 DLR 141 d24, at *3-*4.

²⁸⁹ Cf. McMahon, supra note 44 (finding only 1% of all 1993 Title I claims involved persons with mental retardation).

Empirical study is thus needed to assess the emerging relationship between severity and type of disability, levels of inclusion and empowerment in society, and the nature of Title I complaints filed with the EEOC versus those resolved without resort to litigation. An understanding of this information may not only help avoid and resolve ADA disputes, but may also aid in more systematically gauging the effectiveness of ADA implementation for millions of unemployed but qualified individuals with disabilities.

CONCLUSION

As recently as 1986, the report *Toward Independence* was seen by many as a revolutionary effort to develop a national policy toward persons with disabilities. Eight years later, with ADA implementation underway, the present investigation suggests that the Report's major recommendation may remain unfulfilled: Disability policy continues to reflect "an over-emphasis on income support and an under-emphasis on initiatives for equal opportunity" and independence.²⁹⁰

Persons with disabilities are excluded from the mainstream of American society and are subjected to prejudices and societal paternalism.²⁹¹ Justin Dart writes: "Our society still is infected by an insidious, now almost subconscious, assumption that people with disabilities are less than fully human and therefore are not entitled to the respect, the opportunities, and the services and support systems that are available to other people as a matter of right."²⁹²

A 1994 survey on Americans with disabilities by the Harris Organization highlights that the passage of the ADA alone cannot achieve the goals of inclusion and empowerment for people with disabilities. Four years after the enactment of the ADA, at least two-thirds of working-age Americans with disabilities remain unemployed. In spite of encouraging advances in education and training²⁹³ since the enactment of the ADA, the unemployment problem facing people with disabilities remains unresolved.

The 1994 Harris survey also finds that two factors stand out as critical for adults with disabilities to obtain and retain employment: access to medical treatment and access to education or job-skill

²⁹⁰ *Toward Independence*, supra note 88, at vi; Taylor & Bogdan, supra note 253, at 265.

²⁹¹ See Robert E. Rains, *A Pre-History of the Americans with Disabilities Act and Some Initial Thoughts as to Its Constitutional Implications*, 11 *St. Louis U. Pub. L. Rev.* 185, 202 (1992).

Whether or not the Supreme Court ultimately decides that Congress [through the ADA] has now mandated heightened judicial scrutiny in cases of discrimination on the basis of disability brought under the fourteenth amendment, there can be no question that the A.D.A. will provide, when fully effective, powerful avenues of redress for Americans with disabilities who are subjected to discrimination.

Id.; Michael A. Rebell, *Structural Discrimination and the Rights of the Disabled*, 74 *Geo. L.J.* 1435, 1436-37 (1986) (discussing the history of invidious discrimination against the handicapped); Rogan & Murphy, supra note 196, at 41 (noting that true integration goes beyond mere physical accommodation of persons with disabilities); see also *Trautz v. Weisman*, 819 F. Supp. 282, 294 (S.D.N.Y. 1993) (stating in dicta that the ADA has identified people with disabilities as "a discrete and insular minority" now able to bring a claim under 42 U.S.C. § 1985(3)).

²⁹² Dart, supra note 142, at xxi (concluding that disability rights must be guaranteed as a matter of law).

²⁹³ The Harris 1994 survey shows that 74% of adults with disabilities have completed their high school education, a 14% improvement from 1986. Harris Poll-1994, supra note 95, at 32. In addition, those adults with disabilities having at least some college education have increased from 29% in 1986 to 44% in 1994. *Id.*

training.²⁹⁴ The major reasons given by survey participants for the unemployment of adults with disabilities include limitations imposed by the disability or health problem and the medical treatment or therapy it requires.²⁹⁵ The other critical factor, that has drawn increased concern since 1986, is the risk of losing benefits or insurance payments. Historically, this results from limitations and restrictions insurers impose on coverage of chronic or preexisting conditions. As the 1994 health care reform debate highlighted, for most persons with disabilities this acts as a major disincentive to work.

Within and outside of the law of the ADA, much work remains. Change is needed to include and empower all Americans with disabilities.²⁹⁶ Justin Dart wrote of the work to be done: [N]o matter how well we enforce civil rights laws, [people with disabilities] will not be equal in real life until [they] communicate the simple message of [their] equality to the more than 240 million Americans who will never read any law, but whose thoughts and actions will define our humanity every hour of every day.²⁹⁷

²⁹⁴ Id. at 52. This finding complements the current study's finding that adaptive skill and health status are important measures in employment of people with disabilities.

²⁹⁵ Limitations imposed by disability or health problems were cited by 81% of those surveyed, while 58% cited medical treatment or the therapy as the major limitation. Id.

²⁹⁶ See Edelman, *supra* note 15, at 1569 (questioning whether a "shadow of the law" effect exists as a result of Title VII implementation and interpretation over time). See generally Laura M. Rees et al., Do Attitudes Towards Persons with Handicaps Really Shift Over Time? Comparison Between 1975 and 1988, 29 *Mental Retardation* 81 (1991) (showing positive shift over time in public attitudes toward persons with mental retardation).

²⁹⁷ Dart, *supra* note 142, at xxvii.