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ABSTRACT

This report used data from the National Longitudinal Survey of Youth (NLSY) and the National Longitudinal Transition Survey (NLTS) to evaluate outcomes for 11 categories of students with disabilities in comparison with nondisabled students. The study focused on youth in the last years of secondary school and in the 2 years after leaving secondary school and looked at how many young people dropped out of secondary school, the grade levels at which dropouts left, how many of those who dropped out completed general education development (GED) programs, and how many of those who graduated attended postsecondary schools. The study also examined employment patterns and a measure of social adjustment (the arrest rate). Findings indicated that, compared to nondisabled individuals: (1) more students with disabilities dropped out of secondary school; (2) fewer dropouts with disabilities completed GEDs; (3) fewer graduates with disabilities attended postsecondary schools; (4) fewer youth with disabilities had paying jobs; (5) more employed youth with disabilities worked part-time and in low-status jobs; (6) fewer out-of-school youth with disabilities achieved residential independence; and (7) more youth with disabilities were arrested. Extensive appendices include details of the NLTS sample design, NLTS products, the NLSY study analysis, variables used in the report, and disability classifications. (Contains 51 references.) (DB)

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A Report from the National Longitudinal Transition Study of Special Education Students

March 1992

Prepared for:

The Office of Special Education Programs
U.S. Department of Education

Prepared by:

Camille Marder
Ronald D'Amico

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SRI International



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INTRODUCTION

The recent passage of the Americans with Disabilities Act points up the continuing policy and programmatic interest, at the highest levels, in issues related to people with disabilities. That interest recognizes the barriers to independence that people with disabilities face and the negative impact of such barriers on many aspects of their lives. For example, a survey by the International Center for the Disabled (1986) reports that people with disabilities are three times as likely to have dropped out of high school as people without disabilities, and have an employment rate that is among the lowest of any group of Americans under 65 years old. Furthermore, according to the survey, people with disabilities are twice as likely to be poor as people without disabilities.

How can the prospects for adult independence of persons with disabilities be improved? The public education system is well positioned to exert a positive influence, both on those with disabilities—through education and training in skills needed for independence—and on the general public—through education aimed at increasing our appreciation of the abilities and unique qualities of all people. Although these positive influences can be exerted throughout students' school careers, particular attention has been paid recently to the role of the schools in the years of transition from secondary school to adulthood. Are students making that transition effectively? What school programs or services seem to support more successful transitions? Are support services that might be needed by some youth being provided in school and beyond? Who succeeds? Who "falls through the cracks"?

Early answers to questions such as these gave cause for concern. Studies reported that many young people with disabilities dropped out of secondary school, and that relatively few were employed, pursued postsecondary education, or lived independently (Edgar, 1987; Harnisch, 1987; Hasazi, Gordon, and Roe, 1985; Mithaug, Horiuchi, and Fanning, 1985; Sitlington, Frank, and Cooper, 1989). However, such studies generally involved only single states or school districts, and youth with only one or a few types of disabilities. To what extent did the picture they painted of poor transition outcomes hold for youth with disabilities nationwide? To make national policy, national data representing all students in special education were needed. Consequently, in 1983 Congress mandated the National Longitudinal Transition Study of Youth (NLTS).

The NLTS is an ongoing study being conducted by SRI International under contract to the Office of Special Education Programs (OSEP) of the U.S. Department of Education. As part of that study, data were collected in the summer of 1987 for a nationally representative sample of more than 8,000 young people in all 11 federal special education disability categories who were between the ages of 13 and 21 in the 1985-86 school year and were enrolled as secondary special education students in the fall of that year. Data were collected by telephone or in-person interviews with parents, from school records, and from a survey of educators in schools attended by study participants (see Overview of the Databases below and Appendix A for a description of the sample and data collection).

Using the NLTS, various audiences interested in issues related to youth with disabilities are learning much about a broad range of transition experiences and outcomes in the areas of education, employment, and personal independence. Findings from the NLTS are being made available for a variety of purposes and in a variety of forms (Appendix B lists the NLTS products currently available). Additional analyses and products will be forthcoming in the remaining years of the study.

Initial results from the NLTS suggest a "mixed bag" of transition outcomes of youth with disabilities nationally. We find that more than half of youth with disabilities who left school were graduates. Seven of 10 youth who had been out of secondary school up to 2 years had held a paid job in the preceding year; 14% had enrolled in some form of postsecondary education or training, and 12% had established independent living arrangements (for a complete report, see Wagner et al., 1991). These were significant achievements for many youth.

However, there is a flip side to these achievements. Of the youth who had left secondary school, one-third had dropped out, more than 85% had attended no postsecondary school in the preceding year, 30% had not held a paid job, and almost 1 in 8 had been arrested.

How do we interpret these findings? The extent to which the outcomes of youth with disabilities seem positive or negative depends, in great part, on the yardstick against which they are measured. One logical yardstick for assessing the outcomes of youth with disabilities is the experiences of the general population of young people. For example, if we know the percentage of young people in the general population who had not held jobs, the fact that 30% of youth with disabilities had not held jobs is much more meaningful.

The experiences of young people in the general population not only are a logical comparison for the outcomes of young people with disabilities, they also are important for formulating public policy in helping us understand the extent to which young people with disabilities are having certain experiences because they have disabilities or simply because they are youth. Poorer transition outcomes of young people with disabilities in a particular arena, such as employment, point to opportunities for strengthening specific education and training programs. They also attest to the need for legislative guarantees of equality in employment for those with disabilities, such as those included in the Americans with Disabilities Act. Conversely, when similar transition experiences are found for young people with disabilities and those in the general population, we know where we have been effective in helping young people with disabilities achieve independence typical of their peers.

Despite the importance of comparing outcomes for young people with disabilities and young people as a whole, such comparisons are not straightforward, for at least two reasons. First, although the NLTS provides the most comprehensive database yet available on the transition experiences and outcomes of young people with disabilities, no precisely comparable database exists for young people in general. Differences in content, sample, timing, or respondents between the NLTS and all major databases on adolescents and young adults in the general population complicate using them for comparisons, and collecting data firsthand for an appropriate comparison group was beyond the scope of the NLTS itself.

The second complicating factor in drawing comparisons between young people with disabilities and the general population is that the presence of a disability in the former group is not the only factor that distinguishes it from the latter group. Knowing that there are differences between the employment or dropout rates of young people with disabilities and the general population, for example, may help in interpreting the rates of the former. However, we cannot conclude that such differences result from disability. The NLTS has found that young people with disabilities differ from the general population of young people in gender, ethnicity, and family background (see Marder and Cox, 1991)—factors that have been shown in other research to influence the outcomes of youth (e.g., Greenberger and Steinberg, 1983; Jencks et al., 1972; Eckstrom et al., 1986). Therefore, our understanding of the differences in transition outcomes of youth with disabilities and youth in general would be enhanced if we could purge from them the influence of these demographic factors.

Recognizing the difficulties and limitations inherent in developing a valid comparison group using extant data, as well as the importance of doing so, OSEP asked the NLTS researchers to

examine the extent to which there were differences in several transition outcomes between young people with disabilities and young people in the general population, selecting from among available data sources the database that best lent itself to comparison with the NLTS. Further, the analyses were to include comparisons both with youth from the general population as a whole and with youth who were similar to youth with disabilities on demographic factors important to their transition outcomes (thereby eliminating differences on those factors as possible explanations for differences in outcomes).

After careful review of several alternative databases, the National Longitudinal Survey of Youth (NLSY) (Center for Human Resource Research, 1988) was selected for our purposes, in large part because its contents permit us to make comparisons on a broad range of relevant transition outcomes (see Overview of the Databases below and Appendix C for a description of the NLSY sample). The following section describes those outcomes; Appendix D provides more details on the precise data items being compared. We then describe in somewhat greater detail the two databases themselves and our efforts to maximize their comparability. Finally, we describe differences in transition outcomes between subsamples of three groups of youth: youth with disabilities, youth in the general population, and youth in the general population but with demographic characteristics that match those of youth with disabilities.

We also report separately the transition outcomes of youth in each of the 11 federal special education disability categories, as designated by the schools or school districts from which NLTS youth were sampled (see Table D-1 in Appendix D for definitions of these categories) to demonstrate the sometimes wide variation in transition outcomes of youth with disabilities. The analyses in this report focus on these groups of youth in the last years of secondary school and in the 2 years after leaving secondary school.

TRANSITION OUTCOME MEASURES

Transition is a process extending from secondary school into the early adult years. During this process, several areas of young people's lives are in flux. Given a congressional mandate to examine outcomes in the areas of education, employment, and independence, the NLTS has examined a variety of experiences of young people with disabilities, such as secondary school performance, attendance at postsecondary schools, employment, social activities, and residential independence, and has reported on them extensively (see Wagner et al., 1991). Data to compare young people with disabilities and young people in general do not exist for all of these experiences, however. Thus, the comparisons in this report are limited to experiences that were measured in similar ways by the NLTS and NLSY.

Concerning education, we examine how many young people left secondary school by dropping out and the grade levels at which dropouts left, how many of those who dropped out completed general education development (GED) programs, and how many of those who graduated attended postsecondary schools. We describe employment patterns by showing the rate at which youth were employed while in secondary school and in the first years afterward. We also describe the jobs of out-of-school youth in terms of hours worked and occupations. We then show how many out-of-school youth were living independently. Lastly, we add a measure of social adjustment, examining the rate at which young people had been arrested.

Overview of the Databases

The National Longitudinal Transition Study

As described earlier, the NLTS includes data for more than 8,000 young people who were in special education programs in the 1985-86 school year.* (See Appendix A for a description of the sample, data collection, and weighting; see Javitz and Wagner, 1990, for a more detailed description of the sample design and weighting.) Although the NLTS as a whole includes young people who were 13 through 21 years old in 1985 (and, therefore, 15 to 23 years old when interviews were done in 1987), the analyses reported here include only the 7,107 youth who

* Throughout this report, the terms "young people with disabilities" and "youth with disabilities" will be used as a shorthand to refer to youth who were currently enrolled in secondary school or who had been out of secondary school less than 2 years. The terms should not be construed to mean "all young people with disabilities" regardless of their school status.

were 15 through 20 years old in 1987. We excluded youth over the age of 20 because we sought to compare only youth who were of similar ages *and* school statuses, including length of time out of school for exiters. All NLTS youth, regardless of their age, were either in school or had been out of school less than 2 years when interviewed. In contrast, most youth over the age of 20 in the general population had been out of school more than 2 years. Therefore, few 21- to 23-year-olds in the general population would have matched their NLTS age mates in terms of time out of school.

Figure 1 shows the primary disability classifications of the national population of 15- to 20-year-olds with disabilities represented in this report.* Youth classified as learning disabled constituted more than half of the population (57%), while youth classified as mentally retarded were almost one quarter (22%), and youth classified as seriously emotionally disturbed were just over 10% of the population.** Speech, sensory, and physical disabilities were relatively low-incidence conditions.

Although one might imagine that excluding the oldest NLTS youth would result in a sample that contains relatively few youth with severe disabilities compared with the entire population of students in special education in secondary schools, this is not the case. Youth represented in this report, aged 15 to 20, have virtually the same distribution of disabilities as youth represented by the entire NLTS and as youth aged 13 to 21 who were served under Part B of the Education of the Handicapped Act (P.L. 94-142, EHA-B) as reported by the U.S. Department of Education (1988).†

* Many of these categories encompass a variety of specific disabilities (see Table D-1 in Appendix D for complete definitions). For example, the learning disabled category includes youth with brain injuries, minimal brain dysfunction, dyslexia, and developmental aphasia. Furthermore, the functional and mental abilities of youth in each category range widely. For example, the NLTS has found wide ranges in IQ scores among youth with every classification. See Marder and Cox (1991) for a detailed discussion of heterogeneity of characteristics and abilities of youth within the federal classifications.

** The percentages and means reported in the tables are weighted to represent the national population of youth as described. However, the sample sizes reported in the tables (indicated as "N") are the actual number of cases on which the estimates are based. The data tables also contain standard errors for the percentages. Standard errors (shown in parentheses) have been adjusted to account for the effective sample size, rather than the actual sample size, and are larger than would be the case without such an adjustment (see Appendix A). Readers should interpret data in light of standard errors. Percentages or means based on subgroups with relatively few cases have a considerably greater margin of error than those based on larger subgroups.

† The distributions of disabilities for the population represented by the entire NLTS sample and the 1985-86 child count of students aged 13-21 who were served under EHA-B as reported by the U.S. Department of Education (1988) are shown in Appendix E.

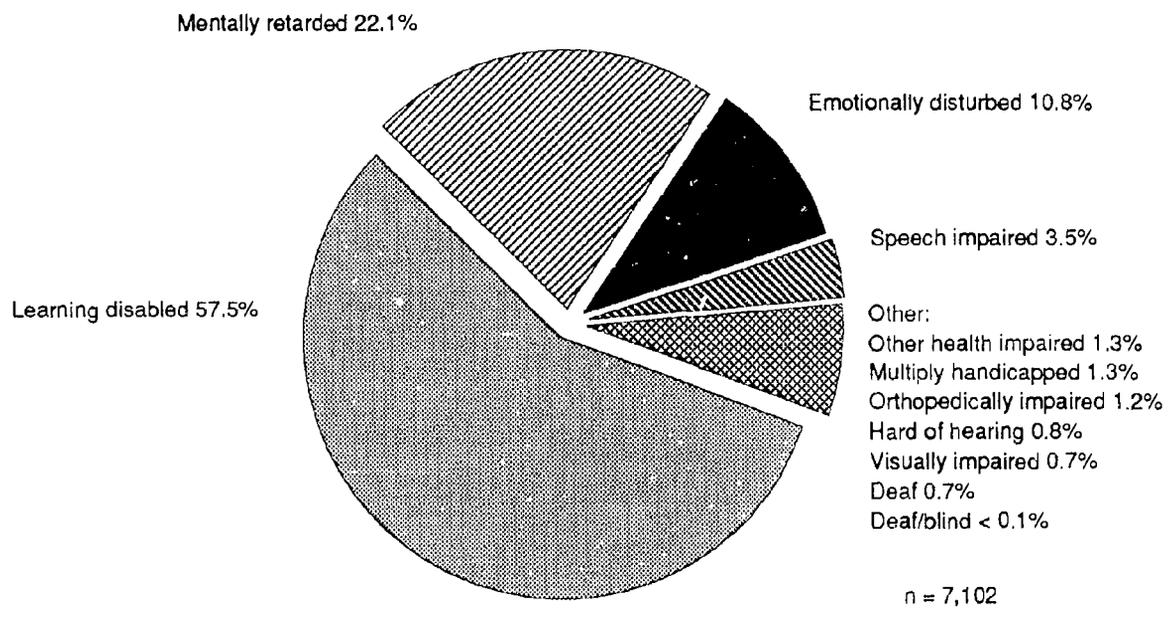


FIGURE 1 DISABILITY CATEGORIES OF YOUTH WHO WERE SECONDARY SPECIAL EDUCATION STUDENTS IN 1985-86 AND WHO WERE 15 TO 20 YEARS OLD IN 1987

Data for the General Population of Young People

Data for the general population of young people come from the National Longitudinal Survey of Youth (NLSY). The nonmilitary sample of the NLSY contains data for more than 11,000 noninstitutionalized youth who were between the ages of 13 and 21 in 1979 (for documentation, see Center for Human Resource Research, 1988). These young people have been interviewed annually from 1979 to the present concerning a wide variety of topics, including their family background, schooling, employment, marital status, and living arrangements. For the present study, we used data from the 1979 to 1983 interviews (after those years, the majority of people in the NLSY were older than the youth in the NLTS).

As mentioned earlier, we thought it was important to compare youth of similar ages and with similar secondary school enrollment statuses. To make the datasets comparable with regard to age, we selected only data for NLSY youth who were 15 through 20 years old when interviewed. To make the two groups as comparable as possible with regard to school enrollment status, we included only data for NLSY youth who were enrolled in secondary school when interviewed or who had been enrolled during the current or previous academic year.* Throughout the rest of this report, the term "general population of youth" and "youth in general" refer to youth who met this secondary school enrollment criterion, not to all 15- through 20-year-olds in the general population.

Note that selection criteria were applied to each interview year separately, with the result that a youth could be included in our dataset more than once. For example, if a youth was 16 years old and in school when interviewed in 1979, and was still in school each year when reinterviewed until 1983, we included that youth's data from the 1979-1983 interviews. However, if he or she was 18 when interviewed in 1979 and had left school during the previous year, only data from the 1979 interview was included.

The NLSY contains weights for the sample to represent the general population of youth in the United States. However, these weights assume the use of data from an equal number of interview years for all youth. Because we used data from a varying number of interview years, an adjustment to the weights was necessary. Appendix C contains a more complete description of the NLSY sample and weighting procedures.

* Most NLSY interviews took place during the spring. This school enrollment status requirement means, for example, that if a youth was enrolled in secondary school until June of 1980, the 1979, 1980, and 1981 interview records would be included in the analyses, but the 1982 and 1983 records would not be included.

Demographic Characteristics of Young People with Disabilities and of the General Population of Youth

As indicated earlier, young people with disabilities differ demographically from the general population of young people. For example, the percentage of young men among students in special education is much higher than among young people in general. Table 1 shows that almost 70% of 1985-86 secondary students in special education were male, compared with about 50% of the general population of students. Young men made up the majority in every disability category, but especially among youth classified as learning disabled, seriously emotionally disturbed, or multiply handicapped.

Compared with young people in general, fewer youth with disabilities were white (65% vs. 73%, $p < .001$), and more were black (24% vs. 14%, $p < .001$) or Hispanic (8% vs. 6%, $p < .01$). However, the percentages of youth from different ethnic backgrounds varied across the disability categories. A comparatively small percentage of young people classified as speech impaired or other health impaired were white (54%), and a comparatively large percentage of young people classified as mentally retarded were black (31%).

Young people with disabilities also differed from the general population of youth in terms of their socioeconomic status, as measured by the educational level of the head of their households.** Relatively more young people with disabilities came from households whose heads had not completed high school (41% vs. 34%; $p < .001$), and fewer came from households whose heads had completed at least 4 years of college (9% vs. 17%; $p < .001$). Educational levels of heads of household were lowest for youth classified as seriously emotionally disturbed, speech impaired, or mentally retarded. In contrast, educational levels of heads of households of youth classified as deaf, hard of hearing, orthopedically impaired, other health impaired, or deaf/blind more closely approximated levels of the general population.

* "p" values indicate the probability that the percentages presented in the text, which are estimates of the percentages in the populations based on sample data, would result from an analysis if the two populations were actually the same. For instance, $p < .001$ as shown in the text means that there is less than one chance in 1,000 that the population of youth with disabilities and youth in general actually contain the same percentages of whites, given the estimates of 65% white for the former group and 73% white for the latter group, and the standard errors of each of these estimates shown in Table 1.

** For youth who were not living with their parent or guardian, this question referred to the head of the parent's or guardian's household. See Appendix D for descriptions of variables used in this report.

Table 1

SELECTED DEMOGRAPHIC CHARACTERISTICS OF 15- TO 20-YEAR-OLDS IN THE GENERAL POPULATION¹
AND WITH DISABILITIES²

Percentage of youth who were:	Youth with Disabilities												
	General Population	All Conditions	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Deaf	Hard of Hearing	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped	Deaf/Blind
Male	51.4*** (.6)	68.7 (1.3)	73.2 (1.9)	76.1 (2.2)	59.2 (3.0)	57.8 (2.1)	55.6 (3.3)	53.3 (3.1)	52.5 (3.4)	54.1 (3.3)	55.4 (3.6)	65.3 (3.9)	52.5 (10.0)
N	21,006	7,089	984	686	538	954	779	730	703	671	412	582	50
White	73.0*** (.5)	65.2 (1.4)	67.4 (2.2)	67.3 (2.7)	54.0 (3.4)	60.5 (2.4)	64.2 (3.4)	62.9 (3.2)	64.2 (3.5)	64.5 (3.4)	54.0 (3.8)	66.5 (4.2)	67.0 (10.4)
Black	14.0*** (.4)	23.9 (1.3)	21.3 (1.9)	24.9 (2.5)	28.1 (3.1)	31.2 (2.3)	24.8 (3.0)	23.7 (2.9)	17.0 (2.7)	17.7 (2.7)	20.2 (3.0)	18.9 (3.4)	16.0 (8.1)
Hispanic	6.2** (.3)	8.2 (.8)	8.4 (1.3)	6.0 (1.4)	14.3 (2.4)	5.8 (1.1)	8.4 (2.0)	9.6 (2.0)	14.3 (2.5)	15.0 (2.6)	22.7 (3.2)	11.1 (2.8)	11.7 (7.1)
Other	6.9*** (.3)	2.7 (.5)	2.8 (.8)	1.7 (.8)	3.6 (1.3)	2.5 (.8)	2.6 (1.1)	3.8 (1.3)	4.5 (1.5)	2.8 (1.2)	3.1 (1.3)	3.5 (1.6)	5.3 (4.9)
N	21,006	6,022	830	567	447	730	677	633	626	597	376	497	42
Percentage of youth from households in which head's highest educational level was:													
Not a high school graduate	33.8*** (.6)	40.9 (1.5)	37.6 (2.4)	44.1 (3.0)	46.0 (3.5)	50.4 (2.5)	36.8 (3.4)	33.5 (3.3)	33.9 (3.5)	32.7 (3.5)	36.1 (3.7)	30.1 (4.4)	29.1 (10.6)
High school graduate	37.3 (.6)	35.9 (1.5)	39.1 (2.4)	28.8 (2.7)	28.3 (3.2)	32.2 (2.4)	33.6 (3.4)	37.0 (3.3)	36.6 (3.5)	32.5 (3.5)	28.9 (3.5)	40.3 (4.7)	32.5 (10.9)
Some college	11.5* (.4)	14.2 (1.1)	14.6 (1.7)	18.0 (2.3)	13.0 (2.4)	10.2 (1.5)	15.5 (2.6)	19.3 (2.7)	15.8 (2.7)	17.4 (2.8)	18.5 (3.0)	16.8 (3.6)	19.1 (9.1)
College graduate	10.5*** (.4)	4.7 (.7)	4.5 (1.0)	5.1 (1.3)	5.1 (1.6)	4.1 (1.0)	7.9 (1.9)	5.4 (1.6)	7.2 (1.9)	5.9 (1.7)	9.2 (2.3)	6.7 (2.4)	8.1 (6.3)
Graduate work degree	6.9** (.3)	4.3 (.6)	4.2 (1.0)	4.1 (1.2)	7.6 (1.9)	3.1 (.9)	6.3 (1.7)	4.7 (1.5)	6.5 (1.8)	11.5 (2.4)	7.3 (2.0)	6.2 (2.3)	11.2 (7.3)
N	21,006	5,646	772	524	414	678	654	605	615	563	356	428	37

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for "all conditions": * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age when interviewed and were enrolled in secondary school during the current or previous academic year.

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. In this study, only 15- to 20-year-old youth are included.

Age differences between the weighted NLTS and NLSY samples also are important to understand when interpreting results in this report (Table 2). Compared with young people in the weighted NLSY sample, a smaller percentage of young people in the weighted NLTS sample were 15 years old when interviewed and a larger percentage were 20 years old. The main cause of the difference in percentages of 15-year-olds concerns the fact that, to be included in the NLTS sample, a youth must have been at least 13 years of age and in the 7th grade when the sample was drawn (2 years before the interview). Youth with disabilities are often one or more grades behind their age mates in school. Thus, many 13-year-olds with disabilities were not yet in 7th grade and, consequently, were excluded from the sample. Furthermore, the response rate from school districts that served only youth in kindergarten through 8th grade was somewhat lower than from secondary school districts. (See Javitz and Wagner, 1990, for a discussion of sampling and response rates.) The principal reason for the difference in percentages of 20-year-olds is the school enrollment requirement described earlier. Relatively few 20-year-olds in the general population met the criterion of having been out of secondary school less than 2 years. However, because many states provide special education services to youth up to age 21, the NLTS contained a larger percentage of young people who were 20 years old and recently or still in secondary school.

Constructing a Demographically Adjusted Population for Comparison

As mentioned earlier, although we are interested in the outcomes of young people with disabilities compared with those of young people as a whole, we also want to go beyond that comparison to identify the extent to which the outcomes of the two groups differ, after taking into account the demographic differences depicted in Table 1. To accomplish this, we used Deming's algorithm* to generate a second set of weights for the NLSY data so that the NLSY sample would match the characteristics of young people with disabilities in terms of gender, ethnicity, and head of household's educational level. With this new set of weights, the NLSY data represent the general population that is demographically similar to youth with disabilities.

We caution the reader that this "adjusted general population" is constructed to match the entire population of young people with disabilities on gender, ethnicity, and head of household's educational level. However, as shown in Table 1, youth in the various disability categories differ considerably along these dimensions. Whether the adjusted or the unadjusted general

* Deming's algorithm is an iterative procedure that creates weights for a sample given a set of targets (see Appendix F for a description of this procedure).

Table 2
AGE DISTRIBUTIONS OF THE WEIGHTED SAMPLES OF YOUTH USED IN THIS REPORT

Percentage who were:	Youth with Disabilities ¹												
	General Population ²	All Conditions	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Deaf	Hard of Hearing	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped	Deaf/Blind
15 years old	22.1*** (.5)	15.2 (1.0)	15.8 (1.5)	14.9 (1.8)	23.7 (2.6)	12.1 (1.3)	14.5 (2.3)	11.9 (2.0)	12.9 (2.3)	11.8 (2.1)	19.3 (2.8)	15.6 (2.9)	8.0 (5.4)
16 years old	19.6 (.5)	20.0 (1.1)	19.9 (1.7)	23.4 (2.2)	25.9 (2.7)	18.3 (1.6)	17.8 (2.5)	15.7 (2.2)	21.7 (2.8)	15.6 (2.4)	11.8 (2.3)	22.9 (3.4)	14.0 (6.9)
17 years old	20.2 (.5)	21.9 (1.1)	23.4 (1.8)	21.1 (2.1)	20.4 (2.4)	18.9 (1.6)	22.4 (2.7)	16.3 (2.2)	18.7 (2.6)	18.8 (2.6)	24.5 (3.1)	16.3 (2.9)	23.4 (8.4)
18 years old	19.0 (.5)	18.6 (1.1)	18.3 (1.6)	19.3 (2.0)	13.2 (2.0)	19.3 (1.6)	18.4 (2.5)	20.8 (2.5)	21.8 (2.8)	19.7 (2.6)	18.9 (2.8)	18.6 (3.1)	22.4 (8.3)
19 years old	15.9 (.4)	14.9 (1.0)	14.3 (1.5)	14.5 (1.8)	10.3 (1.8)	16.7 (1.5)	15.1 (2.3)	21.7 (2.5)	16.1 (2.5)	17.5 (2.5)	15.6 (2.6)	12.0 (2.6)	15.9 (7.2)
20 years old	3.3*** (.2)	9.5 (.8)	7.9 (1.1)	6.6 (1.2)	6.0 (1.4)	14.5 (1.4)	11.7 (2.1)	13.4 (2.1)	8.4 (1.9)	16.3 (2.4)	9.5 (2.1)	14.0 (2.8)	13.1 (7.3)
N	21,006	7,107	988	688	541	957	782	731	704	671	412	583	50

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for "all conditions": * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. In this study, only 15- to 20-year-old youth are included.

² Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. Analyses in this report are limited to a nationally representative sample of youth who were 15 to 20 years old when interviewed and were enrolled in secondary school during the current or previous academic year.

population is the closest match for a given disability category depends on the demographic characteristics of youth in that category. For example, for youth classified as learning disabled, the adjusted general population is the closest match; for youth classified as visually impaired, the unadjusted general population is the closest match.

Note also that we did not reweight the general population to match the age distribution of young people with disabilities because, as mentioned earlier, the differences in the age distributions of the two samples are partly the result of the fact that young people with disabilities stay in school longer than young people in general, largely because of their disabilities. Matching on a variable that itself is affected by disability would lead to underestimates of differences between the groups, because part of the difference would have been "matched away."

Having equalized the distributions of the two groups on gender, ethnicity, and head of household's education, we can be certain that results of our comparisons are not influenced by these factors. However, even after these adjustments, there are still a number of noncomparabilities between the two groups that may influence measures of youth outcomes. The known noncomparabilities are:

- *Respondent.* The NLTS interviewed parents about their adolescent or young adult children, whereas the NLSY interviewed youth themselves. Research on youth in the general population has found differences in parents' reports of youths' activities and the reports of youth themselves. For instance, Freeman and Medoff (1982) show that parents' reports of youths' school enrollment and employment are lower than youths' self-reports. The extent of differences in reporting of other activities of youth in the general population is not known. Furthermore, we are not aware of any data on reporting differences between youth with disabilities and their parents.* To the extent that differences exist, they could bias findings.
- *Month of interview.* The NLTS interviewed in late summer and fall, whereas most NLSY interviews took place in spring and, to a lesser extent, summer. The modal months of interview were August for the NLTS and March for the NLSY. The two outcomes most affected by differences in timing of interview are school enrollment status and employment status. Fortunately, NLSY data included employment status as of August 15, and we used this variable to measure the employment of secondary school students. Employment status and job characteristics (part-time/full-time, occupational category, and wages) of out-of-school NLSY youth are reported as of the time of interview, because job characteristics were available only

* Data to analyze such reporting differences are being collected as part of Wave 2 of the NLTS.

for that time frame.* School enrollment status is measured at time of interview for all youth.

- *Year of interview.* NLTS interviews took place in 1987, whereas NLSY data come from 1979 through 1983. Readers should be sensitive to the fact that period effects may have influenced outcomes.
- *Time out of school.* Because of the differences in the month of interview described earlier, there are differences in how long out-of-school youth in the NLTS and NLSY had been out of school when interviewed. On average, NLSY secondary school dropouts and graduates in the sample (weighted to the general population) had been out of school 8 months when they were interviewed. In contrast, we estimate that NLTS youth had been out of school somewhat longer—on average, about 13 months for graduates and 12 months for dropouts.** Appendix G shows the distributions of the time since leaving school for youth in both samples. To the extent that having been out of school longer is associated with greater likelihood of employment and independent living, the fact that, on average, NLTS youth had been out of school longer may cause our analyses to underestimate differences between out-of-school youth with disabilities and out-of-school youth in general.
- *Unmeasured or unadjusted differences in factors affecting outcomes.* Young people with disabilities may differ from the general population of young people in ways that we are not aware of or in ways that we could not adjust for in the reweighting of the NLSY. Urbanicity is an example of a difference of which we were aware but that we were not able to adjust for. We know that a higher percentage of youth with disabilities than of youth in general lived in urban and rural communities, and that fewer lived in suburban communities (see Marder and Cox, 1991). Furthermore, past research has found a relationship between type of community and employment (Hasazi et al., 1985). Thus, it would have been appropriate to include urbanicity in the reweighting of the NLSY, along with gender, ethnicity, and head of household's education. We were not able to do this, however, because the NLSY does not contain a measure of urbanicity comparable to the NLTS measure. On the other hand, the adjustments we did make may have lessened some other differences between the groups. For example, our adjustment for head of household's educational level may have lessened differences in urbanicity between the two samples because the head of household's education level and urbanicity are associated.

* Comparison of out-of-school youths' employment status as of August 15 and time of interview revealed no significant differences.

** Estimates for time out of school for NLTS exiters are approximations based on data from the exiter substudy of the NLTS, which collected date of school leaving in 1989 for 807 youth who were out of school at the time of the 1987 NLTS interview and had a primary disability classification of learning disabled, seriously emotionally disturbed, mildly or moderately mentally retarded, or speech impaired. Although the year of school leaving is known for the full sample, data were not available to estimate the number of months out of school; however, there is no reason to believe that the time out of school differs for youth in the exiter substudy and youth in the full sample.

- *Exact wording of questions and response categories.* Wording of questions and response categories differed between the NLTS and the NLSY. Considerable research has shown that responses to items can be affected by these types of differences (e.g., Hippler, Schwarz, and Sudman, 1987). This last point underscores the importance of readers' being aware of the construction of variables used in the comparisons between the NLTS and NLSY samples. Appendix D contains the specifications of variables constructed using NLTS and NLSY data.

Despite the remaining noncomparabilities, we believe that we have controlled for several important demographic differences between 15- to 20-year-old youth with disabilities and the general population of youth who were in secondary school or had been in secondary school recently. If interpreted with caution, results in this report are at least suggestive of differences that may be attributed more to disability than to other factors.

Comparison of Outcomes

Secondary School Completion

Increasing concern is being expressed by parents, educators, and policymakers about students who choose to leave school without graduating. Although the dropout rate has declined markedly through this century and has held relatively steady in the past decade, public concern has increased as the consequences of dropping out have become more severe. For example, the William T. Grant Foundation on Work, Family, and Citizenship (1988) found that high school dropouts are much more likely to be unemployed than high school graduates. Furthermore, although fewer than 20% of the adult population were dropouts, they constituted 66% of the nation's prison population.

Whereas the dropout rate for young people in general is cause for concern, research suggests that dropout rates are even higher among young people with disabilities (Levin, Zigmond, and Birch, 1985; Zigmond and Thornton, 1985; Hasazi et al., 1989; Wagner, 1991). To investigate this possibility, we compared 15- to 20-year-olds who had left school in the preceding 2-year period before being interviewed, and examined how many of them had dropped out.

Before examining the comparisons of 15- to 20-year-olds, however, it is important to reiterate that they do not represent *all* young people with disabilities who left secondary school

during the 2-year period, because many youth with disabilities leave school after 20 years of age. In the general student population, there are three typical modes of leaving secondary school. Students can accumulate the necessary course credits in their high school programs and graduate, they can choose to leave school without graduating (drop out), or they can be involuntarily and permanently suspended or expelled from school (a fairly rare occurrence). Students with disabilities can exit secondary school in these three modes as well. In addition, they may "age out"—stay in school until they reach the legal age limit for receiving special education services without accumulating the necessary credits for graduation. Age limits vary by state, ranging from 19 to 26 years of age; however, what is important here is that in many states the limits are above 20 years of age (U.S. Department of Education, 1989).

To illustrate, Figure 2 shows the modes of exit of 15- to 23-year-olds with disabilities who had left school in the previous 2 school years.* Young people who left school by being suspended or expelled are included with dropouts. The percentage of 15- to 23-year-old exiters with disabilities who had aged out was fairly modest (7%); however, it varied widely for the different disability categories, depending largely on the nature and severity of the disability. At one extreme, fewer than 5% of 15- to 23-year-old exiters classified as learning disabled, seriously emotionally disturbed, or speech impaired had aged out. At the other extreme, approximately 50% of exiters classified as multiply handicapped or deaf/blind had aged out. Because most of these youth were still in school at 20 years old, they are excluded from the remaining comparisons in this paper. Therefore, the percentages of exiters with disabilities who left school by dropping out and graduating are higher for 15- to 20-year olds than they would be if exiters of all ages were included, particularly among categories with large percentages of youth who aged out.

School Completion Status of 15- to 20-Year-Old Exiters

Among 15- to 20-year-olds who had left school in the preceding 2 school years, almost twice as many young people with disabilities as young people in general had dropped out (Table 3; 41% vs. 21%, $p < .001$). The difference between youth with disabilities and the general population is only about half as large once adjustments are made for differences in gender, ethnicity, and head of household's educational level, but remains statistically significant (41% vs. 32%, $p < .001$).

* Unlike other analyses in this report, this discussion is not limited to youth who were between the ages of 15 and 20 when interviewed in 1987.

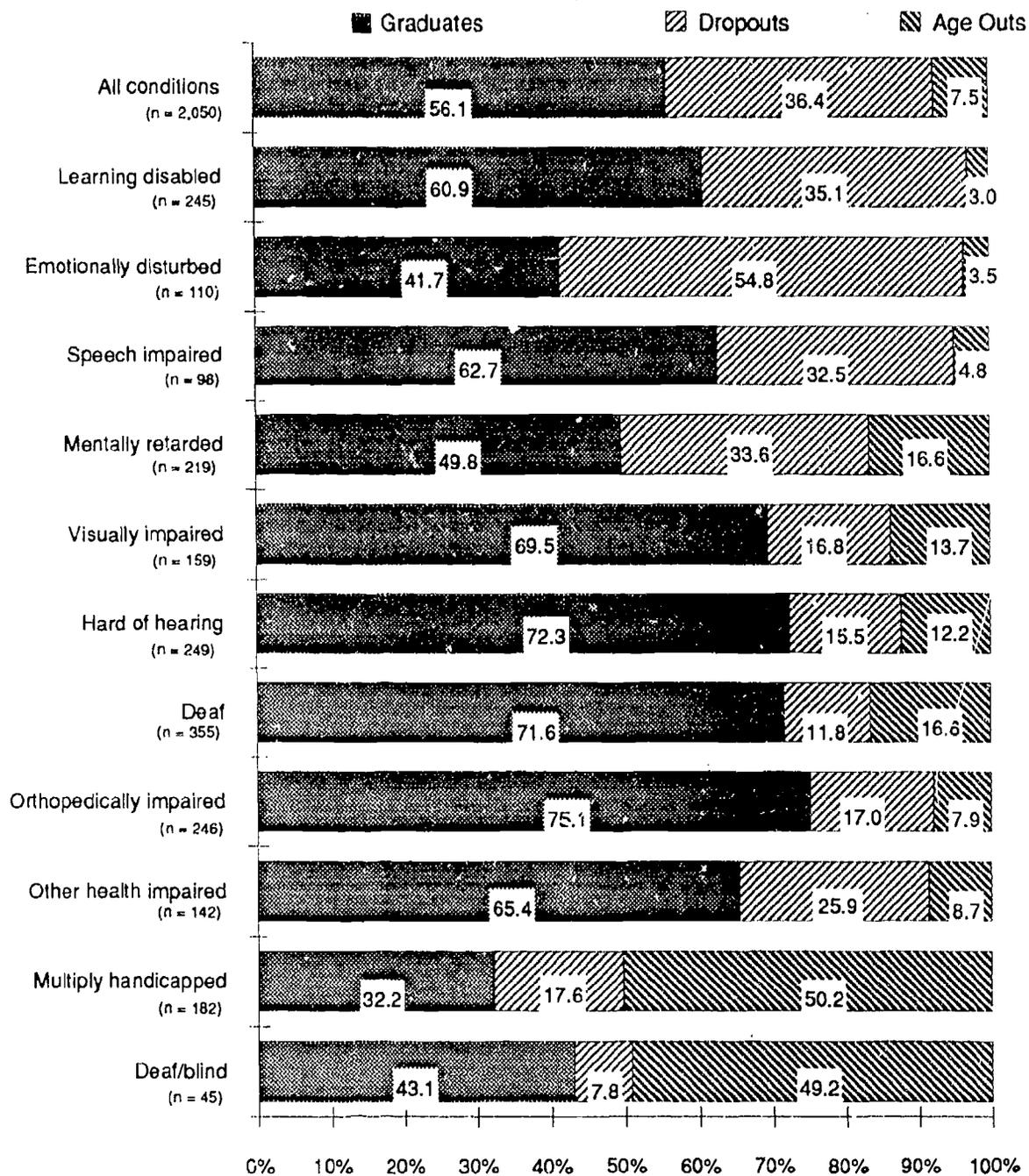


FIGURE 2 MODE OF SCHOOL LEAVING BY 15 TO 23 YEAR-OLDS WITH DISABILITIES

Table 3

PERCENTAGE OF 15- TO 20-YEAR-OLDS IN THE GENERAL POPULATION¹ AND WITH DISABILITIES² THAT EXITED SECONDARY SCHOOL BY DROPPING OUT, BY GENDER AND ETHNICITY

	General Population of Youth		Youth with Disabilities										
	Unadjusted	Adjusted ³	All Conditions ⁴	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Deaf	Hard of Hearing	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
Total	20.9*** (.8)	31.9*** (.9)	41.0 (2.3)	37.9 (3.4)	57.8 (4.3)	33.8 (4.8)	44.5 (4.0)	18.4 (4.6)	12.0 (3.7)	20.0 (5.2)	17.7 (5.1)	27.5 (6.6)	45.2 (11.2)
N	6,595	6,595	1,960	345	252	186	261	202	187	189	177	95	61
Gender													
Male	23.1*** (1.1)	33.7** (1.2)	41.8 (2.8)	38.3 (3.9)	60.2 (4.9)	40.3 (6.3)	45.0 (5.3)	18.9 (5.6)	15.2 (6.0)	17.7 (7.3)	21.9 (7.3)	20.6 (9.0)	44.5 (13.8)
N	3,273	3,273	1,196	268	184	119	145	116	97	89	89	44	42
Female	18.6*** (1.0)	28.2* (1.1)	38.7 (4.0)	36.1 (7.3)	52.2 (8.7)	22.0 (7.1)	43.5 (6.0)	18.0 (7.5)	8.4 (4.2)	21.8 (7.3)	13.6 (6.9)	32.9 (9.5)	--
N	3,323	3,323	760	76	66	67	115	86	90	100	88	51	19
Ethnicity													
Nonminority	17.9*** (.9)	29.6** (1.1)	37.9 (2.9)	35.9 (4.3)	52.4 (5.5)	22.9 (6.2)	41.7 (5.5)	13.0 (5.6)	9.1 (4.5)	17.0 (6.6)	16.2 (7.1)	31.3 (9.6)	42.4 (14.9)
N	3,605	3,605	1,133	219	155	94	134	114	108	116	101	54	34
Minority	30.2** (1.3)	36.8 (1.3)	43.2 (4.8)	39.6 (7.8)	63.9 (8.8)	52.4 (6.9)	42.2 (8.1)	18.7 (6.6)	20.1 (8.1)	28.0 (10.1)	18.5 (7.8)	24.8 (10.7)	--
N	2,991	2,991	519	70	56	58	64	66	52	52	53	30	17

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for "all conditions": * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years old when interviewed and had left school during the academic year of the interview or the previous academic year. (Only one observation per youth is included in the analysis.)

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who were no longer in secondary school when interviewed.

³ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

⁴ "All conditions" includes youth in all 11 federal disability categories. Data are presented separately only for those categories with at least 30 cases.

The great diversity among young people with disabilities is reflected in their dropout behavior, as in all other outcomes discussed in this report. In some disability classifications, relatively few 15- to 20-year-old exiters had dropped out. For example, a smaller percentage of exiters classified as deaf than of exiters in the general population had dropped out (12% vs. 21%, $p < .001$). In contrast, exiters with some other classifications were much more likely than youth in the general population to have dropped out. Specifically, the percentages of dropouts among exiters classified as seriously emotionally disturbed, mentally retarded, or multiply handicapped were 58%, 44%, and 45%, respectively ($p < .001$ for differences between youth with each classification and youth in the general population).

The associations of both gender and ethnicity with dropping out for youth in general are well known (e.g., Eckstrom et al., 1986). Our findings for youth in the general population are consistent with such past research; dropping out was more common among young men than among young women (23% vs. 19%, $p < .05$) and among minority youth than nonminority youth (30% vs. 18%, $p < .001$). However, among youth with disabilities, men and minorities were not significantly more likely to drop out than were women or nonminorities.

In contrast, having a disability was associated with greater likelihood of having dropped out for most demographic subgroups. We found higher percentages of dropouts among exiters with disabilities than among their peers in the general population (regardless of demographic adjustments) for both males and females and for nonminority exiters (after demographic adjustments, males: 42% vs. 34%, $p < .01$; females: 39% vs. 28%, $p < .05$; nonminorities: 38% vs. 30%, $p < .01$). In contrast, among minority exiters, the difference between those with disabilities and others appears largely to be attributable to differences in gender and head of household's educational level; once these were adjusted, the percentages of exiters in both groups that had left school by dropping out were no longer significantly different.

At What Grades Did Dropouts Leave School?

Although not having a high school diploma can be a disadvantage for young people in a variety of situations, the extent of the disadvantage may depend on the grades at which they left secondary school. Dropouts who stayed in school until they reached higher grade levels may be at somewhat less of a disadvantage than those who left school earlier; they may have acquired more knowledge, and having attended a higher grade level may be an important credential, independent of knowledge acquired (Berg, 1971).

Young people with disabilities not only dropped out with greater frequency than young people in general, they also tended to drop out of school at lower grades. Table 4 shows that almost twice as many dropouts with disabilities as dropouts in general had left school during or immediately after the 9th grade (27% vs. 14%, $p < .001$), and fewer than half as many had attended 12th grade (8% vs. 19%, $p < .001$).^{*} Demographic factors appear to account for some of the difference; however, a statistically significant difference between the youth with disabilities and youth in general remains even after demographic factors have been adjusted.

Small sample sizes do not permit investigation of the grades at which dropouts with various disability classifications left school. However, we were able to examine gender and ethnic patterns and found them to differ for youth with disabilities and youth in general. In the general population, the percentages of dropouts who had left school at each grade level were about the same for males and females and for nonminority and minority youth. In contrast, among young people with disabilities, female dropouts tended to have left school at lower grades than males, and minority dropouts tended to have left at lower grades than nonminority dropouts.

At the same time, lower levels of educational attainment are apparent for each demographic subgroup of young people with disabilities. Males and females, nonminority and minority youth with disabilities all tended to have left school at lower grades than their counterparts in general. Differences appear to be somewhat larger for females and minority youth than for males and nonminority youth.

Some insight as to why young people with disabilities left school at earlier grades than young people in general may be provided by Wagner (1991). Using NLTS data, Wagner found that young people with disabilities tended to be about one grade level behind their nondisabled agemates. Thus, if youth with disabilities were dropping out at about the same ages as their nondisabled peers (many at the minimum legal age for dropping out), their educational attainment would be lower.

* The differences in the highest grades attended shown in Table 4 also hold when 15- to 23- year-old special education dropouts are compared with dropouts in general.

Table 4

HIGHEST GRADE ATTENDED BY 15- TO 20-YEAR-OLD DROPOUTS IN THE GENERAL POPULATION¹ AND WITH DISABILITIES,²
BY GENDER AND ETHNICITY

Percentage of dropouts whose highest grade was:	All			Males			Females		
	General		Youth with Disabilities	General		Youth with Disabilities	General		Youth with Disabilities
	Unadjusted	Adjusted ³		Unadjusted	Adjusted ³		Unadjusted	Adjusted ³	
7th	2.2 (.7)	1.2 (.5)	1.4 (1.1)	2.4 (1.0)	1.4 (.7)	1.3 (1.3)	2.0 (1.0)	.9 (.6)	1.7 (2.3)
8th	7.3 (1.2)	7.5 (1.1)	9.8 (2.9)	7.0 (1.7)	7.4 (1.5)	6.3 (2.8)	7.7** (1.9)	7.6** (1.6)	16.9 (6.7)
9th	13.7*** (1.6)	17.0*** (1.6)	26.8 (4.3)	15.8** (2.4)	17.5** (2.1)	27.0 (5.2)	11.2*** (2.2)	16.0* (2.2)	25.5 (7.8)
10th	25.5 (2.1)	26.9 (1.9)	21.3 (4.0)	25.4 (2.8)	27.0 (2.5)	20.2 (4.7)	25.7 (3.1)	26.8 (2.6)	24.1 (7.6)
11th	32.2 (2.2)	29.8 (2.0)	25.9 (4.2)	27.7 (2.9)	28.6 (2.5)	28.8 (5.3)	37.5*** (3.4)	34.0** (2.8)	21.0 (7.3)
12th	18.9*** (1.9)	17.4*** (1.6)	7.8 (2.6)	21.6** (2.7)	18.6* (2.2)	10.4 (3.5)	15.8*** (2.6)	14.8*** (2.1)	1.7 (2.3)
Ungraded	.1*** (.1)	.1*** (.1)	7.8 (2.5)	.1** (.2)	.1** (.2)	6.0 (2.8)	--	--	9.1 (5.1)
N	1,309	1,309	345	701	701	214	608	608	128

(Continued)

Table 4 (Concluded)

Percentage of dropouts whose highest grade was:	Nonminority			Minority		
	General Population of Youth		Youth with Disabilities	General Population of Youth		Youth with Disabilities
	Unadjusted	Adjusted ³		Unadjusted	Adjusted ³	
7th	2.2 (1.0)	.9 (.5)	1.4 (1.6)	2.2 (.9)	1.9 (.8)	.2 (1.0)
8th	7.5 (1.7)	7.1 (1.5)	5.2 (3.0)	7.1 (1.6)	8.2 (1.5)	13.9 (8.4)
9th	11.9** (2.1)	18.3 (2.3)	22.2 (5.5)	17.1** (2.3)	14.7*** (2.0)	30.1 (11.2)
10th	25.7 (2.8)	27.1 (2.6)	20.1 (5.3)	25.2 (2.6)	26.6 (2.5)	31.5 (11.3)
11th	32.2 (3.0)	28.6 (2.6)	33.7 (6.3)	32.4*** (2.8)	32.0*** (2.6)	12.6 (8.1)
12th	20.5*** (2.6)	18.0*** (2.2)	7.5 (3.5)	15.7** (2.2)	16.4** (2.1)	5.3 (5.5)
Ungraded	--	--	9.9 (4.0)	.2** (.3)	.2** (.2)	6.5 (6.0)
N	621	675	176	688	688	71

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for youth with disabilities:
 * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years old when interviewed and had dropped out of school during the academic year of the interview or the previous academic year. (Only one observation per youth is included in the analysis.)

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who had dropped out of school in the 1985-86 and 1986-87 school years.

³ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

Getting a General Education Development (GED) Certificate

Beneath some of the public concern for the dropout rate is the assumption that a student who drops out has prematurely cut short his or her education. However, dropping out of secondary school is not an irrevocable action. Many students later think poorly of their choice; among dropouts in the general student population, 53% later thought that dropping out had not been a good decision (Peng, 1983). Dropouts can reconsider their choices and return to high school or earn the equivalent of a high school diploma, a General Education Development certificate. High school completion, even at a later date, appears to give youth an advantage in later life. Recent research suggests that dropouts who later complete their high school program are more likely to enroll in postsecondary schools and to be employed full time than are dropouts who do not complete their secondary education (Kolstad and Owings, 1986).

In the general population, fewer than 10% of dropouts completed GEDs within 2 years of leaving secondary school (Table 5). Among dropouts with disabilities, the completion rate was 4%—a rate significantly lower than among youth in the general population ($p < .05$). Taking demographic factors into account, however, the rates between the two groups of youth were not significantly different (4% vs. 8%).*

Limitations of sample sizes permitted investigation of GED completion rates for only three disability categories separately: youth classified as learning disabled, seriously emotionally disturbed, or mentally retarded. Even among the three groups, however, there is an important difference masked by the overall rate. The GED completion rates of dropouts classified as learning disabled and seriously emotionally disturbed were not significantly different from the overall rate for youth with disabilities (5%).** In contrast, no youth classified as mentally retarded completed such programs ($p < .001$).

For neither youth with disabilities nor youth in general were differences in GED completion rates statistically significant between males and females or nonminorities and minorities. On the other hand, the gap between those with disabilities and the general population was wider for

* To ascertain whether the differences in GED completion rates of youth with disabilities and youth in general shown in Table 5 were an artifact of discrepant lengths or time out of school in the two samples, we conducted analyses focusing only on dropouts who had been out of school 1 year or less when interviewed. The resulting 1-year GED completion rates are essentially the same as those shown in Table 5.

** Rates for both groups were 5%; standard errors were 4.0 for youth classified as learning disabled and 3.8 for youth classified as seriously emotionally disturbed.

Table 5

**PERCENTAGE OF 15- TO 20-YEAR-OLD DROPOUTS IN THE GENERAL POPULATION ¹
AND WITH DISABILITIES ² WHO OBTAINED A GED WITHIN 2 YEARS AFTER LEAVING
SECONDARY SCHOOL,³ BY GENDER AND ETHNICITY**

	General Population of Youth		Youth with Disabilities
	Unadjusted	Adjusted ⁴	
All	9.2*	8.0	4.3
	(1.0)	(.9)	(2.2)
N	2,422	2,422	326
Gender			
Male	10.4	8.6	5.9
	(1.5)	(1.2)	(3.0)
N	1,319	1,319	212
Female	7.8**	6.5*	.9
	(1.4)	(1.1)	(1.9)
N	1,103	1,103	114
Ethnicity			
Nonminority	9.4	8.3	5.7
	(1.4)	(1.2)	(3.1)
N	1,112	1,112	206
Minority	8.9**	7.5*	1.7
	(1.2)	(1.1)	(2.4)
N	1,310	1,310	120

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for youth with disabilities: * $p < .05$; ** $p < .01$; *** $p < .001$. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age when interviewed and had dropped out of school during the academic year of the interview or the previous academic year.

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who had dropped out of school in the 1985-86 and 1986-87 school years.

³ See Appendix G regarding the distributions of length of time between secondary school completion and interview date for NLSY and NLTS youth.

⁴ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

some subgroups of youth. Females with disabilities were considerably less likely to complete GEDs than their counterparts in general (1% vs. 8%, $p < .01$). Similarly, minority youth with disabilities had lower completion rates than minority youth in general (2% vs. 9%, $p < .01$).

The very low GED completion rate of female dropouts with disabilities is especially disheartening in light of the fact that having a high school diploma has been found to have particularly strong effects on the employment chances of young women in general (Marder, 1988); however, the low rate is not surprising given parents' reports to NLTS that almost 1 in 4 female dropouts had left school because of marriage and/or pregnancy (Wagner, 1991).

Postsecondary Education

For many young people, postsecondary education is an important step on the road to adulthood. In the past, postsecondary education was seen as opening doors to many of the best jobs, with their attendant high status and income (see e.g., Becker, 1975, regarding the monetary returns to schooling; Blau and Duncan, 1967, and Jencks et al., 1972, regarding education and occupational prestige). In recent years, the occupational structure has changed, with increases in both the percentage of white collar jobs and the percentage of blue collar jobs that require advanced technical training. With these changes, postsecondary education has become a requirement for an increasing percentage of jobs (Hudson Institute, 1987).

Postsecondary education and training may be particularly important for many youth with disabilities. Improved skills may help to compensate for obstacles to employment they may experience as a result of their disabilities. The support services that may be part of postsecondary education or training programs, such as career counseling or job placement services, also may help youth with disabilities target their educational programs and job search efforts toward careers and markets most appropriate to persons with their combinations of abilities and disabilities. The opportunities for social interactions with other students may expand students' friendship circles and the satisfaction they take in their post-high school activities. In short, as Will (1984) wrote, postsecondary education offers "an age-appropriate, integrated context in which youth and young adults with disabilities can expand personal, social, academic, and vocational skills" (p. 4).

Because of the evident benefits of collegiate education and postsecondary vocational training for students in the general population (Rumberger and Daymont, 1984), and concern about impediments to the postsecondary participation of students with disabilities (Stilwell,

Stilwell, and Perritt, 1983), federal education policymakers and educators are considering with interest the role of postsecondary education in preparing youth with disabilities for life beyond high school (Flynn, 1982; Will, 1984; Baker and Blanding, 1985; Greenan, 1985).

Table 6 compares rates of postsecondary school enrollment in the preceding year for high school graduates who had been out of school up to 2 years.* The difference between enrollment rates of graduates with disabilities and graduates in general is quite large—33 percentage points. Whereas more than half of recent high school graduates in the general population had attended postsecondary schools in the year before the interview, fewer than one quarter of youth with disabilities had done so (56% vs. 23%, $p < .001$). Adjusting the data for the general population to match youth with disabilities in terms of gender, ethnic background, and head of household's education reduces the gap between the two groups slightly; however, even after such adjustments, rates of enrollment in postsecondary schools were almost 30 percentage points lower for youth with disabilities than for their counterparts in the general population (23% vs. 52%, $p < .001$).

Despite the low rate of postsecondary enrollment for graduates with disabilities as a group, enrollment rates were considerably higher for some disability groups. In fact, postsecondary enrollment rates of graduates classified as speech impaired, visually impaired, deaf, or hard of hearing (48%, 67%, 51%, 47%, respectively) were not statistically different from the rate of the general population. The relatively low rate for young people with disabilities as a whole is due mainly to the fact that few youth in the three largest disability categories attended postsecondary schools. Among recent graduates classified as learning disabled, seriously emotionally disturbed, or mentally retarded, only 23%, 18%, and 8%, respectively, had attended postsecondary schools in the preceding year, rates that were significantly lower than for the general population regardless of demographic adjustments ($p < .001$ for all groups).

* Dropouts, who had very low rates of postsecondary enrollment (Butler-Nalin and Wagner, 1991), are now included in these analyses of postsecondary enrollment. NLTS data used in these analyses are limited to high school graduates who had been out of school 1 to 2 years. About half (54%) of youth in the NLTS who had been out of school 1 to 2 years when interviewed had been out about 14 months, and another 17% had been out about 22 months (see Appendix G). The vast majority (89%) of NLSY graduates had been out of school between 7 and 11 months. These differences in length of time out of school might result in an upward bias in rates of postsecondary participation for youth with disabilities. Therefore, the true differences between rates of postsecondary enrollment of youth with disabilities and youth in general may be even greater than those reflected in this report.

Table 6

PERCENTAGE OF 15- TO 20-YEAR-OLD HIGH SCHOOL GRADUATES IN THE GENERAL POPULATION¹ AND WITH DISABILITIES² WHO ATTENDED POSTSECONDARY SCHOOLS, BY TYPE OF SCHOOL

Percentage of Graduates Who Attended:	Youth with Disabilities											
	General Population of Youth			Emotionally Disturbed	Learning Disabled	All Conditions ⁴	Speech Impaired	Mentally Retarded	Visually Impaired	Deaf	Hard of Hearing	Orthopedically Impaired
	Unadjusted	Adjusted ³	All Conditions ⁴									
Any post-secondary school	55.7*** (1.0)	52.1*** (1.0)	22.5 (4.2)	17.9 (10.0)	23.1 (5.8)	22.5 (4.2)	48.4 (40.0)	8.1 (5.5)	67.5 (10.5)	51.0 (11.8)	47.2 (13.6)	37.8 (10.4)
N	5,100	5,100	442	30	90	442	45	44	60	44	46	53
2-year or 4-year college	50.1*** (1.0)	45.9*** (1.0)	12.6 (3.4)	13.8 (9.0)	12.5 (4.6)	12.6 (3.4)	38.4 (9.7)	.0 (.0)	65.5 (10.6)	49.6 (11.8)	25.4 (11.9)	27.7 (11.9)
N	5,097	5,097	442	30	90	442	45	44	60	44	46	53
Postsecondary vocational school	7.6 (.6)	8.3 (.6)	10.8 (3.2)	6.8 (6.5)	11.7 (4.4)	10.8 (3.2)	10.0 (6.0)	8.1 (5.5)	3.0 (3.8)	1.4 (2.8)	24.2 (11.9)	10.1 (6.5)
N	5,108	5,108	442	30	90	442	45	44	60	44	45	53

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Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for "all conditions": * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

- ¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age when interviewed and had graduated from high school during the academic year of the interview or the previous academic year.
- ² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who graduated from school in the 1985-86 or 1986-87 school year.
- ³ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.
- ⁴ "All conditions" includes youth in all 11 federal disability categories. Data are presented separately only for those categories with at least 30 cases.

Postsecondary enrollment comprises enrollment in both colleges and postsecondary vocational schools. However, differences in rates of postsecondary enrollment between graduates with disabilities and graduates in general result almost entirely from differences in rates of college attendance. Whereas about half of high school graduates in general attended college in the first year or so after secondary school, only 13% of graduates with disabilities did so in a similar time period ($p < .001$). In contrast to graduates classified as speech impaired, visually impaired, deaf, or hard of hearing, whose postsecondary attendance rates were similar to those of youth in general (48%, 67%, 51%, and 47%, respectively), graduates classified as learning disabled and seriously emotionally disturbed had particularly low rates of attendance (13% and 14%, respectively); no youth classified as mentally retarded had attended college.

In contrast, graduates with disabilities enrolled in postsecondary vocational schools at about the same rates as graduates in general (11% vs. 8%). Furthermore, postsecondary vocational schools appear to be accessible to a wide range of youth; enrollment rates did not differ much for youth in the various disability categories, with the exception of youth classified as visually impaired and deaf, who tended to enroll in colleges rather than in postsecondary vocational schools. The variety of abilities appropriate to the diverse programs offered by postsecondary vocational schools may be one reason for this accessibility. In addition, flexible entrance and exit dates and relatively short durations of many postsecondary vocational programs may increase accessibility of postsecondary vocational schools for youth with some types of disabilities.

Among graduates in each demographic subgroup, there was no relationship between gender or ethnicity and enrollment in postsecondary schools; rates for male and female graduates and for nonminority and minority graduates in each group were about the same (Figure 3). However, the large differences between youth with disabilities and youth in general shown in Table 6 hold for youth of both genders and ethnic groups. The gaps are large for each subgroup—more than 30 percentage points for males (21% vs. 54%, $p < .001$), females (26% vs. 57%, $p < .001$), and nonminority graduates (21% vs. 58%, $p < .001$) and about 20 percentage points for minority graduates (28% vs. 49%, $p < .001$).

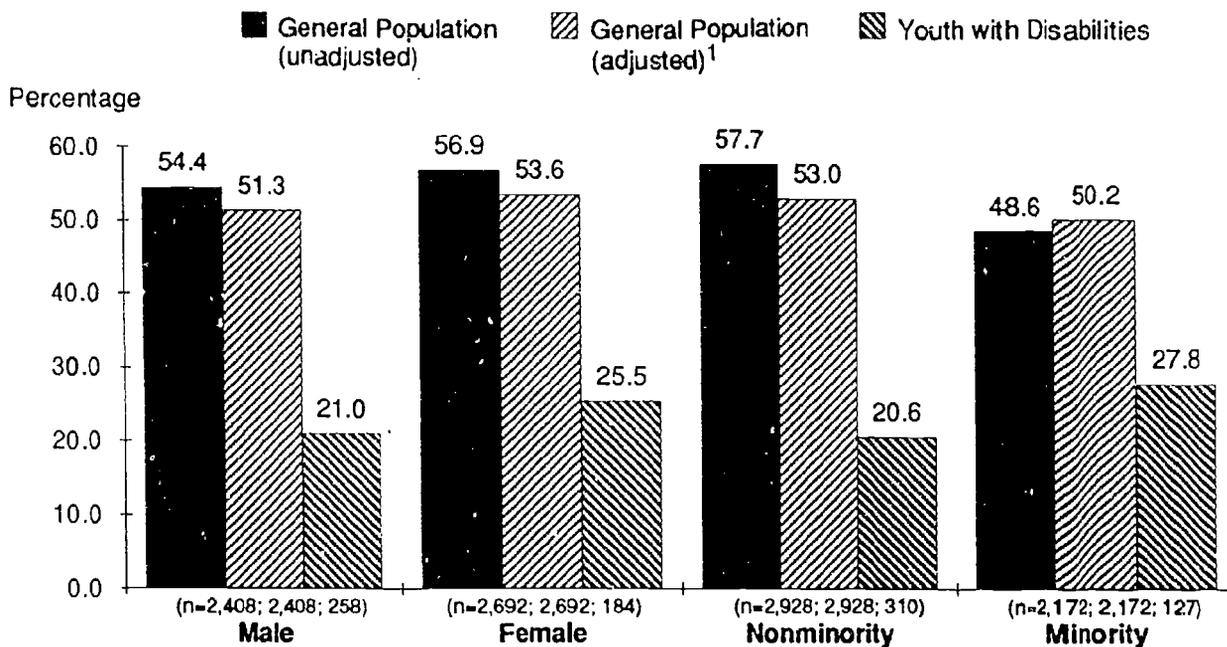


FIGURE 3. PERCENTAGE OF 15- TO 20-YEAR-OLD SECONDARY SCHOOL GRADUATES IN THE GENERAL POPULATION² AND WITH DISABILITIES³ WHO ATTENDED POSTSECONDARY SCHOOL IN THE FIRST 2 YEARS AFTER LEAVING SECONDARY SCHOOL, BY GENDER AND ETHNICITY

¹ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

² Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age when interviewed and had graduated from high school during the academic year of the interview or the previous academic year.

³ Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who graduated from school in the 1985-86 or 1986-87 school year.

Employment

In establishing the Secondary Education and Transition Services for Handicapped Youth Program, the 1983 Amendments to the Education for All Handicapped Children Act indicate that a primary purpose of the program is "to ensure that secondary special education and transitional services result in competitive or supported employment for handicapped youth" (34 CFR 326.1). The importance and implications of paid employment for all individuals, including individuals with disabilities, was aptly explained by then Assistant Secretary of Education Madeleine Will (1984):

Paid employment offers opportunities to expand social contacts, contribute to society, demonstrate creativity, and establish an adult identity. The income generated by work creates purchasing power in the community, makes community integration easier, expands the range of available choices, enhances independence, and creates personal status. (p. 1).

Past studies generally have found low employment rates among youth with disabilities, with high percentages of employed youth working part time, in low-status occupations, and for low wages (e.g., Hasazi et al., 1985; Mithaug et al., 1985). However, these same characteristics may be used to describe employment patterns of the general population of youth—particularly minority youth and youth from low socioeconomic backgrounds (Freeman and Wise, 1982; Osterman, 1980), two groups that are overrepresented among youth with disabilities. We now turn to examining the extent to which employment patterns of youth with disabilities differ from those of youth in general and how much of the differences may be attributed to selected demographic factors.

The Employment Experiences of Secondary School Students

There has been some controversy over whether jobs held by high school students in the general population are good preparation for adult jobs (e.g., Greenberger and Steinberg, 1986; Meyer and Wise, 1982). However, for youth with disabilities, practitioners place a high value on work experience. For example, Wehman, Kregel, and Barcus (1985) identify work experience as imperative to prepare special education students fully for a successful transition to adulthood. They write:

Students should train and work in the community whenever possible. This is not only to expose them to the community and work expectations, but to expose future employers and coworkers to their potential as reliable employees. ...[It] appears that this form of service delivery will be a truly vital aspect of meaningful transition into natural work environments. (p. 29)

Despite practitioners' goals, summer employment rates of high school students with disabilities were significantly lower than those of youth in general (Table 7; 35% vs. 43%, $p < .001$)*, and little of the gap appears to be due to differences in gender, ethnicity, or head of household's educational level. Despite this lower rate for students with disabilities as a whole, the employment rates of students in several disability categories were about the same as those of students in general; about 4 in 10 students classified as learning disabled, seriously emotionally disturbed, or hard of hearing were employed. In contrast, students classified as mentally retarded, visually impaired, orthopedically impaired, or multiply handicapped were much less likely to be employed than youth in general, with rates ranging from 9% to 17% ($p < .001$).

These differences in employment rates of students with various disability classifications suggest that disability-related factors (e.g., inability to perform certain types of jobs, the need for special equipment, or discrimination against individuals with apparent disabilities) may be reasons for comparatively low employment rates. However, the fact that employment rates were low for some categories of students who also had low dropout rates and high college attendance rates (e.g., visually impaired and deaf) suggests that other factors may also be influential. Perhaps high percentages of college-bound youth spent their summers in academic pursuits, resulting in low employment rates.

For students in general, there were strong associations of gender and ethnicity with summer employment. Similar associations were found for youth with disabilities. Regardless of disability, female students were less likely than male students to be employed (38% vs. 47%, $p < .001$, for the general population; 25% vs. 39%, $p < .001$, for youth with disabilities), and minority students were less likely than nonminority students to be employed (34% vs. 46%, $p < .001$, for the general population; 21% vs. 42%, $p < .001$, for youth with disabilities).

* Analyses include youth in the summers after 8th, 9th, 10th, and 11th grades. Youth in the summer after 12th grade are not included because they are considered out of school. For NLTS youth, employment is measured as of the time of the interview; for NLSY youth, employment is measured for the week of August 15. See Appendix B for a detailed description of variables.

Table 7

SUMMER EMPLOYMENT RATES OF 15- TO 20-YEAR-OLD SECONDARY SCHOOL STUDENTS IN THE GENERAL POPULATION¹ AND WITH DISABILITIES² BY GENDER, ETHNICITY, AND GRADE IN SCHOOL

	General Population of Youth		Youth with Disabilities										
	Unadjusted	Adjusted ³	All Conditions ⁴	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Deaf	Hard of Hearing	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
All	42.5*** (.9)	41.6*** (.8)	34.5 (1.8)	41.9 (2.9)	39.0 (3.6)	29.5 (3.8)	17.2 (2.2)	16.5 (3.1)	23.5 (3.4)	40.2 (4.2)	11.2 (2.7)	25.4 (3.8)	9.2 (2.8)
N	8,919	8,919	4,157	513	333	276	504	489	461	454	414	280	399
Gender													
Male	47.0*** (1.2)	44.8* (1.1)	38.8 (2.3)	45.0 (3.5)	43.0 (4.2)	33.6 (5.1)	20.2 (3.1)	15.1 (3.8)	30.2 (4.9)	48.2 (5.7)	14.5 (4.4)	25.4 (5.1)	10.5 (3.9)
N	4,760	4,760	2,505	374	259	161	288	287	251	240	219	165	245
Female	37.7*** (1.3)	34.1** (1.1)	25.3 (2.8)	33.8 (5.5)	24.8 (6.8)	24.0 (5.5)	13.1 (3.0)	18.5 (5.3)	16.4 (4.5)	30.7 (5.9)	7.2 (2.8)	25.4 (5.8)	6.9 (3.7)
N	4,159	4,159	1,652	139	74	115	216	202	210	214	195	115	154
Ethnicity													
Nonminority	45.6 (1.1)	45.3 (1.1)	41.8 (2.3)	50.0 (3.6)	42.1 (4.2)	35.6 (5.4)	23.2 (3.1)	14.7 (4.1)	32.2 (5.3)	50.4 (5.9)	15.0 (4.2)	33.8 (5.8)	8.5 (3.5)
N	4,548	4,548	2,619	364	246	149	324	295	271	266	251	163	270
Minority	33.7*** (1.2)	34.3*** (1.1)	21.3 (2.7)	26.1 (4.8)	32.0 (6.8)	22.6 (5.1)	8.2 (2.7)	19.9 (4.4)	7.8 (2.7)	22.0 (4.5)	4.4 (2.1)	15.3 (4.6)	10.4 (4.7)
N	4,371	4,371	1,531	149	87	126	180	192	186	186	163	117	129
Grade in school													
8th grade	23.8 (3.9)	25.0 (3.5)	27.9 (6.1)	28.9 (9.6)	40.4 (11.3)	21.6 (9.0)	21.2 (9.1)	7.7 (7.0)	32.0 (13.3)	36.5 (12.1)	9.9 (6.6)	22.3 (10.9)	--
N	343	343	370	41	33	36	34	42	39	51	48	31	14
9th grade	31.0 (1.9)	30.6 (1.8)	33.0 (4.4)	35.0 (6.4)	45.5 (7.8)	15.1 (6.9)	21.1 (6.9)	15.5 (7.4)	29.5 (7.2)	36.9 (9.2)	11.6 (5.3)	15.5 (9.3)	--
N	1,640	1,640	658	102	76	50	59	84	79	79	69	35	25
10th grade	43.9 (1.5)	43.3 (1.4)	43.2 (4.3)	48.1 (6.5)	45.8 (9.1)	34.0 (8.6)	34.1 (6.6)	21.8 (8.3)	29.0 (7.7)	28.7 (9.0)	12.4 (6.1)	21.7 (9.3)	27.9 (15.7)
N	2,886	2,886	735	106	55	58	91	96	97	83	68	45	35
11th grade	54.9*** (1.2)	53.5** (1.2)	39.5 (4.5)	45.9 (6.5)	33.0 (10.0)	56.8 (11.3)	19.7 (6.1)	21.1 (9.5)	25.7 (6.6)	51.7 (9.9)	28.2 (11.2)	27.9 (9.0)	16.0 (10.2)
N	3,866	3,866	694	108	42	42	73	77	112	88	66	50	35

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for "all conditions": * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative of youth who were 15 to 20 years old and were enrolled in secondary school when interviewed.

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who were enrolled in secondary school in 1987-88 and intended to enroll in 1988-89.

³ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

⁴ "All conditions" includes youth in all 11 federal disability categories. Data are presented separately only for those categories with at least 30 cases.

In contrast, the relationship between having a disability and a lower likelihood of summer employment was not consistent for all demographic subgroups. Although the association was true of both males and females (39% for males with disabilities vs. 47% for males in general, $p < .001$; 25% for females with disabilities vs. 38% for females in general, $p < .001$), and of minority students (21% for minorities with disabilities vs. 34% for minorities in general, $p < .001$), it did not hold for nonminority students, who were about as likely as their nondisabled peers to be employed (42% vs. 46%).

Examining employment rates by grade level reveals an interesting pattern. Among students in general, summer employment was increasingly common at each successive grade level; the percentage of students in the adjusted general population who were employed climbed steadily from 24% in the summer after 8th grade to 55% in the summer after 11th grade. From 8th to 10th grade, this also was true for students with disabilities. In fact, they were employed at about the same rates as students in general at those grade levels. But in the summer after 11th grade, when the employment rate of students in general took a big jump, the employment rate of students with disabilities stayed about the same as the summer after 10th grade.

Employment Among Out-of-School Youth

We next compare the employment experiences of young people with disabilities and young people in general in the first 2 years after high school.* Research on the general population has shown that a person's employment status and the nature of his or her employment in the first few years after leaving school are often critical determinants of subsequent employment success (e.g., Lynch, 1989; Ellwood, 1982; Blau and Duncan, 1967). Will (1984) has suggested that both of these aspects of employment also are important for individuals with disabilities. Criteria for evaluating employment quality for persons with disabilities, according to the Association for Persons with Severe Handicaps, should be the same as those used to evaluate any employment:

...[I]ncome level and the resulting opportunities created by that income; quality of working life, including integration of the work place, safety, and access to challenging work; and security benefits, including job mobility, advancement opportunities, and protection from lifestyle disruptions due to illness or accident. (Will, 1984, p. 2)

* See Appendix G for lengths of time between school leaving and interview date.

Although our data do not permit us to compare jobs of young people with disabilities and young people in general along all the dimensions indicated by Will, we can examine how many workers held part-time jobs and the occupational categories of employed youth. Because of the large difference in rates of postsecondary school enrollment between young people with disabilities and young people in general, and because the effect of working while in school may be mixed, we limited our analyses to youth who had not attended postsecondary school in the preceding year.*

Employment Status—The gap between the employment rates of out-of-school youth with disabilities and youth in general is sizeable. Whereas 63% of exiters in the general population who had not attended postsecondary schools were employed, fewer than half of exiters with disabilities who had not attended postsecondary programs (49%) held jobs (Table 8, $p < .001$). Adjustments for differences in gender, ethnicity, and head of household's education make virtually no difference in the size of the gap; even after such adjustments, the employment rate of exiters with disabilities was 11 percentage points lower than that of exiters in general (49% vs. 60%, $p < .001$).

Among out-of-school youth with various disabilities, only those classified as learning disabled or speech impaired had employment rates that were not statistically different from the rates of youth in general. The employment rates of youth with all other classifications were lower than those of youth in general, ranging from 45% for young people classified as seriously emotionally disturbed ($p < .05$) to 10% for young people classified as multiply handicapped ($p < .001$).

In the general population, employment rates were lower for females than for males (55% vs. 70%, $p < .001$), lower for minority youth than for nonminority youth (53% vs. 67%, $p < .001$), and lower for dropouts than for graduates (48% vs. 75%, $p < .001$). Our findings show that these patterns also held for young people with disabilities (females vs. males: 32% vs. 56%, $p < .001$; minorities vs. nonminorities: 33% vs. 56%, $p < .001$; dropouts vs. graduates: 44% vs. 57%, $p < .05$).

* NLSY youth were excluded if they had *ever* attended postsecondary school.

Table 8

CURRENT¹ EMPLOYMENT RATES OF 15- TO 20-YEAR-OLD SECONDARY SCHOOL EXITERS IN THE GENERAL POPULATION² AND WITH DISABILITIES³ WHO HAD NOT ATTENDED POSTSECONDARY SCHOOL, BY GENDER AND ETHNICITY

	General Population of Youth		Youth with Disabilities										
	Unadjusted	Adjusted ⁴	All Conditions ⁵	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Deaf	Hard of Hearing	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
All	63.0*** (1.1) 4,475	60.2*** (1.1) 4,475	48.6 (2.9) 1,234	56.9 (4.4) 224	44.9 (5.2) 181	49.3 (7.5) 104	33.2 (4.8) 166	24.9 (6.5) 111	37.7 (7.5) 105	44.9 (8.4) 117	17.5 (6.7) 115	34.4 (9.4) 55	10.3 (8.3) 53
Gender													
Male	69.8*** (1.5) 2,321	65.4** (1.4) 2,321	56.3 (3.5) 754	63.2 (4.9) 174	52.5 (6.1) 133	59.6 (8.4) 69	38.9 (6.9) 86	27.1 (8.6) 63	42.2 (11.8) 50	64.3 (11.5) 58	14.2 (8.1) 60	-- -- 23	9.9 (9.5) 37
N													
Female	55.5*** (1.7) 2,154	49.1*** (1.5) 2,154	31.6 (4.7) 480	37.3 (9.2) 50	28.0 (9.3) 48	31.1 (13.1) 35	26.7 (6.5) 80	22.1 (10.0) 48	33.1 (9.1) 55	26.3 (10.5) 59	20.5 (10.7) 55	26.6 (11.1) 32	-- -- 16
N													
Ethnicity													
Nonminority	67.3** (1.4) 2,250	64.8* (1.4) 2,250	55.6 (3.4) 842	64.2 (4.9) 173	56.0 (6.1) 133	54.4 (10.5) 59	34.5 (6.0) 109	26.1 (8.9) 69	38.5 (9.1) 75	45.4 (10.8) 77	19.9 (9.5) 72	33.0 (12.1) 35	12.9 (11.0) 38
N													
Minority	52.9*** (1.6) 2,225	51.7*** (1.5) 2,225	32.9 (5.1) 390	37.0 (9.0) 51	22.5 (8.4) 48	42.5 (10.0) 44	31.3 (8.0) 57	22.6 (8.9) 42	35.3 (12.3) 30	44.9 (12.8) 39	12.7 (7.6) 43	-- -- 20	-- -- 15
N													
School completion status													
Graduates	74.6*** (1.4) 2,327	72.6*** (1.4) 2,327	56.8 (3.7) 782	64.0 (5.3) 143	58.1 (7.5) 83	58.6 (8.4) 68	41.1 (6.6) 97	29.4 (7.7) 91	44.2 (8.7) 83	54.4 (10.4) 83	21.2 (8.6) 88	35.9 (12.5) 31	-- -- 15
N													
Dropouts	48.2 (1.8) 2,148	48.2 (1.6) 2,148	44.5 (4.9) 374	47.8 (7.6) 79	38.4 (7.1) 93	45.6 (12.3) 33	25.8 (7.1) 64	-- -- 18	-- -- 19	18.4 (11.2) 32	-- -- 22	-- -- 24	-- -- 28
N													

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for "all conditions": * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ "Current" as of time of interview. For most NLSY youth, this is spring; for most NLT-S youth, summer. See Appendix G for length of time between secondary school completion and interview date.

² Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age when interviewed, had left school during the academic year of the interview or the previous academic year, and had never attended postsecondary school.

³ Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who were no longer in secondary school when interviewed and had not attended any type of postsecondary school during the previous 12 months.

⁴ This group matches youth with disabilities with regard to gender.

⁵ "All conditions" includes youth in all 11 federal disability categories. Data are presented separately only for those categories with at least 30 cases.

The association between having a disability and lower employment rates was pervasive, holding for every demographic subgroup we examined but one. The sizes of the gaps between young people with disabilities and their counterparts in general vary, however. When employment rates of each gender and ethnic group are compared, we see that the largest gaps were between the groups with the lowest employment rates—females (32% vs. 55%, $p < .001$) and minorities (33% vs. 53%, $p < .001$).

In contrast, when the employment rates of graduates and dropouts with disabilities are compared with their counterparts in general, we see a different pattern; there are large differences between graduates with disabilities and graduates in general (57% vs. 75%, $p < .001$) but no significant difference between groups of dropouts (45% vs. 48%). Thus, the effect of not having a high school diploma appears to be so strong that having a disability does not compound it.

Part-Time/Full-Time Status—Young workers with disabilities were more likely to be working part-time* than were their counterparts in the general population (Table 9; 38% vs. 28%, $p < .05$). Instead of decreasing the gap between young people with disabilities and young people in general, adjusting for demographic factors actually widened the gap. (The gap widened because the adjustments raised the percentage of males in the general population, and males had lower rates of part-time employment than females.)

In the general population, part-time employment was more common for females than for males (general population: 35% vs. 22%, $p < .001$), but about equally common for nonminority and minority youth (27% vs. 26%) and for graduates and dropouts (26% vs. 30%). Among youth with disabilities, no significant differences in part-time employment rates were found between any of the groups contrasted (males vs. females: 36% vs. 45%; nonminorities vs. minorities: 36% vs. 47%; graduates vs. dropouts: 39% vs. 36%).

* Part-time work is defined as fewer than 35 hours per week, following the Bureau of Labor Statistics (U.S. Department of Labor) definition.

Table 9

**PERCENTAGE OF EMPLOYED OUT-OF-SCHOOL 15- TO 20-YEAR-OLDS
IN THE GENERAL POPULATION ¹ AND WITH DISABILITIES ² WORKING PART TIME,
BY GENDER, ETHNICITY, SCHOOL COMPLETION STATUS**

	General Population of Youth		Youth with Disabilities
	Unadjusted	Adjusted ³	
All	27.6*	26.8**	38.2
	(1.4)	(1.3)	(4.2)
N	2,380	2,380	479
Gender			
Male	21.8*	23.6**	36.4
	(1.7)	(1.6)	(4.7)
N	1,351	1,351	348
Female	34.9	35.3	45.0
	(2.3)	(2.1)	(9.2)
N	1,029	1,029	131
Ethnicity			
Nonminority	27.0	25.6*	35.9
	(1.7)	(1.7)	(4.7)
N	1,363	1,363	365
Minority	26.2*	29.8	46.5
	(2.3)	(2.0)	(9.3)
N	1,017	1,017	114
School completion status			
Graduates	26.2*	24.2**	38.9
	(1.7)	(1.6)	(4.9)
N	1,485	1,485	357
Dropouts	30.3	30.5	35.9
	(2.5)	(2.3)	(7.5)
N	895	895	117

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for youth with disabilities: * $p < .05$; ** $p < .01$; *** $p < .001$. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age and were employed when interviewed, had left school during the academic year of the interview or the previous academic year, and had never attended postsecondary school.

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who were no longer in secondary school and were employed when interviewed, and had not attended any type of postsecondary school during the previous 12 months.

³ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

The association between having a disability and part-time employment differs for the various demographic subgroups. Among males and graduates, part-time employment was more common for young workers with disabilities than for their peers in general (males: 36% vs. 22% $p < .05$; graduates: 39% vs. 26%, $p < .05$). In contrast, there were no statistically significant differences in rates of part-time employment between young women (45% vs. 35%), and the significance of differences within each ethnic subgroup depended on whether or not differences in gender and head of household's educational level; were taken into account.

Occupations—The occupations of young people with disabilities also differ somewhat from those of young people in general (Table 10). Young workers with disabilities were more likely to hold low-status jobs than young workers in general, with fewer working in professional/technical/managerial/administrative (1% vs. 4%, $p < .001$), clerical (7% vs. 19%, $p < .01$), and operative jobs (12% vs. 18%, $p < .05$),* and more working as laborers (30% vs. 17%, $p < .01$) and in service jobs (e.g., food service, childcare, babysitting; 34% vs. 25%, $p < .05$). The differences cannot be attributed to differences in gender, ethnicity, and head of household's educational level between the two populations; differences remain about the same sizes even after adjustments are made for these factors.

Low-status jobs were more common for both young men and young women with disabilities than for their counterparts in general. In particular, among young men who were working, youth with disabilities were more likely than youth in general (after demographic adjustments) to be service workers (28% vs. 16%, $p < .01$) and were less likely to be working as operatives (13% vs. 24%, $p < .01$). About the same percentages of employed youth in both populations were sales workers (3%), clerical workers (5%), and crafts workers (19%).

Among young women, about 3 in 4 workers held clerical or service jobs, regardless of disability. However, whereas young women in general were split about evenly between these two job categories (clerical, 37%; service, 36%), young women with disabilities were about 2-1/2 times as likely have service jobs (55%) as clerical jobs (21%). The only other type of job at which a substantial percentage of women were employed was operative jobs, which accounted for about 10% of employment for both groups.

* Operative jobs involve the use of machinery, and include jobs such as precision machine operators, welders, dressmakers, butchers, garage workers, and gas station attendants. Transportation workers, such as bus drivers, forklift operators, and truck drivers, are also included as operatives.

Table 10
**OCCUPATIONS OF EMPLOYED OUT-OF-SCHOOL 15- TO 20-YEAR-OLDS IN THE GENERAL POPULATION¹
 AND WITH DISABILITIES,² BY GENDER**

Percentage of youth working as:	All			Males			Females		
	General Population of Youth		Youth with Disabilities	General Population of Youth		Youth with Disabilities	General Population of Youth		Youth with Disabilities
	Unadjusted	Adjusted ³	Unadjusted	Adjusted ³	Unadjusted	Adjusted ³	Unadjusted	Adjusted ³	
Professional, technical, administrative workers	4.4*** (.6)	3.5** (.6)	.9 (.8)	4.2** (.8)	3.4 (.7)	1.1 (1.0)	4.6*** (1.0)	3.7*** (.8)	.1 (.5)
Sales workers	4.5 (.7)	3.9 (.6)	2.5 (1.3)	2.7 (.7)	2.7 (.6)	2.4 (1.5)	6.7 (1.2)	7.0 (1.1)	3.0 (3.1)
Clerical workers	19.5*** (1.3)	14.0** (1.1)	6.9 (2.2)	5.0 (.9)	5.3 (.9)	3.3 (1.7)	37.3* (2.3)	36.7* (2.1)	21.2 (7.5)
Crafts workers	11.6 (1.0)	13.8 (1.1)	13.9 (3.0)	19.7 (1.7)	18.7 (1.5)	17.4 (3.7)	1.6* (.6)	1.1* (.5)	.0 (.3)
Operatives	18.3 (1.2)	21.5** (1.3)	12.1 (2.8)	24.4** (1.8)	25.5*** (1.7)	13.0 (3.2)	10.8 (1.5)	11.2 (1.4)	8.6 (5.2)
Laborers	16.7** (1.2)	20.4* (1.2)	29.9 (3.9)	27.6 (1.9)	27.0 (1.7)	34.6 (4.6)	3.2 (.8)	3.3 (.8)	11.6 (5.9)
Service workers	25.0 (1.4)	22.7* (1.3)	33.7 (4.0)	16.4** (1.6)	17.2* (1.5)	28.2 (4.3)	35.7 (2.3)	37.0 (2.1)	55.4 (9.1)
N	2,355	2,355	487	1,320	1,320	355	1,035	1,035	133

(Continued)

Table 10 (Concluded)

Percentage of youth working as:	Graduates			Dropouts		
	General Population of Youth		Youth with Disabilities	General Population of Youth		Youth with Disabilities
	Unadjusted	Adjusted ³		Unadjusted	Adjusted ³	
Professional, technical, administrative workers	5.1* (.9)	4.1 (.8)	1.4 (1.2)	3.0** (.9)	2.7** (.8)	.0 (.2)
Sales workers	4.9 (.8)	4.9 (.8)	3.5 (1.9)	3.8 (1.0)	2.4 (.8)	.6 (.3)
Clerical workers	25.2*** (1.7)	19.1*** (1.5)	7.6 (2.7)	8.3 (1.5)	6.8 (1.2)	5.7 (3.6)
Crafts workers	10.4 (1.2)	13.2 (1.3)	13.7 (3.5)	13.9 (1.9)	14.8 (1.8)	14.3 (5.4)
Operatives	18.0* (1.5)	20.6** (1.6)	9.8 (3.0)	19.1 (2.1)	22.8 (2.1)	16.4 (5.7)
Laborers	15.2** (1.4)	18.5* (1.5)	27.7 (4.6)	19.5 (2.2)	23.2 (2.1)	34.0 (7.3)
Service workers	21.2** (1.6)	19.4*** (1.5)	36.3 (4.9)	32.4 (2.5)	27.3 (2.2)	29.0 (7.0)
N	1,461	1,461	360	894	894	127

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for youth with disabilities:
* p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age and were employed when interviewed, had left school during the academic year of the interview or the previous academic year, and had never attended postsecondary school.

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who were no longer in secondary school and were employed when interviewed, and had not attended any type of postsecondary school during the previous 12 months.

³ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

Graduates with disabilities were more concentrated in low-status jobs than graduates in general. About 80% of employment among both groups was in clerical, operative, laborer, and service jobs. However, more graduates with disabilities worked as laborers (28% vs. 15%, $p < .01$) and in service jobs (36% vs. 21%, $p < .01$), and fewer worked in clerical (8% vs. 25%, $p < .001$) and operative jobs (10% vs. 18%, $p < .05$).

In contrast, the occupations of dropouts with disabilities differed very little from those of dropouts in general. The only statistically significant difference between the two groups of youth was in the percentage of employment in professional/technical/managerial/administrative jobs, and even very few dropouts in the general population held such jobs (3% vs. 0%, $p < .001$). Most dropouts worked as laborers or in service jobs and, to a lesser extent, in crafts or operative jobs, regardless of disability. Interestingly, crafts jobs accounted for about the same percentage of employment among graduates and dropouts, both with disabilities and in the general population (14%).

The high percentage of young people with disabilities working in service jobs, even among high school graduates, is consistent with earlier reports (Hasazi et al., 1985; Mithaug et al., 1985; Sitlington, Frank, and Cooper, 1989). One possible explanation why young people with disabilities were more likely than young people in general to be working at service jobs concerns vocational training received during secondary school. Hayward and Wirt (1989) found that students with disabilities were more likely than students in general to be trained for service occupations.

Residential independence

Although employment is an important part of a full adult life, it is only one of several components. The 1983 Amendments to the Education for All Handicapped Children Act also include residential independence as an important outcome during the transition period. The focus on residential independence is consistent with a long-held expectation in American society that as young people leave school and mature, they also will leave their childhood home to form new households. Past research has suggested that few young people with disabilities live independently in the early post-high-school years (Mithaug and Horiuchi, 1983; Hasazi et al., 1985). However, Wetzel (1987) reports a trend for young people in general to remain in their parents' homes longer than in past years also. In this section, we explore the extent to which young people with disabilities were living independently compared with young people in the general population in the first 2 years after high school.

Table 11 shows the percentages of out-of-school youth who were living independently at the time of the interview. To be classified as living independently, a youth must have lived alone, with a spouse or roommate, in a college dormitory, or in military housing (not with parents). Living with parents or family members other than a spouse or children, or in a group home or institution, was defined as not living independently.

Our findings for out-of-school 15- to 20-year-olds confirm that a much smaller percentage of young people with disabilities than of young people in general were living independently in the first few years after secondary school (13% vs. 33%, $p < .001$). The gap is reduced somewhat when adjustments are made for differences in gender, ethnicity, and head of household's education level; however, even after such adjustments, young people with disabilities were less than half as likely to be living independently as youth in general (13% vs. 29%, $p < .001$).

Furthermore, the rates of independent living were significantly lower for young people in almost every disability category than for young people in general. This is not to say that there was no variation across the disability categories, however. On the contrary, rates ranged from 1% of young people classified as multiply handicapped to about 22% of young people classified as visually impaired.

Judging from the cross-category differences, a great deal of the variation in whether youth lived independently appears to be related to nature and severity of disability. Newman (1991) provides some perspective for this finding. Using NLTS data, she reported strong bivariate relationships between parents' ratings of youths' ability to care for themselves* and rates of independent living. Whereas 12% of young people with high self-care ability scores lived independently, only 2% of those who performed moderately well and 1% with low self-care ability scores lived independently ($p < .001$). Similarly, parents' ratings of youths' functional mental skills also were associated with whether young people lived independently—3% of low scorers lived independently, compared with 12% of high scorers ($p < .001$).

* See Wagner et al. (1991) for scale definitions.

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Table 11

PERCENTAGE OF OUT-OF-SCHOOL 15- TO 20-YEAR-OLDS IN THE GENERAL POPULATION¹ AND WITH DISABILITIES² LIVING INDEPENDENTLY, BY GENDER AND ETHNICITY

	General Population of Youth		Youth with Disabilities										
	Unadjusted	Adjusted ³	All Conditions ⁴	Learning Disabled	Emotionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Deaf	Hard of Hearing	Orthopedically Impaired	Other Health Impaired	Multiply Handicapped
All	33.2*** (.8) 7,560	28.9*** (.8) 7,560	13.4 (1.7) 1,732	15.9 (2.9) 286	11.2 (3.0) 215	12.7 (3.9) 157	8.6 (2.5) 210	21.7 (5.2) 181	14.9 (4.4) 167	17.9 (5.3) 172	7.7 (3.7) 166	10.0 (4.7) 88	1.1 (2.3) 83
Gender													
Male	29.2*** (1.2) 3,744	26.0*** (1.0) 3,744	12.3 (2.0) 1,063	14.4 (3.1) 224	10.3 (3.3) 162	11.1 (4.4) 102	6.3 (3.0) 114	22.5 (6.2) 105	15.6 (6.5) 86	16.8 (7.6) 81	9.2 (5.3) 86	6.0 (5.5) 40	1.4 (3.1) 58
Female	37.3*** (1.2) 3,816	34.8*** (1.1) 3,816	16.1 (3.3) 669	20.6 (6.9) 62	13.4 (6.7) 52	15.5 (7.8) 55	11.6 (4.3) 96	20.8 (8.6) 76	14.1 (5.7) 81	18.8 (7.4) 91	6.1 (5.1) 80	12.9 (7.1) 48	-- -- 25
Ethnicity													
Nonminority	35.2*** (1.1) 4,047	31.4*** (1.1) 4,047	15.3 (2.2) 1,159	18.1 (3.5) 210	11.8 (3.6) 154	15.3 (5.7) 95	9.8 (3.3) 139	23.1 (7.1) 115	13.1 (5.3) 110	18.9 (6.8) 116	10.6 (5.8) 105	11.5 (6.6) 55	.8 (2.5) 55
Minority	27.6*** (1.2) 3,513	23.9*** (1.0) 3,513	8.0 (2.6) 541	9.0 (4.6) 68	7.9 (4.8) 58	8.6 (4.9) 59	5.5 (3.6) 68	18.8 (6.6) 66	18.5 (7.6) 54	15.3 (8.0) 53	2.0 (2.7) 56	4.9 (5.3) 30	-- -- 27

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for "all conditions": * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age when interviewed and had left school during the academic year of the interview or the previous academic year.

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth who were no longer in secondary school when interviewed.

³ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

⁴ "All conditions" includes youth in all 11 federal disability categories. Data are presented separately only for those categories with at least 30 cases.

Among young people in general, living independently was more common for females than for males (37% vs 29%, $p < .001$); however among young people with disabilities, there was no significant difference in the percentages of females and males who were living independently (16% vs. 12%). Among both youth with disabilities and youth in general, living independently was more common among nonminority youth than among minority youth (youth in general: 35% vs. 27%, $P < .001$, youth with disabilities: 15% vs. 8%, $p < .05$).

Relationships between having a disability and being less likely to live independently were found for young people in all four demographic subgroups (12% for males with disabilities vs. 29% for males in general, $p < .001$; 16% for females with disabilities vs. 37% for females in general, $p < .001$; 15% for nonminorities with disabilities vs. 35% for nonminorities in general, $p < .001$; 8% for minorities with disabilities vs. 28% for minorities in general, $p < .01$).

Arrests

The last outcome we examine is a measure of social adjustment. In contrast to young people who are positively integrated into society, some young people fail to follow social and legal rules and exhibit a variety of forms of asocial behavior. Although these behaviors vary in the seriousness of their consequences, some asocial behaviors are not tolerated by society. When such behaviors are exhibited in school, youth can be suspended or expelled. When such behaviors are exhibited on the job, youth can be fired. When asocial behaviors violate the laws of society at large, they can result in arrest. The extent to which arrest rates differed between youth with disabilities and youth in the general population is the focus of this section.

Young people with disabilities were more likely than young people in general to have been arrested (Table 12; 12% vs. 8%, $p < .001$), even after adjusting for differences in gender, ethnicity, and head of household's educational level between the two populations (12% vs. 10%, $p < .05$).

Despite the comparatively high arrest rate of young people with disabilities as a whole, arrest rates for young people with most disability classifications were quite low—about the same as or lower than the rate of young people in general—ranging from 0% for youth classified as deaf/blind to 9% of youth classified as mentally retarded. Exceptions were young people

Table 12

**PERCENTAGE OF 15- TO 20-YEAR-OLDS IN THE GENERAL POPULATION¹ AND WITH DISABILITIES² EVER ARRESTED,
BY GENDER, ETHNICITY, AND SCHOOL ENROLLMENT STATUS**

	Youth with Disabilities													
	Unadjusted	Adjusted ³	All Condi- tions ⁴	Learning Disabled	Emo- tionally Disturbed	Speech Impaired	Mentally Retarded	Visually Impaired	Deaf	Hard of Hearing	Ortho- pedically Impaired	Other Health Impaired	Multiply Handi- capped	Deaf/ Blind
All	7.8** (.5) 5,694	9.6* (.6) 5,694	12.2 (1.0) 5,740	12.3 (1.6) 778	25.0 (2.6) 534	7.1 (1.8) 421	8.8 (1.4) 692	3.3 (1.3) 661	3.4 (1.2) 614	6.9 (1.8) 618	3.1 (1.3) 569	5.1 (1.7) 361	3.0 (1.5) 454	.0 (.0) 38
Gender														
Male	12.3* (.9) 2,924	12.6* (.9) 2,924	15.9 (1.4) 3,463	15.2 (2.0) 581	28.1 (3.1) 405	9.7 (2.7) 254	13.9 (2.3) 390	5.6 (2.0) 387	5.7 (2.2) 387	9.1 (2.9) 316	4.8 (2.2) 300	7.8 (2.8) 201	4.0 (2.3) 284	-- -- 18
Female	3.0 (.5) 2,770	2.9 (.5) 2,770	4.3 (1.1) 2,277	4.0 (1.9) 197	15.7 (4.4) 129	3.5 (2.1) 267	2.0 (1.1) 302	.4 (.7) 274	.8 (.9) 287	4.5 (2.2) 302	1.2 (1.1) 269	1.9 (1.6) 160	.9 (1.4) 170	-- -- 20
Ethnicity														
Nonminority	7.9 (.7) 3,007	10.4 (.9) 3,007	9.8 (1.1) 3,695	9.4 (1.7) 564	24.8 (3.0) 392	4.1 (1.9) 239	5.1 (1.4) 448	2.6 (1.6) 403	2.3 (1.4) 375	6.3 (2.4) 379	2.6 (1.6) 350	4.3 (2.2) 214	2.2 (1.7) 308	-- -- 23
Minority	7.6*** (.8) 2,687	8.0*** (.8) 2,687	16.8 (2.1) 2,036	18.3 (3.5) 214	25.3 (5.0) 142	10.9 (3.3) 181	14.0 (2.9) 243	4.6 (1.9) 256	5.5 (2.1) 237	8.1 (2.7) 236	4.1 (1.8) 219	6.2 (2.7) 147	4.4 (2.9) 146	-- -- 15
School status														
In school	5.8** (.6) 3,997	7.8 (.7) 3,997	9.1 (1.1) 4,137	8.9 (1.7) 509	19.8 (3.0) 330	5.3 (1.9) 274	6.8 (1.5) 506	3.8 (1.6) 488	2.6 (1.3) 454	6.0 (2.0) 451	2.5 (1.3) 413	4.3 (1.8) 280	3.2 (1.7) 398	.0 (.0) 34
Out of school	12.7** (1.3) 1,697	16.7 (1.4) 1,697	20.3 (2.2) 1,603	20.8 (3.3) 269	34.9 (4.7) 204	13.6 (4.2) 147	14.4 (3.4) 186	2.1 (1.9) 173	5.3 (2.9) 160	9.7 (4.1) 167	4.5 (3.0) 156	7.8 (4.4) 81	1.6 (3.2) 56	-- -- 4
Graduates	5.6 (1.1) 1,049	5.9 (1.1) 1,049	8.2 (1.8) 1,132	6.7 (2.4) 187	18.3 (5.2) 102	5.8 (3.1) 106	10.4 (3.6) 119	.7 (1.2) 150	3.9 (2.6) 136	5.2 (3.6) 131	4.5 (3.4) 127	0 (0) 56	-- -- 17	0
Dropouts	29.4 (3.0) 648	30.9 (2.8) 648	39.7 (4.6) 439	44.5 (7.3) 82	49.2 (7.1) 97	31.2 (10.8) 38	21.6 (6.8) 62	-- -- 22	-- -- 21	26.1 (12.4) 34	-- -- 25	-- -- 25	5.3 (7.0) 30	-- -- 4

Note: Asterisks denote significance of differences between the indicated statistic and the comparable figure for "all conditions": * p < .05; ** p < .01; *** p < .001. Standard errors are in parentheses.

¹ Data for the general population come from the 1979-83 National Longitudinal Survey of Youth. This analysis includes a nationally representative sample of youth who were 15 to 20 years of age when interviewed.

² Data for youth with disabilities come from the 1987 National Longitudinal Transition Study, which surveyed a nationally representative sample of 15- to 23-year-olds who had been special education students in secondary school in the 1985-86 academic year. This analysis includes 15- to 20-year-old youth.

³ This group matches youth with disabilities with regard to gender, ethnicity, and head of household's educational level.

⁴ "All conditions" includes youth in all 11 federal disability categories. Data are presented separately only for those categories with at least 30 cases.

classified as learning disabled or seriously emotionally disturbed. Youth classified as seriously emotionally disturbed had a particularly high arrest rate of 25%, a rate 2-1/2 times that of youth in the general population.

Regardless of disability, arrest rates were about four times as high for young men as young women, twice as high for out-of-school youth as for students, and five times as high for dropouts as for graduates ($p < .001$ for all differences). The only difference between the patterns for youth with disabilities and the general population concerns ethnicity. In the general population, about the same percentages of nonminority and minority youth reported having been arrested. In contrast, among youth with disabilities, more minority youth than nonminority youth were reported to have been arrested (17% vs. 10%, $p < .01$).

When the arrest rates of young people in each demographic subgroup are examined separately, we see that males with disabilities were more likely than males in general to have been arrested (16% vs. 12%, $p < .05$), but there was no difference between groups of females (4% vs. 3%). Similarly, arrest rates for minority youth with disabilities were more than twice as high as for minority youth in general (17% vs. 8%, $p < .001$), but they were about the same for nonminority youth regardless of disability (about 10%).

Some of the differences in the arrest rates of youth with disabilities and youth in general may be due to differences in school enrollment and school completion status between the two groups. As mentioned earlier, arrest rates for all young people varied greatly depending on school enrollment and completion status. Yet among youth within each school enrollment and school completion status, arrest rates did not differ significantly between youth with disabilities and youth in general.

The arrest rates of youth classified as seriously emotionally disturbed deserve special comment. Within every subcategory of youth examined, arrest rates of youth classified as seriously emotionally disturbed were higher than for their nondisabled peers. Particularly noteworthy are the facts that more than one-third of out-of-school youth with this classification and almost half of dropouts had been arrested.

SUMMARY AND CONCLUSIONS

The findings in this report give a solid basis for concluding that, on average, young people with disabilities are not doing as well as their counterparts in the general population along a number of dimensions. A comparison of 15- through 20-year-old youth with disabilities and youth in the general population who were in secondary school or had been out of school less than 2 years shows that:

- More exiters with disabilities left secondary school by dropping out.
- Fewer dropouts with disabilities completed GEDs.
- Fewer graduates with disabilities attended postsecondary schools, although about the same percentage attended postsecondary vocational schools.
- Fewer youth with disabilities had paid jobs, both during and after secondary school.
- More employed youth with disabilities worked part-time and in low-status jobs.
- Fewer out-of-school youth with disabilities achieved residential independence.
- More youth with disabilities were arrested.

Although programs designed to ameliorate or compensate for the effects of disability may be helping many young people achieve better transition outcomes than would be possible without such services, young people with disabilities as a group continue to experience significantly less favorable outcomes.

Part of the discrepancy in outcomes for young people with disabilities and young people in general results from demographic differences between the two groups of youth. However, much of the difference remains even after controlling for gender, ethnicity, and head of household's educational level. Our adjustments for these factors typically accounted for between 10% and 20% of the gap in outcomes such as GED completion rates, postsecondary school attendance, and employment. Dropout behavior and arrest rates appear to be influenced more by these demographic factors; for these outcomes, our adjustments accounted for about 50% of the gap. Even after the adjustments, significant gaps between youth with disabilities and youth in general still remained for most outcomes.

Not all categories of young people with disabilities experienced less positive transition outcomes than young people in general, however. Important outcomes of young people with

some classifications were quite similar to those of young people in general. For instance, compared with exiters in general, exiters with visual impairments were about equally likely to have left school by dropping out, about equally likely to have enrolled in college, almost as likely to be living independently, and much less likely to have been arrested. Similarly, young people classified as deaf were less likely than youth in general to have dropped out and were just as likely to have attended college.

At the other end of the spectrum are young people classified as seriously emotionally disturbed. These youth were much more likely than young people in general to have left school by dropping out, much less likely to have attended any postsecondary school, less likely to be employed after leaving school, and much more likely to have been arrested. The arrest rates for this group are alarming; almost 1 in 5 secondary school students and graduates and 1 in 2 dropouts had been arrested.

Young people classified as learning disabled made up the largest group of young people with disabilities. Their profile provides an illustration of mixed outcomes. Compared with the general population of young people, youth classified as learning disabled were about as likely to be employed while in secondary school. Although they were somewhat more likely than young people in the general population to leave secondary school by dropping out, differences disappeared once demographic factors were taken into account. Their rates of enrollment in college were much lower than the rates of young people in general, regardless of demographic adjustments, but their rates of enrollment in postsecondary vocational institutions and postschool employment were about the same. They were considerably less likely to live independently, but only slightly more likely to have been arrested.

How we interpret these findings depends on our expectations. Cases in which the outcomes of young people with disabilities are similar to those of other young people give us cause for satisfaction. Furthermore, they give us hope that increasing numbers of young people with broad ranges of disabilities will experience outcomes similar to those of their nondisabled peers in the future. Hopefully, legislation, such as the recently passed Americans with Disabilities Act, and policy initiatives, such as the transition planning requirements of the Individuals with Disabilities Education Act, will help to close the gaps.

Appendix A

NLTS SAMPLE DESIGN, DATA COLLECTION, AND WEIGHTING

Appendix A

NLTS SAMPLE DESIGN, DATA COLLECTION, AND WEIGHTING

This appendix provides somewhat greater detail on several methodological aspects of the NLTS, including:

- Sampling of districts, schools, and students.
- Weighting of NLTS data.
- Estimation and use of standard errors.

The NLTS Sample

The NLTS sample was constructed in two stages. A sample of 450 school districts was selected randomly from the universe of approximately 14,000 school districts serving secondary (grade 7 or above) special education students,* which had been stratified by region of the country, a measure of district wealth involving the proportion of students in poverty (Orshansky percentile), and student enrollment. Because not enough districts agreed to participate, a replacement sample of 178 additional districts was selected. More than 80 state-supported special schools serving secondary-age deaf, blind, and deaf/blind students also were invited to participate in the study. A total of 303 school districts and 22 special schools agreed to have their students selected for the study.

Analysis of the potential bias of the district sample indicated virtually no systematic bias that would have an impact on study results when participating districts were compared with nonparticipants on several characteristics of the students served, participation in Vocational Rehabilitation programs, the extent of school-based and community resources for the disabled, the configuration of other education agencies serving district students, and metropolitan status (see Javitz & Wagner, 1990, for more information on the LEA sample). The one exception was a significant underrepresentation of districts serving grades kindergarten through eight. Many of these districts did not consider themselves secondary school districts, even though they served

* The 1983 Quality Education Data, Inc. (QED) database was used to construct the sampling frame. QED is a private nonprofit firm located in Denver, Colorado. Special education cooperatives and other special education units were not sampled directly (83% of special education students are served directly by school districts; Moore et al., 1988). However, instructions to districts for compiling student rosters asked districts to include on their listing any students sent from their district to such cooperatives or special service units. Despite these instructions, some districts may have underreported students served outside the district.

grades seven and eight, which are considered secondary grade levels. In addition, bias may exist on factors for which data were not available for such comparisons.

Students were selected from rosters compiled by districts, which were instructed to include all special education students in the 1985-86 school year who were in grades 7 through 12 or whose birthdays were in 1972 or before, whether or not they were served within the district or outside the district (e.g., in state-supported residential schools). Rosters were stratified into 3 age groups (13 to 15, 16 to 18, over 18) for each of the 11 federal special education disability categories, and youth were randomly selected from each age/disability group so that approximately 800 to 1,000 students were selected in each disability category (with the exception of deaf/blind, for which fewer than 100 students were served in the districts and schools included in the sample).

In part because of the time lapse between sample selection and data collection, many students could not be located at the addresses or telephone numbers provided by the schools. Of the 12,833 students selected for the sample, about one-third could not be reached by telephone for the parent interview. (For more than half of these, addresses and telephone numbers were not provided by the schools/districts from which they were sampled.) This relatively high rate of inability to reach sample members confirmed the importance of including in the NLT.S a substudy of nonrespondents to determine whether those who were reached for the telephone interview were a representative sample of the population to which the study was intended to generalize. To identify whether bias existed in the interview sample, interviewers went to 28 school districts with relatively high nonresponse rates to locate and interview in person those who could not be reached by telephone. Of the 554 sought for in-person interviews, 442 were found and interviewed, a response rate of 80%. A comparison of telephone interview respondents with in-person interview respondents showed that the telephone sample underrepresented lower-income households. The sample was reweighted to adjust for that bias, as described in the next section.

Components of the NLTS

Data from three major components of the NLTS are used in this report:

- *The Parent/Guardian Survey.** In the summer and fall of 1987, parents were interviewed by telephone to determine information on family background and expectations for the youth in the sample, characteristics of the youth, experiences with special services, the youths' educational attainments (including postsecondary education), employment experiences, and measures of social integration. Parents, rather than youth, were selected as respondents for the first wave of data collection because of the need for family background information and because, with most students still being in secondary school and living at home, parents were believed to be accurate respondents for the issues addressed.
- *School Record Abstracts.* Information has been abstracted from students' school records for their last year in secondary school prior to the interview (either the 1985-86 or 1986-87 school year). This information relates to courses taken, grades achieved (if in a graded program), placement, related services received from the school, status at the end of the year, attendance, IQ, and experiences with minimum-competency testing.
- *Exiter Substudy.* This substudy examined the experiences of a subsample of youth who were out of school at the time of the 1987 interview and had one of the following disability classifications: learning disabled, seriously emotionally disturbed, speech impaired, and mildly or moderately mentally retarded; youth in these categories constitute more than 90% of students in special education at the secondary level. For these youth, data were collected again in 1989. Parents of more than 800 youth were interviewed by telephone regarding services their young adult children had received and aspects of their functioning and independence.

Of the 10,369 sampled students for whom addresses or telephone numbers were provided by schools or districts, some portion of the needed data was collected for 84%; the response rates for individual components of the study were as follows:

	<u>N</u>	<u>Response Rate</u>
Parent interview	7,619	71%
School records	6,241	60
Exiter substudy	805	66

* For 8% of youth, a parent/guardian was not available to respond to the interview. These were generally cases in which youth lived with another family member or were under the protection of the state and lived with nonfamily members. In such cases, the adult who was most knowledgeable about the youth was interviewed. Responses of these nonparents are included in the analysis, although interviews are referred to as "parent interview."

Weighting Procedures and the Population to Which Data Generalize

Youth with disabilities for whom data could be gathered were weighted to represent the U.S. population of special education students in the 1985-86 school year who were in grades 7 through 12 or at least 13 years old. Because it is a sample of students at various ages, the NLTTS sample does not generalize to youth who had dropped out of school before that age. For example, the sample of 18-year-olds generalizes to youth who were 18 and still in secondary school in 1985-86, not to all 18-year-olds with disabilities, many of whom may have left school at an earlier age.

In performing sample weighting, three mutually exclusive groups of sample members were distinguished:

- (A) Youth whose parents responded to the telephone interview.
- (B) Youth whose parents did not respond to the telephone interview but were interviewed in person.
- (C) Youth whose parents did not respond to either the telephone or in-person interviews but for whom we obtained a record abstract.

A major concern in weighting was to determine whether there was a nonresponse bias and to calculate the weights in such a way as to minimize that bias. There was a potential for three types of nonresponse bias*:

- (1) Bias attributable to the inability to locate respondents because they had moved or had nonworking telephone numbers.
- (2) Bias attributable to refusal to complete an interview (only 3% of those available to be interviewed refused).
- (3) Bias attributable to circumstances that made it infeasible to locate or process a student's school record.

Of these three types of nonresponse, the first was believed to be the most frequent and to have the greatest influence on the analysis. Type 1 bias also was the only type of nonresponse that could be estimated and corrected.

* We assumed that nonrespondents who could not be located because LEAs did not provide student names would have chosen to participate at about the same rate as parents in districts in which youth could be identified. The remaining nonrespondents would presumably have been distributed between the three types of nonresponse mentioned above.

The magnitude of type 1 nonresponse bias was estimated by comparing responses to items available for the three groups of respondents (after adjusting for differences in the frequency with which youth in different disability categories were selected and differences in the size of the LEAs selected). Group A was wealthier, more highly educated, and less likely to be minority than group B. In addition, group A was more likely to have students who graduated from high school than group B or C (which had similar dropout rates). Groups A and B were compared on several additional measures for which data were unavailable for group C. The youth described by the two groups were similar on these additional items, including gender, employment status, pay, functional skills, association with a social group, and length of time since leaving school. Adjusting sample weights to eliminate bias in the income distribution eliminated bias in parental educational attainment and ethnic composition but did not affect differences in dropout rates. Groups B and C were large enough that if they were treated the same as group A in the weighting process, the resulting dropout distribution would be approximately correct.

Sample weighting involved the following steps:

- (1) Data from the first group of sample members were used to estimate the income distribution for each disability category that would have been obtained in the absence of type 1 nonresponse bias.
- (2) Respondents from all three groups were combined and weighted up to the universe by disability category. Weights were computed within strata used to select the sample (i.e., LEA size and wealth, student disability category and age).
- (3) Weights from three low-incidence disability categories (deaf, orthopedically impaired, and visually impaired) were adjusted to increase the effective sample size. These adjustments consisted primarily of slightly increasing the weights of students in larger LEAs and decreasing the weights of students in smaller LEAs. Responses before and after these weighting adjustments were nearly identical. In addition, the three deaf/blind youth from medium-size or smaller districts, who had large weights, were removed from the sample to increase the effective sample size. Thus, NLTS results do not represent the very small number of deaf/blind students in medium-size or smaller LEAs.
- (4) The resulting weights were adjusted so that each disability category exhibited the appropriate income distribution estimated in step 1 above. These adjustments were modest (relative to the range of weights within disability category); the weights of the poorest respondents were multiplied by a factor of approximately 1.6 and the weights of the wealthiest respondents were multiplied by a factor of approximately .7.

Estimation of Standard Errors

The statistical tables present data for various subgroups of youth with disabilities. Most of the variables presented in the tables are reported as percentages of youth. Percentages are weighted to represent the national population of youth with disabilities and youth in each disability category. However, the percentages are only estimates of the actual percentages that would be obtained if all youth with disabilities were included in the study. These estimates vary in how closely they approximate the true measures that would be derived from a study of all youth. To aid the reader in determining the precision of the estimates, the tables present the approximate standard errors and the unweighted numbers of cases on which each percentage is based.

To determine the precision of a particular percentage, the reader can construct a confidence interval for the estimate by multiplying the standard error by 1.96. The result is the range around the estimate within which the true measure would be found 95 out of 100 times. For example, the NLTS estimates that 88.8% of youth with disabilities attended a comprehensive secondary school during their most recent year in school. The standard error of that estimate, .9, is multiplied by 1.96, letting us assume with 95% confidence that the true rate of attendance at comprehensive secondary schools falls within a range of ± 1.8 percentage points, or 87% to 90.6%.

Readers also may want to compare percentages for different subgroups to determine, for example, whether the difference in employment rates for youth with learning disabilities and youth with mental retardation is statistically significant. To calculate whether the difference between percentages is statistically significant with 95% confidence (denoted as $p < .05$), 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 3.94, the difference is significant. Presented as a formula, a difference in percentages is statistically significant at the .05 level if:

$$\frac{(P_1 - P_2)^2}{SE_1^2 + SE_2^2} > 1.96^2$$

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.

The standard errors for the NLTS were computed using procedures that differ from standard calculation routines. Such routines assume a simple random sample. However, the NLTS has a stratified cluster sample, which introduces design effects that reduce the precision of estimates for a sample of a given size, compared with a simple random sample. The design effects within the NLTS affect the precision of estimates to varying degrees for different subpopulations and different variables. Pseudo-replication is widely accepted as a variance estimation technique in the presence of design effects. However, it is not cost-effective for estimating the standard errors of the thousands of variables and subpopulations tabulated in the numerous NLTS reports and its statistical almanacs. Therefore, pseudo-replication was conducted on a limited number of variables to calibrate a cost-effective approximation formula, using the following procedures:

- A set of 25 variables representing the parent interview, school program survey, and record abstract was identified for the purpose of developing a statistical approximation formula; these included 16 nominal variables and 9 continuous variables.
- Standard errors of the weighted means (percentages) of the selected variables were estimated in two ways. The first procedure involved pseudo-replication. For each variable, standard errors were calculated for students in each disability category and for the total sample (300 standard errors) using a partially balanced experimental design specifying how youth were to be allocated to 16 half-samples. The sample was split on the basis of the school districts and special schools from which youth originally were sampled. Districts and schools were paired on the basis of enrollment and a measure of poverty, and one member of each pair was assigned to each half-sample. Sample weights were computed for each half-sample as if those in the half-sample were the only study participants.
- The following formula was used to estimate the standard error of the mean for youth in all conditions:

$$\text{Standard error} = [(1/16) \sum_i (M_i - M)^2]^{1/2}$$

where M_i is the mean calculated for youth in one of the 16 half-samples, M is the mean response calculated from the full sample, and the summation extends over all 16 half-samples. (Note that responses to questions from the school program survey were attached to the records of students in the responding schools so that means for these items were computed using student weights.)

- The second estimation procedure involved an approximation formula based on an estimate of the effective sample size for each disability category and the total sample. The sampling efficiency (E) for a group was calculated using the following formula:

$$E = M_w^2 / (M_w^2 + S_w^2)$$

where M_w and S_w are the mean and standard deviation of the student weights over all members of the group. The approximation formula for the standard error of the weighted mean of nominal variables is:

$$\text{Standard error} = [P(1-P)/(N \times E)]^{1/2}$$

where P is the full-sample weighted proportion of "yes" responses to a particular question in the group, N is the unweighted number of "yes" or "no" responses to the question in the group, and E is the sampling efficiency of the group. The approximation formula for the standard error of the mean of a continuous variable is:

$$\text{Standard error} = [S^2/(N \times E)]^{1/2}$$

where S^2 is the variance of responses in the group for the continuous variable (computed with frequencies equal to full-sample weights), and N is the unweighted number of respondents to the question in the group. These formulas were used to compute a total of 300 standard errors for the same variables and groups addressed using pseudo-replication.

- To assess the accuracy of the standard errors produced by these formulas, we used scatterplots to compare them with standard errors produced using pseudo-replication. For both nominal and continuous variables, the approximate best fit was a 45-degree line. That is, on average, the formula based on estimates of effective sample size neither systematically overestimated nor underestimated the standard error obtained using pseudo-replication, arguing for use of the more cost-effective estimation formulas. However, because error remains in the estimates that might result in underestimating the true standard errors in some instances, we took a conservative approach and multiplied the standard errors produced using the estimation formulas by 1.25. The vast majority of the standard errors so obtained were larger than the standard errors obtained by pseudo-replication. Thus, standard errors were calculated using the effective sample size estimation formulas and increased by a factor of 1.25.

Appendix B

OTHER PRODUCTS AVAILABLE FROM THE NLTS

Appendix B

OTHER PRODUCTS AVAILABLE FROM THE NLTS

The National Longitudinal Transition Study of Special Education Students Statistical Almanacs:

- Volume 1: Overview
- Volume 2: Youth Categorized as Learning Disabled
- Volume 3: Youth Categorized as Emotionally Disturbed
- Volume 4: Youth Categorized as Speech Impaired
- Volume 5: Youth Categorized as Mentally Retarded
- Volume 6: Youth Categorized as Visually Impaired
- Volume 7: Youth Categorized as Hearing Impaired
- Volume 8: Youth Categorized as Orthopedically Impaired
- Volume 9: Youth Categorized as Other Health Impaired
- Volume 10: Youth Categorized as Multiply Handicapped

The National Longitudinal Transition Study of Special Education Students: Report on Sample Design and Limitations, Wave 1 (1987)

The National Longitudinal Transition Study of Special Education Students: Data Tape and Documentation

Parents' Reports of Students' Involvement with Vocational Rehabilitation Agencies in the First Years After Secondary School: A Report from the National Longitudinal Study of Special Education Students

The Transition Experiences of Youth with Disabilities: A Report from the National Longitudinal Study of Special Education Students

Dropouts with Disabilities: What Do We Know? What Can We Do?

Youth With Disabilities: How Are They Doing? The First Comprehensive Report from the National Longitudinal Transition Study of Special Education Students

The National Longitudinal Transition Study of Special Education Students: Report on Procedures for the First Wave of Data Collection (1987)

The Early Work Experiences of Youth with Disabilities: Trends in Employment Rates and Job Characteristics

Appendix C

**THE NATIONAL LONGITUDINAL SURVEY OF YOUTH SAMPLE, WEIGHTING
PROCEDURES, AND CALCULATION OF STANDARD ERRORS**

Appendix C

THE NATIONAL LONGITUDINAL SURVEY OF YOUTH SAMPLE, WEIGHTING PROCEDURES, AND CALCULATION OF STANDARD ERRORS

The civilian sample for the National Longitudinal Survey of Youth consists of two principal components, all representing youth who were between the ages of 14 and 21 in January of 1979: a cross-sectional sample of all youth, and an oversample of Hispanic, black, and non-Hispanic, non-black economically disadvantaged youth. A multi-stage stratified procedure, NLSY screened approximately 75,000 dwellings. From these dwellings, a sample of 12,781 youth were selected, residing in all 50 states and in the District of Columbia. Of these youth, 11,406 (approximately 90%) were interviewed in 1979—6,111 from the cross-section sample and 5,295 from the supplemental sample. Respondents have been reinterviewed each year, and attrition rates have been low. For the interview years from which data are used in this report, attrition rates were less than 4%.

The NLSY contains weights for the sample to represent the entire noninstitutionalized population of United States youth for each interview year. These weights, which are based on each respondent's probability of selection into the sample and differential response rates during the screening phase and interviews (see Center for Human Resource Research, 1981), may be used without adjustments when an analysis uses data from only one year or from multiple years, but the same years (or at least the same number of years), for all youth in the analysis.

However, we used data from all 1979-1983 interviews when a youth was between the ages of 15 and 20 and was in school or had been in school during the previous academic year (except for arrests, which was measured only in 1980). Thus, there were uneven numbers of years of data for various youth, depending on their age and their school status. For some youth, our dataset contained only one observation (e.g., for youth who were 20 years old or had been out of school for more than 1 year in 1979, our dataset would contain only one observation); for most youth, however, our dataset contained multiple observations. Because of our school enrollment criteria, for most youth, only one out-of-school observation was included; two out-of-school interviews could be included if a youth left school during an academic year but before the spring interview.

Furthermore, because the youngest people in the NLSY were 14 years old in 1979, the number of youth included in the 1979-1983 NLSY data increases with years of age. That is, the NLSY sample contained 15-year-olds only in 1979 and 1980, and 16-year-olds only in 1979, 1980, and 1981, etc. Thus, without an adjustment, our use of multiple observations would have led to overrepresentation of older youth. We corrected this bias by multiplying each individual's weight by:

$$\frac{\text{Weighted N of individuals of the youth's age in 1980}}{\text{Weighted N of the youth's age for all observations in the sample}}$$

For analyses that used multiple observations, this adjusted weight was used. For analyses that used only one observation (for instance, data on arrests came only from the 1980 interview), the original weight supplied by the NLSY was used.

Because of the sampling design of the NLSY, a design effect must be taken into account. The size of the effect depends on the particular variables to be analyzed; however, NLSY indicates that for a multiple regression of 1979 rate of pay on race, sex, marital status, and education, the design effect was calculated to be 1.52 (Center for Human Resource Research, 1988). To be conservative, in our analyses, we estimated standard errors for NLSY data using the procedure described in Appendix D.

Appendix D

DESCRIPTION OF VARIABLES USED IN THIS REPORT

Appendix D

DESCRIPTION OF VARIABLES USED IN THIS REPORT

Measurement and Creation of NLTS Variables*

The following NLTS variables were used in this report.

Disability category. Youth are assigned to one of the 11 federal special education disability categories based on the primary disability designated by the school/district from which the student was sampled in the 1985-86 school year. Federal definitions of special education categories are presented in Table D-1. Because we have relied on category assignments made by schools and districts, NLTS data should not be interpreted as describing youth who truly had a particular disability, but rather as describing youth who were categorized as having that disability by their school or district.

Ethnicity. In the majority of cases, parents reported the ethnicity of their children. In a limited number of cases for which no parent interview was obtained, ethnicity was indicated on the school district rosters from which students were sampled. When youth are categorized as white, black, Hispanic, and other (as in Table 1 of this report), Asians are included in the "other" category. When a dichotomous variable, nonminority/minority, is used, whites and Asians are coded as nonminorities, and all other youth are coded as minorities.

Youth's age. In the majority of cases, parents reported the age of their children in 1987. In a limited number of cases for which no parent interview was obtained, age was taken from the school district rosters from which students were sampled. Age in 1987 was calculated by adding 2 years to the roster age.

Head of household's educational level. Parents reported the highest level of education achieved by the head of the youth's household in response to the following question:

* Full documentation of the NLTS database is available as an accompaniment to the NLTS wave 1 data tape (Valdes, 1990).

"What is the highest year or grade (you/the head of household) finished in school?"

Responses were coded into the following categories:

- 11th grade or less
- High school graduate
- Some college or associate degree
- 4-year college graduate
- Postgraduate education.

For youth still living with parents, respondents reported about "the household [the youth] is now part of." For youth who were living elsewhere, respondents reported for the household of the youth's parent/guardian. Although the youth may have been absent from the parental home for some time, we assumed that the characteristics of that household would have influenced the youth's experiences in earlier years.

Secondary school enrollment status. The NLTS classifies youth as in or out of secondary school based on their enrollment status in the summer/fall of 1987.

For 26% of youth, secondary school status is based on parent reports alone because no school record abstract was obtained. If the parent responded positively to the question "Is (NAME) now enrolled, or will she/he be enrolled in the fall in (junior or senior high school/this special) school?" a youth is coded as in school; if the parent responded negatively, the youth is coded as out of school.

For 14% of youth, secondary school enrollment status is based on information from school records alone because no parent interview was completed. The school record abstract reports data from the student's most recent school year. Students whose most recent school year was 1985-86, or whose most recent school year was 1986-87 but who were reported as graduating, dropping out, aging out, being suspended/expelled or incarcerated/institutionalized, or who had withdrawn, moved, or transferred were coded as out of secondary school. Students whose most recent school year was 1986-87 and who were reported as completing the school year by being promoted or not were coded as in secondary school. This might result in an overestimation of the percentage of youth still in school if youth actually failed to return to school the following year.

For 60% of youth, both the parent interview and school record abstracts were available as sources for secondary school enrollment status. Parents and school records agreed on the

school enrollment status of 82% of these youth, with the greatest agreement (97%) apparent for students still enrolled in secondary school. There was agreement in 77% of cases that youth were out of school. The rules for resolving discrepancies for the remaining cases are reported in Wagner et al. (1991).

School completion status. The school completion status variable used in this report has three categories: graduated, dropped out, and aged out. An exiter's completion status was derived from the parent interview and/or the school record abstract. Parents were asked to indicate whether youth were still in school and, if not, whether they had left school by graduating, voluntarily leaving (dropping out), being suspended or expelled, or being older than the school age limit (aging out). The school record abstract asked abstractors to report the student's status at the end of the school year. Possible responses included: graduated, exceeded the school age limit, completed the school year and promoted to the next grade level, completed the school year and not promoted to the next grade level, dropped out, permanently expelled, transferred/moved to another school, and incarcerated/institutionalized due to handicap.

For 30% of cases, school completion status was based on the parent interview alone. For 16% of cases, values were based on the school record abstract alone. For the 55% of cases in which both the parent interview and the school record abstract were available, the two sources agreed in 87% of the cases. The rules for resolving discrepancies for the remaining cases are reported in Wagner et al. (1991).

In this report, youth who were classified by the NLTS as having left school by being suspended or expelled are included with dropouts.

Postsecondary education. Parent interviews were the source of information about postsecondary education. The following were considered postsecondary schools: postsecondary vocational/trade schools, 2-year or junior colleges, and 4-year colleges or universities. For each kind of school, parents of out-of-school youth were asked, "In the past 12 months, has (NAME) taken any courses from...(type of program or school)?" For youth who had been out of secondary school more than 1 year, this measure of enrollment in the preceding year did not include courses that might have been taken in the first year after secondary school (i.e., 1986) unless they also were taken in 1987.

A variable was created from these responses indicating whether youth had been enrolled in any postsecondary school: youth who had been enrolled in any of the types of schools were coded as yes; those enrolling in none of them were coded as no.

Employment. Employment status was determined from parents' answers to the following questions:

"Does (NAME) now do any work for which (he/she) gets paid, other than (his/her) work around the house?"

"Does (NAME) do this work at a sheltered workshop, that is, a place where most of the other workers are disabled?"

Jobs at sheltered workshops were not considered paid competitive employment in this report.

Occupation. Parents who reported that youth currently had a paid job were asked, "What did/does (he/she) do?" Interviewers probed to obtain information on both the kind of work performed and the kind of place in which the work was done (e.g., clerk at a clothing store). Verbatim responses were recorded by interviewers and later coded into job categories using the Bureau of the Census Occupational Classification Code system (U.S. Bureau of the Census, 1970).

Part-time/full-time. Parents were asked, "About how many hours a week does (NAME) usually work at this job?" Working fewer than 35 hours per week was considered part time.

Residential Independence. Parents were asked, "Where does (NAME) live now?" If parents asked for clarification, they were told "By live, we mean the place (NAME) usually spends at least 5 nights a week." Responses were coded into the following categories:

With parent/guardian

Alone

With a spouse or roommate

With another family member, other than youth's spouse

In a residential or boarding school other than a college

In a college dormitory

In military housing

In a supervised group home

In a mental health facility

In a hospital/medical facility or institution for the disabled

In a correctional facility

Other.

Youth were considered to be institutionalized if they were reported to be living in a mental health facility, hospital/medical facility or institution, or correctional facility. Parents of youth living in institutions were asked, "How long has (NAME) lived there?" If youth had been institutionalized more than 1 year, they were considered out of school.

Arrests. Parents were asked, "Has (NAME) ever been arrested?" An anticipated threat to the validity of this response is the potential tendency of respondents to give socially desirable answers to sensitive questions. Although the NLTS cannot verify the accuracy of responses to this item or estimate any underreporting that might exist, two facts suggest that this item is not seriously underestimated. First, fewer than 1% of respondents refused to answer this question or indicated they didn't know the answer, suggesting that the item was not as sensitive to respondents as one might have expected. Further, 8% of respondents gave a positive response, which translated into a weighted percentage of 12%, a rate somewhat higher than that in the general population, suggesting that underreporting probably does not limit this estimate any more than estimates for the general population.

Variables from NLSY

The following variables were constructed from data from the 1979-83 NLSY.

Ethnicity. If the youth indicated more than one ethnicity, the ethnicity he/she reported as identifying most closely with was used. Questions: "What is your origin or descent?" and "You said that your origin or descent was [respondent's answers to prior questions]. Which one do you feel closest to?"

Head of household's educational level is constructed from the 1979 interview questions "What is the highest grade or year of regular school that your father ever completed?" and "What is the highest grade or year of regular school that your mother ever completed?" Responses for father's education were used unless father's education was missing or the father did not reside in the youth's household but the mother did.

Secondary school enrollment status is taken from NLSY's constructed variable "enrollment status as of May 1 survey year," which is based primarily on the questions "Are you currently attending or enrolled in a regular school, that is, in an elementary school, a middle school, a high school, a college, or a graduate school?" and "What grade or year of school is that?"

Secondary school completion status. Youth were asked:

"Are you currently attending or enrolled in a regular school, that is, in an elementary school, a middle school, a high school, a college, or a graduate school?"

"What is the highest grade of school that you have ever attended?"

"Do you have a high school diploma or have you ever passed a high school equivalency or GED test?"

"Which do you have, a high school diploma or a GED?"

The value "dropped out" was assigned if the youth indicated that he/she was not currently enrolled in school, and had completed fewer than 12 years of school or did not have a high school diploma. The value "graduated" was assigned if the youth indicated he or she had a high school diploma or was enrolled in college as of May 1 of the survey.

Grade in school. Youth who were enrolled in secondary school were asked, "What grade of school is that?"

Youth got GED. This variable is taken from the youth's answer to:

"Do you have a high school diploma or have you ever passed a high school equivalency or GED test?"

and

"Which do you have, a high school diploma or a GED?"

Youth attended college. Youth were asked, "What is the highest grade of regular school you have ever attended?"

Youth attended postsecondary vocational school. If the youth stated that he/she had training for 1 month or more at a business college, nursing program, vocational-technical institute, barber or beauty college, or flight school, he/she was construed to have attended postsecondary school.

Employment status is taken from NLSY's Employment Status Recode, a widely used variable derived from answers to several standard CPS questions whose categories are working, with job but not at work, unemployed, keeping house, going to school, unable to work,

other, in active forces. Although the algorithm for constructing the variable is quite complex, the main questions from which the variable is derived are:

"What were you doing most of last week—working, going to school, or something else?"

"Did you do any work at all last week, not counting work around the house?"

"Did you have a job or business from which you were temporarily absent or on layoff last week?"

For in-school youth, employment status as of August 15th was used; for out-of-school youth, employment status as of date of the interview was used.

Occupation. NLSY asked all youth who were employed, "What kind of work were you doing for this job?" The occupation variable used in this report recodes their answer to that question into Census 1-digit broad occupational categories.

Part-time/full-time status. Youth who were employed were asked, "Do you usually work 35 hours or more a week at this job?"

Residential Independence. NLSY constructed a record of each youth's household, including the "type of residence R is living in." Indicates whether respondent was living with parents; in dorm, fraternity, sorority; hospital; jail; own dwelling unit; orphanage; religious institution; or other institutional quarters. Youth was considered to be living independently if he/she lived in his/her own dwelling unit or in a dorm/fraternity/sorority.

Arrests (from 1980 NLSY data only). This variable is taken from the youth's answer to "Not counting minor traffic offenses, have you ever been booked or charged for breaking a law, either by the police or by someone connected with the courts?"

Table D-1
FEDERAL DEFINITIONS OF DISABILITY CATEGORIES

Specific learning disability. A disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, write, spell, or to do mathematical calculations; this includes perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia, but does not include learning problems resulting from visual, hearing, or motor handicaps, or from mental retardation.

Seriously emotionally disturbed. Exhibition of behavior disorders over a long period of time that adversely affect educational performance; this includes an inability to learn that cannot be explained by intellectual, sensory, or health factors; an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; inappropriate types of behaviors or feelings under normal circumstances; a general pervasive mood of unhappiness or depression; or a tendency to develop physical symptoms or fears associated with personal or school problems.

Speech Impaired. Communication disorders, such as stuttering, impaired articulation, language or voice impairments, that adversely affect educational performance.

Mentally retarded. Significantly subaverage general intellectual functioning with concurrent deficits in adaptive behavior that were manifested in the developmental period and that adversely affect educational performance.

Visually Impaired. A visual impairment that, even with correction, adversely affects educational performance, including students who are partially sighted or completely blind.

Hard of hearing. A hearing impairment, permanent or fluctuating, that adversely affects educational performance but that is not included in the deaf category.

Deaf. A hearing impairment that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification, which adversely affects educational performance.

Orthopedically impaired. A severe orthopedic impairment that adversely affects educational performance, including those caused by congenital anomaly, disease, or other causes.

Other health impaired. Limited strength, vitality, or alertness due to chronic or acute health problems that adversely affect educational performance (includes autistic students).

Multiply handicapped. Concomitant impairments, the combination of which causes such severe educational problems that they cannot be accommodated in special education programs solely for one of the impairments (does not include deaf/blind).

Deaf/blind. Concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational problems that they cannot be accommodated in special education programs solely for deaf or blind students.

Appendix E

**DISABILITY CLASSIFICATIONS OF 15- TO 23-YEAR-OLDS REPRESENTED IN THE
NLTS AND OF 13- TO 21-YEAR-OLDS SERVED BY EHA-B IN 1985-86**

Appendix E

DISABILITY CLASSIFICATIONS OF 15- TO 23-YEAR-OLDS REPRESENTED IN THE NLTS AND OF 13- TO 21-YEAR-OLDS SERVED BY EHA-B IN 1985-86

<u>Disability Classification</u>	<u>Percentage of Youth</u>	
	<u>NLSY</u>	<u>1985-86 EHA-B</u>
Learning disabled	55.7 (1.3)	57.2
Emotionally disturbed	10.5 (0.8)	11.4
Speech impaired	3.4 (1.4)	4.9
Mentally retarded	23.9 (1.1)	20.7
Visually impaired	0.7 (0.2)	0.5
Hearing Impaired	1.7 (0.2)	1.1
Deaf	0.8 (0.2)	
Hard of hearing	0.9 (0.2)	
Orthopedically impaired	1.2 (0.3)	1.1
Other health impaired	1.3 (0.3)	1.4
Multiply handicapped	1.6 (0.3)	1.6
Deaf/blind	<0.1 (0.0)	<0.1

Note: Standard errors are in parentheses.

Appendix F

DEMING'S ALGORITHM

Appendix F

DEMING'S ALGORITHM

Survey research commonly seeks to weight survey respondents to match a target population on specified characteristics. One may wish, for example, to match survey respondents to a target population using Census data on gender and age. Until 1960, the only method used in survey research was "cell matching," by which each survey respondent in a particular cell is assigned a weight equal to the Census total for that cell divided by the number of survey respondents in that cell. This procedure works well as long as the number of balancing variables is relatively small, the number of categories for each balancing variable is relatively small, the Census totals are known for the complete crosstabulation of all balancing variables, and there are no cells with positive Census totals and zero (or very small numbers of) survey respondents. Unfortunately, survey researchers often want to balance on many variables. Often the result is hundreds or thousands of cells, many of which are completely devoid of sample respondents. Furthermore, totals for the cells are often unknown.

In the early 1960s, W. Edwards Deming proposed an algorithm for weighting survey respondents to match a target population on selected balancing variables that avoided the problems of cell matching. (See *Statistical Adjustment of Data*, W. Edwards Deming, Dover Publications, Inc., 1964, Chapter VII, "Adjusting Sample Frequencies to Expected Marginal Totals"). This algorithm produces weights iteratively. Each weight is initially set to 1.0. The marginal distribution of the first balancing variable (say, gender) for the survey respondents is compared with the marginal distribution for the target population. The weights of males and females in the sample are multiplied by whatever factor is necessary to equalize the two marginal distributions. For example, if there are 55% males in the survey sample and 51% in the target population, then the male weights are multiplied by $51/55$. Next, using the newly computed weights, the marginal distribution for the second balancing variable (say, age) for the survey respondents is compared with the marginal distribution for the target population. New adjustment factors are computed for the different age categories, and the previous set of weights are multiplied by these factors. The new weights no longer equalize the distribution on the first balancing variable (gender), so the entire process is repeated. In almost all circumstances, the adjustment factors converge to 1.0, so that eventually the survey respondents have weights that equalize all marginal distributions.

The Deming algorithm produces weighted distributions of survey respondents on each balancing variable that match as closely as possible the distribution of the target population on the balancing variable. The weights produced have minimum variance (so that all survey respondents are treated as equally as possible subject to the condition that their weighted results approximate the target population). This is an important property, because the variance of the sample weights determines, to a large extent, the effective sample size. For example, suppose a sample of 11 respondents is weighted so that 10 of the respondents have a weight of 1.0 and the last respondent has a weight of 10.0. Then the effective sample size is approximately 4, meaning that weighted sample estimates have variances of equal magnitude to unweighted estimates from samples of 4 respondents. Weights developed by Deming's algorithm usually have weights that are substantially less variable than those produced by cell matching.

Appendix G

**LENGTH OF TIME BETWEEN LEAVING SECONDARY SCHOOL AND INTERVIEW DATE
FOR GRADUATES AND DROPOUTS IN THE NLTS AND NLSY WEIGHTED SAMPLES**

Appendix G

LENGTH OF TIME BETWEEN LEAVING SECONDARY SCHOOL AND INTERVIEW DATE FOR GRADUATES AND DROPOUTS IN THE NLTS AND NLSY WEIGHTED SAMPLES*

Number of Months Between School Exit and Interview	Dropouts		Graduates	
	NLTS	NLSY	NLTS	NLSY
<1	1.4	3.0	0.0	0.9
1	0.0	6.8	0.8	2.1
2	3.0	7.2	26.1	2.2
3	0.0	9.8	7.9	1.6
4	0.0	8.4	0.1	0.9
5	0.3	8.4	0.0	0.8
6	0.6	5.7	0.0	0.4
7	6.1	4.7	0.0	8.0
8	3.6	7.0	0.0	25.3
9	0.0	10.5	0.0	32.5
10	45.6	7.4	19.3	17.4
11	2.9	6.1	1.5	5.3
12	0.0	4.2	0.0	1.2
13	0.0	1.7	0.2	0.5
14	1.5	2.0	24.2	0.4
15	0.0	1.2	4.2	0.2
16	1.0	1.8	0.1	0.1
17	0.0	1.6	0.0	0.0
18	0.0	1.0	0.0	0.2
19	1.2	0.9	0.7	0.0
20	0.0	0.4	0.0	0.0
21	2.3	0.1	0.0	0.0
22	17.5	0.1	7.5	0.0
23	5.6	0.0	2.3	0.0
>23	7.3	0.0	5.2	0.0
N	110	1,769	407	4,833

- * NLTS figures are estimates based on data from the exiter substudy, a 1989 study that interviewed only those who were reported to have been out of school as of the 1987 interview and whose primary disability classifications were learning disabled, seriously emotionally disturbed, speech impaired, or trainable or educable mentally retarded. NLSY figures are based on weights for the general population. Reweighting so that the sample matches youth with disabilities on gender, ethnicity, and head of household's educational level, does not substantially change the distribution.

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