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NATIONAL LONGITUDINAL TRANSITION STUDY 2

ANALYSIS OF POTENTIAL BIAS IN THE WAVE 1 AND WAVE 2 RESPONDENTS TO THE NATIONAL LONGITUDINAL TRANSITION STUDY-2 (NLTS2)

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ANALYSIS OF POTENTIAL BIAS IN THE WAVE 1 AND WAVE 2 RESPONDENTS TO THE NATIONAL LONGITUDINAL TRANSITION STUDY-2 (NLTS2)

In evaluating the quality of a survey sample, there are two primary considerations: statistical precision and the potential for bias. The survey response rate is pertinent to both in that an unexpectedly low response rate can leave a study with insufficient statistical precision and it might produce, although does not necessarily produce, a biased sample—i.e., one that does not accurately represent the universe from which the sample was selected. Below we present the number of respondents for each NLTS2 instrument for each of the first two waves of data collection and a response rate that is calculated using the maximum eligible sample for each. We then discuss the implications for statistical precision and for the potential for sample bias.

NLTS2 Instrument Response Rates

The calculations below differ somewhat from earlier reports of response rates. To date, NLTS2 staff have defined an eligible sample appropriate to each data collection instrument and have used that eligible sample as the denominator in calculating and reporting response rates. Eligible samples generally have been defined to include (1) all living youth for whom the instrument is applicable (e.g., only youth still in school are eligible for a school survey; only youth taking a general education academic class are eligible for the General Education Teacher Survey, etc.), (2) all youth other than those whose parents have actively denied consent for their participation or who have asked to be permanently withdrawn from the study, and (3) all youth for whom there is location information that makes contact with a respondent possible (e.g., an accurate address and/or phone number for a parent, the name of the school a youth attends). Using these definitions of eligible samples, response rates for telephone interview with parents have exceeded 80%, student assessment rates have exceeded 70%, and school survey rates have reached about 60%.

However, the Office of Management and Budget has requested a calculation that imposes a much broader notion of eligible sample—i.e., including youth as eligible whether or not they could possibly be reached for an interview or survey because no location information is available. This definition, of course, results in much lower response rates than have been calculated and reported thus far.

Table 1 specifies the number of respondents for each instrument in Waves 1 and 2 of NLTS2 and the associated response rates, calculated using the maximum appropriate eligible population within responding LEAs, as indicated in the table notes. Note that the sample obtained for each instrument was weighted so that it accurately represents the universe of students, defined by age and disability category, from which the NLTS2 sample was selected, regardless of response rate.

Table 1. Response Rates for Wave 1 and Wave 2 NLTS2 Instruments

	Eligible Students	Number with Completed Instrument	Response Rate ^a
Wave 1			
Parent interviews/mail survey	11,244 ^a	9,108	81.0%
Student's School Program Survey	11,126 ^b	5,588	50.2%
General Education Academic Teacher Survey	7,650 ^c	2,577	33.7%
School Characteristics Survey	11,126 ^d	5,956	53.5%
Student Assessment	5,956 ^e	3,193	53.6%
Wave 2			
Parent/youth interviews	11,226 ^f	6,841	61.1%
Student's School Program Survey	8,480 ^g	4,078	48.1%
General Education Academic Teacher Survey	5,467 ^h	1,983	36.3%
Student Assessment	5,242 ⁱ	3,135	59.8%

^a 26 deceased youth were eliminated from the pool of eligible sample members, reducing that pool from 11,270 originally selected members to 11,244.

^b Only youth who were in school in the 2001-02 school year (i.e., not known to have left school) were eligible for this school-based survey, producing an eligible sample of 11,126 (11,270-118). However, 609 sample members who were otherwise eligible had actively refused consent for school surveys or had asked to be withdrawn from the study, so no attempt was made to secure a completed questionnaire for them. If these sample members are removed from the eligible pool, a pool of 10,517 results, producing a response rate of 53.1%.

^c Only youth who were in school in the 2001-02 school year (i.e., not known to have left school) and who were thought to be taking a general education academic class (i.e., were not known not to be taking such a class) were eligible for this class-specific survey, producing an eligible sample of 7,650 (11,270-(118+3,476)). The resulting response rate is an underestimate of the true response rate because an unknown number of those in the eligible pool for whom a questionnaire was not returned had no data because there the student took no relevant class. Further, 536 sample members who were otherwise eligible had actively refused consent for school surveys or had asked to be withdrawn from the study, so no attempt was made to secure a completed questionnaire for them. If these sample members are removed from the eligible pool, a pool of 7,114 results, producing a response rate of 36.2%.

^d Only youth who were in school in the 2001-02 school year (i.e., not known to have left school) were eligible for this school-based survey, producing an eligible sample of 11,126 (11,270-118). However, 609 sample members who were otherwise eligible had actively refused consent for school surveys or had asked to be withdrawn from the study, so no attempt was made to secure a completed questionnaire for them. If these sample members are removed from the eligible pool, a pool of 10,517 results, producing a response rate of 56.6%.

^e Only youth who were at least 16 or older were eligible for the assessment, producing an eligible pool of 5,956 (11,244-5,288). However, 885 sample members who were otherwise eligible had refused consent for the assessment or had asked to be withdrawn from the study, so no attempt was made to complete an assessment for them. If they are removed from the eligible pool, a pool of 5,071 results, producing a response rate of 63%.

^f 44 deceased youth were eliminated from the pool of eligible sample members in Wave 2, reducing that pool from 11,270 originally selected members to 11,226.

^g Only youth who were in school in the 2003-04 school year (i.e., not known to have left school) were eligible for this school-based survey, producing an eligible sample of 8,480 (11,226-2,746). However, 665 sample members who were otherwise eligible had actively refused consent for school surveys or had asked to be withdrawn from the study, so no attempt was made to secure a completed questionnaire for them. If these sample members are removed from the eligible pool, a pool of 7,815 results, producing a response rate of 57.4%.

^h Only youth who were in school in the 2003-04 school year (i.e., not known to have left school) and who were thought to be taking a general education academic class (i.e., were not known not to be taking such a class) were eligible for this class-specific survey, producing an eligible sample of 5,467 (11,226-(2,746+3,013)). The resulting response rate is an underestimate of the true response rate because an unknown number of those in the eligible pool for whom a questionnaire was not returned had no data because the student took no relevant class. Further, 601 sample members who were otherwise eligible had actively refused consent for school surveys or had asked to be withdrawn from the study, so no attempt was made to secure a completed questionnaire for them. If these sample members are removed from the eligible pool, a pool of 4,866 results, producing a response rate of 40.8%.

ⁱ Only youth who were ages 16 or older were eligible for the assessment, producing an eligible pool for Wave 2 of 5,242 (11,244-6,002). However, 899 youth who were otherwise eligible had refused consent for the assessment or had asked to be withdrawn from the study, so no attempt was made to complete an assessment for them. If these sample members are removed from the eligible pool, a pool of 4,343 results, producing a response rate of 72.2%.

Implications for Statistical Precision

The NLTS2 sampling plan (available at http://www.nlts2.org/pdfs/final_sampling_plan.pdf) estimated the needed student sample using the following assumptions:

- Estimates in Year 9 (the fifth and final wave of data collection for the parent/youth interviews) should have standard errors of no more than 3.6% for the largest categories of disability (learning disabilities, speech impairments, emotional disturbances, mental retardation, hearing impairments, and other health impairments). Other categories are expected to range from 3.8% (visual impairments) to 8.2% and 10.1% for the very small categories of traumatic brain injuries and deaf-blindness.
- Ten percent of the initial sample would not have good contact information and, thus, would have no data from any instrument.
- Attrition would be 8% per year (i.e., sample members lost due to out-of-date contact information) of those with initial contact information.
- The parent/youth interview response rate would be 70% of the available sample (i.e., sample remaining after attrition) in a given wave.¹

With a starting sample of 11,270, these assumptions would produce the available sample indicated in column A of Table 2 for each year of the study and the number of completed parent/youth interviews indicated in Column B. The data indicate that 3,643 parent/youth interviews would be needed in year 9 (wave 5) to achieve the precision levels desired. Column C indicates the actual number of parent interviews completed in Waves 1 and 2.

Table 2. Expected and Actual Number of Parent/Youth Interviews to Date

Study Year/Wave	A Expected "Live" Sample	B Expected Number Completed Parent Interviews	C Actual Number Completed Parent Interviews
1 (Wave 1)	10,143	7,100	9,230
2	9,332		
3 (Wave 2)	8,585	6,010	6,859
4	7,898		
5 (Wave 3)	7,266	5,086	
6	6,685		
7 (Wave 4)	6,150	4,305	
8	5,658		
9 (Wave 5)	5,205	3,643	

The number of Wave 1 parent interviews exceeded the expected number by 30%, and the actual number of completes in Wave 2 exceeded expectations by 14%. Thus, the study is going into Wave 3 with a higher number of sample members with completed interviews than was expected in order to reach the desired precision level in Wave 5. Because having had a previous interview increases the chances of completing a subsequent interview (because information on location and on third-party contacts through whom a youth's location could be traced), there is a high likelihood that subsequent waves of interviewing will continue to reap more than the expected number of completed interviews. This likelihood is further increased by the fact that the new incentive plan approved by OMB, which permits payments of \$20 for each completed

¹ This rate assumes either the parent or youth interview is completed.

parent and youth interview is being implemented beginning with Wave 3 (no direct payments to respondents were in effect in Wave 1 and payments were only made in Wave 2 for whom an interview had not been completed in the last few weeks of interviewing). This should help achieve or exceed the response rates required to reach the required number of completed interviews in Wave 5, suggesting the statistical precision requirements of the study will be met.

Implications for Potential Bias

Although, as noted above, response rate and response bias are conceptually independent (i.e., it is possible to generate an unbiased, representative sample even with a relatively low response rate), the risk of bias increases as response rate decreases. To reduce the likelihood of bias, the NLTS2 sample for each instrument in each wave is weighted to represent the distribution on the key factors of disability category, age, and race/ethnicity of students with disabilities in the universe, as reported by states to OSEP for their entire special education population. No other items in the limited dataset on the universe of students receiving special education are common to NLTS2, so there are not additional factors that could be compared to test for bias or to develop or adjust weights.

Other than the variables in the OSEP report to the states, the closest approximation to the universe that can be used to assess potential bias are the responses to the NLTS2 Wave 1 parent interview. These data were used to assess whether bias exists in the respondent samples to subsequent surveys relative to the larger group they are intended to represent. The analysis approach is illustrated using the Wave 1 General Education Teacher Survey.

The preliminary step in performing this analysis was to identify key variables from the NLTS2 Wave 1 parent interview that reflect or help shape students' school experiences and outcomes. Those variables include disability category, age, gender, household income, race/ethnicity, school type, school experiences, and parental involvement, satisfaction and expectations.

The second step was to categorize the NLTS2 participant population according to whether or not a student (1) had a Wave 1 parent interview, (2) was ineligible for the Wave 1 General Education Teacher Survey, and (3) was a respondent to that survey. Ineligibility is narrowly defined as either deceased, known not to be in school, or known not to participate in a general education academic class (teachers of those classes were the intended respondents to the survey). Table 3 shows the six mutually exclusive categories into which a student could be classified. (For the sake of simplicity, the very small number of children who were deceased or otherwise ineligible for the Wave 1 Parent Interview are classified as nonrespondents to that interview). Cells are labeled G1 (for Group 1) to G6. The table shows the number of students in each cell.

Each student in Table 3 represents a set of students in the universe; if both instruments had successfully been administered to every student in the universe, the universe also would be divided into the categories in Table 3. The original weights for the Wave 1 General Education Teacher Survey projected all students in groups G3 and G4 to represent all students in the universe in groups G3 through G6.

Table 3. Distribution of Students to the Wave 1 Parent Interview and Wave 1 General Education Teacher Survey

	Wave 1 Parent Interview Respondents	Wave 1 Parent Interview Nonrespondents
Ineligible for Wave 1 General Education Teacher Survey	G1 = 3,093	G2 = 529
Respondents to Wave 1 General Education Teacher Survey	G3 = 2,231	G4 = 346
Nonrespondents to Wave 1 General Education Teacher Survey	G5 = 3,784	G6 = 1,289

For purposes of this nonresponse weighting analysis, two alternative weights were developed for participants in the Wave 1 General Education Teacher Survey. One set of weights (denoted as the G3 weights) project students in G3 to the portion of the universe represented by G3 through G6. The second set of weights (denoted as the G35 weights) project the students in G3 and G5 to the portion of the universe represented by G3 through G6.

Responses to the key questions from the Wave 1 survey have been tabulated in four ways: using (1) the G3 group without weights, (2) the combination of the G3 and G5 group without weights, (3) the G3 group and the G3 weights, and (4) the combination of the G3 and G5 group and the G35 weights. The comparison of tabulations 1 and 2 (i.e., unweighted comparisons) can be used to assess the extent to which there is nonresponse bias before any weighting adjustments are made. The comparison of tabulations 3 and 4 (i.e., weighted comparisons) can be used to assess the extent to which there is nonresponse bias after weighting adjustments are made. For example, if teachers of Hispanic students are disproportionately nonrespondents to the Wave 1 General Education Teacher Survey, this would be reflected in differences between tabulations 1 and 2, but not in differences between tabulations 3 and 4 because race/ethnicity is one of the variables considered in the weighting process.

The amount of bias caused by nonresponse in G5 can be estimated using the formula: $Bias = MG_{35} - MG_3$ where MG_{35} is the mean value for the key variable using the G35 weights and MG_3 is the mean value for the key variable using the G3 weights.

The results of these analyses are displayed in the following tables.

Table 4: Weighted and Unweighted Comparisons of Wave 2 Parent/Youth Interview Respondents and Eligible Population

	Unweighted		Weighted	
	Respondents	All	Respondents	All
Disability category				
Learning disability	9.2	10.0	62.0	62.0
Speech impairment	8.9	9.9	4.0	4.0
Mental retardation	9.2	9.5	12.2	12.2
Emotional disturbance	8.4	9.5	11.4	11.4
Hearing impairment	9.7	9.4	1.3	1.3
Visual impairment	7.5	6.9	.5	.5
Orthopedic impairment	10.0	9.6	1.2	1.2
Other health impairment	10.3	10.1	4.6	4.6
Autism	11.2	9.8	.7	.7
Traumatic brain injury	3.9	3.9	.3	.3
Multiple disabilities	9.8	9.8	1.8	1.8
Deaf-blindness	1.9	1.5	.2	.2
Age in Wave 1				
13 or 14	17.2	17.4	15.5	15.9
15	24.8	24.8	22.6	22.8
16	25.4	24.9	23.6	23.1
17-18	32.6	32.9	38.4	39.3
Gender = male	65.5	64.5	66.8	66.0
Household income				
\$25,000 or less	32.3*	35.1*	36.6	36.4
\$25,001 to \$50,000	30.5	30.3	32.6	31.0
More than \$50,000	37.3*	34.6*	31.7	32.6
Race/ethnicity				
White	65.6*	62.6*	63.0	62.7
African-American	20.1	20.8	20.3	20.2
Hispanic	12.2	13.0	13.6	14.0
School type				
Attends regular school for general population	81.9	82.2	91.9	91.6
Attends neighborhood school	61.6	61.8	73.2	72.0
School experiences				
Has ever been held back a grade	32.0	32.7	36.7	36.0
Has ever been suspended or expelled	25.7	27.2	32.8	32.7
Parent has been through mediation over special education services	13.1	12.8	10.5	10.7
Parent belongs to a group for parents of students with disabilities	18.1	16.6	9.3	9.3
Parent's agreement that student is getting supports from school he/she needs				
Strongly agree	29.8	29.5	28.5	27.3
Disagree/strongly disagree	19.5	19.9	18.9	19.9
Parent's satisfaction with child's school				
Very satisfied	44.7	43.7	37.1	36.3
Somewhat/very dissatisfied	18.9	19.4	19.7	20.5
In this school year, parent:				
Attended general school meeting	77.8	76.5	77.6	77.4
Volunteered at school	27.1	25.6	24.2	23.8
Went to IEP meeting	91.4	90.7	89.0	88.3
Parent wanted to be more involved in decision making at IEP meeting	32.1	32.9	34.7	34.6
Parent's expectations that student will pursue postsecondary education				
Definitely will	25.7	25.5	23.7	24.1
Probably/definitely won't	42.3	42.0	39.7	38.5

The category of "All" includes all sample members who responded to the Wave 1 Parent Interview and were eligible for the Wave 2 Parent/Youth Interview.

Shaded comparisons in bold and marked with "*" are differences of 2.1 to 5 percentage points.

Table 5: Weighted and Unweighted Comparisons of Student’s School Program Survey Respondents and Eligible Population

	Unweighted				Weighted			
	Wave 1		Wave 2		Wave 1		Wave 2	
	Respondents	All	Respondents	All	Respondents	All	Respondents	All
Disability category								
Learning disability	9.8	10.0	8.1	8.8	62.1	62.1	61.7	61.7
Speech impairment	8.7	9.9	8.6	10.3	4.0	4.0	4.0	4.0
Mental retardation	9.9	9.5	10.2	9.9	12.1	12.1	12.4	12.4
Emotional disturbance	6.2*	9.5*	4.7*	8.5*	11.4	11.4	11.4	11.4
Hearing impairment	10.2	9.4	9.5	9.0	1.3	1.3	1.3	1.3
Visual impairment	8.3	6.9	8.6	6.9	.5	.5	.5	.5
Orthopedic impairment	10.6	9.7	10.7	9.8	1.2	1.2	1.2	1.2
Other health impairment	10.6	10.0	8.9	8.9	4.5	4.5	4.6	4.6
Autism	10.3	9.9	13.7*	11.4*	.7	.7	.7	.7
Traumatic brain injury	4.0	3.9	3.5	3.6	.3	.3	.3	.3
Multiple disabilities	9.5	9.8	11.3	11.2	1.8	1.8	1.9	1.9
Deaf-blindness	1.8	1.5	2.3	1.6	.2	.2	.2	.2
Age								
13 or 14	16.4	17.6	23.9	22.4	16.7	16.0	18.3*	16.0*
15	24.1	25.0	32.7	31.1	23.0	22.7	20.6*	22.8*
16	26.6	25.0	28.1	26.2	23.7	23.1	23.7	23.1
17	32.9	32.4	15.4*	20.3*	37.5	38.2	37.4	38.0
Gender = Male	63.4	64.6	63.6	64.6	67.2	66.0	66.2	64.8
Household income								
\$25,000 or less	32.2*	35.2*	31.5*	35.8*	36.3	36.3	36.9	36.9
\$25,001 to \$50,000	31.6	30.3	31.1	29.9	31.3	30.9	32.1	30.5
More than \$50,000	36.2	34.4	37.4*	34.4*	32.4	32.9	31.0	32.6
Race/ethnicity								
White	65.7*	62.4*	67.6**	61.4**	62.0	62.7	62.4	63.2
African-American	20.1	20.9	18.5*	21.0*	20.7	20.2	20.6	19.9
Hispanic	10.8*	13.0*	10.6*	13.8*	14.0	14.0	14.3	14.1
School type								
Attends regular school serving general population	81.8	82.1	81.8	81.2	92.0	91.7	91.8	92.4
Attends neighborhood school	61.0	61.7	61.0	60.7	72.4	72.0	69.6	71.7
School experiences								
Has ever been held back a grade	31.9	32.8	33.2	33.7	37.3	35.8	36.5	34.8
Has ever been suspended or expelled	22.2*	27.0*	18.4**	24.6**	33.7	32.5	33.0	31.4
Parent has been through mediation over special education services	11.8	12.7	11.8	13.1	9.7	10.8	9.4	10.1
Parent belongs to a group for parents of students with disabilities	16.4	16.5	18.3	17.6	9.2	9.3	7.6	9.3

Table 5: Weighted and Unweighted Comparisons of Student’s School Program Survey Respondents and Eligible Population (Concluded)

	Unweighted				Weighted			
	Wave 1		Wave 2		Wave 1		Wave 2	
	Respondents	All	Respondents	All	Respondents	All	Respondents	All
Parent’s agreement that “student is getting supports from school he/she needs								
Strongly agree	31.4	29.6	31.4	29.9	27.1	27.4	29.3	28.7
Disagree/strongly disagree	17.5*	19.8*	17.7	19.4	20.9	20.0	17.0	18.0
Parent’s satisfaction with child’s school								
Very satisfied	46.6*	43.8*	47.5*	44.7*	38.3	36.4	40.0*	37.6*
Somewhat/very dissatisfied	17.0*	19.3*	16.2*	18.6*	20.5	20.6	18.0*	20.1*
In this school year, parent:								
Attended general school meeting	77.2	76.5	78.4	77.6	76.0	77.3	78.0	77.7
Volunteered at school	27.5	25.7	28.6	26.7	21.6*	23.8*	21.4*	23.7*
Went to IEP meeting	91.0	90.7	91.4	90.8	88.1	88.4	89.2	89.0
Parent wanted to be more involved in decision making at IEP meeting	30.0*	32.9*	31.4*	33.5*	33.9	34.5	32.2	33.6
Parent’s expectations that student will pursue postsecondary education								
Definitely will	28.5*	25.4*	24.1	23.2	25.5	24.2	22.3*	25.3*
Probably/definitely won’t	40.9	42.1	44.7	45.1	37.0	38.5	40.6*	37.0*

The “All” category includes sample members for whom a Wave 1 parent interview is available, and who were eligible for the Wave 1 or Wave 2 Student’s School Program Survey, respectively.

Comparisons highlighted in yellow and marked by “*” are differences of 2.1 to 5 percentage points; those marked by “**” are > 5 percentage points.

Table 6: Weighted and Unweighted Comparisons of General Education Teacher Survey Respondents and Eligible Population

	Unweighted				Weighted			
	Wave 1		Wave 2		Wave 1		Wave 2	
	Respondents	All	Respondents	All	Respondents	All	Respondents	All
Disability category								
Learning disability	14.6	12.9	13.0	12.2	62.7	62.7	62.4	62.4
Speech impairment	14.1	13.1	14.3	14.3	4.0	4.0	3.9	3.9
Mental retardation	5.5*	8.4*	6.3	8.2	11.7	11.7	11.8	11.8
Emotional disturbance	7.5*	10.1*	6.2*	10.9*	11.3	11.3	11.3	11.3
Hearing impairment	8.7	8.0	7.9	8.6	1.3	1.3	1.4	1.3
Visual impairment	6.0	6.1	6.5	5.3	.5	.5	.5	.5
Orthopedic impairment	12.5	10.8	12.5	11.1	1.2	1.2	1.2	1.2
Other health impairment	16.2*	12.6*	14.1*	11.8*	4.4	4.4	4.5	4.5
Autism	6.1	7.4	8.5	6.8	.7	.7	.7	.7
Traumatic brain injury	4.0	4.2	4.8	4.3	.3	.3	.3	.3
Multiple disabilities	3.9	5.4	4.8	5.9	1.9	1.9	1.9	1.9
Deaf-blindness	1.0	1.0	1.2	.9	.2	.2	.1	.1

Table 6: Weighted and Unweighted Comparisons of General Education Teacher Survey Respondents and Eligible Population (Concluded)

	Unweighted				Weighted			
	Wave 1		Wave 2		Wave 1		Wave 2	
	Respondents	All	Respondents	All	Respondents	All	Respondents	All
Age 13 or 14	19.6	18.2	28.6*	23.8*	15.9	16.0	17.2	15.0
15	25.0	25.4	37.1*	32.7*	23.9	22.6	19.8	24.9
16	25.3	24.4	26.5	24.8	23.0	24.3	26.1	22.7
17	30.2	32.1	7.8**	18.7**	37.1	37.1	36.9	37.3
Gender = Male	64.3	64.5	66.4	65.4	66.7	65.0	63.6	64.2
Household income								
\$25,000 or less	25.9**	32.8**	27.7**	34.3**	34.4*	37.3*	36.9	36.0
\$25,001 to \$50,000	31.2	30.1	31.2*	29.6*	31.7	29.9	31.2	31.5
More than \$50,000	42.8**	37.0**	41.2**	36.1**	33.9	32.8	31.9	32.5
Race/ethnicity: White	72.3**	65.4**	70.5**	63.7**	61.6	61.9	62.0	63.5
African-American	15.0*	19.0*	16.2*	18.8*	22.4	20.6	20.5	19.4
Hispanic	9.6*	12.3*	10.1*	13.6*	13.2	14.0	14.1	13.9
School type								
Attends regular school serving general population	95.6*	91.6*	94.1*	89.8*	92.2	91.9	93.1	93.4
Attends neighborhood school	71.3*	68.3*	70.7*	67.7*	75.1*	72.6*	71.8	72.4
School experiences								
Has ever been held back a grade	31.0*	33.4*	33.9	35.0	38.6*	36.4*	35.2	33.2
Has ever been suspended or expelled	22.0**	27.1**	20.6**	27.5**	31.8	31.7	27.9	29.4
Parent has been through mediation over special education services	11.2	12.1	11.2	12.7	9.3	9.8	10.0	9.5
Parent belongs to a group for parents of students with disabilities	14.3	14.3	14.3	14.8	9.5	9.3	6.0	6.0
Parent's agreement that "student is getting supports from school he/she needs"								
Strongly agree	29.2	28.8	30.0	28.6	28.0*	25.7*	26.5	25.7
Disagree/strongly disagree	18.0*	20.2*	17.3*	19.4*	21.5	20.6	15.9*	18.3*
Parent's satisfaction with child's school								
Very satisfied	43.6	42.6	44.3	42.4	37.4*	34.8*	38.7*	34.9*
Somewhat/very dissatisfied	18.3	19.5	16.6*	18.7*	20.4	21.7	15.8*	19.7*
In this school year, parent:								
Attended general school meeting	81.8*	78.9*	83.1*	79.6*	77.7	77.4	77.4	77.7
Volunteered at school	31.9*	26.8*	31.1*	27.6*	23.1	23.9	22.2*	24.6*
Went to IEP meeting	91.9*	90.9*	92.1*	91.0*	87.1	87.7	88.3	88.4
Parent wanted to be more involved in decision making at IEP meeting	27.4*	31.6*	28.8*	32.4*	36.3	37.3	35.5	33.8
Parent's expectations that student will pursue postsecondary education								
Definitely will	37.0**	30.3**	34.5**	29.4**	28.4*	25.3*	23.8	24.6
Probably/definitely won't	23.5**	34.1**	26.0**	33.0**	34.4	36.4	42.2**	36.6**

The "All" category includes youth for whom a Wave 1 parent interview is available and who were eligible for the Wave 1 and 2 General Education Teacher Survey. Comparisons highlighted in yellow and marked by "*" are differences of 2.1 to 5 percentage points; those marked by "**" are > 5 percentage points.

Table 7: Weighted and Unweighted Comparisons of School Characteristics Survey and Student Assessment Respondents and Eligible Population

	School Characteristics Survey				Student Assessment			
	Unweighted		Weighted		Unweighted		Weighted	
	Respondents	All	Respondents	All	Respondents	All	Respondents	All
Disability category								
Learning disability	9.3	9.9	62.0	62.0	9.1	10.0	62.0	62.0
Speech impairment	9.4	9.9	4.0	4.0	9.4	9.9	4.0	4.0
Mental retardation	10.0	9.5	12.1	12.1	9.8	9.5	12.2	12.2
Emotional disturbance	7.8	9.5	11.4	11.4	7.0*	9.5*	11.4	11.4
Hearing impairment	11.0	9.4	1.3	1.3	10.0	9.4	1.3	1.3
Visual impairment	8.3	7.0	.5	.5	8.3	6.9	.5	.5
Orthopedic impairment	10.0	9.7	1.2	1.2	10.5	9.7	1.2	1.2
Other health impairment	10.4	10.0	4.5	4.5	9.5	10.1	4.6	4.6
Autism	8.9	9.9	.7	.7	10.9	9.8	.7	.7
Traumatic brain injury	3.8	3.9	.3	.3	3.9	3.9	.3	.3
Multiple disabilities	9.4	9.8	1.8	1.8	9.5	9.8	1.8	1.8
Deaf-blindness	1.8	1.5	.2	.2	2.1	1.5	.2	.2
Age								
13 or 14	15.1*	17.6*	15.7	16.0	18.4	17.4	16.7	15.9
15	24.4	25.0	23.9	22.8	25.3	24.8	21.8	22.8
16	26.3	25.0	22.6	23.0	25.4	24.9	23.8	23.1
17	33.3	32.4	37.8	38.2	30.9	32.9	37.8	38.2
Gender = Male	63.7	64.5	66.2	66.0	63.9	64.5	67.7	66.0
Household income								
\$25,000 or less	32.8*	35.2*	34.9	36.4	33.7	35.1	37.6	36.4
\$25,001 to \$50,000	31.8	30.3	31.5	30.8	31.0	30.3	29.4	31.0
More than \$50,000	35.4	34.5	33.6	32.8	35.4	34.6	32.9	32.6
Race/ethnicity								
White	65.8*	62.4*	63.3	62.6	62.7	62.6	62.4	62.8
African-American	19.9	20.9	19.9	20.3	20.9	20.8	20.4	20.2
Hispanic	10.7*	13.0*	13.6	14.0	13.1	13.0	14.0	14.0
School type								
Attends regular school serving general population	80.6	82.1	91.9	91.7	82.1	82.2	91.8	91.6
Attends neighborhood school	60.7	61.7	72.9	72.0	61.1	61.8	71.8	72.0
School experiences								
Has ever been held back a grade	32.4	32.8	35.8	35.8	32.1	32.7	34.5	36.0
Has ever been suspended or expelled	25.0	27.0	32.6	32.5	23.5*	27.2*	32.4	32.7
Parent has been through mediation over special education services	12.0	12.8	10.2	10.8	12.0	12.8	10.4	10.7
Parent belongs to a group for parents of students with disabilities	16.2	16.5	9.9	9.3	17.3	16.5	9.8	10.7

Table 7: Weighted and Unweighted Comparisons of School Characteristics Survey and Student Assessment Respondents and Eligible Population (Concluded)

	School Characteristics Survey				Student Assessment			
	Unweighted		Weighted		Unweighted		Weighted	
	Respondents	All	Respondents	All	Respondents	All	Respondents	All
Parent's agreement that "student is getting supports from school he/she needs"								
Strongly agree	30.8	29.6	27.5	27.4	30.5	29.5	28.5	27.3
Disagree/strongly disagree	18.0	19.8	19.9	20.0	18.2	19.9	18.0	19.9
Parent's satisfaction with child's school								
Very satisfied	45.8	43.8	36.9	36.5	46.0*	43.6*	38.3	36.3
Somewhat/very dissatisfied	17.4	19.3	19.3	20.6	17.2*	19.4*	19.5	20.5
In this school year, parent:								
Attended general school meeting	76.6	76.5	76.6	77.2	77.4	76.4	76.1	77.2
Volunteered at school	26.9	25.7	23.7	23.8	26.9	25.6	23.4	23.8
Went to IEP meeting	91.3	90.7	87.7	88.4	91.0	90.7	87.8	88.4
Parent wanted to be more involved in decision making at IEP meeting	30.9	32.9	32.8	34.5	32.1	32.8	34.5	34.5
Parent's expectations that student will pursue postsecondary education								
Definitely will	25.5	25.4	26.0	24.3	26.6	25.4	23.2	24.3
Probably/definitely won't	41.9	42.1	37.5	38.4	41.1	42.1	40.7*	38.4*

The "All" category includes sample members for whom a Wave 1 parent interview is available and who were eligible for the School Characteristics Survey or the Student Assessment, respectively.

Comparisons highlighted in yellow and marked by "*" are differences of 2.1 to 5 percentage points.

Across the instruments and waves, 14 comparisons were made (two waves each of the Student's School Program and General Education Teacher Surveys, one wave each of the School Characteristics Survey and Wave 2 Parent Interview, and the Student Assessment combined across waves, each weighted and unweighted) on 39 responses, for a total of 546 individual comparisons. Of these, 452 (83%) were within 2 percentage points of each other, 78 (14.3%) were within 2.1 and 5 percentage points of each other and 16 (2.9) differed by 5.1 to 10.9 percentage points. The large majority of values (75) that differed by more than 2 percentage points were unweighted comparisons; only 19 weighted comparisons differed by 2 to 5 percentage points, and 1 differed by 5.6 percentage points. This suggests that the weighting used for the various instruments resulted in the respondent sample resembling very closely the characteristics of the total eligible sample.

There were only three comparisons that differed by more than 2 percentage points for the Wave 2 parent interview—all among the unweighted comparisons. The School Characteristics Survey had four comparisons that differed by more than 2 percentage points among the unweighted comparisons but none among the weighted comparisons. The four differences of more than 2 percentage points for the Student Assessment among the unweighted comparisons dropped to one among the weighted comparisons.

The General Education Teacher Survey had the largest number of discrepancies. Among the unweighted comparisons for the two waves, there were 28 differences of 2.1 to 5 percentage points and 13 differences of more than 5 percentage points. These dropped to 10 and 1 among the weighted comparisons. For the Student's School Program Survey 20 comparisons that differed by 2.1 to 5 percentage points and 2 of more than 5 percentage points among the unweighted comparisons dropped to 8 differences of 2.1 to 5 percentage points among the weighted comparisons and none that were larger.

Among the unweighted comparisons, household income and race/ethnicity were fairly consistently among those with notable differences; other factors that varied among the unweighted comparisons often were associated with race/ethnicity or income differences (e.g., parents' involvement at school or expectations for students' postsecondary education). However, the weights used in NLTS2 account for racial/ethnic differences, resulting in there being no notable differences in the weighted comparisons and a substantial reduction in the number of sizable comparisons for related variables (e.g., only 1 of 7 weighted comparisons on income was more than 2 percentage points).

We note that some of the differences observed here would be expected to be reduced by weighting, because they involve variables used in the weighting process. The weighting process includes disability category and age (categorized as 13 to 15, and 16 and older).

Overall, the bias analysis is quite encouraging. For three of the five instruments (Wave 2 Parent/Youth Interview, School Characteristics Survey, and Student Assessment), bias was very small. This result with respect to the Wave 2 Parent/Youth Interview is particularly important because it is the primary data collection instrument in Waves 3 through 5. For the Student's School Program Survey, the Wave 1 biases were small. Some differences exist between Wave 2 School Program Survey respondents and the total eligible population, but they are modest and may be due to random variability attributable to the smaller sample size in Wave 2 because many youth had finished school. The General Education Teacher Survey had the greatest number of differences between respondents and eligible populations in both waves, but the indications of

potential bias were not numerous and, again, may have been due to random variability caused by relatively smaller sample size in Wave 2.

Cumulative Response Rates

A power analysis indicated that a total of 497 local education agencies (LEAs), stratified by region, district size (student enrollment), and community wealth (Orshansky percentile), was the appropriate sample for NLTS2. A total of 501 LEAs provided rosters from which to select students for the second stage sample, meeting both the requirements of LEA sample size and distribution across the sampling grid. A total of 3,634 LEAs were selected from the universe of those serving students with disabilities in the NLTS2 grade range and invited to participate to generate the needed sample of 501 LEAs, or 13.8% of the number invited. Using this as the first-stage response rate, the following cumulative response rates result for each Wave 1 and Wave 2 instrument.

Table 8. Cumulative Response Rates for Wave 1 and Wave 2 NLTS2 Surveys

	LEA Response Rate	Instrument Response Rate	Cumulative Response Rate
Wave 1			
Parent interviews/mail survey	13.8%	81.0%	11.2%
Student's School Program Survey	13.8%	50.2%	6.9%
General Education Academic Teacher Survey	13.8%	33.7%	4.6%
School Characteristics Survey	13.8%	53.5%	7.4%
Student Assessment	13.8%	53.6%	7.4%
Wave 2			
Parent/youth interviews	13.8%	61.1%	8.4%
Student's School Program Survey	13.8%	48.1%	6.6%
General Education Academic Teacher Survey	13.8%	36.3%	5.0%
Student Assessment	13.8%	59.8%	8.2%

As was discussed earlier, it is possible to generate an unbiased, representative sample even with a relatively low response. Analyses comparing the universe of LEAs and the LEA sample, both weighted and unweighted, on variables used in stratification revealed that the weighted LEA sample closely resembled the LEA universe with respect to those variables. To further confirm the representativeness of the NLTS2 LEA sample, OMB directed the Office of Special Education Programs to complete a nonresponse bias study; it was conducted in two stages. The first stage involved analyses of extant databases to determine whether variations in LEA characteristics contribute meaningfully to explaining variations in student-level experiences and outcomes. The second stage involved selecting a nationally representative sample of LEAs and conducting a telephone survey of those LEAs and LEAs participating in NLTS2 to compare various aspects of their special education policies and procedures. The results of both stages support the conclusion that bias in the NLTS2 LEA sample is not a significant issue. It appears to be a nationally representative sample of LEAs from which a nationally representative sample of students was selected, meeting the goals and technical requirements of the NLTS2 sampling plan.