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NATIONAL LONGITUDINAL TRANSITION STUDY 2

CHANGES OVER TIME IN THE EARLY POSTSCHOOL OUTCOMES OF YOUTH WITH DISABILITIES

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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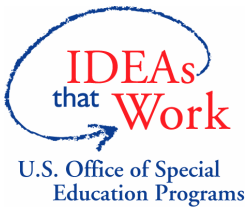

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Prepared for:
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SRI Project P11182

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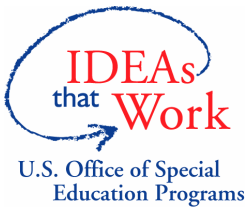

ACKNOWLEDGMENTS

The comprehensiveness and scale of the National Longitudinal Transition Study-2 (NLTS2) make it a complex study that is made possible only by the contributions of a large team. The authors' sincere thanks go to:

- Pat Gonzalez and Lou Danielson of the Office of Special Education Programs, U.S. Department of Education, for their leadership and guidance in helping make NLTS2 and the OSEP longitudinal studies program such a valuable asset to our field.
- Kathryn Valdes, Mary McCracken, Hal Javitz, and the rest of SRI's programming and data management team, whose technical expertise and responsiveness to innumerable and sometimes frantic analysis requests make a huge analytic task manageable.
- Marion Collins, Klaus Krause, and SRI's administrative team for their unfailing support in bringing the study's findings to the public.
- Our colleagues at Westat for their contributions as subcontractors in collecting the data reported here.

But none of the contributions made by the NLTS2 team would be meaningful without the generosity of the more than 9,000 parents and guardians of youth with disabilities whose stories we tell. Our hats are off to them for their time, openness, and insights.

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EXECUTIVE SUMMARY

Since the early 1980s, when *A Nation at Risk* sounded a clear warning about the condition of American education, there have been extensive federal, state, and local efforts to improve schools for all students. At the federal level, these have most recently been codified in The No Child Left Behind Act (NCLB) of 2001, which emphasizes the need for accountability, flexibility, parent involvement, and evidence-based instruction in the education of all students. Such efforts on behalf of all students parallel compatible initiatives that focused explicitly on improving the education and outcomes of students who receive special education services, leading to the Individuals with Disabilities Education Act (IDEA) Amendments of 2004. These most recent amendments demonstrate legislative commitment to improving access to the general education curriculum, high academic standards, goal-oriented transition planning, and accountability for results for students with disabilities. These broad policy initiatives are intended to change the school experiences of students with disabilities and improve their outcomes both during school and in their postschool years.

Two studies by the Office of Special Education Programs (OSEP) of the U.S. Department of Education provide documentation of changes experienced since the mid-1980s by secondary school students with disabilities as they transition to young adulthood. The National Longitudinal Transition Study (NLTS) generated nationally representative information about secondary-school-age youth who were receiving special education services in 1985. To assess the status of youth with disabilities in the early 21st century, OSEP commissioned the National Longitudinal Transition Study-2 (NLTS2). To identify changes among youth with disabilities in their early post-high-school years, this report focuses on the subset of youth represented in NLTS and NLTS2 who had been out of high school up to 2 years. Information reported here is drawn from the first wave of parent interviews conducted for NLTS youth in 1987 (referred to as cohort 1) and the second wave of parent/youth interviews conducted for NLTS2 youth in 2003 (referred to as cohort 2). Analyses include the age group of out-of-school youth that was common to the studies at those time points: youth ages 15 through 19.

Comparisons of data from NLTS and NLTS2 document changes in the following aspects of the early postschool experiences of youth with disabilities who had been out of secondary school up to 2 years:

- Secondary school completion status and timing.
- Living arrangements and social involvement.
- Education after high school, including enrollment in high school degree-completion programs by dropouts and participation in 2-year or 4-year colleges or postsecondary vocational, business, or technical schools.
- Employment rates and job characteristics.
- Overall engagement in the community through participation in school, work, or preparation for work.

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The report documents the extent and direction of change for out-of-school youth with disabilities as a whole and for youth in the nine disability categories that were in use in both 1987 and 2001.[1] Changes also are described for youth with disabilities who differed in their school-exit status, age, gender, household income, and race/ethnicity, when significant.

School Completion

The school completion rate of youth with disabilities increased and the dropout rate decreased by 17 percentage points between 1987 and 2003. With these changes, 70% of cohort 2 youth with disabilities had completed high school. A sizable increase also was noted in the percentage of youth who had left school at least a year before the interview, suggesting that youth were increasingly leaving high school with their same-age peers in the general population.

Household Arrangements and Social Activities

The living arrangements of youth with disabilities were stable over time: about three-fourths of youth in both cohorts 1 and 2 lived with parents, about one in eight lived independently (alone, with a roommate, in a college dormitory, or in military housing as a service member), and 3% of youth in cohort 1 and 1% in cohort 2 lived in a facility or institution. Nine in 10 out-of-school youth with disabilities in each cohort were single. However, some aspects of youth's involvement in social activities changed.

- Membership in organized community groups (e.g., a community sports team, hobby club, or performing group) more than doubled, so that 28% of cohort 2 youth were group members. In contrast, the involvement of out-of-school youth with disabilities in volunteer or community service activities (e.g., working in a soup kitchen, volunteering in a nursing home or child care center) did not change significantly; one in five cohort 2 youth were involved in their communities in this way.
- There was a large increase in youth with disabilities ever having been subject to disciplinary action at school, fired from a job, or arrested. More than half of cohort 2 youth had had such negative consequences for their behavior, compared with about one-third of cohort 1 youth.

Postsecondary Education

- The rate of postsecondary education participation by youth with disabilities more than doubled over time, increasing to 32% the share of cohort 2 youth who had been out of high school up to 2 years and who had enrolled in a 2- or 4-year college or a postsecondary vocational, technical, or business school.
- The greatest growth in postsecondary enrollment (17 percentage points) was apparent for 2-year colleges; 21% of cohort 2 youth had attended one since high school.

[1] Analytic adjustments, described in Appendix A of the report, were made to account for the differences between 1987 and 2003 in disability categories and their composition (e.g., combining the 1987 categories of deaf and hard of hearing into a single category to correspond to the 2003 category of hearing impairment; combining the 2003 category of autism with other health impairment, the category that included most youth with autism in 1987).

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- Attendance at 4-year institutions also increased significantly (8 percentage points), so that 10% of youth with disabilities had been students in such schools since high school.
- Enrollment at postsecondary vocational, technical, or business schools was static; 6% of cohort 2 youth had enrolled in these kinds of schools.
- Despite these changes, youth in the general population were more than twice as likely as those with disabilities to be attending a postsecondary school in 2003.

Employment

- In 2003, 70% of youth with disabilities who had been out of school up to 2 years had worked for pay at some time since leaving high school; 55% had done so in 1987. However, there was no change over time in youth with disabilities working at the time of the interview; almost half were doing so.
- Employed cohort 2 youth were 18 percentage points less likely than cohort 1 peers to work full-time at their current or most recent job; 39% were full-time workers.
- Over time, considerably more out-of-school youth with disabilities earned above the federal minimum wage (70% vs. 85% of cohorts 1 and 2, respectively). Yet, the average hourly wage did not increase when adjusted for inflation; earnings averaged $7.30 per hour in 2003.
- Fewer cohort 2 than cohort 1 youth held maintenance or clerical jobs and more worked in retail at their current or most recent job.

Engagement in School, Work, or Preparation for Work

In their early post-high-school years, 70% and 75% of youth in cohorts 1 and 2, respectively, had engaged in school, work, or job training, either alone or in combination. Although their overall rate of engagement in these activities did not increase markedly over time, their modes of engagement did change.

- Engagement in the combination of postsecondary education and paid employment since high school almost quadrupled, to 22% in cohort 2.
- An increase in youth pursuing employment alone was apparent (11 percentage points), so that 44% of cohort 2 youth had been engaged since high school in this way.
- These increases were accompanied by declines in engagement in job training programs as a sole activity or in combination with other activities.
- There was no increase in pursuing postsecondary education alone—3% of cohort 2 youth had done so.

Differential Changes in Outcomes across Disability Categories

As is true with most aspects of their lives, youth who differed in the nature of their disabilities experienced change over time in their early postschool outcomes in markedly different ways. The patterns of change for the following groups stand out.

Youth with Hearing or Visual Impairments

- Youth with hearing or visual impairments had among the highest rates of school completion in cohort 2; 82% and 94% of the two groups, respectively, had finished high school.
- Youth with visual impairments had the largest increase in participation in postsecondary education overall, and both they and youth with learning impairments surpassed other disability categories in the size of increase in participation in 2-year and 4-year colleges, giving them the highest rates of enrollment in those institutions of any category of youth.
- Youth with visual impairments had the largest increase in paid employment since high school; they joined cohort 2 youth with hearing impairments in having a 62% employment rate, similar to the rate for youth with disabilities as a whole.
- Youth in these categories experienced large increases in engagement in their communities via the dual roles of employee and college student; more than one-third in each category had both worked and gone to school since high school.
- Out-of-school youth with hearing or visual impairments had among the highest rates of participation in organized community groups, and they experienced the only significant increases among the disability categories in their participation in volunteer or community service activities.

Youth with Emotional Disturbances

Youth in this category demonstrated complex patterns of change over time relative to many other categories.

- These youth demonstrated a substantial improvement (16 percentage points) in their school completion rate. Nonetheless, their 56% cohort 2 school completion rate remained among the lowest of any disability category.
- Their improved school completion rate did not translate into a higher rate of postsecondary education participation overall; about one in five youth in this category had pursued some kind of postsecondary education since high school, among the lowest rates of any disability category. However, a significant, 10-percentage-point increase in 2-year college enrollment was seen for this group.
- Youth in this category did not share in the increase in employment that occurred for youth with disabilities as a whole. Yet, working youth in this category showed the only significant increase in earnings relative to the federal minimum wage.
- Youth with emotional disturbances had a dramatic increase over time (33 percentage points) in ever having been in disciplinary trouble at school, fired from a job, or arrested. Almost 9 in 10 youth with emotional disturbances had had one or more of these experiences by the time they had been out of secondary school up to 2 years, the highest rate of any disability category.
- Affiliation with what are typically prosocial organized community group activities also was weaker in the postschool years for youth with emotional disturbances than for youth in other categories.

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Youth with Other Health Impairments

- These youth did not share in the improved school completion rate that was evident for youth with disabilities overall; more than 40% dropped out of high school. They also did not share in the increased participation in postsecondary education.
- Cohort 2 youth with other health impairments lagged significantly behind youth with disabilities overall in the percentage who had worked since leaving high school, having experienced no improvement in their employment rate since cohort 1.
- Given their lower rate of employment, youth with other health impairments were less likely than youth with disabilities overall to have been engaged in school, work, or preparation for work since leaving high school.
- The rate at which out-of-school youth with other health impairments experienced negative consequences for their behavior more than quadrupled over time, so that two-thirds of cohort 2 youth in this category had been subject to disciplinary action at school, fired from a job, or arrested at some point, a rate exceeded only by youth with emotional disturbances.

Youth with Multiple Disabilities or Deaf-Blindness

Comparisons of youth represented in NLTS and NLTS2 document the social and educational implications of the significant disabilities within the category of multiple disabilities, including deaf-blindness.

- Over time, out-of-school youth with these disabilities remained among the least likely to have finished high school; about half of cohort 2 youth had done so. Although this is almost a doubling of the rate since cohort 1, the change did not attain statistical significance for this small group.
- Despite lower school completion rates than many other categories, cohort 2 youth with these disabilities were as likely as youth with disabilities as a whole to have been enrolled in a postsecondary school since leaving high school. Postsecondary vocational, technical, or business schools dominated their choices of postsecondary institutions.
- Youth with multiple disabilities did not show an increase in the likelihood of having worked for pay since leaving high school; about one-third had done so, the lowest rate across the disability categories.
- They also had among the lowest rates of participation in school, work, or preparation for work since leaving high school (59%), with no notable increase over time.
- A 25-percentage-point decrease in youth in this category living in an institution did not attain statistical significance for this small group but may suggest a trend toward greater community inclusion if it is sustained as more youth leave secondary school.

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The Challenging Consequences of Dropping Out

Differences between youth with disabilities who did and did not complete high school underscore the challenges dropouts face.

- Without a high school diploma, dropouts did not share in the significant increase in postsecondary education enrollment that occurred among youth with disabilities who completed high school; fewer than 1 in 10 had enrolled in any postsecondary education since leaving high school, primarily vocational, technical, or business schools.
- Only about one-fourth of dropouts had enrolled in a high school completion program, suggesting that their postsecondary education options may remain limited.
- Dropouts did not share in the improvements in earnings relative to the federal minimum wage and the shifts in the types of jobs held (i.e., declines in maintenance and clerical jobs and an increase in retail jobs) by youth with disabilities who completed high school.
- In both cohorts, dropouts were less likely than school completers to have the support and stability of living with parents, and they were less likely to be single.
- Despite showing a smaller increase in having negative consequences for their behavior, dropouts in both cohorts were more likely than school completers to have those experiences; 6 in 10 had done so in cohort 1, a rate that increased to 8 in 10 in cohort 2.

However, other changes that occurred differentially between dropouts and completers are less worrisome.

- The increase in the rate at which youth with disabilities had worked for pay since leaving high school occurred largely among dropouts, which brought parity with school completers in this outcome.
- Differences in the participation of cohort 1 dropouts and completers in organized community groups or volunteer or community service activities moderated over time, so that more dropouts were experiencing the benefits of these forms of community participation.

Changes in Postschool Outcomes Associated with Gender

Some of the changes experienced by boys and girls with disabilities resulted in fewer gaps between genders in cohort 2 than in cohort 1.

- Whereas cohort 1 boys were almost twice as likely as girls to have worked for pay since leaving high school, the employment rates of the two groups were similar in cohort 2.
- By cohort 2, the 19-percentage-point difference between cohort 1 boys and girls in their overall engagement in school, work, or preparation for work was virtually eliminated.
- Unfortunately, a narrowing of differences between genders also was apparent in their tendency toward negative social adjustment. Both boys and girls with disabilities had large increases in the receipt of negative consequences for their behavior such that by cohort 2, the significantly higher rate of these negative consequences among boys had been reduced and was no longer significantly different from that among girls.

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The two genders also experienced other changes in different ways:

- Only boys experienced a significant improvement in their high school completion rate.
- Girls demonstrated larger increases than boys in postsecondary school enrollment, with most of their gains in enrollment being at 2-year colleges. In contrast, boys showed a significant increase in attending 4-year colleges that was not seen among girls, such that at cohort 2, they were almost twice as likely as girls to have attended such a school.
- A significant increase in earnings relative to the minimum wage and shifts in the kinds of jobs held were apparent only among boys.
- In both cohorts, girls were less likely than boys to be single.

Continued Limitations for Lower-Income Households

The changes that occurred over time for youth with disabilities were experienced differently by youth in the bottom, middle, and upper thirds of the household income distribution.

- Youth with disabilities from households in the lowest income group shared with those in the middle group a large increase in their rate of high school completion. Yet, youth from the lowest-income households in both cohorts lagged behind those from the highest income group in completing high school.
- Youth from households in the lowest income group did not have a significant improvement in postsecondary education participation, continuing the gap between income groups that existed in cohort 1.
- Youth from the lowest-income households did not share with their highest-income peers an increase in having been employed at some time since leaving high school, so that they lagged significantly behind that group on that measure, as well as on their rate of current employment. However, a large increase in the average hourly wage of the lowest-income group resulted in a similar earnings picture across income groups.

Decreasing but Persistent Racial/Ethnic Differences

Over time, African-American and Hispanic youth with disabilities increasingly had experiences that were similar to those of their white peers in multiple domains. For example:

- Only 2% of cohort 1 Hispanic youth had participated in organized groups or volunteer or community service activities, but large increases over time resulted in quite similar levels of participation across racial/ethnic groups in cohort 2.
- Cohort 1 African-American youth with disabilities lagged significantly behind white youth in having worked for pay since high school, a gap that did not exist in cohort 2.

Yet, some racial/ethnic differences remained:

- Changes over time left white youth exceeding their African-American peers in independent living during the early years after high school.
- Only white youth with disabilities experienced a significant increase in postsecondary education enrollment overall and in the pursuit of both employment and postsecondary education since high school. However, African-American youth demonstrated a significant gain in 4-year college attendance.

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- Only white youth with disabilities showed an earnings increase relative to the federal minimum wage and an increase in volunteer or community service activities.
- No changes in the employment profile of Hispanic youth with disabilities were noted.

The age groups included in NLTS and NLTS2 and the timing of data collection in the two studies permit one more comparison between youth with disabilities represented in the two studies—when youth were ages 18 through 21 and had been out of high school up to 4 years. Analyses of those cohorts, to be presented in future reports, will reveal the ways in which the changes in the early postschool outcomes of youth with disabilities documented in this report evolve as youth continue into early adulthood.

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1. THE CHANGING WORLD OF YOUTH WITH DISABILITIES AFTER HIGH SCHOOL

By Mary Wagner

Since the early 1980s, when *A Nation at Risk* (National Commission on Excellence in Education, 1983) sounded a clear warning about the condition of American education, there have been extensive federal, state, and local efforts to improve schools for all students. At the federal level, these have most recently been codified in The No Child Left Behind Act (NCLB) of 2001, which emphasizes the need for accountability, flexibility, parent involvement, and evidence-based instruction in the education of all students in public schools, including those with disabilities. Efforts on behalf of all students have paralleled compatible initiatives focused explicitly on improving the education and outcomes of students who receive special education services, culminating in the Individuals with Disabilities Education Act (IDEA), as amended in 2004. These most recent amendments demonstrate legislative commitment to access to the general education curriculum, high academic performance standards, goal-oriented planning for the transition from secondary school to adult life, and accountability for results for students with disabilities.

In an effort to document changes in the secondary school experiences of students with disabilities since the mid-1980s, the Office of Special Education Programs (OSEP) of the U.S. Department of Education has sponsored two longitudinal research projects 15 years apart. The National Longitudinal Transition Study (NLTS) generated nationally representative information about secondary-school-age youth who were receiving special education services in 1985.[1] To assess the status of youth with disabilities[2] in the early 21st century, OSEP commissioned the National Longitudinal Transition Study-2 (NLTS2).[3] It addresses many of the same issues as NLTS but extends its scope. Key features of the two studies are summarized in Exhibit 1-1.

Previous comparisons of findings for youth who were represented in NLTS with those represented in NLTS2 illuminate the extent to which and ways in which youth with disabilities, special education, and student outcomes have changed in the years between the studies (Wagner, Cameto, & Newman, 2003; Wagner, Newman, & Cameto, 2004). For example, comparative analyses reveal an increased emphasis on students with disabilities taking academic courses, including mathematics, science, social studies, and a foreign language, as a foundation for pursuing postsecondary education. Moreover, increasingly, students with disabilities are receiving their instruction in regular schools, and those who take academic courses are more likely to do so in general education classrooms. Teachers of those general education classes also are more likely to receive a variety of supports to help them meet the needs of students with

[1] NLTS methods and postschool findings are summarized in Blackorby and Wagner (1996). A more complete summary and a list of reports available from NLTS are available at http://www.sri.com/policy/cehs/dispolicy/nlts.html.

[2] Although the populations represented in NLTS and NLTS2 are youth who were receiving special education services, for convenience, the broader phrase "youth with disabilities" is used to describe them in this report.

[3] Additional information on the NLTS2 design and on reports available from the study can be found at http://www.nlts2.org.

Exhibit 1-1
KEY FEATURES OF NLTS AND NLTS2

NLTS (referred to as cohort 1)	NLTS2 (referred to as cohort 2)
Study Duration	
• 1984 through 1993	• 2001 through 2010
Sample Members	
• Youth receiving special education, ages 15 through 23 in the 1985-86 school year. The oldest youth for whom data were collected were age 27 in Wave 2 (1990) and had been out of secondary school up to 5 years.	• Youth ages 13 through 16 and receiving special education in grade 7 or above in December 2000. The oldest youth will be 26 when the last data are collected.
Population to Which Findings Generalize	
• Youth with disabilities as a whole nationally and youth in each federal special education disability category individually.	• Youth with disabilities as a whole nationally and youth in each federal special education disability category individually.
Data Sources	
• Wave 1: Parents (telephone interviews); school record abstracts (information abstracted by school personnel from students' high school records); principals (school background survey). • Wave 2: Parents (telephone interviews); youth (telephone interviews); school staff best able to describe students' overall school program (school program survey); principals (school background survey); students' high school transcripts.	• Wave 1: Parents (telephone interviews, mail survey); youth (direct assessment of academic abilities, youth in-person interview on attitudes toward school); teachers (general education teacher survey); school staff best able to describe students' overall school program (student's school program survey); principals (school characteristics survey); students' high school transcripts. • Wave 2: Parents (telephone interviews); youth (telephone interviews, mail survey, direct assessment of academic abilities, youth in-person interview on attitudes toward school); teachers (general education teacher survey); school staff best able to describe students' overall school program (student's school program survey); students' high school transcripts. • Waves 3 and 4: Parents (telephone interviews); youth (telephone interviews, mail survey); students' high school transcripts. • Wave 5: Parents (telephone interviews); youth (telephone interviews, mail survey).
Years of Data Collection	
• Wave 1 parent interviews, 1987 • Wave 1 school data collection, 1985-86 or 1986-87 school year • Wave 2, all data, 1990	• Wave 1 parent interviews/mail survey, 2001 • Wave 1 school data collection and direct assessments of youth, 2001-02 school year • Wave 2 parent/youth interviews and mail survey, 2003 • Wave 2 school data collection and direct assessments of youth, 2003-04 school year • Wave 3, 2005 • Wave 4, 2007 • Wave 5, 2009

disabilities in their classes. Increased related and support services of various kinds also are provided directly to students, with particularly large increases noted for speech/language therapy and vocational and mental health services. Students' grades also have improved, a larger proportion are at the appropriate grade level for their age, and parents' expectations for students with disabilities pursuing postsecondary education after high school have increased.

In addition, other changes in the years between NLTS and NLTS2 have affected not only students but the nation as a whole. For example, the 1990s saw dramatic economic growth and prosperity, ushered in by the "information age," an economic climate that changed precipitously with the "dotcom bust" in the early years of the new millennium. The accelerated, dynamic state of technology innovation has changed the nature of communication, work, education, and leisure. The Internet has increased tremendously the speed and range of access to information, along with the ability to communicate 24-7 worldwide.

It is timely now to ask whether these changes in the school experiences of students with disabilities and their environment are accompanied by changes in their early postschool outcomes. To address this question, this report focuses on the subset of youth represented in NLTS and NLTS2 who had been out of high school up to 2 years. Information reported here is drawn from the first wave of parent interviews conducted for NLTS youth in 1987 (referred to as cohort 1) and the second wave of parent/youth interviews conducted for NLTS2 youth in 2003 (referred to as cohort 2). Analyses include the age group of out-of-school youth that was common to the studies at those time points: youth ages 15 through 19. The two samples are weighted to have the same distribution of these age groups: 19% were 15 through 17, 31% were 18, and half were 19.

Comparisons of interview data from NLTS and NLTS2 document changes in the following aspects of the early postschool experiences of youth with disabilities who had been out of secondary school up to 2 years:

- Secondary school completion status and timing (Chapter 2).
- Living arrangements and social involvement (i.e., participating in organized groups outside of work or school, taking part in volunteer or community service activities, experiencing negative consequences for behavior) (Chapter 3).
- Education after high school, including enrollment in high school degree-completion programs by dropouts and participation in 2-year or 4-year colleges or postsecondary vocational, business, or technical schools (Chapter 4).
- Employment rates and job characteristics (Chapter 5).
- Engagement in the community through participation in school, work, or preparation for work (Chapter 6).

The seventh chapter highlights the themes that have emerged from the study comparisons.

This report documents the extent and direction of change for out-of-school 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 when they were in school. To document the ways in which youth with different disabilities experienced change over time, findings are presented for youth in the nine federal special education disability categories that were in use in both 1987 and 2001, when NLTS and

NLTS2 samples were selected. 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 have been if they had been 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 school-exit status, age, gender, the income of their households, and their racial/ethnic background, when significant.[4]

NLTS and NLTS2 have many design features that enable 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.[5] 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. At the time of the Wave 1 parent interviews for NLTS, youth were 15 through 23 years old, whereas the Wave 2 NLTS2 parent/youth interviews were about youth who were 15 through 19. 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, youth of similar ages, 15 through 19, 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. For example, although youth with autism as their primary disability now comprise a separate category, in 1987 they generally were included in the category of other health impairment; thus, for comparability, NLTS2 youth with autism also are analyzed as part of the other health impairment category.

In addition, readers should remember the following issues when interpreting the findings in this report:

- **Findings are weighted.** NLTS and NLTS2 were designed to provide a national picture of the characteristics, experiences, and achievements of youth with disabilities in their respective age ranges. Therefore, all the statistics from the studies are weighted estimates of the national population of youth receiving special education in the studies' age ranges at the time the studies began, as well as of each disability category individually. Each response for each sample member is weighted to represent the number of youth nationally that were in his or her disability category in the kind of school district (defined by region, student enrollment, and proportion of students in poverty) or special school from which he or she was selected.
- **Standard errors.** For each mean and percentage in this report, a standard error is presented that indicates the precision of the estimate. For example, a variable with a weighted estimated value of 50% and a standard error of 2 means that the value for the total population, if it had been measured, would, with 95% confidence, lie between

[4] The intercorrelation between income and racial/ethnic background is acknowledged. This comparison of the NLTS/NLTS2 cohorts does not attempt the multivariate analyses needed to disentangle that interrelationship.

[5] Please see Appendix A for more information on the study samples and other methodological issues, including results of extensive efforts to document the representativeness of the student sample and the school districts from which students were drawn.

48% and 52% (i.e., within plus or minus 2 percentage points of 50%). Thus, smaller standard errors allow for greater confidence to be placed in the estimate, whereas larger ones require caution.

- **Small samples.** Although NLTS and NLTS2 data are weighted to represent the population, the size of standard errors is influenced heavily by the actual number of youth in a given group (e.g., a disability category). Groups with very small samples have comparatively large standard errors (in fact, findings are not reported separately for groups that do not include at least 35 sample members); readers should be cautious in interpreting results for groups with small sample sizes and large standard errors.
- **Significant differences.** In discussions of the descriptive statistics, generally only differences between groups that reach a level of statistical significance of at least .05 are mentioned in the text; significance levels are noted in the text and/or exhibits.

Appendix A provides further information on specific methods used in the two studies, adjustments made to enhance their comparability, weighting of the samples, and interpretation of the population estimates that result. Appendix B contains the unweighted sample sizes for which weighted means and percentages were calculated.

2. YOUTH WITH DISABILITIES LEAVING SECONDARY SCHOOL

By Mary Wagner

Dropout statistics for 1986 indicated that only 55% of dropouts under age 20 were employed, only 31% of male dropouts and one in seven female dropouts were working full-time, and although dropouts were fewer than 20% of the adult population, they constituted 66% of the national prison population (William T. Grant Foundation Commission on Work, Family and Citizenship, 1988). Since that time, the economic costs of dropping out have risen markedly as the workplace increasingly demands better-skilled and more technologically savvy workers. High school dropouts now are 72% more likely to be unemployed and earn 27% less than high school graduates (U.S. Department of Labor, 2005).

During the 1990s, as the economic consequences of dropping out were better understood, attention to ameliorating the high dropout rate among students with disabilities increased (e.g., Thurlow, Christenson, Sinclair, Evelo, & Thornton, 1995; Sinclair, Christenson, Evelo, & Hurley, 1998). In the early years of this century a federal commitment was made that "secondary school students with disabilities receive the support they need to complete high school prepared for postsecondary education or employment" (Office of Special Education Programs, 2001, p. 14). As a result, the Office of Special Education Programs (OSEP) funded the What Works Transition Synthesis Research Project and the National Dropout Prevention Center for Students with Disabilities in 2001 and 2003, respectively, to learn more about prevention and intervention strategies for students with disabilities who have dropped out of high school or are at risk for doing so.

Data reported by the states to OSEP annually suggest that efforts since the mid 1990s are paying off. OSEP reports that in the 1999-2000 school year, the dropout rate among youth with disabilities was 29.4%, a decline of 4.7 percentage points over 5 years (U.S. Department of Education, 2002). A comparison of findings regarding school completion from NLTS and NLTS2[1] permits a longer view of the changing pattern of school completion from 1987 through 2003. It also draws on reports of individual youth with disabilities or their parents, rather than relying on aggregate statistics, which can underestimate dropout rates (U.S. Department of Education, 2002; Wagner, 1991).

The following sections identify the rates at which youth with disabilities left high school in a 2-year period. Youth included in these findings from NLTS2 were all in high school in the fall of the 2000-01 school year and had left high school by the time of the 2003 interviews with parents and youth.[2] Youth in NLTS were in school in the fall of the 1985-86 school year and had left school by fall 1987. Rates are calculated by dividing the number of youth reported to have left school in a particular way (e.g., by graduating) by the total number of youth who had left school. Rates are reported for youth with different primary disability classifications,[3] and who differ in age, gender, household income, and race/ethnicity, when significant.

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[1] Youth for whom data are available for NLTS (1987) and NLTS2 (2003) are referred to as cohort 1 and cohort 2, respectively. For both groups of youth, 19% were 15 through 17, 31% were 18, and 50% were 19.

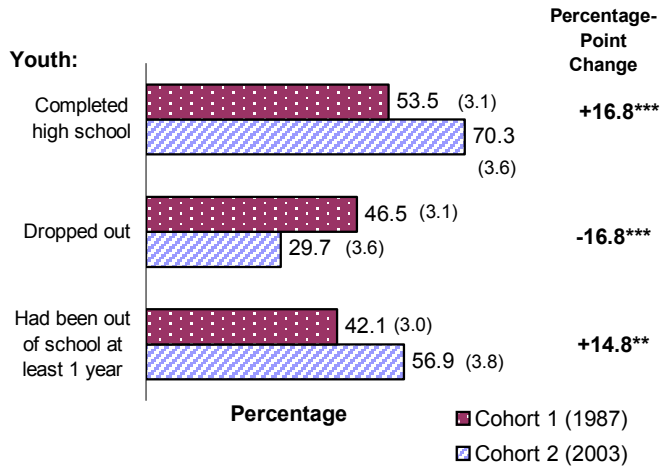
[2] Interviews were conducted between April and November of 2003.

[3] Because there are too few youth in the category of deaf-blindness to report separately, they have been combined in these analyses with the category of multiple disabilities.

Changes in School-Exit Status and Timing

Findings from NLTS and NLTS2 are consistent with state-reported data showing an increase over time in the graduation rate among youth with disabilities and a corresponding decline in the dropout rate (Exhibit 2-1). The proportion of school leavers who had received a high school diploma or certificate of completion increased from 54% to 70% between 1987 and 2003, and those leaving school without finishing declined from 46% to 30% ($p<.001$ for both changes).[4] Although they are referred to here as dropouts, in cohort 1, this group included 6% of youth who were reported to have been suspended or expelled or left school for other reasons without finishing; the dropout rate for cohort 2 includes 1% of such school leavers. The rate of school completion in cohort 2 was the same as that in the general population, 70%,[5] whereas in cohort 1, it was much lower (54% vs. 76%, $p<.001$).[6]

Exhibit 2-1
CHANGES IN SCHOOL-EXIT STATUS AND TIMING OF YOUTH WITH DISABILITIES



Source: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.
Statistical significance: **p<.01; ***p<.001.
Standard errors are in parentheses.

In addition to being more likely to have finished high school, cohort 2 youth also were more likely than their cohort 1 peers to have been out of school at least 1 year (57% vs. 42%, $p<.01$). This change likely results at least in part from the fact that many more youth represented in NLTS2 were at the appropriate grade level for their age than was true among those represented in NLTS (Wagner, Cameto, et al., 2003). Further, the grades of youth with disabilities improved over time (Wagner, Newman, et al., 2004). These two factors would result in more cohort 2 youth with disabilities graduating with their age peers in the general population and thus more 18- and 19-year-olds in that cohort being out of school longer. The fact that cohort 2 youth with disabilities had been out of school longer than cohort 1 peers could help explain differences in outcomes that are affected by the length of time youth were out of school (e.g., ever working or enrolling in postsecondary education since high school).

[4] This graduation rate for cohort 1 is lower and the dropout rate higher than rates reported for the full NLTS sample (Wagner, 1991; Wagner, 1993) because the analyses reported here exclude NLTS youth who were older than 19, many of whom stayed in high school through age 21, thereby increasing the school completion rate for the full NLTS sample relative to the subsample included in this report.

[5] Calculated for out-of-school 15- through 19-year-olds using data from the second wave of the 1997 National Longitudinal Survey of Youth (U.S. Department of Labor, 2003).

[6] Calculated using data from the years 1979 through 1983 from the National Longitudinal Survey of Youth (U.S. Department of Labor, 2004).

Differential Changes Related to Disability Category

Improvements in the school completion status of youth with disabilities were not distributed equally across disability categories (Exhibit 2-2). Only youth with learning disabilities, mental retardation, or emotional disturbances had a significant increase in the school completion rate and a corresponding decline in the dropout rate, ranging from 16 to 21 percentage points ($p<.05$ and $p<.001$). Increases for youth with learning disabilities or mental retardation brought their school completion rates to more than 70% in cohort 2; rates for youth with speech, hearing, visual, or orthopedic impairments ranged from 79% to 94%. However, even with a 16-percentage-point increase in their school completion rate, only 56% of cohort 2 youth with emotional disturbances were reported to have finished high school, a rate similar to youth with other health impairments and multiple disabilities or deaf-blindness (59% and 51%, respectively). Youth with emotional disturbances or multiple disabilities or deaf-blindness also were the least likely to have finished high school in cohort 1 (39% and 26%).

Exhibit 2-2
CHANGES IN SCHOOL-EXIT STATUS AND TIMING, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Multiple Disabilities/ Deaf-Blindness
Percentage completing high school									
Cohort 1 (1987)	56.1	60.2	50.7	39.4	77.1	85.1	84.8	62.3	26.2
	(4.7)	(6.7)	(6.0)	(5.2)	(4.9)	(5.8)	(6.9)	(8.7)	(11.7)
Cohort 2 (2003)	74.0	79.4	71.8	55.8	82.2	94.0	85.9	58.6	50.8
	(5.0)	(8.6)	(7.2)	(5.5)	(6.6)	(4.7)	(5.6)	(12.9)	(13.8)
Percentage-point change	**+17.9*** **	+19.2	**+21.1***	**+16.4***	+5.1	+8.9	+1.1	-3.7	+24.6
Percentage dropping out of high school									
Cohort 1 (1987)	43.9	39.8	49.3	60.6	22.9	14.9	15.2	37.7	73.8
	(4.7)	(6.7)	(6.0)	(5.2)	(4.9)	(5.8)	(6.9)	(8.7)	(11.7)
Cohort 2 (2003)	26.0	20.6	28.2	44.2	17.8	6.0	14.1	41.4	49.2
	(5.0)	(8.6)	(7.2)	(5.5)	(6.6)	(4.7)	(5.6)	(12.9)	(13.8)
Percentage-point change	**-17.9*** **	-19.2	**-21.1***	**-16.4***	-5.1	-8.9	+1.1	+3.7	-24.6
Percentage out of high school at least 1 year									
Cohort 1 (1987)	42.7	41.8	39.3	43.4	30.3	35.3	25.0	49.2	65.2
	(4.6)	(7.0)	(5.5)	(5.1)	(5.2)	(7.6)	(8.0)	(8.8)	(12.2)
Cohort 2 (2003)	59.6	70.3	41.4	57.6	52.5	69.7	47.5	46.4	36.6
	(5.5)	(9.7)	(7.6)	(5.4)	(8.3)	(9.0)	(7.9)	(12.8)	(12.5)
Percentage-point change	**+16.9***	**+28.5***	+2.1	**+14.2***	**+22.2****	**+34.4***	+22.5	-2.8	-28.6

Sources: NLTS Wave 1 parent interview and NLTS2 Wave 2 parent/youth interviews.
Statistically significant difference in a two-tailed test at the following levels: *p<.05; **p<.01; ***p<.001.
Standard errors are in parentheses.

In addition to increased school completion rates, youth with learning disabilities and emotional disturbances were joined by those with speech, hearing, and visual impairments in being more likely in cohort 2 than previously to have been out of school at least 1 year. Increases ranged from 14 percentage points for youth with emotional disturbances to 34 percentage points for those with visual impairments ($p<.05$ for both increases). These categories of youth also all experienced increases in the likelihood that they were at the typical grade level for their age (Wagner, Cameto, et al., 2003), as well as demonstrating improvements in their grades (Wagner, Newman, et al., 2004). However, similar changes in grade-for-age among youth with mental retardation or orthopedic and other health impairments and similar improvements in grades for youth with other health impairments or multiple disabilities apparently did not translate into increased probabilities that youth in those categories were leaving school earlier.

Differential Changes Related to Demographic Characteristics

Changes in school completion status and timing occurred differently for youth with disabilities who differed in age, gender, household income, and race/ethnicity, as noted below.

Age. Improvements in school completion rates occurred only among youth with disabilities who were ages 15 through 18 (Exhibit 2-3); the rate for 19-year-olds already was the highest of any age group in cohort 1 and did not increase appreciably over time. The increase in the likelihood that youth with disabilities were at the typical grade level for their age appears to have had a particularly noticeable effect on the youngest age group. Whereas in cohort 1, almost none of the 15- through 17-year-old school leavers had finished high school, in cohort 2, 44% of them had, largely 17-year-olds who graduated with their age peers in the general population. Further, 19-year-olds were much more likely in cohort 2 than previously to have been out of school at least a year (74% vs. 43%, $p<.001$), suggesting many had graduated earlier.

Exhibit 2-3
CHANGES IN SCHOOL-EXIT STATUS AND TIMING OF YOUTH WITH DISABILITIES, BY AGE

	15 through 17	18	19
Percentage completing high school			
Cohort 1 (1987)	6.5 (4.4)	44.7 (5.3)	74.1 (3.7)
Cohort 2 (2003)	43.7 (10.1)	70.1 (5.4)	80.1 (4.7)
Percentage-point change	**+37.2*** **	**+25.4*** **	+6.0
Percentage dropping out of high school			
Cohort 1 (1987)	93.5 (4.4)	55.3 (5.3)	25.9 (3.7)
Cohort 2 (2003)	56.3 (10.1)	29.9 (5.4)	19.9 (4.7)
Percentage-point change	**-37.2*** **	**-25.4*** **	-6.0
Percentage out of high school at least 1 year			
Cohort 1 (1987)	45.4 (7.7)	38.7 (5.0)	42.9 (4.1)
Cohort 2 (2003)	31.2 (9.1)	44.6 (5.8)	74.0 (5.1)
Percentage-point change	-14.2	+5.9	**+31.1*** **

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.
Statistically significant difference in a two-tailed test at the following level: ***p<.001.
Standard errors are in parentheses.

Exhibit 2-4
CHANGES IN SCHOOL-EXIT STATUS AND TIMING OF YOUTH WITH DISABILITIES, BY GENDER

	Boys	Girls
Percentage completing high school		
Cohort 1 (1987)	52.4 (3.8)	56.3 (5.7)
Cohort 2 (2003)	72.4 (4.3)	66.4 (6.4)
Percentage-point change	**+20.0*** **	+10.1
Percentage dropping out of high school		
Cohort 1 (1987)	47.6 (3.8)	43.7 (5.7)
Cohort 2 (2003)	27.6 (4.3)	33.6 (6.4)
Percentage-point change	**-20.0*** **	-10.1
Percentage out of high school at least 1 year		
Cohort 1 (1987)	41.4 (4.7)	43.5 (6.7)
Cohort 2 (2003)	58.9 (4.7)	52.9 (6.7)
Percentage-point change	**+17.5** **	+9.4

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Gender. Only boys with disabilities experienced significant improvements in school completion rates (Exhibit 2-4); they demonstrated a 20-percentage-point increase in their school completion rate and an 18-percentage-point increase in the likelihood of having been out of school at least a year. Although girls did not have similar changes, their dropout and completion rates in cohort 2 were not significantly different from those of boys, nor was the likelihood that they had been out of school at least a year.

Household income. Sizable changes in school-exit status occurred only among youth in the lowest and middle income groups (Exhibit 2-5), who had increases in school completion rates of 18 and 26 percentage points, respectively. Although these groups had similar completion rates in cohort 1, the larger increase among youth in the middle income group resulted in a significantly higher completion rate for them in cohort 2 relative to their lower-income peers (74% vs. 60%, $p<.05$). In fact, the cohort 2 school completion rate of the middle income group did not differ markedly from that of the highest income group, whose school completion rate had been significantly higher than both the middle and lowest income groups in cohort 1 (71% vs. 48% and 41%, respectively, $p<.001$ and $p<.01$). In contrast, only youth in the highest income group experienced a significant increase in the proportion who had been out of high school at least a year (23 percentage points, $p<.01$).

Race/ethnicity. Both white and African-American youth with disabilities had significant improvements in school completion rates, bringing to about three-fourths the proportion of youth in both groups who had completed high school. White youth were the only group to have a significant increase in the proportion who had been out of school at least a year, although all three groups had similar rates in cohort 2, ranging from 55% to 63% compared with 39% to 63% in cohort 1.

Exhibit 2-5
CHANGES IN SCHOOL-EXIT STATUS AND TIMING OF YOUTH WITH DISABILITIES, BY HOUSEHOLD INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Lowest	Middle	Highest	White	African-American	Hispanic
Percentage completing high school						
Cohort 1 (1987)	40.9 (6.2)	47.7 (6.2)	71.2 (4.6)	54.1 (3.8)	52.7 (6.5)	43.7 (13.5)
Cohort 2 (2003)	59.7 (6.9)	73.7 (7.0)	81.1 (5.7)	71.7 (4.4)	74.8 (7.2)	59.8 (11.7)
Percentage-point change	**+18.8***	**+26.0****	+9.9	**+17.6****	**+22.1***	+16.1
Percentage dropping out of high school						
Cohort 1 (1987)	59.1 (6.2)	52.3 (6.2)	28.8 (4.6)	45.9 (3.8)	47.3 (6.5)	56.3 (13.5)
Cohort 2 (2003)	40.3 (6.9)	26.3 (7.0)	18.9 (5.7)	28.3 (4.4)	25.2 (7.2)	40.2 (11.7)
Percentage-point change	**-18.8***	**-26.0****	-9.9	**-17.6****	**-22.1***	-16.1
Percentage out of high school at least 1 year						
Cohort 1 (1987)	46.0 (6.1)	41.0 (6.0)	31.3 (4.7)	38.9 (3.6)	43.4 (6.2)	62.8 (12.6)
Cohort 2 (2003)	56.3 (6.9)	51.6 (7.7)	53.9 (7.2)	54.7 (4.9)	62.6 (7.7)	60.2 (11.3)
Percentage-point change	+10.3	+10.6	**+22.6****	**+15.8****	+19.2	-2.6

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.
Statistically significant difference in a two-tailed test at the following levels: *p<.05; **p<.01.
Standard errors are in parentheses.

Summary

Analyses reported in this chapter demonstrate substantial improvements in the school-exit status of youth with disabilities since the mid-1980s, with the completion rate increasing and the dropout rate decreasing by 17 percentage points. With these changes, 70% of cohort 2 youth with disabilities had completed high school. A sizable increase also was noted in the percentage of out-of-school youth with disabilities who had left school at least a year earlier, suggesting youth were increasingly likely to have left high school with their same-age peers in the general population.

Increases in school completion rates were significant for youth with learning disabilities, mental retardation, and emotional disturbances. Nonetheless, in both cohorts, youth with emotional disturbances had the lowest completion rate and highest dropout rate of any disability category; 44% left school without finishing in cohort 2. Improvements in school completion rates also were largest for boys, for youth ages 15 through 18, for those who were white or African-American, and those in the lowest or middle third of the household income distribution. In fact, the 26-perecentage-point increase in school completion among youth in the middle income group eliminated the significant disadvantage relative to higher-income peers that was apparent in cohort 1. Outcomes of youth with disabilities reported in subsequent chapters may well reflect the higher school completion rate for youth with disabilities as a whole and for the subgroups that experienced these increases.

3. CHANGES IN THE HOUSEHOLD ARRANGEMENTS AND SOCIAL ACTIVITIES OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES

By Mary Wagner

For many youth, with and without disabilities, leaving high school is accompanied by a focus on the demands of postsecondary education and/or the workforce. However, work and schooling are not the only important aspects of the lives of youth; these also include the living arrangements of youth and their interpersonal relationships. The lives of many youth also intersect with their communities through participation in a variety of organized groups, such as a sports team, religious group, or professional association, and through community service or volunteer activities. These positive forms of involvement outside the home are offset for some, however, by actions that violate social norms or other rules to the extent that negative consequences result, such as disciplinary actions at school, being fired from a job, or being arrested.

This chapter examines changes between 1987 and 2003 in these aspects of the lives of youth with disabilities who had been out of high school up to 2 years, as measured in the National Longitudinal Transition Study (NLTS) and the National Longitudinal Transition Study-2 (NLTS2).[1] Specifically, it addresses:

- **Household arrangements:** with whom youth lived and their marital status.
- **Social involvement:** participating in organized group activities outside of work or school, volunteering, and at some point experiencing negative consequences for behavior (i.e., disciplinary actions at school or being fired from a job or arrested).

These factors are described for youth with disabilities as a whole and for youth who differed in their disability category, high-school-exit status (i.e., those who completed high school and those who did not), age, gender, household income, and race/ethnicity, when significant.

Household Arrangements

Earlier comparisons of findings from NLTS and NLTS2 for youth with disabilities who were still in secondary school demonstrated that their living arrangements had not changed appreciably between 1987 and 2003 (Wagner, Cameto, et al., 2003). The same is true of youth with disabilities who had been out of secondary school up to 2 years at those two points in time. About three-fourths of youth with disabilities in both cohorts 1 and 2 (76% and 73%, respectively) were living with one or both parents, and 7% and 8%, respectively, were living with another family member or friend. About one in eight out-of-school youth with disabilities (11% and 15% of the two cohorts) were living independently (i.e., alone, with a spouse or roommate, in military housing as a service member, or in a college dormitory). Few youth (3% of cohort 1 and 1% of cohort 2) lived in an institution or facility, and 3% of each cohort had another living arrangement.

[1] Youth for whom data are available for 1987 and 2003 are referred to as cohort 1 and cohort 2, respectively. For both groups of youth, 19% were 15 through 17, 31% were 18, and 50% were 19.

As might be expected, given the large majority of youth with disabilities who still lived with their families of origin, few youth (6% in each cohort) were married or living in a marriage-like relationship. In fact, about 9 of 10 youth with disabilities who were out of secondary school up to 2 years were single (92% and 88% of cohorts 1 and 2, respectively). Although few were reported to be engaged to be married, the 6% of cohort 2 youth who were represents a significant increase over time ($p<.05$).

Differential Changes Related to Disability Category

Although living arrangements did not change markedly over time for out-of-school youth with disabilities as a whole, significant changes were apparent for youth in some disability categories (Exhibit 3-1). Notably, cohort 1 youth with orthopedic impairments were significantly more likely than youth in many other categories to be living with parents (92% vs. 74% to 77% of youth with learning disabilities, speech impairments, mental retardation, or emotional disturbances and 58% of youth with multiple disabilities; $p<.05$ for all comparisons). However, a 17-percentage-point decrease over time ($p<.05$) resulted in cohort 2 youth with orthopedic impairments being no more or less likely to be living with parents (75%) than youth in other disability categories (64% to 80%). A corresponding increase of 12 percentage points in youth with orthopedic impairments living independently did not attain statistical significance.

A significant decrease was apparent in out-of-school youth with mental retardation living in an institution or facility (7 percentage points, $p<.05$). However, a 25-percentage-point decrease in living in an institution or facility among youth with multiple disabilities did not reach statistical significance for this small group of youth. Nonetheless, these decreases eliminated the differences across categories in the rates of living in an institution or facility that were apparent in cohort 1 (8% and 31% for youth with mental retardation and multiple disabilities vs. 1% or fewer of youth with learning disabilities or speech or visual impairments, $p<.05$ for all comparisons).

In contrast, no category of youth experienced a significant change in the likelihood that they were living independently. Thus, the 15-percentage-point difference across categories in cohort 1 (1% of youth with multiple disabilities to 16% of those with visual impairments, $p<.05$) decreased by only 1 percentage point in cohort 2 (4% to 18% for youth with multiple disabilities and orthopedic impairments, respectively; not a significant difference). There are neither significant differences across groups nor significant changes over time in youth with disabilities living with another family member or friend or in a living arrangement classified as “other.”

Regarding the marital status of youth with disabilities, only one category of youth demonstrated a significant change over time. Youth with emotional disturbances experienced a 13-percentage-point decrease in the likelihood of being single (96% vs. 83%, $p<.05$); thus, they were significantly less likely to be single in cohort 2 than youth with speech impairments or multiple disabilities (99% and 98%, $p<.01$). There was a corresponding 8-percentage-point increase in the likelihood of out-of-school cohort 2 youth with emotional disturbances being engaged (1% vs. 9%, $p<.05$), a higher likelihood of being engaged than youth with orthopedic impairments or multiple disabilities (1%, $p<.05$). There were no significant differences across groups and no significant changes over time in youth with disabilities being married or in a marriage-like relationship (ranging from 1% to 8% across categories in both cohorts).

Exhibit 3-1
CHANGES IN THE LIVING ARRANGEMENTS OF OUT-OF-SCHOOL YOUTH, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Multiple Disabilities/ Deaf-Blindness
Percentage who lived:									
With a parent/guardian									
Cohort 1 (1987)	76.0	75.8	74.3	76.7	79.2	76.3	92.0	80.8	58.1
	(4.0)	(6.0)	(4.9)	(4.4)	(4.6)	(6.8)	(5.1)	(7.0)	(12.7)
Cohort 2 (2003)	74.8	77.7	72.9	67.2	77.5	80.5	75.1	64.4	76.9
	(5.0)	(8.9)	(7.0)	(5.2)	(6.1)	(7.8)	(6.9)	(12.3)	(10.9)
Percentage-point change	-1.2	+1.9	-1.4	-9.5	-1.7	+4.2	**-16.9***	-16.4	+18.8
Independently (alone, with a spouse or roommate, or in military housing or a college dormitory)									
Cohort 1 (1987)	13.0	15.5	4.4	8.8	15.6	15.8	6.2	5.1	1.3
	(3.2)	(5.5)	(2.3)	(3.0)	(5.2)	(5.9)	(4.5)	(3.9)	(2.9)
Cohort 2 (2003)	16.0	7.6	14.5	13.6	12.3	14.8	17.8	6.7	4.4
	(4.3)	(5.7)	(5.6)	(3.8)	(4.8)	(6.8)	(6.3)	(6.4)	(5.3)
Percentage-point change	+3.0	-7.9	+10.1	+4.8	-3.3	-1.0	+11.6	+1.6	+3.1
In an institution or facility									
Cohort 1 (1987)	.6	.4	7.5	4.0	1.6	.8	1.9	1.6	30.6
	(.7)	(.9)	(3.0)	(2.0)	(1.4)	(1.4)	(2.5)	(2.2)	(11.9)
Cohort 2 (2003)	.0	2.4	.5	3.4	.0	.0	.0	1.3	5.5
		(3.3)	(1.1)	(2.0)				(2.9)	(5.9)
Percentage-point change	-.6	+2.0	**-7.0***	-.6	-1.6	-.8	-1.9	-.3	-25.1

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Differential Changes Related to School-Exit Status

The distribution of living arrangements of out-of-school youth with disabilities did not change significantly over time for either youth who completed high school or those who left high school without graduating. However, at both points in time, high school dropouts were significantly less likely than completers to be living with parents (72% vs. 84% in cohort 1, 58% vs. 78% in cohort 2; $p<.05$ for both comparisons). Similarly, marital status did not change markedly over time for either group; however, high school dropouts with disabilities in both cohorts were significantly less likely to be single than their peers who completed high school (76% vs. 97% in cohort 1, $p<.01$; 76% vs. 92% in cohort 2, $p<.05$).

Differential Changes Related to Demographic Characteristics

Several demographic characteristics of youth with disabilities were associated with differences in their living arrangements or marital status or in the extent to which they changed over time.

Age. As was true for youth with disabilities as a whole, there was no significant change over time in the living arrangements of out-of-school youth with disabilities across the 15- through 19-year-old age range. However, among cohort 2 youth, 19-year-olds were significantly more likely than their 15- through 17-year-old peers to be living independently (15% vs. 2%, $p<.01$). The difference among cohort 1 youth (12% vs. 6%) was not significant. There were no significant differences by age in the marital status of out-of-school youth with disabilities or in changes over time in that status.

Gender. Boys and girls with disabilities who had been out of school up to 2 years neither differed in the likelihood of having various living arrangements nor in significant changes in living arrangements over time. Changes in marital status over time also were not apparent for either gender. However, both cohorts 1 and 2 girls with disabilities were less likely than their male counterparts to be single (80% vs. 98% in cohort 1, $p<.01$; 78% vs. 93% in cohort 2, $p<.05$).

Household income. There were no significant differences between youth with disabilities in the lowest, middle, or highest third of the household income spectrum in their living arrangements or marital status in either cohort 1 or 2. Similarly, there were no significant changes over time for any household income group on these factors.

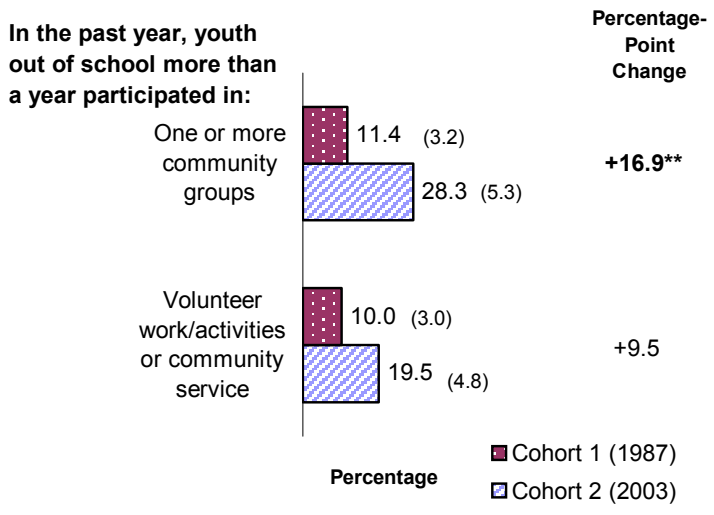
Race/ethnicity. Although there were no significant changes over time in living arrangements for any racial/ethic group, cohort 2 white youth with disabilities were significantly more likely than their African-American peers to be living independently (19% vs. 4%, $p<.05$). Other living arrangements did not differ between groups. Youth with disabilities who differed in their racial/ethnic background did not differ in marital status in either cohort, and no groups experienced significant changes over time in this factor.

Social Involvement

Participation in community activities is a valued outcome that shapes the quality of life of youth with disabilities (National Center on Educational Outcomes, 1993). Participation in organized group activities, with their generally prosocial norms and expectations for membership, has been found to be associated with other positive outcomes for youth with disabilities after high school, including an increased likelihood of pursuing postsecondary education and living independently (Wagner, Blackorby, Cameto, & Newman, 1993). Earlier comparisons of findings from NLTS and NLTS2 for youth with disabilities who were still in secondary school demonstrated that their involvement in organized group activities did not change appreciably between 1987 and 2003; however, the rate at which youth participated in volunteer or community service activities more than doubled (Wagner, Cameto, et al., 2003).

A different picture emerges for youth with disabilities who were out of secondary school up to 2 years at those two points in time (Exhibit 3-2). A17-percentage-point increase in group membership ($p<.01$) resulted in more than twice as many cohort 2 youth (28%) as their cohort 1 peers (11%) belonging to a community group. In contrast, there was no significant increase in out-of-school youth with disabilities participating in volunteer or community service activities.

Exhibit 3-2
CHANGES IN ASPECTS OF THE SOCIAL INVOLVEMENT OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES



Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

Statistical significance: **p<.01.

Standard errors are in parentheses.

Unfortunately, the prosocial activities of organized community groups and community service are offset for some youth with disabilities by activities that generate negative consequences, including disciplinary actions at school, being fired from a job, or being arrested. NLTS and NLTS2 have investigated the extent to which youth with disabilities had ever experienced any of these negative consequences. A 21-percentage-point increase in ever experiencing any of these negative consequences for behavior occurred between 1987 and 2003. Among cohort 1 youth, 34% had at some time been subject to disciplinary actions at school, fired from a job, or arrested; that rate rose to 56% among cohort 2 youth (p<.001).

Differential Changes Related to Disability Category

The significant increase over time in the likelihood that out-of-school youth with disabilities belonged to an organized community group that was noted for youth with disabilities as a whole was not apparent for the smaller group of youth in any disability category (Exhibit 3-3). Nonetheless, the spread across disability categories in group membership rates narrowed somewhat from cohort 1; with cohort 2 rates ranging from 19% of youth with emotional disturbances to 44% of those with visual impairments (p<.05). Although there was no significant increase among youth with disabilities as a whole in their likelihood of doing volunteer work or community service, significant increases did occur among youth with hearing or visual impairments (35 and 42 percentage points, respectively; p<.01 and p<.05). In both cohorts, youth with emotional disturbances were among the least likely to participate in organized community groups or in volunteer or community service activities.

Exhibit 3-3
CHANGES IN ASPECTS OF THE SOCIAL INVOLVEMENT OF OUT-OF-SCHOOL YOUTH, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Multiple Disabilities/ Deaf-Blindness
In the past year, percentage of youth out of school more than a year who participated in:									
One or more community groups									
Cohort 1 (1987)	13.2 (5.1)	21.8 (10.3)	4.0 (4.0)	5.5 (3.9)	33.3 (10.9)	36.6 (13.7)	--	--	--
Cohort 2 (2003)	29.4 (7.6)	24.7 (14.2)	--	18.7 (6.0)	44.5 (10.1)	43.3 (13.3)	32.1 (10.4)	36.9 (9.0)	13.3 (10.5)
Percentage-point change	+16.2	+2.9		+13.2	+11.2	+6.7			
Volunteer work/activities or community service									
Cohort 1 (1987)	12.8 (4.0)	13.1 (6.8)	3.7 (4.6)	4.2 (3.7)	12.5 (5.8)	11.9 (8.0)	--	--	--
Cohort 2 (2003)	19.1 (6.7)	20.8 (13.4)	--	14.1 (5.5)	47.2 (10.3)	53.8 (13.8)	29.2 (10.4)	21.4 (7.9)	36.4 (15.3)
Percentage-point change	+6.3	+7.7		+9.9	**+34.7****	**+41.9***			
Percentage who ever had experienced negative consequences for behavior									
Cohort 1 (1987)	32.2 (4.5)	22.8 (5.8)	30.0 (5.6)	55.9 (5.4)	15.0 (4.2)	7.9 (4.5)	5.5 (4.5)	14.7 (7.0)	45.8 (13.8)
Cohort 2 (2003)	49.8 (5.8)	41.7 (11.2)	46.5 (8.0)	88.9 (3.4)	28.6 (6.7)	14.6 (7.2)	29.1 (7.5)	67.1 (12.4)	35.8 (12.8)
Percentage-point change	**+17.6***	+18.9	+16.5	**+33.0*****	+13.6	+6.7	**+23.6****	**+52.4*****	-10.0

Sources: NLTS Wave 1 parent interview and NLTS2 Wave 2 parent/youth interviews.

-- Too few to report separately.

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

Standard errors are in parentheses.

The large increase in youth with disabilities experiencing negative consequences for their behavior was evident for four disability categories: learning disabilities, emotional disturbances, and orthopedic and other health impairments. Increases ranged from 18 percentage points for youth with learning disabilities to 52 percentage points for those with other health impairments. At both points in time, youth with emotional disturbances had the highest rates of negative consequences of any disability group. More than half (56%) of cohort 1 youth with emotional disturbances and 89% of those in cohort 2 had had such experiences ($p<.01$ and $p<.001$ compared with youth with learning disabilities).

Differential Changes Related to School-Exit Status

Neither youth with disabilities who completed high school nor those who dropped out experienced significant changes in participation in organized community groups or in volunteer or community service activities. However, larger changes among dropouts ameliorated the significant differences between the two groups that had existed among cohort 1 youth. Whereas

33% of cohort 1 school completers had participated in an organized community group, only 9% of dropouts were group members (p<.001). By cohort 2, these rates were 32% and 20%, respectively, not a significant difference. Similarly, 21% of cohort 1 school completers and 8% of dropouts had taken part in volunteer or community service (p<.01); those rates were 26% and 20% among cohort 2 youth.

Both youth with disabilities who finished high school and those who did not had significant increases in experiencing negative consequences for their behavior, with the largest increase being among high school completers. Cohort 1 youth who finished high school were dramatically less likely to have been subject to negative consequences for their behavior than were peers who dropped out (11% vs. 62%, p<.001). A 34-percentage point increase among high school completers brought the rate to 46% for cohort 2. Although dropouts had a smaller, 18-percentage-point increase in cohort 2, they still were more likely to have had negative consequences for their behavior than school completers (80% vs. 46%, p<.001).

Exhibit 3-4
CHANGES IN ASPECTS OF THE SOCIAL INVOLVEMENT OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY AGE

	15 through 17	18	19
In the past year, percentage of youth out of school more than a year who participated in:			
One or more community groups			
Cohort 1 (1987)	9.5 (7.4)	15.3 (6.9)	10.0 (4.0)
Cohort 2 (2003)	27.3 (15.4)	24.4 (8.3)	29.8 (7.1)
Percentage-point change	+17.8	+9.1	**+19.8***
Volunteer work/activities or community service			
Cohort 1 (1987)	1.5 (3.2)	9.5 (5.7)	13.0 (4.5)
Cohort 2 (2003)	22.4 (14.6)	19.1 (7.7)	19.2 (6.2)
Percentage-point change	+20.9	+9.6	+6.2
Percentage who ever had experienced negative consequences for behavior			
Cohort 1 (1987)	73.0 (8.1)	34.4 (5.2)	22.8 (3.6)
Cohort 2 (2003)	64.3 (9.5)	56.3 (5.9)	51.9 (6.0)
Percentage-point change	-8.7	**+21.9****	**+29.1*****

Sources: NLTS Wave 1 parent interview and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Differential Changes Related to Demographic Characteristics

Age. Although only 19-year-olds experienced a significant increase in membership in a community group (20 percentage points, p<.05; Exhibit 3-4), cohort 2 rates of membership were quite similar for the three age groups, as were rates of participation in volunteer work or community service. Both 18- and 19-year-old youth with disabilities had significant increases in experiencing negative consequences for their behavior (22 and 29 percentage points, respectively, p<.01 and p<.001). Although their rates of negative consequences in cohort 1 were much lower than that of 15- through 17-year-olds (34% and 23% vs. 73%, p<.001 for both comparisons), increases for older youth resulted in cohort 2 rates that were not significantly different across age groups.

Exhibit 3-5
CHANGES IN ASPECTS OF THE SOCIAL INVOLVEMENT OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY GENDER

	Boys	Girls
In the past year, percentage of youth out of school more than a year who participated in:		
One or more community groups		
Cohort 1 (1987)	12.1 (4.1)	9.9 (5.1)
Cohort 2 (2003)	30.4 (6.6)	23.5 (8.6)
Percentage-point change	**+18.3***	+13.6
Volunteer work/activities or community service		
Cohort 1 (1987)	13.2 (4.3)	3.4 (3.1)
Cohort 2 (2003)	15.0 (5.3)	29.2 (9.3)
Percentage-point change	+1.8	**+25.8****
Percentage who ever had experienced negative consequences for behavior		
Cohort 1 (1987)	39.1 (3.7)	23.6 (4.9)
Cohort 2 (2003)	60.6 (4.8)	46.4 (6.8)
Percentage-point change	**+21.5*****	**+22.8****

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Gender. Out-of-school boys with disabilities experienced an 18-percentage-point increase in community group membership over time (p<.05; Exhibit 3-5), whereas an increase of 14 percentage points did not reach statistical significance for the smaller group of girls. In contrast, girls had the only significant increase in participation in volunteer or community service activities (26 percentage points, p<.01). Despite the genders having similar increases in experiencing negative consequences for behavior (22 and 23 percentage points, respectively; p<.001 and p<.01), the significant gap between them in cohort 1 (39% for boys, 24% for girls; p<.05) was no longer apparent in cohort 2.

Household income. Only youth in the lowest income group experienced a significant increase in community group membership over time (16 percentage points, p<.05; Exhibit 3-6). However, none of the groups had a significant change in participation in volunteer or community service activities, despite the 20-percentage-point increase noted for the lowest income group. The likelihood of being subject to negative consequences for their behavior increased for youth in both the middle and upper income groups (33 and 18 percentage points, respectively; p<.001 and p<.05). With this sizable increase among youth in the middle income group, their rate of negative consequences was significantly higher in cohort 2 than youth in the highest income group (p<.05), a difference that was not apparent in cohort 1.

Race/ethnicity. The increase in community group membership over time occurred largely among Hispanic youth (25 percentage points, p<.05; Exhibit 3-6). An increase of 31 percentage points in volunteer or community service activities for that group did not reach statistical significance, although the 18-percentage-point increase among white youth with disabilities did (p<.05). Both white and African-American youth with disabilities had sizable increases in having been subject to negative consequences for their behavior (23 and 24 percentage points, p<.001 and p<.05), an increase not apparent among Hispanic youth. Despite the different changes noted for the three groups, in neither cohort were rates of negative consequences significantly different across them.

Exhibit 3-6
CHANGES IN ASPECTS OF THE SOCIAL INVOLVEMENT OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Lowest	Middle	Highest	White	African-American	Hispanic
In the past year, percentage of youth out of school more than a year who participated in:						
One or more community groups						
Cohort 1 (1987)	13.7 (4.2)	19.7 (4.8)	35.7 (4.8)	22.8 (3.2)	24.3 (5.6)	1.9 (3.6)
Cohort 2 (2003)	29.2 (6.6)	25.9 (7.3)	29.0 (6.9)	31.1 (4.9)	19.1 (6.8)	27.2 (11.2)
Percentage-point change	**+15.5***	+6.2	-6.7	+8.3	-5.2	**+25.3***
Volunteer work/activities or community service						
Cohort 1 (1987)	9.2 (5.4)	8.4 (5.2)	22.7 (7.5)	11.4 (4.0)	17.1 (7.5)	1.7 (4.7)
Cohort 2 (2003)	29.1 (9.0)	17.2 (9.1)	33.0 (10.3)	29.5 (6.9)	19.2 (8.5)	33.4 (17.7)
Percentage-point change	+19.9	+8.8	+10.3	**+18.1***	+2.1	+31.7
Percentage who ever had experienced negative consequences for behavior						
Cohort 1 (1987)	40.6 (6.5)	37.0 (6.0)	25.0 (4.4)	31.5 (3.6)	41.0 (6.7)	39.5 (14.0)
Cohort 2 (2003)	58.5 (7.0)	69.6 (7.3)	43.4 (7.3)	54.6 (5.0)	65.3 (7.8)	47.0 (12.3)
Percentage-point change	+17.9	**+32.6*****	**+18.4***	**+23.1*****	**+24.3***	+7.5

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Summary

Although the living arrangements of youth with disabilities as a whole were stable over time, with about three-fourths of youth in both cohorts 1 and 2 living with parents, participation in their communities in the form of membership in organized community groups more than doubled, so that 28% of cohort 2 youth were group members. In contrast to this positive aspect of social involvement, there was a large increase in the proportion of youth with disabilities who had ever experienced negative consequences for their behavior—being subject to disciplinary action at school, fired from a job, or arrested. More than half of cohort 2 youth had had such experiences, compared with about one-third of youth in cohort 1.

As with most aspects of their lives, youth with disabilities with different primary disabilities had different experiences with living arrangements and social involvement. For example, there were indications that youth with mental retardation were more likely to be participating in their communities in 2003 than in 1987; they had a significant reduction in the proportion who were living in an institution or facility. Increased community participation also was apparent for youth with hearing or visual impairments in the form of volunteer or community service

activities. Large increases for those two groups resulted in about half taking part in such activities in cohort 2, the highest rates of participation of any disability category.

Unfortunately, the experience that makes youth with emotional disturbances stand out from peers with other kinds of disabilities is the large increase in and high rate of experiencing negative consequences for their behavior. More than half of cohort 1 youth with emotional disturbances had been subject to disciplinary action at school, fired from a job, or arrested, experiences that had occurred to 9 in 10 cohort 2 youth with emotional disturbances. Youth with learning disabilities and orthopedic or other health impairment also had large increases in this negative aspect of social adjustment.

Other findings in this chapter underscore the variety of challenges in the early postschool years that face youth with disabilities who do not finish high school. In both cohorts, dropouts were both less likely than those who finished high school to be living with parents and less likely to be single. The lower rates of participation in organized community groups and volunteer or community service activities that were apparent for cohort 1 dropouts compared with those who finished high school were ameliorated over time. However, this positive development was offset by the fact that in both cohorts, dropouts were significantly more likely than high school completers to have experienced negative consequences for their behavior; 6 in 10 had done so in cohort 1, a rate that increased to 8 in 10 in cohort 2.

As expected, 19-year-olds differed from their 15- through 17-year-old peers in several respects, including being more likely to live independently and demonstrating a large increase in belonging to an organized community group. Unfortunately, both 18- and 19-year-old youth with disabilities also had large increases in the likelihood of experiencing negative consequences for their behavior, so that a lower rate in cohort 1 relative to younger peers was eliminated.

Living arrangements were stable for both boys and girls with disabilities, whereas only boys had a significant increase in community group membership, and only girls had an increase in participation in volunteer or community service activities. This pattern of changes resulted in cohort 2 boys and girls having very similar experiences, with the exception that girls were less likely than boys to be single.

Household income was unrelated to the living arrangements of youth with disabilities in both cohorts and to changes in arrangements over time. The racial/ethnic background of youth also was unrelated to changes in living arrangements over time; however, cohort 2 white youth were more likely than their African-American peers to be living independently. Increases in community group membership occurred largely among the lowest income group and Hispanic youth with disabilities. In contrast, only white youth experienced an increase in volunteer or community service activities. Increases in the receipt of negative consequences for behavior were shared by white and African-American youth and by those in both the middle and upper income groups, with the increase being twice as large for the middle as for the upper income group.

These findings demonstrate that most youth with disabilities still had access to the supports available from their families when they had been out of high school up to 2 years, many actively participated in positive ways in their community, but for somewhat more than half of youth, their behavior had resulted in negative consequences for them at school or in their community.

4. CHANGES IN POSTSECONDARY EDUCATION PARTICIPATION OF YOUTH WITH DISABILITIES

By Lynn Newman

As the American economy becomes increasingly knowledge based, attaining a postsecondary education is more important than ever. Projections for the next decade suggest that the strongest job growth will be in occupations requiring postsecondary education (Braddock, 1999). Whereas only 20% of workers needed at least some college for their jobs in 1959, by 2000 that number had increased to 56% (Carnevale & Fry, 2000). Analyses exploring the relationship between educational attainment and earnings have found that over the past 25 years, the gap in earnings between the different education levels has widened (Day & Newburger, 2002). For example, in 1975, those with an advanced degree earned 1.8 times as much as high school graduates; by 1999, the disparity had increased to 2.6 times as much (Day & Newburger, 2002).

Perhaps in part reflecting an awareness of the growing importance of postsecondary education, students with disabilities increasingly are taking rigorous academic courses in high school, including college-preparatory courses, such as a foreign language and science. In 1987, 62% of high school youth with disabilities had taken a science class, and 6% had enrolled in a foreign language class. By 2003, 83% were taking science, and 21% were studying a foreign language, demonstrating significant increases in the types of courses needed to prepare for postsecondary education (Wagner, Newman, et al., 2004).

Changes are apparent not only in student course-taking but also in the expectations parents hold for their adolescent children. When most youth included in this report were still in high school, parents were asked to report how likely they thought it was that their adolescent children with disabilities would reach several postsecondary education milestones. Postsecondary education, particularly graduation from a 2-year college, was 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 with disabilities, and for those at all income levels (Wagner, Cameto, et al., 2003).

To what extent are these types of changes for students with disabilities accompanied by changes in postsecondary education participation over time? This chapter examines changes between 1987 and 2003 in the postsecondary education enrollment of youth with disabilities who had been out of secondary school up to 2 years, as measured in the National Longitudinal Transition Study (NLTS) and the National Longitudinal Transition Study-2 (NLTS2).[1] It focuses on participation in three types of institutions—2-year/community colleges; 4-year colleges; and postsecondary vocational, technical, or business schools. The section begins with a discussion of change over time in youth's experiences with programs designed to help those who dropped out of high school earn a high school diploma. It continues with an examination of changes in enrollment rates at postsecondary institutions for youth with disabilities as a whole and for youth who differed in their disability category, high-school-exit status, age, gender,

[1] Youth for whom data are available for 1987 and 2003 are referred to as cohort 1 and cohort 2, respectively. For both groups of youth, 20% were 15 through 17, 31% were 18, and 50% were 19.

household income, and race/ethnicity, when significant. It concludes with findings regarding changes in the extent to which students attended postsecondary school full- or part-time.

Participation in High School Diploma/Certificate Programs

For the 30% of out-of-school youth in 2003 and the 46% in 1987 who had left high school without finishing,[2] post-high-school education did not necessarily mean postsecondary-level education. Dropping out of secondary school is not an irrevocable decision; young people may still obtain a high school diploma by reentering a regular or alternative secondary school program or by taking an examination to obtain a General Educational Development (GED) credential.

Although cohort 2 youth were much more likely than their cohort 1 peers to have finished high school (see Chapter 2), those who dropped out in 2003 were no more or less likely to have participated in GED or other high school equivalency programs than were dropouts in 1987. Within 2 years of leaving secondary school, approximately one-quarter of dropouts in cohorts 1 and 2 (25% and 22%, respectively) had participated in a program to obtain a high school diploma or certificate.[3]

Postsecondary School Enrollment

In contrast to the unchanged participation in GED programs, the likelihood of enrollment in postsecondary-level education increased over time. There was a 17-percentage-point increase between 1987 and 2003 in young adults with disabilities continuing their education at the postsecondary level ($p<.001$; Exhibit 4-1). This marked increase resulted in the overall postsecondary enrollment rate more than doubling, from 15% in cohort 1 to 32% in cohort 2 ($p<.001$). In 2003, almost one-third of out-of-school youth with disabilities had attended a postsecondary school at some time since leaving high school.

The increase in postsecondary education enrollment was greater for youth with disabilities than for their peers in the general population. Youth in the general population who had completed high school[4] showed an approximate 5-percentage-point increase in college enrollment between 1987 and 2001 (Snyder & Hoffman, 2003). Despite a larger increase for youth with disabilities, the gap between the two groups continued. At the time of the 2003 survey, approximately one in five out-of-secondary-school youth with disabilities (19%) currently were attending postsecondary school, a rate that was less than half that of their peers in the general population (40%, $p<.001$).

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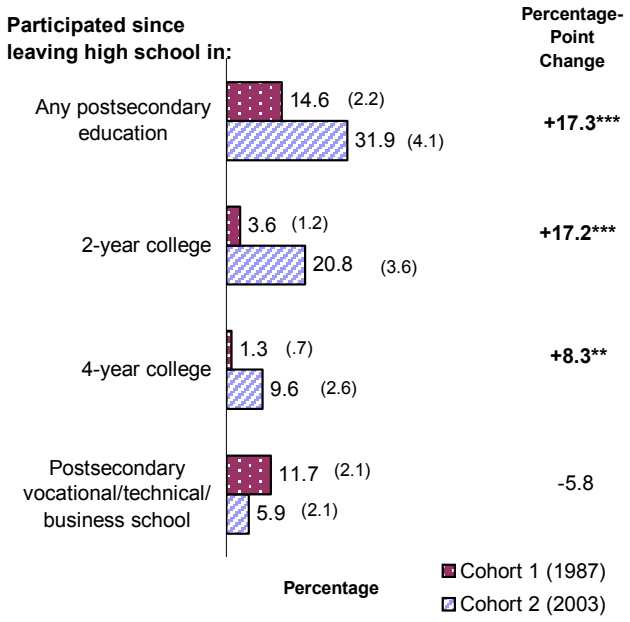
[2] This includes 6% of youth in 1987 and 1% in 2003 who were reported to have been suspended or expelled or left school for other reasons without finishing. For convenience, the entire group is referred to as dropouts.

[3] There are too few dropouts in most disability categories to report findings separately by disability category.

[4] The general population comparison is for individuals ages 16 to 24 who graduated from high school or completed a GED during the preceding 12 months. The youth with disabilities sample is 15- to 19-year-olds and includes dropouts.

Exhibit 4-1
CHANGES IN POSTSECONDARY EDUCATION PARTICIPATION SINCE HIGH SCHOOL OF YOUTH WITH DISABILITIES



Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

Statistical significance: **p<.01; ***p<.001.

Standard errors are in parentheses.

Examining enrollment at the various types of postsecondary schools, it is apparent that the greatest growth was experienced in enrollment at 2-year colleges. The likelihood of attending a 2-year or community college increased by 17 percentage points (p<.001). Youth were five times as likely to have attended a 2-year college in 2003 as they were 16 years earlier (21% vs. 4%, p<.001). Youth with disabilities also were more likely to have enrolled in a 4-year college in cohort 2 than in cohort 1, with an 8-percentage-point increase over time in the rate of enrollment at this type of institution (p<.01). Youth with disabilities were 10 times as likely to have attended a 4-year college in 2003 as in 1987 (10% vs. 1%, p<.01).

Youth in the general population were more likely to have attended 4-year than 2-year colleges, and since the 1980s, the rate of increase has been higher at 4- than 2-year institutions (National Center for Education Statistics, 2000). In contrast to their peers in the general population, youth with disabilities experienced a higher rate of growth in enrollment at 2-year colleges, resulting in more youth with disabilities having attended 2-year than 4-year institutions in cohort 2 (21% vs. 10%, p<.05).

Unlike enrollment in the other types of postsecondary schools, there was no significant change in enrollment at a postsecondary vocational, technical, or business school. In cohort 2, 6% of youth with disabilities had attended this type of school since leaving high school.

Differential Changes Related to Disability Category

As with many aspects of their lives, change over time in postsecondary school involvement varied widely by disability category, with increases ranging from 3 percentage points for youth with mental retardation to 33 percentage points for those with visual impairments (Exhibit 4-2). The largest increases were experienced by those most likely to have attended postsecondary school in cohort 1—youth with sensory impairments—resulting in their continuing to be among those most likely to be enrolled in any postsecondary education in cohort 2. For example, with their 33-percentage-point increase (p<.01), youth with visual impairments went from one-third having attended postsecondary school in 1987 to two-thirds in 2003. They remained more likely than youth in many other categories to have participated in any type of postsecondary school

Exhibit 4-2
CHANGES IN POSTSECONDARY EDUCATION PARTICIPATION SINCE HIGH SCHOOL OF YOUTH WITH DISABILITIES, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Multiple Disabilities/ Deaf-Blindness
Percentage participating since high school in:									
Any postsecondary education									
Cohort 1 (1987)	15.0	24.9	10.1	13.4	32.4	32.8	20.2	26.1	--
	(3.4)	(6.2)	(3.5)	(3.6)	(5.4)	(7.7)	(7.6)	(7.9)	
Cohort 2 (2003)	34.7	42.7	13.3	21.8	53.1	66.1	39.7	36.2	40.1
	(6.1)	(11.8)	(5.9)	(5.0)	(10.4)	(9.6)	(8.3)	(6.4)	(16.9)
Percentage-point change	**+19.7****	+17.8	+3.2	+8.4	+20.7	**+33.3****	+19.5	+10.1	
2-year college									
Cohort 1 (1987)	3.4	13.9	.9	3.0	13.0	6.1	11.8	14.4	0
	(1.8)	(5.0)	(1.2)	(2.0)	(4.1)	(4.1)	(6.4)	(6.7)	
Cohort 2 (2003)	23.4	25.6	3.8	12.9	36.7	38.5	20.0	29.6	9.8
	(5.5)	(10.7)	(3.5)	(4.1)	(8.5)	(10.1)	(6.9)	(6.2)	(10.7)
Percentage-point change	**+20.0*****	+11.7	+2.9	**+9.9***	**+23.7***	**+32.4****	+8.2	+15.2	+9.8
4-year college									
Cohort 1 (1987)	1.1	5.3	--	.6	6.2	17.2	4.3	7.0	1.6
	(1.0)	(3.2)		(.8)	(2.8)	(6.2)	(3.8)	(4.6)	(3.9)
Cohort 2 (2003)	11.0	20.0	.6	4.2	36.4	40.7	19.0	5.8	3.5
	(4.1)	(9.8)	(1.4)	(2.5)	(8.5)	(10.2)	(6.7)	(3.1)	(6.4)
Percentage-point change	**+9.9***	+14.7	+.6	+3.6	**+30.2*****	**+23.5***	+14.7	-1.2	+1.9
Postsecondary vocational, technical, or business school									
Cohort 1 (1987)	11.9	11.7	10.9	12.9	15.5	10.9	5.0	6.5	--
	(3.2)	(4.6)	(3.9)	(3.9)	(4.4)	(5.3)	(4.3)	(4.7)	
Cohort 2 (2003)	4.5	1.5	10.5	7.5	12.6	8.7	10.9	7.2	29.8
	(2.7)	(3.0)	(5.6)	(3.2)	(5.9)	(5.8)	(5.4)	(3.5)	(15.9)
Percentage-point change	-7.4	-10.2	-.4	-5.4	-2.9	-2.2	+5.9	+.7	

Sources: NLTS Wave 1 parent interview and NLTS2 Wave 2 parent/youth interviews.

-- Too few to report separately.

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

Standard errors are in parentheses.

program (66% vs. 40% of youth with orthopedic impairments, p<.05; approximately 35% of youth with other health impairments or learning disabilities, p<.01 for both comparisons; 22% of youth with emotional disturbances, p<.001; and 13% of youth with mental retardation, p<.001).

Youth with hearing or visual impairments demonstrated the largest increases in both 2- and 4-year college participation, resulting in their remaining among those most likely to be enrolled at these types of institutions. Youth in these two categories experienced 24- and 32-percentage-point increases in enrollment at 2-year colleges (p<.05 and p<.01, respectively), such that 37% and 38% of cohort 2 youth had done so. Enrollment rates at 4-year colleges increased by 30 and 24 percentage points for youth with hearing or visual impairments, respectively (p<.001 and p<.05) bringing those rates for cohort 2 to 36% and 41%.

Youth with learning disabilities also experienced significant increases in postsecondary participation, demonstrating a 20-percentage-point gain between cohorts in enrollment in any type of postsecondary school ($p<.01$), which more than doubled their enrollment rates (35% vs. 15%, $p<.01$). They experienced a 20-percentage-point increase in enrollment at 2-year colleges ($p<.001$) and a 10-percentage-point increase in enrollment at 4-year institutions ($p<.05$). These increases, particularly at 2-year colleges, brought them from being among the least likely to have enrolled at cohort 1 (3% enrolled in a 2-year college) to being among those more likely to have done so (23%).

In cohort 2, between about one- and two-thirds of youth in most disability categories had enrolled in a postsecondary program, with the exceptions of youth with mental retardation or emotional disturbances. They were among the least likely to have attended in 1987, and with no significant increases over time, they remained among those least likely to have attended postsecondary school (13% and 22%, respectively).

In contrast to the gains experienced in enrollment at 2- and 4-year colleges, no category of youth had a significant change in the likelihood of enrollment in a postsecondary vocational, technical, or business school.

Exhibit 4-3
CHANGES IN POSTSECONDARY EDUCATION PARTICIPATION SINCE HIGH SCHOOL OF YOUTH WITH DISABILITIES, BY SCHOOL-EXIT STATUS

	Completers	Dropouts
Percentage participating since high school in:		
Any postsecondary education		
Cohort 1 (1987)	23.7 (3.5)	5.6 (2.2)
Cohort 2 (2003)	41.3 (5.3)	8.8 (4.3)
Percentage-point change	**+17.6****	+3.2
2-year college		
Cohort 1 (1987)	5.3 (1.9)	1.3 (1.3)
Cohort 2 (2003)	28.4 (4.9)	1.3 (1.8)
Percentage-point change	**+23.1*****	.0
4-year college		
Cohort 1 (1987)	2.5 (1.3)	--
Cohort 2 (2003)	13.4 (3.7)	--
Percentage-point change	**+10.9****	.0
Postsecondary vocational, technical, or business school		
Cohort 1 (1987)	16.1 (3.0)	6.0 (2.7)
Cohort 2 (2003)	5.1 (2.4)	8.0 (4.2)
Percentage-point change	**-11.0****	+2.0

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Differential Changes Related to School-Exit Status

Almost all of the postsecondary enrollment gains over time were experienced by youth who had finished high school. High school completers demonstrated an 18-percentage-point increase in the likelihood of attending postsecondary school ($p<.01$), whereas dropouts experienced a 3-percentage-point change (Exhibit 4-3). In 2003, 4 of 10 high school completers had participated in a postsecondary program since leaving high school, compared with 1 of 10 dropouts (41% vs. 9%, $p<.001$).

Of the 9% of high school dropouts who continued on to postsecondary programs, more than 90% had enrolled at postsecondary vocational, technical, or business schools. Their rates of enrollment at 2- and 4-year colleges were negligible.

For those who completed high school, there was a shift over time

from enrollment in vocational, technical, or business schools to enrollment in 2- and 4-year programs. High school finishers experienced a 23-percentage-point increase in enrollment at 2-year colleges ($p<.001$) and an 11-percentage-point increase at 4-year colleges ($p<.01$), with a concurrent 11-percentage-point decrease in participation in postsecondary vocational, technical, or business schools ($p<.01$). In 2003, more than one-quarter (28%) of high school completers had attended a 2-year college, 13% had attended a 4-year college, and 5% had enrolled in vocational, technical, or business school programs.

Exhibit 4-4
CHANGES IN POSTSECONDARY EDUCATION PARITICIPATION SINCE HIGH SCHOOL OF YOUTH WITH DISABILITIES, BY AGE

	15 through 17	18	19
Percentage participating since high school in:			
Any postsecondary education			
Cohort 1 (1987)	6.3 (4.0)	13.6 (3.6)	18.2 (3.3)
Cohort 2 (2003)	14.1 (8.2)	20.3 (5.4)	43.7 (6.3)
Percentage-point change	+7.8	+6.7	**+25.5*** **
2-year college			
Cohort 1 (1987)	.6 (1.6)	2.5 (1.8)	5.1 (1.9)
Cohort 2 (2003)	.4 (1.5)	10.2 (4.1)	32.6 (6.1)
Percentage-point change	-.2	+7.7	**+27.5*** **
4-year college			
Cohort 1 (1987)	.1 (.4)	.6 (.9)	2.2 (1.5)
Cohort 2 (2003)	9.6 (7.3)	4.0 (2.7)	12.7 (4.3)
Percentage-point change	+7.6	+3.5	**+11.3***
Postsecondary vocational, technical, or business school			
Cohort 1 (1987)	5.3 (4.6)	12.8 (3.8)	13.0 (3.0)
Cohort 2 (2003)	5.1 (5.4)	7.6 (3.6)	5.2 (2.9)
Percentage-point change	-.2	-5.2	-7.8

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Differential Changes Related to Demographic Characteristics

The extent to which the participation of youth with disabilities in postsecondary education changed over time varied with several demographic characteristics.

Age. Across all age groups, only older youth experienced significant increases in postsecondary education enrollment. Among 19-year-olds, there were increases of 26 percentage points in overall postsecondary school attendance since high school ($p<.001$) and 28 and 11 percentage points in attendance at 2- and 4-year colleges, respectively ($p<.001$ and $p<.05$; Exhibit 4-4). These gains meant that the gap in enrollment between 19-year-olds and their younger peers widened over time. For example, in cohort 1, 18% of 19-year-olds, compared with 14% of 18-year-olds, had been enrolled in any type of postsecondary education, whereas in cohort 2, more than twice as many 19- as 18-year-olds had been enrolled (44% vs. 20%, $p<.01$). Fewer than 15% of 15- through-17-year-olds had been enrolled in a postsecondary school since high school (vs. 44% of 19-year-olds, $p<.01$). Some of the difference in enrollment rates between 15- through 17-year-olds and their older peers might be due to higher rates of dropping out among this younger age group. None of the age groups

experienced a significant change over time in enrollment at postsecondary vocational, technical, or business schools.

Exhibit 4-5
CHANGES IN POSTSECONDARY EDUCATION PARTICIPATION SINCE HIGH SCHOOL OF YOUTH WITH DISABILITIES, BY GENDER

	Boys	Girls
Percentage participating since high school in:		
Any postsecondary education		
Cohort 1 (1987)	14.9 (2.7)	14.1 (3.9)
Cohort 2 (2003)	30.3 (5.0)	35.0 (7.0)
Percentage-point change	**+15.4****	**+20.9****
2-year college		
Cohort 1 (1987)	4.3 (1.6)	2.0 (1.7)
Cohort 2 (2003)	19.4 (4.4)	23.5 (6.4)
Percentage-point change	**+15.1****	**+21.5****
4-year college		
Cohort 1 (1987)	.8 (.7)	2.2 (1.6)
Cohort 2 (2003)	11.3 (3.5)	6.2 (3.7)
Percentage-point change	**+10.5****	+4.0
Postsecondary vocational, technical, or business school		
Cohort 1 (1987)	11.7 (2.6)	11.8 (3.9)
Cohort 2 (2003)	4.7 (2.4)	8.3 (4.2)
Percentage-point change	**-7.0***	-3.5

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Gender. Mirroring their peers in the general population (Peter & Horn, 2005), girls with disabilities demonstrated larger gains than boys in enrollment in postsecondary school. The likelihood of enrollment since high school in a postsecondary school program increased by 21 percentage points (p<.01) for girls and 15 percentage points for boys (p<.01; Exhibit 4-5). Girls experienced most of these gains in enrollment at 2-year colleges (22 percentage points, p<.01), whereas boys experienced gains at both 2- and 4-year schools (15 and 10 percentage points, p<.01 for both). Nonetheless, participation rates at both types of institutions did not differ significantly by gender. In 2003, 24% of girls and 19% of boys had attended a 2-year college, and 6% of girls and 11% of boys had attended a 4-year college.

Boys also experienced a 7-percentage-point decline (p<.05) in enrollment at postsecondary vocational, technical, or business schools. Almost 5% of boys and 8% of girls had attended this type of school in cohort 2.

Household income. Youth from wealthier households were the only income group to experience a consistent increase over time in enrollment across several types of postsecondary schools. They showed a 22-percentage-point increase (p<.05) in having attended any type of postsecondary school, and 19- and 14-percentage-point increases (p<.05 for both) in having attended 2- and 4-year colleges (Exhibit 4-6). In contrast, youth in the middle income group had an increase in enrollment only in 2-year colleges (16 percentage points, p<.05), and those in the lowest income group showed no significant increase in postsecondary school attendance. This continued the gap between the groups that had existed in cohort 1. Youth in the highest income group were more than twice as likely as those in the lowest to have attended any type of postsecondary school in cohort 2 (42% vs. 17%, p<.05). The gap was particularly apparent in enrollment at 4-year colleges. In 2003, 16% of youth from wealthier households had attended a 4-year institution, compared with fewer than 1% of those from middle-income households (p<.05).

Exhibit 4-6
CHANGES IN POSTSECONDARY EDUCATION PARTICIPATION SINCE HIGH SCHOOL OF YOUTH WITH DISABILITIES, BY HOUSEHOLD INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Lowest	Middle	Highest	White	African-American	Hispanic
Percentage participating since high school in:						
Any postsecondary education						
Cohort 1 (1987)	8.7	11.9	20.3	14.3	15.6	18.3
	(3.5)	(3.9)	(4.1)	(2.6)	(4.7)	(10.3)
Cohort 2 (2003)	17.0	22.2	42.5	36.2	27.8	21.2
	(5.6)	(7.2)	(8.2)	(5.3)	(7.9)	(11.0)
Percentage-point change	+8.3	+10.3	**+22.2***	**+21.9*****	+12.2	+2.9
2-year college						
Cohort 1 (1987)	1.7	.9	8.1	3.9	2.8	3.5
	(1.7)	(1.3)	(2.9)	(1.6)	(2.3)	(5.1)
Cohort 2 (2003)	10.5	16.6	26.9	24.7	14.2	13.5
	(4.7)	(6.5)	(7.5)	(4.9)	(6.2)	(9.7)
Percentage-point change	+8.8	**+15.7***	**+18.8***	**+20.8*****	+11.4	+10.0
4-year college						
Cohort 1 (1987)	.1	.6	2.2	1.2	.2	5.7
	(.4)	(.9)	(1.5)	(.8)	(.6)	(6.2)
Cohort 2 (2003)	4.5	.6	16.0	10.7	12.0	1.6
	(3.2)	(1.4)	(6.2)	(3.5)	(5.8)	(3.6)
Percentage-point change	+4.4	.0	**+13.8***	**+9.5****	**+11.8***	-4.1
Postsecondary vocational, technical, or business school						
Cohort 1 (1987)	8.0	12.4	11.7	11.1	15.3	9.8
	(3.6)	(4.4)	(3.4)	(2.5)	(5.0)	(8.2)
Cohort 2 (2003)	3.5	6.2	4.7	6.1	4.2	8.5
	(2.8)	(4.2)	(3.6)	(2.7)	(3.6)	(7.9)
Percentage-point change	-4.5	-6.2	-7.0	-5.0	-11.1	-1.3

Source: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

None of the household income groups showed significant change in enrollment in postsecondary vocational, technical, or business schools, with rates of enrollment at cohort 2 ranging from 4% to 6% of youth in the three income groups.

Race/ethnicity. Although white youth with disabilities were the only racial/ethnic group to experience significant increases in overall postsecondary participation (22 percentage points, $p<.001$), their level of enrollment in postsecondary schools in cohort 2 did not differ significantly from that of their African-American or Hispanic peers. In 2003, 36% of white youth with disabilities, 28% of African-American youth, and 21% of Hispanic youth had enrolled in a postsecondary program since leaving high school.

The pattern of enrollment change over time for youth with disabilities differed from that of peers in the general population. White youth with disabilities demonstrated the largest increases and Hispanic youth the smallest. In contrast, Hispanic youth in the general population

experienced much larger increases in enrollment than their white or African-American peers.[5] Hispanic youth in the general population experienced an 18-percentage-point increase in postsecondary enrollment, three times the 6% increase experienced by white youth and nine times the 2% increase experienced by African-American youth (Snyder & Hoffman, 2003).

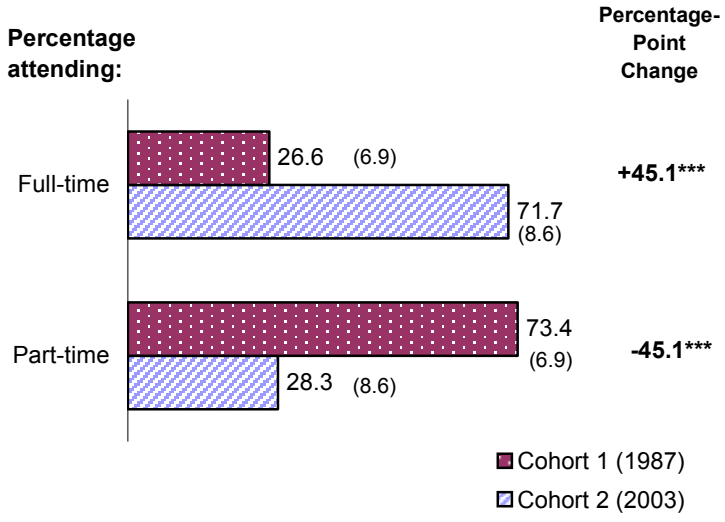
White youth with disabilities showed the only significant gain over time in 2-year college enrollment (21 percentage points, $p<.001$). Both African-American and white youth experienced significant increases in 4-year college attendance, with gains of 12 and 10 percentage points ($p<.05$ and $p<.01$, respectively). Despite these gains, cohort 2 enrollment at 2- or 4-year institutions did not differ by racial/ethnic categories, possibly due in part to the small sample size, particularly for Hispanic youth. In 2003, 25% of white youth and 14% of both African-American and Hispanic youth had enrolled in 2-year schools, and 11% of white youth, 12% of African-American youth, and 2% of Hispanic youth had attended 4-year colleges.

Change in enrollment at postsecondary vocational, technical, or business schools was not significant for any of the racial/ethnic groups.

Postsecondary Enrollment Characteristics

In cohort 1, nearly three-quarters of postsecondary students attended programs part-time. The 45-percentage-point increase in attending school full-time ($p<.001$) experienced by postsecondary students in cohort 2 resulted in a complete reversal over time in the balance between the two modes of school attendance (Exhibit 4-7). By 2003, almost three-quarters were attending postsecondary school full-time, making their experience more similar to that of their peers in the general population, who tended to be enrolled full-time (Wirt, 2000).

Exhibit 4-7
CHANGES IN FULL- AND PART-TIME ENROLLMENT IN POSTSECONDARY SCHOOL BY YOUTH WITH DISABILITIES



Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

Statistical significance: ***p<.001.

Standard errors are in parentheses.

Summary

Enrollment in post-secondary-level education by youth with disabilities increased markedly over time, with the overall participation rate increasing by 17 percentage points between cohorts 1 and 2. Youth with disabilities experienced a larger increase than their peers in the general population, although the

[5] Individuals in the general population ages 16 to 24 who graduated from high school or completed a GED during the preceding 12 months.

gap in postsecondary attendance rates between the two groups continued. Youth in the general population were more than twice as likely as those with disabilities to be attending postsecondary school in 2003.

The greatest growth in postsecondary enrollment was experienced at 2-year colleges, with attendance at 4-year institutions also increasing significantly. In contrast, enrollment at postsecondary vocational, technical, or business schools remained static or decreased for some groups.

Change over time in postsecondary school attendance varied widely by disability category. Youth with visual or hearing impairments demonstrated the largest increases in participation at 2- and 4-year institutions, resulting in their remaining among those most likely to have enrolled at these types of colleges. Increased enrollment also was apparent for youth with learning disabilities. In cohort 2, between about one- and two-thirds of youth in most disability categories had enrolled in a postsecondary program. The exceptions were those with emotional disturbances or mental retardation. They were among the least likely to have attended in 1987, and with a lack of significant increases over time, they remained among those least likely to have attended postsecondary school.

Almost all of the postsecondary enrollment gains over time were experienced by youth who had completed high school. In cohort 2, 4 out of 10 high school completers had participated in a postsecondary program since leaving high school, compared with fewer than 1 out of 10 dropouts. Dropouts who continued on to postsecondary programs were most likely to be enrolled at postsecondary vocational, technical, or business schools. Their rates of enrollment at 2- and 4-year colleges were negligible. In contrast, there was a shift over time from enrollment in vocational, technical, or business schools to enrollment in 2- and 4-year programs for those who had graduated from high school.

Across all age groups, only 19-year-olds experienced a significant increase in postsecondary education enrollment. Their gain meant that the gap in enrollment between 19-year-olds and their younger peers widened over time.

Girls demonstrated larger increases than boys in postsecondary school enrollment. Girls experienced most of these gains in enrollment at 2-year colleges, whereas boys experienced gains at both 2- and 4-year schools. Nonetheless, participation rates at both types of institutions did not differ significantly by gender in cohort 2.

Youth from wealthier households were the only income group to experience a consistent increase over time in enrollment across several types of postsecondary schools. In contrast, youth in the middle income group showed an increase only in enrollment in 2-year colleges, and those in the lowest income group demonstrated no significant increase in postsecondary school attendance from 1987 to 2003. This pattern of change continued the gap in postsecondary enrollment between income groups that existed in cohort 1, favoring youth from wealthier households.

White youth with disabilities were the only racial/ethnic group to experience significant increases in overall postsecondary enrollment, as well as 2-year and 4-year college enrollment. African-American youth demonstrated gains in 4-year college attendance. Contrary to the experiences of their peers in the general population, Hispanic youth with disabilities showed the smallest change in enrollment over time. Despite this pattern of gains for the racial/ethnic groups, cohort 2 enrollment at 2- or 4-year institutions did not differ across the groups.

5. CHANGES IN THE EMPLOYMENT STATUS AND JOB CHARACTERISTICS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES

By Renée Cameto and Phyllis Levine

Employment is the pathway to financial independence and self-reliance for the vast majority of adults. This also is true for the majority of youth with disabilities as they move toward adulthood. One of the intentions of their education is to prepare them for employment and independent living. In fact, achieving employment is a primary transition goal of the majority of high school students with disabilities (Cameto, Levine, & Wagner, 2004). However, for many youth entering young adulthood, it is not enough simply to have a job; they need a job that offers benefits, pays a livable wage, and presents opportunities for advancement.

Historically, employment options for people with disabilities tended toward service, unskilled labor, and blue-collar industries. However, the growing emphasis on technology in the workplace has shifted labor force demands toward workers with technical knowledge and skills and the ability to work independently. These types of competencies present significant challenges for many youth with disabilities, while creating the potential for securing jobs with benefits and opportunity of advancement.

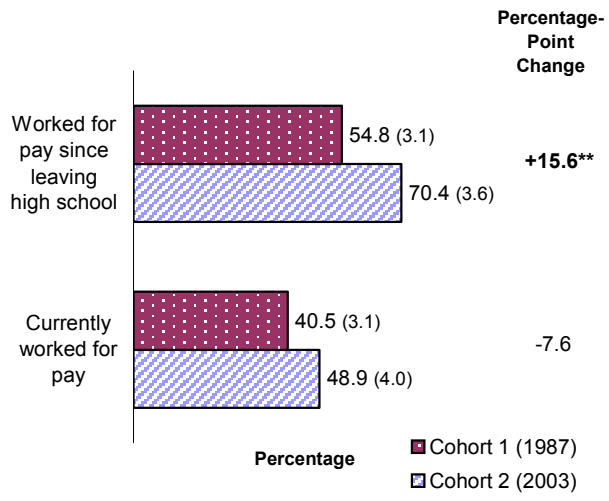
This chapter considers how youth with disabilities have adapted to evolving labor market conditions by examining changes between 1987 and 2003 in the employment status of youth with disabilities who had been out of high school up to 2 years, as measured in the National Longitudinal Transition Study (NLTS) and the National Longitudinal Transition Study-2 (NLTS2).[1] Specifically, it addresses:

- **Employment status**: having been employed at any time since leaving high school and being employed at the time of the interview.
- **Characteristics of youth's current or most recent job**: hours worked per week, hourly wage, and the general type or category of job.

These factors are described for youth with disabilities as a whole and for those who differed in disability category, high-school-exit status (i.e., those who completed high school and those who did not), age, gender, household income, and race/ethnicity, when significant.

[1] Youth for whom data are available for 1987 and 2003 are referred to as cohort 1 and cohort 2, respectively. For both groups of youth, 20% were 15 through 17 years old, 31% were 18, and 50% were 19.

Exhibit 5-1
EMPLOYMENT STATUS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES



Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

Statistical significance: **p.<01.

Standard errors are in parentheses.

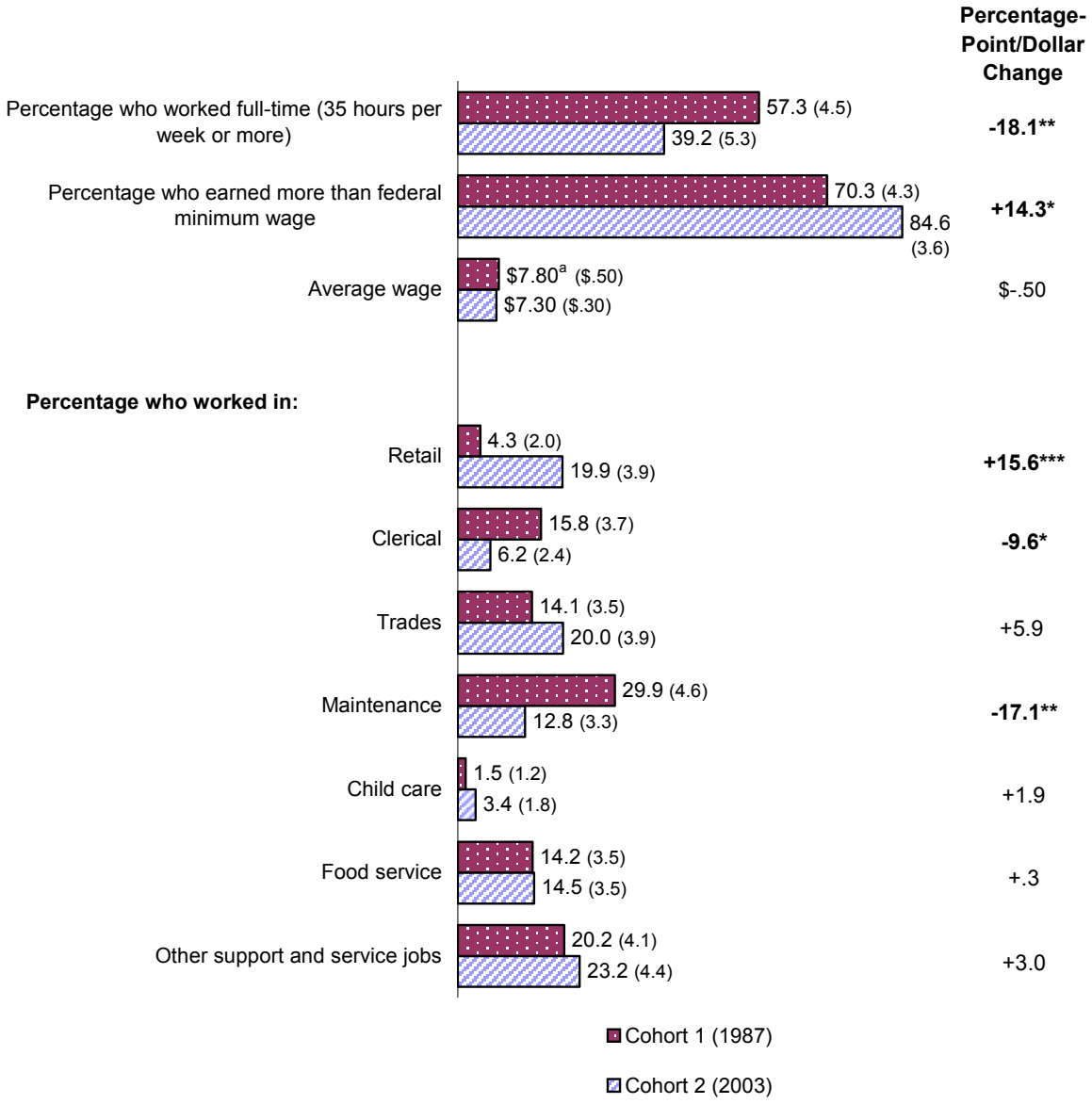
Employment during the Transition Years after High School

Out-of-school youth in cohort 2 were more likely to have worked for pay during the first few years after high school than their peers in cohort 1 (70% vs. 55%, p<.01; Exhibit 5-1). In contrast, there was no difference over time in the likelihood of out-of-school youth being competitively employed at the time of the interview (48% and 41% in cohorts 1 and 2, respectively). The difference between these two findings is not surprising because they reflect very different time frames (i.e., up to 2 years and a single point in time) during a period when many young adults experience fluctuations in employment and/or postsecondary education and training. The findings are similar to those reported for youth with disabilities while they were in secondary school (Wagner, Cameto, et al., 2003). Paid employment in the previous year for secondary school students with disabilities in 2001 had increased since 1987 by 9 percentage points, whereas employment at the time of the interview was down by 7 percentage points. The rate of current employment for out-of-school youth with disabilities (41%) lagged significantly behind that of their same-age out-of-school peers in the general population, among whom 63% were currently working in 2000 (p<.001).[2] In fact, the 22-percentage-point difference between youth with disabilities and the general population widened since the mid-1980s, when 48% of cohort 1 youth were currently employed, as were 61% of youth in the general population (D'Amico, 1991).

As for other teens, the first foray into the labor market by youth with disabilities generally involves entry-level jobs primarily in maintenance, food service, retail, and other service and support fields. With time, the types of jobs youth perform may more closely reflect their interests and experiences and have greater potential for full-time work and increased wages, responsibility, or advancement. In fact, from 1987 to 2003, there were several notable changes in the characteristics of the jobs youth with disabilities held (Exhibit 5-2). Employed youth in cohort 2 were less likely to work full-time than their peers in cohort 1, a finding mirrored in analyses of secondary school students with disabilities (Wagner, Cameto, et al., 2003). There was a decrease of 18 points in the percentage of out-of-school youth working 35 hours per week or more at their current or most recent job (57% of cohort 1 vs. 39% of cohort 2, p<.01) and an increase of 12 points in the percentage working 10 to 19 hours per week (5% vs. 17%, p<.01).

[2] Calculated for 15- through 19-year-old out-of-school youth using data from the National Longitudinal Survey of Youth, 2000 (U.S. Department of Labor, 2003).

Exhibit 5-2
CHANGES IN JOB CHARACTERISTICS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES



Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

[a] Adjusted for inflation, expressed in 2003 dollars.

Statistical significance: *p<.05, **p<.01, *** p<.001.

Standard errors are in parentheses.

Although they tended to work fewer hours, at first glance, youth in cohort 2 were better paid on average, as were secondary school students with disabilities (Wagner, Cameto, et al., 2003); 85% of out-of-school youth earned more than the federal minimum wage, a 14-percentage-point increase from cohort 1 ($p<.05$). However, despite this apparent improvement in youth with disabilities being employed at rates above minimum wage, the average wage (about $7.30 for cohort 2) did not increase significantly over time when 1987 wages were adjusted for inflation.

The percentages of youth with disabilities whose current or most recent job involved work in child care, food service, or other support and service jobs (assembly, sorting, delivery) changed little between cohorts 1 and 2. In contrast, the likelihood of being employed in maintenance or laborer jobs, including gardening, grounds keeping, cleaning, animal care, or farm labor, decreased from 30% to 13% ($p<.01$). A decrease of 10 percentage points in the likelihood of youth holding clerical jobs, including computer support, bank telling, stock work, and general clerical positions, also occurred (16% to 6%, respectively, $p<.05$). On the other hand, there was a 16-percentage-point increase, from 4% of cohort 1 youth to 20% of cohort 2 youth, in employment in retail jobs, including sales, marketing, and cashiering ($p<.001$).

Differential Changes Related to Disability Category

Although employment status changed over time for out-of-school youth with disabilities as a whole, few notable changes appeared between cohorts for youth in different disability categories (Exhibit 5-3), with the exceptions that significant increases in working for pay since leaving high school occurred for youth with learning disabilities (16 percentage points, $p<.05$) and visual impairments (26 percentage points, $p<.05$). In contrast, a 26-percentage-point increase in working for pay since leaving high school among youth with multiple disabilities did not reach statistical significance for this small group of youth.

Exhibit 5-3
CHANGES IN EMPLOYMENT STATUS OF OUT-OF-SCHOOL YOUTH, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities/ Deaf-Blindness
Percentage:									
Who worked for pay since leaving high school									
Cohort 1 (1987)	62.2 (4.6)	61.3 (7.0)	37.9 (5.5)	52.6 (5.2)	54.7 (5.7)	36.6 (7.8)	30.3 (8.6)	50.8 (8.9)	9.6 (7.6)
Cohort 2 (2003)	78.5 (4.7)	69.3 (10.0)	41.5 (8.0)	63.8 (5.4)	62.0 (8.5)	62.4 (9.7)	44.9 (8.1)	50.2 (13.0)	36.1 (12.7)
Percentage-point change	**+16.3***	+8.0	+3.6	+11.2	+7.3	**+25.8***	+14.6	-.6	+26.5
Currently worked for pay									
Cohort 1 (1987)	53.8 (4.8)	55.4 (7.3)	35.2 (5.6)	46.8 (5.3)	51.2 (5.8)	29.9 (7.6)	26.9 (8.3)	39.1 (8.8)	14.1 (11.1)
Cohort 2 (2003)	44.6 (5.7)	51.3 (11.1)	25.2 (7.1)	36.9 (5.6)	45.0 (7.2)	27.6 (9.0)	16.5 (6.1)	32.8 (12.4)	25.7 (12.0)
Percentage-point change	-9.2	-4.1	-10.0	-9.9	-6.2	-2.3	-10.4	-6.3	+11.6

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

At both points in time, youth with learning disabilities or speech impairments were the most likely to have worked since leaving high school and, along with youth with hearing impairments, to be working at the time of the interview. In fact, significantly more out-of-school youth with learning disabilities were reported to have worked for pay since leaving high school than peers

with mental retardation, orthopedic impairments, or multiple disabilities ($p<.01$ or $p<.001$). Although the proportion of cohort 1 youth with learning disabilities who worked since leaving high school also was considerably higher than that for youth with visual impairments (62% vs. 37%, $p<.01$), this was not the case at the second point in time. The 26-percentage-point increase for cohort 2 youth with visual impairments resulted in 62% of these youth being employed since leaving high school, a rate that was similar to that of their peers with learning disabilities. Cohort 1 and 2 youth with learning disabilities or hearing or speech impairments also were considerably more likely to be working for pay at the time of the interview than their peers with mental retardation or orthopedic impairments ($p<.05$ or greater).

There were few notable changes in the characteristics of the jobs held by working youth in different disability categories (Exhibit 5-4). Only youth with learning disabilities were significantly less likely to be working full-time in cohort 2 (23 percentage points, $p<.05$). Although these youth were the most likely to be employed full-time in cohort 1, this decrease resulted in youth with emotional disturbances having the highest proportion of full-time workers in cohort 2 (53%, $p<.05$ compared with youth with mental retardation). The increase in the proportion of youth who earned more than the federal minimum wage that was seen for youth with disabilities as a whole occurred only among youth with emotional disturbances (26 percentage points, $p<.01$).

Youth with learning disabilities experienced the greatest change in the types of jobs held; they held fewer clerical and maintenance jobs (11 and 19 percentage points, respectively; $p<.05$ for both changes) in 2003 than in 1987 but were more likely to be working in retail positions (18 percentage points, $p<.01$). Youth with emotional disturbances or hearing impairments also were more likely to be employed in retail jobs in cohort 2 than cohort 1 (11 and 19 percentage points, respectively; $p<.05$).

Exhibit 5-4
CHANGES IN JOB CHARACTERISTICS OF OUT-OF-SCHOOL YOUTH, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment	Multiple Disabilities/ Deaf-Blindness
Percentage of working youth who:									
Worked full-time (35 hours per week or more)									
Cohort 1 (1987)	61.7	46.3	48.7	48.9	57.6	44.0	--	--	--
	(6.2)	(8.9)	(10.2)	(7.8)	(9.2)	(13.4)			
Cohort 2 (2003)	38.3	33.2	24.2	52.7	47.0	28.7	20.2	37.1	27.1
	(7.3)	(10.1)	(11.3)	(7.5)	(9.6)	(12.5)	(12.0)	(6.6)	(20.2)
Percentage-point change	**-23.4***	-13.1	-24.5	+3.8	-10.6	-15.3			
Earned more than the federal minimum wage									
Cohort 1 (1987)	78.1	61.7	49.5	55.0	72.6	--	--	--	--
	(5.4)	(9.2)	(10.7)	(8.1)	(8.6)				
Cohort 2 (2003)	87.3	84.4	68.1	81.4	89.3	67.6	86.0	85.9	65.5
	(4.8)	(7.4)	(10.7)	(5.6)	(5.7)	(13.7)	(9.3)	(4.5)	(19.5)
Percentage-point change	+9.2	+22.7	+18.6	**+26.4****	+16.7				
Were employed in:[a]									
Retail									
Cohort 1 (1987)	3.9	4.9	--	3.2	3.2	--	--	--	--
	(2.7)	(4.3)		(3.0)	(3.6)				
Cohort 2 (2003)	22.2	17.8	5.7	14.6	22.1	11.9	24.6	19.4	10.9
	(5.6)	(7.5)	(5.4)	(4.8)	(7.6)	(8.4)	(11.2)	(4.9)	(12.4)
Percentage-point change	**+18.3****	+12.9		**+11.4***	**+18.9***				
Clerical									
Cohort 1 (1987)	15.1	24.3	--	14.5	22.3	--	--	--	--
	(4.9)	(8.6)		(6.0)	(8.5)				
Cohort 2 (2003)	4.0	16.5	14.7	9.7	15.6	13.1	4.6	11.7	6.0
	(2.6)	(7.3)	(8.2)	(4.0)	(6.6)	(8.8)	(5.4)	(4.0)	(9.4)
Percentage-point change	**-11.1***	-7.8		-4.8	-6.7				
Maintenance									
Cohort 1 (1987)	31.4	27.0	--	27.4	9.2	--	--	--	--
	(6.4)	(8.9)		(7.6)	(5.9)				
Cohort 2 (2003)	12.2	10.1	15.1	15.2	6.4	7.4	11.7	7.7	4.6
	(4.4)	(5.9)	(8.3)	(4.9)	(4.5)	(6.8)	(8.4)	(3.3)	(8.3)
Percentage-point change	**-19.2***	-16.9		-12.2	-2.8				

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

[a] The categories of trades, child care, food service, and other support and service jobs are omitted from the exhibit because there were no significant changes over time for any category.

-- Too few to report separately.

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

Standard errors are in parentheses.

Exhibit 5-5
CHANGES IN EMPLOYMENT STATUS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY SCHOOL-EXIT STATUS

	Completers	Dropouts
Percentage who:		
Worked for pay since leaving high school		
Cohort 1 (1987)	63.8 (4.0)	50.8 (4.9)
Cohort 2 (2003)	73.0 (4.3)	67.5 (6.7)
Percentage-point change	+9.2	**+16.7***
Currently worked for pay		
Cohort 1 (1987)	57.3 (4.1)	40.9 (4.9)
Cohort 2 (2003)	43.9 (4.9)	34.7 (7.1)
Percentage-point change	**-13.4***	-6.2

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Exhibit 5-6
CHANGES IN JOB CHARACTERISTICS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY SCHOOL-EXIT STATUS

	Completers	Dropouts
Percentage of working youth who:		
Worked full-time (35 hours per week or more)		
Cohort 1 (1987)	54.9 (5.5)	62.1 (7.8)
Cohort 2 (2003)	33.6 (6.2)	55.8 (9.7)
Percentage-point change	**-21.3***	-6.3
Earned more than federal minimum wage		
Cohort 1 (1987)	68.2 (5.3)	73.8 (7.5)
Cohort 2 (2003)	84.7 (4.3)	83.8 (7.0)
Percentage-point change	**+16.5***	+10.0
Were employed in:[a]		
Retail		
Cohort 1 (1987)	6.0 (2.9)	1.4 (2.2)
Cohort 2 (2003)	23.3 (5.0)	10.2 (5.4)
Percentage-point change	**+17.3****	+8.8
Maintenance		
Cohort 1 (1987)	26.4 (5.3)	36.6 (8.9)
Cohort 2 (2003)	11.7 (3.8)	16.3 (6.6)
Percentage-point change	**-14.7***	-20.3

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

[a] The categories of clerical, trades, child care, food service, and other support and service jobs are omitted from the exhibit because there were no significant changes over time for any category.

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

Standard errors are in parentheses.

Differential Changes Related to School-Exit Status

The percentages of out-of-school youth with disabilities who were reported to have worked for pay since leaving high school increased only among dropouts (17 percentage points, p<.05; Exhibit 5-5). Conversely, there was a decrease in the percentage of out-of-school youth who were working at the time of the interview only among high school completers (13 percentage points, p<.05). These changes resulted in a leveling of the differences between completers and dropouts that were apparent in cohort 1. Cohort 1 completers were more likely than dropouts to be employed both since high school (64% vs. 51%, p<.05) and at the time of the interview (57% vs. 41%, p<.05), but in cohort 2, these differences moderated and were not statistically significant.

Changes over time in the job characteristics of employed youth with disabilities were notable only for school completers (Exhibit 5-6). Among cohort 2 youth who completed high school, significantly fewer worked full-time at their current or most recent job (21 percentage points, p<.05), and a significantly larger proportion earned more than the federal minimum wage (16 percentage points, p<.05). Furthermore, mirroring employed youth with disabilities as a whole, over time, high school completers were less likely to be working in maintenance jobs

(15 percentage points, p<.05) and more likely to be working in retail jobs (17 percentage points, p<.01). In neither cohort were there significant differences in job characteristics between high school completers and dropouts.

Differential Changes Related to Demographic Characteristics

Several demographic characteristics of youth with disabilities were associated with different changes over time in their employment status or job characteristics; however, among the types of job held, only for maintenance and retail jobs were any significant changes noted for any demographic characteristic.

Age. Notable change over time in the percentages of youth with disabilities who worked for pay since leaving high school occurred for youth in the two older age groups (Exhibit 5-7). About three-fourths of cohort 2 youth ages 18 and 19 were reported to have worked since high school, reflecting increases of 19 and 15 percentage points, respectively (p<.05 for both changes). As for youth as a whole, there were no significant changes in the percentage of youth employed at the time of the interview in the three age groups.

Exhibit 5-7
CHANGES IN EMPLOYMENT STATUS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY AGE

	15 through 17	18	19
Percentage who:			
Worked for pay since leaving high school			
Cohort 1 (1987)	37.4 (7.7)	54.4 (5.3)	61.7 (4.1)
Cohort 2 (2003)	50.5 (10.0)	73.0 (5.3)	76.3 (5.1)
Percentage-point change	+13.1	**+18.6***	**+14.6***
Currently worked for pay			
Cohort 1 (1987)	36.2 (8.1)	48.1 (5.4)	53.1 (4.3)
Cohort 2 (2003)	21.5 (8.5)	46.6 (6.0)	44.6 (6.0)
Percentage-point change	-14.7	-1.5	-8.5

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

The employment status differences between the youngest out-of-school youth and their older peers were accentuated over time, both with regard to employment since high school and employment at the time of the interview. The youngest cohort 1 youth were significantly less likely to be employed than 19-year-olds (37% vs. 62% p<.01). At cohort 2, increases for both 18- and 19-year-olds resulted in there being significant differences between the youngest group and both of the older groups (50% vs. 73% and 76%, p<.05). Considering employment at the time of the interview, no differences existed between the age groups at cohort 1, but by cohort 2, there were significant differences between the youngest youth and both groups of their older peers (22% vs. 47% and 45%, respectively; p<.05).

There were no significant changes over time in the percentages of youth in the three age groups who were working full-time. Earning more than the federal minimum wage at their current or most recent job significantly increased only for the oldest youth (Exhibit 5-8). Among 19-year-olds in cohort 2, 90% were earning more than minimum wage, a 16-percentage-point increase from cohort 1 (p<.05).

Exhibit 5-8
CHANGES IN JOB CHARACTERISTICS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY AGE

	15 through 17	18	19
Percentage of working youth who:			
Earned more than federal minimum wage			
Cohort 1 (1987)	62.5 (14.9)	68.3 (7.6)	73.3 (5.5)
Cohort 2 (2003)	66.5 (13.4)	84.1 (5.6)	89.7 (4.4)
Percentage-point change	+4.0	+15.8	**+16.4***
Were employed in:[a]			
Retail			
Cohort 1 (1987)	--	2.1 (2.4)	5.7 (3.0)
Cohort 2 (2003)	11.0 (8.1)	14.3 (5.0)	26.3 (6.6)
Percentage-point change		**+12.2***	**+20.6****
Maintenance			
Cohort 1 (1987)	--	38.4 (8.3)	29.1 (5.9)
Cohort 2 (2003)	25.6 (11.4)	21.2 (5.8)	3.3 (2.7)
Percentage-point change		-17.2	**-25.8*****

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

[a] The categories of clerical, trades, child care, food service, and other support and service jobs are omitted from the exhibit because there were no significant changes over time for any category.

-- Too few to report separately.

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

Standard errors are in parentheses.

The types of jobs youth held changed significantly in only two job categories for the oldest youth. Among 19-year-olds, there was a decrease over time of 26 percentage points in the likelihood of working in maintenance jobs (p<.001), with a corresponding increase in retail jobs for 19-year-olds (21 percentage points, p<.01). The sizable decrease in maintenance jobs for the oldest youth resulted in a significantly lower rate of such jobs relative to 18-year-olds in cohort 2 (3% vs. 21%, p<.01) that had not existed in cohort 1. Eighteen-year-olds shared the increase in employment in retail jobs with their older peers, although the increase was smaller (12 percentage points, p<.05).

Gender. Changes in employment status over time were dramatic for girls with disabilities but not for their male counterparts (Exhibit 5-9). The percentage of out-of-school girls who had worked for pay since leaving high school almost doubled between cohorts 1 and 2 (35% to 67%), a 32-percentage-point increase (p<.001). This sizable increase for girls eliminated the large gap in employment rates in cohort 1 that favored boys (64% vs. 35%, p<.001). Regarding current employment, in cohort 1, boys were almost twice as likely as girls to be employed at the time of the interview (57% vs. 30%, p<.001), but there was no significant difference between the two groups in cohort 2.

Unlike all youth with disabilities, the percentage working full-time did not decrease significantly for either boys nor girls, nor were there significant differences between them in the rates of full-time work for either cohort. The increase in earning more than the federal minimum wage was significant only for the larger group of boys (14 percentage points, p<.05; Exhibit 5-10). Boys were less likely to be employed in maintenance work in cohort 2 than cohort 1. There was an 18-percentage-point decrease, with 14% being employed in these jobs in cohort 2 (p<.01). A corresponding increase in employment in retail jobs for boys of

Exhibit 5-9
CHANGES IN EMPLOYMENT STATUS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY GENDER

	Boys	Girls
Percentage who:		
Worked for pay since leaving high school		
Cohort 1 (1987)	63.8 (3.5)	34.8 (5.3)
Cohort 2 (2003)	72.1 (4.4)	67.1 (6.5)
Percentage-point change	+8.3	**+32.3*** **
Currently worked for pay		
Cohort 1 (1987)	56.7 (3.7)	30.2 (5.2)
Cohort 2 (2003)	46.0 (4.9)	31.1 (6.4)
Percentage-point change	-10.7	+.9

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Exhibit 5-10
CHANGES IN JOB CHARACTERISTICS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY GENDER

	Boys	Girls
Percentage of working youth who:		
Earned more than federal minimum wage		
Cohort 1 (1987)	73.2 (4.7)	57.5 (10.6)
Cohort 2 (2003)	87.3 (4.0)	79.5 (7.2)
Percentage-point change	**+14.1***	+22.0
Were employed in:[a]		
Retail		
Cohort 1 (1987)	3.1 (1.9)	9.9 (7.2)
Cohort 2 (2003)	16.5 (4.5)	26.9 (7.5)
Percentage-point change	**+13.4****	+17.0
Maintenance		
Cohort 1 (1987)	32.2 (5.2)	18.5 (9.4)
Cohort 2 (2003)	13.7 (4.2)	10.8 (5.2)
Percentage-point change	**-18.5****	-7.7

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

[a] The categories of clerical, trades, child care, food service, and other support and service jobs are omitted from the exhibit because there were no significant changes over time for any category.

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

Standard errors are in parentheses.

13 percentage points also was significant (p<.01) (the small number of employed girls limits the ability of findings for that group to reach statistical significance on some variables, despite having larger changes relative to boys).

Household income. Although youth from households in both the middle and highest income groups in cohort 1 were more likely to be employed since leaving high school than youth from the lowest-income households (66% and 64% vs. 42%, p<.01; Exhibit 5-11), this pattern had changed by cohort 2. A 20-percentage-point increase in employment among youth from the highest-income households resulted in their employment rate surpassing those of youth from both the lowest and middle income groups (84% vs. 59% and 65%, p<.01 and p<.05, respectively). A similar pattern was evident regarding current employment. Youth from the middle- and highest-income households in cohort 1 were more likely to be employed at the time of the interview than youth from households in the lowest income group (57% and 60% vs. 31%, p<.01 and p<.001, respectively). A 23-percentage-point decrease in current employment among cohort 2 youth in the middle income group resulted in youth from the wealthiest households being more likely than those from other two groups to be employed (53% vs. 31% and 34%, respectively; p<.05).

There were no significant changes in youth in any household income group working full-time. Similarly there were no differences between the groups in either cohort. The significantly

Exhibit 5-11
CHANGES IN EMPLOYMENT STATUS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY HOUSEHOLD INCOME

	Income		
	Lowest	Middle	Highest
Percentage who:			
Worked for pay since leaving high school			
Cohort 1 (1987)	42.1 (6.0)	66.5 (5.8)	64.0 (4.9)
Cohort 2 (2003)	59.1 (6.8)	65.0 (7.4)	84.3 (5.3)
Percentage-point change	+17.0	-1.5	**+20.3****
Currently working for pay			
Cohort 1 (1987)	31.0 (5.7)	57.3 (6.1)	59.9 (5.0)
Cohort 2 (2003)	31.3 (6.5)	34.3 (7.4)	53.0 (7.3)
Percentage-point change	+.3	**-23.0***	-6.9

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Exhibit 5-12
CHANGES IN JOB CHARACTERISTICS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY HOUSEHOLD INCOME

	Income		
	Lowest	Middle	Highest
Percentage of working youth who:			
Earned more than federal minimum wage			
Cohort 1 (1987)	53.3 (11.5)	75.7 (7.6)	78.1 (5.6)
Cohort 2 (2003)	80.0 (7.0)	89.9 (5.9)	84.6 (6.1)
Percentage-point change	**+26.7***	+14.2	+6.5
Employed in:[a]			
Retail			
Cohort 1 (1987)	1.7 (3.4)	4.6 (4.0)	6.4 (3.4)
Cohort 2 (2003)	15.7 (6.3)	15.8 (7.2)	22.6 (6.9)
Percentage-point change	+14.0	+11.2	**+16.2***
Maintenance			
Cohort 1 (1987)	40.3 (13.0)	26.5 (8.5)	32.2 (6.5)
Cohort 2 (2003)	13.5 (6.0)	16.5 (7.4)	13.8 (5.7)
Percentage-point change	-26.8	-10.0	**-18.4***

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

[a] The categories of clerical, trades, child care, food service, and support and other service jobs are omitted from the exhibit because there were no significant changes over time for any category.

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

Standard errors are in parentheses.

increased likelihood of earning more than minimum wage that was apparent for youth with disabilities as a whole occurred only among youth from households in the lowest income group (27 percentage points, p<.05; Exhibit 5-12;). Significant changes over time in the types of jobs held by youth from different household income groups occurred only with maintenance and retail jobs held by youth from households in the highest income group. Working in maintenance jobs deceased by 18 percentage points (p<.05), whereas holding retail jobs increased by 16 percentage points (p<.05).

Race/ethnicity. There were increases over time in employment since high school among white and African-American youth with disabilities (13 and 26 percentage points, p<.05 and p<.01, respectively; Exhibit 5-13). The substantial gain for African-American youth eliminated the wide disparity that existed at cohort 1 between them and white youth in having been employed since leaving high school (36% vs. 62%, p<.001). The disparity between white and African-American youth in current employment in cohort 1 (56% vs. 27%, p<.001) was no longer significantly different in cohort 2.

There were no significant decreases across time in the percentage of youth of different racial/ethnic backgrounds working full-time, nor were there differences in rates between groups

Exhibit 5-13
CHANGES IN EMPLOYMENT STATUS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY RACE/ETHNICITY

	Race/Ethnicity		
	White	African-American	Hispanic
Percentage who:			
Worked for pay since leaving high school			
Cohort 1 (1987)	61.6 (3.6)	35.5 (6.1)	60.4 (12.8)
Cohort 2 (2003)	74.3 (4.3)	61.7 (8.1)	65.4 (11.4)
Percentage-point change	**+12.7***	**+26.2****	+5.0
Currently worked for pay			
Cohort 1 (1987)	56.4 (3.7)	27.4 (5.9)	49.6 (13.3)
Cohort 2 (2003)	45.4 (5.0)	32.3 (7.8)	32.2 (11.3)
Percentage-point change	-11.0	+4.9	-17.4

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

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

Standard errors are in parentheses.

Exhibit 5-14
CHANGES IN JOB CHARACTERISTICS OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY RACE/ETHNICITY

	Race/Ethnicity		
	White	African-American	Hispanic
Percentage of working youth who:			
Earned more than federal minimum wage			
Cohort 1 (1987)	70.7 (4.9)	73.5 (11.1)	54.6 (20.4)
Cohort 2 (2003)	90.2 (3.6)	77.4 (9.7)	68.6 (15.4)
Percentage-point change	**+19.5****	+3.9	+14.0
Were employed in:[a]			
Retail			
Cohort 1 (1987)	4.4 (2.3)	6.1 (6.6)	--
Cohort 2 (2003)	16.5 (4.4)	18.6 (8.2)	39.8 (15.3)
Percentage-point change	**+12.1***	+12.5	
Maintenance			
Cohort 1 (1987)	30.8 (5.2)	26.5 (12.2)	--
Cohort 2 (2003)	10.3 (3.6)	18.4 (8.2)	17.9 (12.0)
Percentage-point change	**-20.5****	-8.1	

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

[a] The categories of clerical, trades, child care, food service, and other support and service jobs are omitted from the exhibit because there were no significant changes over time for any category.

-- Too few to report separately.

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

Standard errors are in parentheses.

in either cohort. The increases over time in the percentage earning more than minimum wage were substantial only for white youth (Exhibit 5-14). With a 20-percentage-point increase, 90% of white youth in cohort 2 were earning more than the federal minimum wage (p<.01).

Among the three racial/ethnic groups, only white youth experienced significant changes in their level of employment in maintenance and retail positions, with a 20-percentage-point decrease in maintenance jobs and a 12-percentage-point increase in retail jobs (p<.01 and p<.05, respectively).

Summary

The employment picture for youth with disabilities in their initial years out of school changed in several ways between 1987 and 2003. About 7 in 10 youth with disabilities who had been out of school up to 2 years in 2003 had worked for pay outside the home at some time since leaving high school; somewhat more than half had done so in 1987. However, cohort 2 youth with disabilities were no more likely than cohort 1 peers to be working at the time of the

interview, and they were less likely to work full-time at their current or most recent job. Over time, considerably more out-of-school youth with disabilities earned above the federal minimum wage, yet the average hourly wage did not increase when adjusted for inflation. There also were some shifts in the types of jobs worked by employed out-of-school youth with disabilities—fewer youth held maintenance or clerical jobs and more worked in retail in their current or most recent job.

The decrease in current and in full-time employment is consistent with findings reported in Chapter 6 of a significant increase in youth with disabilities combining work with the pursuit of postsecondary education. This potential explanation for findings reported in this chapter is reinforced by the fact that the decrease in current and full-time employment occurred only among high school completers—those most likely to have been enrolled in postsecondary education. Improvements in earnings relative to the federal minimum wage and shifts in the types of jobs held also occurred only among high school completers.

The changes in employment that were identified for youth with disabilities as a whole were not widely distributed across disability categories. They were best reflected among youth with learning disabilities, the largest disability group. These youth were more likely to have worked since high school and less likely to have worked full-time, and they demonstrated the shift in the kinds of jobs held that were apparent for youth with disabilities as a whole. However, they did not experience an increase in the likelihood of earning more than the minimum wage; only youth with emotional disturbances did so. Youth with visual impairments shared in the increase in the rate of employment since high school, and, with youth with emotional disturbances, they experienced the increase in retail sales jobs noted generally for all youth with disabilities.

The youngest out-of-school youth with disabilities did not share in any of the employment changes noted for older youth, perhaps in part because the large majority of them had not finished high school, as noted in Chapter 2. Although girls with disabilities closed the gap relative to boys in the proportion who had worked since leaving high school, a significant increase in earnings relative to the minimum wage and shifts in the kinds of jobs held were apparent only among boys. Similar-size changes in earnings and job types for girls did not reach statistical significance due to the smaller size of that group relative to boys.

Changes in employment rates and characteristics were not consistent across income groups. Youth with disabilities in the highest income group experienced the only significant increase in the rate of employment since high school and were the only group to have significant shifts in the kinds of jobs held. However, the middle income group showed a significant decline in the current employment rate (a decline not exhibited by youth with disabilities as a whole or any other subgroup), and the lowest income group showed the only significant gain in earnings relative to the federal minimum wage. Increases in the likelihood of working for pay since high school benefited white and African-American youth with disabilities, but only white youth showed an increase in the likelihood of earning more than the minimum wage or shifts in the kinds of jobs held; no changes in the employment profile of Hispanic youth with disabilities were noted.

Subsequent reports comparing NLTS and NLTS2 findings will explore the extent to which the pattern of changes in employment among youth with disabilities are sustained or evolve as youth pursue careers in young adulthood.

6. CHANGES IN THE ENGAGEMENT IN SCHOOL, WORK, AND PREPARATION FOR WORK OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES

By Mary Wagner

The preceding two chapters have described changes between 1987 and 2003 in the postsecondary education and employment experiences of youth with disabilities in their first 2 years out of high school. Each of those activities can be a central focus for youth who participate in them. For some youth, however, participating in work or schooling after high school is not an either-or choice; they combine the multiple demands of employment and postsecondary education, while still others may choose another path to productive engagement in their community, such as participation in a job training program that is unaffiliated with a college or university. These realities argue for taking a more comprehensive look at the ways in which youth with disabilities can be involved in moving toward financial independence.

At the time of NLTS, looking beyond paid employment in considering postschool outcomes for youth with disabilities was not common. For example, Halpern (1990) found that of 27 follow-up or follow-along studies of youth with disabilities, 25 dealt with some aspect of employment, whereas 16 considered residential arrangements and 10 addressed issues of postsecondary education. In an effort to broaden the view of positive pathways to early adulthood, NLTS analysts developed a concept of engagement that incorporated both employment and postsecondary education, as well as job training and volunteer activities (Jay, 1991). In that spirit, this chapter addresses changes from NLTS to NLTS2[1] in the extent to which youth with disabilities had been engaged in any of three modes of participation in their communities since high school: paid employment, education (enrollment in a GED or other high school degree completion program; a 2- or 4-year college; or a vocational, business, or technical school), and job training other than programs associated with a college.[2] Changes in the way or ways in which youth were engaged also are presented.

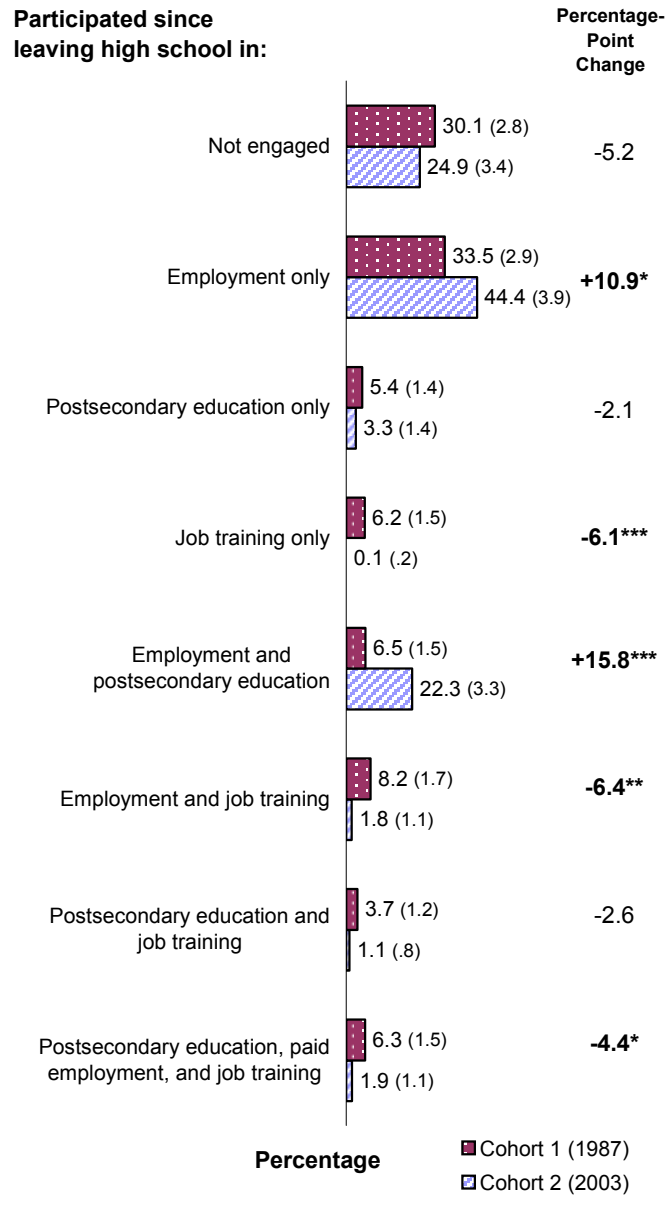
Rates and Modes of Engagement in the Community

The large majority of youth with disabilities had engaged in school, work, or preparation for work in their early years after high school (Exhibit 6-1). Three-fourths of cohort 2 youth had worked, gone to school, or been in job training, not a significant increase from the 70% of cohort 1 youth who had been involved in one or more of those activities. However, despite there being little change in the overall rate of engagement, the specific modes of engagement of youth with disabilities at the two points in time changed. Most apparent is the 16-percentage-point increase in the proportion of youth who had both worked and gone to school since leaving high school. Whereas only 6% of youth had been involved in both activities in cohort 1, 22% of cohort 2 youth had engaged in both work and school ($p<.001$). A sizable increase also was apparent in youth focusing on employment alone; an 11-percentage-point increase brought to 44% the proportion of youth with disabilities for whom paid employment had been their sole

[1] Youth for whom data are available for 1987 and 2003 are referred to as cohort 1 and cohort 2, respectively. For both groups of youth, 20% were 15 through 17 years old, 31% were 18, and 50% were 19.

[2] Note that the definition of engagement presented in this chapter does not include volunteer work, as had been the case in NLTS.

Exhibit 6-1
ENGAGEMENT IN SCHOOL, WORK, OR PREPARATION FOR WORK BY YOUTH WITH DISABILITIES



Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.
Statistical significance: *p<.01; **p<.05; ***p<.001.
Standard errors are in parentheses.

mode of engagement since leaving high school. These increases were accompanied by decreases in the proportion of youth involved in job training alone (6 percentage points, p<.001) or in combination with employment (6 percentage points, p<.01) or with both employment and postsecondary education (4 percentage points, p<.05). No change was evident in postsecondary education alone; 5% had been thus engaged in cohort 1, compared with 3% in cohort 2. Similarly, the rate of participation in the combination of postsecondary education and job training did not change; 4% and 1% of youth in the cohorts 1 and 2 did so, respectively.

Differential Changes Related to Disability Category

The stability over time in the overall rate at which youth with disabilities had engaged in school, work, or preparation for work since high school is apparent across disability categories (Exhibit 6-2). Although some double-digit changes occurred in the overall measure of engagement, they were mixed in direction, and none attained statistical significance. However, the result of the changes was to narrow the range in the rates of engagement across disability categories from a 54-percentage-point spread in cohort 1 to 37 percentage points in cohort 2. The narrowing came almost entirely from an increase in the lowest score, not a decrease in the highest score. Specifically, the top scores in the two cohorts were quite similar; 80% of cohort 1 youth with hearing impairments and 83% of cohort 2 youth with learning disabilities had engaged in school, work, or preparation for work since high school. In contrast, the bottom score in cohort 1 was 26% for those with multiple disabilities or deaf-blindness but was 46% in cohort 2 for youth with mental retardation. In that shift, several disability categories markedly changed their place in the overall distribution across categories. For example, youth with

Exhibit 6-2
CHANGES IN ENGAGEMENT IN SCHOOL, WORK, OR PREPARATION FOR WORK OF OUT-OF-SCHOOL YOUTH, BY DISABILITY CATEGORY

	Learning Disability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Multiple Disabilities/ Deaf-Blindness
Since high school, percentage engaged in:									
Postsecondary education, paid employment, or job training									
Cohort 1 (1987)	75.3 (4.1)	73.5 (6.2)	55.5 (5.8)	67.7 (4.9)	80.5 (4.6)	65.0 (7.7)	56.2 (9.3)	69.2 (8.3)	26.1 (14.0)
Cohort 2 (2003)	82.6 (4.3)	70.1 (9.9)	45.8 (8.0)	69.2 (5.2)	65.2 (8.1)	73.9 (8.6)	56.4 (7.9)	55.7 (12.9)	58.6 (13.3)
Percentage-point change	+7.3	-3.4	-9.7	+1.5	-15.3	+8.9	+.2	-13.5	+32.5
Postsecondary education only									
Cohort 1 (1987)	5.9 (2.2)	4.7 (3.0)	4.4 (2.4)	4.0 (2.1)	5.1 (2.5)	15.1 (5.8)	6.2 (4.5)	9.0 (5.2)	7.3 (8.3)
Cohort 2 (2003)	3.0 (1.9)	.9 (2.1)	2.6 (2.5)	2.9 (1.9)	3.2 (3.0)	10.1 (5.9)	12.3 (5.3)	4.6 (5.5)	19.3 (10.7)
Percentage-point change	-2.9	-3.8	-1.8	-1.1	-1.9	-5.0	6.1	-4.4	12.0
Paid employment only									
Cohort 1 (1987)	37.4 (4.6)	27.8 (6.3)	25.5 (5.1)	34.8 (5.0)	21.2 (4.7)	11.9 (5.2)	16.6 (7.0)	16.0 (6.6)	9.3 (9.3)
Cohort 2 (2003)	50.0 (5.7)	28.2 (9.8)	25.1 (6.9)	46.6 (5.6)	20.0 (6.8)	10.2 (5.9)	22.2 (6.7)	25.3 (11.3)	29.2 (12.3)
Percentage-point change	+12.6	+.4	-.4	+11.8	-1.2	-1.7	+5.6	+9.3	+19.9
Job training only									
Cohort 1 (1987)	5.7 (2.2)	6.1 (3.4)	6.9 (3.0)	6.4 (2.6)	14.7 (4.1)	4.5 (3.3)	14.9 (6.7)	3.4 (3.3)	5.1 (7.0)
Cohort 2 (2003)	.0	.0	.6 (1.2)	.3 (.6)	.0	.0	.0	.5 (1.8)	.0
Percentage-point change	**-5.7***	-6.1	-6.3	**-6.1***	**-14.7*****	-4.5	**-14.9***	-2.9	-5.1
Postsecondary education and paid employment									
Cohort 1 (1987)	6.3 (2.3)	17.1 (5.3)	3.0 (2.0)	7.7 (2.8)	14.2 (4.0)	8.8 (4.6)	3.3 (3.3)	23.1 (7.6)	.0
Cohort 2 (2003)	25.4 (5.0)	36.9 (10.5)	5.7 (3.7)	16.0 (4.1)	34.8 (8.1)	35.9 (9.4)	19.2 (6.3)	20.5 (10.5)	7.1 (7.0)
Percentage-point change	**+19.1*****	+19.8	+2.7	+8.3	**+20.6***	**+27.1****	**+15.9***	-2.6	+7.1
Postsecondary education and job training									
Cohort 1 (1987)	3.2 (1.7)	3.4 (2.6)	4.4 (2.4)	4.3 (2.1)	6.8 (2.9)	9.5 (4.7)	5.0 (4.1)	5.1 (4.0)	.0
Cohort 2 (2003)	1.1 (1.2)	.0	2.5 (2.5)	1.1 (1.2)	.0	2.1 (2.8)	.0	.0	1.5 (3.3)
Percentage-point change	-2.1	-3.4	-1.9	-3.2	**-6.8***	-7.4	-5.0	-5.1	1.5

Exhibit 6-2
CHANGES IN ENGAGEMENT IN SCHOOL, WORK, OR PREPARATION FOR WORK OF OUT-OF-SCHOOL YOUTH, BY DISABILITY CATEGORY (CONCLUDED)

	Learning Disability	Speech/ Language Impair-ment	Mental Retar-dation	Emo-tional Distur-bance	Hearing Impair-ment	Visual Impair-ment	Ortho-pedic Impair-ment	Other Health Impair-ment	Multiple Disabilities/ Deaf-Blindness
Paid employment and job training									
Cohort 1 (1987)	8.8	10.2	7.8	6.5	8.4	12.4	2.0	12.5	2.9
	(2.7)	(4.3)	(3.1)	(2.6)	(3.2)	(5.3)	(2.6)	(6.0)	(5.4)
Cohort 2 (2003)	1.0	3.0	9.3	1.5	.9	.4	.0	2.5	.4
	(1.1)	(3.7)	(4.6)	(1.4)	(1.6)	(1.2)		(4.1)	(1.7)
Percentage-point change	**-7.8****	-7.2	1.5	-5.0	**-7.5***	**-12.0***	-2.0	-10.0	-2.5
Postsecondary education, paid employment, and job training									
Cohort 1 (1987)	8.0	4.2	3.5	3.9	9.9	2.8	8.3	.0	1.6
	(2.6)	(2.8)	(2.1)	(2.0)	(3.4)	(2.7)	(5.2)		(4.0)
Cohort 2 (2003)	2.2	1.1	.0	.8	6.3	15.2	2.7	2.3	1.2
	(1.7)	(2.3)		(1.0)	(4.1)	(7.0)	(2.6)	(3.9)	(3.0)
Percentage-point change	-5.8	-3.1	-3.5	-3.1	-3.6	+12.4	-5.6	+2.3	-.4

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.
Statistically significant difference in a two-tailed test at the following levels: *p<.05; **p<.01; ***p<.001.
Standard errors are in parentheses.

multiple disabilities or deaf-blindness had by far the lowest rate of engagement in cohort 1 (significantly lower than those for six other categories) but were above three categories in cohort 2, as youth with mental retardation took the bottom position. Youth with hearing impairments had the highest rate of engagement in cohort 1 but were surpassed by four other categories in cohort 2 ($p<.05$ compared with youth with learning disabilities).

Neither the proportion of youth with disabilities who had been engaged solely in postsecondary education or solely in employment changed markedly over time for any disability category, nor did the rate at which youth were engaged in those two activities together in combination with job training. In fact, not only did the rate of postsecondary education enrollment as a sole engagement activity not change, there were no significant differences in the 11-percentage-point spread across categories in that measure in cohort 1. That range increased to 18 percentage points in cohort 2, with only youth with speech or orthopedic impairments differing significantly from each other (1% vs. 19%, $p<.05$). Similarly, there were no meaningful differences across categories in cohort 1 in youth participating in the combination of school, work, and job training; only youth with visual impairments and those with mental retardation differed in cohort 2 (15% vs. 0%, $p<.05$). Greater differences were apparent regarding employment as a sole engagement activity. Youth with visual impairments had the lowest rates of this activity in both cohorts (12% and 10%), and youth with learning disabilities had the highest (37% and 50%), with the difference between them increasing from 28 percentage points ($p<.001$) to 40 percentage points over time ($p<.001$).

Although the rates of postsecondary education and paid employment as sole modes of engagement did not change over time, there was a significant increase in the likelihood of youth engaging in the combination of those activities among youth in four categories: learning

Exhibit 6-3
CHANGES IN ENGAGEMENT IN SCHOOL, WORK, OR PREPARATION FOR WORK OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY SCHOOL-EXIT STATUS

	Completers	Dropouts
Since high school, percentage engaged in:		
Postsecondary education, paid employment or job training		
Cohort 1 (1987)	77.3 (3.4)	63.5 (4.7)
Cohort 2 (2003)	78.8 (4.0)	69.3 (6.6)
Percentage-point change	+1.5	+5.8
Employment only		
Cohort 1 (1987)	34.4 (3.9)	34.7 (4.7)
Cohort 2 (2003)	40.2 (4.7)	56.4 (7.1)
Percentage-point change	+5.8	**+21.7***
Job training only		
Cohort 1 (1987)	8.3 (2.2)	3.6 (1.8)
Cohort 2 (2003)	.1 (.3)	.2 (.6)
Percentage-point change	**-8.2*****	-3.4
Postsecondary education and paid employment		
Cohort 1 (1987)	6.6 (2.0)	7.0 (2.5)
Cohort 2 (2003)	29.0 (4.4)	7.4 (3.7)
Percentage-point change	**+22.4*****	+.4
Paid employment and job training		
Cohort 1 (1987)	11.7 (2.6)	5.0 (2.1)
Cohort 2 (2003)	2.2 (1.4)	1.2 (1.5)
Percentage-point change	**-9.5****	-3.8
Postsecondary education, paid employment, and job training		
Cohort 1 (1987)	8.7 (2.3)	4.1 (1.9)
Cohort 2 (2003)	1.8 (1.3)	2.3 (2.1)
Percentage-point change	**-6.9***	-1.8

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

Note: The categories of postsecondary education only and postsecondary education combined with job training are omitted from the exhibit because there were no significant changes over time or differences between categories.

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

Standard errors are in parentheses.

disabilities and hearing, visual, and orthopedic impairments. Significant increases ranged from 16 to 27 percentage points ($p<.05$ to $p<.001$). In contrast, rates of job training as a sole mode of engagement and combined with employment and with postsecondary education declined significantly for some categories. Youth with hearing impairments had decreases in all three of these measures, ranging from 7 percentage points for job training combined with postsecondary education to 15 percentage points for job training alone. A more limited change with regard to job training is evident for youth with emotional disturbances, for whom only job training alone declined (6 percentage points, $p<.05$).

Differential Changes Related to School-Exit Status

Neither youth with disabilities who completed high school nor those who left without finishing experienced significant changes over time in their overall measure of participation in school, work, or preparation for work (Exhibit 6-3). Nonetheless, the significant difference between the two groups in their rates of engagement that was apparent in cohort 1 (77% vs. 64% for completers and dropouts, respectively; $p<.05$), was eliminated by cohort 2 (79% vs. 69%, not a significant difference). In addition, there were neither significant changes

in youth pursuing postsecondary education only or in combination with job training nor significant differences between completers and dropouts in those modes of engagement in either cohort.

However, changes were apparent in the rates at which youth with disabilities pursued other modes of engagement, although those changes occurred differentially for those who completed high school and those who did not. For example, the increase in youth who were working as their sole mode of engagement that was observed for youth with disabilities as a whole occurred largely among high school dropouts (22 percentage points, $p<.05$). In contrast, an increase of similar size in youth combining working and going to school occurred only among high school completers ($p<.001$). This increase created a significantly higher rate of these joint activities among cohort 2 completers than among dropouts (29% vs. 7%, $p<.001$), a difference not observed in cohort 1. High school completers also were the only group to experience declines in the proportion who were engaged only in job training or in job training combined with paid employment or with both employment and postsecondary education (decreases of 7 to 10 percentage points, $p<.05$ to $p<.001$).

Differential Changes Related to Demographic Characteristics

Age. The overall rate of engagement in school, work, or preparation for work did not change significantly for any age group of youth with disabilities (Exhibit 6-4). This stability maintained the relative advantage 19-year-olds had in overall engagement. They were significantly more likely to be engaged in cohort 1 than either of the younger age groups (79% vs. 57% and 64% of 15- through 17-year-olds and 18-year-olds, respectively, $p<.05$ for both comparisons) and were more likely than the youngest age group to be engaged in cohort 2 (82% vs. 55%, $p<.05$).

No change in any mode of engagement was apparent among the youngest age group, whereas 18- and 19-year-old youth with disabilities shared some changes and experienced others differently. For example, both groups showed increases in engagement in the combination of paid work and postsecondary education since leaving high school. However, the increase was more than twice as large for 19-year-olds (23 percentage points, $p<.001$) than 18-year-olds (11 percentage points, $p<.05$), giving them a significantly higher rate of this form of engagement in cohort 2 than the youngest age group (31% vs. 8%, $p<.01$). Both 18- and 19-year-olds experienced similar-size decreases in the likelihood of participating in job training as their sole mode of engagement (5 and 7 percentage points, respectively, $p<.05$ and $p<.01$). However, only 18-year-olds experienced a large increase in being engaged in paid work alone (23 percentage points, $p<.01$) and a significant decrease in the combination of all three modes of engagement (7 percentage points, $p<.05$). Nineteen-year-olds had the only significant decrease in the pursuit of paid employment combined with job training (9 percentage points, $p<.01$).

Exhibit 6-4
CHANGES IN ENGAGEMENT IN SCHOOL, WORK, OR PREPARATION FOR WORK OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY AGE

	15 through 17	18	19
Since high school, percentage engaged in:			
Postsecondary education, paid employment or job training			
Cohort 1 (1987)	57.2 (8.1)	63.6 (5.0)	78.6 (3.5)
Cohort 2 (2003)	54.6 (10.1)	75.8 (5.1)	82.1 (4.5)
Percentage-point change	-2.6	+12.2	+3.5
Employment only			
Cohort 1 (1987)	27.3 (7.3)	28.3 (4.7)	39.0 (4.1)
Cohort 2 (2003)	41.9 (10.0)	51.3 (5.9)	41.2 (5.8)
Percentage-point change	+14.6	**+23.0****	+2.2
Job training only			
Cohort 1 (1987)	5.6 (3.8)	5.3 (2.3)	7.0 (2.2)
Cohort 2 (2003)	.1 (.6)	.0	.2 (.5)
Percentage-point change	-5.5	**-5.3***	**-6.8****
Postsecondary education and paid employment			
Cohort 1 (1987)	4.0 (3.2)	6.1 (2.5)	7.7 (2.3)
Cohort 2 (2003)	8.1 (5.5)	17.0 (4.5)	30.7 (5.4)
Percentage-point change	+4.1	**+10.9***	**+23.0*****
Paid employment and job training			
Cohort 1 (1987)	4.4 (3.4)	7.7 (2.8)	10.0 (2.5)
Cohort 2 (2003)	1.1 (2.1)	3.0 (2.0)	1.4 (1.4)
Percentage-point change	-3.3	-4.7	**-8.6****
Postsecondary education, paid employment, and job training			
Cohort 1 (1987)	3.5 (3.0)	8.8 (2.9)	5.8 (2.0)
Cohort 2 (2003)	.0	2.1 (1.7)	2.4 (1.8)
Percentage-point change	-3.5	**-6.7***	-3.4

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

Note: The categories of postsecondary education only and postsecondary education combined with job training are omitted from the exhibit because there were no significant changes over time or differences between age groups.

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

Standard errors are in parentheses.

Gender. Although the rate of overall engagement in school, work, or preparation for work did not increase significantly for either gender (Exhibit 6-5), the changes over time did eliminate the sizable advantage cohort 1 boys had had over their female peers (76% vs. 57%, p<.01). Cohort 1 boys also had an advantage over girls in the likelihood of employment being their sole mode of engagement (38% vs. 23%, p<.05). However, a 16-percentage-point increase among girls with disabilities resulted in their cohort 2 rates of engaging in employment only being quite similar (47% and 40%). There also was parity in their pursuit of the combination of paid employment and post-secondary education; boys' and girls' increases in this form of engagement (15 and 17 percentage points, p<.001 and p<.05) and their rates of engagement in these combined activities in the two cohorts were similar (8% and 4% in cohort 1, 23% and 22% in cohort 2). There also were changes among both genders in the pursuit of job training alone, although the decrease was more than twice as large for girls as boys (10 and 4 percentage points, respectively, p<.05 for both changes). Only boys experienced a decline in the likelihood of being engaged in job training in combination with employment or with both employment and postsecondary education (8 and 7 percentage points, p<.01 and p<.05).

Exhibit 6-5
CHANGES IN ENGAGEMENT IN SCHOOL, WORK, OR PREPARATION FOR WORK OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY GENDER

	Boys	Girls
Since high school, percentage engaged in:		
Postsecondary education, paid employment, or job training		
Cohort 1 (1987)	75.6 (3.2)	57.1 (5.5)
Cohort 2 (2003)	76.5 (4.1)	72.3 (6.0)
Percentage-point change	+.9	+15.2
Paid employment only		
Cohort 1 (1987)	38.1 (3.6)	23.2 (4.7)
Cohort 2 (2003)	47.0 (4.9)	39.6 (6.6)
Percentage-point change	+8.9	**+16.4***
Job training only		
Cohort 1 (1987)	4.4 (1.5)	10.4 (3.4)
Cohort 2 (2003)	.1 (.3)	.1 (.4)
Percentage-point change	**-4.3***	**-10.3***
Postsecondary education and paid employment		
Cohort 1 (1987)	7.5 (1.9)	4.3 (2.3)
Cohort 2 (2003)	22.8 (4.1)	21.5 (5.5)
Percentage-point change	**+15.3*****	**+17.2***
Paid employment and job training		
Cohort 1 (1987)	9.7 (2.2)	4.9 (2.4)
Cohort 2 (2003)	2.0 (1.4)	1.6 (1.7)
Percentage-point change	**-7.7****	-3.3
Postsecondary education, employment, and job training		
Cohort 1 (1987)	7.7 (2.0)	3.2 (2.0)
Cohort 2 (2003)	1.1 (1.0)	3.4 (2.4)
Percentage-point change	**-6.6***	+.2

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

Note: The categories of postsecondary education only and postsecondary education combined with job training are omitted from the exhibit because there were no significant changes over time or differences between genders.

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

Standard errors are in parentheses.

Household income. As with other demographic characteristics, the overall measure of engagement did not change over time for any income group (Exhibit 6-6). This stability retained the significant advantage of youth in the highest income group relative to those in the lowest that existed in both cohort 1 (80% vs. 59%, p<.01) and cohort 2 (88% vs. 65%, p<.01). However, the significant difference between the middle and lowest income groups that was apparent in cohort 1 (80% vs. 59%, p<.05) no longer existed in cohort 2 (71% vs. 65%). There were no notable changes in paid employment or postsecondary education as sole modes of engagement or in the combination of postsecondary education and job training, nor were there significant differences across income groups in the rates of these forms of engagement.

However, changes were noted in all other modes of engagement. The highest income group experienced the most widespread changes, with three of five modes of engagement changing significantly for that group, including job training as a sole activity and in combination with paid employment (decreases of 7 and 12 percentage points, p<.01 and p<.001, respectively) and the combination of paid employment and postsecondary education (a 24-percentage-point increase, p<.001). The lowest income group also experienced a 7-percentage-point decline in the rate of participation in job training only (p<.05), and the middle income group had an 8-percentage-point decline in youth participating in the combination of paid employment, postsecondary education, and job training (p<.05).

Exhibit 6-6
CHANGES IN ENGAGEMENT IN SCHOOL, WORK, OR PREPARATION FOR WORK OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES, BY HOUSEHOLD INCOME AND RACE/ETHNICITY

	Income			Race/Ethnicity		
	Lowest	Middle	Highest	White	African-American	Hispanic
Since high school, percentage engaged in:						
Postsecondary education, paid employment, or job training						
Cohort 1 (1987)	58.7	79.7	79.9	74.3	62.5	63.4
	(6.1)	(4.9)	(4.1)	(3.3)	(6.2)	(12.6)
Cohort 2 (2003)	64.9	70.7	87.6	78.9	69.3	66.7
	(6.6)	(7.1)	(4.8)	(4.0)	(7.6)	(11.1)
Percentage-point change	+6.2	-9.0	+7.7	+4.6	+6.8	+3.3
Job training only						
Cohort 1 (1987)	7.6	3.7	7.2	5.8	8.8	.8
	(3.3)	(2.3)	(2.6)	(1.7)	(3.6)	(2.3)
Cohort 2 (2003)	.3	.0	.1	.1	.1	.4
	(.8)		(.5)	(.3)	(.5)	(1.5)
Percentage-point change	**-7.3***	-3.7	**-7.1****	-5.7***	-8.7*	-.4
Employment and postsecondary education						
Cohort 1 (1987)	6.3	5.8	8.1	5.7	5.0	19.0
	(3.0)	(2.9)	(2.8)	(1.7)	(2.8)	(10.2)
Cohort 2 (2003)	11.2	12.9	32.6	26.1	17.6	13.8
	(4.4)	(5.2)	(6.8)	(4.3)	(6.3)	(8.1)
Percentage-point change	+4.9	+7.1	**+24.5*****	**+20.4*****	+12.6	-5.2
Employment and job training						
Cohort 1 (1987)	4.9	9.4	13.0	11.0	3.7	.1
	(2.7)	(3.6)	(3.4)	(2.3)	(2.4)	(.8)
Cohort 2 (2003)	2.8	1.1	.6	1.2	4.4	1.4
	(2.3)	(1.6)	(1.1)	(1.1)	(3.4)	(2.8)
Percentage-point change	-2.1	-8.3	**-12.4*****	**-9.8*****	+0.7	+1.3
Postsecondary education, employment, and job training						
Cohort 1 (1987)	1.2	9.4	8.6	7.8	2.7	8.1
	(1.3)	(3.6)	(2.8)	(2.0)	(2.1)	(7.1)
Cohort 2 (2003)	.7	.9	2.7	1.6	3.3	1.2
	(1.2)	(1.5)	(2.4)	(1.2)	(2.9)	(2.6)
Percentage-point change	-.5	**-8.5***	-5.9	**-6.2****	+.6	-6.9

Sources: NLTS Wave 1 parent interviews and NLTS2 Wave 2 parent/youth interviews.

Note: The categories of employment only, postsecondary education only, and postsecondary education combined with job training are omitted from the exhibit because there were no significant changes over time or differences between groups.

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

Standard errors are in parentheses.

Race/ethnicity. The lack of change in the overall rate of engagement in the community resulted in no differences between racial/ethnic groups in that measure in either cohort. Of the modes of engagement for which significant change occurred, white youth with disabilities experienced those changes most broadly. They were the only group with a significant increase in youth pursuing both paid employment and postsecondary education (20 percentage points, p<.001), with corresponding reductions in pursuit of job training alone and in combination with

employment and with employment and postsecondary education (6 and 10 percentage points, $p<.01$ and $p<.001$). African-American youth also witnessed a reduction in job training participation as the sole mode of engagement (9 percentage points, $p<.05$). Hispanic youth had no significant changes in their modes of engagement.

Summary

This effort to examine postschool outcomes in a more comprehensive way than is possible by focusing on postsecondary education or employment alone demonstrates that in their early post-high-school years, the majority of youth with disabilities in both 1987 and 2003 (70% and 75%, respectively) had engaged in these activities or in a job training program, alone or in combination,. Although this rate of engagement in school, work, or preparation for work did not increase markedly over time, the ways in which youth were involved in their communities did change. The marked increase in postsecondary education that was depicted in Chapter 4 accounts for the largest increase in any mode of engagement. Interestingly, that increase in postsecondary education occurred almost entirely in combination with employment; the rate at which youth with disabilities had engaged in both postsecondary education and paid employment since high school almost quadrupled, to 22% in cohort 2, largely among high school completers. There was no accompanying increase in youth with disabilities pursuing postsecondary education alone. However, an increase in youth pursuing employment alone was apparent, largely among high school dropouts. These increases were accompanied by declines in engagement in job training programs as a sole activity or in combination with postsecondary education or with paid employment.

Modes of engagement changed significantly only for youth with learning disabilities; emotional disturbances; or hearing, visual, or orthopedic impairments, with youth with hearing impairments experiencing the most widespread changes. In contrast, no changes were evident for youth with speech or other health impairments, mental retardation, or multiple disabilities/deaf-blindness; youth in the latter two categories were among the least likely to be engaged in school, work, or preparation for work in both cohorts 1 and 2.

Regarding demographic differences in modes of engagement, significant changes were more common among older youth, those in the highest income group, and white youth with disabilities. No changes in rates or modes of engagement were apparent for the youngest group of out-of-school youth with disabilities or Hispanic youth. Several changes in modes of engagement occurred similarly for boys and girls with disabilities, although girls were the only group to experience a significant increase in employment as a sole mode of engagement. Changes among girls also eliminated the cohort 1 gap between genders in their rates of overall engagement; their rates were quite similar in cohort 2.

7. THE CHANGING EXPERIENCES OF OUT-OF-SCHOOL YOUTH WITH DISABILITIES

By Mary Wagner

This report has documented changes between 1987 and 2003 in several important outcomes of youth with disabilities who had been out of high school up to 2 years, as measured in NLTS and NLTS2. But the stage was set for interpreting these findings in two earlier reports (Wagner Cameto, et al., 2003; Wagner, Newman, et al., 2004), which examined change over time in the characteristics and school experiences of youth with disabilities while they still were in secondary school. They offered clues regarding the differences that might be expected between the early postschool outcomes of youth with disabilities in the mid-1980s and their peers more than a decade and a half later.

Students' school programs changed in important ways during this time period (Wagner, Newman, et al., 2004). Evidence consistently points to students with disabilities having greater rates of participation in regular schools and general education classrooms, with greater support for both teachers and students to help them succeed. Further, students with disabilities were taking more challenging academic courses in classrooms where instruction was offered at grade level. Their own grades also improved, suggesting they were better able to meet the academic expectations of their teachers. Consistent with this, cohort 2 students with disabilities were much more likely than youth in cohort 1 to be at the appropriate grade level for their age, indicating they were better able to keep up with their peers, even as their school programs became more like those of the general education population.

These patterns of change in secondary school programs suggest that students with disabilities were being better prepared to pursue postsecondary education. In fact, their parents increasingly expected this outcome, at least with regard to enrollment in 2-year colleges (Wagner, Cameto, et al., 2003). Higher parental expectations for their children's pursuit of at least a 2-year college education may reflect the fact that the parents themselves were better educated in 2003 than were their peers in the 1980s. They also were more likely to be employed and less likely to be in poverty, suggesting they may have been more financially able to help their adolescent children with disabilities pursue the postsecondary education they expected.

Parents also were more likely to expect that their children with disabilities would achieve paid employment after high school (Wagner, Cameto, et al., 2003). And overall, the work histories of youth with disabilities in high school supported this optimism. Secondary school students with disabilities in cohort 2 were more likely than earlier peers to have worked for pay outside the home in the preceding year and to have participated in a work-study program at school, both experiences that could increase their chances for employment in their postschool years.

Other changes in the lives of students with disabilities outside the classroom also could help shape different experiences later on. While in secondary school, cohort 2 students with disabilities were more likely than cohort 1 peers to have participated in a community group, such as a sports team or church or temple youth group. Students' participation in volunteer service groups also increased over time. Unfortunately, these increases in prosocial activities were offset for some youth with disabilities by higher absenteeism from school, which might suggest a

weakening of the bonds students with disabilities had with their schools (Wagner, Newman, et al., 2004). Behaviors that resulted in youth with disabilities being subject to disciplinary actions at school, fired from a job, or arrested also were markedly higher among secondary school students with disabilities in cohort 2 than in cohort 1.

This chapter addresses the extent to which the changes over time in the early postschool experiences of youth with disabilities were consistent with the patterns of change documented in earlier reports. Those reports concluded that there was much "good news" in the changes documented for in-school youth, although several causes for concern also were apparent. The same mixed picture is apparent when early postschool experiences are the focus of attention.

Improvements in Outcomes over Time

An increase in students with disabilities being at the appropriate grade level for their age and improvement in their grades may have contributed to the significant increase in the proportion of students with disabilities who completed high school; 70% of cohort 2 youth had done so. This improvement in the school completion rate, accompanied by changes in the rigor and inclusiveness of students' school programs, in parents' expectations, and in parents' own circumstances, may have worked alone or in combination to increase the odds of youth with disabilities pursuing postsecondary education. In fact, by 2003, there were significant increases in their postsecondary education participation overall and in their enrollment in both 2- and 4-year colleges. Overall, 32% of cohort 2 youth with disabilities had been enrolled in some kind of postsecondary education since high school, including 21% of out-of-school youth who had attended a 2-year college and 10% who had attended a 4-year college. The 17-percentage-point increase in 2-year college enrollment was particularly large, consistent with the notable increase in parents' expectations that their children with disabilities would pursue that path after high school.

Parents' increased expectations that their adolescent children with disabilities would find paid employment after high school also were realized in the higher proportion of cohort 2 youth who had worked since leaving high school (70%), relative to their cohort 1 peers (55%). With both postsecondary education and employment rates increasing independently, it is not surprising that more cohort 2 than cohort 1 youth were pursuing both modes of engagement simultaneously. Consistent with their dual roles as students and workers, an increase in the proportion of postsecondary students going to school full-time was accompanied by a reduction in the proportion of youth who were working full-time. Moreover, despite the demands of school and/or work, the 11-percentage-point increase in secondary school students with disabilities participating in organized community groups grew to a 17-percentage-point increase in this activity among those who had been out of high school up to 2 years. More than one-fourth of cohort 2 youth with disabilities belonged to one or more organized groups. Thus in 2003, youth with disabilities clearly were participating in their communities in multiple ways to a markedly greater extent than was true in the mid-1980s.

Behaviors Resulting in Negative Consequences

Despite the positive changes noted above, other changes were disconcerting. Perhaps most troubling of the findings documented in this report is the sizable increase in the proportion of youth with disabilities who had exhibited behavior at some point that led to their being subject to

disciplinary action at school, fired from a job, or arrested. Whereas 34% of cohort 1 youth had experienced these negative consequences by the time they had been out of high school up to 2 years, 56% of cohort 2 youth had been in trouble in one or more of these ways. An increase over time also was noted in earlier analyses of secondary school students with disabilities, albeit a much smaller, 6-percentage-point change (Wagner, Cameto, et al., 2003).

No Real Wage Gains

Although there was a considerable increase over time in the percentage of out-of-school youth with disabilities who were earning more than the federal minimum wage—more than 8 in 10 youth had such earnings in cohort 2—there was no real change in earnings over time when wages were adjusted for inflation. On average, cohort 1 youth earned $7.80 per hour in 2003 dollars, and their cohort 2 peers earned $7.30. At this average wage, the 40% of cohort 2 youth with disabilities who were working full-time would have earned an average of $14,600 per year;[1] the majority who were working part-time would have averaged $9,125 for 25 hours of work per week—less than the federal poverty threshold of $9,573 for a single-person household (U.S. Census Bureau, 2004). With these earnings, it is not surprising that there was no increase over time in the percentage of youth with disabilities who were living independently; about three-fourths of youth with disabilities in both cohorts still lived with a parent or parents.

The increase in postsecondary education enrollment among youth with disabilities holds promise for an improvement in the long-term earnings potential of more youth in 2003 than had been the case in 1987. Still, fewer than one-third of cohort 2 youth with disabilities had enrolled in any kind of postsecondary school since leaving high school, and only 10% had gone to a 4-year institution. These rates are fractions of the participation rates for youth in the general population. Further, most postsecondary school students in the general population went to 4-year colleges, whereas 2-year college enrollment was most common postsecondary participation among youth with disabilities. Thus, an earnings gap between youth with disabilities and youth in the general population is likely and could well widen over time as a higher rate of educational attainment among youth in the general population boosts their lifetime earnings relative to youth with disabilities (Day & Newburger, 2002).

Differential Changes in Outcomes across Disability Categories

Each chapter in this report noted differences across disability categories in the ways youth experienced changes over time in their early postschool outcomes. Because youth with learning disabilities are the largest category, their experiences most closely mirror those of youth with disabilities as a whole. However, youth in some other categories differ from the general pattern of change on key outcomes.

Youth with Hearing or Visual Impairments

Youth with these sensory impairments tended to succeed while in school and to follow that trajectory of academic success into postsecondary education. They shared in the increase in academic course-taking that was apparent for youth with disabilities overall, thereby preparing for postsecondary education, and they performed well in their classes, with grades increasing

[1] This calculation assumes youth work 40 hours per week, 50 weeks per year.

over time and being among the highest of any disability category (Wagner, Newman, et al., 2004). With this background, it is not surprising that youth with hearing or visual impairments had among the highest rates of school completion in cohort 2; 82% and 94% of the two groups, respectively, had finished high school. Youth with visual impairments had the largest increase in participation in postsecondary education, and both groups surpassed all others in the size of increase in participation in both 2-year and 4-year colleges, giving them the highest rate of enrollment in those institutions of any category of youth.

However, youth with hearing or visual impairments did not focus on postsecondary education alone in their postschool years. Youth with visual impairments had the largest increase in the likelihood of paid employment since high school, as well as the highest rate of receiving accommodations on the job (Cameto, 2005); they joined cohort 2 youth with hearing impairments in having a 62% rate of employment since high school. Further, youth with both sensory impairments experienced large increases in engagement in their communities via the dual roles of employee and college student; more than one-third of youth in each category had experienced both work and postsecondary education since leaving high school. Social involvement in their communities also was high and positive for most youth with sensory impairments. They had among the highest rates of participation in organized group activities while in school, and that pattern continued into their postschool years. In addition, out-of-school youth with hearing or visual impairments experienced the only significant increases of any disability category in their participation in volunteer or community service activities; about half of cohort 2 youth in each category had done so since leaving high school.

Youth with Emotional Disturbances

Youth in this category demonstrated a complex pattern of changes over time relative to many other categories. Academically, when they were in secondary school, students with emotional disturbances shared in the improvements over time in grades and in being at the appropriate grade level for their age that occurred among students with disabilities as a whole (Wagner, Cameto, et al., 2003; Wagner, Newman, et al., 2004). This translated into a substantial improvement in their school completion rate and in the percentage who had been out of school at least 1 year, suggesting they were more likely to have graduated with their same-age peers than had been true in cohort 1. However, their school completion rate remained among the lowest of any disability category in cohort 2—56%. And, unlike for youth with disabilities as a whole, an improved school completion rate among youth with emotional disturbances did not translate into a higher rate of postsecondary education participation overall or of enrollment in 4-year colleges; however, an increase in 2-year college enrollment was seen for this group. Nonetheless, with their high dropout rates, youth with emotional disturbances joined youth with mental retardation in being the least likely in both cohorts to have enrolled in any postsecondary school since leaving high school.

Additionally, youth with emotional disturbances did not share in the increase in employment that occurred for youth with disabilities as a whole, although working youth in that category were the only group to show an increase in earnings relative to the federal minimum wage. However, as noted above, low postsecondary education participation by youth with emotional disturbances is likely to be associated with depressed earnings over the long term

relative not only to youth in the general population but also to youth with disabilities in other categories who more actively pursue postsecondary education.

Finally, the emotional and behavioral issues that were problematic for youth with emotional disturbances in secondary school continued into their early postschool years. Secondary school students with emotional disturbances in cohort 2 showed significant increases over cohort 1 in the likelihood that they had been suspended from school (Wagner, Newman, et al., 2004), and they had the highest absenteeism rate and among the lowest rates of participation in organized school groups of any disability group in both cohorts, possibly suggesting weak bonds with school. Moreover, in the postschool years, youth with emotional disturbances had a dramatic increase over time in the likelihood that they had ever been in disciplinary trouble at school, fired from a job, or arrested. Almost 9 in 10 youth with emotional disturbances had had one or more of these experiences by the time they had been out of secondary school up to 2 years, the highest rate of negative consequences of behavior of any disability category. Affiliation with what are typically prosocial organized community group activities also was weaker in the postschool years for youth with emotional disturbances than for youth in other disability categories.

Youth with Other Health Impairments

The category of other health impairment has grown tremendously in the years since NLTS. Federal child count statistics (U.S. Department of Education, 2002) indicated that whereas secondary school students with disabilities ages 15 through 17 increased by 59% between 1987 and 2001, the category of other health impairment increased by 630% (Wagner, Cameto, et al., 2003). The kinds of disabilities represented in the category also changed dramatically. For example, in 1987, the category included many youth with autism, who now are classified separately for special education purposes.[2] In cohort 2, the largest single disability represented in the category of other health impairment, according to parents, was attention deficit or attention deficit/hyperactivity disorder (ADD/ADHD) (Marder, Levine, & Wagner, 2003).

In addition to these disability-related changes, a number of changes were experienced by youth with other health impairments both during and after secondary school. Along with students with mental retardation, those with other health impairments were the only category of students not to experience an improvement in grades, and students with other health impairments experienced the largest increase in the percentage who had been suspended in the current school year (Wagner, Newman, et al., 2004). Outside of school, however, secondary school students with other health impairments showed important increases in participation in community groups and in volunteer or community service activities and in employment (Wagner, Cameto, et al., 2003); whereas cohort 1 youth in this category lagged behind youth with disabilities overall in these forms of participation in the community, in cohort 2, they were on par with others.

Consistent with their lack of improvement in grades during secondary school, youth with other health impairments did not share in the improved school completion rate that was evident for youth with disabilities overall; more than 40% of youth in this category dropped out of high school. Nor did they share in the increased participation in postsecondary education. Further, in the employment domain, cohort 2 youth with other health impairments lagged significantly

[2] Although the federal child count now categorizes youth with autism separately, cohort 2 youth with autism have been included in the category of other health impairment in analyses in this report to be comparable with the category as defined in 1987.

behind youth with disabilities overall in the percentage who had worked since leaving high school (about half had done so, compared with 7 in 10 youth with disabilities overall), having experienced no improvement in the employment rate since cohort 1. Given their lower rate of employment, youth with other health impairments also were less likely than youth with disabilities overall to have been engaged in school, work, or preparation for work since leaving high school. Consistent with their large increase in having been suspended while in secondary school, the rate at which out-of-school youth with other health impairments experienced negative consequences for their behavior more than quadrupled over time, so that two-thirds of cohort 2 youth in this category had been subject to disciplinary action at school, fired from a job, or arrested at some point, a rate exceeded only by youth with emotional disturbances.

Youth with Multiple Disabilities or Deaf-Blindness

Comparisons of youth represented in NLTS and NLTS2 document the serious social and educational implications of the significant disabilities within the category of multiple disabilities, including deaf-blindness. However, there has been some improvement over time, including increased participation in their schools and communities. While in school, for example, they were significantly more likely to be taking at least one course in a general education classroom, although only in the case of language arts was there an increase in taking an academic class in that setting; the largest increases in general education course-taking involved physical education or fine arts (Wagner, Newman, et al., 2004). Large increases also were noted regarding participation in community groups, volunteer or community service activities, and school-sponsored work-study programs among secondary school students with multiple disabilities or deaf-blindness (Wagner, Cameto, et al., 2003).

Although their grades improved while in secondary school, out-of-school youth with multiple disabilities or deaf-blindness remained among the least likely to have finished high school; about half had done so, compared with 70% of youth with disabilities over all. Nonetheless, in cohort 2, they were as likely as youth with disabilities as a whole to have been enrolled in a postsecondary school since leaving high school, although a postsecondary vocational, technical, or business school dominated their choices of postsecondary institutions to a degree not evident for youth in other categories. In contrast, in the employment domain, youth with multiple disabilities did not show an increase in the likelihood of having worked for pay since leaving high school, remaining the category of youth least likely to have done so. However, they were not the least likely to have been engaged in school, work, or preparation for work since leaving high school; youth with mental retardation and orthopedic or other health impairments joined them in having a rate of participation in these activities that was below 60%.

Emerging Changes in Postschool Outcomes Associated with Gender

Comparisons of youth with disabilities represented in NLTS and NLTS2 both while they were in secondary school and in the first few years after high school indicate that the similarities and differences between boys and girls with disabilities that were apparent in 1987 shifted in some ways over time. Some of these shifts resulted in a narrowing of the gap between genders that existed in cohort 1. For example, there were marked differences related to gender in cohort 1 in parents' expectations that their children with disabilities would find paid employment in the future and in the actual employment experiences of their children, favoring sons. By

cohort 2, both parents' expectations and youth's employment experiences while in secondary school no longer differed; girls were as likely as boys to be expected to participate in the workforce and were doing so while still in secondary school (Wagner, Cameto, et al., 2003).

The pattern of change over time seen in the employment of boys and girls with disabilities while they were in secondary school was mirrored in their early postschool years. Whereas cohort 1 boys who had been out of school up to 2 years were almost twice as likely as girls to have worked for pay since leaving high school, their employment rates were very similar in cohort 2. A similar convergence over time in the experiences of boys and girls with disabilities is seen in the virtual elimination by cohort 2 of the 19-percentage-point difference between cohort 1 boys and girls in their engagement in school, work, or preparation for work since high school. Unfortunately, a narrowing of differences between genders also was apparent in their tendency toward negative social adjustment. Both boys and girls with disabilities had large increases in the receipt of negative consequences for their behavior, such that by cohort 2 the significantly higher rate of these negative consequences among boys in cohort 1 had been reduced and was no longer significant in cohort 2.

However, not all changes experienced by boys and girls with disabilities over time resulted in a narrowing of differences between them. Both during high school and in their early postschool years, girls remained less likely than boys to be single. Some other changes that were experienced by one gender more markedly than the other did not reach statistical significance but may be part of a trend that could have future implications. For example, only boys experienced a significant improvement in their high school completion rate; in cohort 1, they lagged behind girls by 4 percentage points, whereas in cohort 2, they were 6 percentage points ahead. Similarly and relatedly, boys showed a significant increase in attending a 4-year college that was not demonstrated by girls, such that at cohort 2 they were almost twice as likely as girls to have attended such a school. Although for neither cohort were differences between genders in school completion or 4-year college enrollment statistically significant, the long-term benefits associated with positive changes in these outcomes may be more likely to accrue to boys with disabilities than to girls.

Challenging Consequences of Dropping Out

As noted previously in this chapter, a marked decline in the dropout rate among out-of-school youth with disabilities is part of the good news story in their collective experiences over time. Nonetheless, differences between youth with disabilities who did and did not complete high school underscore the challenges dropouts face. Not only did they leave school without benefit of a complete education and a high school diploma, in both cohorts, dropouts were less likely than school completers to have the support and stability of living with parents, and they were less likely to be single. Both cohort 1 and cohort 2 dropouts also were more likely than their peers who completed high school to have been in trouble at school and/or in the community.

In addition to differences between dropouts and completers that persisted across cohorts, differences in the pattern of changes experienced by the two groups over time suggest that the 30% of cohort 2 youth who dropped out may face a number of significant challenges in the future. Most obvious is the fact that without a high school diploma, dropouts did not share in the significant increase in postsecondary education enrollment that occurred among youth with

disabilities who completed high school; fewer than 1 in 10 had enrolled in any postsecondary education since leaving high school. The fact that only about one-fourth of dropouts had enrolled in a high school completion program suggests that postsecondary education options may remain limited for dropouts with disabilities.

However, other changes that occurred differentially between dropouts and completers are less worrisome. The increase in the rate at which youth with disabilities had worked for pay since leaving high school occurred largely among dropouts, which brought parity between the two groups in this important outcome. Differences in the participation of cohort 1 dropouts and completers in organized community groups or volunteer or community service activities also moderated over time, indicating that more dropouts were experiencing the benefits of these forms of community participation. Dropouts also experienced a smaller increase than school completers in the likelihood of experiencing negative consequences for their behavior. Yet despite an improved employment rate, earnings increases relative to the federal minimum wage were not shared by dropouts. Further, the discrepancy in education between dropouts and completers is likely to widen, creating a discrepancy in future earnings as well. And notwithstanding a smaller increase in negative consequences for their behavior, dropouts in both cohorts were more likely than school completers to have those experiences.

Continued Limitations for Lower-Income Households

The changes that occurred over time for youth with disabilities, both while they were in secondary school and in their early postschool years, were experienced differently by youth in the bottom, middle, and upper thirds of the household income distribution, with youth from households in the lowest income group demonstrating a pattern of changes that raises concerns about their future.

Youth with disabilities from households in the lowest income group showed the only significant increase in taking academic courses in general education settings, including general education mathematics, science, and social studies (Wagner, Newman, et al., 2004). This may have contributed to the large increase, shared with youth from households in the middle income group, in their rate of high school completion. However, despite these increases, youth from households in the lowest income group in both cohorts lagged behind those from the highest income group in the likelihood of completing high school. Youth from households in the lowest income group also did not share with youth from the other two groups a significant improvement in postsecondary education participation.

In the employment domain, secondary school students from households in the lowest income group did not share the increase in having worked for pay in the previous year or increased earnings relative to the minimum wage, and they were the only group to show a significant decrease in current employment. In the early years after high school, the employment picture of youth from households in the lowest income group continued to be worrisome. They did not share with their highest-income peers in an increase in the likelihood of being employed since leaving high school, so that they lagged significantly behind that group on that measure, as well as on their rate of current employment. However, a large increase in hourly wage for the lowest-income group resulted in comparable wages across income groups.

Decreasing but Persistent Racial/Ethnic Differences

The patterns of changes revealed in comparisons of youth represented in NLTS and NLTS2 have shown that African-American and Hispanic youth with disabilities increasingly had experiences that were similar to those of their white peers in multiple domains. For example, whereas among cohort 1 out-of-school youth with disabilities, only 2% of Hispanic youth had participated in their communities through membership in organized groups or volunteer or community service activities, large increases resulted in levels of participation being quite similar across racial/ethnic groups in cohort 2. Similarly, cohort 1 African-American youth with disabilities lagged significantly behind white youth in the likelihood that they had worked for pay in the first few years after high school, a gap that no longer existed in cohort 2.

Yet, despite these instances of increasingly similar experiences across groups, some racial/ethnic differences remained. For example, changes over time left white youth exceeding their African-American peers in the likelihood that they were living independently in the early years after high school. Further, some changes over time suggest that some gaps may be forming between racial/ethnic groups if trends continue. For example, only white youth with disabilities experienced a significant increase in postsecondary education enrollment and in the pursuit of both employment and postsecondary education since leaving high school, and only they showed an hourly wage increase relative to the federal minimum wage. Although these changes did not create significant differences between cohort 2 white and African-American or Hispanic youth with disabilities, if this pattern of changes continues, such differences may emerge in the future.

The age groups included in NLTS and NLTS2 and the timing of data collection in the two studies permit one more comparison between youth with disabilities represented in the two studies—when youth were ages 18 through 21 and had been out of high school up to 4 years. Analyses of those cohorts, to be presented in future reports, will reveal the ways in which the changes in the early postschool outcomes of youth with disabilities documented in this report evolve as youth continue into early adulthood.

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APPENDIX A

SAMPLING, DATA COLLECTION, AND ANALYSIS PROCEDURES: NLTS WAVE 1 PARENT INTERVIEW/SURVEY AND NLTS2 WAVE 2 PARENT-YOUTH INTERVIEW/SURVEY

APPENDIX A
SAMPLING, DATA COLLECTION, AND ANALYSIS PROCEDURES: NLTS WAVE 1 PARENT INTERVIEW/SURVEY AND NLTS2 WAVE 2 PARENT-YOUTH INTERVIEW/SURVEY

This appendix describes several aspects of the NLTS and NLTS2 methods relevant to the 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.

[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).

[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

[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.

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 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.

Interviews/Surveys of Parents and Youth

The data source for the NLTS findings reported here was parents/guardians of NLTS sample members, who were interviewed by telephone or surveyed by mail in 1987.[6] NLTS2 data come from 2003 interviews with parents/guardians of NLTS2 sample members and of youth themselves when they were able to respond; youth who could not respond by telephone but could complete a self-administered questionnaire were mailed one.

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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. NLTS interviews were conducted between June and September 1987, and 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. The questionnaire 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. NLTS2 interviews were conducted between May and December 2003. Only youth whose households included an adult member who spoke English or Spanish were included in NLTS and NLTS2 interviews. In the two studies, 96% and 97% of the interviews, respectively, were conducted in English. Out of 10,369 eligible youth in NLTS, 6,852 respondents provided data. Out of 8,210 eligible youth in NLTS2, data was provided for 6,888 youth.

Wave 2 Parent/Youth Interviews

NLTS2 sample members for whom working telephone numbers and addresses were available were eligible for the Wave 2 parent/youth telephone interview in 2003. Database matching procedures were used to maximize the eligible sample, as in Wave 1. Contact procedures alerting parents of the interviews also were similar for the two waves. The major distinction between the data collection methods in Waves 1 and 2 is that interviews were sought both with parents of NLTS2 sample members and with the youth themselves if they were able to respond to questions.

The first interview contact was made with parents of eligible sample members. Those who agreed to participate were interviewed using CATI. Items in this portion of the interview, referred to as Parent Part 1, focused on topics for which the parent was considered the most appropriate respondent (e.g., services received, family expectations, and support). At the end of Parent Part 1, the respondent was asked the following:

> *My next questions are about jobs (YOUTH'S NAME) may have had, schools (he/she) may have gone to, and about (his/her) feelings about (him/herself) and (his/her) life. The questions are similar to those I've been asking you, where (he/she) will be asked to answer using scales, like "very well," "pretty well," "not very well," or "not at all well." The interview would probably last about 20 to 30 minutes. Do you think that (YOUTH'S NAME) would be able to accurately answer these kinds of questions over the telephone?*

If youth could answer questions by phone, they also were told:

> *I also have some questions about (his/her) involvement in risk behaviors, like smoking, drinking, and sexual activity. Is it all right for me to ask (YOUTH"S NAME) questions like that?*

If parents consented, interviewers asked to speak with the youth or asked for contact information to reach the youth in order to complete the youth portion of the interview, referred to as Youth Part 2.

Parents who reported that youth could not answer questions by telephone were asked:

Would (he/she) be able to accurately answer these kinds of questions using a written questionnaire?

If parents indicated youth could complete a written questionnaire, they were asked for the best address to which to send a questionnaire, and a questionnaire was sent. The questionnaire contained a subset of items from the telephone interview that were considered most important for understanding the experiences and perspectives of youth. Multiple follow-up phone or mail contacts were made to maximize the response rate for the mail survey. Data from the mail survey and Youth Part 2 of the telephone interview were merged for analysis purposes.

If parents reported that youth could not answer questions either by telephone or written questionnaire or declined to have youth asked questions related to risk behaviors, interviewers asked them to continue the interview, referred to as Parent Part 2. If youth were reported to be able to complete a telephone interview or a written questionnaire but did not after repeated attempts, parents were contacted again and asked to complete Parent Part 2 in lieu of Youth Part 2.

Exhibit A-2 reports the sample members for whom there are data from the Wave 2 Parent Part 1 and Parent Part 2 telephone interviews and the Youth Part 2 telephone/mail survey.

Combining Parent and Youth Data

Youth Part 2 of the interview contains many items that were asked only of youth because they focus on youth's perspectives or attitudes (e.g., job satisfaction, self-concept). However, the majority of the interview items that were in Youth Part 2 also were included in Parent Part 2 so that data would be available for them, regardless of whether a parent or youth completed the interview or the mail questionnaire. Thus, in preparing the data for analysis, responses to these overlapping items from parents and youth were combined—i.e., data for many Part 2 items combine responses from parents and youth in the proportions with which they completed Part 2 of the interviews, indicated in Exhibit A-2.

Exhibit A-2
RESPONSE RATES FOR NLTS2 WAVE 2 PARENT/YOUTH DATA COLLECTION

	Number	Percentage
Total eligible sample	8,210	100.0
Respondents		
Completed Parent Part 1 telephone interview	6,888	83.9
Completed Parent Part 2 telephone interview	2,997	36.5
Completed Youth Part 2 telephone interview or mail questionnaire	3,375	41.1
Completed Part 1 and either Parent or Youth Part 2	6,372	77.6
Total nonrespondents (no parent or youth data)	1,322	16.1

There also is a relatively small set of items that appeared in Parent Part 1 as well as Youth Part 2. These were considered critical variables for which the maximum amount of data would be needed; they were included in Part 1 to avoid the risk

that a Part 2 would not be completed with either the parent or youth. However, a small number of these also were included in Youth Part 2 because a youth was potentially the more knowledgeable respondent. In such cases, the youth response was used when combining parent and youth data.

Combining data across respondents raises the question of whether parent and youth responses would concur—i.e., would the same findings result if parent responses were reported instead of youth responses. Exhibit A-3 reports the level of congruence in parent and youth responses to four items related to key outcomes of interest. However, a high degree of congruence gives confidence that accurate information is being collected, regardless of who provided Part 2 responses.

When both parents and youth were asked whether the youth belongs to an organized community group, currently works for pay, and worked for pay in the past 2 years, and whether currently employed youth earned less than $5.15 per hour, $5.15 to $6.00 per hour, $6.01 to $7.00 per hour, or more than $7.00 per hour, their responses agreed from 68% to 87% of the time. The greatest congruence (87%) is noted regarding youth's current employment, with high congruence (79%) also evident regarding wages for that employment. There is somewhat less, although still relatively high, agreement regarding employment in the preceding 2 years (74%). Parents and youth were least likely to agree on whether youth belonged to an organized group in the community. This item could be expected to have greater discrepancy than those dealing with employment because parents could be less aware of youth's social or leisure time activities than of employment, the evidence of which would be visible in the wages earned and spent.

Exhibit A-3
CONGRUENCE OF PARENT AND YOUTH RESPONSES TO KEY ITEMS

	Percentage with:		
	Congruent Responses	Parent Answering Yes/ Higher Wage, Youth No/ Lower Wage	Parent Answering No/Lower Wage, Youth Yes/Higher Wage
Youth currently working for pay	86.9	5.7	7.5
Current hourly wage	79.1	5.5	15.4
Youth worked for pay in past 2 years	73.6	7.6	18.9
Youth belongs to an organized group in the community	68.5	4.4	27.1

It is impossible to determine the cause of discrepant responses. Complete congruence would not be expected, even with both respondents answering accurately, because Parent Part 1 could have been completed well before the subsequent Part 2 interview during the 7-month interview period; the status of youth could have changed in the intervening period. In such cases, both responses would be accurate at the time given. However, discrepancies also could result from one response being inaccurate, either because a respondent gave a socially desirable response (e.g., reported a youth was employed when he or she was not) or because the respondent (usually the parent) had inaccurate information (e.g., a youth no longer living with a parent had not informed the parent regarding a community group he or she had joined, leading to a negative parent response regarding group membership when a positive response was accurate). Although it is not possible to tell which of two discrepant responses is correct, it is noteworthy

that with the exception of current employment, discrepant cases are more likely to result from a positive response from youth when parents responded negatively (e.g., youth reported higher wages or a higher rate of group membership than parents). Thus, for some items, youth for whom data were collected through Youth Part 2 may appear to have more positive experiences than those for whom data were collected through Parent Part 2 because of the source of the data, in addition to or instead of actual differences in their experiences. Again, this difference does not necessarily imply inaccuracies in the data, but it does affirm the difference in the knowledge and perspectives of parents and youth.

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 youth who had been out of school up to 2 years. 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-4 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-4).

Exhibit A-4
EXAMPLE OF WEIGHTED PERCENTAGE CALCULATION

Disability Category	A Number in Sample	B Participated in Group Activities	C Example Weight for Category	D 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 15 to 19 when Wave 2 parent data were collected. Thus, the full sample of youth with NLTS Wave 1 parent data included youth who were older than any in NLTS2 (20- 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 19-year-olds. To create age-equivalent samples, NLTS2 youth were weighted to match the age distribution of NLTS.

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 range demarcated by the estimate, plus or minus the standard error 95% of the time. For example, if the cohort 2 estimate for the current employment rate of youth out of school up to 2 years is 49%, with a standard error of 4.0 (as reported in Exhibit 5-1), one can be 95% confident that the true current employment rate for the population is between 41% and 57%.

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 49% 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-5. NLTS2 findings indicate that 48.9% of cohort 2 youth were currently employed (see Exhibit 5-1). The standard error accompanying that estimate is 4.0, indicating that the true current employment rate for the population is likely to fall between 44.9% and 52.9%. Cohort 2 represents a total of 1,455,505 youth out of school up to 2 years. Multiplying the percentages by this population size yields a single-point estimate of an estimate of 711,742 and a range of 653,522 to 769,962, within which the actual population size will fall, with 95% confidence.

Exhibit A-5
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)
48.9	4.0	44.9 to 52.9	1,455,505	711,742	653,522 to 769,962

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-6.

Exhibit A-6
POPULATION SIZES OF GROUPS REPRESENTED BY NLTS AND NLTS2

Groups	Cohort 1	Cohort 2
All youth with disabilities	747,442	1,455,505
Disability category:		
Learning disability	447,839	729,881
Speech/language impairment	27,011	33,439
Mental retardation	139,827	149,400
Emotional disturbance	94,882	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 out of school up to 2 years 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 out-of-school youth who match in age the 15- through 19-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 2-1, 3-2, 4-1, 4-7, 5-1, 5-2, AND 6-1

	Cohort 1	Cohort 2
Exhibit 2-1		
School-exit status (Completed high school/dropped out)	1,137	1,254
School-exit timing (Out of school for at least 1 year)	1,235	1,309
Exhibit 3-2		
Community groups	411	573
Volunteer/community service	399	552
Exhibit 4-1		
Any postsecondary education	1,165	1,029
2-year college	1,034	974
4-year college	1,165	981
Vocational/technical/business school	1,033	975
Exhibit 4-7	231	288
Exhibit 5-1		
Worked since high school	1,203	1,252
Currently working	1,140	1,213
Exhibit 5-2		
Worked full-time	487	638
Wages (More than federal minimum wage/average wage)	447	690
Type of job	397	770
Exhibit 6-1	1,178	1,270

Exhibit B-2
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS FOR DISABILITY CATEGORIES: EXHIBITS 2-2, 3-1, 3-3, 4-2, 5-3, 5-4, AND 6-2

	Learning Disability	Speech/ Language Impairment	Mental Retardation	Emotional Disturbance	Hearing Impairment	Visual Impairment	Orthopedic Impairment	Other Health Impairment/ Autism	Multiple Disabilities/ Deaf-Blindness
Exhibit 2-2									
School-exit status (Completed high school/dropped out)	200/183	110/91	121/88	175/183	217/146	117/92	98/98	64/250	35/123
School-exit timing (Out of school for at least 1 year)	205/187	116/93	136/94	188/193	226/155	122/94	105/102	67/256	70/135
Exhibit 3-1	202/183	116/91	135/90	183/187	224/133	121/94	104/101	67/248	69/134
Exhibit 3-3									
Community groups	80/89	41/42	41/29	69/94	57/64	40/45	33/41	32.117	18/52
Volunteer/community service	81/89	39/42	40/29	66/90	53/63	39/44	33/39	32/111	16/49
Negative consequences for behavior	189/176	106/82	115/86	170/190	209/132	116/90	97/95	56/246	54/130
Exhibit 4-2									
Any postsecondary education	198/150	113/78	127/73	180/155	217/102	118/85	102/83	64/209	46/94
2-year college	178/146	99/74	111/65	150/151	198/86	112/83	95/79	58/199	/91
4-year college	198/146	113/74	/66	180/151	217/87	118/83	102/80	64/202	46/92
Vocational/technical/business school	179/146	99/74	109/66	150/151	198/83	112/83	95/79	58/202	33/91
Exhibit 5-3									
Worked since high school	198/182	113/90	132/85	183/180	220/146	119/91	103/97	66/252	69/129
Currently working	196/180	109/88	123/83	175/168	213/138	114/91	102/96	64/245	44/124
Exhibit 5-4									
Worked full-time	110/109	62/50	43/31	80/101	95/79	38/51	26/32	24/130	9/55
Wages (More than federal minimum wage/average wage)	105/109	55/57	39/40	72/110	88/82	33/50	26/37	20/144	9/61
Type of job	95/134	51/60	32/40	65/124	81/87	30/58	21/41	17/158	5/68
Exhibit 6-2	204/185	115/91	126/88	182/181	221/151	120/93	102/99	64/253	44/129

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

Exhibit B-3
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY AGE: EXHIBITS 2-3, 3-4, 4-4, 5-7, 5-8, AND 6-4

	Age		
	15 through 17	18	19
Exhibit 2-3			
School-exit status (Completed high school/dropped out)	137/159	383/529	617/566
School-exit timing (Out of school for at least 1 year)	195/174	399/550	641/585
Exhibit 3-4			
Community groups	68/44	85/181	258/348
Volunteer/community service	65/42	82/176	252/334
Negative consequences for behavior	143/171	360/518	609/538
Exhibit 4-4			
Any postsecondary education	162/117	381/420	622/492
2-year college	102/107	340/394	592/473
4-year college	162/108	381/396	622/477
Vocational/technical/business school	102/106	341/397	590/472
Exhibit 5-7			
Worked since high school	187/167	381/530	443/555
Currently working	156/157	369/512	615/544
Exhibit 5-8			
Worked full-time	41/69	169/256	277/313
Wages (More than federal minimum wage/average wage)	35/73	155/285	257/332
Type of job	27/85	139/330	231/355
Exhibit 6-4	160/166	391/532	627/572

Exhibit B-4
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY SCHOOL-EXIT STATUS: EXHIBITS 4-3, 5-5, 5-6, AND 6-3

	Completers		Dropouts	
	Cohort 1	Cohort 2	Cohort 1	Cohort 2
Exhibit 4-3				
Any postsecondary education	727	745	394	269
2-year college	723	701	296	259
4-year college	727	707	--	--
Vocational/technical/business school	725	702	294	259
Exhibit 5-5				
Worked since high school	725	888	384	320
Currently working	726	870	374	302
Exhibit 5-6				
Worked full-time	357	474	125	156
Wages (More than federal minimum wage/average wage)	334	522	107	154
Type of job	300	572	93	182
Exhibit 6-3	741	903	387	320

Exhibit B-5
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY GENDER:
EXHIBITS 2-4, 3-5, 4-5, 5-9, 5-10, AND 6-5

	Boys		Girls	
	Cohort 1	Cohort 2	Cohort 1	Cohort 2
Exhibit 2-4				
School-exit status (Completed high school/dropped out)	702	816	434	438
School-exit timing (Out of school for at least 1 year)	770	852	464	457
Exhibit 3-5				
Community groups	253	375	158	198
Volunteer/community service	245	361	154	191
Negative consequences for behavior	695	802	417	425
Exhibit 4-5				
Any postsecondary education	719	663	445	366
2-year college	639	626	395	348
4-year college	719	634	445	347
Vocational/technical/business school	637	630	396	345
Exhibit 5-9				
Worked since high school	748	817	455	435
Currently working	704	788	436	425
Exhibit 5-10				
Worked full-time	338	430	149	208
Wages (More than federal minimum wage/average wage)	310	462	137	228
Type of job	283	519	114	251
Exhibit 6-5	733	821	444	449

Exhibit B-6
UNWEIGHTED SAMPLE SIZES FOR EXHIBITS BY INCOME AND RACE/ETHNICITY: EXHIBITS 2-5, 3-6, 4-6, 5-11, 5-12, 5-13, 5-14, AND 6-6

	Income			Race/Ethnicity		
	Lowest	Middle	Highest	White	African-American	Hispanic
Exhibit 2-5						
School-exit status (Completed high school/dropped out)	242/338	286/306	437/429	749/842	240/249	95/125
School-exit timing (Out of school for at least 1 year)	255/352	302/324	444/437	803/871	270/267	101/131
Exhibit 3-6						
Community groups	104/153	117/149	132/193	252/382	97/126	43/51
Volunteer/community service	103/148	112/144	132/185	246/366	94/122	42/50
Negative consequences for behavior	220/336	286/309	439/417	742/822	233/250	85/118
Exhibit 4-6						
Any postsecondary education	254/278	302/262	444/346	762/693	250/208	98/97
2-year college	226/265	262/250	414/328	680/656	217/199	89/90
4-year college	254/264	302/252	444/331	762/666	250/198	98/89
Vocational/technical/ business school	225/264	262/253	416/328	679/658	215/200	90/89
Exhibits 5-11, 5-13						
Worked since high school	255/348	301/322	443/432	785/844	263/248	99/124
Currently working	250/340	299/312	441/419	753/814	240/245	97/119
Exhibits 5-12, 5-14						
Worked full-time	69/150	129/172	230/251	366/452	66/115	36/56
Wages (More than federal minimum wage/average wage)	62/166	120/189	220/280	338/496	56/121	33/58
Type of job	49/179	100/207	207/309	303/553	51/135	25/64
Exhibit 6-6	252/346	301/315	442/434	770/852	250/255	100/126

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