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NATIONAL LONGITUDINAL
TRANSITION STUDY 2

YOUTH WITH DISABILITIES: A CHANGING POPULATION

A Report of Findings from the National Longitudinal Transition Study (NLTS) and the National Longitudinal Transition Study-2 (NLTS2)

Prepared for:
Office of Special Education Programs
U.S. Department of Education

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SRI International
333 Ravenswood Avenue Menlo Park, CA 94025

IDEAs that Work
U.S. Office of Special Education Programs

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Prepared for:
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Prepared by:
Mary Wagner, Renée Cameto, and Lynn Newman

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The research reported here spans almost a decade and a half and has commanded much of the intellectual energy of the authors and the NLTS and NLTS2 study teams for those years. It has been an investment made willingly and with confidence in the importance of the work.

Throughout the NLTS/NLTS2 lifetimes, the authors have had some steady companions. We have been grateful beyond measure over the years for our long-time SRI colleagues and their talents—the intellectual prowess of Jose Blackorby, the programming genius of Kathryn Valdes, the sampling and statistical expertise of Hal Javitz, the analytic capability of Camille Marder, and the unflagging editorial and production support of Marion Collins and Klaus Krause. The whole arena of longitudinal studies of children and youth with disabilities also owes much to the steadfast presence at the Office of Special Education Programs of Lou Danielson, now Director of OSEP's Research to Practice Division. In many ways, he "birthed" the original NLTS, and his clear sense of the value of the information such studies produce has enabled them to prosper and the field of special education and disability policy to benefit.

Other colleagues have contributed importantly to NLTS2 more recently. Pat Gonzalez of OSEP is an outstanding project officer who adds much to the value the project is bringing to its many audiences. The interests of those audiences were expressed in the study design phase by representatives of many stakeholder groups, whose contributions of time and ideas are truly appreciated. Many staff at SRI have worked tirelessly to collect and process data, and their care and commitment are the foundation for the quality of the findings. Staff at Westat also have been key partners in conducting the interviews that have yielded the NLTS2 data reported here.

But we are particularly grateful to the many thousands of young people with disabilities whose stories are at the heart of NLTS and NLTS2, and to the parents and guardians who care for them, for their willingness to share with us something of their experiences. They have much to teach about living with courage and humor, as well as living with disability.

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EXECUTIVE SUMMARY

In 1987, the Office of Special Education Programs (OSEP) of the U.S. Department of Education began the first effort in this country to document the experiences and outcomes of youth with disabilities. It launched the National Longitudinal Transition Study (NLTS), which generated nationally representative information about secondary school-age youth who were receiving special education services at the time. To assess the current status of youth with disabilities and how they differ from their predecessors, OSEP has commissioned the National Longitudinal Transition Study-2 (NLTS2). NLTS2 addresses many of the same issues as NLTS, but extends its scope in important ways.

Comparisons of findings for youth who were included in NLTS with those in NLTS2 illuminate the ways in which special education and the youth it serves have changed in the years between the studies. This report documents the extent and direction of differences between the population of 15- to 17-year-old youth with disabilities in 1987 and those in 2001 (referred to as cohorts 1 and 2) using data reported in interviews with parents about the following topics:

- Characteristics of students, including aspects of students' disability profiles and demographic characteristics (Chapter 2).
- Characteristics of students' households, including household demographics and parents' expectations for their children's futures (Chapter 3).
- The services provided students by their schools (Chapter 4).
- Achievements of students in the academic and social domains and in moving toward independence (Chapter 5).

Findings are presented for youth in the nine disability categories that were in use in both 1987 and 2001 and for youth with disabilities who differed in their gender, the income of their households, and their racial/ethnic background.

Methods

The findings presented in this report come from telephone interviews with parents of students included in NLTS and NLTS2. Parents who could not be reached by telephone were mailed a questionnaire with a subset of the items included in the telephone interview. Total response rates of 66% and 82% were achieved for NLTS and NLTS2, respectively.

NLTS and NLTS2 have many design features that facilitate valid comparisons between them. However, important differences between them have required analytic adjustments for comparisons to be valid. To make the age distribution of students in the two samples equivalent, only the subset of youth of similar ages, 15 through 17, were selected from each sample for comparative analyses. The membership of particular disability categories in use at the two times also have required analytic adjustments to improve comparability.

This is an executive summary of Wagner, M., Cameto, R., & Newman, L. (2003). *Youth with disabilities: A changing population. A report of findings from the National Longitudinal Transition Study (NLTS) and the National Longitudinal Transition Study-2 (NLTS2).* Menlo Park, CA: SRI International.

The statistics presented in the report are weighted estimates for the population of youth with disabilities nationally. They generalize to that population as a group, as well as to each disability category.

Changes in Characteristics of Students

The composition of 15- through 17-year-old youth with disabilities has changed markedly in some ways since 1987.

- **Types of disability.** The NLTS/NLTS2 age group had significantly fewer youth classified with mental retardation as their primary disability in 2001 than in 1987. At the same time, 15- to 17-year-olds had grown significantly in the proportion classified as having other health impairments. Some of the growth in the other health impairment category resulted from large increases in the numbers of youth diagnosed with autism or attention deficit/hyperactivity disorder.
- **Gender.** Boys comprised about two-thirds of youth with disabilities in both studies. However, there were shifts in specific disability categories. The change in the mix of disabilities within the other health impairment category was accompanied by significant increases in the proportion of boys in that category.
- **Race/ethnicity**. The racial/ethnic makeup of youth with disabilities has become more like that of the general population of youth. Youth of color accounted for similar proportions of those with disabilities and those in the general population in 2001, whereas they had been overrepresented by about 4 percentage points in 1987. This shift resulted from African Americans being a smaller proportion of youth with disabilities in 2001 than in 1987 although they remained somewhat overrepresented among youth with disabilities. The sizable increase in the proportion of youth who were Hispanic was similar among youth with disabilities and youth in the general population, as were their proportions of the populations of youth with disabilities and those in the general population. Changes in the racial/ethnic distribution were particularly evident for youth in the other health impairment category, which included markedly more white youth in 2001 than previously.
- **Language diversity.** The languages used by youth with disabilities became increasingly diverse over time, with a significant increase in the percentage of youth who did not speak primarily English at home. In 2001 more than half of Hispanic youth with disabilities spoke primarily a language other than English at home.
- **Age for grade level.** The proportion of youth who were at the typical age for their grade level increased from one-third of youth to more than one-half between 1987 and 2001. This could bode well for youth in their efforts to finish high school; being older than the typical age for a grade level has been shown to be a powerful predictor of youth with disabilities dropping out of school.
- **Age at identification of and first service for a disability.** Youth were both identified and first served at significantly earlier ages in 2001 than in 1987, with declines in these ages averaging 8 and 13 months, respectively. Declines of at least a full year in age at

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first service for a disability were evident for almost all categories of youth, which narrowed the gap between identification and service for most of them.

- **Daily living skills.** Despite earlier identification and service, small, but significant declines were reported by parents in the daily living skills of youth.

Changes in Characteristics of Students' Households

Demographic characteristics. Several changes since 1987 in the households of youth with disabilities could have positive repercussions for youth:

- In 2001, youth with disabilities were more likely to be living in households with at least one biological parent present than in 1987, and the heads of their households were much less likely to be high school dropouts or unemployed.
- Consistent with higher educational and employment levels among heads of households in 2001, youth with disabilities were less likely to be living in poverty in 2001 than in 1987. Yet, despite having made some strides in closing the income gap with the general population, youth with disabilities still were more likely than other youth to live in households with the risk factors of low income, unemployment, and heads of households who were poorly educated.

Other changes were less positive:

- In 2001, almost 6% of youth with disabilities lived with a family member other than a parent—a rate twice that in 1987—and youth were significantly more likely to be living in households with an adult with a disability than previously.
- Even with declines in the percentage of heads of households who were high school dropouts, youth with mental retardation or emotional disturbances continued to be more likely than other youth with disabilities to live in poverty, with unemployed heads of households, and in households that participated in benefit programs.

Changes in some factors were most beneficial to categories of youth who were more disadvantaged:

- Improvements in the education or employment status of heads of households were most apparent for the families of low- and middle-income families, which narrowed significantly the gap between middle- and higher-income youth.
- Similarly, African American and Hispanic youth benefited most from improvements in head of household education and employment.

Parents' expectations. Parents of youth with disabilities had similar expectations for youth in 1987 and 2001 in some respects, but not in others:

- Youth with disabilities were about equally likely in 1987 and 2001 to be expected by parents "definitely" to graduate from high school with a regular diploma (about half of youth) and "definitely" to graduate from a 4-year college (fewer than 10% of youth). However, expectations for 4-year-college graduation increased significantly for youth with speech or hearing impairments.

- Two-year colleges were considered a much more likely option in 2001 than in 1987 for youth in all disability categories, for both boys and girls, for white and African American youth, and for those at all income levels.
- Employment expectations also rose for most categories of youth, and larger increases for girls than boys closed the gap in employment expectations that had existed in 1987.
- Although for all groups, expectations of independent living were lower than those of paid employment, sizable increases were noted for youth with mental retardation, hearing and other health impairments, or multiple disabilities.

Services Received

Youth with disabilities were substantially more likely to be receiving support services in 2001 than in 1987, with the difference being accounted for entirely by increases in services provided from or through their schools:

- **Receiving any services.** By 2001, half of 15- to 17-year-old students with disabilities were receiving related or support services from or through their schools, compared with less than one-third of students in 1987.
- **Types of services.** Significant increases were noted for many kinds of services, with there being particularly large increases of 9 and 10 percentage points in receipt of speech/language therapy and vocational and mental health services. Only life skills training and help from a tutor, reader, or interpreter were not received from their schools by significantly more youth in 2001 than in 1987.
- **Disability category differences.** The increases in receipt of any support services from schools occurred for youth in all disability categories, with the largest increase occurring for youth with emotional disturbances, primarily because of their 20 percentage point increase in receipt of mental health services. Students with learning disabilities experienced increases in fewer kinds of services than other youth, increasing significantly over the time span only in receipt of speech/language therapy and mental health services. All other categories of youth experienced increases in at least four kinds of services, and youth with mental retardation, visual impairments, or multiple disabilities had increases in seven of the eight kinds of services assessed.
- **Demographic differences.** Boys and girls both experienced significant increases in receiving services from their schools. All income groups also experienced significant increases in receiving any services and the receipt of transportation help. Youth from lower income households had increases in a wider range of services than youth from higher income households. White and African American youth had a similar pattern of change in services, with significant increases in speech/language therapy, vocational and mental health services, and transportation. Hispanic youth shared gains in vocational services, but were the only ones to experience increases in help from a tutor, reader, or interpreter and in physical therapy.

Student Outcomes

Examining changes in a range of outcomes for youth with disabilities from 1987 to 2001 does not yield a consistent or unequivocal "good news" or "bad news" story. The mix of changes shows progress on some dimensions and for some groups, but little change or even change in an undesirable direction on some measures.

- **Academics.** The 1-year dropout rate for youth with disabilities was cut in half in the years between NLTS and NLTS2, with the rate in 2001 for youth with disabilities being significantly lower than the rate in the general population. However, only youth with mental retardation experienced a significant decline over time. Youth with emotional disturbances had the highest dropout rate in 1987, and had no decrease over time.
- **Extracurricular activity.** Overall participation in extracurricular activities did not increase between the two cohorts of youth with disabilities, but increases were evident for some kinds of activities. Most notable were increases in volunteer or community service activities, which more than doubled over time. However, rates of extracurricular activity for youth with disabilities remained below that of the general population.
- **Employment rates.** The 1-year paid employment rate increased, with significantly more youth holding paid jobs in the previous year in 2001 than 1987. This increase brought the overall 1-year employment rate for youth with disabilities (60%) in line with that of the general population of youth (63%). However, a decline in the rate of current employment suggests that youth also had more sporadic work experiences, rather than continuous employment.
- **Employment experiences.** Youth with disabilities experienced an increase in work-study jobs, a decline in the average number of hours worked per week, and significant improvements in pay. In 2001, two-thirds of youth with disabilities were earning more than the minimum wage, half again as many as had done so in 1987.
- **Independence.** Although there was little change in the level of responsibility for household chores between 1987 and 2001, more youth with disabilities had money about which to make decisions.
- **Social adjustment.** There is cause for concern in the increased rate at which youth with disabilities experienced the negative consequences of being suspended or expelled from school, fired from a job, or arrested. By 2001, one in five youth with disabilities had experienced one or more of these consequences of their behavior, up 6 percentage points from 1987.

Given the important differences within the population of youth with disabilities, these changes in outcomes did not affect all youth equally, and most groups of youth experienced changes that were inconsistent in direction. For example:

- **Youth with other health impairments.** This group had a sizable increase in their overall level of extracurricular group participation and volunteerism, increases in employment and pay, and increases in their responsibility for managing money of their own—all of which bode well for their future. Yet they were the only group that had a significant decrease in performing household responsibilities, and along with youth with emotional disturbances, had sizable increases in the rate at which they experienced negative consequences for their behavior.

- **Youth with mental retardation.** These youth had the only significant decrease in the dropout rate, and the largest rate of increase in holding a work-study job, yet they were the only disability category not to experience a significant increase in earning more than the minimum wage.
- **Youth with visual impairments.** This was the only group to experience a significant decline in their overall rate of participation in extracurricular activities and was among the few groups to show no increase in the work-study or 1-year or current paid employment rates. Yet youth with visual impairments who were working had large gains in earnings.
- **Gender differences.** Girls with disabilities experienced much larger increases in participation in some kinds of extracurricular activities than boys, particularly community groups and leadership or student government organizations. With greater change over time, the participation of girls in these activities in 2001 significantly exceeded that of boys. Because girls also had larger increases in employment than boys, the gap in employment rates between the genders that favored boys in 1987 had been closed for the most part by 2001. Girls also increased more than boys in the likelihood of having money of their own to spend. Yet, despite significant increases in the proportion of girls with disabilities who earned more than the minimum wage, boys still were more likely than girls to meet or exceed the minimum wage.
- **Household income differences.** Improvements in employment outcomes over time were least apparent for lower-income youth with disabilities. They experienced no significant gains in 1-year or work-study employment rates, nor did they share in the large gains in pay that were evident for other income groups. In addition, they had the largest decline in current employment rates. Upper income youth showed negative changes in other areas. Specifically, between 1987 and 2001, the percentage of upper income youth who had been suspended or expelled from school, fired from a job, or arrested increased from 11% to 20%.
- **Racial/ethnic differences.** Although all racial/ethnic groups experienced gains in 1-year employment rates, white youth had the only significant increase in pay and the only significant decline in the dropout rate. On the negative side, white youth accounted for virtually all of the gain in the percentage of youth that had experienced negative consequences for their behavior.

Summing Up

Summing up the changes identified in this report raises the question, “have they been for the better?” In many respects, the answer to that question is “yes,” but that answer applies to some youth more than to others. Findings also point to several challenges remaining for youth with disabilities, their families, and the schools that serve them. Future comparisons between NLTS and NLTS2 will focus more directly on the schools attended by youth with disabilities and their educational programs, examining such aspects of those programs as course-taking, placement in general education classes, and supports and accommodations. As NLTS2 youth age, comparisons also will be made between their early postschool experiences and those of youth with disabilities in NLTS.

1. A CHANGING POPULATION

In 1987, the Office of Special Education Programs (OSEP) of the U.S. Department of Education began the first effort in this country to document the experiences and outcomes of youth with disabilities. It launched the National Longitudinal Transition Study (NLTS), which generated nationally representative information about secondary school-age youth who were receiving special education services in 1985. NLTS information met the information needs of a variety of audiences, and was particularly helpful in the reauthorization of the Individuals with Disabilities Education Act in 1992 and 1997.

Since NLTS was conducted, much has changed in American society, and the impacts of those changes are evident in many aspects of our national life. For those in the disability policy arena, the breadth of such changes raises important questions. To what extent and in what ways have the changes in our world resulted in changes in the demographics and experiences of youth with disabilities? Have some youth with disabilities benefited or been hampered more than others by particular changes? Have improvements taken place in important outcomes for youth with disabilities, such as finishing high school, enrolling in postsecondary education or training, and finding employment?

To assess the current status of youth with disabilities and how they differ from their predecessors, OSEP has commissioned the National Longitudinal Transition Study-2 (NLTS2). It addresses many of the same issues as NLTS, but extends its scope in important ways. Comparisons of findings for youth who were included in NLTS with those in NLTS2 illuminate the extent to and ways in which special education and the youth it serves have changed in the years between the studies. Those comparisons are the focus of this report, whose purpose is descriptive. Findings presented here were generated by comparing information from the first wave of interviews with parents of NLTS2 students (cohort 1), conducted in the spring and summer of 2001, with data from similar interviews of parents conducted in 1987 (cohort 2) for the age groups of students included in Wave 1 of both studies: 15-, 16-, and 17-year-olds.[1]

Although the changes in the population of youth with disabilities can be described using information from NLTS and NLTS2, this report does not attempt to identify the combination of factors that explain the changes in the population. The tremendous range and scope of changes that mark the last decade of the 20th century and the beginning years of the 21st make attributing differences between youth with disabilities in 1987 and 2001 to specific social changes impossible. Yet, an awareness of those social changes is an important lens to use in viewing a variety of changes in the population of youth with disabilities:

- **Population.** We are a more racially and ethnically diverse nation than ever before, with more of us having a language other than English as our primary language.
- **Families.** Families also are increasingly diverse, with the traditional family of two married biological parents and their children being only one of the many combinations of

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[1] The samples were weighted to have the same distribution of these three age groups: 26% are 15, 35% are 16, and 38% are 17.

adults and children who now make up family units. Increasingly, if there are two adults in a family, both work outside the home.

- **Economics.** The 1990s saw unparalleled economic growth and prosperity as we embraced the "information age." In the new millennium, the economic boom came to an end with the "dotcom bust" and a general economic downturn that included declines in stock values and a depressed job market.
- **Technology.** The accelerated, dynamic state of technology innovation is changing the nature of communication, work, education, and leisure. The Internet has increased tremendously our access to information and our ability to communicate worldwide.
- **Risk.** School shootings, teen gang violence, and other tragedies involving adolescents have increased the awareness of our society that the teenage years are not simply "troubled" for some youth, but can be truly perilous for them and for those around them. Such events have served as "wake-up calls" to alert us to the need to know much more about the behaviors of adolescents and influences on those behaviors.

These changes have far-reaching impacts on all of us. Other changes particularly affect students, including, for example, the growing emphasis on the use by school systems of "high stakes" testing through which they are held accountable for the academic performance of their students, and the growing number of "school choice" options available to parents in determining the nature of their children's education. Still other changes have particular impacts on students with disabilities and their families, including:

- **Education legislation.** The Individuals with Disabilities Education Act (IDEA) was revised significantly in the 1997 Amendments to the Individuals with Disabilities Education Act (IDEA '97). These amendments demonstrated legislative commitment to access for all students to the general education curriculum, high academic performance standards, and accountability for results for students with disabilities. The No Child Left Behind Act of 2001 emphasizes the need for accountability, flexibility, parent involvement, and evidence-based instruction in the education of all children, including students with disabilities in public schools.
- **Changing disability categories and prevalence.** Changes to IDEA in the 1990s altered the federal special education disability categories. The deafness and hard of hearing categories were combined into a single hearing impairment category, and categories were added for traumatic brain injury and autism. These additions were in recognition of the unique educational challenges those disabilities pose and, in the case of autism, the dramatic increase in its prevalence. Even within existing categories, the prevalence in special education of students with some kinds of disabilities has changed markedly, including a large increase in children and youth being diagnosed with attention deficit/hyperactivity disorder (who, if eligible for special education, are classified primarily within the other health impairment category) and a decline in the categorization of students as having mental retardation for eligibility purposes under IDEA.
- **Parent involvement.** What started in the mid-1970s as a somewhat revolutionary idea—parents being partners with schools in the education of their children—is now an established part of the educational process for students with disabilities. Parent information and training programs encourage parent participation and give parents tools

to enhance the effectiveness of their involvement at home and at school. Many parents have become much better educated in curricula, school policies, legal avenues, therapeutic interventions, and the education rights of their children, including secondary transition.

- **Advocacy.** Today, there are support groups, Web sites, conferences, and institutional advocacy for many disability groups. Active advocacy has expanded opportunities for people with disabilities and their families, both in the schools and in society at large.
- **Self-determination.** A notable change has taken place in recent years in the way young people with disabilities are viewed and treated by the adults in their lives. Increasingly and justifiably, youth with disabilities are viewed as capable of conceiving and shaping their own futures. The preferences and dreams of youth with disabilities are increasingly being expressed and taken into account in such areas as transition planning and service need determination.

These kinds of social, legislative, and education policy changes can be expected to affect the population of youth with disabilities in a variety of ways. Comparisons of NLTS with NLTS2 document changes on the following dimensions:

- Characteristics of students, including aspects of students' disability profiles and student demographic characteristics (Chapter 2).
- Characteristics of students' households, including household demographics and parents' expectations for their children's futures (Chapter 3).
- The services provided students by their schools (Chapter 4).
- Achievements of students in the academic and social domains and in moving toward independence (Chapter 5).

This report highlights variations in the extent and direction of change for the population of 15- through 17-year-old youth with disabilities as a whole and for key subgroups. Perhaps the most important subgroups are youth who differed with regard to the primary disability that made them eligible for special education services. To document the important ways in which the populations of youth with different disabilities experienced change over time, findings are presented for youth in the nine disability categories that were in use in both 1987 and 2001. Readers should note that youth are included in the disability categories assigned to them by the schools or school districts from which they were selected for the studies. Variations in eligibility determination processes among school districts and over time underscore the importance of interpreting findings as describing youth who were categorized as having a particular primary disability by their school or district; what students' actual disability diagnoses would be if they were subjected to uniform diagnostic processes are unknown. In addition to disability category differences, changes also are described for youth with disabilities who differed in their gender, the income of their households, and their racial/ethnic background.[2]

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[2] The samples sizes are sufficient to report findings only for white, African American, and Hispanic youth. The intercorrelation between income and racial/ethnic background is acknowledged. This initial descriptive comparison of the NLTS/NLTS2 cohorts does not attempt the multivariate analyses needed to disentangle that interrelationship.

NLTS and NLTS2 have many design features that facilitate valid comparisons between them, and detailed studies of both school district and student nonresponse indicate that NLTS and NLTS2 accurately represent the populations of youth with disabilities at their respective points in time.[3] However, important differences exist between them that have required analytic adjustments for comparisons to be valid. One important difference is the age ranges for youth included in the two studies. In its first wave of parent interviews, NLTS youth were 15 through 23 years old, whereas the first wave of NLTS2 interviews was about youth who were 13 through 17. Because age is a powerful determinant of experience, straightforward comparisons between the full sample of youth in NLTS and NLTS2 are not valid. To improve the comparability of the studies, the subset of youth of similar ages, 15 through 17, were selected from each sample. Differences in the membership of particular disability categories in use at the two points in time also have required analytic adjustments to improve comparability. In addition, readers should be aware that the statistics presented in this report are weighted estimates for the population of youth with disabilities nationally, and they generalize to that population. Appendix A provides additional information on methods used in the two studies, adjustments made to enhance their comparability, weighting of the samples, and interpretation of the population estimates that result.

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[3] Results of the nonresponse bias study for NLTS can be found in Javitz & Wagner, 1990. Results of the study of potential bias in NLTS2 will be available in spring 2003 at www.nlts2.org.

2. CHANGES IN THE INDIVIDUAL CHARACTERISTICS OF YOUTH WITH DISABILITIES

The nature of a student's disability and its functional implications can be powerful influences on his or her experiences, both in and out of school. Perhaps especially during adolescence, however, other fundamental characteristics of youth, in addition to whether or not they have disabilities, also help shape their development, relationships, experiences, and achievements. Gender is a defining human characteristic, and, during adolescence, when young people are exploring their sexuality and gender roles, it can shape their experiences and choices in powerful ways. In addition, racial/ethnic and language background can be associated with rich cultural traditions, patterns of relationships within families and communities, and strong group identification, which can generate important differences in values, perspectives, expectations, and practices.

Understanding the disability profiles and demographic makeup of youth with disabilities and how they have changed over time is fundamental to understanding how their experiences have changed from 1987 to 2001, both for the group as a whole and for youth with particular disability classifications. Such understanding also provides a foundation for interpreting comparisons between youth with disabilities and those in the general population.

This chapter reports on changes in the distribution of disabilities among 15- through 17-year-old youth and describes changes in both their demographic characteristics and disability profiles that can influence their experiences in important ways. Changes in the characteristics of youth with disabilities as a whole are compared with the general population, followed by a discussion of the changes in characteristics of youth in different primary disability categories and who differed on other important factors.

Primary Disability Classification

Using federal child count data reported by the Office of Special Education Programs, Exhibit 2-1 depicts the considerable growth in the number of adolescents receiving special education, as well as changes in the distribution of disability categories between 1987 and 2001, the most recent year for which data are available. Although the number of youth in this age group receiving special education increased by 58%, the more important point for comparing the two cohorts is the different mix of disabilities at the two time points. Most notably, in 1990, Public Law 101-476 added two new disability categories—autism and traumatic brain injury—to those eligible for special education. Youth with those conditions previously had been distributed among other categories, with the heaviest concentration in the other health impairment category. Despite the shift of youth with autism and traumatic brain injuries to separate categories, the other health impairment category still has shown more than a fourfold increase; whereas it accounted for only slightly more than 1% of youth with disabilities in this age range in 1987, it accounted for more than 6% in 2000. This change reflects, in part, the large number of youth diagnosed with attention deficit/hyperactivity disorder (AD/HD) as a primary disability, who often were not eligible for special education in 1987. They generally now are included in the other health impairment category if they are eligible for special education. Parents indicated that

Exhibit 2-1
DISABILITY CATEGORY DISTRIBUTION OF YOUTH WITH DISABILITIES

	Federal Child Count (Ages 15 to 17)					NLTS/NLTS2 (Ages 15 to 17)		
	1987[1]		2001					
Primary Disability Category	Number	Percentage	Number	Percentage	Percentage Point Change	1987	2001	Percentage Point Change
Learning disability	447,839	59.9	729,881	61.6	+1.7	60.4	61.4	+1.0
Speech/language impairment	27,011	3.6	33,439	2.8	-1.4	4.4	3.2	-1.2
Mental retardation	139,827	18.7	149,400	12.6	-6.1	18.0	13.0	-5.0
Emotional disturbance	94,882	12.7	139,019	11.7	-1.0	11.4	11.9	+.5
Hearing impairment	8,140	1.1	15,350	1.3	+.2	1.4	1.4	.0
Visual impairment	3,852	.5	5,794	.5	.0	.6	.6	.0
Orthopedic impairment	7,341	1.0	14,061	1.2	+.2	1.0	1.2	+.2
Other health impairment	8,243	1.1	60,168	5.1	+5.0	1.4	5.3[a]	+3.9
Multiple disabilities	11,217	1.5	24,839	2.1	+.6	1.3[b]	2.2[b]	+.9
Deaf-blindness	124	.02	256	.02	.0			
Autism	NA		9,009	.8	+.8			
Traumatic brain injury	NA		3,953	.3	+.3			
All disabilities	747,442		1,185,169			100.0	100.0	

[a] Youth with autism and traumatic brain injury have been reassigned, for comparison purposes, to other categories, as described in Appendix A, with many being included in other health impairment.

[b] Includes youth with deaf-blindness.

Source: NLTS and NLTS2 Wave 1 parent interviews and federal child count statistics (U.S. Department of Education, 1989 and Office of Special Education Programs, 2002).

74% of youth in the other health impairments category had AD/HD as a primary or secondary disability (Wagner, Levine, Cameto, Cadwallader, Marder, & Blackorby, 2003). A decline of 6 percentage points was evident for youth with mental retardation (17% to 12%).

Smaller changes were evident for some other categories. The learning disability and autism categories each increased by 1 percentage point, and declines of similar size were noted in the categories of speech/language impairment and emotional disturbance. Other changes were less than 1 percentage point. Overall, the distributions of primary disability classifications of the NLTS and NLTS2 samples of 15- through 17-year-olds depicted in Exhibit 2-1 quite closely match the national distribution of 15- to 17-year-olds indicated by the federal child count.

The shifts in disability distribution between the two time points should be kept in mind in considering the findings regarding changes in the population of youth with disabilities as a

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[1] Although the 2001 child count allows the identification of youth who were 15 through 17, the child count in 1987 included all youth ages 12 through 17. The 1987 child count of 15- through 17-year-olds was estimated by calculating for each disability the proportion of 12- through 17-year-olds in 2001 who were 15 through 17. This percentage was then multiplied by the 1987 child count of 12- through 17-year-olds to obtain an estimate of the youth in that age range who were 15 through 17.

Demographic Characteristics of Youth

This section describes the distribution of gender, race/ethnicity,[2] age, and grade level of youth with disabilities in 1987 and 2001.

The gender distribution of youth with disabilities did not change significantly over time (69% and 67% male, Exhibit 2-2). At both points in time, males were significantly overrepresented among youth receiving special education relative to youth in the general population. Interestingly, a similar overrepresentation of males was evident even among infants and toddlers with disabilities (61%; Hebbeler, Wagner, Spiker, Scarborough, Simeonsson, & Collier, 2001) and with elementary age students, indicating that these percentages hold across the age range (Marder & Wagner, 2002).

The increase in the racial/ethnic diversity of the general student population also is evident among youth with disabilities. Hispanic youth exhibited the largest increase, being more than half again as large a proportion of the population of students with disabilities in 2001 as in 1987 (increasing from 9% to 14%, p<.01). In contrast, the proportion of youth with disabilities who were white underwent little change; given almost a 6 percentage point decline in that group in the general population, whites were the same proportion of youth with disabilities and the general population in 2001. Along with a small decline in the percentage of African Americans among

Exhibit 2-2
CHANGES IN DEMOGRAPHIC CHARACTERISTICS OF YOUTH WITH DISABILITIES AND YOUTH IN THE GENERAL POPULATION

	Youth with Disabilities			Youth in the General Population		
Individual Characteristics	Cohort 1	Cohort 2	Percentage Point Change	1987	2001	Percentage Point Change
Percentage male	68.6 (2.0)	67.4 (1.8)	-1.2	50.0	51.0	+1.0
Percentage who were:						
White	64.9 (2.1)	62.5 (1.9)	-2.4	68.8	63.1	-5.7
African American	23.5 (1.8)	20.7 (1.6)	-2.8	16.4	16.0	-.4
Hispanic	8.7 (1.2)	13.6 (1.3)	**+4.9****	10.8	15.7	+4.9
Multiple or “other” race/ethnicity	2.8 (.7)	3.3 (.8)	+.2	3.9	5.2	+1.3
Percentage who did not use primarily English at home	3.3 (.8)	14.2 (1.4)	**+10.9*****	3.5	5.0	+1.5

Source: NLTS and NLTS2 Wave 1 parent interviews and U.S. Census Bureau (2002). General population figures are for 15- to 19-year-olds.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: ** p<.01; ***p<.001.

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[2] The racial/ethnic classification of youth in cohort 1 relied on information supplied by parents. In cohort 2, information came from the schools/school districts from which youth were sampled. In cases in which schools or districts did not supply this information, parents’ reports of racial/ethnic classifications were used.

youth with disabilities, the population of high school youth receiving special education in 2001 more closely reflected the general population than had been true in 1987.

There was more than a fourfold increase in the proportion of youth with disabilities who did not use primarily English at home, increasing from 3% to 14% of youth—a noticeably higher rate of increase than in the general population. Thus, youth with disabilities increasingly were facing the challenges of communicating in two languages and accommodating two cultures, in addition to the challenges of their disabilities.

Exhibit 2-3
CHANGES IN AGE AND GRADE LEVEL DISTRIBUTION OF YOUTH WITH DISABILITIES, BY COHORT

	Cohort 1	Cohort 2	Change
Percentage who were:			
15 years old	26.4 (1.9)	26.2 (1.7)	-.2
16 years old	35.2 (2.0)	35.4 (1.9)	+.2
17 years old	38.4 (2.1)	38.4 (1.9)	0
Percentage assigned to:			
Grade 8 or below	20.4 (2.0)	9.6 (1.2)	**-10.8*** **
Grade 9	33.7 (2.4)	27.7 (1.8)	**-6.0***
Grade 10	27.6 (2.2)	36.1 (1.9)	**-8.5****
Grade 11	10.5 (1.5)	22.5 (1.6)	**+12.0*** **
Grade 12	1.0 (.5)	2.4 (.6)	+1.4
An ungraded program	6.9 (1.3)	1.7 (.5)	**-5.2*** **
Percentage who were at the typical grade level for their age	32.0 (2.5)	52.8 (2.0)	**+20.8*** **

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Regarding the age of youth, the two cohorts included similar percentages of 15-, 16-, and 17-years-olds[3] (Exhibit 2-3). However, they were assigned to a broader range of grade levels in school than this 3-year age span would suggest, and the distribution of grade levels was significantly different for the two cohorts.

Although the cohorts included three age years, students within them were at five or more grade levels that spanned both middle and high school, as well as being in programs that were not identified by grade level (referred to as ungraded programs). However, a significant shift upward in grade level occurred over time. For example, in 1987, 10% of this age group were in 11th grade, whereas in 2001, more than twice that many were juniors in high school (22%, p<.001). This point is illustrated further in examining a single year age group. Among 16-year-olds, for example, 52% were in 9th grade and 22% in 10th grade in 1987. By 2001, the numbers essentially reversed, with 28% being in 9th grade and 54% in 10th grade (p<.001 for changes in both grade levels).

This greater likelihood of students advancing to the next grade level resulted in a 21 point increase in the percentage of students who were at the typical grade level for their age (32% vs. 53%, p<.001). This increase could have important positive implications for other academic

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[3] Equality in the balance of ages for the two cohorts was created in the process of weighting the two samples to ensure maximum comparability. Please see the methodological appendix for more details.

outcomes; analyses of the original NLTS indicated that being older than the typical age for a student's grade level contributed significantly to the likelihood of students' dropping out of high school. The increase in students with disabilities being at grade level also is somewhat surprising, given that "the pendulum today is clearly swinging toward not allowing for any conditional promotion and mandating retention for all low-performing students" (Smink, 2001). Several states (e.g., Georgia, North Carolina, and Texas) and some large school districts (e.g., Chicago, Dallas, and Philadelphia) have explicit policies that mandate retention at grade level on the basis of poor scores on a single standardized test. However, despite the large decline over time, almost half of youth with disabilities (47%) still were at least 1 year older than the typical age for their grade level in 2001.

Disability Differences in Changes in Demographic Characteristics

The changes in the demographics of youth with disabilities that have been described thus far did not affect all youth similarly. Differences in levels of change were noted for youth who differed in primary disability, gender, and race/ethnicity.

Disability category differences. The fairly stable gender distribution that was noted for youth with disabilities as a whole also was evident for most disability categories (Exhibit 2-4). Only among youth with other health impairments was there a significant change, with the proportion of males in that category increasing from 54% in cohort 1 to 75% in cohort 2 ($p<.001$). This change resulted primarily from the considerable increase in the number of youth with autism and AD/HD, most of whom were included in the other health impairment category for comparison purposes. Youth with autism had the highest proportion of males of any disability category (85%; Levine, Wagner, & Marder, 2003).

Changes in the racial/ethnic distribution that were observed for youth with disabilities as a whole affected disability categories quite differently. Although the small declines in the proportion of youth who were white in six of the nine disability categories were not statistically significant, increases in the proportion of white youth of 13 and 20 percentage points ($p<.05$ and .001) were evident for the speech and other health impairment categories, respectively. The increase in white youth among those with other health impairments may relate to the rise in youth with AD/HD, 82% of whom were white (Levine et al., 2003). There were no significant differences in the percentage of youth with disabilities who were African American in seven disability categories; only among youth with speech impairments was there a significant difference—a decline of 11 percentage points ($p<.05$).

The significant increase in the Hispanic population for youth with disabilities as a whole resulted from 7 and 8 percentage point increases for youth with learning disabilities and visual impairments ($p<.05$ and .01). In contrast, a 17 percentage point decrease took place in the percentage of Hispanic youth with other health impairments ($p<.001$), consistent with the large increase in white youth in that group.

The significant increases in the percentage of youth who used a language other than English at home for six disability categories ranged from 6 to 22 percentage points. Although many of these increases were consistent with increases in the proportion of Hispanic youth, the largest increase was among youth with hearing impairments, which reflected a growth in the reported use of manual communication. A significant decrease in the percentage of youth who used a

Exhibit 2-4
CHANGES IN DEMOGRAPHIC CHARACTERISTICS, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage who were:									
Male									
Cohort 1	72.8	56.9	55.8	76.6	54.3	59.7	55.0	53.6	67.9
	(2.9)	(4.3)	(3.5)	(3.2)	(3.6)	(4.9)	(4.5)	(4.8)	(6.0)
Cohort 2	68.3	64.5	57.9	75.8	50.5	53.7	56.1	75.1	58.2
	(2.8)	(3.2)	(3.0)	(2.6)	(3.3)	(4.3)	(3.4)	(2.2)	(3.1)
Percentage point change	-4.5	+7.6	+2.1	+.8	-3.8	-6.0	+1.1	**+21.5*****	-9.7
White									
Cohort 1	67.0	53.8	60.2	67.5	61.0	62.7	62.6	55.0	63.0
	(3.1)	(4.4)	(3.5)	(3.7)	(3.5)	(4.9)	(4.4)	(4.8)	(6.3)
Cohort 2	62.9	66.5	55.2	61.5	60.8	60.9	64.3	74.9	65.3
	(2.9)	(3.1)	(3.0)	(3.0)	(3.2)	(4.2)	(3.2)	(2.2)	(3.0)
Percentage point change	-4.1	**+12.7***	-5.0	-6.0	-.2	-1.8	-1.7	**+19.9*****	+2.3
African American									
Cohort 1	21.2	27.4	30.3	24.8	20.4	26.1	20.2	17.2	20.8
	(2.7)	(3.9)	(3.3)	(3.4)	(2.9)	(4.4)	(3.6)	(3.7)	(5.3)
Cohort 2	18.4	16.8	32.6	24.2	17.7	19.5	14.9	15.0	18.3
	(2.3)	(2.5)	(2.9)	(2.6)	(2.5)	(3.4)	(2.4)	(1.8)	(2.4)
Percentage point change	-2.8	**-10.6***	+2.3	-.7	-2.7	-6.6	-5.3	-2.2	-2.5
Hispanic									
Cohort 1	8.7	15.7	6.3	6.0	14.4	7.7	15.5	24.4	10.8
	(1.9)	(3.2)	(1.7)	(1.9)	(2.5)	(2.7)	(3.3)	(4.2)	(4.0)
Cohort 2	15.4	14.3	9.5	10.5	16.1	15.4	16.6	7.2	12.0
	(2.2)	(2.3)	(1.8)	(1.9)	(2.4)	(3.1)	(2.5)	(1.3)	(2.0)
Percentage point change	**+6.7***	+1.4	+3.2	+4.5	+1.7	**+7.7****	+1.1	**-17.2*****	+1.2
Percentage who did not use primarily English at home									
Cohort 1	1.3	7.6	5.9	1.5	18.0	5.6	7.6	10.3	33.5
	(.8	(2.4)	(1.7)	(1.0)	(2.8	(2.3)	(2.5)	(3.0	(6.1)
Cohort 2	15.4	17.6	11.1	9.0	41.4	17.7	14.9	9.1	15.6
	(2.2)	(2.6)	(2.0)	(1.8)	(3.3)	(3.3)	(2.5)	(1.5)	(2.3)
Percentage point change	**+14.1*****	**+10.0****	**+5.5***	**+7.4*****	**+22.4*****	**+12.1****	+7.3	-1.3	**-17.9****

Exhibit 2-4
CHANGES IN DEMOGRAPHIC CHARACTERISTICS, BY DISABILITY CATEGORY (Concluded)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage who were at the typical grade level for their age									
Cohort 1	34.4	37.0	21.1	29.5	32.1	34.1	30.4	33.1	41.6
	(3.8)	(5.0)	(3.9)	(4.4)	(4.0)	(5.7)	(4.7)	(6.3)	(10.7)
Cohort 2	56.3	56.8	36.6	50.4	53.2	64.0	50.5	56.6	43.9
	(3.0)	(3.3)	(3.0)	(3.1)	(3.4)	(4.4)	(3.4)	(2.6)	(3.5)
Percentage point change	**+21.9*****	**+19.8*****	**+15.5****	**+20.9*****	**+21.1*****	**+29.9*****	**+20.1*****	**+23.5*****	+2.3

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

language other than English at home was noted for youth with multiple disabilities (18 percentage points, p<.01).

The significant increase in the percentage of students with disabilities who were at grade level was evident for all categories of youth, except those with multiple disabilities, ranging from 16 to 30 percentage points. The largest increase was for youth with visual impairments (p<.001), bringing the proportion who were at grade level to 64% in 2001. The category of youth with the lowest initial rate of being at grade level—mental retardation—had the smallest significant increase, 16 percentage points (p<.01), so that in 2001, still only about one-third of youth with mental retardation were at the typical grade level for their age.

Demographic Differences in Changes in Demographic Characteristics

The stability in the proportion of youth who were white and African American was similar for both boys and girls. However, the increase in proportion of youth who were Hispanic was more pronounced among boys (p<.05, Exhibit 2-5). Significant changes in language use and in being at grade level were of similar magnitude for the two genders. Similar to the pattern of gender difference, the increase in the Hispanic population was not uniform across the groups; only the lower-income group experienced a significant increase (9 percentage points, p<.001). Consistent with this, the increase in the use of a language other than English at home was largest for the lowest-income group (15 percentage points, p<.001 vs. 6 points for the highest income group, p<.01). In contrast, a larger increase in students being at grade level occurred among higher-income youth (26 percentage points, p<.001) than among lower-income students (15 percentage points, p<.05).

Exhibit 2-5
CHANGES IN DEMOGRAPHIC CHARACTERISTICS, BY GENDER

	Boys	Girls
Percentage of youth who were Hispanic		
Cohort 1	7.8	10.6
	(1.4)	(2.3)
Cohort 2	14.1	12.6
	(2.3)	(2.5)
Percentage point change	**+6.3***	+2.0
Percentage who used a language other than English at home		
Cohort 1	1.7	3.6
	(1.0)	(1.4)
Cohort 2	14.0	14.5
	(1.7)	(2.4)
Percentage point change	**+12.3*****	**+10.9*****
Percentage who were at the typical grade level for their age		
Cohort 1	31.6	32.7
	(3.1)	(4.4)
Cohort 2	52.3	53.8
	(2.4)	(3.4)
Percentage point change	**+20.7*****	**+21.1*****

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ***p<.001.

Regarding differences in change among youth of different racial/ethnic backgrounds, it was not surprising that the increase in youth who used a language other than English at home was more pronounced for Hispanic youth (37 percentage points, p<.01) than white or African American youth (2 and 3 percentage points, Exhibit 2-6).

Exhibit 2-6
CHANGES IN DEMOGRAPHIC CHARACTERISTICS, BY INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity[4]		
	Lowest	Middle	Highest	White	African American	Hispanic
Percentage of youth who were Hispanic						
Cohort 1	10.9	8.8	3.0	NA	NA	NA
	(2.8)	(2.4)	(1.3)			
Cohort 2	20.1	10.7	8.9	NA	NA	NA
	(2.7)	(2.4)	(2.1)			
Percentage point change	**+9.2***	+1.9	+5.9			
Percentage who did not speak primarily English at home						
Cohort 1	4.3	3.4	2.2	1.7	1.7	20.3
	(1.8)	(1.5)	(1.1)	(.7)	(1.2)	(6.5)
Cohort 2	19.2	12.8	9.1	3.2	4.8	57.3
	(2.6)	(2.5)	(2.2)	(.9)	(1.9)	(5.0)
Percentage point change	**+14.9*****	**+9.4****	**+6.9****	+1.5	+3.1	**+37.0*****
Percentage who were at the typical grade level for their age						
Cohort 1	28.3	31.2	36.0	67.5	72.8	66.1
	(5.2)	(4.8)	(4.2)	(3.1)	(5.4)	(9.2)
Cohort 2	43.0	54.2	61.8	45.5	51.6	47.9
	(3.3)	(3.8)	(3.7)	(2.6)	(4.4)	(5.1)
Percentage point change	**+14.7***	**+23.0*****	**+25.8*****	**-22.0*****	**-21.2****	-18.2
Sample size (cohort 1/2):						

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01; ***p<.001.
NA=Not applicable

The increase in youth being at grade level was similar across racial/ethnic categories, although the change reached statistical significance only for the larger groups of white and African American youth.

Disability Profiles of Youth

This section highlights changes in key aspects of the disability profiles of youth, including the ages at which youth's disabilities first were identified and youth first received disability-related services, and the functional implications of disability in terms of youth's daily living skills.

Age at First Identification of and Service for Disability

The age at which children first are recognized as having a disability can indicate much about the nature of their disabilities and the experiences children and families have with those disabilities. Some disabilities, such as genetic disorders and some conditions that result from

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[3] There were too few cohort 1 Asian/Pacific Islander and American Indian/Alaska Native youth to identify then separately throughout this report.

premature birth, affect children throughout their lifetimes; they and their families never experience a time when disability is not an aspect of their relationship. Other disabilities emerge when children reach the ages of typical developmental milestones and exhibit delays in acquiring skills, such as delays in walking or talking. Still others become apparent when children take on more sophisticated cognitive tasks, such as reading or mathematics, and demonstrate difficulty in learning. Others can result from accidents or illnesses that can occur at any age. Regardless of the age at which disabilities emerge, promptness in identifying and treating disabilities can be extremely important in ameliorating their effects on children's development and functioning. IDEA includes an early intervention program for infants and toddlers with disabilities that begins at birth and has outreach components for their families.

High-school-age youth with disabilities in 2001 first were identified as having a disability or delay significantly earlier than their peers in 1987 (Exhibit 2-7). The average age at first identification reported by parents dropped by about 8 months, from 6.6 years for cohort 1 to 5.9 years for cohort 2. Higher proportions of youth in cohort 2 first were identified as preschoolers (10% vs. 6%, $p<.05$). Disability-related services also began significantly earlier for cohort 2; the average age of first service was 7.4 years for cohort 2, compared with 8.5 years for cohort 1 ($p<.001$). These changes narrowed the average lag between identification and service from 1.9 to 1.5 years.

Youths' Daily Living Skills

Some kinds of disabilities can delay or circumvent the typical development of competencies in daily living tasks, such as feeding or dressing oneself or going to places outside the home. This section explores changes in parents' reports of the ability of high-school-age youth with disabilities to handle fundamental self-care needs and carry out common cognitive tasks.

Parents were asked to rate how well youth were able to feed and dress themselves without help and go places outside the home, such as to a neighbor's house or a nearby park. Parents also were asked to evaluate youth regarding four skills that often are used in daily activities: telling time on a clock with hands, reading and understanding common signs, counting change, and looking up telephone numbers and using the telephone. These activities are referred to as cognitive mental skills because they require the cognitive ability to read, count, and calculate. However, they also require sensory and physical skills to see signs, manipulate a telephone, etc.

Exhibit 2-7
CHANGES IN AGE AT FIRST IDENTIFICATION OF AND SERVICE FOR DISABILITY

	Cohort 1	Cohort 2	Percentage Point Change
Percentage whose disability or delay first was identified at age:			
Birth to 2	16.5 (1.7)	19.0 (1.6)	+2.5
3 or 4	5.5 (1.2)	9.5 (1.2)	**+4.0***
5 or 6	27.0 (2.1)	31.3 (1.9)	+4.3
7 to 10	37.2 (2.3)	29.6 (1.9)	**-7.6***
11 or older	13.7 (1.6)	10.6 (1.3)	-3.1
Average age when disability or delay first was identified	6.6 (.2)	5.9 (.2)	**-.7****
Percentage who began receiving service for a disability/delay at age:			
Birth to 2	4.3 (1.0)	9.1 (1.2)	**+4.8****
3 or 4	5.6 (1.1)	7.9 (1.1)	+2.3
5 or 6	18.3 (1.8)	21.5 (1.6)	+3.2
7 to 10	44.4 (2.3)	42.8 (2.0)	-1.6
11or older	27.3 (2.1)	18.8 (1.6)	**-8.5****
Average age when first began receiving service for a disability or delay	8.5 (.1)	7.4 (.1)	**-1.1*****

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

A high score clearly indicates high functioning in all these areas; however, a low score may indicate deficits in one or more of the cognitive, sensory, or physical domains. Parents reported these self-care and cognitive mental skills on a four-point scale: "very well," "pretty well," "not too well," "not at all well." For both sets of skills, a scale was created by summing the values of the component items.

A small but consistent downward trend in scale scores was evident for both self-care skills and cognitive mental skills (Exhibit 2-8), resulting primarily from smaller percentages of youth scoring "high" and larger proportions scoring "medium" on the scales. The average scores on the scales declined by less than one-half point, but the changes were enough to attain statistical significance.

These changes in average skills may reflect real differences in youth' abilities between the two cohorts. If the trend toward earlier identification of disability that was reported above reflects a greater proportion of youth with more severe disabilities in cohort 2 relative to cohort 1, that greater severity of disability also might be reflected in somewhat lower skill attainment. Alternatively, the differences between groups may suggest a change in emphasis on the kinds of skills youth are being taught. For example, one of the skills in the cognitive mental skill scale is telling time on an analog clock. With digital technology now ubiquitous, youth who have trouble with number concepts may no longer need to struggle to learn how to tell time on a clock with hands, relying instead on digital timepieces. Thus, they might score lower on the scale but have no real limitation in the task of telling time.

Exhibit 2-8
CHANGES IN THE DAILY LIVING SKILLS OF YOUTH WITH DISABILITIES

	Cohort 1	Cohort 2	Change
Percentage whose self-care skills scale[a] score (range = 3 to 12) was:			
High (11 or 12)	92.9 (1.1)	89.7 (1.2)	-3.2
Medium (8 to 10)	4.7 (1.0)	8.1 (1.1)	**+3.4***
Low (3 to 7)	2.4 (.7)	2.2 (.6)	-.2
Average self-care skills scale score	11.7 (.0)	11.5 (.0)	**-.2****
Percentage whose cognitive mental skills scale[b] score (range = 4 to 16) was:			
High (15 or 16)	58.3 (2.2)	50.0 (2.0)	**-8.3****
Medium (9 to 14)	35.8 (2.2)	44.4 (2.0)	**+8.6*****
Low (4 to 8)	5.8 (1.1)	5.6 (.9)	-.2
Average cognitive mental skills scale score	14.0 (.1)	13.7 (.1)	**-.3***

[a] Scale includes how well youth could dress and feed themselves independently and get around to nearby places outside the house.

[b] Scale includes how well youth were able to tell time on a clock with hands, read and understand common signs, count change, and look up telephone numbers and use the telephone.

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Differences Between Groups in Changes in Disability Profiles

Disability category differences. The decline in the average age at first identification of a disability[5] that was noted for youth with disabilities as a whole resulted from significant reductions in age for youth in five disability categories—learning disabilities, mental retardation, emotional disturbance, and orthopedic and other health impairments—ranging from 8 to 18 months (p<.05 to .001, Exhibit 2-9). A significant drop in age at first service was evident for youth in all categories except hearing impairment. Significant declines averaged 1 to 2 years.

In general, little change in age at first identification and first service was evident for categories for which the ages already were among the lowest of the disability categories. For example, there was essentially no change in the average age of identification for youth with hearing or visual impairments or multiple disabilities, for whom the average age already was age 2 or younger. Unlike most categories of youth whose disabilities first were identified at school age, there was no decline in the average age at identification for youth with speech impairments.

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[5] The specific disability that first was diagnosed is not known and may have been different from the primary disability for which youth were classified for special education services in secondary school.

Exhibit 2-9
CHANGES IN DISABILITY PROFILES OF YOUTH WITH DISABILITIES, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Average age when disability was identified									
Cohort 1	7.3	5.9	4.8	7.4	2.2	1.8	3.2	6.1	2.1
	(.2)	(.3)	(.2)	(.3)	(.2)	(.3)	(.4)	(.5)	(.4)
Cohort 2	6.5	5.8	4.1	6.5	2.5	1.8	1.7	4.8	2.3
	(.2)	(.2)	(.2)	(.2)	(.2)	(.3)	(.2)	(.2)	(.2)
Change in average age	**-.8****	-.1	**-.7***	**-.9***	+.3	.0	**-1.5*****	**-1.3****	+.2
Average age when first received service for a disability									
Cohort 1	9.0	8.4	6.8	9.5	4.6	5.3	4.9	8.5	4.6
	(.2)	(.3)	(.2)	(.2)	(.2)	(.3)	(.4)	(.4)	(.5)
Cohort 2	8.0	7.4	5.7	8.5	4.1	3.5	2.9	6.7	3.4
	(.2)	(.2)	(.2)	(.2)	(.2)	(.3)	(.3)	(.2)	(.2)
Change in average age	**-1.0*****	**-1.0****	**-1.1*****	**-1.0*****	-.5	**-1.8****	**-2.0*****	**-1.8*****	**-1.2***
Average self-care skills score									
Cohort 1	11.9	11.8	11.0	11.9	11.8	10.9	9.9	11.1	8.5
	(.0)	(.1)	(.2)	(.1)	(.0)	(.2)	(.2)	(.1)	(.5)
Cohort 2	11.7	11.7	10.7	11.7	11.6	10.3	9.5	11.3	9.0
	(.0)	(.1)	(.1)	(.0)	(.1)	(.2)	(.2)	(.1)	(.2)
Change in scale score	**-.2***	-.1	-.3	**-.2***	**-.2***	**-.6***	-.4	+.2	+.5
Average cognitive mental skills scale score									
Cohort 1	14.6	14.5	12.0	14.3	14.2	12.6	13.5	13.7	8.3
	(.1)	(.2)	(.2)	(.1)	(.1)	(.3)	(.2)	(.2)	(.5)
Cohort 2	14.1	14.4	11.3	14.5	14.2	11.7	12.5	13.7	9.8
	(.1)	(.1)	(.2)	(.1)	(.2)	(.3)	(.3)	(.1)	(.3)
Change in scale score	**-.5*****	-.1	-.7	+.2	.0	**-.9***	**-1.0***	.0	**+1.5*****

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

The small, but statistically significant reductions in average scores for youth overall on scales measuring self-care and cognitive mental skills resulted from declines in scores in only some disability categories. For example, small but significant declines in self-care scale scores were noted for four categories (learning disability, emotional disturbance, hearing impairment, and visual impairment, p<.05). Similarly, the overall decline in the cognitive mental skills scale resulted from small but significant declines in three categories (youth with learning disabilities, p<.001; and hearing impairments and visual impairments, p<.05).

Demographic differences. The small changes in average self-care and cognitive mental skills scales did not vary significantly across genders. However, there were differences between boys and girls in their experience of changes in the age at first identification of and service for disability (Exhibit 2-10). The reduction in the age at first identification of disability was more than twice as large for boys as girls (almost 11 months, p<.01, vs. almost 5 months), although reductions in the age at first service for disability were more similar (13 and 11 months, p<.001 and .05).

Exhibit 2-10
CHANGES IN AGE AT DISABILITY IDENTIFICATION AND FIRST SERVICE, BY GENDER

	Boys	Girls
Average age at disability identification		
Cohort 1	6.7 (.2)	6.4 (.3)
Cohort 2	5.8 (.2)	6.0 (.3)
Percentage change in years	**-.9****	-.4
Average age at first service for disability		
Cohort 1	8.5 (.2)	8.4 (.3)
Cohort 2	7.4 (.2)	7.5 (.2)
Percentage change in years	**-1.1*****	**-.9***

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05; ** p<.01; ***p<.001.

No meaningful decreases took place in the age of disability identification across income levels (Exhibit 2-11). However, the decline in the age when youth first received services for their disability was larger among higher income youth (1.3 years, p<.01) than among middle and lower income youth (about 7 and 10 months, not significant differences).

Reductions in age of first identification were between 10 and 12 months across racial/ethnic groups, with only the difference for the larger white group being statistically significant (p<.01). Reductions were from 6 months to 13 months for age at first service, but only the reductions for white and African American youth were significant (p<. 001 and .01).

Exhibit 2-11
CHANGES IN AGE AT DISABILITY IDENTIFICATION AND FIRST SERVICE, BY DEMOGRAPHIC CHARACTERISTICS

	Income			Race/Ethnicity		
	Lowest	Middle	Highest	White	African American	Hispanic
Average age at disability identification						
Cohort 1	6.9 (.4)	6.3 (.3)	6.2 (.3)	6.3 (.2)	7.4 (.4)	6.3 (.6)
Cohort 2	6.2 (.3)	5.9 (.2)	5.5 (.3)	5.5 (.2)	6.6 (.4)	6.3 (.4)
Percentage change in years	-.7	-.4	-.7	**-.8****	-.8	-1.0
Average age at first service for disability						
Cohort 1	8.7 (.3)	8.2 (.3)	8.2 (.3)	8.2 (.2)	9.2 (.3)	8.4 (.5)
Cohort 2	7.9 (.3)	7.6 (.3)	6.9 (.3)	7.1 (.2)	8.1 (.3)	7.9 (.4)
Percentage change in years	-.8	-.6	**-1.3****	**-1.1*****	**-1.1****	-.5

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: ** p<.01; ***p<.001.

Summary

The composition of 15- through 17-year-old youth with disabilities has changed markedly in some ways since 1987.

Of particular note is the distribution of youth across disability categories. This age group had significantly fewer youth classified with mental retardation as their primary disability in 2001 than in 1987. At the same time, 15- to 17-year-old youth had grown significantly in the proportion classified as having other health impairments. Some of the growth in the other health impairment category resulted from large increases in the numbers of youth diagnosed with autism or AD/HD. The change in the mix of disabilities within the other health impairment category was accompanied by significant increases in the proportion of boys in that category and in the proportion of white youth.

The racial/ethnic distribution of youth with disabilities became increasingly diverse over time, with a significant increase in the percentage of Hispanic youth and those who did not speak primarily English at home. This increase in language diversity was particularly marked among Hispanic and Asian/Pacific Islander youth. In 2001, more than three-fourths of Asian/Pacific Islander and more than half of Hispanic youth with disabilities were not native English speakers.

Among the characteristics of youth examined in this report, the largest change was in the grade level distribution of youth. Youth with disabilities were much more likely to be at higher grade levels in 2001 than their age-mates in 1987. In fact, the proportion of youth who were at the typical grade level for their age increased from one-third of youth to more than one-half over that period. It is unclear how such factors as the educational programs they experienced, their academic performance, or policies related to social promotion contributed to the trend toward youth with disabilities being at the typical grade level for their age.

Other important changes had to do with identifying and first serving youth for their disabilities. Youth were both identified and first served at significantly earlier ages in 2001 than in 1987, with declines in these ages averaging 8 and 13 months, respectively. Declines of at least a full year in age at first service for a disability were evident for almost all categories of youth, which narrowed the gap between identification and service for most of them. Despite earlier identification and service, small, but significant declines were reported by parents in the daily living skills of youth.

3. CHANGES IN THE HOUSEHOLDS OF YOUTH WITH DISABILITIES

A child's household is his or her first educational setting. At home, children form their first emotional attachments, achieve their early developmental milestones, and acquire the foundation for their subsequent growth and learning. During adolescence, the family can be the context within which a youth wrestles with his or her desire for both independence and separation, and the need to stay connected to family and home. These already complex dynamics of households with adolescents can be made even more complex by the added element of an adolescent's disability. How families respond to that complexity can influence the family system itself, the nature of the adolescent years, and the transition to adulthood and independence.

This chapter examines changes over time in the household composition of youth with disabilities, including their living arrangements, the presence of parents and other children in their households, and whether any other child had a disability. The education and employment status of heads of households and the household's economic status also are considered.

Household Demographics

Household Composition

The living arrangements of youth with disabilities did not change markedly over time (Exhibit 3-1); the vast majority of youth with disabilities and youth in the general population lived with one or both parents. The exception to the stability in living arrangements was an increase of almost 4 percentage points in youth living with friends or family members other than parents (p<.001).

The percentage of youth living in single-parent households also was fairly stable over time for both youth with disabilities and youth in the general population; no decrease took place in the 10 percentage point higher rate of youth with disabilities living in single-parent households. However, the 4 to 6 percentage point increase (p<.01 and .05) in youth with disabilities who were living with only their biological mother or father suggests that two-parent households increasingly included stepparents. The percentage of youth with disabilities who were living with neither parent declined by 6 percentage points (p<.05), consistent with the decline in youth living in group settings other than households. This decline contrasts with a doubling of youth living in nonparent households in the general population. Nonetheless, the rate at which youth with disabilities lived in households with no biological parents in 2001 was more than twice that of youth in the general population—14% vs. 6%, p<.001).

The average number of children in households of youth with disabilities dropped marginally over time (from 2.6 to 2.3 children, p<.05). The percentage with an adult with a disability doubled (from 10% to 21%, p<.001), indicating that households increasingly were experiencing the challenges of multiple members with disabilities.

Exhibit 3-1
CHANGES IN HOUSEHOLD COMPOSITION OF YOUTH WITH DISABILITIES AND YOUTH IN THE GENERAL POPULATION

	Youth with Disabilities			Youth in the General Population		
Individual Characteristics	Cohort 1	Cohort 2	Percentage Point Change	Cohort 1[a]	Cohort 2[b]	Percentage Point Change
Percentage of youth living:						
With a parent or guardian	94.0 (1.0)	92.8 (1.5)	-1.2	94.0	94.0	.0
With another family member or friend	2.2 (.6)	5.8 (.9)	**+3.6*** **	NA	NA	
In a residential school	.6 (.3)	.1 (.1)	-.5	NA	NA	
In a supervised group home	.7 (.3)	.2 (.2)	-.5	NA	NA	
In an institution	1.0 (.4)	.4 (.1)	-.6	NA	NA	
In another arrangement	1.5 (.5)	.7 (.3)	-.8	NA	NA	
Percentage living in a single-parent household	35.8 (2.2)	37.2 (1.9)	+1.4	25.6	27.0	+1.4
Percentage of households with:						
Both biological parents present	42.4 (2.2)	37.6 (1.9)	-4.8	73.1	67.8	-5.3
Biological mother only present	34.8 (2.2)	41.2 (1.9)	**+6.4***	21.3	21.9	+.6
Biological father only present	3.8 (.9)	7.8 (1.0)	**+4.0****	2.6	4.2	+1.6
Neither biological parent present	19.0 (1.8)	13.5 (1.3)	**-5.5***	3.0	6.0	+3.0
Average number of children in the household	2.6 (.1)	2.3 (.1)	**-.3***	2.2	NA	
Percentage with another child/other children with disabilities	21.5 (1.9)	26.1 (2.2)	+4.6	NA	NA	
Percentage with an adult with a disability	10.1 (1.4)	20.8 (1.5)	**+10.7*** **	NA	NA	
Sample size	2,859	5,758				

Source for youth with disabilities: NLTS and NLTS2 Wave 1 parent interviews.

[a] U.S. Census Bureau (1987).

[b] Federal Interagency Forum on Child and Family Statistics (2001).

NA indicates that data are not available.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Parents' Characteristics

The education and employment status of heads of households of both youth with disabilities and youth in the general population improved markedly (Exhibit 3-2). For example, the percentage of youth with disabilities living in households with a head who was not a high school graduate dropped by almost half (from 41% to 22%, $p<.001$), which greatly exceeded the 9 percentage point decline in the general population (from 22% to 13%). This closed the gap between the two groups from 19 percentage points in 1987 to 9 percentage points in 2001, with youth with disabilities still being more likely to have a head of household who was not a high school graduate. There were corresponding increases in youth with disabilities with heads of households who were at every other education level. However, greater increases in the general population of those with heads of households who had some college or college degrees indicates that the gap between youth with disabilities and youth in the general population in having college-educated heads of households widened over time.

The strong economy that characterized the late 1990s and early 21st century may have contributed to the higher rates of employment of heads of households of youth with disabilities. Unemployment among heads of households of youth with disabilities dropped by 11 percentage points ($p<.001$), and full-time employment increased by a similar amount. However, the employment status of heads of households in which youth with disabilities lived remained substantially below that of youth in the general population.

Exhibit 3-2
CHANGES IN THE EDUCATION AND EMPLOYMENT OF HEADS OF HOUSEHOLDS OF YOUTH WITH DISABILITIES AND YOUTH IN THE GENERAL POPULATION

	Youth with Disabilities			Youth in the General Population		
Individual Characteristics	Cohort 1	Cohort 2	Percentage Point Change	1987[a]	2001[b]	Percentage Point Change
Head of household's education (percentage)						
Less than high school	41.3 (2.2)	21.5 (1.6)	**-19.8*****	22.3	13.3	-9.0
High school graduate or GED	34.9 (2.2)	41.4 (2.0)	**+6.5***	38.8	29.7	-9.1
Some college	15.4 (1.6)	23.6 (1.7)	**+8.2*****	17.8	28.8	+11.0
Bachelor's degree or more	8.4 (1.3)	13.6 (1.4)	**+5.2****	21.1	28.3	+7.2
Head of household's employment (percentage)						
Not employed	29.0 (2.1)	18.4 (1.6)	**-10.6*****	NA	11.0[c] (.6)	
Part time	8.7 (1.3)	7.9 (1.1)	-.8	NA	NA	
Full time	62.4 (2.2)	73.8 (1.8)	**+11.4*****	NA	NA	

Source for youth with disabilities: NLTS and NLTS2 Wave 1 parent interviews.

[a] U.S. Census Bureau (1988). Data are for youth ages 12 to 17 and living with at least one parent in March 1987.

[b] U.S. Census Bureau (2001). Data are for children ages 6 through 17.

[c] Computed using data for 13- to 17-year-olds from the National Household Education Survey, 1999.

NA indicates that data are not available.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Socioeconomic Status

In 1987, the annual unemployment rate was 6.2%, whereas in 2001, it was 4.8% (U.S. Bureau of Labor Statistics, 2002). This decrease in unemployment almost certainly contributed to an increase in the income of youths' households between cohort 2 and cohort 1 (Exhibit 3-3). Although a sizable increase in income would be expected because of inflation alone, the larger income gains for households of youth with disabilities than for those of youth in the general population suggest that more than inflation contributed to higher incomes for households of youth with disabilities. For example, the percentage of youth with disabilities whose household incomes were less than $25,000 declined by 33 percentage points between 1987 and 2001 (p<.001), compared with a 19 percentage point decline in the general population. Nonetheless,

Exhibit 3-3
CHANGES IN HOUSEHOLD SOCIOECONOMIC STATUS OF YOUTH WITH DISABILITIES AND YOUTH IN THE GENERAL POPULATION

	Youth with Disabilities			Youth in the General Population		
	Cohort 1	Cohort 2	Percentage Point Change	1987	2001	Percentage Point Change
Percentage with annual household income:						
Up to $25,000	67.8 (2.2)	34.9 (2.0)	**-32.9*** **	38.6[a]	19.8[b]	-18.8
$25,000 to $50,000	27.1 (2.0)	30.4 (1.9)	+3.3	35.6[a]	25.5[b]	-10.1
More than $50,000	5.1 (1.0)	34.7 (2.0)	**+29.6*** **	25.8[a]	54.7[b]	+28.9
In poverty	38.0 (1.6)	28.9 (1.1)	**-9.1** **	19.6[c]	16.3[d]	-3.0
Percentage recently receiving:						
AFDC/TANF	14.2 (1.6)	10.5 (1.1)	-3.8	12.6	8.6	-4.0
Food Stamps	26.7 (2.0)	15.6 (1.4)	**-11.1*** **	12.9[e]	14.2[f]	+1.3
SSI	9.8 (1.4)	14.8 (1.3)	**+5.0* **	NA	NA	NA

Source for youth with disabilities: NLTS and NLTS2 Wave 1 parent interviews.

[a] U.S. Census Bureau, (1988).

[b] U.S. Census Bureau (2001).

[c] Center for the Study of Social Policy (1993).

[d] U. S. Census Bureau (2002).

[e] U.S. Department of Education (1988). Figures are for households with children under age 18.

[f] Computed using data for 13- to 17-year-olds from the National Household Education Survey, 1999.

NA indicates that data are not available.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, *** p<.001.

significantly more youth with disabilities continued to live in poverty than youth in the general population (29% vs. 16%, p<.001), despite a larger decline in the poverty rate for youth with disabilities than for youth in the general population (9 percentage points vs. 4 percentage points).

At the upper end of the income range, the proportion of youth with disabilities living in households with incomes of more than $50,000 increased by 30 percentage points (p<.001), similar to the increase among youth in the general population. Thus, the household incomes of youth with disabilities were more likely than others to move from the lowest into the moderate income group, but were no more likely than households for other youth to have incomes move from the moderate to the high income group.

Both higher incomes and welfare reform may have contributed to the 11 percentage point reduction in Food Stamp Program participation (p<.001), which was much larger than the decline of less than 2 percentage points in the general population. Participation in the Supplemental Security Income (SSI) program increased significantly, by 5 percentage points (p<.05).

Disability Differences in Changes in Household Demographic Characteristics

Several of the changes in the households of youth with disabilities that were observed for the group as a whole affected disability categories differently (Exhibit 3-4). For example, the absence of significant change in the percentage of youth living in single-parent households that was evident for some disability categories contrasted with the declines of 12 and 17 percentage points among youth with speech/language and other health impairments (p<.05 and .01), the categories of youth with the highest rates in cohort 1. Similarly, changes in parent characteristics also did not always affect youth equally across the disability categories. For example, although all categories of cohort 2 youth were significantly less likely than those in cohort 1 to have heads of households who had not graduated from high school, the significant increase in college graduates that was evident for youth with disabilities as a whole occurred for parents of youth in only six disability categories, ranging from 7 to 12 percentage points (p<.05 and .01). There were no marked changes among parents of youth with learning disabilities, mental retardation, or visual impairments. Improvements in employment status also did not occur uniformly. Although there were fewer heads of households who were not employed in most categories, heads of households of youth with emotional disturbances, sensory impairments, and multiple disabilities did not experience those benefits.

Regarding economic status, the percentage of youth in poverty decreased significantly in six categories, ranging from 10 to 27 percentage points (youth with learning disabilities and other health impairments, respectively). Youth with mental retardation, emotional disturbances, and hearing impairments experienced no reduction in the percentage who were living in poverty. Poverty rates continued to be particularly high for youth with mental retardation or emotional disturbances (46% and 35%). Consistent with this fact, mental retardation or emotional disturbances were the only categories of youth for whom there was no significant drop in Food Stamp participation and for whom receipt of SSI increased significantly. The only groups that experienced a significant drop in receipt of Aid to Families with Dependent Children, now known as Temporary Assistance to Needy Families, were youth with orthopedic impairments or other health impairments.

Exhibit 3-4
CHANGES IN SELECTED HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage with head of household who was:									
A single parent									
Cohort 1	33.6	44.7	36.3	41.8	34.1	36.2	37.4	44.7	38.1
	(3.3)	(4.5)	(3.6)	(4.0)	(3.4)	(4.8)	(4.5)	(5.0)	(6.9)
Cohort 2	35.3	33.1	43.7	46.5	34.6	41.5	31.6	27.4	34.3
	(2.9)	(3.1)	(3.0)	(3.1)	(3.2)	(4.2)	(3.2)	(2.3)	(3.0)
Percentage point change	+1.7	**-11.6***	+7.4	+4.7	+.5	+5.3	-5.8	**-17.3****	-3.8
Not a high school graduate									
Cohort 1	37.3	46.1	52.9	46.8	32.2	36.8	37.5	35.9	27.1
	(3.3)	(4.5)	(3.7)	(4.1)	(3.4)	(4.9)	(4.5)	(4.8)	(6.3)
Cohort 2	20.3	19.1	33.5	21.1	20.4	17.0	16.8	13.1	12.9
	(2.5)	(2.7)	(3.0)	(2.6)	(2.8)	(3.3)	(2.6)	(1.8)	(2.2)
Percentage point change	**-17.0*****	**-27.0*****	**-19.4*****	**-25.7*****	**-11.8****	**-19.8*****	**-20.7*****	**-22.8*****	**-14.2***
A college graduate									
Cohort 1	8.8	11.4	5.7	6.0	11.2	15.4	17.3	17.1	12.7
	(2.0)	(2.9)	(1.7)	(1.9)	(2.3)	(3.6)	(3.5)	(3.8)	(4.7)
Cohort 2	11.9	22.6	9.3	13.4	23.0	17.1	27.8	27.4	23.9
	(2.0)	(2.9)	(1.8)	(2.1)	(2.9)	(3.3)	(3.1)	(2.3)	(2.8)
Percentage point change	+3.1	**+11.2****	+3.6	**+7.4****	**+11.8****	+1.7	**+10.5***	**+10.3***	**+11.2***
Not employed									
Cohort 1	25.3	27.0	43.3	25.9	25.9	26.4	34.1	30.5	30.8
	(3.0)	(4.1)	(3.7)	(3.6)	(3.2)	(4.4)	(4.4)	(4.6)	(6.5)
Cohort 2	14.9	14.6	29.6	25.8	18.0	19.9	17.1	15.0	22.6
	(2.2)	(2.5)	(2.9)	(2.8)	(2.7)	(3.5)	(2.7)	(1.9)	(2.7)
Percentage point change	**-10.4****	**-12.4****	**-13.7****	-.1	-7.9	-6.5	**-17.0*****	**-15.5****	-8.2
Percentage in poverty									
Cohort 1	35.3	38.5	47.7	35.6	34.2	39.3	38.7	46.6	30.8
	(3.5)	(4.5)	(3.9)	(4.0)	(3.6)	(5.1)	(4.7)	(5.3)	(7.4)
Cohort 2	25.5	22.1	46.0	34.7	26.7	23.4	24.4	19.7	27.5
	(2.8)	(3.0)	(3.3)	(3.1)	(3.3\2)	(3.7)	(3.7)	(2.2)	(3.1)
Percentage point change	**-9.8***	**-16.7****	-1.7	-.9	-7.5	**-15.8***	**-14.3***	**-26.9*****	**-17.2***

Exhibit 3-4
CHANGES IN SELECTED HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS, BY DISABILITY CATEGORY (Concluded)

Household Characteristics	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage who recently received:									
AFDC/TANF									
Cohort 1	14.2	10.6	16.3	12.3	9.2	13.0	14.1	19.9	15.4
	(2.4)	(2.8)	(2.7)	(2.7)	(2.1)	(3.4)	(3.2)	(4.0)	(5.1)
Cohort 2	9.2	8.9	15.2	14.9	8.5	11.0	6.0	7.5	9.7
	(1.8)	(2.0)	(2.3)	(2.3)	(1.9)	(2.7)	(1.7)	(1.4)	(1.9)
Percentage point change	-5.0	-1.7	-1.1	+2.6	-.7	-2.3	**-8.1***	**-12.4****	-5.7
Food Stamps									
Cohort 1	25.7	22.9	33.0	25.5	18.8	19.9	24.7	24.7	27.9
	(3.0)	(3.8)	(3.5)	(3.6)	(2.8)	(4.0)	(4.0)	(4.3)	(6.3)
Cohort 2	14.0	11.7	24.6	25.0	11.7	9.7	10.6	9.7	11.5
	(2.2)	(2.2)	(2.7)	(2.8)	(2.2)	(2.5)	(2.2)	(1.6)	(2.1)
Percentage point change	**-11.7****	**-11.2***	-8.4	-.5	**-7.1***	**-10.2***	**-14.1****	**-15.0*****	**-16.4***
SSI									
Cohort 1	4.9	11.3	20.5	9.4	20.3	27.7	33.2	20.2	34.4
	(1.5)	(2.9)	(3.0)	(2.4)	(2.9)	(4.5)	(4.4)	(4.0)	(6.6)
Cohort 2	8.8	8.7	35.6	18.8	23.4	29.5	29.7	15.2	31.8
	(1.8)	(2.0)	(3.0)	(2.5)	(2.9)	(3.9)	(3.2)	(1.9)	(3.0)
Percentage point change	+3.8	-2.6	**+15.1*****	**+9.4****	+2.9	+1.8	-3.5	-5.0	-2.6

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Demographic Differences in Changes in Household Characteristics

Some household characteristics did not change significantly for youth of either gender or youth who differed in household income or racial/ethnic background, including, for example, the rate at which they lived in single parent households or participated in TANF. However, some youth with different demographic characteristics did experience some kinds of changes in household circumstances, although to different degrees, as described below.

Gender. Girls showed greater gains relative to boys in both the education level and employment status of heads of households (Exhibit 3-5). There was a decline of 27 percentage points in the incidence of girls with disabilities whose head of household was not a high school graduate, compared with 16 percentage points for boys (p<.001). Declines in unemployed heads of households were 15 percentage points for girls and 9 percentage points for boys (p<.001 for both declines). With these changes, the disadvantage experienced by cohort 1 girls relative to boys regarding parents' education and employment was eliminated. The improvements in poverty status were quite similar in size for boys and girls, although it attained statistical significance only for the larger group of boys. There also were reductions of about 10 percentage points in Food Stamp participation for both groups (p<.001 and .05). However, only boys experienced a significant increase in receipt of SSI benefits.

Household income. Head of household education improved for all income levels, but improvements in employment occurred only among the lowest and middle income groups (19 and 13 percentage points, p<.001 and .01) (Exhibit 3-6). Both the lowest and middle income groups showed declines in poverty (18 and 9 percentage points, p<.001 and .01) and in Food Stamp participation (20 and 9 percentage points, p<.001 and .05). However, the increase in SSI participation noted for youth with disabilities as a whole occurred only among the lowest-income group (12 percentage points, p<.05), as would be expected.

Racial/ethnic background. Improvements in head of household's education were greatest for African American and Hispanic youth; there were declines of 30 and 31 percentage points (p<.001) in the high school dropout rate among their heads of households, compared with an 18 percentage point decline for white youth (p<.01), the group with lowest dropout rate initially (Exhibit 3-6). Similarly, significant reductions in the unemployment rate of heads of household occurred only for African American and Hispanic youth (22 and 20 percentage points, p<.001 and .05). However, these improvements did not translate into significant reductions in the poverty rate among African American and Hispanic students; only among white students did the percentage in poverty decline significantly (28% to 18%, p<.01). Further, Hispanic youth did not experience the significant declines in Food Stamp participation noted for the other groups (9 to 29 percentage points, p<.05 and .001).

Exhibit 3-5
CHANGES IN SELECTED HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS, BY YOUTH'S GENDER

	Boys	Girls
Percentage whose head of household was:		
Not a high school graduate		
Cohort 1	38.1	48.1
	(2.7)	(3.8)
Cohort 2	21.6	21.2
	(2.0)	(2.8)
Percentage point change	**-16.5*** **	**-26.9*** **
Not employed		
Cohort 1	26.7	34.0
	(2.5)	(3.7)
Cohort 2	17.9	19.4
	(2.0)	(2.8)
Percentage point change	**-8.8** **	**-14.6** **
Percentage in poverty		
Cohort 1	36.7	40.9
	(2.8)	(4.0)
Cohort 2	27.9	30.8
	(2.3)	(3.3)
Percentage point change	**-8.8* **	-10.1
Percentage who recently received		
Food Stamps		
Cohort 1	25.6	29.1
	(2.4)	(3.6)
Cohort 2	14.8	19.1
	(1.8)	(2.7)
Percentage point change	**-10.8*** **	**+10.0* **
SSI		
Cohort 1	8.9	11.6
	(1.6)	(2.5)
Cohort 2	15.9	12.7
	(1.8)	(2.3)
Percentage point change	**+7.0** **	+1.1

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Exhibit 3-6
CHANGES IN SELECTED HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS, BY INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Lowest	Middle	Highest	White	African American	Hispanic
Percentage with head of household who was:						
Not a high school graduate						
Cohort 1	59.1	40.6	18.9	33.4	55.2	69.4
	(4.4)	(4.1)	(2.9)	(2.6)	(4.8)	(7.4)
Cohort 2	40.4	17.9	5.6	15.8	25.2	38.2
	(3.3)	(2.9)	(1.7)	(1.9)	(3.9)	(4.9)
Percentage point change	**-18.7****	**-22.7*****	**-13.3*****	**-17.6*****	**-30.0*****	**-31.2*****
Not employed						
Cohort 1	56.6	22.0	4.4	20.0	49.3	37.4
	(4.4)	(3.5)	(1.5)	(2.2)	(4.8)	(7.7)
Cohort 2	37.8	9.3	5.2	14.7	27.0	17.8
	(3.2)	(2.2)	(1.7)	(1.9)	(4.1)	(3.9)
Percentage point change	**-18.8*****	**-12.7****	+.8	-5.3	**-22.3*****	**-19.6***
Percentage in poverty						
Cohort 1	98.9	12.2	.0	28.4	62.1	51.0
	(.9)	(2.8)	(.0)	(2.6)	(4.9)	(8.8)
Cohort 2	81.2	3.2	.0	18.6	50.4	38.8
	(2.6)	(1.3)	(.0)	(2.1)	(4.7)	(5.2)
Percentage point change	**-17.7*****	**-9.0****	.0	**-9.8****	-11.7	-12.2
Percentage who recently received:						
Food Stamps						
Cohort 1	61.3	15.2	1.7	17.1	49.2	34.7
	(4.3)	(3.0)	(1.0)	(2.1)	(4.8)	(7.6)
Cohort 2	41.6	6.3	1.0	8.5	25.1	27.2
	(3.3)	(1.8)	(0.7)	(1.5)	(4.2)	(4.9)
Percentage point change	**-19.7*****	**-8.9***	-.7	**-8.6*****	**-24.1*****	-7.5
SSI						
Cohort 1	18.8	7.3	2.1	6.9	17.8	7.5
	(3.5)	(2.2)	(1.1)	(1.4)	(3.7)	(4.3)
Cohort 2	30.6	10.1	4.1	11.0	27.7	14.0
	(3.1)	(2.3)	(1.5)	(1.7)	(4.1)	(3.5)
Percentage point change	**+11.8***	+2.8	+2.0	+4.1	+9.9	+6.5

Source: NLTS and NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Parents' Expectations

Changes were apparent not only in the characteristics of households, but also in the aspirations and expectations parents held for their adolescent children. Parental expectations are important because past research has found them to be associated with both student achievement (e.g., Thorkildsen & Stein, 1998) and postschool outcomes (Wagner, Blackorby, Cameto, & Newman, 1993). For example, among youth in the general population, those whose parents expected them to continue on to postsecondary school were more likely to do so (Clark, 2002; Gill & Reynolds, 1996; Reynolds, 1998). Positive associations between parents' expectations and postschool outcomes also were found for youth with disabilities, even when factors such as disability category, family income, and functional skills were controlled for statistically[1] (Wagner et al., 1993).

To assess family expectations, parents of youth in NLTS and NLTS2 were asked to report their perceptions of the likelihood that their adolescent children would attain specific goals, such as graduating from high school with a regular diploma, attending a 2- or 4-year college, being employed, and living independently. Parents' expectations regarding youth graduating from high school with a regular diploma, graduating from a 4-year college, and living independently remained essentially unchanged over time (Exhibit 3-7). For example, approximately half of youth in both cohorts were expected "definitely" to graduate from high school with a regular diploma. However, parents in cohort 2 were significantly more confident that youth would graduate from a 2-year college than those in the first cohort. Almost 13% of those in cohort 2 were expected "definitely" to graduate from a 2-year college, compared with 3% of those in cohort 1 ($p<.001$). Cohort 2 parents also were more optimistic about the employment outlook for youth, with more than 87% of those in cohort 2 being expected "definitely" to find paid employment, compared with 78% of those in cohort 1 ($p<.001$). It is unclear whether expectations for improved employment prospects reflected the stronger economy during the late 1990s and early 21st century, perceptions that youth were better prepared to find jobs, or other factors.

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[1] That is, given two youth with the same disability category, household income, and level of functional skills, but with dissimilar parental expectations, those whose parents had higher expectations was more likely to have positive postschool outcomes.

Exhibit 3-7
CHANGES IN PARENTS' EXPECTATIONS FOR THE FUTURE EDUCATION AND INDEPENDENCE OF YOUTH WITH DISABILITIES

	Cohort 1	Cohort 2	Percentage Point Change
Percentage expected to:			
Graduate from high school with a regular diploma			
Definitely will	51.1 (2.4)	52.6 (2.0)	+1.5
Probably will	32.7 (2.2)	30.5 (1.8)	-2.2
Definitely/probably won't	16.2 (1.8)	16.9 (1.5)	+.7
Graduate from a 2-year college			
Definitely will	2.6 (.9)	12.7 (1.5)	**+10.1*****
Probably will	22.3 (2.3)	24.9 (2.0)	+2.6
Definitely/probably won't	75.0 (2.4)	62.4 (2.2)	**-12.6*****
Graduate from a 4-year college			
Definitely will	5.0 (1.0)	8.9 (1.2)	+3.9
Probably will	25.8 (2.1)	23.1 (1.7)	-2.7
Definitely/probably won't	69.2 (2.2)	68.0 (1.9)	-1.2
Get a paid job			
Definitely will	78.3 (1.9)	87.1 (1.3)	**+8.8*****
Probably will	17.8 (1.8)	10.1 (1.2)	**-7.7*****
Definitely/probably won't	3.9 (.9)	2.9 (.7)	-1.0
Live independently			
Definitely will	47.3 (2.4)	53.0 (2.0)	+5.7
Probably will	35.9 (2.3)	31.3 (1.9)	-4.6
Definitely/probably won't	16.8 (1.8)	15.7 (1.5)	-1.1

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

*** Statistically significant difference in a two-tailed test at the p<.001 levels.

Disability Differences in Changes in Parents' Expectations

Although expectations related to graduating from high school with a regular diploma were fairly stable over time for all disability categories, there were notable differences across disability categories in expectations about other future attainments (Exhibit 3-8).

Youth with all disability categories experienced significant increases in expectations that they would graduate from a 2-year college. In 1987, with the exception of the visual impairment group, fewer than 5% of youth in any category were expected to complete a 2-year college program, whereas in 2001, expectations ranged from 5% to 28% being expected to graduate from a 2-year college. Youth with visual impairments joined those with hearing and speech impairments in having the largest gains (18 and 23 percentage points, p<.001 and .01). Youth with speech or hearing impairments also were the only groups to experience a significant increase in the percentages of parents who said that they "definitely" would graduate from a 4-year college (10 and 8

Exhibit 3-8
CHANGES IN PARENTS' EXPECTATIONS FOR THE FUTURE EDUCATION AND INDEPENDENCE OF YOUTH, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage expected to:									
Graduate from high school with a regular diploma									
Definitely will									
Cohort 1	58.9	60.3	31.1	35.1	69.6	65.4	51.0	49.6	18.7
	(3.6)	(4.7)	(3.7)	(4.1)	(3.6)	(5.0)	(4.8)	(5.3)	(5.6)
Cohort 2	58.8	67.0	30.6	42.7	69.3	68.0	53.5	52.0	28.4
	(3.1)	(3.2)	(2.9)	(3.1)	(3.2)	(4.1)	(3.5)	(2.6)	(2.9)
Percentage point change	-.1	+6.7	-.5	+7.6	-.3	+2.6	+2.5	+2.4	+9.7
Definitely/probably won't									
Cohort 1	9.0	14.9	35.9	22.5	8.9	10.2	23.4	18.2	60.0
	(2.1)	(3.4)	(3.9)	(3.6)	(2.2)	(3.2)	(4.0)	(4.1)	(7.1)
Cohort 2	11.2	7.4	37.1	20.8	10.5	15.3	22.1	18.0	48.3
	(2.0)	(1.8)	(3.1)	(2.6)	(2.1)	(3.1)	(2.9)	(2.1)	(3.3)
Percentage point change	+2.2	-7.5	+1.2	-1.7	+1.6	+5.1	-1.3	-.2	-11.7
Graduate from a 2-year college									
Definitely will									
Cohort 1	3.5	3.4	.8	1.4	4.7	7.1	2.6	.5	.5
	(1.6)	(2.4)	(.8)	(1.1)	(2.3)	(4.7)	(2.0)	(1.0)	(1.1)
Cohort 2	13.6	21.9	5.3	13.3	27.7	25.6	17.9	12.7	6.2
	(2.5)	(3.3)	(1.6)	(2.6)	(3.4)	(4.2)	(3.0)	(2.1)	(1.7)
Percentage point change	**+10.1*****	**+18.5*****	**+4.5***	**+11.9*****	**+23.0*****	**+18.5****	**+15.3*****	**+12.2*****	**+5.7****
Definitely/probably won't									
Cohort 1	69.6	75.0	88.9	77.1	68.1	65.7	72.1	80.4	93.3
	(4.0)	(5.8)	(2.7)	(4.1)	(5.1)	(8.8)	(5.7)	(5.5)	(3.7)
Cohort 2	57.2	50.9	81.9	65.8	42.7	46.4	62.4	65.4	85.7
	(3.6)	(4.0)	(2.7)	(3.6)	(3.8)	(4.8)	(3.8)	(3.0)	(2.4)
Percentage point change	**-12.4***	**-24.1*****	-7.0	**-11.3***	**-25.4*****	-19.3	-9.7	**-15.0***	-7.6

Exhibit 3-8
CHANGES IN PARENTS' EXPECTATIONS FOR THE FUTURE EDUCATION AND INDEPENDENCE OF YOUTH, BY DISABILITY CATEGORY (Continued)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage expected to:									
Graduate from a 4-year college									
Definitely will									
Cohort 1	5.0	12.2	2.5	2.8	12.8	24.2	10.7	13.8	.4
	(1.6)	(3.2)	(1.2)	(1.4)	(2.6)	(4.5)	(3.0)	(3.7)	(.9)
Cohort 2	9.6	22.0	2.9	6.5	21.3	25.0	14.1	9.5	3.2
	(1.9)	(2.9)	(1.1)	(1.6)	(2.9)	(3.9)	(2.5)	(1.6)	(1.2)
Percentage point change	+4.6	**+9.8***	+.4	+3.7	**+8.5***	+.8	+3.4	-4.3	+2.8
Definitely/probably won't									
Cohort 1	65.8	53.2	84.5	74.9	46.0	36.1	65.1	56.9	91.3
	(3.4)	(4.9)	(2.9)	(3.7)	(3.9)	(5.0)	(4.6)	(5.4)	(4.0)
Cohort 2	63.9	48.6	85.2	74.5	44.4	42.6	64.6	69.3	89.3
	(3.1)	(3.5)	(2.3)	(2.8)	(3.5)	(4.4)	(3.4)	(2.5)	(2.0)
Percentage point change	-1.9	-4.6	+.7	-.4	-1.6	+6.5	-.5	**+12.4***	-2.0
Get a paid job									
Definitely will									
Cohort 1	84.9	73.5	58.8	81.9	77.0	71.8	44.2	66.4	32.5
	(2.5)	(4.1)	(3.8)	(3.2)	(3.2)	(4.6)	(4.7)	(4.9)	(6.6)
Cohort 2	93.1	89.1	69.8	85.6	83.9	78.7	58.2	83.2	50.7
	(1.6)	(2.1)	(2.9)	(2.2)	(2.5)	(3.6)	(3.4)	(2.0)	(3.3)
Percentage point change	**+8.2****	**+15.6*****	**+11.0***	+3.7	+8.7	+6.9	**+14.0***	**+16.8*****	**+18.2***
Definitely/probably won't									
Cohort 1	.0	4.5	15.8	2.4	2.3	6.2	14.8	6.7	40.9
	(.0)	(1.9)	(2.8)	(1.3)	(1.1)	(2.5)	(3.3)	(2.6)	(7.0)
Cohort 2	.5	1.2	10.5	2.5	.6	6.6	12.5	3.0	24.1
	(.4)	(.7)	(2.0)	(1.0)	(.5)	(2.2)	(2.3)	(.9)	(2.8)
Percentage point change	+.5	-3.3	-5.3	+.1	-1.7	+.4	-2.3	-3.7	**-16.8***

Exhibit 3-8
CHANGES IN PARENTS' EXPECTATIONS FOR THE FUTURE EDUCATION AND INDEPENDENCE OF YOUTH, BY DISABILITY CATEGORY (Concluded)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage expected to:									
Live independently									
Definitely will									
Cohort 1	55.8	48.0	18.8	50.3	41.9	38.4	21.7	32.5	6.4
	(3.5)	(4.8)	(3.2)	(4.2)	(3.8)	(5.1)	(4.0)	(4.9)	(3.5)
Cohort 2	62.0	63.6	22.3	46.5	59.7	37.0	25.4	49.9	17.4
	(3.0)	(3.3)	(2.7)	(3.1)	(3.4)	(4.3)	(3.0)	(2.6)	(2.4)
Percentage point change	+6.2	**+15.6****	+1.8	-3.5	**+17.8*****	-1.4	+3.7	**+17.4****	**+11.0****
Definitely/probably won't									
Cohort 1	9.4	15.7	38.9	15.8	10.6	23.0	42.1	36.2	74.4
	(2.1)	(3.6)	(3.9)	(3.1)	(2.4)	(4.5)	(4.8)	(5.1)	(6.2)
Cohort 2	7.7	10.5	43.4	16.4	10.2	25.3	43.8	19.5	62.1
	(1.7)	(2.1)	(3.2)	(2.3)	(2.1)	(3.8)	(3.5)	(2.1)	(3.1)
Percentage point change	-1.7	-5.2	+4.5	+.6	-.4	+2.3	+1.7	**-16.7****	-12.3

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

percentage points, respectively, p<.05). Youth with mental retardation and multiple disabilities experienced the smallest gains in expectations of 2-year college graduation (4 and 6 percentage points, p<.05 and .01), although those in cohort 2 still were significantly more likely than were those in cohort 1 to be expected to graduate from a 2-year college.

In contrast with the pattern of generally higher postsecondary education expectations, youth in cohort 2 with other health impairments were significantly *less* likely than their peers in cohort 1 to be expected to graduate from a 4-year college (a 12 percentage point increase in those expected "definitely or probably" *not* to graduate, p<.05).

Even with a stronger economy, not all categories of youth experienced significant increases in parents' expectations regarding their employment. Youth with emotional disturbances or sensory impairments were no more likely to be expected to have a paid job in 2001 than in 1987. In contrast, increases in "definite" employment expectations ranged from 4 to 18 percentage points for other groups, with those with speech, orthopedic, or other health impairments; mental retardation; or multiple disabilities experiencing the largest increases (11 to 18 percentage points p<.05 to .001).

The percentages of parents who expected that their sons or daughters definitely would live independently in the future also increased for youth speech, hearing, and/or other health impairments or multiple disabilities; increases ranged from 11 to 18 percentage points (p<.01). No significant differences in expectations for independence were found for youth in other disability categories.

Demographic Differences in Changes in Parents' Expectations

Gender. Parents' expectations for both sons' and daughters' graduating from high school with a regular diploma, graduating from a 4-year college, and living away from home remained fairly stable over time, with no significant differences between cohorts.

However, both genders experienced significant and similar increases in their parents' expectations for their "definitely" graduating from a 2-year college (10 and 11 percentage points, p<.001 and .01, Exhibit 3-9). Both genders also experienced significant increases in being expected "definitely" to have a paid job, but girls experienced a much larger increase than boys (16 vs. 6 percentage points, p<.001 and p<.05). This larger increase closed the gap in employment expectations between boys and girls. In cohort 1, only 70% of girls were expected "definitely" to be employed, compared with 82% of boys (p<.01), whereas in cohort 2, 86% of girls and 87% of boys were expected "definitely" to find a paid job.

Exhibit 3-9
CHANGES IN PARENTS' EXPECTATIONS FOR THE FUTURE EDUCATION AND INDEPENDENCE OF YOUTH, BY YOUTH'S GENDER

	Boys	Girls
Percentage expected to:		
Graduate from a 2-year college		
Definitely will		
Cohort 1	2.2 (1.0)	3.7 (1.9)
Cohort 2	11.8 (1.8)	14.6 (2.8)
Percentage point change	**+9.6*** **	**+10.9** **
Definitely/probably won't		
Cohort 1	75.5 (2.9)	73.8 (4.4)
Cohort 2	64.7 (2.7)	57.7 (3.9)
Percentage point change	**-10.8** **	**-16.1** **
Get a paid job		
Definitely will		
Cohort 1	81.9 (2.2)	69.8 (3.7)
Cohort 2	87.4 (1.6)	86.3 (2.3)
Percentage point change	**+5.5* **	**+16.5*** **
Definitely/probably won't		
Cohort 1	3.1 (1.0)	5.7 (1.9)
Cohort 2	2.7 (.8)	3.3 (1.2)
Percentage point change	-.4	-2.4

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Household income. Parents' expectations for youth graduating from high school with a regular diploma and graduating from a 4-year college did not change markedly over time for youth at different income levels. However, cohort 1 youth of all income levels were more likely to be expected to graduate from a 2-year college than were those in cohort 1 (Exhibit 3-10), with increases ranging from 8 to 13 percentage points (p<.05 and .001). Cohort 2 parents at each income level also were more confident that youth would be gainfully employed, with gains of 6 to 13 percentage points (p<.05 and .01). The largest gains in employment expectations were for youth from middle-income families; closing the cohort 1 gap between the middle and highest income groups, with 92% of cohort 2 youth at both income levels "definitely" expected to have a paid job. Cohort 2 youth from the lowest-income families remained the least likely to be expected to be employed (79% vs. 92%; p<.001). Only youth from middle income families experienced significant gains in expectations for living independently (17 percentage points; p<.01).

Race/ethnicity. As with different income groups, parents' expectations for high school and 4-year-college graduation did not change markedly for youth with different racial/ethnic backgrounds. However, expectations related to community college attendance did change, with white and African American youth experiencing increases (7 and 14 percentage points, p<.001). Only white youth experienced a significant change in their parent's expectations related to employment (9 percentage points, p<.001), remaining significantly more likely to be expected "definitely" to have a paid job than their African American or Hispanic peers (91% vs. 82% and 81%; p<.05).

Exhibit 3-10

CHANGES IN PARENTS' EXPECTATIONS FOR THE FUTURE EDUCATION AND INDEPENDENCE OF YOUTH, BY INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Lowest	Middle	Highest	White	African American	Hispanic
Percentage expected to:						
Graduate from a 2-year college						
Definitely will						
Cohort 1	.6	2.9	2.7	2.4	1.0	11.1
	(.9)	(1.7)	(1.4)	(1.0)	(1.4)	(7.6)
Cohort 2	11.4	10.4	15.5	9.5	15.0	19.4
	(2.5)	(2.6)	(3.2)	(1.8)	(3.7)	(4.7)
Percentage point change	**+10.8*****	**+7.5***	**+12.8*****	**+7.1*****	**14.0*****	+8.3
Definitely/probably won't						
Cohort 1	79.0	75.6	70.1	78.1	65.1	61.6
	(4.9)	(4.3)	(4.1)	(2.7)	(6.6)	(11.8)
Cohort 2	63.0	67.8	58.6	70.0	56.4	40.6
	(3.8)	(4.0)	(4.4)	(2.8)	(5.2)	(5.8)
Percentage point change	**-16.0****	-7.8	-11.5	**-8.1***	-8.7	-21.0
Get a paid job						
Definitely will						
Cohort 1	68.3	78.8	86.0	81.9	71.2	65.7
	(4.5)	(3.5)	(2.6)	(2.2)	(4.6)	(8.0)
Cohort 2	79.0	91.9	92.5	90.7	82.3	81.3
	(2.7)	(2.1)	(2.0)	(1.5)	(3.5)	(4.0)
Percentage point change	**+10.7***	**13.1****	**+6.5***	**+8.8*****	+11.1	+15.6
Definitely/probably won't						
Cohort 1	4.1	3.7	3.8	4.0	3.5	5.2
	(1.9)	(1.6)	(1.4)	(1.1)	(1.9)	(3.7)
Cohort 2	5.0	1.9	1.5	2.1	3.7	2.1
	(1.5)	(1.0)	(0.9)	(.7)	(1.7)	(1.5)
Percentage point change	+.9	-1.8	-2.3	-1.9	+.2	-3.1
Live independently						
Definitely will						
Cohort 1	35.7	40.7	65.4	54.5	32.6	22.6
	(4.8)	(4.3)	(3.5)	(2.8)	(4.9)	(7.5)
Cohort 2	35.5	58.1	66.0	60.5	43.4	39.8
	(3.3)	(3.8)	(3.6)	(2.6)	(4.5)	(5.1)
Percentage point change	-0.2	**+17.4****	+.6	+6.0	+10.8	+17.2
Definitely/probably won't						
Cohort 1	16.6	16.0	14.1	14.8	17.2	33.5
	(3.7)	(3.2)	(2.6)	(2.0)	(4.0)	(8.4)
Cohort 2	22.9	11.7	11.1	12.7	20.8	17.4
	(2.9)	(2.5)	(2.4)	(1.7)	(3.7)	(3.9)
Percentage point change	+6.3	-4.3	-3.0	-2.1	+3.6	-16.1

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Summary

Several of the changes since 1987 in the households of youth with disabilities could have positive repercussions for youth. In 2001, youth with disabilities were more likely to be living in households with at least one biological parent present than in 1987, and the heads of their households were much less likely to be high school dropouts or unemployed. Consistent with higher educational and employment levels in 2001, youth with disabilities were less likely to be living in poverty in 2001 than in 1987. Yet, despite having made some strides in closing the income gap with the general population, youth with disabilities still were more likely than other youth to live in households with the risk factors of low income, unemployment, and poorly educated heads.

Other changes were less positive. In 2001, almost 6% of youth with disabilities lived with a family member other than a parent—a rate twice that in 1987—and they were significantly more likely to be living in households with an adult with a disability than previously. And youth with some disabilities continued to be at a particular disadvantage. For example, even with declines in the percentage of heads of households who were high school dropouts, youth with mental retardation or emotional disturbances continued to be more likely than other youth with disabilities to live in poverty and with unemployed heads of households and in households that participated in benefit programs.

Improvements in the education or employment status of heads of households were most apparent for the families of low- and middle-income families, which narrowed significantly the gap between middle- and higher-income youth. Similarly, African American and Hispanic youth benefited most from improvements in head of household education and employment. And several of the differences in household characteristics of boys and girls in 1987, which favored boys, narrowed because of larger gains for girls with disabilities. The lower employment expectations for girls with disabilities relative to boys that were evident in 1987 also were ameliorated over time, so that in 2001, boys and girls with disabilities were equally likely to be expected to have paid employment in the future.

Looking to the future, parents of youth with disabilities shifted their expectations for youth in some respects, but not in others. Youth with disabilities were about equally likely in 1987 and 2001 to be expected by parents “definitely” to graduate from high school with a regular diploma (about half of youth) and “definitely” to graduate from a 4-year college (fewer than 10% of youth), although significant increases in expectations for 4-year-college were apparent for youth with speech or hearing impairments. In contrast, 2-year colleges were considered a much more likely option in 2001 than in 1987 for youth in all disability categories, for both boys and girls, for white and African American youth, and for those at all income levels.

Employment expectations also rose for most categories of youth, and larger increases for girls than boys closed the gap in employment expectations that had existed in 1987. For all groups, expectations for independent living were lower than those for paid employment; overall, fewer than two-thirds as many parents expected their sons or daughters “definitely” to live independently as expected them “definitely” to have paid employment, suggesting that factors other than youth’s ability to support themselves financially influenced parents’ expectations.

Comparisons between the two cohorts of youth in early adulthood will reveal the extent to which parents’ expectations of youth with disabilities were born out later in their education, employment, and independence outcomes.

4. SERVICES RECEIVED BY YOUTH WITH DISABILITIES

Youth with disabilities may require a variety of support services in order to function in their daily life and perform in school. Some services are arranged for by families and provided by a variety of community-based organizations. In addition, students with disabilities who qualify for special education may receive related services to assist them to benefit from instruction, as prescribed in a student's Individualized Education Program (IEP). The related services provisions of special education make schools a major provider of many kinds of services for students with disabilities.

Comparisons of findings from NLTS and NLTS2 permits an assessment of changes in the extent to which the related and support services are provided to students with disabilities, and the variation in receipt of services for students who differed in disability category, gender, household income, and racial/ethnic background. Information on receipt of services was provided in both studies by parents, who were asked in telephone interviews whether students received any of the following types of services and, if so, whether the school provided the service:

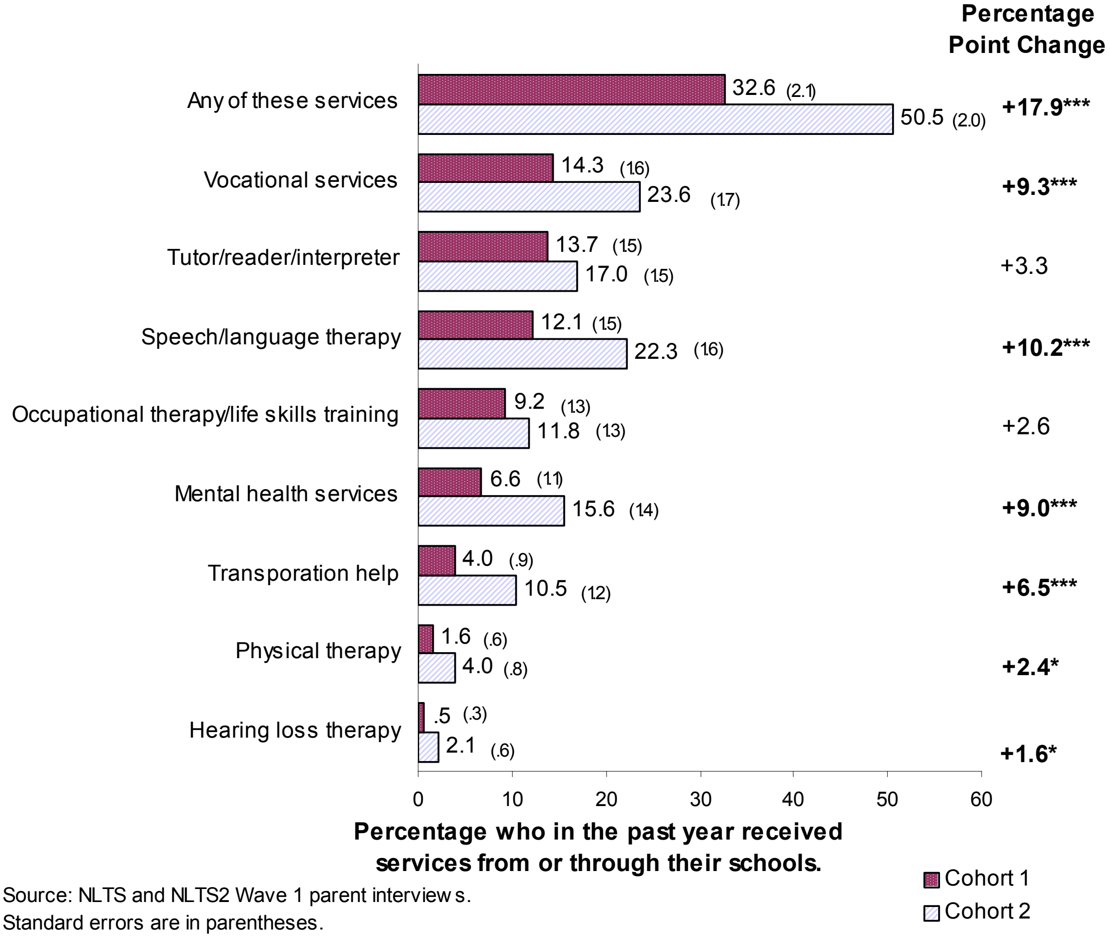
- Help from a tutor, reader, or interpreter
- Speech therapy
- Occupational therapy/life skills training
- Personal counseling/therapy
- Transportation help
- Physical therapy
- Hearing loss therapy/audiology
- Job counseling/training.

According to parents' reports, significantly more youth with disabilities were receiving support services in 2001 than in 1987. In 2001, nearly three-fourths (72%) of youth with disabilities received at least one of the support services noted above, compared with 57% of youth in 1987—a 16 percentage point increase (p<.001). This increase in receipt of services was entirely attributable to increases in services received from or through the schools attended by youth (Exhibit 4-1). In 1987, fewer than one-third of youth with disabilities received one or more of the designated support services from or through their school; by 2001, more than half were receiving such services (p<.001).

Schools were reported to be providing almost all of the types of services to a significantly greater percentage of students with disabilities in 2001 than in 1987, with the exception of life skills training and tutoring. Vocational services, speech therapy, and mental health services experienced the greatest increases—about 10 percentage points (p<.001). With these changes, job counseling and speech therapy were the services most often provided; almost one-fourth of cohort 2 students received these kinds of services from their schools.

Exhibit 4-1

CHANGES IN SERVICES RECEIVED BY YOUTH WITH DISABILITIES FROM OR THROUGH THEIR SCHOOLS



Source: NLTS and NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.
Statistically significant difference in a two-tailed test at the following levels:
* p<.05, ** p<.01, *** p<.001.

Disability Differences in Changes in Services Received

Youth with different primary disability classifications receive different types of support services from their schools, reflecting the nature of their disabilities and the kinds of support they require to benefit from their education. Some services meet very specific needs and are appropriate for youth with a specific disability. For example, physical therapy is a service provided many youth with orthopedic impairments, and interpreter services are appropriate for many youth with hearing impairments. In contrast, some services meet more general needs (e.g., job training and life skills training) and could be appropriate for many youth, regardless of the type of their disabilities.

Between 1987 and 2001, there were significant increases in reported receipt of services from schools by youth in every disability group (Exhibit 4-2). The largest increases were experienced by categories of youth who were among the least likely to have received support services from their schools in 1987. Specifically, in 1987, only about one-fourth to one-third of students with speech or visual impairments or emotional disturbances were receiving services. Increases of at least 30 percentage points meant that at least 60% of youth were receiving services from their

Exhibit 4-2
CHANGES IN SERVICES RECEIVED BY YOUTH WITH DISABILITIES FROM OR THROUGH THEIR SCHOOLS, BY COHORT AND DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage who in the past year received from or through the school:									
Any of these services									
Cohort 1	29.8	37.0	40.3	25.0	58.4	31.7	58.5	32.7	61.6
	(3.1)	(4.3)	(3.6)	(3.5)	(3.6)	(4.7)	(4.6)	(4.7)	(6.5)
Cohort 2	40.9	67.1	68.8	59.5	79.8	62.7	78.0	56.9	88.4
	(3.0)	(3.2)	(2.9)	(3.0)	(2.7)	(4.2)	(2.9)	(2.6)	(2.1)
Percentage point change	**+11.1***	**+30.1*****	**+28.5*****	**+34.5*****	**+21.4*****	**+31.0*****	**+19.5*****	**+24.2*****	**+26.8*****
Vocational services									
Cohort 1	15.3	7.8	15.5	11.3	14.9	6.9	9.3	14.1	7.8
	(2.5)	(2.4)	(2.7)	(2.6)	(2.6)	(2.5)	(2.7)	(3.5)	(3.6)
Cohort 2	21.4	15.4	28.7	28.6	26.2	29.2	25.0	24.8	34.2
	(2.6)	(2.5)	(2.9)	(2.9)	(3.0)	(3.9)	(3.0)	(2.3)	(3.1)
Percentage point change	+6.1	**+7.6***	**+13.2*****	**+17.3*****	**+11.3****	**+22.3*****	**+15.7*****	**+10.7***	**+26.4*****
Help from a tutor, reader, or interpreter									
Cohort 1	15.4	9.2	12.6	6.6	31.0	15.5	16.3	11.9	6.2
	(2.5)	(2.6)	(2.5)	(2.0)	(3.4)	(3.6)	(3.4)	(3.3)	(3.3)
Cohort 2	17.3	14.3	13.9	16.5	47.7	27.3	15.5	15.1	18.6
	(2.4)	(2.2)	(2.2)	(2.3)	(3.5)	(3.8)	(2.5)	(1.9)	(2.5)
Percentage point change	+1.9	+5.1	+1.3	**+9.9****	**+16.7*****	**+11.8***	-.8	+3.2	**+12.4****
Speech/language therapy									
Cohort 1	9.0	31.0	19.3	3.1	41.6	5.5	18.2	11.7	46.3
	(2.0)	(4.2)	(2.9)	(1.4)	(3.6)	(2.3)	(3.6)	(3.2)	(6.7)
Cohort 2	15.1	65.5	43.6	12.6	56.7	19.8	32.0	23.2	66.5
	(2.2)	(3.3)	(3.2)	(2.1)	(3.4)	(3.4)	(3.3)	(2.2)	(3.1)
Percentage point change	**+6.1***	**+34.5*****	**+24.3*****	**+9.5*****	**+15.1****	**+14.3*****	**+13.8****	**+11.5****	**+20.2****
Occupational therapy/life skills training									
Cohort 1	8.2	2.0	16.2	4.0	8.0	11.0	15.9	8.6	19.3
	(1.9)	(1.3)	(2.7)	(1.6)	(2.0)	(3.1)	(3.4)	(2.8)	(5.3)
Cohort 2	6.8	5.5	23.9	13.0	14.8	26.4	37.4	15.8	57.1
	(1.6)	(1.6)	(2.7)	(2.1)	(2.5)	(3.8)	(3.4)	(1.9)	(3.2)
Percentage point change	-1.4	+3.5	**+7.7***	**+9.0*****	**+6.8***	**+15.4****	**+21.5*****	**+7.2***	**+37.8*****

Exhibit 4-2

CHANGES IN SERVICES RECEIVED BY YOUTH WITH DISABILITIES FROM OR THROUGH THEIR SCHOOLS, BY COHORT AND DISABILITY CATEGORY (Concluded)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage who in the past year received from or through the school									
Mental health services									
Cohort 1	6.5	2.5	4.0	13.2	6.6	3.4	4.9	7.4	6.1
	(1.7)	(1.4)	(1.4)	(2.7)	(1.8)	(1.8)	(2.0)	(2.6)	(3.2)
Cohort 2	12.2	7.8	15.8	33.5	18.4	14.2	9.1	17.7	21.0
	(2.0)	(1.9)	(2.3)	(3.0)	(2.7)	(3.0)	(2.0)	(2.0)	(2.7)
Percentage point change	**+5.7***	**+5.3***	**+11.8*****	**+20.3*****	**+11.8*****	**+10.8****	+4.2	**+10.3****	**+14.9*****
Transportation help									
Cohort 1	1.3	1.6	10.3	.5	19.1	15.8	34.9	8.0	33.0
	(.8)	(1.1)	(2.3)	(.6)	(2.9)	(3.7)	(4.4)	(2.7)	(6.3)
Cohort 2	2.6	5.4	25.5	19.4	25.4	38.2	47.7	17.8	50.0
	(1.0)	(1.6)	(2.8)	(2.5)	(3.0)	(4.1)	(3.5)	(2.0)	(3.2)
Percentage point change	+1.3	+3.8	**+15.2*****	**+18.9*****	+6.3	**+22.4*****	**+12.8***	**+9.8****	**+17.0***
Physical therapy									
Cohort 1	.4	.0	3.9	.5	2.4	7.5	36.2	7.0	16.5
	(.4)	(.0)	(1.5)	(.6)	(1.1)	(2.9)	(5.3)	(2.8)	(5.7)
Cohort 2	1.3	1.8	9.2	2.0	3.9	13.8	42.1	4.8	40.1
	(.7)	(.9)	(1.8)	(.9)	(1.3)	(3.0)	(3.5)	(1.1)	(3.2)
Percentage point change	+.9	**+1.8***	**+5.3***	+1.5	+1.5	+6.3	+5.9	-2.2	**+23.6*****
Hearing loss therapy									
Cohort 1	.0	.4	.5	.0	27.2	.3	.0	.3	1.7
	(.0)	(.6)	(.5)	(.0)	(3.3)	(.6)	(.0)	(.6)	(1.8)
Cohort 2	1.0	.9	3.4	.5	50.9	5.5	1.9	1.6	5.5
	(.6)	(.6)	(1.1)	(.4)	(3.5)	(1.9)	(.9)	(.7)	(1.5)
Percentage point change	+1.0	+.5	**+2.9***	+.5	**+23.7*****	**+5.2****	**+1.9***	+1.3	+3.8

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

schools in 2001. But even among categories of youth who had been receiving services at relatively higher rates initially, large increases were noted. For example, more than half of cohort 1 youth with hearing impairments (58%), orthopedic impairments (58%), or multiple disabilities (62%) received some type of support service from their schools. With increases of 20 to 27 percentage points (p<.001), almost 80% or more were receiving services from their schools in 2001. The most notable exception to these large increases was youth with learning disabilities. With an 11 percentage point increase between cohorts (p<.05), only about 40% of cohort 2 youth with learning disabilities were reported by parents to be receiving any related or support services from their schools, a significantly lower rate of reported service receipt than any other group (p<.001).

Increases in schools providing speech/language therapy were the most widespread. The largest increase (34 percentage points, p<.001) was among youth with speech impairments, as might be expected, but all other categories also showed gains, ranging from 6 to 24 percentage points (p<.05 to .001). Increases in vocational services, life skills training, and mental health services also were widespread, with almost all categories of youth experiencing significant increases. Increases ranged from 8 to 26 percentage points for vocational services, from 6 to 38 percentage points for life skills training, and from 5 to 20 percentage points for mental health services (p<.05 to .001). Exceptions to these increases were that youth with learning disabilities did not receive significantly more vocational services or life skills training from their schools, and youth with orthopedic impairments did not have a significant increase in mental health services. Youth with speech impairments also did not receive significantly more life skills training. Transportation services increased significantly to all categories of youth, except those with learning disabilities or speech or hearing impairments.

It is not surprising that increases in these broadly relevant kinds of services were experienced by most categories of youth, regardless of disability. However, another kind of service that could have broad applicability across disability categories was help from a tutor, reader, or interpreter. Significant increases in receiving these services from schools were seen only for youth with emotional disturbances, hearing or visual impairments, or multiple disabilities (10 to 16 percentage points, p<.05 to .001).

As expected, increases in more focused services were concentrated among particular disability groups. For example, significant increases in hearing loss therapy occurred for four groups, with youth with hearing impairments having the largest increase (24 percentage points, p<.001), as would be expected. Similarly, significant increases in physical therapy occurred for three groups, including a 24 percentage point increase for youth with multiple disabilities (p<.001). Mental health services provided to youth with emotional disturbances from or through their schools increased from 13% to 34% (p<.001). Youth with orthopedic impairments continued to be the most likely to receive physical therapy (42%), but the increase from 1987 to 2001 was not significant.

Demographic Differences in Changes in Services Received

Gender. Changes between 1987 and 2001 in the kinds and levels of services provided by schools to boys and girls were quite similar (Exhibit 4-3). For example, the percentage of both boys' and girls' receiving support services went from about one-third in 1987 to one-half in 2001

Exhibit 4-3

CHANGES IN SERVICES RECEIVED BY YOUTH FROM OR THROUGH THEIR SCHOOLS, BY YOUTH'S GENDER

	Boys	Girls
Percentage who in the past year received from or through the school		
Any of these services		
Cohort 1	32.2	33.5
	(2.6)	(3.6)
Cohort 2	51.1	49.3
	(2.4)	(3.4)
Percentage point change	**+18.2*****	**+15.1****
Vocational services		
Cohort 1	15.7	11.3
	(2.0)	(2.4)
Cohort 2	24.9	20.9
	(2.2)	(2.8)
Percentage point change	**+9.2****	**+9.6****
Speech/language therapy		
Cohort 1	11.3	13.9
	(1.7)	(2.7)
Cohort 2	22.7	21.6
	(2.0)	(2.8)
Percentage point change	**+11.4*****	**+7.7***
Mental health services		
Cohort 1	6.9	6.0
	(1.4)	(1.8)
Cohort 2	15.1	16.5
	(1.8)	(2.6)
Percentage point change	**+8.2*****	**+10.5*****
Transportation help		
Cohort 1	3.3	5.6
	(1.0)	(1.8)
Cohort 2	10.5	10.5
	(1.5)	(2.1)
Percentage point change	**+7.2*****	+4.9
Physical therapy		
Cohort 1	1.1	2.8
	(.6)	(1.3)
Cohort 2	3.7	4.7
	(.9)	(1.5)
Percentage point change	**+2.6***	+1.9

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

(18 and 15 percentage points increases, respectively, p<.001 and .01). There were no significant increases in receipt of hearing loss therapy, life skills training, or help from a tutor, reader, or interpreter for either gender. Both boys and girls experienced significant increases in vocational services (9 and 10 percentage points, p<.01), speech therapy (11 and 8 percentage points, p<.001 and .05), and mental health services (8 and 10 percentage points, p<.001). Only boys experienced significant increases in transportation services (7 percentage points, p<.001) and physical therapy (2 percentage points, p<.05).

Household income. Youth at all household income levels experienced significant increases in support services from or through their schools (Exhibit 4-4). In 1987, about one-third of youth received some type of support service from schools, regardless of household income. Increases by 2001 were largest for youth from middle- and low-income households, so that more than half were receiving some type of service in 2001 (20 and 24 percentage point increases, respectively, p<.001). Receipt of support services by youth from higher-income households increased by 14 percentage points, to almost half receiving services (p<.01).

There were no significant increases in hearing loss therapy; physical therapy; help from a tutor, reader, or interpreter; or life skills training provided from or through schools to youth in any income group. In contrast, all income groups experienced significant increases (of 6 or 7 percentage points, p<.05) in receipt of transportation help from their schools.

For services that increased significantly, increases were more common among youth in the lower- and middle-income groups. For example, significant increases in receipt of vocational services occurred only among low- and middle-income students (14 and 10 percentage points, p<.001). Similarly, mental health services significantly increased among low- and middle-income students (14 and 9 percentage points, p<.001 and .05). These increases created a significant difference among income groups in the receipt of mental health services. Youth from low-income level households in cohort 2 received significantly more of such services than higher income youth (20 vs. 10 percentage points, p<.01).

Youth from lower income households also experienced significant gains in receipt of speech/language therapy (11 percentage points, p<.05). However, in contrast with the pattern for mental health and vocational services, middle-income youth did not share such gains, although youth from higher income households did (12 percentage points p<.001).

Race/ethnicity. White, African American, and Hispanic youth in cohort 2 received more services than youth in these groups in cohort 1 (Exhibit 4-4). Significant increases of 17 to 21 percentage points (p<.001 and .05) resulted in about half of each group receiving some type of support service.

Hispanic youth had a different pattern of change in services from or through their schools than white and African American youth. Both of these groups experienced significant increases in the receipt of speech therapy, vocational and mental health services and transportation help, ranging from 6 to 9 percentage points for white youth (p<.01 and .001), and from 8 to 15 percentage points for African American youth (p<.05 and .001). The somewhat larger increases for African American youth resulted in a significantly larger percentage of them receiving mental health services than white youth in cohort 2 (21 vs. 12 percentage points, p<.05). There were no significant changes in receipt of hearing loss therapy for any group.

Hispanic students shared the significant increase in vocational services experienced by others (12 percentage points, p<.05), but did not experience the significant increases in mental health services and transportation help noted for white and African American youth. Instead, there were significant increases for Hispanic youth in help from a tutor, reader, or interpreter (13 percentage points, p<.05) and physical therapy (7 percentage points, p<.05)—the only group to experience such increases. The significant increase in the percentage of Hispanic students receiving help from a tutor, reader, or interpreter eliminated the significant gap between them and white students in the receipt of these services from schools in cohort 1.

Exhibit 4-4
CHANGES IN SERVICES RECEIVED BY YOUTH WITH DISABILITIES FROM OR THROUGH THEIR SCHOOLS, BY INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Low	Medium	High	White	African American	Hispanic
Percentage who in the past year received from or through the school:						
Any of these services						
Cohort 1	32.0	34.1	33.4	32.6	32.5	30.1
	(4.1)	(4.0)	(3.5)	(2.6)	(4.4)	(7.2)
Cohort 2	56.2	54.1	47.1	49.3	52.7	51.4
	(3.3)	(3.8)	(3.8)	(2.6)	(4.4)	(5.0)
Percentage point change	**+24.2*** **	**+20.0*** **	**+13.7** **	**+16.7*** **	**+20.2*** **	**+21.3* **
Vocational services						
Cohort 1	11.9	13.2	17.5	15.6	13.2	9.4
	(2.9)	(2.9)	(2.8)	(2.0)	(3.2)	(4.6)
Cohort 2	25.4	23.5	22.6	23.5	24.4	21.7
	(2.9)	(3.3)	(3.2)	(2.3)	(4.0)	(4.2)
Percentage point change	**+13.5*** **	**+10.3* **	+5.1	**+7.9** **	**+11.2* **	**+12.3* **
Tutor/reader/interpreter						
Cohort 1	13.8	16.9	14.1	14.6	12.0	4.7
	(3.1)	(3.2)	(2.6)	(1.9)	(3.1)	(3.4)
Cohort 2	16.8	16.4	18.5	15.4	20.4	17.6
	(2.5)	(2.8)	(2.9)	(1.9)	(3.7)	(3.9)
Percentage point change	+3.0	-.5	+4.4	+.8	+8.4	**+12.9* **
Speech/language therapy						
Cohort 1	15.3	13.5	8.2	10.5	14.1	15.2
	(3.2)	(2.9)	(2.0)	(1.7)	(3.3)	(5.8)
Cohort 2	25.9	20.0	20.4	19.8	27.3	26.5
	(2.9)	(3.1)	(3.1)	(2.1)	(4.1)	(4.5)
Percentage point change	**+10.6* **	+6.5	**+12.2*** **	**+9.3*** **	**+13.2* **	+11.3
Occupational therapy/life skills training						
Cohort 1	8.8	9.4	11.1	10.9	4.1	7.4
	(2.5)	(2.5)	(2.3)	(1.7)	(1.9)	(4.2)
Cohort 2	10.5	11.6	14.0	13.5	10.4	7.8
	(2.1)	(2.4)	(2.6)	(1.8)	(2.8)	(2.7)
Percentage point change	+1.7	+2.2	+2.9	+2.6	+6.3	+.4
Mental health services						
Cohort 1	6.3	7.9	7.3	6.4	5.5	9.3
	(2.2)	(2.3)	(1.9)	(1.3)	(2.2)	(4.6)
Cohort 2	20.2	16.9	9.9	12.5	20.7	19.3
	(2.7)	(2.9)	(2.3)	(1.7)	(3.7)	(4.0)
Percentage point change	**+13.9*** **	**+9.0* **	+2.6	**+6.1** **	**+15.2*** **	+10.0

Exhibit 4-4

CHANGES IN SERVICES RECEIVED BY YOUTH WITH DISABILITIES FROM OR THROUGH THEIR SCHOOLS, BY INCOME AND RACE/ETHNICITY (Concluded)

	Income			Race/Ethnicity		
	Low	Medium	High	White	African American	Hispanic
Percentage who in the past year received from or through the school:						
Transportation help						
Cohort 1	5.2 (2.0)	3.1 (1.5)	3.8 (1.4)	3.2 (1.0)	4.1 (1.9)	7.8 (4.3)
Cohort 2	11.7 (2.2)	10.1 (2.3)	9.4 (2.2)	9.2 (1.5)	12.6 (3.1)	13.3 (3.5)
Percentage point change	**+6.5***	**+7.0***	**+5.6***	**+6.0********	**+8.5***	+5.5
Physical therapy						
Cohort 1	2.4 (1.4)	1.0 (.9)	1.6 (1.0)	1.5 (.7)	2.4 (1.5)	.3 (.9)
Cohort 2	5.9 (1.6)	3.2 (1.3)	2.9 (1.3)	3.1 (.9)	4.3 (1.9)	7.3 (2.6)
Percentage point change	+3.5	+2.2	+1.3	+1.6	+1.9	**+7.0***

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Summary

Youth with disabilities were substantially more likely to be receiving support services in 2001 than in 1987, with the difference being accounted for entirely by increases in services provided from or through their schools. By 2001, half of 15- to 17-year-old students with disabilities were receiving related or support services from or through their schools. Significant increases were noted for many kinds of services, with there being particularly large increases of 9 and 10 percentage points in receipt of speech/language therapy and vocational and mental health services. Only life skills training and help from a tutor, reader, or interpreter were not received from their schools by significantly more youth in 2001 than in 1987.

The increases in receipt of support services from schools occurred for youth in all disability categories, with the largest increase being for youth with emotional disturbances, largely because of their 20 percentage point increase in receipt of mental health services. The reported receipt of speech/language therapy also increased for all categories of youth. Students with learning disabilities experienced increases in receipt of fewer kinds of services than other youth, increasing only in receipt of speech/language therapy and mental health services. All other categories of youth experienced increases in at least four kinds of services, and youth with mental retardation, visual impairments, or multiple disabilities had increases in seven of the eight kinds of services assessed.

Boys and girls both experienced significant increases in receiving services from their schools, but boys had increases in five kinds of service, whereas girls had increases in three. All income groups also experienced significant increases in receiving any services and receiving transportation help. Youth from lower income households had increases in a wider range of services than youth from higher income households. White and African American youth had a similar pattern of increase in services, with significant increases in speech/language therapy, vocational and mental health services, and transportation. Hispanic youth shared gains in vocational services, but were the only ones to experience increases in help from a tutor, reader, or interpreter, and in physical therapy.

The following chapter explores whether increases in the kinds of services reported here are reflected in improved outcomes for youth with disabilities.

5. CHANGES IN SELECTED OUTCOMES OF YOUTH WITH DISABILITIES

"Improving results for infants, toddlers, children and youth with disabilities ages birth through 21" is the mission of OSEP (Office of Special Education Programs, 2002). Comparisons between the achievements of youth with disabilities in 1987 and in 2001 provide an important perspective on the extent to which improvements are occurring for one age group—15- through 17-year-olds. This section presents comparisons of achievements of this age group of youth in five domains:

- School engagement
- Extracurricular participation
- Employment
- Social adjustment
- Independence.

School Engagement

The importance of a high school diploma as an entry requirement for much postsecondary education, and training has increased to meet the rising demands of the U.S. labor market for highly skilled workers. Yet almost a half-million youth leave high school without graduating each year (Kaufman, Klein, & Frase, 1999). Nonetheless, the high school dropout rate in the general population has declined somewhat; in 1972, the 1-year dropout rate indicated that 6.1% of students had dropped out of school in the preceding year, compared with 4.8% of students in 2000 (Kaufman, Alt, & Chapman, 2001).

Given that a similar small decline occurred among youth with disabilities (Exhibit 5-1),[1] for the group overall, the rate of 1% in 2001 was significantly lower than for the general population (4.8%, $p<.001$). However, the only statistically significant decline occurred for youth with mental retardation (3 percentage points, $p<.05$).

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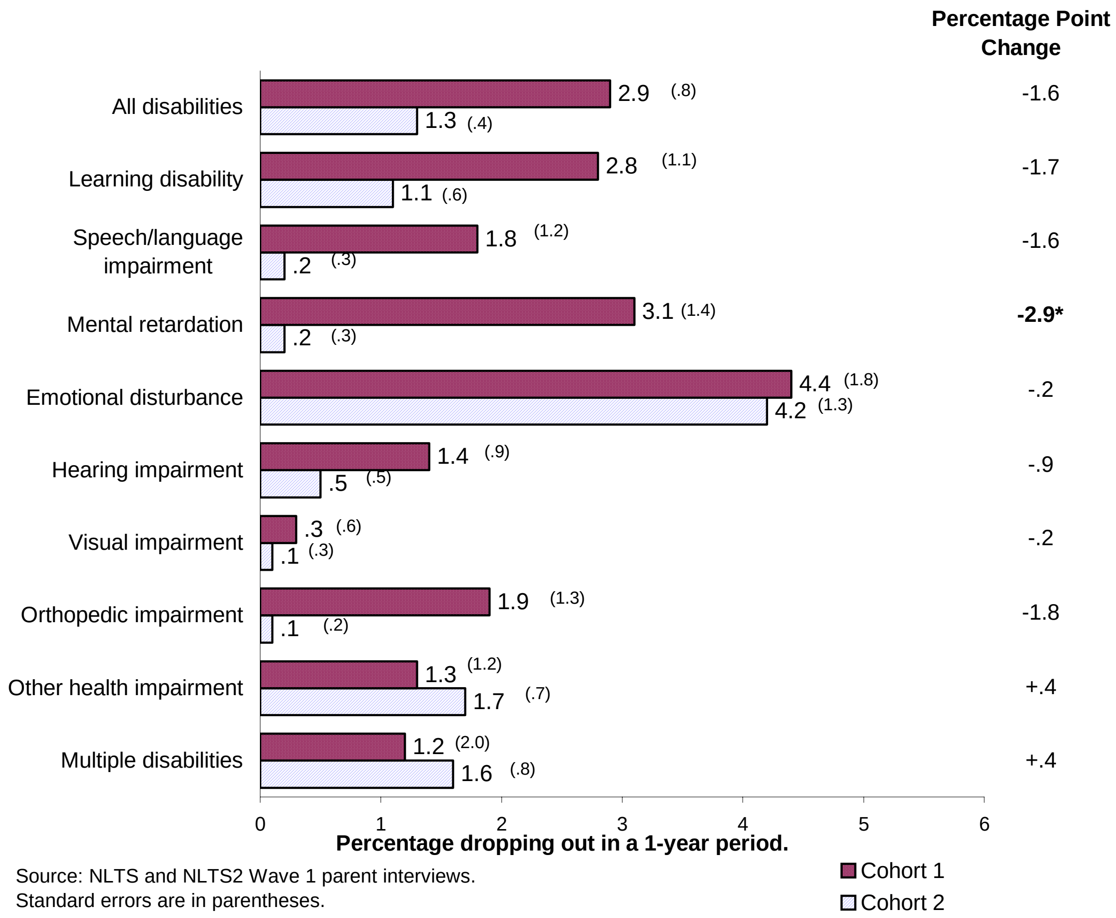
[1] The dropout rate for cohort 1 is the percentage of youth who were in school in the 1985-86 school year, were not in school at the time of the interview (August through November 1987), and whose parent indicated that they had dropped out. This created a period in which youth could have dropped out that ranged from 3 to 13 months. For cohort 2, the dropout rate is the percentage of youth who were in school in October of the 2000-2001 school year, were not in school at the time of the interview (May through September 2001), and whose parent said they had dropped out. This created a period in which youth could have dropped out that ranged from 7 to 12 months. Both periods are referred to as a "1-year rate."

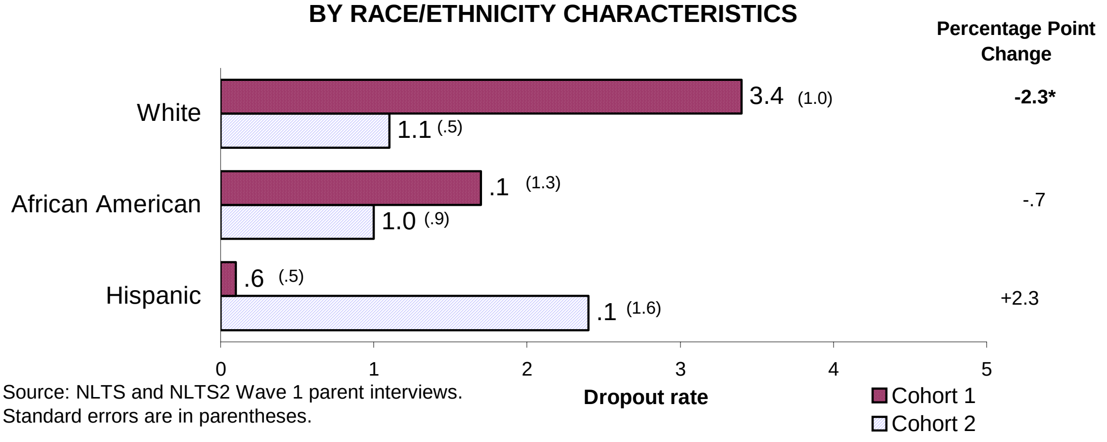
Exhibit 5-1
CHANGES IN DROPOUT RATES, BY DISABILITY CATEGORY



Source: NLTS and NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.

There were no significant differences in the dropout rate between boys or girls or youth who differed in household income levels. However, youth with different racial/ethnic backgrounds experienced changes in the dropout rate differently (Exhibit 5-2). A significant decline in the

Exhibit 5-2
CHANGES IN DROPOUT RATES OF YOUTH WITH DISABILITIES, BY RACE/ETHNICITY CHARACTERISTICS



Source: NLTS and NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.

dropout rate was apparent only for white youth (2 percentage points, p<.05), whereas an increase of the same magnitude for Hispanic youth did not attain statistical significance for that smaller group.

Extracurricular Participation

This section focuses on two aspects of extracurricular involvement—participation by youth with disabilities in groups and in volunteer or community service. The social, psychological, and educational benefits of extracurricular activities are well known. Reflecting the importance of extracurricular activities for students with disabilities, the Individuals with Disabilities Education Act Amendments of 1997 requires Individual Educational Programs (IEPs) to address student participation in extracurricular and nonacademic activities (P.L. 105-17, 614 111 Stat.84). Presence and participation in the community, including extracurricular activities, is one of the primary outcome domains for assessing the well-being of youth with disabilities posited by the National Center on Educational Outcomes (NCEO, 1994). Participation in organized groups during secondary school has been correlated with higher levels of self-esteem, increased student engagement, more expressed satisfaction with school, improved academic performance, and increased likelihood of school completion (Gerber, 1996; Mahoney & Cairns, 1997; Marsh, 1992).

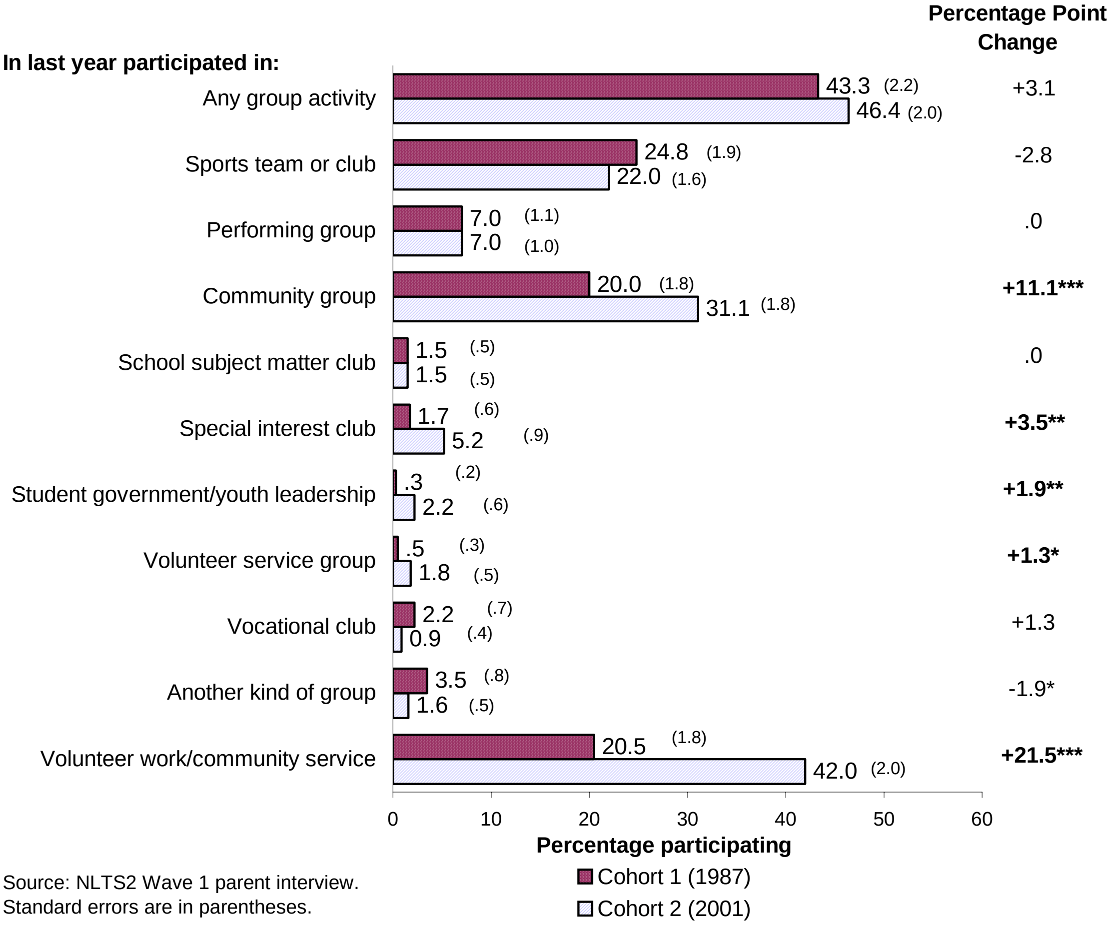
In addition to recognizing the value of extracurricular activity in general, during the last decade, student involvement in volunteer/community service activities has received increasing emphasis (NCES, 1999). Participation in volunteer activities has been linked to increased engagement in democratic processes, lowered likelihood of dropping out, improved transition from school to work, and improved educational attitudes and performance (Brandeis University, 1999; Conrad & Hedin, 1991; Kraft, 1996; NCES, 1997; Shumer, 1994).

To learn about the participation of youth with disabilities in group activities, parents of youth in both cohorts were asked to report on youth's participation in organized school or community groups during the preceding year. According to parent reports, group participation remained stable over time (Exhibit 5-3), with 43% and 46% of youth in the two cohorts participating in any type of organized group activity. This rate of participation in group activities was somewhat lower for youth with disabilities in cohort 2 than for those in the general population (59%, National Survey of America's Families—NSAF, 1999).

Reflecting their wide-ranging interests, youth in both cohorts belonged to a variety of types of groups. Sports teams were the most popular type of group activity in cohort 1, with 25% of youth with disabilities participating—a rate that did not change markedly over time. Participation in sports teams also was stable for youth in the general population, although at a rate about twice as high as for youth with disabilities—52% in 1988 (NCES, 1993) and 49% in 1999 (NSAF, 1999).

Community groups, such as scouting and religious or political groups, surpassed team sports to become the most popular activity in cohort 2; with almost one-third of youth with disabilities participating in them. Community group participation showed the greatest gains over time (11 percentage points, p<.001). Although in both cohorts many more youth participated in sports teams and community groups than other types of groups, several other types of groups showed increased participation over time as well. Special interest clubs, such as photography or computer clubs

Exhibit 5-3
CHANGES IN THE EXTRACURRICULAR PARTICIPATION OF YOUTH WITH DISABILITIES, BY COHORT



Source: NLTS2 Wave 1 parent interview.
Standard errors are in parentheses.

showed a 4-percentage-point gain in attendance (p<.01), student government experienced a 2-percentage-point gain (p<.01), and volunteer service groups gained 1 percentage point (p<.05).

Volunteer/community service participation, whether or not as part of group membership, more than doubled over time, with 42% having volunteered or done other forms of community service in 2001, compared with 21% in 1987 (p<.001). During the period between the two cohorts, the number of schools promoting community service opportunities almost tripled, with 27% of high schools offering community service opportunities to their students in 1984, compared with 80% in 1999 (Newmann & Rutter, 1985; Skinner & Chapman, 1999). The large increase in volunteer activity experienced by youth with disabilities may, in part, reflect this greater emphasis on volunteerism by schools. Some change may also result from differences in item wording and placement in the parent interviews for the two cohorts. In cohort 1, the question about volunteer "work" was included after the section of questions focusing on employment, whereas in cohort 2, a question focusing on "volunteer or community service activities" was included in the section on after-school and extracurricular activities. The broader definition in cohort 2 may have prompted a larger percentage of parents to consider their child's activities as "volunteer or community service" than as "volunteer work." The degree to which this difference in wording affects the comparison between cohorts is unknown.

Disability Differences in Changes in Extracurricular Participation

Although participation in organized groups differed by disability category in both cohorts, the range in participation among those in the different disability groups narrowed over time (Exhibit 5-4). The 28-percentage-point difference between those with the highest and lowest levels of participation in cohort 1 (youth with visual impairments and those with multiple disabilities, p<.001) had narrowed to a 10-percentage-point difference by 2001 (youth with hearing impairments and those with mental retardation, p<.01).

Youth in three disability categories experienced significant changes in group participation. Significantly fewer youth with visual impairments were group members in cohort 2 than in cohort 1 (13-percentage-point decrease, p<.05), which resulted in this group no longer being most likely to participate in organized groups. Youth with multiple disabilities or other health impairments experienced significant gains in group participation over time (15 percentage points, p<.05 and p<.01).

Change in participation in various types of organized groups differed widely by disability category. Youth with other health impairments experienced significant gains in membership in nearly all types of groups, including being the only group that was significantly more likely to be sports team members in cohort 2 than in cohort 1 (11 percentage points, p<.01). With the exception of youth with visual impairments, all youth experienced significant increases in community group participation, ranging from a 9-percentage-point gain (p<.05) for those with learning disabilities to a 20-percentage-point gain for those with multiple disabilities (p<.001). Special interest group membership significantly increased for youth in four disability categories, those with learning disabilities or hearing, orthopedic, or other health impairments (3 to 8 percentage points, p<.05 and .001). Those with other health impairments and learning disabilities were the only groups to experience significant increases in participation in student government (2 percentage points, p<.01 and p<.05). Membership in performing groups, subject matter clubs, and other kinds of groups remained fairly stable over time for all disability groups.

Youth in all disability categories experienced highly significant increases in volunteer/community service participation, ranging from a 17-percentage-point increase for those with visual impairments (p<.01) to a 36-percentage-point increase for those with other health impairments (p<.001).

Exhibit 5-4
CHANGES IN EXTRACURRICULAR PARTICIPATION, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage taking part in the past year in:									
Any organized group activity									
Cohort 1	48.3	50.4	32.0	33.0	54.9	57.5	38.4	36.2	29.6
	(3.4)	(4.5)	(3.4)	(3.8)	(3.6)	(5.0)	(4.5)	(4.8)	(6.1)
Cohort 2	48.1	52.4	40.0	40.5	52.7	44.2	47.0	50.9	44.7
	(3.1)	(3.4)	(3.1)	(3.0)	(3.4)	(4.3)	(3.4)	(2.6)	(3.2)
Percentage point change	+.2	+2.0	+8.0	+7.5	-2.2	**-13.3***	+8.6	**+14.7****	**+15.1***
Sports team									
Cohort 1	28.8	26.9	15.8	19.0	36.6	24.4	15.9	11.0	18.5
	(3.1)	(4.0)	(2.7)	(3.2)	(3.5)	(4.3)	(3.4)	(3.1)	(5.2)
Cohort 2	23.6	27.8	20.7	14.0	29.3	16.2	14.9	22.3	19.9
	(2.6)	(3.0)	(2.5)	(2.2)	(3.1)	(3.2)	(2.5)	(2.2)	(2.6)
Percentage point change	-5.2	+.9	+4.9	-5.0	-7.3	-8.2	-1.0	**+11.3****	+1.4
Community group									
Cohort 1	22.3	22.3	15.5	14.5	21.0	24.8	20.8	19.7	9.2
	(2.9)	(3.8)	(2.7)	(2.8)	(2.9)	(4.3)	(3.8)	(4.0)	(3.9)
Cohort 2	31.3	35.1	28.0	29.1	34.0	28.1	33.0	38.7	29.0
	(3.0)	(3.3)	(2.8)	(2.8)	(3.2)	(3.9)	(3.2)	(2.5)	(2.9)
Percentage point change	**+9.0***	**+12.8***	**+12.5****	**+14.6*****	**+13.0****	+3.3	**+12.2***	**+19.0*****	**+19.8*****
Special interest group									
Cohort 1	1.8	3.0	.8	1.6	2.4	4.6	1.4	.8	1.7
	(.9)	(1.5)	(.7)	(1.0)	(1.1)	(2.1)	(1.1)	(.9)	(1.7)
Cohort 2	5.2	5.1	4.2	3.8	9.4	9.2	9.7	7.3	5.0
	(1.4)	(1.5)	(1.3)	(1.2)	(2.0)	(2.5)	(2.0)	(1.4)	(1.4)
Percentage point change	**+3.4***	+1.9	+2.1	+2.2	**+7.0****	+4.6	**+8.3*****	**+6.5*****	+3.3

Exhibit 5-4
CHANGES IN EXTRACURRICULAR PARTICIPATION, BY DISABILITY CATEGORY (Concluded)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage taking part in the past year in:									
Student government/leadership development group									
Cohort 1	.2 (.3)	3.0 (1.5)	.0 (.0)	.0 (.0)	1.5 (.9)	2.2 (1.5)	.7 (.8)	.0 (.0)	.0 (.0)
Cohort 2	2.6 (1.0)	3.7 (1.3)	.9 (.6)	.8 (.6)	3.4 (1.2)	3.8 (1.6)	2.1 (1.0)	1.9 (.7)	.8 (1.0)
Percentage point change	**+2.4***	+.7	+.9	+.8	+1.9	+1.6	+1.4	**+1.9****	+.8
Volunteer service group									
Cohort 1	.3 (.4)	0 (.0)	1.0 (.7)	.3 (.4)	.7 (.6)	3.1 (1.7)	1.1 (1.0)	2.1 (1.4)	.1 (.4)
Cohort 2	1.7 (.8)	3.1 (1.2)	1.3 (.7)	1.7 (.8)	2.9 (1.1)	1.6 (1.1)	2.2 (1.0)	2.8 (.9)	2.9 (1.1)
Percentage point change	+1.4	**+3.1****	+.3	+1.4	+2.2	-1.5	+1.1	+.7	+2.8
Percentage who had done volunteer work/community service									
Cohort 1	24.0 (2.9)	17.4 (3.4)	12.0 (2.4)	19.0 (3.2)	19.8 (2.9)	26.6 (4.5)	15.5 (3.4)	12.1 (3.3)	7.2 (3.5)
Cohort 2	43.5 (3.0)	49.8 (3.4)	36.6 (3.0)	36.0 (3.0)	46.8 (3.4)	43.3 (4.3)	41.4 (3.4)	47.7 (2.6)	34.3 (3.4)
Percentage point change	**+19.5*****	**-32.4*****	**+24.6*****	**+17.0*****	**+27.0*****	**+16.7****	**+25.9*****	**+35.6*****	**+27.1*****

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Demographic Differences in Changes in Extracurricular Participation

Gender. Boys' and girls' overall participation in organized groups did not differ markedly over time or between genders. Nor were there significant differences between genders or changes across cohorts regarding membership in sports teams, school subject matter clubs, volunteer service groups, or vocational clubs.

However, both genders increased their membership in community groups (Exhibit 5-5), with a 9-percentage-point increase for boys (p<.001) and a 14-percentage-point increase for girls (p<.001). The larger increase for girls resulted in their becoming significantly more likely to be community group members than boys (36% vs. 28%, p<.05). Similarly, participation in student leadership significantly increased only for girls (4 percentage points, p<.01), again resulting in girls becoming more likely than boys to be student government members (4.5% vs. 1%, p<.05). Both genders also increased their participation in special interest clubs (3 and 4 percentage points for boys and girls, respectively, p<.05).

The rate of participation in volunteer work significantly increased between 1987 and 2001 for both genders, with little difference between them in the amount of increase or the level of volunteer involvement in either cohort.

Household income. Membership in an organized group did not change markedly between cohorts for youth from families with high, medium or low incomes (Exhibit 5-6). Youth from higher-income families in cohort 2 continued to be more likely to be group participants than were their peers from lower income families (52% vs. 39%, p<.01). Those at all income levels significantly

Exhibit 5-5
CHANGES IN EXTRACURRICULAR PARTICIPATION, BY GENDER

	Boys	Girls
Percentage taking part in the past year in:		
Community group		
Cohort 1	19.1 (1.4)	21.8 (3.2)
Cohort 2	28.5 (2.2)	36.3 (3.3)
Percentage point change	**+9.4*****	**+14.5*****
Special interest club		
Cohort 1	1.6 (.7)	1.7 (1.0)
Cohort 2	4.9 (1.1)	5.7 (1.6)
Percentage point change	**+3.3***	**+4.0***
Student government/leadership development group		
Cohort 1	.3 (.3)	.3 (.4)
Cohort 2	1.0 (.5)	4.5 (1.4)
Percentage point change	+.7	**+4.2****
Percentage who had done volunteer work/community service		
Cohort 1	20.5 (2.2)	20.5 (3.1)
Cohort 2	41.6 (2.4)	42.8 (3.3)
Percentage point change	**+21.1*****	**+22.3*****

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Exhibit 5-6
CHANGES IN EXTRACURRICULAR PARTICIPATION, BY INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Low	Medium	High	White	African American	Hispanic
Percentage taking part in the past year in:						
Any organized group activity						
Cohort 1	35.2	41.1	56.4	46.9	39.3	29.0
	(4.2)	(4.2)	(3.6)	(2.7)	(4.6)	(7.2)
Cohort 2	39.0	49.7	51.5	49.4	46.4	36.3
	(3.2)	(3.8)	(3.8)	(2.7)	(4.6)	(5.1)
Percentage point change	+3.8	+8.6	-4.9	+2.5	+7.1	+7.3
Community group						
Cohort 1	17.1	17.6	26.3	20.9	21.9	5.4
	(3.3)	(3.2)	(3.2)	(2.2)	(3.9)	(3.6)
Cohort 2	25.9	33.0	36.4	34.2	32.2	21.1
	(2.9)	(3.6)	(3.6)	(2.5)	(4.2)	(4.1)
Percentage point change	**+8.8***	**+15.4****	**+10.1***	**+13.3*****	+10.3	**+15.7****
Special interest club						
Cohort 1	.6	2.1	1.4	2.0	1.1	.9
	(.7)	(1.2)	(.9)	(.8)	(1.0)	(1.5)
Cohort 2	3.0	6.0	6.4	6.9	1.8	3.1
	(1.1)	(1.8)	(1.9)	(1.3)	(1.2)	(1.7)
Percentage point change	+2.4	+3.9	**+5.0***	**+4.9****	+.7	+2.2
Student government/youth leadership						
Cohort 1	.2	.1	.3	.2	.3	1.4
	(.4)	(.3)	(.4)	(.2)	(.5)	(1.9)
Cohort 2	1.7	2.7	2.3	2.5	2.3	1.0
	(.9)	(1.2)	(1.1)	(.8)	(1.4)	(1.0)
Percentage point change	+1.5	**+2.6***	+2.0	**+2.3****	+2.0	-.4
Volunteer service group						
Cohort 1	.1	.6	.9	.5	.5	.1
	(.3)	(.7)	(.7)	(.4)	(.7)	(.5)
Cohort 2	.2	1.9	3.3	2.1	1.0	1.6
	(.3)	(1.0)	(1.4)	(.7)	(.9)	(1.3)
Percentage point change	+.1	+1.3	+2.4	**+1.6***	+.5	+1.5
Another kind of group						
Cohort 1	4.3	1.8	5.3	3.6	2.4	5.1
	(1.8)	(1.1)	(1.6)	(1.0)	(1.4)	(3.5)
Cohort 2	2.2	2.3	.8	1.8	1.3	1.3
	(1.0)	(1.1)	(.7)	(.7)	(1.0)	(1.1)
Percentage point change	-2.1	+.5	**-4.5****	-1.8	-1.1	-3.8
Percentage who had done volunteer work/community service						
Cohort 1	14.7	22.1	29.1	24.9	9.8	13.4
	(3.2)	(3.5)	(3.3)	(2.4)	(2.8)	(5.4)
Cohort 2	33.1	42.5	52.9	47.3	32.5	31.6
	(3.1)	(3.8)	(3.8)	(2.6)	(4.2)	(4.7)
Percentage point change	**+18.4*****	**+20.4*****	**+23.8*****	**+22.4*****	**+22.7*****	**+18.2***

Source: NLTS and NLTS2 Wave 1 parent interviews. Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

increased their membership in community groups, with those from medium-income families experiencing the largest gains (9 to 15 percentage points, p<.05 and .01). Changes in participation in special interest clubs, student government, and other types of groups were less consistent across family income levels; with only those from higher income families experiencing changes in their special interest club and other group membership (a 5-percentage point-gain, p<.05, and a 4-percentage-point decline, p<.01). Only those from medium-income families significantly increased their participation in student leadership groups (3 percentage points, p<.05). Membership in sports teams, performing groups, subject matter clubs, and vocational clubs remained stable over time for youth at all income levels.

Youth at all income levels experienced significant increases in their participation in volunteer work/community service (18 to 24 percentage points, p<.001). Those from higher-income families remained significantly more likely to engage in such activities than did their peers from lower income families (53% vs. 33%, p<.001). It is notable that this increase was not associated with an increase in involvement in volunteer groups, suggesting that individual volunteer activities, rather than group activities, were an important part of students' volunteerism.

Race/ethnicity. White youth with disabilities experienced significant gains in membership in several types of groups. They were the only group with significantly greater participation in 2001 than in 1987 in special interest groups, student government, and volunteer groups (2 and 5 percentage points, p<.01 and .05). White and Hispanic youth were the only racial/ethnic groups to experience increases in community group participation (13 and 16 percentage points, p<.001). Membership in sports teams, performing groups, subject matter clubs, and vocational clubs remained stable over time for youth in all racial/ethnic groups.

Although youth in all ethnic/racial groups experienced significant increases in their involvement in volunteer activities (18 to 23 percentage points, p<.05, p<.001), white youth remained the most likely to volunteer (47% compared with 33% for African American and 32% for Hispanic youth, p<.01).

Employment

Work always has been part of the lives of many youth in the United States (Kerschner, 2000). In recent years, approximately 80% of youth reported holding jobs at some point during high school (Commission on Behavioral and Social Sciences and Education, 1998). Entry into the labor market often begins earlier than high school, with approximately half of youth ages 12 and 13 and nearly two-thirds of youth ages 14 or 15 reporting that they work (Rothstein & Herz, 2000). With the majority of youth working at some time in their middle- or high-school years, youth employment has become the norm in American society.

Exhibit 5-7
CHANGES IN EMPLOYMENT CHARACTERISTICS OF YOUTH WITH DISABILITIES

	Cohort 1	Cohort 2	Percentage Point Change
Percentage in the last year with:			
A paid job outside the home	51.0 (2.2)	60.2 (2.0)	**+9.2****
A work-study job	9.5 (1.3)	15.2 (1.6)	**+5.7****
Percentage with a paid job currently	36.3 (2.1)	29.0 (1.8)	**-7.3****
Percentage of employed youth currently working:			
8 hours or less per week	26.0 (3.5)	31.3 (2.6)	+5.3
8.1 to 16 hours per week	13.9 (2.8)	27.4 (2.5)	**+13.5*****
More than 16 hours per week	60.1 (3.9)	41.2 (2.8)	**-18.9*****
Percentage earning at their current or most recent job:			
Less than minimum wage	32.2 (3.7)	9.0 (2.5)	**-23.2*****
Minimum wage	26.4 (3.5)	23.1 (3.7)	-3.3
More than minimum wage	41.4 (4.0)	67.9 (4.2)	**+26.5*****

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels:
* p<.05, ** p<.01, *** p<.001.

Work was more likely to be part of the lives of youth with disabilities in 2001 than in 1987 (Exhibit 5-7). Six in ten youth in cohort 2 had worked for pay outside the home in the preceding year, a rate quite similar to that of the general population of youth (63%, Udry, 1998). This was a 9-percentage-point increase over the 1-year employment rate of cohort 1 (51%, p<.01). The rate at which youth held work-study jobs also increased, by almost 6 percentage points (p<.01). Somewhat surprisingly, however, the rate at which cohort 2 youth were working at a given point in time declined by 7 percentage points relative to cohort 1 (29% vs. 36%, p<.01), suggesting that cohort 2 youth may have been more likely to engage in summer, seasonal, or sporadic employment (e.g., babysitting).

Not only did the employment rates change over time, so did the characteristics of the jobs held by youth. In 2001, youth with disabilities tended to work fewer hours than their peers in 1987. For example, 41% of cohort 2 youth worked more than 16 hours per week, a rate similar to the general population (46%, Udry, 1998). This compares with 60% of those in cohort 1 working more than 16 hours per week (p<.001). In light of concerns raised regarding the potential negative consequences of students working long hours (National Research Council, 1998), this reduction in work hours could benefit youth with disabilities. Cohort 2 youth also tended to be better paid; 68% earned more than the minimum wage, whereas only 41% had done so in 1987.

Disability Differences in Changes in Employment

Gains in employment in the preceding year were experienced primarily by youth with learning disabilities and speech, orthopedic, or other health impairments (Exhibit 5-8), ranging from 10 to 17 percentage points (p<.05 and .01). In contrast, increases in work-study employment occurred primarily among youth with mental retardation, emotional disturbances, or multiple disabilities (14 to 18 percentage points, p<.05 and .001). Changes in the rate of current employment generally were small, with the exception of a 16-percentage-point drop among youth with emotional disturbances (p<.01). Reductions in the percentage of youth working more than 16 hours per week were evident for five categories, ranging from 17 to 29 percentage points (p<.05 and .01 for youth with learning disabilities, mental retardation, emotional disturbances, and orthopedic and other health impairments). The proportion of youth earning more than the minimum wage was 19 to 48 percentage points higher for cohort 2 than cohort 1, with the differences being statistically significant for all categories except mental retardation. In 1987, with one exception (learning disabilities), about one-third or fewer in each group earned the minimum wage. In 2001, from more than one-half (youth with visual or orthopedic impairments) to almost three-fourths (youth with speech impairments) earned more than the minimum wage.

Demographic Differences in Changes in Employment

Gender. Girls were more commonly the beneficiaries of increases in paid employment during the past year, with their gain of 14 percentage points being double that of boys (Exhibit 5-9). Thus, the gender gap narrowed from 12 percentage points in 1987 (55% for boys vs. 43% for girls, p<.05), to 5 percentage points in 2001—no longer a significant difference. Work-study employment showed approximately the same increase for boys and girls. However, current paid employment rates declined almost twice as much for boys as for girls. Reductions in hours worked and increases in pay were similar for boys and girls.

Exhibit 5-8
CHANGES IN EMPLOYMENT CHARACTERISTICS, BY COHORT AND DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage of youth who in the past year had:									
A paid job outside the home									
Cohort 1	57.1	42.5	31.9	61.7	44.5	35.6	18.3	38.4	15.2
	(3.3)	(4.4)	(3.4)	(3.9)	(3.6)	(4.8)	(3.6)	(4.9)	(4.8)
Cohort 2	67.2	59.5	38.2	60.5	52.1	39.6	31.3	55.7	24.0
	(2.9)	(3.4)	(3.1)	(3.1)	(3.5)	(4.2)	(3.3)	(2.6)	(2.8)
Percentage point change	**+10.1***	**+17.0****	+6.3	-1.2	+7.6	+4.0	**+13.0****	**+17.3****	+8.8
A work-study job									
Cohort 1	8.4	6.0	15.7	5.5	11.9	12.6	14.4	13.6	14.7
	(1.9)	(2.1)	(2.7)	(1.9)	(2.4)	(3.4)	(3.3)	(3.5)	(4.8)
Cohort 2	10.2	9.0	33.8	19.5	18.0	21.5	16.8	17.2	29.7
	(2.0)	(2.2)	(3.3)	(2.7)	(2.9)	(3.8)	(2.9)	(2.1)	(3.4)
Percentage point change	+2.4	+3.0	**+18.1*****	**14.0*****	+6.1	+8.9	+2.4	+3.6	**+15.0***
Percentage of youth currently employed									
Cohort 1	42.0	28.2	21.4	40.5	32.3	22.0	9.6	29.2	9.2
	(3.3)	(4.0)	(3.0)	(4.0)	(3.4)	(4.2)	(2.7)	(4.6)	(3.9)
Cohort 2	34.1	31.3	14.1	24.7	28.2	16.7	11.0	26.7	10.6
	(2.9)	(3.2)	(2.2)	(2.7)	(3.1)	(3.2)	(2.2)	(2.3)	(2.0)
Percentage point change	-7.9	+3.1	-7.3	**-15.8****	-4.1	-5.3	+1.4	-2.5	+1.4
Percentage currently working more than 16 hours per week									
Cohort 1	61.2	57.3	51.9	62.7	53.4	60.1	52.2	61.1	--
	(5.2)	(8.9)	(8.3)	(6.5)	(6.7)	(9.8)	(10.8)	(9.9)	
Cohort 2	42.7	39.8	27.1	46.4	43.0	39.8	23.5	36.4	--
	(3.9)	(4.7)	(4.9)	(4.3)	(5.0)	(7.6)	(5.9)	(3.5)	
Percentage point change	**-16.9****	-17.5	**-24.8***	**-18.3***	-10.4	-20.3	**-28.7***	**-24.7***	

Exhibit 5-8
CHANGES IN EMPLOYMENT CHARACTERISTICS, BY COHORT AND DISABILITY CATEGORY (Concluded)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage earning more than minimum wage at their current or most recent job									
Cohort 1	44.0 (5.3)	35.5 (8.5)	37.7 (8.1)	33.7 (6.4)	32.2 (6.5)	17.3 (8.0)	25.2 (9.2)	27.1 (9.0)	--
Cohort 2	68.1 (5.5)	72.9 (6.0)	58.9 (9.1)	67.1 (6.8)	69.6 (7.0)	54.0 (15.0)	53.3 (10.5)	74.8 (4.8)	--
Percentage point change	**+24.1****	**+37.4*****	+18.8	**+33.4*****	**+37.4*****	**+45.4***	**+31.5***	**+47.7*****	

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

--Too few to report separately.

Exhibit 5-9
CHANGES IN EMPLOYMENT CHARACTERISTICS, BY GENDER

	Boys	Girls
Percentage who in the past year had:		
A paid job outside the home		
Cohort 1	54.6 (2.7)	43.0 (3.8)
Cohort 2	61.9 (2.3)	56.7 (3.3)
Percentage point change	**+7.3***	**+13.7****
A work-study job		
Cohort 1	9.0 (1.6)	10.6 (2.4)
Cohort 2	14.8 (1.9)	16.2 (2.7)
Percentage point change	**+5.8***	+5.6
Percentage of youth currently employed		
Cohort 1	39.4 (2.7)	29.5 (3.5)
Cohort 2	30.7 (2.3)	25.4 (3.0)
Percentage point change	**-8.7***	-4.1
Percentage currently working more than 16 hours per week		
Cohort 1	61.3 (4.5)	56.4 (7.9)
Cohort 2	44.8 (3.4)	33.3 (4.7)
Percentage point change	**-16.2****	**-19.5***
Percentage earning more than the minimum wage in their current or most recent job		
Cohort 1	44.4 (4.6)	32.7 (7.5)
Cohort 2	72.5 (4.8)	57.4 (7.9)
Percentage point change	**+28.1*****	**+24.7***

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Household income. Differences in employment were noted for youth who differed in the income levels of their households and in their racial/ethnic backgrounds (Exhibit 5-10). Although youth in all income levels experienced changes in the same direction, the magnitude of changes was different. For example, all categories showed gains in the employment rate in the preceding year; however, only the 13-percentage-point difference for youth in the middle income category was large enough to attain statistical significance. Similarly, reductions in the current employment rate were significant only for youth in the lowest income group, and the reduction in work hours was significant only for youth in the highest income group. Increased wages also were greatest for the middle and highest income groups.

Race/ethnicity. Increases in the 1-year employment rate were markedly larger for African American (15 percentage points) and Hispanic youth (17 percentage points), resulting in a narrowing of the gap in employment rates between those groups and white youth. Nonetheless, white youth still were significantly more likely to have been employed in the last year than their African American or Hispanic counterparts (50% and 43%, p<.001). In contrast, white youth were the only group to have a significant increase in wages, resulting in a widening of the wage gap between white and African American youth over time. White youth also experienced a significant increase in work-study employment and a reduction in work hours that were not shared by other groups.

Exhibit 5-10
CHANGES IN EMPLOYMENT CHARACTERISTICS, BY INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Lowest	Medium	Highest	White	African American	Hispanic
Percentage of youth who in the past year had:						
A paid job outside the home						
Cohort 1	38.7	53.4	61.9	60.5	34.4	26.0
	(4.3)	(4.2)	(3.6)	(2.7)	(4.5)	(6.9)
Cohort 2	47.5	66.6	69.8	69.2	49.6	43.2
	(3.3)	(3.6)	(3.5)	(2.4)	(4.6)	(5.1)
Percentage point change	+8.8	**+13.2***	+7.9	**+8.7***	**+15.2***	**+17.2***
A work-study job						
Cohort 1	14.6	5.4	8.9	8.1	13.3	8.8
	(3.2)	(1.9)	(2.1)	(1.5)	(3.2)	(4.5)
Cohort 2	19./0	13.8	14.0	15.3	18.0	13.1
	(2.8)	(2.7)	(2.6)	(2.0)	(3.7)	(3.6)
Percentage point change	+4.6	+8.4	+5.1	**+7.2****	+4.7	+4.3
Percentage of youth currently employed						
Cohort 1	27.7	36.1	46.9	44.7	23.7	14.0
	(4.0)	(4.1)	(3.7)	(2.7)	(4.0)	(5.5)
Cohort 2	16.5	33.5	38.3	36.0	18.9	18.2
	(2.5)	(3.6)	(3.7)	(2.5)	(3.6)	(3.9)
Percentage point change	**-11.2***	-2.6	-8.6	-8.7	-4.8	+4.2
Percentage currently working more than 16 hours						
Cohort 1	59.9	60.0	58.6	59.6	70.0	52.0
	(9.2)	(7.3)	(5.8)	(4.3)	(10.6)	(18.2)
Cohort 2	41.8	43.9	39.4	38.8	46.6	46.4
	(5.0)	(5.2)	(4.6)	(3.4)	(6.9)	(8.5)
Percentage point change	-18.1	-16.1	**-19.2****	**-20.2*****	-23.4	+5.6
Percentage earning more than minimum wage at their current or most recent job						
Cohort 1	43.4	34.4	46.3	41.8	40.3	28.1
	(9.6)	(7.1)	(5.9)	(4.3)	(11.9)	(17.3)
Cohort 2	54.1	65.9	74.8	72.1	52.4	58.5
	(9.0)	(7.8)	(5.7)	(4.6)	(12.5)	(15.2)
Percentage point change	+10.7	**+31.5****	**+28.5*****	**+30.3*****	+12.1	+30.4

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01, *** p<.001.

Independence

Independently engaging in managing one's own money and performing various household chores or responsibilities are measures of growth toward adulthood. Comparisons of the performance of these activities between youth with disabilities in 1987 and 2001 provide one perspective on how independent youth in the 15- through 17-year-old group have become over this time period.

Parents were asked whether youth had money about which they made their own decisions. They also were asked to rate on a four-point scale, from "never" to "always," how often youth performed various household chores on their own, including fixing breakfast, straightening up their living areas, doing laundry, and buying items from a store. Combining the scores for the four household activities produced a household responsibilities scale score ranging from 4 (all of them done "never") to 16 (all of them done "always").

Exhibit 5-11 shows the changes in independent decision-making about money and the frequency of performing typical household tasks. Although youth with disabilities became more independent managing money, no significant changes were reported in independent performance of household chores. Youth having money about which they made their own decisions increased significantly, from 76% to 84% (p<.01) and may be associated with working more.

Exhibit 5-11
CHANGES IN THE INDEPENDENCE OF YOUTH WITH DISABILITIES

	Cohort 1	Cohort 2	Change
Percentage who had money about which they made their own decisions	76.0 (2.0)	84.2 (2.0)	**+8.2****
Percentage whose household responsibilities scale score (range = 4 to 16) was:			
Low (4 to 8)	27.6 (2.1)	32.2 (1.8)	+4.6
Medium (9 to 14)	64.3 (2.2)	59.1 (1.9)	-5.2
High (15 or 16)	8.1 (1.3)	8.5 (.8)	+.4
Average household responsibilities scale score	10.3 (.1)	10.1 (.1)	-.2

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following level: ** p<.01.

Disability Differences in Changes in Independence

The percentage of youth having money about which they made decisions increased significantly from 1987 to 2001 for youth with mental retardation, other health impairments, or multiple disabilities (Exhibit 5-12). The percentage of youth with mental retardation or other health impairments who handled money independently increased from about 62% to 79% and 84%, respectively (p<.001), bringing them up to the percentage of most other disability groups. Money management among youth with multiple disabilities also increased, from fewer than half to 65% having money about which they made decisions (p<.05). These changes markedly reduced the differences between categories, from a range of 34 percentage points (48% to 82%) for cohort 1 to 23 percentage points (65% to 88%) for cohort 2.

Exhibit 5-12
CHANGES IN INDEPENDENCE OF YOUTH WITH DISABILITIES, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Percentage with money about which they made decisions									
Cohort 1	80.1	75.9	63.0	78.7	81.7	77.0	70.9	62.2	48.1
	(2.8)	(3.9)	(3.7)	(3.5)	(2.8)	(4.3)	(4.3)	(5.0)	(6.7)
Cohort 2	86.2	83.0	79.2	83.5	87.8	79.1	77.5	84.0	65.3
	(2.1)	(2.6)	(2.6)	(2.3)	(2.2)	(3.5)	(2.9)	(1.9)	(3.1)
Percentage point change	+6.1	+7.1	**+16.2***	+4.8	+6.1	+2.1	+6.6	**+21.8***	**+17.2***
Percentage with household responsibilities scale score of:									
Low									
Cohort 1	22.8	22.2	39.4	31.0	19.2	33.4	53.4	31.1	72.4
	(3.0)	(3.8)	(3.8)	(4.0)	(3.0)	(4.9)	(4.8)	(4.8)	(6.6)
Cohort 2	26.9	29.3	43.3	36.5	24.6	39.0	62.5	42.2	60.4
	(2.7)	(3.0)	(3.0)	(2.9)	(2.9)	(4.2)	(3.3)	(2.5)	(3.1)
Percentage point change	+4.1	+7.1	+3.9	+5.5	+5.4	+5.6	+9.1	**+11.1***	-12.0
High									
Cohort 1	8.9	11.9	6.3	6.2	8.1	5.5	6.1	7.6	1.0
	(2.0)	(3.0)	(1.9)	(2.1)	(2.1)	(2.4)	(2.3)	(2.8)	(1.5)
Cohort 2	9.1	6.8	9.5	7.9	10.8	4.8	5.0	3.8	3.1
	(1.7)	(1.7)	(1.8)	(1.6)	(2.1)	(1.8)	(1.5)	(.9)	(1.1)
Percentage point change	+.2	-5.1	+3.2	+1.7	+2.7	-.7	-1.1	-3.8	+2.1
Average household responsibilities scale score									
Cohort 1	10.6	10.7	9.6	9.9	10.9	10.0	8.6	10.1	7.1
	(.2)	(.3)	(.2)	(.2)	(.2)	(.3)	(.3)	(.3)	(.4)
Cohort 2	10.4	10.2	9.5	9.9	10.8	9.5	7.9	9.4	7.9
	(.2)	(.2)	(.2)	(.2)	(.2)	(.3)	(.2)	(.1)	(.2)
Change in scale score	-.2	-.5	-.1	0	-.1	-.5	-.7	**-.7***	+.8

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ***p<.001.

Although there was a slight increase in the percentage of youth performing in the low range on household chores between 1987 and 2001, this increase was significant only for youth with other health impairments (11 percentage points, p<.05) resulting in a decrease in the average score of almost one point (p<.05).

Demographic Differences in Changes in Independence

Exhibit 5-13
CHANGES IN INDEPENDENCE,
BY GENDER

	Boys	Girls
Percentage with money about which they made decisions		
Cohort 1	78.2 (2.3)	71.1 (3.6)
Cohort 2	83.8 (1.8)	85.0 (2.4)
Percentage point change	+5.6	**+13.9****
Percentage with household responsibility scale score of:		
Low		
Cohort 1	31.1 (2.6)	19.9 (3.2)
Cohort 2	35.8 (2.3)	24.9 (2.9)
Change in scale score	+4.7	+5.0
High		
Cohort 1	6.3 (1.4)	12.1 (2.6)
Cohort 2	6.0 (1.1)	13.6 (2.3)
Change in scale score	-.3	+1.5
Average household responsibility scale score		
Cohort 1	10.0 (.2)	11.0 (.2)
Cohort 2	9.8 (.1)	10.8 (.2)
Change in scale score	-.2	-.2

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: ** p<.01.

Gender. Girls showed significant gains in having money about which they made decisions (Exhibit 5-13); 71% of girls in cohort 1 were managing money, compared with 85% in cohort 2 (p<.01).

Household income. Changes in independence were found for youth who differed in the income levels of their households and their racial/ethnic backgrounds (Exhibit 5-14). Only youth in the highest income group experienced significant changes. This group experienced an 8 percentage point gain, to 92% (p<.05) of youth having money about which they made decisions. Their average household responsibility scale score also dropped significantly (.6 points, p<.05), with the loss coming from those with higher scores (5 percentage points, p<.05).

Race/ethnicity. Significantly greater independence with money was experienced by white (8 percentage points, p<.01) and African American youth (13 percentage points, p<.05). More than 85% of African American and white youth made decisions about money.

Exhibit 5-14
CHANGES IN YOUTH'S INDEPENDENCE, BY INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Low	Medium	High	White	African American	Hispanic
Percentage with money about which they made decisions						
Cohort 1	71.6 (4.2)	76.5 (3.7)	82.8 (2.8)	79.9 (2.3)	72.4 (4.3)	56.2 (7.9)
Cohort 2	77.2 (2.8)	83.7 (2.8)	91.6 (2.1)	88.3 (1.7)	85.4 (3.2)	69.8 (4.6)
Percentage point change	+5.4	+7.2	**+8.8***	**+8.4****	**+13.0***	+13.6
Percentage with household responsibility scale score of:						
Low						
Cohort 1	32.6 (4.4)	26.5 (3.9)	22.8 (3.2)	30.1 (2.6)	23.1 (4.2)	23.4 (7.1)
Cohort 2	37.1 (3.2)	30.5 (3.5)	29.2 (3.4)	32.7 (2.3)	26.8 (3.8)	40.2 (5.4)
Change in scale score	+4.5	+4.0	+6.2	+2.6	+3.7	+16.8
High						
Cohort 1	10.5 (2.9)	6.1 (2.1)	6.9 (1.9)	6.2 (1.4)	15.4 (3.6)	2.0 (2.4)
Cohort 2	6.7 (1.6)	10.2 (2.3)	8.2 (2.0)	6.9 (1.3)	12.1 (2.8)	9.4 (3.2)
Change in scale score	-3.8	+4.1	+1.3	+.7	-3.3	+7.4
Average household responsibility scale score						
Cohort 1	10.2 (.3)	10.3 (.2)	10.4 (.2)	10.0 (.2)	10.9 (.3)	10.6 (.5)
Cohort 2	9.8 (.2)	10.2 (.2)	10.2 (.2)	10.0 (.1)	10.5 (.3)	9.9 (.3)
Change in scale score	-.4	-.1	-.2	0	-.4	-.7

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

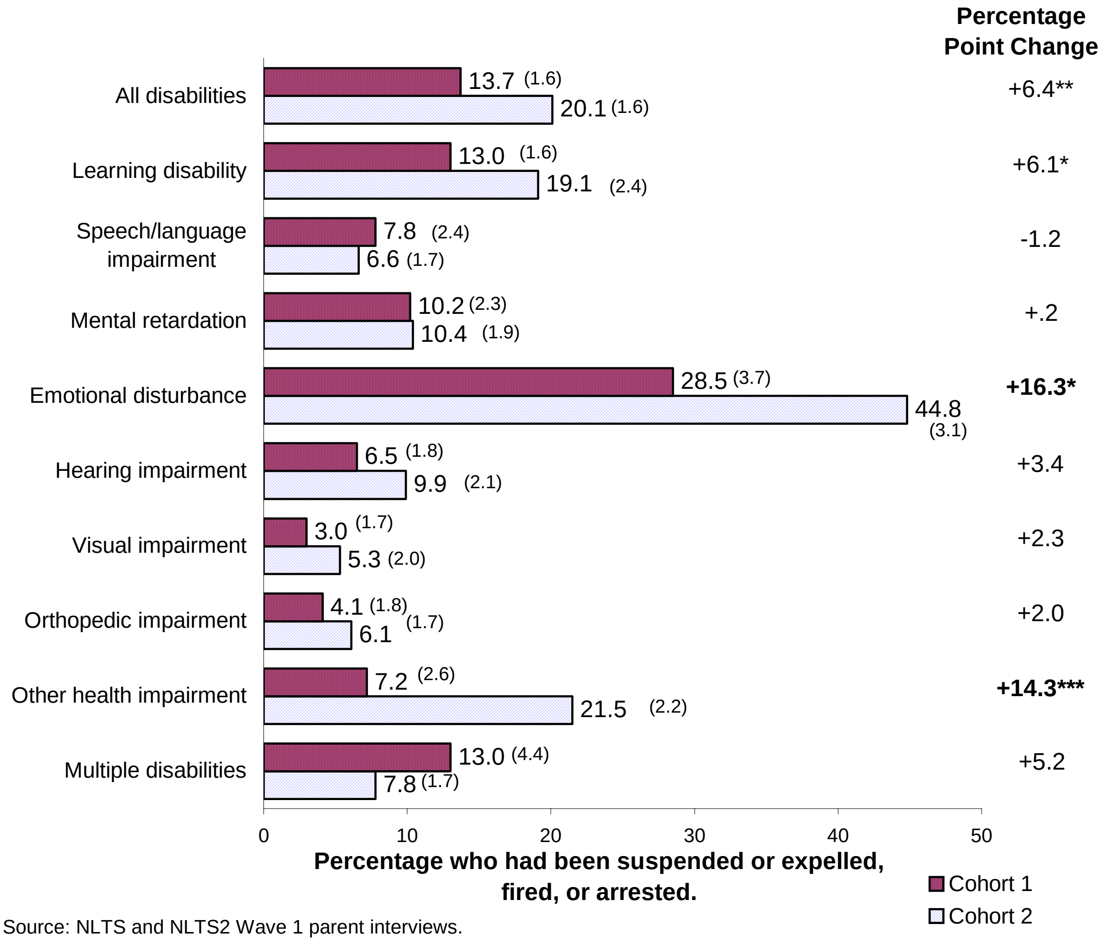
Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01.

Social Adjustment

In their adolescent years, many youth, both with and without disabilities, engage in behaviors designed to exhibit their independence and test the limits of adult authority. Although many youth engage in problem behaviors without serious negative consequences, the behavior of some youth goes so far as to violate social norms and cause serious negative consequences for them. Four such consequences were assessed in NLTS and NLTS2—the extent to which youth ever had been suspended or expelled from school, fired from a job, or arrested.[2]

The rate at which youth with disabilities had experienced any of these negative consequences increased significantly (Exhibit 5-15). Whereas in 1987, 14% of youth with disabilities had

Exhibit 5-15
CHANGES IN YOUTH EXPERIENCING NEGATIVE CONSEQUENCES FOR THEIR ACTIONS, BY DISABILITY CATEGORY



Source: NLTS and NLTS2 Wave 1 parent interviews.
Standard errors are in parentheses.
Statistically significant difference in a two-tailed test at the following levels: ** p<.01, *** p<.001.

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[2] The data archiving process of NLTS incorporated the constructed dichotomous variable indicating whether youth had ever experienced expulsion, suspension, arrest, or being fired from a job. The individual variables that make up that construct were not archived. Thus, the cohorts cannot be compared in regard to individual consequences, only in regard to whether they had experienced any one or more that one of them.

experienced one or more of the negative consequences considered in NLTS, 20% of youth in 2001 had had such experiences (p<.01). The increase in experiencing negative consequences was concentrated particularly among youth with emotional disturbances and other health impairments, among whom the rates of increase were 16 and 14 percentage points, respectively (p<.01 and .001). However, even though their rates of increase were similar, the extent to which youth with emotional disturbances experienced negative consequences was significantly higher at both times than for youth with other health impairments or those in any other disability category.

Increases in rates of experiencing negative consequences occurred similarly for boys and girls with disabilities, about 6 percentage points (Exhibit 5-16), which left boys with a higher rate of such experiences in 2001 than girls (23% vs. 14%, p<.01). The largest increases occurred among youth in the upper income group and among white youth, 9 and 8 percentage points, respectively (p<.05 and .01). Rates of experiencing negative consequences were quite similar across income and racial/ethnic groups in 2001.

Exhibit 5-16
CHANGES IN YOUTH EXPERIENCING NEGATIVE CONSEQUENCES FOR THEIR BEHAVIOR, BY DEMOGRAPHIC CHARACTERISTICS

	Cohort 1	Cohort 2	Percentage Point Change
Youth who were:			
Male	16.2 (2.0)	22.9 (2.1)	**+6.7***
Female	8.1 (2.1)	14.5 (2.4)	**+6.4***
Youth whose household income group was:			
Lowest	13.2 (3.1)	19.6 (2.6)	+6.4
Medium	16.0 (3.1)	21.8 (3.2)	+5.8
Highest	11.3 (2.3)	20.2 (3.0)	**+8.9***
Youth who were:			
White	12.5 (1.8)	20.4 (2.1)	**+7.9****
African American	15.0 (3.4)	17.3 (3.5)	+2.3
Hispanic	15.9 (5.9)	19.4 (4.0)	+3.5

Source: NLTS and NLTS2 Wave 1 parent interviews.

Standard errors are in parentheses.

Statistically significant difference in a two-tailed test at the following levels: * p<.05, ** p<.01.

Summary

Examining changes in a range of outcomes for youth with disabilities from 1987 to 2001 does not yield a consistent or unequivocal “good news” or “bad news” story. The mix of changes shows progress on some dimensions or for some groups, yet little change or even change in an undesirable direction for some measures of achievements.

On the academic front, the 1-year dropout rate for youth with disabilities was cut in half over this period, with the rate in 2001 for youth with disabilities being significantly lower than the rate in the general population. However, only youth with mental retardation experienced a significant decline.

Extracurricular activity in general did not increase between the two cohorts of youth with disabilities, but increases were evident for some kinds of activities. Most notable were increases in volunteer or community service activities, which more than doubled over time. However, rates of extracurricular activity for youth with disabilities remained below that of the general population.

A mix of changes also was evident regarding youth employment. The 1-year paid employment rate increased, with significantly more youth holding paid jobs in the previous year in 2001 than 1987. This increase brought the overall 1-year employment rate for youth with disabilities (60%) in line with that of the general population of youth (63%). It is unknown how much of this increase resulted from different economic conditions in the two periods, a greater interest in or preparation for employment on the part of youth, or other factors.

Employment experiences also changed for many youth with disabilities, with an increase in work study jobs, a decline in the average number of hours worked per week, and significant improvements in pay. In 2001, two-thirds of youth with disabilities were earning more than the minimum wage, half again as many as had done so in 1987. However, a decline in the rate of current employment suggests that youth also had more sporadic work experiences, rather than continuous employment.

Two measures of the independence of youth showed changes in opposite directions, with more youth with disabilities having money about which to make decisions and slightly more youth scoring in the low range on responsibility for the set of household chores examined in NLTS2. Both findings are consistent with the increase in employment, which could yield income for working youth to manage and reduce time available for household activities. Increases in participation in activities such as community service also could leave less time for household chores. Alternatively, changes in the social context, such as an increase in the workforce participation of mothers, could have contributed to changes in chores youth with disabilities were held accountable for at home.

There is cause for concern in the finding that the rate at which youth with disabilities experienced the negative consequences of suspension or expulsion from school, being fired from a job, or arrested increased over time. By 2001, one in five youth with disabilities had experienced one or more of these consequences of their behavior, up 6 percentage points from 1987.

But as is always true, given the important differences within the population of youth with disabilities, these changes in outcomes did not affect all youth equally, and most categories of youth experienced changes that were inconsistent in direction. For example, youth with other health impairments had a sizable increase in their overall level of extracurricular group participation and volunteerism, increases in employment and pay, and increases in their responsibility for managing money of their own—all of which bode well for their future. Yet they, along with youth with emotional disturbances, had sizable increases in the rate at which they experienced negative consequences for their behavior.

Similarly, youth with mental retardation had the only significant decrease in the dropout rate, and the largest rate of increase in holding a work study job, yet they were the only disability category not to experience a significant increase in earning more than the minimum wage. Youth with visual impairments were the only group to experience a significant decline in their overall rate of participation in extracurricular activities and were among the few groups to show no increase in the work-study or 1-year or current paid employment rates. Yet youth with visual impairments who were working had large gains in earnings.

Other group differences were apparent as well. Girls with disabilities experienced much larger increases in participation in some kinds of extracurricular activities than boys, particularly community groups and leadership or student government organizations. With greater change over time, the participation of girls in these activities in 2001 significantly exceeded that of boys.

Girls also had larger increases in employment than boys, and the gap in employment rates between the genders that favored boys in 1987 had been closed for the most part by 2001. A larger increase in employment among girls was mirrored in a larger increase in having money about which to make their own decisions. Yet, despite significant increases in the proportion of girls with disabilities who earned more than the minimum wage, boys still were more likely than girls to meet or exceed the minimum wage.

Improvements in employment outcomes over time were least apparent for lower-income youth with disabilities. They experienced no significant gains in 1-year or work study employment rates, nor did they share in the large gains in pay that were evident for other income groups. In addition, they had the largest decline in current employment rates. Upper income youth showed negative changes in other areas. Specifically, between 1987 and 2001 the percentage of upper-income youth who had been suspended or expelled from school, fired from a job, or arrested increased from 11% to 20%.

Youth with different racial/ethnic backgrounds also experienced different kinds of changes in outcomes. Although all groups experienced gains in 1-year employment rates, white youth had the only significant increase in pay and the only significant decline in the dropout rate. On the negative side, white youth accounted for virtually all of the gain in the percentage of youth that had experienced negative consequences for their behavior.

This chapter presents the first analysis of changes in outcomes of youth with disabilities between 1987 and 2001, at which time virtually all of the youth were in school. Future research will focus on changes in other outcomes of in-school youth, as well as youth’s outcomes during the early post-high-school years.

6. ACHIEVEMENTS AND CHALLENGES

Chapter 1 identified a variety of changes in population, economics, technology, legislation, and other areas that could be expected to contribute to changes in the characteristics and experiences of young people with disabilities. Indeed, this report has identified changes that have occurred in the population of 15- to 17-year-old youth with disabilities since 1987 regarding their individual and household characteristics, the services they received from schools, and their outcomes in multiple domains. Summing up these changes raises the question, "Have they been for the better?" In many respects, the answer to that question is "yes," but that answer applies to some youth more than to others. Findings also point to several challenges remaining for youth with disabilities, their families, and the schools that serve them.

Positive Changes

Several changes among youth with disabilities would be construed by many as being "in the right direction."

The racial/ethnic makeup of youth with disabilities has become more like that of the general population of youth. The disproportionate representation of minority children and youth among those receiving special education is of national concern (Donovan & Cross, 2002). Comparisons between youth with disabilities in 1987 and 2001 suggest that the disproportionality is moderating. Youth of color accounted for similar proportions of those with disabilities and those in the general population in 2001, whereas they had been overrepresented by about 4 percentage points in 1987. This shift resulted from African Americans being a smaller proportion of youth with disabilities in 2001 than in 1987. However, African American youth continued to be a larger percentage of youth with mental retardation than other categories of disability. The increase in the proportion of youth who were Hispanic was similar among youth with disabilities and youth in the general population.

Youth with disabilities were living in households that may have been better able to support their positive development. In 2001, youth with disabilities were more likely to be living with their parents, and as a group, those parents were better educated and more likely to be employed than was true in 1987. Consistent with improved education and increased employment, youth also were less likely to be living in poverty or receiving Food Stamps, thereby narrowing the sizable gap on these factors that had existed in 1987. These changes could bode well, in that fewer youth with disabilities were at risk for the poor outcomes associated with poverty (Duncan & Brooks-Gunn, 1997). Parents also had higher expectations for youth with disabilities in terms of achieving a 2-year college education and finding employment. Research has demonstrated that high parental expectations are associated with improved outcomes (e.g., Thorkildsen & Stein, 1998; Wagner et al., 1993).

Youth were having their disabilities identified and were receiving services for them earlier. Developments in brain research have confirmed the importance of the early years in maximizing children's development (Shonkoff & Phillips, 2000). Thus, it is encouraging that cohort 2 youth were more likely to have had their disabilities identified earlier than youth in cohort 1, with the average age at identification dropping from 6.6 to 5.9 years. The largest declines were among categories of youth who were oldest at identification in cohort 1—those with learning disabilities, emotional disturbances, or orthopedic or other health impairments. Services also began for cohort 2 youth 13 months earlier, on average, than for youth in cohort 1. This narrowed the gap between age at identification and age at first service to 1.5 years, down from almost 2 years in 1987.

Youth with disabilities were increasingly likely to be provided a variety of related or support services from or through their schools. In 1987, 57% of youth with disabilities received at least one of eight specific related or support services; in 2001, almost three-fourths of youth were receiving one or more of such services. Virtually all of the increase in these services resulted from schools providing them to more students. Schools provided related or support services to one-third of 15- to 17-year-old students in 1987, but to one-half of them in 2001. Significant increases were apparent in students receiving speech/language therapy, vocational and mental health services, physical and hearing loss therapies, and transportation assistance. The poorest youth with disabilities also were more likely to be receiving SSI benefits in 2001 than in 1987.

Youth were increasingly likely to be at the typical grade level for their age, rather than being "behind" their age peers in school. Being behind the typical grade level for their age is a powerful predictor of youth with disabilities dropping out of school (Wagner, 1991). Among the largest changes identified in the NLTS/NLTS2 comparison was the increase in students being at grade level for their age. Whereas only one-third of youth with disabilities were at grade level in 1987, more than half were in 2001.

Youth with disabilities became increasingly involved in extracurricular activities of several kinds, particularly those in the community. "Presence and participation" at school and in the community have been identified as key outcome areas for youth with disabilities (National Center on Educational Outcomes, 1994). Overall, the percentage of youth participating in any kind of extracurricular group activity was stable over time, as was participation in some specific kinds of groups, including sports teams. However, substantially greater participation occurred in community groups, volunteer and community service activities, and some kinds of school extracurricular groups, suggesting that youth with disabilities who participated in groups were active in a wider range of extracurricular activities, particularly outside of school.

Employment in the preceding year had become more common among youth with disabilities, reaching a level similar to that of youth in the general population. Earnings also increased markedly, with two-thirds of employed youth making more than the minimum wage in 2001, compared with only about 40% in 1987. Consistent with more youth earning wages, the percentage of youth with disabilities who had money about which they could make their own decisions also increased. In addition, fewer employed youth were working more than 16 hours per week, a potentially beneficial change in light of the link between working longer hours and poor outcomes (Commission on Behavioral and Social Sciences and Education, 1998). It is unknown how much of the improved employment picture resulted from an improved economy, increased provision of vocational services by schools to youth with disabilities, or other factors.

Unequal Distribution of Positive Changes

Positive changes did not accrue to all youth with disabilities equally. Because they were by far the largest group among adolescents with disabilities, those with learning disabilities had a pattern of change very like that of the population as a whole. Others differed markedly. For example, youth with mental retardation had the smallest improvements in household circumstances on several dimensions—virtually no movement out of poverty and no reduction in the rate at which they had an unemployed head of household. They also had the smallest improvement in the percentage who were at grade level, and did not share in the improved youth employment picture in terms either of their employment rate or earnings. Yet, they were the only group to have a significant decline in their dropout rate.

In contrast, youth with other health impairments changed dramatically in makeup, largely as a result of the sizable increase in youth with autism or AD/HD. This group had increases of 20 percentage points or more in the proportion who were white and who were male, resulting in more such students in this group than in virtually any other category. They did not share in the increased language diversity experienced by most other categories, and outpaced many others in improvements in the economic conditions of their households. Youth with other health impairments enjoyed substantial improvements in youth employment and earnings, yet also were more likely than almost all other categories of youth to have behavior problems that resulted in negative consequences.

Besides differences among disability categories, there also were differences in the kinds of changes experienced by youth who differed in gender, household income, and race/ethnicity. Some of the differences between groups in rates of change may have been beneficial. For example, girls with disabilities were more likely than boys to experience increases in parents' expectations that they "definitely" would find paid employment in the future. The increase in the actual employment rate was larger for girls as well, bringing both employment expectations and employment experiences to similar levels for the two genders. Consistent with increased employment, girls had a larger increase than boys in having money about which they could make decisions.

It also is noteworthy that the largest increase in the percentage of youth with disabilities who received any of the support services investigated in the two studies was among the lowest income youth, who may have been in greater need of services to ameliorate the risk factors often associated with poverty. Lower income and African American and Hispanic youth also experienced the greatest improvement in the employment of their heads of household. And the gap between middle-income and higher income youth closed on several measures, including, for example, parent employment and expectations for the future of their adolescent children.

However, other disparities among groups were potentially of more concern. For example, lower income youth did not experience the same decline in the age at first service for a disability or increase in being at grade level as higher income youth. Nor did employed lower income youth with disabilities have earnings gains of the same magnitude as the middle-income and higher income groups. Further, African American and Hispanic youth did not share equally in the move out of poverty or in the reduced dropout rate experienced by white youth.

Remaining Challenges

Despite these real and important improvements on many fronts in the circumstances and experiences of youth with disabilities, the positive picture is balanced with areas of potential continuing concern.

Youth with disabilities continued to be more likely than youth in the general population to live in households with characteristics that could put them at risk for poor outcomes. Youth with disabilities continued to be much more likely to be in poverty and to have a poorly educated or unemployed head of household than other youth. One in five youth also lived in a household with an adult member with a disability, a doubling of that rate since 1987.

Parents reported a gap of about 18 months between the average age at which youth were identified as having a disability and the age at which they first received services for them. This gap resulted in many children coming to school with identified disabilities for which no intervention had been received. For example, on average, youth with mental retardation had been identified as having that disability at age 4, but did not receive services until almost 6 years of age, when they entered school. Similarly, youth with other health impairments were younger than 5 when their disabilities were identified, but almost 7 before services were provided to them. Narrowing that gap potentially could benefit the school performance and other outcomes of youth with disabilities.

A substantial number of youth with disabilities continued not to be able to keep up with their age peers in school. Although the rate at which youth with disabilities were at the typical grade level for their age increased dramatically, almost half of them continued to be older for their grade, either because they were not ready to start school with their age peers or because they had been retained at grade level for poor performance at some time in their school careers. A small, but significant, decline in parents’ reports of youth’s abilities to perform functional mental skills, such as reading common signs and counting change, also raises concern about the academic skills being acquired by youth with disabilities. These findings point to the continuing challenges schools face in developing educational programs for youth with disabilities that will maximize their chances of progressing through school at a typical pace.

Challenging behaviors may have been increasing among some youth with disabilities. There was a significant increase over time in the rate at which youth with disabilities demonstrated behaviors that had resulted at some time in them being suspended or expelled from school, fired from a job, or arrested. This increase occurred almost entirely among youth with emotional disturbances or other health impairments. Both groups of youth had experienced significant increases in receipt of mental health services, which may have addressed some of their behavioral issues, but clearly did not fully ameliorate their tendency to act in ways that resulted in negative sanctions by schools, employers, or society.

This first look at changes over time in the population of high-school-age youth with disabilities shows mixed results. Significant progress has been made in important areas, but work remains to be done in more fully realizing the vision of improved results for children and youth with disabilities. Additional analyses in the coming year of differences in the school experiences between high school students with disabilities at the time of NLTS and those represented by NLTS2 will shed additional light on both the accomplishments and remaining challenges they face.

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APPENDIX A

NLTS AND NLTS2 SAMPLING, DATA COLLECTION, AND ANALYSIS PROCEDURES: WAVE 1 PARENT INTERVIEW/SURVEY

Appendix A
NLTS AND NLTS2 SAMPLING, DATA COLLECTION, AND ANALYSIS PROCEDURES: WAVE 1 PARENT INTERVIEW/SURVEY

This appendix describes several aspects of the NLTS and NLTS2 methods relevant to the parent interview/survey data reported in this document and to comparisons between the studies, including:

- Sampling of local education agencies (LEAs), schools, and students
- Parent interview and survey procedures and response rates
- Weighting of the parent interview/survey data
- Analytic adjustments to increase the comparability of the study samples
- Estimation and use of standard errors
- Unweighted and weighted sample sizes
- Calculation of statistical significance
- Measurement issues.

Overview of the NLTS and NLTS2 Samples

The samples for both studies were constructed in two stages. A stratified random sample of LEAs was selected from the universe of operating LEAs that served students receiving special education in at least one grade from 7th through 12th grades in the 1983-84 and 1999-2000 school years. These LEAs and all state-supported special schools that served primarily students with hearing and vision impairments and multiple disabilities were invited to participate in the study. Targets of recruiting 400 and 497 participating LEAs were set for the two studies, respectively, and as many special schools as possible. From these would be selected target student samples of about 14,000 (NLTS) and 12,000 students (NLTS2). Approximately three-fourths of the target number of LEAs was reached in NLTS and 101% in NLTS2.

For both studies, the roster of all students receiving special education from each participating LEA[1] and special school was stratified by disability category (11 in use in 1987 and 12 in 2000) and age. Students then were selected randomly from each disability category and age group. Sampling fractions were calculated that would produce enough students in each category so that, in the final year of each study, findings would generalize to most categories individually with an acceptable level of precision, accounting for attrition and for response rates to the parent/youth interview. A total of 10,369 and 11,276 students were selected and eligible to participate in the NLTS and NLTS2 parent interview/surveys, respectively.

Details of the LEA and student samples are provided below.

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[1] LEAs were instructed to include on the roster any student for which they were administratively responsible, even if the student was not educated within the LEA (e.g., attended school sponsored by an education cooperative or was sent by the LEA to a private school). Despite these instructions, some LEAs may have underreported students served outside the LEA.

The LEA Samples

Defining the Universe of LEAs

The NLTS and NLTS2 samples include only LEAs that had teachers, students, administrators, and operating schools—that is, "operating LEAs." They exclude such units as supervisory unions; Bureau of Indian Affairs schools; public and private agencies, such as correctional facilities; LEAs from U.S. territories; and LEAs with 10 or fewer students in the NLTS2 age range, which would be unlikely to have students with disabilities.

The public school universe data file maintained by Quality Education Data (QED) for 1998 was used to construct the NLTS2 sampling frame because it had more recent information than the alternative list maintained by the National Center for Education Statistics (NCES). For NLTS, a combination of QED and NCES data was used for the 1983 and 1984 school years, respectively. In NLTS, a sample of 1,600 LEAs was surveyed by telephone to collect data on LEAs for sample and bias estimation purposes. (Details of the NLTS Wave 1 sample can be found in Javitz & Wagner, 1990.) Correcting for errors and duplications resulted in a master list of 13,180 (NLTS) and 12,435 (NLTS2) LEAs that met the selection criteria for the two studies. These comprised the LEA sampling frames.

Stratification

The LEA samples were stratified to increase the precision of estimates, to ensure that low-frequency types of LEAs (e.g., large urban districts) were adequately represented in the samples, to improve comparisons with the findings of other research, and to make the studies responsive to concerns voiced in policy debate (e.g., differential effects of federal policies in particular regions, LEAs of different sizes). Three stratifying variables were used:

Region. This variable captures essential political differences, as well as subtle differences in the organization of schools, the economic conditions under which they operate, and the character of public concerns. The regional classification that was used by the U.S. Department of Commerce, the U.S. Bureau of Economic Analysis, and the National Assessment of Educational Progress was selected (categories are Northeast, Southeast, Midwest, and West).

LEA size (student enrollment). LEAs vary considerably by size, the most useful available measure of which is student enrollment. A host of organizational and contextual variables are associated with size, and they exert considerable potential influence over the operations and effects of special education and related programs. In addition, total enrollment serves as an initial proxy for the number of students receiving special education in an LEA. The QED database provides enrollment data from which LEAs were sorted into the following categories:[2]

NLTS

- **Huge** (enrollment of 50,000 or more).
- **Very large** (enrollment of 25,000 to 49,999).
- **Large (**enrollment of 10,000 to 24,999).

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[2] NLTS size strata were determined by logical dividing points using multiples of 500 students. NLTS2 strata are quartiles.

- **Medium (**enrollment of 2,500 to 9,999).
- **Small** (enrollment of 500 to 2,499).
- **Very small** (enrollment less than 500).

NLTS2

- **Very large** (estimated[3] enrollment greater than 14,931 in grades 7 through 12).
- **Large** (estimated enrollment from 4,661 to 14,931 in grades 7 through 12).
- **Medium** (estimated enrollment from 1,568 to 4,660 in grades 7 through 12).
- **Small** (estimated enrollment from 11 to 1,567 in grades 7 through 12).

LEA/community wealth. As a measure of district wealth, the Orshansky index (the proportion of the student population living below the federal definition of poverty, Employment Policies Institute, 2002) is a well-accepted measure. The distribution of Orshansky index scores was organized into four categories of LEA/community wealth, as follows:[4]

NLTS

- **High** (0 to 4% disadvantaged youth).
- **Medium** (5% to 9% disadvantaged youth).
- **Low** (10% to 19% disadvantaged youth).
- **Very low** (20% or more disadvantaged youth).

NLTS2

- **High** (0% to 13% disadvantaged youth).
- **Medium** (14% to 24% disadvantaged youth).
- **Low** (25% to 43% disadvantaged youth).
- **Very low** (43% or more disadvantaged youth).

The three variables generated 96- and 64-cell grids for the two studies, into which the universes of LEAs were arrayed.

LEA Sample Size

On the basis of an analysis of LEAs' estimated enrollment across LEA size, and estimated sampling fractions for each disability category, targets of 400 and 497 LEAs (and as many state-sponsored special schools as would participate) were considered sufficient to generate the student samples needed for the two studies (Exhibit A-1). Taking into account expectations regarding the rate at which LEAs would refuse to participate (which experience in the intervening years suggests would be dramatically higher in 2000 than in 1987), samples of 628 and 3,635 LEAs were invited to participate in the two studies, respectively. A total of 303 and

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[3] Enrollment in grades 7 through 12 was estimated by dividing the total enrollment in all grade levels served by an LEA by the number of grade levels to estimate an enrollment per grade level. This value was then multiplied by 6 to estimate the enrollment in grades 7 through 12.

[4] NLTS wealth strata were defined by logical divisions, with strata being multiples of 5 percentage points. NLTS2 strata are quartiles.

501 LEAs provided students for the two study samples—76% and 101% of the target numbers needed and 48% and 14% of those invited. Analyses of the region, size, and wealth of the LEA sample, both weighted and unweighted, confirmed that that the weighted LEA sample closely resembled the LEA universe with respect to those variables. However, in addition to ensuring that the LEA sample matched the universe of LEAs on variables used in sampling, it was important to ascertain whether the stratified random sampling approach resulted in skewed distributions on relevant variables not included in the stratification scheme. Thus, additional extensive analyses were conducted on the LEA sample of both studies.

Exhibit A-1
FIRST STAGE SAMPLE SIZES

	NLTS	NLTS2
Target LEA sample sought	400	497
Sample invited to participate		
LEAs	628	3,635
Special schools	84	77
TOTAL	712	3,712
Sample participating		
LEAs	303	501
Special schools	22	
TOTAL	325	
Percentage of invited		
LEAs	48%	14%
Special schools	26%	
TOTAL	46%	
Percentage of LEA target	**76%**	**101%**

NLTS analyses involved comparing the 303 participating LEAs with a sample of 1,600 LEAs randomly selected from the universe of LEAs and contacted in a brief telephone survey. The only significant or meaningful difference found between the NLTS sample and the larger survey sample was that NLTS underrepresented students in LEAs that served grades kindergarten through eighth grade. It was hypothesized at the time that K-8 districts may not have perceived themselves to be secondary districts and refused to participate at higher rates because only their seventh and eighth grade students would have met the sample criteria. No variables, beyond those used to stratify the sample, were used in constructing weights at the LEA level.

NLTS2 analyses involved several stages. The first involved selecting three variables from the QED database on which to compare the “fit” between the first-stage sample and the population: the LEA’s racial/ethnic distribution of students, the proportion who attended college, and the urban/rural status of the LEA. This analysis revealed that the sample of LEAs somewhat underrepresented African American students and college-bound students, and overrepresented Hispanic students and LEAs in rural areas. Thus, in addition to accounting for stratification variables, LEA weights were calculated to achieve a distribution on the urbanicity and racial/ethnic distributions of students who matched the universe.

To determine whether the resulting weights, when applied to the participating NLTS2 LEAs, accurately represented the universe of LEAs serving the specified grade levels, data collected from the universe of LEAs by the U.S. Department of Education’s Office of Civil Rights (OCR) and additional items from QED were compared for the weighted NLTS2 LEA sample and the universe. Finally, the NLTS2 participating LEAs and a sample of 1,000 LEAs that represented the universe of LEAs were surveyed to assess a variety of policies and practices known to vary among LEAs and to be relevant to secondary-school-age youth with disabilities. Analyses of both the extant databases and the LEA survey data confirm that the weighted NLTS2 LEA sample accurately represents the universe of LEAs.

The Student Samples

Determining the size of the NLTS and NLTS2 student samples took into account the duration of the study (5 and 10 years, respectively), desired levels of precision, and assumptions regarding attrition and response rates. (Obviously, these kinds of assumptions for NLTS were not informed by the experience gleaned from it and other longitudinal studies conducted in the intervening years.) The studies' sample designs called for findings to be generalizable to students receiving special education as a whole and for each of the special education disability categories in use at the time. Standard errors were to be no more than 3.2% and 3.6% for the two studies, respectively, except for the low-incidence categories. Assuming a 50% sampling efficiency, analyses for the two studies determined that approximately 13,000 and 12,000 students would need to be sampled to ensure sufficient youth would have a parent/youth interview in the final wave of each study.

LEAs and special schools were contacted to obtain their agreement to participate in the study and to request rosters of students receiving special education. NLTS sampled students ages 13 to 21, and NLTS2 sampled students ages 13 through 16. For both studies, students had to have been in at least 7th grade.[5] Requests for rosters for both studies specified that they contain the names of students receiving special education under the jurisdiction of the LEA, the disability category of each student, and the students' birth dates or ages. NLTS also requested the name of students' schools. NLTS2 requested that student addresses and telephone numbers be included on rosters; this information was obtained in a second contact with LEAs for NLTS. Some LEAs in both studies would provide only identification numbers for students, along with the corresponding birth dates and disability categories. When students were sampled in these LEAs, identification numbers of selected students were provided to the LEA, along with materials to mail to their parents/guardians (without revealing their identity).

After estimating the number of students receiving special education in the NLTS2 age range, the appropriate fraction of students in each category was selected randomly from each LEA and special school. In cases in which a family had more than one child included on a roster, only one was eligible to be selected. LEAs and special schools were notified of the students selected, and contact information for their parents/guardians was requested if it had not been provided initially.

Parent Interview/Survey

The data source for the findings reported here was parents/guardians of NLTS and NLTS2 sample members, who were interviewed by telephone or surveyed by mail.[6] The conceptual frameworks for both studies suggested that a youth's nonschool experiences, such as extracurricular activities and friendships; historical information, such as age when disability was first identified; household characteristics, such as socioeconomic status; and a family's level and type of involvement in school-related areas are crucial to student outcomes. Parents/guardians are the most knowledgeable about these aspects of students' lives.

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[5] Students who were designated as being in ungraded programs also were sampled if they met the age criteria.

[6] More details of the NLTS data collection procedures are found in Wagner, Newman, & Shaver (1989).

Letters were sent to parents of youth in each study sample to notify them that their child had been selected for study participation and that an interviewer would attempt to contact them by telephone. The letters for both studies included a toll-free telephone number for parents to call to be interviewed if they did not have a telephone number where they could be reached reliably or if they wanted to make an appointment for the interview at a specific time.

Computer-assisted telephone interviewing (CATI) was used for both NLTS and NLTS2 parent interviews. Interviews were conducted between June and September 1987, and from mid-May through late September 2001. Only youth whose households included an adult member who spoke English or Spanish were included. In the two studies, 96% and 95% of the interviews, respectively, were conducted in English.

In both studies, parents who could not be reached by telephone were mailed a self-administered questionnaire. The questionnaire contained a subset of key items from the telephone interview. In NLTS, the survey also requested a telephone number, and if a new working number was provided, a telephone interview also was attempted in an extended interview period through November 1987. Exhibit A-2 reports the response rates to the telephone and mail surveys.

Exhibit A-2
RESPONSE RATES FOR PARENT/GUARDIAN TELEPHONE INTERVIEW AND MAIL SURVEY

	NLTS		NLTS2	
	Number	Percentage	Number	Percentage
Total eligible sample	10,369	100.0	11,276	100.0
Respondents				
Completed telephone interview	6,438	62.1	8,672	76.9
Partial telephone interview completed	220	2.1	300	2.7
Complete mail questionnaire[7]	194	1.9	258	2.3
Total respondents	6,852	66.1	9230	81.9
Nonrespondents				
Refused	332	3.2	738	6.5
Language barrier	65	.6	138	1.2
No response/other	3,120	30.1	1,170	10.4
Total nonrespondents	3,517	33.9	2,046	18.1

In addition to the telephone interviews and mail survey, NLTS also included a nonresponse bias study that involved conducting in-person interviews with nonrespondents in 17 high-nonresponse LEAs. Interviews were attempted with parents of 554 youth and completed with 441 (80%). Analyses of differences between the telephone and in-person study samples revealed that the telephone survey underrepresented low-income youth. Sample weighting accounted for this bias, as described in Javitz & Wagner (1990).

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[7] These are mail questionnaire respondents for whom no subsequent telephone interview was conducted.

Weighting the Wave 1 Parent Data

The percentages and means reported in the data tables are estimates of the true values for the population of 15- through 17-year-olds receiving special education services. The estimates are calculated from responses of parents of NLTS and NLTS2 sample members. The response for each sample member is weighted to represent the number of youth in his or her disability category in the kind of LEA (i.e., region, size, and wealth) or special school from which he or she was selected.

Exhibit A-3 illustrates the concept of sample weighting and its effect on percentages or means that are calculated for students with disabilities as a group. In this example, 10 students are included in a sample, 1 from each of 10 disability groups, and each has a hypothetical value regarding whether that student participated in organized group activities outside of school (1 for yes, 0 for no). Six students participated in such activities, which would result in an unweighted value of 60% participating. However, this would not accurately represent the national population of students with disabilities because many more students are classified as having a learning disability than orthopedic or other health impairments, for example. Therefore, in calculating a population estimate, weights in the example are applied that correspond to the proportion of students in the population that are from each disability category. (Actual study weights account for several aspects of the students and the districts from which they were chosen.) The sample weights for this example appear in column C. Using these weights, the weighted population estimate is 87%. The percentages in NLTS and NLTS2 are similarly weighted population estimates, whereas the sample sizes are the actual number of cases on which the weighted estimates are based (similar to the 10 cases in Exhibit A-3).

Exhibit A-3
EXAMPLE OF WEIGHTED PERCENTAGE CALCULATION

	A	B	C	D
Disability Category	Number in Sample	Participated in Group Activities	Example Weight for Category	Weighted Value for Category
Learning disability	1	1	5.5	5.5
Speech/language impairment	1	1	2.2	2.2
Mental retardation	1	1	1.1	1.1
Emotional disturbance	1	0	.9	0
Hearing impairment	1	1	.2	.2
Visual impairment	1	1	.1	.1
Orthopedic impairment	1	0	.1	0
Other health impairment	1	1	.6	.6
Autism	1	0	.2	0
Multiple disabilities	1	0	.1	0
TOTAL	10	6	10	8.7

Unweighted sample percentage = 60% (Column B total, divided by Column A total)

Weighted population estimate = 87% (Column D total, divided by Column C total)

The students in LEAs and state schools with parent interview/survey data were weighted to represent the universe of students in LEAs and state schools at the two study time points. NLTS weighting procedures are detailed in Javitz & Wagner (1990). NLTS2 used the following process:

- For each of the 64 LEA sampling cells, an LEA student sampling weight was computed. This weight is the ratio of the number of students in participating LEAs in that cell, divided by the number of students in all LEAs in that cell in the universe of LEAs. The weight represents the number of students in the universe who are represented by each student in the participating LEAs. For example, if participating LEAs in a particular cell served 4,000 students and if the universe of LEAs in the cell served 400,000 students, the LEA student sampling weight would be 100.
- For each of the 64 LEA cells, the number of students in each disability category was estimated by multiplying the number of students with that disability on the rosters of participating LEAs in a cell by the adjusted LEA student sampling weight for that cell. For example, if 350 students with learning disabilities were served by LEAs in a cell, and the LEA student sampling weight for that cell was 100 (i.e., each student in the sample of participating LEAs in that cell represented 100 students in the universe), estimates would suggest 35,000 students with learning disabilities in that cell in the universe.
- For the state schools, the number of students in each disability category was estimated by multiplying the number of students with that disability on the rosters by the inverse of the proportion of state schools that submitted rosters.
- The initial student sampling weights were adjusted by disability category so that the sum of the weights (i.e., the initial student sampling weights, multiplied by the number of students for whom interviews were completed) was equal to the number of students in the geographical and wealth cells of each size strata. The adjustments were typically small and essentially served as a nonresponse adjustment. However, the adjustments could become substantial when there were relatively few interviewees (as occurred in the small and medium strata for the lowest incidence disabilities) because in these cases, some cells might not have any interviewees, and it was necessary to adjust the weights of other interviewees to compensate. Two constraints were imposed on the adjustments: (1) within each size stratum, the cell's weights could not vary from the average weight by more than a factor of 2, and (2) the average weight within each size stratum could not be larger than 4 times the overall average weight. These constraints substantially increased the efficiency of the sample at the cost of introducing a small amount of weighting bias (discussed below).
- In a final step, the weights were adjusted so that they summed to the number of students in each disability category, as reported to OSEP by the states for the 2000-2001 school year (OSEP, 2001).

The imposition of constraints on the adjusted weights increased sampling efficiency at the cost of introducing a small amount of bias. The average efficiency increased from 51.7% to 67.4%; the largest increases in sampling efficiency occurred for youth with emotional disturbances (from 44.4% to 81.0%) and for those with multiple disabilities (from 32.1% to 56.8%). Biases introduced by the imposition of constraints on the student weights generally were very small. The largest bias in size distribution was for youth with visual impairments (decreasing from 17.1% in the smallest size stratum to 11.6%) and those with autism (decreasing from 21.3% in the smallest size stratum to 17.5%). All other changes in the size distribution were 1.5% or less, and the average absolute change was only 0.4%. The largest bias in wealth distribution was for those with multiple disabilities (from 22.2% in wealth stratum 3 to 16.6%, and from 18.3% in wealth stratum 4 to 22.0%). All other changes were 2.1% or less, and the average absolute change was only 0.6%. All biases in regional distribution were 2.1% or less, and the average absolute change was only 0.5%. Considering the increase in sampling efficiency, these biases are considered acceptable.

The reason for the reduction in the proportion of students represented in the cells mentioned above is that there were relatively few students with interview/survey data in those cells. For example, small LEAs had only 21 students with visual impairments with data, requiring that they represent an estimated 1,701 students with visual impairments from small LEAs. The weighting program determined that the average weight required (i.e., 81.0) violated the constraints, and therefore reduced these weights to a more reasonable value (i.e., 56.2).

Analytic Adjustment to Increase the Comparability of Study Samples

The NLTS and NLTS2 samples are similar in many respects. Yet, they differ in important ways that make a comparison between youth in the full samples of the two studies inadvisable because misleading conclusions could be drawn from such comparisons. One important distinction is the age of youth in the two studies. NLTS includes youth who were ages 13 to 21 when selected and 15 to 23 when the Wave 1 parent data were collected. NLTS2, in contrast, includes youth who were 13 to 16 when selected and 13 to 17 when Wave 1 parent data were collected. Thus, the full sample of youth with Wave 1 parent data included youth who were older than any in NLTS2 (18- through 23-year-olds), and NLTS2 included youth who were younger than any included in NLTS (13- and 14-year-olds). Because age is such a powerful determinant of the experience of adolescents, comparisons made in this report between the two studies include only youth in the age range that overlaps the two studies, 15- through 17-year-olds.

Even with limiting the comparisons to youth in the 15- to 17-year-old age range, the comparability of the two samples was questionable because there were many more 17-year-olds in NLTS than NLTS2. The oldest age cohort in NLTS2 was 16-year-olds, only some of whom had turned 17 by the time parent data were collected. To create age-equivalent samples, NLTS2 youth were weighted to match the age distribution of NLTS; 26% are 15, 35% are 16, and 38% are 17.

One other difference between the study samples that has been accommodated through analytic adjustments to enhance comparability involves the different system of disability classification in use at the time the two studies were conducted. The following adjustments have been made:

- The two NLTS categories of deaf and hard of hearing were combined to be comparable to the single NLTS2 category of hearing impairment.

- In both cohorts, students with deaf-blindness were included in the multiple impairments category because there were too few to report separately.
- Because the categories of autism and traumatic brain injury were not in use in 1987, NLTS2 students with autism or traumatic brain injury were included in other categories, using descriptions of the primary disability provided by parents. If parents said the primary disability of these students was autism or traumatic brain injury, with no other information provided, students were included in the other health impairment category, where they most likely would have been classified in 1987. If more than one disability, in addition to autism or traumatic brain injury, was mentioned by parents, students were included in the multiple impairments category. This distribution mirrors the fairly broad dispersion of NLTS students known to have autism or traumatic brain injuries.

Estimating Standard Errors

Each estimate reported in the data tables is accompanied by a standard error. A standard error acknowledges that any population estimate that is calculated from a sample will only approximate the true value for the population. The true population value will fall within the ranged demarcated by the estimate, plus or minus the standard error 95% of the time. For example, if the cohort 2 estimate for youth's current employment rate is 29%, with a standard error of 1.8 (as reported in Exhibit 5-7), one can be 95% confident that the true current employment rate for the population is between 27.2% and 30.8%.

Because the NLTS and NLTS2 samples are both stratified and clustered, calculating standard errors by formula is not straightforward. Standard errors for means and proportions were estimated using pseudo-replication, a procedure that is widely used by the U.S. Census Bureau and other federal agencies involved in fielding complex surveys. To that end, a set of weights was developed for each of 32 balanced half-replicate subsamples. Each half-replicate involved selecting half of the total set of LEAs that provided contact information using a partial factorial balanced design (resulting in about half of the LEAs being selected within each stratum) and then weighting that half to represent the entire universe. The half-replicates were used to estimate the variance of a sample mean by: (1) calculating the mean of the variable of interest on the full sample and each half-sample using the appropriate weights; (2) calculating the squares of the deviations of the half-sample estimated from the full sample estimate; and (3) adding the squared deviations and dividing by (n-1), where n is the number of half-replicates.

Although the procedure of pseudo-replication is less unwieldy than the development of formulas for calculating standard errors, it is not easily implemented using the Statistical Analysis System (SAS), the analysis program used for NLTS and NLTS2, and it is computationally expensive. Experience has demonstrated that it is possible to develop straightforward estimates of standard errors using the effective sample size.

When respondents are independent and identically distributed, the effective sample size for a weighted sample of N respondents can be approximated as

$$Neff = N \times (E^2[W] / (E^2[W] + V[W]$$

where Neff is the effective sample size, $E^2[W]$ is the square of the arithmetic average of the weights and V[W] is the variance of the weights. For a variable X, the standard error of estimate can typically be approximated by sqrt(V[X]/Neff), where V[X] is the weighted variance of X.

Respondents are not independent of each other because they are clustered in LEAs, and the intracluster correlation is not zero. However, because the intracluster correlation traditionally has been quite small, the formula for the effective sample size shown above has worked well. To be conservative, however, the initial estimate was multiplied by a "safety factor" to assure that the standard error of estimate was not underestimated.

To determine the adequacy of fit of the variance estimate based on the effective sample size and to estimate the required safety factor, 24 questions with 95 categorical and 2 continuous responses were selected. Standard errors of estimates for each response category and the mean response to each question were calculated for each disability group using both pseudo-replication and the formula involving effective sample size. A safety factor of 1.25 resulted in the effective sample size standard error estimate underestimating the pseudo-replicate standard error estimate for 92% of the categorical responses and 89% of the mean responses. Because the pseudo-replicate estimates of standard error are themselves estimates of the true standard error, and are therefore subject to sampling variability, this can be considered an adequate margin of safety.

Unweighted and Weighted Sample Sizes

As indicated above, standard errors accompany all estimates reported in the data tables. How close an estimate comes to a true population value is influenced by the size of the sample on which the estimate is based. Larger samples yield estimates with smaller standard errors, indicating that those estimates are closer to true population values than estimates with larger standard errors based on smaller samples.

The actual, or "unweighted." sample sizes for each variable reported in the data tables are included in Appendix B. However, some readers may be interested in determining the number of youth in the nation represented by a particular estimate (e.g., if 29% of youth in cohort 2 were employed currently, how many youth in the country were employed?). A first step in determining these "weighted" sample sizes involves multiplying the percentage estimate by the actual number of youth in the nation represented by that estimate (see example below). However, 95% of the time, the true population value is likely to diverge from that estimate by as much as the amount of the standard error. Therefore, it is more appropriate to use the standard error to calculate a range in the number of youth represented by an estimate, rather than relying on the single value resulting from multiplying the estimate by the size of the population it represents.

Consider the example depicted in Exhibit A-4. NLTS2 findings indicate that 29% of cohort 2 youth were currently employed (see Exhibit 5-7). The standard error accompanying that estimate is 1.8, indicating that the true current employment rate for the population is likely to fall between 27.2% and 30.8%. Cohort 2 represents a total of 1,455,505 15- through 17-year-olds receiving special education services. Multiplying the percentages by this population size yields a single-point estimate of an estimate of 422,096 and a range of 395,897 to 448,296, within which the actual population size will fall, with 95% confidence.

Exhibit A-4
EXAMPLE OF CALCULATING WEIGHTED SAMPLE SIZES

A	B	C	D	E	F
Percentage Estimate	Standard Error	Range around Estimate (Column A Plus or Minus Column B)	Population Size	Single-point Weighted Population Affected (Column A x Column D)	Range in Weighted Population Affected (Column C x Column D)
29.0	1.8	27.2 to 30.8	1,455,505	422,096	395,897 to 448,296

Because percentage estimates are provided not only for the full sample of youth with disabilities in each cohort, but also for youth who differ in primary disability category, gender, household income, and race/ethnicity, readers must have the actual population size for each of these subgroups to calculate weighted sample sizes for some estimates. These population sizes are presented in Exhibit A-5.

Exhibit A-5
POPULATION SIZES OF GROUPS REPRESENTED BY NLTS AND NLTS2

Groups	Cohort 1	Cohort 2
All youth with disabilities	747442	1,455,505
Disability category:		
Learning disability	447839	729,881
Speech/language impairment	27011	33,439
Mental retardation	139,827	149,400
Emotional disturbance	94882	139,019
Hearing impairment	81,40	15,350
Visual impairment	3,852	5,794
Orthopedic impairment	7,341	14,061
Other health impairment	8,243	60,168
Multiple disabilities	11,217	24,839
Gender		
Boys	512,745	798,685
Girls	234,697	386,484
Household income		
Lowest	261,829	413,624
Middle	241,947	359,936
Highest	243,591	411,609
Race/ethnicity		
White	485,015	686,094
African American	175,275	215,464
Hispanic	64,853	207,760

Calculating Significance Levels

In general, references in the text of the report to differences between groups highlight only differences that are statistically significant with at least 95% confidence (denoted as $p<.05$). Beyond the differences highlighted in the text, readers may want to compare percentages or means for specific subgroups to determine, for example, whether the difference in the percentage of students who are male between students with learning disabilities and those with hearing impairments is greater than would be expected to occur by chance. To calculate whether the difference between percentages is statistically significant, the squared difference between the two percentages of interest is divided by the sum of the two squared standard errors. If this product is larger than 3.84, the difference is statistically significant at the .05 level (i.e., it would occur by chance fewer than 5 times in 100). Presented as a formula, a difference in percentages is statistically significant at the .05 level if:

$$\frac{(P_1P_2)^2}{SE_1^2 + SE_2^2} > 1.96^2$$

where P_1 and SE_1 are the first percentage and its standard error, and P_2 and SE_2 are the second percentage and its standard error. If the product of this calculation is 6.63 to 10.79, the significance level is .01; products of 10.8 or greater are significant at the .001 level.

Measurement Issues

The chapters in this report include information on variables that were included in both NLTS and NLTS2. If there were differences between the studies in how a particular variable was defined, those differences are highlighted in the discussion of findings related to that variable. However, several general points about measures are used repeatedly in analyses that should be clear to readers as they consider the findings reported here.

Categorizing students by primary disability. Information about the nature of students' disabilities came from rosters of all students in the study age ranges who were receiving special education in the sample school years under the auspices of participating LEAs and state-supported special schools. For analysis purposes, students in both studies were assigned to a disability category on the basis of the primary disability designated by the student's school or district. Although there are federal guidelines for making category assignments criteria, methods for assigning students to categories vary from state and to state and even between districts within states, with the potential for substantial variation in the nature and severity of disabilities included in categories (see for example, MacMillan & Siperstein, 2002). Therefore, data should not be interpreted as describing students who truly had a particular disability, but rather as describing students who were categorized as having that primary disability by their school or district. Hence, descriptive data are nationally generalizable to youth in the 15- to 17-year-old age range who were classified as having a particular primary disability in the school year in which they were selected for the NLTS or NLTS2 sample.

Demographic characteristics. Findings in this report are provided for youth who differ in age, gender, household income, and race/ethnicity. For the large majority of youth, age was determined from data provided by students' schools or districts. For youth for whom age information was not provided by schools or districts, birth date or age was taken from the parent interview/survey. For NLTS, gender and race/ethnicity also were obtained from parents, whereas these data were requested from and supplied by many school districts on student rosters. Classifying the income of students' households relied exclusively on information provided during the parent interview/survey. When variations in NLTS and NLTS2 variables between income groups are described, designations of lower, medium, and higher are used. These were constructed by dividing the income distribution of each study into approximate thirds. Thus, the categories indicate income relative to other youth in the study, not to a fixed income amount.

Households in poverty. A dichotomous variable indicating that a student's household was in poverty was constructed using parents' reports of household income and household size and federal poverty thresholds for 1987 and 2001 (U.S. Census Bureau, 2001). These thresholds indicate the income level for specific sizes of households, below which the household is considered in poverty. Because NLTS and NLTS2 respondents reported household income in categories (e.g., $25,000 to $29,999) rather than specific dollar amounts, estimates of poverty status were calculated by assigning each household to the mean value of the category of income reported by the parent and comparing that value to the household's size to determine poverty status.

Comparisons with the general population of students. In cases in which survey data for the general population of youth are publicly available (e.g., the National Household Education Survey), data have been abstracted from those datasets for youth who match in age the 15- through 17-year-olds included in the comparison of NLTS and NLTS2. However, many of the comparisons have been made using published data, particularly for NLTS. For many of these comparisons, differences in samples (e.g., ages of students) or measurement (e.g., question wording on surveys) reduce the direct comparability of data for youth with disabilities and data for youth in the general population. When these limitations affect the comparisons, they are pointed out in the text and the implications for the comparisons are noted.

Reporting statistics. Statistics are not reported for groups with fewer than 35 members. Statistics with a decimal of .5 are rounded to the nearest whole even number.

APPENDIX A REFERENCES

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Appendix B

UNWEIGHTED SAMPLE SIZES

Exhibit B-1
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS WITH ALL YOUTH WITH DISABILITIES: EXHIBITS 2-2, 2-3, 2-7, 2-8, 3-1, 3-2, 3-3, 3-7, 4-1, 5-1, 5-3, 5-7, 5-11, AND 5-15

	Youth with Disabilities	
	Cohort 1	Cohort 2
Exhibit 2-2		
Gender	3,147	6,178
Ethnicity	3,057	6,168
Language used	2,988	6,002
Exhibit 2-3		
Age	3,148	6,178
Grade level	2,282	6,022
Appropriate grade level for age	2,273	5,761
Exhibit 2-7		
Age at identification	2,753	5,427
Age at first service	2,729	5,514
Exhibit 2-8		
Self care skills	2,899	6,104
Functional cognitive skills	2,842	5,979
Exhibit 3-1		
Living arrangement	3,052	6,128
Single-parent household	2.896	6,146
Parents present	2,859	6,146
Children in household	2,903	5,756
Another child with a disability	2,890	4,050
Adult with a disability	2,888	5,758
Exhibit 3-2		
Head of household’s education	2,873	5,889
Head of household’s employment	2,878	5,685
Exhibit 3-3		
Household income	2,598	5,281
In poverty	2,620	5,326
Received AFDC/TANF	2,871	5,752
Received Food Stamps	2,881	5,755
Received SSI	2,863	5,737
Exhibit 3-7		
Expected to graduate from high school	2,624	5,776
Expected to graduate from 2-year college	1,641	4,407
Expected to graduate from 4-year college	2,605	5,538
Expected get a paid job	2,770	5,829
Expected to live independently	2,626	5,744

Exhibit B-1
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS WITH ALL YOUTH WITH DISABILITIES: EXHIBITS 2-2, 2-3, 2-7, 2-8, 3-1, 3-2, 3-3, 3-7, 4-1, 5-1, 5-3, 5-7, 5-11, AND 5-15
(Concluded)

	Youth with Disabilities	
	Cohort 1	Cohort 2
Exhibit 4-1		
Received any of these services	2,852	5,996
Received vocational services	2,923	5,733
Received tutor/reader/interpreter services	2,896	5,777
Received speech/language therapy	2,888	5,728
Received occupational therapy/life skills training	2,904	5,729
Received mental health services	2,895	5,729
Received transportation help	2,914	5,775
Received physical therapy	2,602	5,769
Received hearing loss therapy	2,852	5,898
Exhibit 5-1	2,987	5,929
Exhibit 5-3		
Any group participation	2,933	6,015
Kinds of groups	2,932	5,916
Volunteer work	2,906	5,960
Exhibit 5-7		
Employment in last year	2,973	5,725
Work study job in last year	2,871	4,724
Current employment	2,968	5,782
Hours worked	745	1.014
Wages	726	925
Exhibit 5-11		
Had money to spend independently	2,801	5,863
Household responsibilities	2,695	6,001
Exhibit 5-15	2,913	5,819

Exhibit B-2
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR DISABILITY CATEGORIES: EXHIBITS 2-4, 2-9, 3-4, 3-8, 4-2, 5-1, 5-4, 5-8, 5-12, 5-15

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Exhibit 2-4									
Gender	411/630	238/471	349/607	314/575	647/612	349/489	316/627	236/1,226	287739
Ethnicity	402/647	228/491	331/629	297/595	631/636	344/499	308/650	234/1,257	282/774
Language used	383/634	219/473	323/607	288/576	626/612	339/489	300/632	229/1,225	281/754
Age for grade level	300/637	172/483	248/597	215/581	457/607	248/431	218/624	140/1,179	195/622
Exhibit 2-9									
Age at identification	342/529	188/390	280/508	258/494	604/572	330/474	287/609	197/1,136	267/715
Age at first service	347/571	187/410	276/525	255/519	598/570	327/455	287/599	194/1,152	258/713
Self care skills	372/642	213/486	315/617	280/593	616/633	333/484	294/640	216/1,244	260/765
Functional cognitive skills	359/627	214/463	303/602	274/573	599/610	322/476	284/635	217/1,236	260/757
Exhibit 3-4									
Single-parent household	369/644	214/490	314/628	276/586	617/635	337/494	299/649	219/1,253	251/767
Head of household's education	369/614	214/456	312/597	272/561	610/598	335/471	295/627	220/1,227	246/738
Head of household's employment	365/593	212/436	315/579	275/544	613/574	336/453	298/605	218/1,183	245/718
In poverty	328/566	196/401	272/539	260/512	551/544	299/435	269/565	197/1,104	226/660
Received AFDC/TANF	365/607	214/442	311/579	269/547	612/579	334/463	297/610	220/1,197	249/728
Received Food Stamps	369/608	214/443	311/580	271/545	615/579	335/463	297/613	220/1,196	249/728
Received SSI	363/606	311/441	310/582	269/544	613/578	332/461	296/605	218/1,192	251/727
Exhibit 3-8									
Expected to graduate from high school	339/605	194/456	262/583	251/548	557/588	317/463	265/610	200/1,193	239/730
Expected to graduate from 2-year college	229/435	99/335	229/470	191/385	273/455	110/378	163/466	120/898	228/585
Expected to graduate from 4-year college	335/566	186/427	268/571	246/522	557/569	313/434	260/593	192/1,145	248/711
Expected get a paid job	369/620	207/456	282/580	271/560	587/593	325/467	276/617	207/1,207	246/729
Expected to live independently	348/612	190/449	262/566	255/554	552/583	317/452	264/609	197/1,188	241/731

Sample sizes are presented in the following format: cohort 1/cohort 2.

Exhibit B-2
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR DISABILITY CATEGORIES:
EXHIBITS 2-4, 2-9, 3-4, 3-8, 4-2, 5-1, 5-4, 5-8, 5-12, 5-15 (Concluded)

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities
Exhibit 4-1									
Received any of these services	367/634	208/473	297/607	275/575	609/611	328/487	300/632	205/1,225	263/752
Received vocational services	337/599	218/442	318/573	279/537	613/582	333/460	3-2/612	218/1,200	265/728
Received tutor/reader/interpreter services	375/607	217/443	308/580	278/550	610/583	333/464	296/613	218/1,202	261/735
Received speech/language therapy	373/600	214/436	309/571	277/544	600/577	333/461	300/612	220/1,195	262/732
Received occupational therapy/life skills training	374/604	217/440	312/576	278/541	611/574	333/458	299/608	219/1,198	261/730
Received mental health services	377/607	218/441	316/570	279/544	604/578	331/460	291/609	22-/1,195	259/725
Received transportation help	376/599	214/444	310/578	281/550	621/590	333/466	299/612	217/1,201	263/735
Received physical therapy	372/607	210/441	284/578	278/549	582/584	274/462	206/611	184/1,203	212/734
Received hearing loss therapy	387/628	222/462	281/602	285/565	605/577	325/476	281/628	214/1,216	252/744
Exhibit 5-1	390/627	225/466	327/602	284/564	636/604	337/276	304/628	226/1,218	258/744
Exhibit 5-4									
Any group participation	373/628	217/470	316/608	281/577	623/614	337/478	300/641	221/1,240	265/759
Kinds of groups	373/616	217/460	316/597	281/565	623/603	337/473	300/629	221/1,228	264/745
Volunteer work	371/626	216/462	313/604	277/570	613/603	334/470	299/638	220/1,234	263/753
Exhibit 5-8									
Employment in last year	386/608	224/442	324/580	282/543	632/479	339/455/	301/611	221/1,192	264/716
Work study job in last year	374/524	219/349	306/471	275/465	602/467	329/387	289/486	219/1,005	258/570
Current employment	385/608	224/444	323/582	281/551	631/580	338/462	301/614	221/1,205	264/736
Hours worked	153/176	55/114	63/179	100/122	188/129	77/152	38/59	54/214	17/69
Wages	156/166	55/111	61/66	97/107	180/117	71/44	39/51	54/196	13/67
Exhibit 5-12									
Had money to spend independently	357/618	208/453	295/585	255/563	605/593	331/472	290/623	213/1.211	247/745
Household responsibilities	355/626	208/464	291/604	244/577	569/615	312/481	286/636	206/1,239	224.759
Exhibit 5-15	372/615	214/446	309/580	619/555	336/591	298/470	221/616	270/1,203	/743

Sample sizes are presented in the following format: cohort 1/cohort 2.

Exhibit B-3
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY GENDER: EXHIBITS 2-5, 2-10, 3-5, 3-9, 4-3, 5-5, 5-9, 5-13, AND 5-16

	Males		Females	
	Cohort 1	Cohort 2	Cohort 1	Cohort 2
Exhibit 2-5				
Ethnicity	1,851	4,005	1,206	2,163
Language used	1,808	4,015	1,180	2,163
Age for grade level	1,352	3,746	883	2,015
Exhibit 2-10				
Age at identification	1,675	3,531	1,078	1,896
Age at first service	1,664	3,610	1,065	1,904
Exhibit 3-5				
Head of household's education	1,728	3,833	1,145	2,056
Head of household's employment	1,734	3,702	1,144	1,983
In poverty				
Received Food Stamps	1,734	3,754	1,147	2,001
Received SSI	1,722	3,742	1,141	1,995
Exhibit 3-1				
Expected to graduate from 2-year college	1,049	2,862	592	1,545
Expected to get a paid job	1,694	3,793	1,075	2,036
Exhibit 4-1				
Received any of these services	1,732	3,906	1,120	2,090
Received vocational services	1,768	3,736	1,155	1,997
Received speech/language therapy	1,744	3,734	1,144	1,994
Received mental health services	1,746	3,735	1,149	1,994
Received transportation help	1,761	3,765	1,153	2,010
Received physical therapy	1,589	3,760	1,013	2,009
Exhibit 5-5				
Kinds of groups	1,768	3,829	1,164	2,077
Volunteer activities	2,752	3,870	1,154	2,090
Exhibit 5-9				
Employment in last year	1,793	3,737	1,179	1,988
Work study job in last year	1,730	3,079	1,141	1,645
Current employment	1,791	3,768	1,176	2,014
Hours worked	511	701	234	313
Wages	492	630	233	295
Exhibit 5-13				
Had money to spend independently	1,688	3,822	1,113	2,041
Household responsibilities	1,628	3,905	1,067	2,096
Exhibit 5-16	1,759	3,797	1,154	2,022

Exhibit B-4
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY INCOME AND RACE/ETHNICITY: EXHIBITS 2-6, 2-11, 3-6, 3-10, 4-4, 5-2, 5-6, 5-10, 5-14, AND 5-16

	Income			Race/Ethnicity		
	$25,000 or less	$25,001 to $50,000	More than $50,000	White	African American	Hispanic
Exhibit 2-6						
Ethnicity	710/1,824	773/1,564	1,115/1,858	1,877/3,541	725/1,124	350/1,045
Language	703/1,824	769/1,567	1,113/1,890	1,838/3,443	713/1,088	332/1,019
Age for grade level	463/1,709	522/1,481	826/1,796	1,361/3,318	476/1,048	208/969
Exhibit 2-11						
Age at identification	646/1,656	727/1,426	1,035/1,743	1,702/3,131	640/962	309/932
Age at first service	646/1,718	727/1,501	1,035/1,822	1,702/3,293	640/987	309/969
Exhibit 3-6						
Head of household's education	702/1,805	771/1,558	1,113/1,883	1,765/3,423	675/1,048	336/976
Head of household's employment	705/1,790	770/1,545	1,113/1,857	1,764/3,291	676/1,008	340/960
In poverty	710/1,822	773/1,562	1,115/1,887	1,627/3,101	605/930	276/893
Received SSI	704/1,815	768/1,581	1,108/1,885	1,757/3,329	676/1,013	335/964
Exhibit 3-10						
Expected to graduate from 2-year college	348/1,360	456/1,1756	663/1,386	1.154/2,517	291/815	135/745
Expected to get a paid job	615/1,775	737/1,547	1,104/1,875	1,735/3,394	620/1,037	301/960
Expected to live independently	567/1,731	709/1,536	1,095/1,862	1,682/3,355	580/1,019	271/932
Exhibit 4-4						
Received any of these services	668/1,823	751/1,566	1,094/1,886	1,773/3,438	668/1,088	314/1,018
Received vocational services	694/1,797	768/1,548	1,101/1,880	1,792/3,325	692/1,018	338/963
Received tutor/ reader/interpreter services	696/1,818	765/1,5623	1,107/1,884	1,781/3,347	678/1,023	338/973
Received speech/ language therapy	692/1,795	764/1,555	1,096/1,879	1,775/3,324	681/1,011	331/966
Received occupational therapy/ life skills training	699/1,788	763/1,549	1,106/1,883	1,786/3,324	683/1,013	333/963
Received mental health services	689/1,798	766/1,548	1,100/1,875	1,782/3,322	680/1,021	333/961
Received transportation help	699/1,806	762/1,555	1,103/1,884	1,786/3,348	686/1.020	340/975
Received physical therapy	624/1,813	705/1,561	957/1,887	1,583/3,346	630/1,022	303/969

Sample sizes are presented in the following format: cohort 1/cohort 2.

Exhibit B-4
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY INCOME AND RACE/ETHNICITY: EXHIBITS 2-6, 2-11, 3-6, 3-10, 4-4, 5-2, 5-6, 5-10, 5-14, AND 5-16

	Income			Race/Ethnicity		
	$25,000 or less	$25,001 to $50,000	More than $50,000	White	African American	Hispanic
Exhibit 5-2	--	--	--	1,809/3,409	698/1,079	343/999
Exhibit 5-6						
Any group participation	710/1,821	773/1,566	1,115/1,890	1794/3,469	694/1,083	344/1,012
Kinds of groups	709/1,806	773/1,560	1,115/1,884	1,793/3,421	694/1,052	344/1,000
Volunteer work	704/1,800	767/1,559	1,106/1,880	1,779/3444	689/1,070	341/1,001
Exhibit 5-10						
Employment in last year	708/1,797	773/1,556	1,113/1,880	1,802/3,317	694/1,018	344/960
Work study job in last year	675/1,407	757/1,307	1,103/1,598	1,785/2,744	678/853	334/767
Current employment	705/1,820	772/1,564	1,113/1,889	1,798/3,349	693/1,030	345/971
Hours worked	125/182	213/305	344/472	570/761	112/92	41/92
Wages	116/155	203/264	343/428	557/708	104/81	39/85
Exhibit 5-14						
Had money to spend independently	661/1,820	737/1,566	1,093/1,889	1,705/3,385	671/1,049	331/993
Household responsibilities	641/1,822	721/1,564	1,057/1,889	1,660/3,471	627/1,074	318/1,007
Exhibit 5-16	691/1,818	765/1,565	1,112/1,888	1,781/3,366	691/1,038	337/980

Sample sizes are presented in the following format: cohort 1/cohort 2.