Appendix A
Introduction to the Electronic Codebook

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This appendix supplies a brief introduction to the Education Longitudinal Study of 2002 (ELS:2002/04) base-year to first follow-up data in electronic codebook (ECB) format. General instructions are provided for using the ELS:2002/04 data, along with an orientation to ECB and variance estimation software that can be used to manipulate the data.

A.1   Obtaining the ELS:2002/04 ECB

The ELS:2002/04 base-year to first follow-up ECB on CD-ROM carries the National Center for Education Statistics (NCES) product/publication number NCES 2006–346. This data product contains

- ELS:2002/04 data from the base year and first follow-up;

- ECB software; and

- documentation.

A single copy of an ELS:2002/04 public-use CD-ROM may be obtained without cost from the Education Publications Center (ED Pubs), until supplies are exhausted. This group can be contacted by telephone at 1-877-4ED-PUBS or by writing

ED Pubs
P.O. Box 1398
Jessup, MD 20794–1398

Requests can also be made electronically to http://www.edpubs.org/ or to customerservice@edpubs.org. Requesters will need the title of the data product and the NCES number (NCES 2006–346 for the ELS:2002/04 base-year to first follow-up ECB).

A restricted-use version of the ECB is available to institutionally based users in the United States whose research requires this additional level of information. A restricted-use license agreement is required for this version. Contact NCES at http://nces.ed.gov/pubsearch/licenses.asp.

A.2   Features and Content of the ELS:2002/04 ECB

ECBs allow the user to

- search a list of variables based on keywords or labels;

- tag (i.e., select) variables for analysis;

- generate SAS and SPSS syntax for system files;

- produce printed codebooks of selected variables;

- import tag files; and

- access database files for extraction.

The overall organization of data reflects two integrated and comprehensive data files, or megafiles. One megafile is at the student level; the other is at the school level. School-level variables include information collected in the base-year school administrator questionnaire, library media center questionnaire, and facilities checklist, as well as data from the first follow-up school administrator questionnaire. Users are cautioned that only the base-year school-level files generalize to the nation's high schools (specifically, to regular high schools with a 10th grade in the 2001–02 school year). First follow-up school-level data do not provide national estimates for the nation's high schools with a 12th grade in the 2003–04 school year. Nonetheless, because the first follow-up returned to the base-year schools, the first follow-up school data permit analysis of the nation's high schools 2 years later, in 2002 (also, of course, providing contextual data that can be attached to the student record).

At the student level, data from the base-year and first follow-up student (and related[1]) questionnaires, the base-year and first follow-up assessments, the base-year teacher and parent questionnaires, and school-level variables at the individual level are represented. Universe variables, weights, participation flags and status indicators, and composite variables (also called constructed variables, derived variables, or created variables) are located at the beginning of the file, followed by the questionnaire variables.

Some important variable naming conventions (typically embedded in the first three to four characters of each variable name) may be noted. Normally, the first three to four characters of each variable name identify the instrument from which the variable is taken. BYS stands for base-year student; BYS21 stands for question 21 in the student questionnaire. BYP stands for base-year parent, BYA for the base-year administrator questionnaire, and so on. Likewise, F1 is the prefix used for first follow-up variables (hence, F1S45 represents question 45 in the first follow-up student questionnaire). A label with the terminal characters WT is indicative of a weight (e.g., BYSTUWT is the final or nonresponse-adjusted student weight for the base year). Test variables contain the characters TX, while flags are indicated by FLG or FG and status variables by STAT (e.g., BYTXSTAT refers to test completion status in the base year). The contents of the student and school megafiles are described more specifically in the sections below.

A.2.1 Student Megafile

The student-level file contains variables from the base-year student, parent, and teacher questionnaires, as well as scores for the assessments in reading and mathematics. The student-level file also contains questionnaire and assessment data for the first follow-up sample. School-level data are also included, attached to the student record.

The main contents of the student file, in order of appearance, and associated naming conventions are as follows:

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[1] The first follow-up data represent two student cohorts: sophomores in 2002 and seniors in 2004. Not all sophomore cohort members were high school students 2 years later. Some were dropouts, some were early graduates, and some were being homeschooled. Data for these individuals are provided on the "student" file regardless of whether the individual was a student, dropout, or early graduate or was being homeschooled in 2004.

- *IDs and universe variables.* Student and school identifications (IDs) and universe variables are at the beginning of the data file.

- *BY weights and composites.* The weights (BYSCHWT, BYSTUWT) lead this section. They are followed by student-level composites, participation flags, status flags, imputation flags, school-level composites, and Common Core of Data (CCD) and Private School Study (PSS) data, as well as confidential geocode data and linkages to external sources.

- *F1 weights and composites.* The weights (F1QWT and F1PNLWT) lead this section. They are followed by student-level composites, participation flags, status flags, imputation flags, school-level composites, and CCD/PSS data, as well as confidential geocode data and linkages to external sources.

- *BY student questionnaire (BYS*).* These data come from scanned forms filled out by the student or from the computer-assisted telephone interview (CATI).

- *F1 student questionnaire (F1S*, F1D*, F1T*, F1E*, F1N*).* These data come from currently enrolled students, dropouts, transfer students, early graduates, or homeschoolers. Data come from completed forms or from the CATI interview.

- *BY school (BYA*, BYL*, BYF*).* These data come from BY school administrator questionnaires, library and facilities questionnaires, and facilities checklists. The data are linked to BY eligible students and replicated at the student level.

- *F1 school (F1A*).* These data come from F1 school administrator questionnaires. The data are linked to F1 currently enrolled students and replicated at the student level.

- *BY parent questionnaire (BYP*).* These data come from scanned forms filled out by the parent or from the CATI interview.

- *BY teacher questionnaire—English (BYTE*).* These data come from scanned teacher questionnaires filled out by the student sample member's English teacher. English teacher data have been linked to the appropriate student(s).

- *BY teacher questionnaire—math (BYTM*).* These data come from the scanned teacher questionnaire and have been linked to the appropriate student(s).

A.2.2 School Megafile

The school-level file contains all questionnaires administered at the school level. This includes the school administrator questionnaires (base year and first follow-up) and the base-year library media center questionnaire and facilities checklist.

Variable prefixes on the school file identify the contents:

- *IDs and weights.* Student and school IDs and the school weight (BYSCHWT) are at the beginning of the data file. Note that there is no first follow-up school weight.

- *BY school-level composites.* School-level composites are produced from questionnaire data, allowing an analyst access to data in an easier format.

- *BY data from outside sources.* Licensed users of the restricted-use file will have access to CCD/PSS data via the NCES identification number (NCESID), geocodes, and other information for linking to external sources.

- *F1 school-level composites.* School-level composites are produced from questionnaire data, allowing an analyst access to data in an easier format.

- *F1 data from outside sources.* Licensed users of the restricted-use file will have access to CCD/PSS data via the NCESID, geocodes, and other information for linking to external sources.

- *BY school administrator data (BYA*).* These data come from scanned forms filled out by the BY school principal and other administrative staff.

- *F1 school administrator data (F1A*).* These data come from scanned forms filled out by the F1 school principal and other administrative staff.

- *BY library section data (BYL*).* These data come from scanned forms filled out by the librarian or library media center specialist.

- *BY school facilities data (BYF*).* These data come from scanned forms filled out by the survey administrator during the student surveys at the school.

The school ID is constructed such that student file records can merge with the school data.

A.3   Installing the ECB

A.3.1 Hardware/Software Requirements

The ECB program is designed to run on a PC with Windows 95 or higher versions.

A.3.2 Installation Procedures

To install the ECB, complete the following steps:

1. Close all applications on your computer.

2. Place the CD-ROM into the CD-ROM drive.

3. From Windows, click on "START" and then "RUN."

4. Browse through the CD-ROM drive for the "ecbw" folder and open the "SETUP.exe" file.

5. Setup will guide you through the installation of the ECB.

6. Click on the ECB icon to run.

A.4   Using the ECB

A.4.1 Understanding the File Structure and Capacity

The ECB is ready to use once it is installed. Familiarity with the "hot" keys and some practice can help the user to more quickly understand the structure of the file and the power provided by the ECB to produce data files:

1. On the toolbar found at the top of the ECB screen, click on each "hot" key.

2. Consult the "Electronic Codebook Help Guide" available on the CD-ROM (file named "HELP.pdf") for an overview of the ECB functions.

A.4.2 Examining the Frequencies Available for Each Variable on the ECB

By examining these data descriptions, the ELS:2002 user will begin to appreciate the complexity of collecting data from respondents (legitimate values, legitimate skips, refusals, etc.). It is important to realize that some respondents

- did not respond to an entire instrument;

- skipped individual items;

- refused to complete selected items;

- did not reach the end of the questionnaire in the time they were given;

- completed abbreviated versions of the instrument;

- made illegal skips; and/or

- responded outside predefined valid ranges.

The following reserve code conventions are used in the ELS:2002 data files:

- −1 = *"Don't know"*

  This reserve code applies to questions in the hardcopy questionnaires that allow a "Don't know" response. The CATI interview by default allows "Don't know" for most questions that a respondent does not know so that the subsequent question can be administered.

- −2 = "*Refused"*

  Respondents are free to refuse to answer any question. In the hardcopy questionnaire, such refusals are explicitly captured only for critical items (items that, because of their importance, are subject to onsite edit and retrieval). CATI interviews, by default, allow refusals to be recorded on a question-by-question basis.

- −3 = *"Item legitimate skip/NA"*

  Questions that are not answered because prior answers route the respondent elsewhere are filled with "Legitimate skip/NA." This value applies to variables from all data collection modes.

- −4 = *"Nonrespondent"*

  "Nonrespondent" variables from questionnaires that have no respondent are filled with the "Nonrespondent" reserve code. This code applies to both the student file and the school file, because each file is composed of multiple interviews. For example, the school file may contain school administrator questionnaire data and facilities data, but the school's librarian may not have responded to the library media questionnaire; hence, all library media variables appear with the "Nonrespondent" reserve code.

- −5 = *"Out of range"*

  This code applies to values reported by the respondent that are out of range. Responses are set to this value if they are beyond the reasonable limits for the given item. For example, a teacher may have indicated teaching at a particular school for a longer period of time than he/she taught overall.

- −6 = *"Multiple response"*

  Non-CATI applications are unable to prevent respondents from giving multiple responses to a question that requires one answer. The scanning process for hardcopy questionnaires routes these instances to a verifier to determine whether the respondent "intended" to choose one answer (e.g., eraser marks interpreted by the optical scanning equipment as a second answer). If the verifier cannot determine a single unique answer, the item is assigned the reserve code for "Multiple response."

- −7 = *"Partial interview-breakoff"*

  Questions that are not answered because the respondent does not wish to continue the interview, or, in timed sessions, because they have run out of time, are filled with a "Partial/not reached" reserve code. This code is also used for CATI interviews that encounter breakoffs during the interview (and the respondent cannot be reached for completion of the interview). The code is also used for an abbreviated version of the questionnaire in which particular items are not included.

- −8 = *"Survey component legitimate skip/NA"*

  Survey components that do not apply to the sample member will have questions with values of -8. For example, a student who is currently enrolled would not be administered the early graduate questionnaire, so questions that are specific to that questionnaire will have values of -8. Another example are freshened students, who will have values of -8 for questions that were administered in BY questionnaires.

- −9 = *"Missing"*

  This code applies to questions that are not answered in the scanned hardcopy questionnaires. These questions are typically missed accidentally (e.g., respondent did not understand the routing pattern) and are not an indication of the respondent filling out only part of the questionnaire. This reserve code can also apply to CATI data where, for reasons associated with different versions, an item is not administered.

A.4.3 Creating a Taglist, Extracting Data, and Generating Program Code

The following procedures can be used to tag variables, extract data, and generate program codes on the ECB:

1. Tag variables of interest by clicking on the "tag box" next to each variable.

2. Choose the appropriate weights and flags for the population of interest. In each megafile, flags can be selected to identify a particular part of the population. For example, flags are available to identify whether a student questionnaire completer also completed a test. Weights are variables placed on the dataset to compensate for the unequal probabilities of selection and to adjust for nonresponse. When used with flags, weights allow the analyst to make generalizations about the national populations represented by the various ELS:2002 samples (e.g., schools versus students within schools). When weights are not used or a flag is used inappropriately, the estimates generated will not be representative of the population.

3. After tagging the variables of interest, go to "File" and then "Output."

4. Select the program (e.g., SPSS to generate SPSS program code).

5. Specify the directory and the name of the program code file.

6. Select the appropriate button in the "Confirmation" box.

7. To view the program code, select "File" and then "View Output."

8. Open the program code in the appropriate software (e.g., SPSS) to generate a working system file and run analyses. It may be necessary to modify the program slightly (check for "execute" statements, period locations, and file names). The code should identify the ASCII data file location, which will be the CD-ROM. Users should be aware of a possible SPSS syntax error associated with continuous variables: the "VALUE LABELS" statement is missing when the first tagged item for a data file is continuous and has no reserve codes.

A.4.4 Variance Estimation

Because the ELS:2002 sample design involved stratification, disproportionate sampling of certain strata (e.g., oversampling of Asians and of private schools), and clustered (e.g., students within a school) probability sampling, the resulting statistics are more variable than they would have been had they been based on data collected from a simple random sample of the same size. A number of statistical packages (e.g., SUDAAN, WesVar, Stata, and AM) take account of complex sampling designs in the calculation of standard errors. (For an assessment of strengths and limitations of SUDAAN, Stata, and WesVar, see Broene and Rust 2000.) AM variance estimation software can be downloaded for free from the following website: http://am.air.org/.

A.5 Additional Sources of Information (NCES Reports, Bibliographic Resources)

A number of reports using ELS:2002 data have been produced to date. ELS:2002 reports can be found in electronic format on the NCES website under

http://nces.ed.gov/surveys/els2002/. From that website, documents can be searched and downloaded. The NCES website also includes an ELS:2002 Bibliography (http://nces.ed.gov/surveys/els2002/), noting these and additional reports, articles, and conference papers on or using the study. In addition, many of the National Education Longitudinal Study of 1988 (NELS:88) reports may be of interest, both for what they suggest about possible cross-cohort analyses and for issues that can be examined cross-sectionally and longitudinally in ELS:2002 and NELS:88. In addition to the ELS:2002 Bibliography, the NELS:88 Bibliography may be of interest to data users (http://nces.ed.gov/surveys/nels88/).

A.6   Appendix A Reference

Broene, P., and Rust, K. (2000). *Strengths and Limitations of Using SUDAAN, Stata, and WesVarPC for Computing Variances from NCES Data Sets* (NCES 2000–03). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Appendix B
Base-Year and First Follow-up Questionnaires

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Base-Year and First Follow-up Questionnaires

Web-published PDF files of the Education Longitudinal Study of 2002 (ELS:2002) base-year and first follow-up questionnaires are available at http://nces.ed.gov/surveys/els2002/index.asp.

Appendix C
Documentation for Imputed Variables

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C.1   Introduction

Appendix C comprises tables that provide further documentation of imputation procedures. Table C-1 reports on the imputation status of eight groups of sample members, based on their combined base-year and first follow-up response and eligibility status. (Note that the expanded "contextual" sample members are individuals deemed incapable, owing to limited English proficiency or a severe disability, of completing the questionnaire. For these students, only contextual information, such as parent or school or teacher reports, was collected.) With the imputation variables forming the rows and sample disposition the columns, the table indicates whether imputation for these cases was performed in the base year or the first follow-up.

Table C-2 provides further information about the questionnaire variables imputed through the weighted sequential hotdeck method. It lists each imputation variable, the imputation class, and the sort variables.

Table C-3 provides further information about the assessment variables (the ability estimate, or theta) that were approached through multiple imputation. Specifically, the table lists all variables included in the multiple imputation model.

Table C-4 shows before-and-after distributions (sample size and weighted percent) for all imputed questionnaire variables.

Finally, tables C-5 through C-39B show the comparisons between unimputed and imputed point estimates for select variables and the respective standard errors. A discussion outlining the analytical approach and general findings follows on page C-12. The comparisons are based on the forthcoming report: *United States High School Sophomores: A Twenty-Two Year Comparison, 1980-2002.*

Table C-1. ELS:2002 imputation variables, by respondent status: 2004

Imputation variable	Sample disposition							
	BY nonrespondent/ F1 respondent	BY respondent/ F1 respondent	BY contextual/ F1 respondent	Freshened respondent	BY contextual/ F1 contextual	BY nonrespondent/ F1 contextual	BY respondent/ F1 contextual	Freshened contextual
Sample size[1]	651	14,062	105	171	53	2	14	31
Student sex	X	X	X	X	X	X	X	X
Student race/ethnicity	X	X	X	X	X	X	X	X
Student language minority status	X	X	X	X	X	X	X	X
Student Hispanic subgroup	X	X	X	X	X	X	X	X
Student Asian subgroup	X	X	X	X	X	X	X	X
School program type	X	O	Ø	Ø	Ø	Ø	O	Ø
Student postsecondary educational expectations	X	X	X	X	Ø	Ø	Ø	Ø
Parental aspirations for student postsecondary achievement	X	O	X	Ø	X	X	O	Ø
Family composition	X	X	X	X	X	X	X	X
Mother's educational attainment	X	X	X	X	X	X	X	X
Mother's occupation	X	X	X	X	X	X	X	X
Father's educational attainment	X	X	X	X	X	X	X	X
Father's occupation	X	X	X	X	X	X	X	X
Family income (2001)	X	O	X	X	X	X	O	X
Enrollment status (in school vs. out, grade)	X	X	X	X	X	X	X	X
12th-grade student ability estimates (theta) for mathematics	X	X	X	X	Ø	Ø	Ø	Ø
10th-grade student ability estimates (theta) for mathematics	X	O	Ø	Ø	Ø	Ø	O	Ø
10th-grade student ability estimates (theta) for reading	X	O	Ø	Ø	Ø	Ø	O	Ø

[1] Total sample size is 15,089.
NOTE: BY = base year; F1 = first follow-up. X denotes that these cases were imputed in the first follow-up study, O denotes that these cases were imputed in the base-year study, and Ø denotes that these cases were not imputed in either the base-year or first follow-up study.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002).

Table C-2. ELS:2002 imputation variables, by imputation class and sort variables: 2004

Imputation variable	Imputation class variables	Sort variables
Student race (F1RACE)	School identifier (SCHOOLID)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL)
English as native language (F1STLANG)	Student race (F1RACE)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Student Hispanic origin (F1HISPAN)	Student race (F1RACE) English as native language (F1STLANG)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Student Asian origin (F1ASIAN)	Student race (F1RACE) English as native language (F1STLANG)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Type of school program (BYSCHPRG)	School coed status (BYA11) Percent 10th-graders in general high school (BYA14A) Percent 10th-graders in college prep (BY14B) Percent 10th-graders in voc/tech (BYA14D)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Student postsecondary aspirations (F1STEXP)	Student sex (F1SEX) PROGTYPE (program)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Parental aspirations for student postsecondary achievement (BYPARASP)	Student race (F1RACE) Student postsecondary aspirations (F1STEXP)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)

See note at end of table.

Table C-2. ELS:2002 imputation variables, by imputation class and sort variables: 2004—Continued

Imputation variable	Imputation class variables	Sort variables
Family composition (F1FCOMP)	Student race (F1RACE) English as native language (F1STLANG)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Mother's educational attainment (F1MOTHED)	Student race (F1RACE) Student postsecondary aspirations (F1STEXP)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Father's educational attainment (F1FATHED)	Student race (F1RACE) Student postsecondary aspirations (F1STEXP)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Mother's occupation (F1OCCUM)	Student race (F1RACE) Mother's educational attainment (F1MOTHED)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Father's occupation (F1OCCUF)	Student race (F1RACE) Father's educational attainment (F1FATHED)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Household income (BYINCOME)	Mother's educational attainment (F1MOTHED) Father's educational attainment (F1FATHED) Family composition (F1FCOMP)	Census region (BYREGION) Urbanicity (BYURBAN) School type (BYSCTRL) Student race (F1RACE)
Student enrollment status (F1RISTAT)	Student grade (GRADE) Student final F1 enrollment status (F1ENRFIN)	IMPGRP School identifier (SCHOOLID)

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002).

Table C-3. Variables included in multiple imputation model for student ability estimates for reading and mathematics: 2002 and 2004

Imputation variable	Variables included in multiple imputation model
Student ability estimates (theta) for base-year mathematics and reading and first follow-up mathematics	School type (BYSCTRL)
	Census region (BYREGION)
	Census urbanicity (BYURBAN)
	Student sex (F1SEX)
	Student race (F1RACE)
	Student language (F1STLANG)
	Mother's occupation (F1OCCUM)
	Father's occupation (F1OCCUF)
	Student postsecondary aspirations (F1STEXP)
	Parental aspirations for student postsecondary achievement (BYPARASP)
	Mother's educational attainment (F1MOTHED)
	Father's educational attainment (F1FATHED)
	Household income (BYINCOME)
	Family composition (F1FCOMP)
	10th-grade student ability estimates for math and reading
	12th-grade student ability estimates for math

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002" and "First Follow-up, 2004."

Table C-4. ELS:2002 imputation variable distributions before and after imputation: 2004

Characteristic	Before imputation		After imputation	
	Sample size	Weighted percent	Sample size	Weighted percent
Student sex (F1SEX)	15,086	100.00	15,089	100.00
Male	7,537	50.64	7,538	50.63
Female	7,549	49.36	7,551	49.37
Student race (F1RACE)	15,074	100.00	15,089	100.00
American Indian	127	0.98	127	0.98
Asian	1,536	4.23	1,537	4.23
Black	1,996	14.32	1,999	14.34
Hispanic, no race specified	1,004	7.27	1,005	7.27
Hispanic, race specified	1,229	9.15	1,232	9.18
Multiracial, non-Hispanic	679	4.02	679	4.02
White	8,503	60.02	8,510	60.00
English as native language (F1STLANG)	14,970	100.00	15,089	100.00
No	2,608	14.49	2,632	14.47
Yes	12,362	85.51	12,457	85.53
Student Hispanic origin (F1HISPAN)	14,274	100.00	15,089	100.00
Not applicable	12,066	82.84	12,077	78.26
Mexican, Mexican-American, Chicano	1,423	11.55	1,907	14.39
Cuban	87	0.64	116	0.83
Dominican	81	0.79	102	0.90
Puerto Rican	286	1.93	413	2.71
Central American	161	1.16	226	1.41
South American	170	1.08	248	1.50
Student Asian origin (F1ASIAN)	14,270	100.00	15,089	100.00
Not applicable	12,459	93.97	12,473	87.33
Chinese	402	1.30	554	2.53
Filipino	277	1.17	482	2.78
Japanese	131	0.46	225	1.27
Korean	277	0.89	391	1.81
Southeast Asian	450	1.28	568	2.28
South Asian	274	0.92	396	2.00
Type of school program (BYSCHPRG)	14,438	100.00	15,089	100.00
Missing	362	2.99	362	2.84
General	4,845	37.06	5,088	37.10
College preparatory, academic	7,888	49.79	8,229	49.84
Vocational, including technical/business	1,343	10.16	1,410	10.22

See note at end of table.

**Table C-4. ELS:2002 imputation variable distributions before and after imputation: 2004—
Continued**

	Before imputation		After imputation	
Characteristic	Sample size	Weighted percent	Sample size	Weighted percent
Student postsecondary aspirations (F1STEXP)	14,998	100.00	15,089	100.00
Missing	100	0.69	100	0.69
Less than high school graduation	48	0.42	50	0.44
GED only	182	1.68	185	1.70
High school graduation	669	4.95	679	4.99
Attend or complete a 2-year school	2,041	15.34	2,055	15.33
Attend college, but not complete a 4-year degree	500	3.90	506	3.90
Graduate from college	4,780	31.23	4,796	31.14
Obtain a master's degree or equivalent	3,286	20.12	3,294	20.05
Obtain a PhD, MD, or other advanced degree	2,089	12.06	2,100	12.07
Other	1,303	9.61	1,324	9.69
Parental aspirations for student postsecondary achievement (BYPARASP)	14,367	100.00	15,089	100.00
Missing	202	1.93	202	1.82
Less than high school graduation	11	0.08	12	0.07
High school graduation or GED only	473	3.77	504	3.83
Attend or complete a 2-year school	1,061	8.54	1,117	8.53
Attend college, but not complete a 4-year degree	132	1.04	142	1.05
Graduate from college	6,278	44.29	6,596	44.36
Obtain a master's degree or equivalent	3,003	19.80	3,162	19.86
Obtain a PhD, MD, or other advanced degree	3,207	20.56	3,354	20.48
Family composition (F1FCOMP)	14,959	100.00	15,089	100.00
Mother and father	9,066	57.66	9,138	57.62
Mother and male guardian	1,752	13.03	1,763	12.96
Father and female guardian	454	3.12	458	3.13
Two guardians	240	1.73	243	1.73
Mother only	2,612	18.54	2,642	18.61
Father only	445	3.19	450	3.20
Female guardian only	190	1.37	194	1.39
Male guardian only	48	0.29	49	0.29
Lives with student less than half time	152	1.07	152	1.06

See note at end of table.

Table C-4. ELS:2002 imputation variable distributions before and after imputation: 2004—Continued

Characteristic	Before imputation		After imputation	
	Sample size	Weighted percent	Sample size	Weighted percent
Mother's educational attainment (F1MOTHED)	14,911	100.00	15,089	100.00
Did not finish high school	1,872	13.31	1,909	13.43
Graduated from high school or GED	3,960	27.84	4,016	27.88
Attended 2-year school, no degree	1,789	12.77	1,813	12.78
Graduated from 2-year school	1,574	11.04	1,587	11.04
Attended college, no 4-year degree	1,517	10.06	1,526	9.99
Graduated from college	2,801	16.82	2,821	16.72
Completed master's degree or equivalent	1,088	6.37	1,106	6.39
Completed PhD, MD, advanced degree	310	1.79	311	1.77
Father's educational attainment (F1FATHED)	14,839	100.00	15,089	100.00
Did not finish high school	1,946	14.01	1,998	14.12
Graduated from high school or GED	4,175	30.22	4,249	30.26
Attended 2-year school, no degree	1,366	9.65	1,384	9.58
Graduated from 2-year school	1,144	7.93	1,159	7.93
Attended college, no 4-year degree	1,346	8.97	1,364	8.94
Graduated from college	2,705	17.14	2,741	17.13
Completed master's degree or equivalent	1,296	7.60	1,323	7.60
Completed PhD, MD, advanced degree	861	4.48	871	4.45
Mother's occupation (F1OCCUM)	14,846	100.00	15,089	100.00
No job	567	3.08	582	3.11
Clerical	2,400	16.46	2,442	16.52
Craftsperson	331	2.34	338	2.33
Farmer, farm manager	73	0.53	75	0.54
Homemaker	768	5.39	785	5.43
Laborer	632	4.56	652	4.65
Manager, administrator	1,590	10.77	1,612	10.76
Military	27	0.17	27	0.17
Operative	605	4.42	623	4.47
Professional A	2,158	13.87	2,181	13.77
Professional B	568	3.64	575	3.62
Proprietor, owner	348	2.27	357	2.29
Protective service	107	0.70	108	0.70
Sales	640	4.36	654	4.36
Schoolteacher	999	6.37	1,004	6.27
Service	2,282	16.03	2,317	16.02
Technical	742	4.93	748	4.88
Other	9	0.10	9	0.09

See note at end of table.

Table C-4. ELS:2002 imputation variable distributions before and after imputation: 2004—Continued

Characteristic	Before imputation		After imputation	
	Sample size	Weighted percent	Sample size	Weighted percent
Father's occupation (F1OCCUF)	14,794	100.00	15,089	100.00
No job	162	0.75	167	0.75
Clerical	349	2.51	358	2.52
Craftsperson	1,860	13.62	1,904	13.69
Farmer, farm manager	284	2.07	296	2.14
Homemaker	354	2.45	360	2.45
Laborer	1,519	10.68	1,561	10.76
Manager, administrator	2,206	14.88	2,248	14.82
Military	187	1.26	191	1.25
Operative	1,696	12.23	1,728	12.24
Professional A	1,599	9.94	1,624	9.94
Professional B	892	4.90	906	4.91
Proprietor, owner	902	5.90	910	5.83
Protective service	503	3.41	512	3.40
Sales	772	5.18	783	5.15
Schoolteacher	213	1.45	216	1.44
Service	600	3.96	614	3.95
Technical	685	4.65	700	4.64
Other	11	0.14	11	0.14
Household income (BYINCOME)	14,154	100.00	15,089	100.00
None	67	0.41	73	0.46
$1,000 or less	154	1.13	161	1.09
$1,001–$5,000	252	1.73	273	1.78
$5,001–$10,000	293	2.17	318	2.22
$10,001–$15,000	594	4.24	630	4.27
$15,001–$20,000	668	4.86	707	4.83
$20,001–$25,000	872	6.55	933	6.61
$25,001–$35,000	1,625	12.07	1,725	11.98
$35,001–$50,000	2,652	19.81	2,826	19.74
$50,001–$75,000	2,929	21.19	3,132	21.17
$75,001–$100,000	1,922	12.99	2,057	13.08
$100,001–$200,000	1,611	10.15	1,710	10.10
$200,001 or more	515	2.67	544	2.68
Student enrollment status (F1RISTAT)	15,944	100.00	16,374	100.00
In school and in grade 12	13,899	85.50	14,305	85.72
In school and not in grade 12	1,015	7.33	1,033	7.25
Out of school	909	6.49	915	6.36
Out of scope	121	0.68	121	0.67

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002).

C.2 Examining the Effects of Imputation

Surveys often produce an incomplete data record due to respondent item nonresponse. Even though most of the questionnaire was completed, the respondent may choose to ignore some items, refuse to answer a particular question, provide an improbable response, break off an interview, fail to complete the last items of a timed interview, or mistakenly skip a question. The greatest concern with item nonresponse is that respondent answers are systematically different from nonrespondent answers, resulting in biased estimates of means, proportions, variances, and covariances (Federal Committee on Statistical Methodology 2001; Groves 1989; Seastrom 2003).

For items with some level of nonresponse, the researchers can address the potential for bias after the collection process has ended through imputation. Imputation is the process of estimating the value that a respondent might have reported. Typically, the information used to impute data is based on other responses the respondent gave during the interview or from information based on other respondents.

Following the standards developed by the National Center for Education Statistics (NCES), key items for the Education Longitudinal Study of 2002 (ELS:2002) were statistically or logically imputed for missing data. Although past studies, such as the National Education Longitudinal Study of 1988 (NELS:88) and the High School and Beyond Study (HS&B), had data editing and some logical imputations, statistical imputations (the multiple imputations and hotdeck imputations of ELS:2002 provide relevant examples) were generally not performed (see chapter 3 for more detail on the ELS:2002 imputation strategy).

To assess the impact that imputation has on point estimates, the distributions for key items were compared before and after imputation. The organization and selection of the variables were driven in part by the intercohort comparisons between ELS:2002, NELS:88, and HS&B made in the forthcoming NCES report, *United States High School Sophomores: A Twenty-Two Year Comparison, 1980-2002*. The reason for employing the tables in this particular report reflects the concern with whether, for cross-cohort comparisons, ELS:2002 imputed data should be used. The imputed data should be the most precise and accurate but may not be as strictly comparable as the unimputed version of the ELS:2002 data, in that imputation was not performed in the prior studies. (Tables C-39A and C-39B speak in particular to this issue.)

Because the variables (unimputed and imputed) are dependent and can be thought of as paired, the difference of these two variables is treated as if it were a single sample. In other words, the two variables are treated as repeated measures. The comparisons were tested in SUDAAN using *t*-test statistics. To guard against errors of inference based upon multiple comparisons, the Bonferroni procedure adjusts significance tests for multiple contrasts. This method corrects the significance (or alpha) level for the total number of contrasts made with a particular classification variable. For each classification variable, there are $(K*(K-1))/2$ possible contrasts (or nonredundant pairwise comparisons), where K is the number of categories. For example, if a classification variable such as race has six categories, $K=6$ and there are (6*5)/2=15 possible comparisons between the categories. The Bonferroni procedure divides the

alpha-level for a single *t*-test (in this case, .05) by the number of possible pairwise comparisons (15) to derive a new alpha corrected for the fact that multiple contrasts are being made.

The reader should recognize that because of the dependent observations and large sample size, many small differences were found to be statistically significant. As presented in the tables below, these small differences would not normally be thought of as having substantive or practical significance. The sample sizes between the two variables being compared differed by only the amount of missing data. Table C-4 presents the sample sizes and weighted distributions for key variables.

The analysis was divided by item topic: student demographics (tables C-6A to C-12B), school experiences (C-13A to C-17B), tested achievement (C-18A to C-26B), afterschool activities (C-27A to C-30B), life values (C-31A to C-34B), and plans and expectations (C-35A to C-38B). A sample of items was selected from the questionnaire for each topic. Summary statistics for the differences between imputed and unimputed estimates are presented in table C-5 by topic area. A final analysis shown in tables C-39A and 39B compares the NELS:88 and HS&B sophomore cohorts with both the imputed and unimputed ELS:2002 sophomore cohort data. These comparisons demonstrate to some degree the potential impact that imputation has on bivariate statistics in intercohort analysis.

An important analytical variable is the socioeconomic status indicator (SES). This variable is not imputed directly but contains elements from five other variables that were imputed. As with the other comparisons, SES was recomputed using the unimputed values, and these estimates were compared to the imputed estimates, testing for differences.

Table C-5 summarizes the general findings for the imputation comparisons by ELS:2002 topical area. Generally, differences were very small, ranging from an average of 0.01 percent for life value items to 0.06 percent for tested achievement. Of these differences, only a fraction of comparisons, were statistically significant. For example, out of 53 student demographics comparisons, only 9 percent (or 5) were statistically significant, the largest being a 0.6 percentage point difference (mother and father family living arrangement and Asian/Pacific Islander race categories).

However, for one variable in particular, there were significant and large differences for students by parents' education level, especially those students who had at least one parent with a graduate/professional degree. Table C-16A shows a moderate decline (-5.1 percentage points) in the percentage of students in this category who felt disruptions interfered with learning. Larger differences between imputed and unimputed estimates for this group of students were seen in the use of calculators (table C-17A, -14.2 percentage points) and in tested achievement (C-20A, C-21A, C-23A, C-24A, C-25A, C-26A). For example, students who had a least one parent with a graduate or professional degree saw significant differences in the probability of proficiency in reading level 2 (18.7 percentage points or a 40 percent increase from the unimputed score), reading level 3 (10.7 percentage points or a 153 percent increase), math level 2 (12.4 percentage points or an 18 percent increase), math level 3 (21.9 percentage points or a 47 percent increase), math level 4 (19.6 percentage points or a 107 percent increase), and math level 5 (2.5 percentage points or a 417 percent increase). In each case, the imputed mean was significantly greater than the unimputed mean. It is of interest to note that the univariate distributions for mother's and

father's education levels (tables C-8A and C-9A) did not show any large differences. These findings must be tempered by the fact that they are the exception. Most comparisons did not reveal any difference between imputed and unimputed estimates, and any difference that was detected was usually very small (< 1 percentage point).

An important issue is how imputation affected SES, particularly whether the results would differ greatly depending on whether it was constructed in accordance with the earlier (e.g., NELS:88) specifications or constructed in accord with the new ELS:2002 specifications. This composite variable is critical for research on tested achievement and other educational outcomes as a major nonschool factor that correlates highly with school success. For ELS:2002 and for its predecessor studies as well, the five components of the SES variable are mother's and father's education, mother's and father's occupation, and family income. In prior studies (such as NELS:88), a student-derived household items index was substituted when parent-reported income data were missing. In addition, when parent-reported data were missing for parent education or occupation, student-reported data were substituted.

In ELS:2002 (unlike NELS:88), the household items index was not used in the construction of SES. If missing from the parent survey, family income was directly imputed. However, as in NELS:88, if parental occupation and education reports were missing from the parent survey, student-reported data were substituted. Only if the occupation and education variables were missing from both the parent and student surveys were these data elements imputed.

Examination of the relationships between SES and race, and SES and school sector, reveals no statistically significant differences between SES in ELS:2002 when constructed according to the NELS:88 criteria (inclusion of the household index when income data are missing) versus the ELS:2002 criteria (direct imputation of missing income data (see tables C-11A and C-12A). Other tables using SES as a row variable show small differences—all smaller than 2 percentage points (and most below 1 percentage point).

Finally, to demonstrate to some degree the potential impact that imputation has on bivariate statistics in intercohort analysis, tables C-39A and C-39B provide comparisons between imputed and unimputed point estimates from ELS:2002 to NELS:88 and HS&B data files. Of the 36 comparisons between the unimputed ELS:2002 and NELS:88, only 2 changed in statistical significance (one became significantly different and the other was no longer significant). For the ELS:2002 and HS&B comparisons, no changes in the number of statistically significant comparisons or in the direction of these differences were detected. This limited analysis suggests that imputation has a limited impact on intercohort comparisons.

This appendix examines the potential impact that imputation had on point estimates and intercohort comparisons. The general findings reveal a number of differences, but these differences were very small and in most cases lack any practical or substantive magnitude. Some estimates experienced significant differences, but these estimates were not part of a larger pattern and usually involved a relatively small, select population, suggesting a limited impact from imputation. Although this analysis cannot specify how well the imputation worked, it demonstrates, in general, that the imputation did not introduce large shifts from unimputed point

estimates, allowing analysts to take advantage of the larger sample sizes when conducting statistical analyses.

C.3   Appendix C References

Federal Committee on Statistical Methodology. (2001). *Measuring and Reporting Sources of Error in Surveys* (Statistical Policy Working Paper 31). Washington, DC: Office of Management and Budget.

Groves, R.M. (1989). *Survey Errors and Survey Costs*. New York: Wiley.

Seastrom, M. (2003). *NCES Statistical Standards* (NCES 2003–601). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Available: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2003601

Table C-5. Summary of differences between imputed and unimputed data, by topic: 2002

Topic	Mean relative difference (percent)	Median relative difference (percent)	Number of comparisons made	Percentage of significant differences	Percentage of unimputed estimates > imputed estimates (all estimates)	Percentage of unimputed estimates > imputed estimates (estimates with significant differences)
Student demographics	0.0158	0.0082	53	9.4	49.1	40.0
School experiences	0.0256	0.0053	219	12.8	60.7	67.9
Tested achievement	0.0617	0.0163	192	57.8	55.7	49.5
Afterschool activity	0.0068	0.0025	117	0.9	46.2	100.0
Life values	0.0058	0.0026	108	12.0	54.6	30.8
Plans and expectations	0.0092	0.0011	146	4.8	49.3	28.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-6A. Percentage of high school sophomores, by sex: 2002

Sex	Unimputed	Imputed	Difference
Male	50.5	50.5	#
Female	49.5	49.5	#

Rounds to zero.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-6B. Standard errors for table C-6A estimates (percentage of high school sophomores, by sex): 2002

Sex	Unimputed	Imputed
Male	0.53	0.53
Female	0.53	0.53

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-7A. Percentage of high school sophomores, by family living arrangement: 2002

Family living arrangement	Unimputed	Imputed	Difference
Mother and father	57.4	56.8	-0.6*
Mother and guardian	13.3	13.4	0.1
Father and guardian	3.1	3.2	0.1
Mother only	18.9	19.0	0.1
Father only	3.2	3.2	#
Other relative or nonrelative	4.1	4.3	0.2

\# Rounds to zero.
* Denotes statistical significance at *p* < .05.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-7B. Standard errors for table C-7A estimates (percentage of high school sophomores, by family living arrangement): 2002

Family living arrangement	Unimputed	Imputed
Mother and father	0.58	0.57
Mother and guardian	0.37	0.36
Father and guardian	0.18	0.16
Mother only	0.46	0.44
Father only	0.21	0.20
Other relative or nonrelative	0.22	0.21

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-8A. Percentage of high school sophomores, by mother's highest level of education: 2002

Highest level of education	Unimputed	Imputed	Difference
Did not finish high school	12.9	13.2	0.3*
Graduated from high school or GED	27.8	27.9	0.1
Some postsecondary education (PSE)	34.8	34.6	-0.2*
Graduated from college	16.7	16.6	-0.1
Completed master's or equivalent	6.0	6.0	#
Completed Ph.D., M.D., or other advanced degree	1.7	1.7	#

Rounds to zero.
* Denotes statistical significance at *p* < .05.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-8B. Standard errors for table C-8A estimates (percentage of high school sophomores, by mother's highest level of education): 2002

Highest level of education	Unimputed	Imputed
Did not finish high school	0.53	0.54
Graduated from high school or GED	0.50	0.49
Some postsecondary education (PSE)	0.54	0.53
Graduated from college	0.48	0.46
Completed master's or equivalent	0.28	0.27
Completed Ph.D., M.D., or other advanced degree	0.15	0.15

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-9A. Percentage of high school sophomores, by father's highest level of education: 2002

Highest level of education	Unimputed	Imputed	Difference
Did not finish high school	13.6	13.9	0.3*
Graduated from high school or GED	29.9	30.1	0.2
Some postsecondary education (PSE)	27.7	27.4	-0.2
Graduated from college	16.9	16.7	-0.2
Completed master's or equivalent	7.5	7.4	-0.1
Completed Ph.D., M.D., or other advanced degree	4.5	4.4	-0.1

* Denotes statistical significance at $p < .05$.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-9B. Standard errors for table C-9A estimates (percentage of high school sophomores, by father's highest level of education): 2002

Highest level of education	Unimputed	Imputed
Did not finish high school	0.57	0.54
Graduated from high school or GED	0.59	0.53
Some postsecondary education (PSE)	0.52	0.48
Graduated from college	0.46	0.43
Completed master's or equivalent	0.33	0.30
Completed Ph.D., M.D., or other advanced degree	0.28	0.26

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-10A. Percentage of high school sophomores whose native language is English, by race/ethnicity: 2002

Race/ethnicity[1]	Unimputed	Imputed	Difference
American Indian or Alaska Native	83.8	83.7	-0.1
Asian or Pacific Islander	36.3	36.9	0.6*
Black or African American	94.5	94.4	-0.1
Hispanic or Latino	47.6	47.7	0.1
More than one race	92.8	92.5	-0.3
White	97.0	97.0	#

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] All race categories exclude individuals of Hispanic or Latino origin.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-10B. Standard errors for table C-10A estimates (percentage of high school sophomores whose native language is English, by race/ethnicity): 2002

Race/ethnicity[1]	Unimputed	Imputed
American Indian or Alaska Native	4.55	4.46
Asian or Pacific Islander	2.07	2.01
Black or African American	0.62	0.64
Hispanic or Latino	1.97	1.93
More than one race	0.99	1.04
White	0.28	0.28

[1] All race categories exclude individuals of Hispanic or Latino origin.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-11A. Percentage of high school sophomores, by socioeconomic status and race/ethnicity: 2002

Race/ethnicity[1]	Unimputed			Imputed			Difference		
	Low	Middle	High	Low	Middle	High	Low	Middle	High
American Indian or Alaska Native	33.8	52.7	13.5	31.4	54.9	13.7	-2.4	2.3	0.2
Asian or Pacific Islander	28.5	39.9	31.6	28.0	40.5	31.5	-0.5	0.6	-0.1
Black or African American	36.5	50.5	13.0	35.2	51.9	12.9	-1.3	1.4	-0.1
Hispanic or Latino	49.9	40.4	9.7	50.1	40.2	9.7	0.2	-0.2	#
More than one race	23.2	55.4	21.4	23.6	56.0	20.4	0.4	0.6	-1.0
White	15.5	52.7	31.8	15.6	52.3	32.0	0.1	-0.3	0.2

Rounds to zero.
[1] All race categories exclude individuals of Hispanic or Latino origin.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-11B. Standard errors for table C-11A estimates (percentage of high school sophomores, by socioeconomic status and race/ethnicity): 2002

Race/ethnicity[1]	Unimputed			Imputed		
	Low	Middle	High	Low	Middle	High
American Indian or Alaska Native	4.73	4.87	3.78	5.42	4.87	3.48
Asian or Pacific Islander	2.24	1.91	2.34	2.16	1.69	2.15
Black or African American	1.44	1.30	0.95	1.38	1.37	0.89
Hispanic or Latino	1.78	1.46	0.87	1.86	1.54	0.86
More than one race	2.01	2.41	1.95	2.01	2.33	1.76
White	0.66	0.79	0.95	0.63	0.80	0.94

[1] All race categories exclude individuals of Hispanic or Latino origin.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-12A. Percentage of high school sophomores, by school sector and socioeconomic status: 2002

Socioeconomic status	Unimputed			Imputed			Difference		
	Public	Catholic	Other private	Public	Catholic	Other private	Public	Catholic	Other private
Lowest quarter	98.1	0.9	1.0	98.0	1.0	1.0	-0.1	0.1	#
Middle quarters	94.0	3.5	2.5	94.0	3.5	2.6	#	-0.1	0.1
Highest quarter	83.3	9.1	7.6	83.5	9.0	7.5	0.2	-0.1	-0.2

Rounds to zero.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-12B. Standard errors for table C-12A estimates (percentage of high school sophomores, by school sector and socioeconomic status): 2002

Socioeconomic status	Unimputed			Imputed		
	Public	Catholic	Other private	Public	Catholic	Other private
Lowest quarter	0.23	0.14	0.18	0.24	0.16	0.17
Middle quarters	0.30	0.19	0.23	0.31	0.19	0.25
Highest quarter	1.00	0.60	0.82	0.98	0.59	0.81

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-13A. Percentage of high school sophomores, by high school program and selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	General	Academic/ college preparatory	Vocational	General	Academic/ college preparatory	Vocational	General	Academic/ college preparatory	Vocational
Sex									
Male	39.0	48.1	12.9	39.3	47.9	12.8	0.3	-0.2	-0.1
Female	37.7	53.7	8.5	37.8	53.5	8.7	0.1	-0.2	0.1
Socioeconomic status									
Lowest quarter	43.8	39.9	16.4	42.8	41.6	15.7	-1.0	1.7*	-0.7
Middle quarters	40.2	49.0	10.8	40.8	48.3	10.9	0.6	-0.7	0.2
Highest quarter	29.0	65.9	5.0	29.9	64.5	5.5	0.9	-1.4*	0.5
Composite achievement test score									
Lowest quarter	48.6	34.1	17.3	48.0	35.0	17.0	-0.6	0.9*	-0.3
Second quarter	44.8	41.8	13.4	44.5	42.4	13.1	-0.3	0.6	-0.3
Third quarter	36.3	56.1	7.7	36.8	55.3	7.9	0.5	-0.7*	0.2
Highest quarter	24.4	70.7	4.8	24.9	69.9	5.1	0.5	-0.8*	0.3

* Denotes statistical significance at $p < .05$.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-13B. Standard errors for table C-13A estimates (percentage of high school sophomores, by high school program and selected student characteristics): 2002

Characteristic	Unimputed			Imputed		
	General	Academic/college preparatory	Vocational	General	Academic/college preparatory	Vocational
Sex						
Male	0.80	0.88	0.66	0.79	0.88	0.67
Female	0.80	0.81	0.44	0.79	0.80	0.43
Socioeconomic status						
Lowest quarter	1.10	1.07	0.93	1.04	1.01	0.86
Middle quarters	0.82	0.86	0.56	0.77	0.83	0.55
Highest quarter	1.11	1.19	0.50	1.13	1.21	0.52
Composite achievement test score						
Lowest quarter	1.06	0.94	0.90	1.01	0.90	0.88
Second quarter	1.12	1.08	0.76	1.07	1.06	0.75
Third quarter	1.07	1.17	0.60	1.07	1.15	0.58
Highest quarter	1.06	1.16	0.55	1.04	1.15	0.54

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-14A. Percentage of high school sophomores who report having been in various kinds of courses or programs in high school, by selected student characteristics: 2002

Characteristic	Unimputed				Imputed				Difference			
	Remedial English	Remedial math	Bilingual or bicultural education	Advanced Placement	Remedial English	Remedial math	Bilingual or bicultural education	Advanced Placement	Remedial English	Remedial math	Bilingual or bicultural education	Advanced Placement
Sex												
Male	10.1	11.5	26.9	17.1	10.1	11.5	26.9	17.1	-0.002	#	#	#
Female	6.9	8.4	29.5	18.3	6.9	8.4	29.5	18.3	0.006	#	#	#
Socioeconomic status												
Lowest quarter	10.5	12.4	19.1	12.6	10.1	12.0	20.0	13.2	-0.408	-0.4	0.9*	0.6
Middle quarters	8.1	9.4	28.9	16.5	8.4	9.7	28.3	16.1	0.267	0.3	-0.6*	-0.4
Highest quarter	7.0	8.5	35.9	25.2	7.2	8.4	36.0	25.1	0.162	#	#	-0.2
Composite achievement test score												
Lowest quarter	14.5	16.0	12.8	9.5	14.6	16.0	12.8	9.5	0.017	#	#	#
Second quarter	7.3	9.6	21.1	11.6	7.4	9.6	20.9	11.5	0.037	#	-0.2	#
Third quarter	6.8	8.6	34.6	17.9	6.7	8.5	34.3	17.9	-0.099*	#	-0.2	#
Highest quarter	5.4	5.7	44.2	31.6	5.4	5.7	44.1	31.4	-0.050	#	-0.1	-0.1

Rounds to zero.
* Denotes statistical significance at *p* < .05.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-14B. Standard errors for table C-14A estimates (percentage of high school sophomores who report having been in various kinds of courses or programs in high school, by selected student characteristics): 2002

	Unimputed				Imputed			
Characteristic	Remedial English	Remedial math	Bilingual or bicultural education	Advanced Placement	Remedial English	Remedial math	Bilingual or bicultural education	Advanced Placement
Sex								
Male	0.44	0.51	0.76	0.60	0.44	0.51	0.76	0.60
Female	0.37	0.44	0.80	0.68	0.37	0.44	0.80	0.68
Socioeconomic status								
Lowest quarter	0.66	0.74	0.83	0.71	0.66	0.76	0.87	0.73
Middle quarters	0.43	0.47	0.76	0.62	0.43	0.46	0.76	0.62
Highest quarter	0.52	0.58	1.02	1.06	0.51	0.55	1.04	1.03
Composite achievement test score								
Lowest quarter	0.77	0.89	0.71	0.60	0.76	0.88	0.70	0.60
Second quarter	0.50	0.61	0.91	0.70	0.49	0.60	0.89	0.69
Third quarter	0.51	0.57	1.05	0.88	0.50	0.56	1.04	0.87
Highest quarter	0.48	0.48	1.10	1.26	0.47	0.48	1.10	1.25

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-15A. Percentage of high school sophomores saying they usually or often come to school unprepared, by selected student characteristics: 2002

	Unimputed				Imputed				Difference			
Characteristic	Come to school without books	Come to school without paper, pen, or pencil	Come to school without homework	Come to school without books and/or homework	Come to school without books	Come to school without paper, pen, or pencil	Come to school without homework	Come to school without books and/or homework	Come to school without books	Come to school without paper, pen, or pencil	Come to school without homework	Come to school without books and/or homework
Sex												
Male	18.5	22.0	30.5	35.2	18.5	22.0	30.5	35.2	#	#	#	#
Female	15.1	13.1	21.3	25.6	15.1	13.1	21.3	25.6	#	#	#	#
Socioeconomic status												
Lowest quarter	22.0	21.8	31.7	37.3	21.8	21.1	31.8	37.1	-0.2	-0.7	#	-0.2
Middle quarters	16.2	16.9	25.8	30.4	16.1	17.1	25.8	30.4	-0.1	0.3	#	-0.1
Highest quarter	12.9	14.6	20.1	23.7	13.4	14.9	20.2	24.0	0.5	0.3	0.1	0.3
Composite achievement test score												
Lowest quarter	29.6	29.6	37.9	44.4	29.5	29.6	37.8	44.4	#	#	-0.1	#
Second quarter	16.0	16.2	26.1	30.7	15.9	16.4	26.1	30.6	#	0.2	#	-0.1
Third quarter	12.3	13.0	22.1	26.2	12.2	13.0	22.1	26.1	-0.1	#	#	#
Highest quarter	9.7	11.0	17.7	20.8	9.7	11.1	17.7	20.8	#	#	#	#

Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-15B. Standard errors for table C-15A estimates (percentage of high school sophomores saying they usually or often come to school unprepared, by selected student characteristics): 2002

Characteristic	Unimputed				Imputed			
	Come to school without books	Come to school without paper, pen, or pencil	Come to school without homework	Come to school without books and/or homework	Come to school without books	Come to school without paper, pen, or pencil	Come to school without homework	Come to school without books and/or homework
Sex								
Male	0.57	0.60	0.71	0.77	0.57	0.60	0.71	0.77
Female	0.57	0.51	0.64	0.69	0.57	0.51	0.64	0.69
Socioeconomic status								
Lowest quarter	0.90	0.78	0.99	1.06	0.88	0.78	0.97	1.03
Middle quarters	0.54	0.54	0.66	0.70	0.55	0.54	0.66	0.70
Highest quarter	0.70	0.82	0.89	0.92	0.71	0.78	0.90	0.95
Composite achievement test score								
Lowest quarter	1.01	0.93	1.09	1.14	1.01	0.93	1.09	1.13
Second quarter	0.80	0.82	1.02	1.04	0.78	0.81	1.01	1.03
Third quarter	0.66	0.64	0.82	0.87	0.65	0.64	0.81	0.86
Highest quarter	0.57	0.62	0.75	0.80	0.57	0.62	0.75	0.79

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-16A. Percentage of high school sophomores who agreed or strongly agreed with various statements about the school's climate and teaching, by selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	I don't feel safe at this school	Disruptions by other students get in the way of my learning	The teaching is good	I don't feel safe at this school	Disruptions by other students get in the way of my learning	The teaching is good	I don't feel safe at this school	Disruptions by other students get in the way of my learning	The teaching is good
Sex									
Male	12.7	43.6	79.0	12.7	43.6	79.0	#	#	#
Female	11.1	47.8	82.2	11.1	47.8	82.2	#	#	#
Socioeconomic status									
Lowest quarter	17.0	52.5	79.3	16.4	51.9	79.4	-0.5	-0.7	0.1
Middle quarters	11.5	44.9	79.7	12.0	45.4	79.6	0.5	0.4	-0.1
Highest quarter	7.5	40.3	84.0	7.3	40.2	83.9	-0.2	#	-0.2
Parents' education									
High school or less	18.5	53.7	84.3	15.2	50.4	79.7	-3.4*	-3.3	-4.5
Some college	13.1	48.7	78.8	12.0	45.6	79.4	-1.1*	-3.1	0.5
College graduation	12.3	44.8	79.6	9.7	42.5	82.2	-2.6*	-2.3	2.6
Graduate or professional degree	11.1	47.4	78.3	9.2	42.3	82.7	-1.9*	-5.1*	4.3
Native language[1]									
English	11.0	44.0	80.2	11.1	44.3	80.1	0.2*	0.3*	#
Non-English	16.4	54.3	83.8	16.7	54.4	83.6	0.2	#	-0.2
Student's educational expectations									
High school or less	22.6	50.2	68.5	22.8	50.7	68.6	0.2	0.5	0.1
Some college	16.6	46.2	76.1	16.7	46.6	76.2	#	0.5	0.1
College graduation	9.3	44.5	81.7	9.6	44.7	81.5	0.3*	0.2	-0.2
Graduate or professional degree	9.1	44.8	85.6	9.1	45.0	85.4	#	0.3*	-0.1
Don't know	16.4	46.4	74.6	16.2	46.6	74.5	-0.1	0.2	-0.1

See notes at end of table.

Table C-16A. Percentage of high school sophomores who agreed or strongly agreed with various statements about the school's climate and teaching, by selected student characteristics: 2002—Continued

Characteristic	Unimputed			Imputed			Difference		
	I don't feel safe at this school	Disruptions by other students get in the way of my learning	The teaching is good	I don't feel safe at this school	Disruptions by other students get in the way of my learning	The teaching is good	I don't feel safe at this school	Disruptions by other students get in the way of my learning	The teaching is good
Composite achievement test score									
Lowest quarter	21.1	55.2	73.8	21.1	55.3	73.9	-0.1	#	0.1
Second quarter	12.4	48.9	78.5	12.7	49.0	78.3	0.3	0.2	-0.2
Third quarter	8.7	42.7	82.5	8.6	42.5	82.5	#	-0.2	#
Highest quarter	5.2	35.8	87.7	5.2	35.9	87.7	#	0.1	#

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-16B. Standard errors for table C-16A estimates (percentage of high school sophomores who agreed or strongly agreed with various statements about the school's climate and teaching, by selected student characteristics): 2002

	Unimputed			Imputed		
Characteristic	I don't feel safe at this school	Disruptions by other students get in the way of my learning	The teaching is good	I don't feel safe at this school	Disruptions by other students get in the way of my learning	The teaching is good
Sex						
Male	0.5	0.8	0.7	0.5	0.8	0.7
Female	0.5	0.8	0.6	0.5	0.8	0.6
Socioeconomic status						
Lowest quarter	0.8	0.9	0.9	0.8	1.0	0.8
Middle quarters	0.5	0.8	0.7	0.5	0.8	0.7
Highest quarter	0.6	1.1	0.8	0.6	1.1	0.9
Parents' education						
High school or less	1.5	1.8	1.4	0.7	1.0	0.8
Some college	0.8	1.2	1.0	0.6	0.8	0.8
College graduation	1.0	1.5	1.3	0.7	1.1	1.0
Graduate or professional degree	1.0	1.6	1.4	0.7	1.3	1.1
Native language[1]						
English	0.4	0.6	0.6	0.4	0.6	0.6
Non-English	1.1	1.2	0.9	1.1	1.2	1.0
Student's educational expectations						
High school or less	1.6	1.7	1.7	1.6	1.7	1.7
Some college	1.2	1.8	1.4	1.2	1.8	1.4
College graduation	0.5	0.9	0.8	0.5	0.9	0.7
Graduate or professional degree	0.5	0.9	0.7	0.5	0.9	0.7
Don't know	1.2	1.6	1.4	1.2	1.5	1.4
Composite achievement test score						
Lowest quarter	0.8	1.0	1.0	0.8	1.0	1.0
Second quarter	0.7	1.0	0.9	0.7	1.0	0.8
Third quarter	0.6	1.1	0.8	0.6	1.1	0.8
Highest quarter	0.5	1.0	0.7	0.5	1.0	0.7

[1] The first language students learned to speak when they were children.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-17A. Percentage of high school sophomores' use of calculators and computers, by selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	Use calculators	Use graphic calculators	Use computers	Use calculators	Use graphic calculators	Use computers	Use calculators	Use graphic calculators	Use computers
Sex									
Male	7.4	31.6	58.5	7.4	31.6	58.5	#	#	#
Female	4.6	33.7	62.8	4.6	33.7	62.8	#	#	#
Socioeconomic status									
Lowest quarter	8.6	38.5	54.8	8.7	38.1	54.8	0.1	-0.5	0.1
Middle quarters	5.9	34.4	62.4	5.8	34.7	62.1	#	0.2	-0.3
Highest quarter	3.4	22.9	63.2	3.7	23.1	63.5	0.2	0.3	0.3
Parents' education									
High school or less	13.2	40.7	57.2	8.5	37.6	57.8	-4.7	-3.0	0.6*
Some college	7.1	36.8	59.4	5.7	35.5	60.3	-1.4	-1.3	0.9*
College graduation	5.9	35.5	60.3	5.0	28.2	62.6	-0.9	-7.3*	2.3
Graduate or professional degree	5.7	38.0	61.9	3.8	23.8	63.5	-1.9	-14.2*	1.6
Native language[1]									
English	5.2	31.7	61.9	5.3	31.7	61.6	0.1	#	-0.3*
Non-English	10.6	38.4	55.1	10.6	38.3	54.8	#	-0.1	-0.3
Student's educational expectations									
High school or less	12.9	42.9	54.8	13.3	42.6	54.0	0.4	-0.2	-0.8
Some college	8.1	40.3	57.7	8.0	40.2	57.0	#	-0.2	-0.7*
College graduation	4.7	32.5	61.6	4.7	32.4	61.2	#	-0.1	-0.4*
Graduate or professional degree	3.9	26.2	62.1	4.0	26.3	61.7	0.1	0.1	-0.3*
Don't know	10.0	40.2	64.1	9.9	40.1	63.8	-0.1	-0.1	-0.3
Composite achievement test score									
Lowest quarter	10.9	39.7	48.4	10.9	39.6	48.4	#	#	#
Second quarter	5.8	36.5	61.4	5.7	36.5	61.1	-0.1*	#	-0.3*
Third quarter	4.2	33.3	65.1	4.2	32.9	64.7	-0.1*	-0.3	-0.3
Highest quarter	3.3	21.7	68.7	3.3	21.6	68.4	#	-0.1	-0.2

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-17B. Standard errors for table C-17A estimates (percentage of high school sophomores' use of calculators and computers, by selected student characteristics): 2002

Characteristic	Unimputed			Imputed		
	Use calculators	Use graphic calculators	Use computers	Use calculators	Use graphic calculators	Use computers
Sex						
Male	0.46	0.94	0.92	0.46	0.94	0.92
Female	0.34	1.01	0.86	0.34	1.01	0.86
Socioeconomic status						
Lowest quarter	0.66	1.17	1.11	0.68	1.19	1.12
Middle quarters	0.40	1.06	0.94	0.39	1.03	0.90
Highest quarter	0.43	1.10	1.24	0.44	1.09	1.24
Parents' education						
High school or less	1.54	2.20	2.13	0.61	1.18	1.14
Some college	0.68	1.34	1.33	0.41	1.13	1.02
College graduation	0.76	1.74	1.62	0.47	1.16	1.26
Graduate or professional degree	0.72	1.84	1.76	0.47	1.33	1.35
Native language[1]						
English	0.32	0.91	0.82	0.32	0.90	0.82
Non-English	1.01	1.63	1.50	1.02	1.61	1.50
Student's educational expectations						
High school or less	1.27	1.82	1.99	1.24	1.76	1.95
Some college	0.90	1.92	1.77	0.89	1.90	1.75
College graduation	0.42	1.08	1.02	0.41	1.07	1.02
Graduate or professional degree	0.32	0.96	1.02	0.32	0.95	1.01
Don't know	1.09	1.91	1.68	1.06	1.86	1.66
Composite achievement test score						
Lowest quarter	0.67	1.13	1.24	0.67	1.13	1.23
Second quarter	0.50	1.16	1.19	0.50	1.14	1.18
Third quarter	0.44	1.32	1.26	0.44	1.31	1.26
Highest quarter	0.42	1.15	1.24	0.41	1.14	1.24

[1] The first language students learned to speak when they were children.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-18A. Item Response Theory (IRT)-estimated number-right scores for mathematics, by selected student characteristics: 2002

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	37.6	38.0	0.5
Female	38.0	37.1	-1.0
Socioeconomic status			
Lowest quarter	31.2	31.5	0.3*
Middle quarters	37.6	37.3	-0.3*
Highest quarter	44.1	44.0	-0.1
High school program			
General	35.1	35.0	-0.1
Academic/college preparatory	40.8	40.5	-0.4*
Vocational	33.0	33.0	0.1

* Denotes statistical significance at *p* < .05.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-18B. Standard errors for table C-18A estimates (Item Response Theory [IRT]-estimated number-right scores for mathematics, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.24	0.24
Female	0.25	0.25
Socioeconomic status		
Lowest quarter	0.29	0.28
Middle quarters	0.19	0.21
Highest quarter	0.25	0.25
High school program		
General	0.26	0.26
Academic/college preparatory	0.24	0.24
Vocational	0.46	0.44

NOTE: SE = standard error.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-19A. High school sophomore probability of proficiency at reading level 1, by selected student characteristics: 2002

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	87.1	87.6	0.5*
Female	91.0	91.3	0.3*
Socioeconomic status			
Lowest quarter	79.0	80.7	1.7*
Middle quarters	90.9	90.4	-0.5*
Highest quarter	95.8	96.2	0.4
Parents' education			
High school or less	77.5	83.5	6.0
Some college	85.9	89.8	3.9*
College graduation	89.4	92.5	3.1*
Graduate or professional degree	91.7	94.5	2.8*
Student's educational expectations			
High school or less	68.5	69.8	1.3*
Some college	82.6	82.7	0.1
College graduation	91.9	91.6	-0.2
Graduate or professional degree	95.4	95.2	-0.2
Don't know	84.7	84.0	-0.7*
Native language[1]			
English	91.5	91.5	-0.1
Non-English	76.7	76.8	0.1
Composite achievement test score			
Lowest quarter	59.5	60.1	0.5*
Second quarter	97.7	97.8	0.1*
Third quarter	99.9	99.9	#*
Highest quarter	100.0	100.0	#*
High school program			
General	87.4	87.1	-0.3
Academic/college preparatory	93.1	92.5	-0.6*
Vocational	82.9	83.1	0.2

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-19B. Standard errors for table C-19A estimates (high school sophomore probability of proficiency at reading level 1, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.50	0.48
Female	0.45	0.44
Socioeconomic status		
Lowest quarter	0.83	0.77
Middle quarters	0.36	0.39
Highest quarter	0.42	0.38
Parents' education		
High school or less	1.46	0.70
Some college	0.78	0.46
College graduation	0.74	0.53
Graduate or professional degree	0.69	0.56
Student's educational expectations		
High school or less	1.46	1.37
Some college	0.96	0.93
College graduation	0.48	0.47
Graduate or professional degree	0.34	0.34
Don't know	1.01	0.99
Native language[1]		
English	0.33	0.33
Non-English	1.16	1.13
Composite achievement test score		
Lowest quarter	0.83	0.82
Second quarter	0.15	0.14
Third quarter	0.02	0.02
Highest quarter	#	#
High school program		
General	0.56	0.55
Academic/college preparatory	0.40	0.41
Vocational	1.00	0.96

\# Rounds to zero.
[1] The first language students learned to speak when they were children.
NOTE: SE = standard error.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-20A. High school sophomore probability of proficiency at reading level 2, by selected student characteristics: 2002

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	43.6	44.2	0.5*
Female	48.3	48.2	-0.1
Socioeconomic status			
Lowest quarter	25.0	26.2	1.2*
Middle quarters	46.1	45.2	-0.9*
Highest quarter	67.6	68.0	0.4
Parents' education			
High school or less	21.6	30.5	8.8*
Some college	34.6	43.6	9.0*
College graduation	42.7	56.2	13.5*
Graduate or professional degree	46.3	65.0	18.7*
Student's educational expectations			
High school or less	15.7	15.5	-0.2
Some college	26.8	27.1	0.3
College graduation	46.9	46.4	-0.5*
Graduate or professional degree	62.0	61.9	-0.1
Don't know	35.1	34.2	-0.9*
Native language[1]			
English	49.7	49.2	-0.5*
Non-English	27.3	27.6	0.3
Composite achievement test score			
Lowest quarter	2.6	2.6	#
Second quarter	22.7	22.6	-0.2
Third quarter	65.3	65.5	0.2*
Highest quarter	93.8	94.0	0.1*
High school program			
General	38.6	38.5	-0.1
Academic/college preparatory	56.7	55.6	-1.1*
Vocational	28.9	29.2	0.4

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-20B. Standard errors for table C-20A estimates (high school sophomore probability of proficiency at reading level 2, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.80	0.78
Female	0.88	0.85
Socioeconomic status		
Lowest quarter	0.85	0.84
Middle quarters	0.70	0.68
Highest quarter	0.89	0.88
Parents' education		
High school or less	1.37	0.80
Some college	0.98	0.83
College graduation	1.29	0.96
Graduate or professional degree	1.32	1.17
Student's educational expectations		
High school or less	1.07	0.98
Some college	1.11	1.07
College graduation	0.89	0.85
Graduate or professional degree	0.89	0.85
Don't know	1.27	1.22
Native language[1]		
English	0.70	0.68
Non-English	1.21	1.18
Composite achievement test score		
Lowest quarter	0.12	0.12
Second quarter	0.45	0.42
Third quarter	0.56	0.53
Highest quarter	0.22	0.21
High school program		
General	0.86	0.83
Academic/college preparatory	0.82	0.79
Vocational	1.46	1.39

[1] The first language students learned to speak when they were children.

NOTE: SE = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-21A. High school sophomore probability of proficiency at reading level 3, by selected student characteristics: 2002

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	8.2	8.1	-0.1
Female	8.8	8.5	-0.3*
Socioeconomic status			
Lowest quarter	2.5	2.5	#
Middle quarters	6.7	6.3	-0.4*
Highest quarter	18.2	17.8	-0.3
Parents' education			
High school or less	1.3	3.0	1.7*
Some college	3.8	6.1	2.2*
College graduation	6.0	11.5	5.4*
Graduate or professional degree	7.0	17.7	10.7*
Student's educational expectations			
High school or less	0.8	0.8	#
Some college	2.1	2.1	-0.1
College graduation	7.6	7.2	-0.4*
Graduate or professional degree	13.9	13.5	-0.4*
Don't know	5.8	5.6	-0.2
Native language[1]			
English	9.4	9.0	-0.4*
Non-English	3.9	3.8	-0.1
Composite achievement test score			
Lowest quarter	#	#	#*
Second quarter	0.1	0.1	#*
Third quarter	2.2	2.1	-0.1*
Highest quarter	31.4	30.9	-0.5*
High school program			
General	4.9	4.8	-0.1
Academic/college preparatory	12.7	12.1	-0.6*
Vocational	2.8	2.8	#

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-21B. Standard errors for table C-21A estimates (high school sophomore probability of proficiency at reading level 3, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.34	0.32
Female	0.39	0.37
Socioeconomic status		
Lowest quarter	0.25	0.23
Middle quarters	0.26	0.25
Highest quarter	0.72	0.71
Parents' education		
High school or less	0.33	0.24
Some college	0.34	0.28
College graduation	0.53	0.57
Graduate or professional degree	0.60	0.84
Student's educational expectations		
High school or less	0.23	0.20
Some college	0.31	0.29
College graduation	0.39	0.36
Graduate or professional degree	0.51	0.48
Don't know	0.62	0.59
Native language[1]		
English	0.31	0.29
Non-English	0.44	0.41
Composite achievement test score		
Lowest quarter	#	#
Second quarter	0.01	0.01
Third quarter	0.11	0.11
Highest quarter	0.66	0.63
High school program		
General	0.30	0.28
Academic/college preparatory	0.46	0.43
Vocational	0.42	0.39

Rounds to zero.

[1] The first language students learned to speak when they were children.

NOTE: SE = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-22A. High school sophomore probability of proficiency at math level 1, by selected student characteristics: 2002

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	91.4	91.7	0.3*
Female	91.3	91.6	0.3*
Socioeconomic status			
Lowest quarter	83.2	84.5	1.4*
Middle quarters	92.8	92.5	-0.3
Highest quarter	97.2	97.1	-0.1
Parents' education			
High school or less	81.6	87.4	5.7
Some college	89.5	91.6	2.2*
College graduation	90.4	94.3	3.9*
Graduate or professional degree	93.8	95.6	1.8*
Student's educational expectations			
High school or less	77.0	77.6	0.6
Some college	86.0	85.7	-0.2
College graduation	93.7	93.6	-0.1
Graduate or professional degree	96.0	95.9	-0.1
Don't know	87.9	87.5	-0.4
Native language[1]			
English	93.0	93.0	-0.1
Non-English	83.8	83.7	-0.1
Composite achievement test score			
Lowest quarter	69.1	69.5	0.4*
Second quarter	97.5	97.6	0.1*
Third quarter	99.7	99.7	#*
Highest quarter	100.0	100.0	#*
High school program			
General	89.8	89.5	-0.2
Academic/college preparatory	94.7	94.3	-0.4*
Vocational	87.1	87.1	0.1

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-22B. Standard errors for table C-22A estimates (high school sophomore probability of proficiency at math level 1, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.36	0.35
Female	0.36	0.35
Socioeconomic status		
Lowest quarter	0.66	0.56
Middle quarters	0.30	0.33
Highest quarter	0.26	0.26
Parents' education		
High school or less	1.24	0.48
Some college	0.53	0.37
College graduation	0.68	0.37
Graduate or professional degree	0.52	0.46
Student's educational expectations		
High school or less	1.11	1.05
Some college	0.87	0.85
College graduation	0.34	0.33
Graduate or professional degree	0.30	0.30
Don't know	0.72	0.72
Native language[1]		
English	0.25	0.26
Non-English	0.84	0.81
Composite achievement test score		
Lowest quarter	0.67	0.66
Second quarter	0.09	0.09
Third quarter	0.01	0.01
Highest quarter	#	#
High school program		
General	0.42	0.41
Academic/college preparatory	0.30	0.30
Vocational	0.80	0.76

Rounds to zero.

[1] The first language students learned to speak when they were children.

NOTE: SE = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

**Table C-23A. High school sophomore probability of proficiency at math level 2, by selected
student characteristics: 2002**

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	68.0	68.4	0.4*
Female	65.3	65.7	0.5*
Socioeconomic status			
Lowest quarter	44.9	46.4	1.4*
Middle quarters	68.2	67.8	-0.4
Highest quarter	86.3	86.2	-0.1
Parents' education			
High school or less	41.6	52.0	10.5*
Some college	57.0	65.9	8.9*
College graduation	64.1	76.1	11.9*
Graduate or professional degree	70.5	82.9	12.4*
Student's educational expectations			
High school or less	32.2	32.4	0.2
Some college	48.1	48.3	0.3
College graduation	70.7	70.1	-0.6*
Graduate or professional degree	81.0	80.9	-0.1
Don't know	55.3	54.4	-0.9*
Native language[1]			
English	70.2	69.9	-0.3*
Non-English	49.7	49.7	0.1
Composite achievement test score			
Lowest quarter	9.9	9.8	-0.2*
Second quarter	63.4	63.2	-0.2
Third quarter	95.1	95.3	0.2*
Highest quarter	99.9	99.9	#*
High school program			
General	59.2	59.2	-0.1
Academic/college preparatory	77.5	76.4	-1.1*
Vocational	50.9	51.2	0.3

\# Rounds to zero.
* Denotes statistical significance at $p < .05$.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-23B. Standard errors for table C-23A estimates (high school sophomore probability of proficiency at math level 2, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.86	0.84
Female	0.90	0.89
Socioeconomic status		
Lowest quarter	1.19	1.15
Middle quarters	0.73	0.75
Highest quarter	0.75	0.73
Parents' education		
High school or less	2.00	1.02
Some college	1.19	0.88
College graduation	1.40	0.91
Graduate or professional degree	1.31	1.09
Student's educational expectations		
High school or less	1.50	1.42
Some college	1.53	1.48
College graduation	0.92	0.89
Graduate or professional degree	0.83	0.81
Don't know	1.51	1.46
Native language[1]		
English	0.71	0.71
Non-English	1.66	1.62
Composite achievement test score		
Lowest quarter	0.46	0.44
Second quarter	0.75	0.72
Third quarter	0.28	0.26
Highest quarter	0.01	0.01
High school program		
General	0.99	0.99
Academic/college preparatory	0.76	0.75
Vocational	1.83	1.77

[1] The first language students learned to speak when they were children.

NOTE: SE = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-24A. High school sophomore probability of proficiency at math level 3, by selected student characteristics: 2002

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	48.0	48.0	#
Female	44.7	44.7	-0.1
Socioeconomic status			
Lowest quarter	24.8	25.1	0.3
Middle quarters	45.5	44.7	-0.8*
Highest quarter	70.7	70.9	0.2
Parents' education			
High school or less	20.8	29.5	8.7*
Some college	34.3	42.9	8.6*
College graduation	41.7	56.6	14.9*
Graduate or professional degree	46.9	68.8	21.9*
Student's educational expectations			
High school or less	13.7	13.2	-0.4
Some college	24.0	23.9	-0.1
College graduation	48.4	47.5	-1.0*
Graduate or professional degree	63.4	63.1	-0.3
Don't know	33.7	32.9	-0.7*
Native language[1]			
English	49.6	49.0	-0.6*
Non-English	30.2	30.1	-0.1
Composite achievement test score			
Lowest quarter	0.7	0.7	#*
Second quarter	17.3	16.4	-0.9*
Third quarter	69.5	69.6	0.1
Highest quarter	98.6	98.6	0.1*
High school program			
General	36.5	36.3	-0.2
Academic/college preparatory	59.0	57.5	-1.5*
Vocational	29.7	29.8	0.1

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-24B. Standard errors for table C-24A estimates (high school sophomore probability of proficiency at math level 3, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.93	0.92
Female	0.95	0.92
Socioeconomic status		
Lowest quarter	0.96	0.96
Middle quarters	0.82	0.81
Highest quarter	1.04	1.02
Parents' education		
High school or less	1.57	0.95
Some college	1.17	0.93
College graduation	1.48	1.13
Graduate or professional degree	1.50	1.32
Student's educational expectations		
High school or less	1.22	1.13
Some college	1.39	1.33
College graduation	1.04	1.00
Graduate or professional degree	1.04	1.00
Don't know	1.50	1.44
Native language[1]		
English	0.80	0.79
Non-English	1.48	1.44
Composite achievement test score		
Lowest quarter	0.11	0.11
Second quarter	0.62	0.59
Third quarter	0.79	0.76
Highest quarter	0.14	0.13
High school program		
General	0.98	0.97
Academic/college preparatory	0.94	0.91
Vocational	1.76	1.64

[1] The first language students learned to speak when they were children.
NOTE: SE = standard error.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-25A. High school sophomore probability of proficiency at math level 4, by selected student characteristics: 2002

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	22.7	22.3	-0.3*
Female	18.9	18.5	-0.4*
Socioeconomic status			
Lowest quarter	7.5	7.6	0.1
Middle quarters	18.6	17.7	-0.9*
Highest quarter	39.1	38.7	-0.4
Parents' education			
High school or less	5.3	9.8	4.5*
Some college	12.2	16.4	4.2*
College graduation	16.5	27.4	10.8*
Graduate or professional degree	18.4	38.0	19.6*
Student's educational expectations			
High school or less	3.2	3.1	-0.1
Some college	6.6	6.5	-0.1
College graduation	20.2	19.4	-0.9*
Graduate or professional degree	32.4	31.7	-0.7*
Don't know	13.0	12.7	-0.3
Native language[1]			
English	22.4	21.7	-0.7*
Non-English	12.8	12.6	-0.2
Composite achievement test score			
Lowest quarter	0.1	0.1	#*
Second quarter	1.5	1.4	-0.1*
Third quarter	14.7	14.1	-0.6*
Highest quarter	66.6	66.1	-0.5*
High school program			
General	13.9	13.6	-0.2
Academic/college preparatory	28.9	27.7	-1.2*
Vocational	10.7	10.6	-0.1

\# Rounds to zero.
* Denotes statistical significance at $p < .05$.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-25B. Standard errors for table C-25A estimates (high school sophomore probability of proficiency at math level 4, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.65	0.63
Female	0.66	0.63
Socioeconomic status		
Lowest quarter	0.46	0.45
Middle quarters	0.52	0.52
Highest quarter	1.01	0.95
Parents' education		
High school or less	0.66	0.54
Some college	0.73	0.56
College graduation	0.97	0.86
Graduate or professional degree	1.03	1.19
Student's educational expectations		
High school or less	0.46	0.43
Some college	0.65	0.61
College graduation	0.70	0.66
Graduate or professional degree	0.85	0.82
Don't know	0.99	0.95
Native language[1]		
English	0.57	0.55
Non-English	0.95	0.91
Composite achievement test score		
Lowest quarter	0.01	0.01
Second quarter	0.10	0.09
Third quarter	0.45	0.43
Highest quarter	0.68	0.67
High school program		
General	0.59	0.56
Academic/college preparatory	0.77	0.73
Vocational	0.90	0.87

[1] The first language students learned to speak when they were children.
NOTE: SE = standard error.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-26A. High school sophomore probability of proficiency at math level 5, by selected student characteristics: 2002

Characteristic	Unimputed (mean)	Imputed (mean)	Difference (mean)
Sex			
Male	1.4	1.3	-0.1*
Female	0.6	0.6	#*
Socioeconomic status			
Lowest quarter	0.2	0.2	#
Middle quarters	0.5	0.5	-0.1
Highest quarter	2.7	2.6	-0.1
Parents' education			
High school or less	0.2	0.2	#*
Some college	0.3	0.4	0.1*
College graduation	0.3	1.2	0.9
Graduate or professional degree	0.6	3.1	2.5*
Student's educational expectations			
High school or less	#	#	#
Some college	0.1	#	#
College graduation	0.6	0.6	#*
Graduate or professional degree	2.0	1.9	-0.1*
Don't know	0.6	0.6	#*
Native language[1]			
English	1.0	0.9	-0.1*
Non-English	1.2	1.1	-0.1*
Composite achievement test score			
Lowest quarter	#	#	#
Second quarter	#	#	#
Third quarter	#	#	#*
Highest quarter	3.9	3.8	-0.1*
High school program			
General	0.4	0.4	#*
Academic/college preparatory	1.6	1.5	-0.1*
Vocational	0.3	0.3	#*

Rounds to zero.
* Denotes statistical significance at *p* < .05.
[1] The first language students learned to speak when they were children.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-26B. Standard errors for table C-26A estimates (high school sophomore probability of proficiency at math level 5, by selected student characteristics): 2002

Characteristic	Unimputed SE (mean)	Imputed SE (mean)
Sex		
Male	0.14	0.13
Female	0.07	0.07
Socioeconomic status		
Lowest quarter	0.05	0.05
Middle quarters	0.06	0.06
Highest quarter	0.25	0.23
Parents' education		
High school or less	0.12	0.05
Some college	0.06	0.06
College graduation	0.07	0.17
Graduate or professional degree	0.14	0.31
Student's educational expectations		
High school or less	0.03	0.02
Some college	0.03	0.02
College graduation	0.08	0.07
Graduate or professional degree	0.18	0.17
Don't know	0.17	0.16
Native language[1]		
English	0.09	0.08
Non-English	0.21	0.19
Composite achievement test score		
Lowest quarter	#	#
Second quarter	#	#
Third quarter	0.01	0.01
Highest quarter	0.28	0.27
High school program		
General	0.07	0.06
Academic/college preparatory	0.14	0.13
Vocational	0.12	0.11

\# Rounds to zero.

[1] The first language students learned to speak when they were children.

NOTE: SE = standard error.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-27A. Percentage of high school sophomores who participate in academic clubs, athletics, and cheerleading/drill team, by selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	Academic clubs	Athletics	Cheerleading/ drill team	Academic clubs	Athletics	Cheerleading/ drill team	Academic clubs	Athletics	Cheerleading/ drill team
Sex									
Male	6.8	61.0	8.1	6.8	61.0	8.1	#	#	#
Female	9.9	48.5	19.2	9.9	48.5	19.2	#	#	#
Socioeconomic status									
Lowest quarter	5.5	44.1	13.0	5.6	44.9	13.5	0.1	0.8	0.4
Middle quarters	7.2	55.4	14.1	7.2	54.9	14.2	#	-0.5	0.1
Highest quarter	13.6	64.0	13.1	13.3	64.3	12.8	-0.3	0.3	-0.3
Composite achievement test score									
Lowest quarter	4.2	47.9	15.0	4.3	47.7	15.0	0.1	-0.2*	#
Second quarter	5.0	52.6	14.7	5.2	52.5	14.5	0.2	-0.1	-0.2
Third quarter	7.8	56.6	13.8	8.2	56.5	13.7	0.4	-0.1	-0.2
Highest quarter	15.6	62.2	11.7	15.5	62.3	11.6	-0.1	0.2	-0.1

Rounds to zero.

* Denotes statistical significance at *p* < .05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-27B. Standard errors for table C-27A estimates (percentage of high school sophomores who participate in academic clubs, athletics, and cheerleading/drill team, by selected student characteristics): 2002

Characteristic	Unimputed			Imputed		
	Academic clubs	Athletics	Cheerleading/ drill team	Academic clubs	Athletics	Cheerleading/ drill team
Sex						
Male	0.38	0.81	0.52	0.38	0.81	0.52
Female	0.46	0.85	0.63	0.46	0.85	0.63
Socioeconomic status						
Lowest quarter	0.46	1.13	0.72	0.46	1.09	0.73
Middle quarters	0.38	0.86	0.58	0.38	0.82	0.60
Highest quarter	0.73	1.08	0.78	0.74	1.05	0.78
Composite achievement test score						
Lowest quarter	0.42	1.04	0.83	0.42	1.03	0.82
Second quarter	0.42	1.05	0.75	0.44	1.03	0.75
Third quarter	0.55	1.07	0.75	0.55	1.06	0.74
Highest quarter	0.83	1.04	0.74	0.80	1.04	0.73

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-28A. Percentage of high school sophomores who participate in hobby clubs, music, and vocational clubs, by selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	Hobby clubs	Music	Vocational clubs	Hobby clubs	Music	Vocational clubs	Hobby clubs	Music	Vocational clubs
Sex									
Male	8.1	16.2	7.6	8.1	16.3	7.6	#	#	#
Female	10.9	26.8	9.1	10.9	26.8	9.1	#	#	#
Socioeconomic status									
Lowest quarter	6.5	15.2	9.1	6.7	15.6	9.2	0.2	0.4	0.1
Middle quarters	8.8	21.6	8.6	8.8	21.6	8.6	0.1	#	#
Highest quarter	13.8	27.4	7.0	13.5	27.1	7.0	-0.3	-0.3	-0.1
Composite achievement test score									
Lowest quarter	6.3	15.4	8.8	6.4	15.4	8.8	#	#	#
Second quarter	7.0	19.1	9.3	7.2	18.8	9.5	0.2	-0.2	0.2
Third quarter	10.3	22.7	7.8	10.8	22.7	7.7	0.4	#	-0.1
Highest quarter	13.1	28.9	7.5	13.4	28.7	7.4	0.4	-0.2	-0.1

Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-28B. Standard errors for table C-28A estimates (percentage of high school sophomores who participate in hobby clubs, music, and vocational clubs, by selected student characteristics): 2002

Characteristic	Unimputed			Imputed		
	Hobby clubs	Music	Vocational clubs	Hobby clubs	Music	Vocational clubs
Sex						
Male	0.41	0.60	0.53	0.41	0.60	0.53
Female	0.50	0.71	0.53	0.50	0.71	0.53
Socioeconomic status						
Lowest quarter	0.47	0.74	0.72	0.50	0.75	0.76
Middle quarters	0.40	0.67	0.54	0.39	0.64	0.50
Highest quarter	0.80	1.02	0.56	0.79	1.02	0.57
Composite achievement test score						
Lowest quarter	0.53	0.79	0.63	0.52	0.79	0.63
Second quarter	0.50	0.82	0.73	0.49	0.79	0.72
Third quarter	0.63	0.92	0.68	0.64	0.86	0.65
Highest quarter	0.75	1.04	0.70	0.75	1.02	0.67

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-29A. Percentage of high school sophomores, by employment status and selected student characteristics: 2002

	Unimputed				Imputed				Difference			
Characteristic	Ever worked for pay or employed	Worked for pay or employed at time of survey	Worked more than 10 hours per week at time of survey	Worked more than 15 hours per week at time of survey	Ever worked for pay or employed	Worked for pay or employed at time of survey	Worked more than 10 hours per week at time of survey	Worked more than 15 hours per week at time of survey	Ever worked for pay or employed	Worked for pay or employed at time of survey	Worked more than 10 hours per week at time of survey	Worked more than 15 hours per week at time of survey
Sex												
Male	62.9	27.6	66.2	57.2	62.9	27.7	66.2	57.2	#	#	#	#
Female	56.6	23.6	57.0	44.4	56.6	23.6	57.0	44.5	#	#	0.1	0.1
Socioeconomic status												
Lowest quarter	54.0	22.9	70.2	61.4	55.1	23.4	69.9	60.5	1.0	0.5	-0.3	-0.9
Middle quarters	62.2	27.3	65.3	53.2	61.8	27.2	65.3	53.4	-0.4	-0.1	#	0.2
Highest quarter	59.7	24.6	47.6	38.4	59.8	24.5	47.8	38.7	0.1	-0.1	0.2	0.3
Composite achievement test score												
Lowest quarter	56.1	25.3	69.8	61.9	56.1	25.3	69.8	61.7	0.1	#	#	-0.2
Second quarter	60.2	26.3	70.8	60.4	59.9	26.2	71.0	60.6	-0.3	-0.1	0.2	0.1
Third quarter	60.9	25.8	61.1	49.9	60.9	25.8	61.3	50.0	-0.1	#	0.3	0.2
Highest quarter	61.3	25.0	47.2	34.7	61.3	25.1	47.1	34.8	#	0.1	-0.1	#

Rounds to zero.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-29B. Standard errors for table C-29A estimates (percentage of high school sophomores, by employment status and selected student characteristics): 2002

Characteristic	Unimputed				Imputed			
	Ever worked for pay or employed	Worked for pay or employed at time of survey	Worked more than 10 hours per week at time of survey	Worked more than 15 hours per week at time of survey	Ever worked for pay or employed	Worked for pay or employed at time of survey	Worked more than 10 hours per week at time of survey	Worked more than 15 hours per week at time of survey
Sex								
Male	0.82	0.71	1.45	1.52	0.82	0.71	1.45	1.52
Female	0.80	0.69	1.50	1.55	0.80	0.69	1.50	1.54
Socioeconomic status								
Lowest quarter	1.31	1.00	2.08	2.21	1.26	0.98	1.98	2.25
Middle quarters	0.75	0.72	1.34	1.39	0.77	0.73	1.35	1.39
Highest quarter	1.05	0.93	2.29	2.23	1.05	0.91	2.38	2.27
Composite achievement test score								
Lowest quarter	1.24	1.01	1.95	2.01	1.25	1.01	1.94	2.01
Second quarter	1.08	0.96	1.82	1.93	1.07	0.94	1.81	1.92
Third quarter	1.05	0.92	2.21	2.03	1.04	0.91	2.19	2.02
Highest quarter	1.05	0.97	2.06	2.07	1.04	0.97	2.04	2.05

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-30A. Percentage of high school sophomores who report that they engage in various activities at least once or twice a week, by selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	Driving or riding around	Visiting with friends or meeting at a hangout	Talking with friends on the telephone	Driving or riding around	Visiting with friends or meeting at a hangout	Talking with friends on the telephone	Driving or riding around	Visiting with friends or meeting at a hangout	Talking with friends on the telephone
Sex									
Male	59.5	80.3	64.9	59.5	80.3	64.9	#	#	#
Female	57.1	78.6	83.3	57.1	78.6	83.3	#	#	#
Socioeconomic status									
Lowest quarter	56.3	73.5	69.6	56.6	74.3	69.7	0.2	0.8	0.1
Middle quarters	60.6	81.1	75.9	60.5	80.5	75.9	-0.1	-0.6	#
Highest quarter	55.9	82.2	75.0	55.7	82.2	74.7	-0.2	0.1	-0.3
Composite achievement test score									
Lowest quarter	59.4	74.4	72.1	59.2	74.3	72.1	-0.2	#	#
Second quarter	63.7	81.9	76.2	63.6	81.7	75.9	#	-0.2	-0.2
Third quarter	59.5	82.6	75.1	59.4	82.6	75.1	#	#	#
Highest quarter	51.0	79.1	73.0	51.2	79.1	73.2	0.2	0.1	0.2

Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-30B. Standard errors for table C-30A estimates (percentage of high school sophomores who report that they engage in various activities at least once or twice a week, by selected student characteristics): 2002

Characteristic	Unimputed			Imputed		
	Driving or riding around	Visiting with friends at a hangout	Talking with friends on the telephone	Driving or riding around	Visiting with friends at a hangout	Talking with friends on the telephone
Sex						
Male	0.76	0.65	0.68	0.76	0.65	0.68
Female	0.84	0.65	0.56	0.84	0.65	0.56
Socioeconomic status						
Lowest quarter	1.05	0.98	0.94	1.07	0.96	0.92
Middle quarters	0.72	0.58	0.69	0.72	0.63	0.67
Highest quarter	1.14	0.81	0.86	1.15	0.82	0.84
Composite achievement test score						
Lowest quarter	1.10	1.02	0.93	1.10	1.02	0.93
Second quarter	1.05	0.81	0.85	1.05	0.81	0.85
Third quarter	1.04	0.80	0.87	1.03	0.79	0.86
Highest quarter	1.14	0.85	0.88	1.13	0.84	0.87

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-31A. Percentage of high school sophomores who report that various life values related to work are very important to them, by selected student characteristics: 2002

	Unimputed			Imputed			Difference		
Characteristic	Being successful in my line of work	Being able to find steady work	Having lots of money	Being successful in my line of work	Being able to find steady work	Having lots of money	Being successful in my line of work	Being able to find steady work	Having lots of money
Sex									
Male	84.1	82.0	51.0	84.1	81.9	51.0	#	#	#
Female	88.5	86.7	33.3	88.5	86.7	33.3	#	#	#
Socioeconomic status									
Lowest quarter	81.9	81.2	46.8	81.9	81.9	47.3	#	0.7	0.5
Middle quarters	86.9	85.2	42.4	86.9	84.6	42.6	#	-0.5	0.2
Highest quarter	89.2	85.7	36.5	89.1	85.9	36.2	-0.1	0.3	-0.3
Composite achievement test score									
Lowest quarter	76.7	76.8	55.8	76.7	76.9	55.5	#	0.2	-0.3
Second quarter	85.9	86.6	47.4	85.8	86.5	46.9	-0.1	-0.1	-0.6
Third quarter	90.6	87.9	38.0	90.6	87.6	37.6	#	-0.2	-0.4
Highest quarter	91.4	85.6	29.4	91.4	85.7	29.5	#	0.2	0.1

Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-31B. Standard errors for table C-31A estimates (percentage of high school sophomores who report that various life values related to work are very important to them, by selected student characteristics): 2002

Characteristic	Unimputed			Imputed		
	Being successful in my line of work	Being able to find steady work	Having lots of money	Being successful in my line of work	Being able to find steady work	Having lots of money
Sex						
Male	0.52	0.58	0.79	0.52	0.58	0.79
Female	0.49	0.45	0.71	0.49	0.45	0.71
Socioeconomic status						
Lowest quarter	0.81	0.79	0.97	0.82	0.80	0.99
Middle quarters	0.47	0.50	0.75	0.48	0.49	0.79
Highest quarter	0.67	0.77	0.92	0.65	0.77	0.92
Composite achievement test score						
Lowest quarter	0.83	0.85	1.10	0.82	0.85	1.08
Second quarter	0.74	0.66	1.11	0.72	0.63	1.05
Third quarter	0.60	0.69	0.95	0.58	0.68	0.91
Highest quarter	0.61	0.77	1.02	0.60	0.75	0.98

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-32A. Percentage of high school sophomores who report that various life values related to family are very important to them, by selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	Finding right person to marry and having a happy family life	Having children	Being able to give my children better opportunities than I've had	Finding right person to marry and having a happy family life	Having children	Being able to give my children better opportunities than I've had	Finding right person to marry and having a happy family life	Having children	Being able to give my children better opportunities than I've had
Sex									
Male	73.4	45.1	78.9	73.4	45.1	78.9	#	#	#
Female	79.3	49.7	81.6	79.3	49.7	81.6	#	#	#
Socioeconomic status									
Lowest quarter	71.6	42.0	83.4	71.4	43.5	83.6	-0.2	1.5*	0.2
Middle quarters	76.5	48.0	81.9	76.6	47.3	81.6	#	-0.7*	-0.3
Highest quarter	81.0	51.3	73.9	80.9	51.2	74.4	-0.2	-0.1	0.5
Composite achievement test score									
Lowest quarter	70.3	44.5	80.3	70.4	44.2	80.6	0.1	-0.3	0.3*
Second quarter	75.3	46.4	84.0	75.2	46.4	84.4	-0.1	-0.1	0.3
Third quarter	79.2	49.0	82.2	79.0	48.7	82.5	-0.2	-0.3	0.3
Highest quarter	80.7	50.2	73.2	80.7	50.0	73.6	#	-0.2	0.4*

Rounds to zero.
* Denotes statistical significance at *p* < .05.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-32B. Standard errors for table C-32A estimates (percentage of high school sophomores who report that various life values related to family are very important to them, by selected student characteristics): 2002

	Unimputed			Imputed		
	Finding right person to marry and having a happy family life	Having children	Being able to give my children better opportunities than I've had	Finding right person to marry and having a happy family life	Having children	Being able to give my children better opportunities than I've had
Sex						
Male	0.68	0.82	0.63	0.68	0.82	0.63
Female	0.60	0.76	0.57	0.60	0.76	0.57
Socioeconomic status						
Lowest quarter	0.87	1.11	0.74	0.89	1.12	0.74
Middle quarters	0.64	0.82	0.58	0.61	0.81	0.58
Highest quarter	0.84	0.97	0.87	0.87	0.96	0.88
Composite achievement test score						
Lowest quarter	0.87	1.00	0.85	0.85	0.99	0.83
Second quarter	0.95	1.09	0.76	0.91	1.05	0.74
Third quarter	0.84	1.04	0.73	0.82	1.02	0.70
Highest quarter	0.86	1.05	0.95	0.84	1.04	0.91

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-33A. Percentage of high school sophomores who report that various life values related to friendships and leisure time are very important to them, by selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	Having strong friendships	Having leisure time to enjoy own interests	Getting away from this area of the country	Having strong friendships	Having leisure time to enjoy own interests	Getting away from this area of the country	Having strong friendships	Having leisure time to enjoy own interests	Getting away from this area of the country
Sex									
Male	79.3	68.8	21.5	79.3	68.8	21.5	#	#	#*
Female	86.2	67.4	21.1	86.2	67.4	21.1	#	#	#
Socioeconomic status									
Lowest quarter	75.3	59.1	22.9	76.0	59.6	22.7	0.6	0.5	-0.2
Middle quarters	83.9	68.8	22.5	83.5	69.0	22.6	-0.3	0.3	0.1
Highest quarter	87.7	75.3	17.2	87.7	74.4	17.4	#	-1.0*	0.2
Composite achievement test score									
Lowest quarter	73.5	58.8	27.3	73.8	58.9	27.1	0.3*	0.1	-0.2
Second quarter	82.1	68.2	21.8	81.9	68.1	21.8	-0.2	-0.1	#
Third quarter	86.9	71.3	19.9	86.8	71.0	19.7	-0.2	-0.3	-0.2
Highest quarter	88.2	73.6	17.1	88.0	73.8	17.0	-0.2	0.1	-0.1

Rounds to zero.

* Denotes statistical significance at *p* < .05.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-33B. Standard errors for table C-33A estimates (percentage of high school sophomores who report that various life values related to friendships and leisure time are very important to them, by selected student characteristics): 2002

	Unimputed			Imputed		
Characteristic	Having strong friendships	Having leisure time to enjoy own interests	Getting away from this area of the country	Having strong friendships	Having leisure time to enjoy own interests	Getting away from this area of the country
Sex						
Male	0.58	0.70	0.64	0.58	0.70	0.64
Female	0.51	0.69	0.61	0.51	0.70	0.61
Socioeconomic status						
Lowest quarter	0.84	1.02	0.84	0.91	0.99	0.84
Middle quarters	0.51	0.65	0.68	0.54	0.64	0.67
Highest quarter	0.63	0.84	0.73	0.61	0.87	0.74
Composite achievement test score						
Lowest quarter	0.94	0.96	0.97	0.91	0.97	0.95
Second quarter	0.82	0.91	0.93	0.80	0.88	0.90
Third quarter	0.73	0.93	0.87	0.69	0.89	0.84
Highest quarter	0.61	0.89	0.73	0.59	0.88	0.71

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-34A. Percentage of high school sophomores who report that various life values related to community are very important to them, by selected student characteristics: 2002

Characteristic	Unimputed			Imputed			Difference		
	Helping other people in community	Working to correct social and economic inequalities	Living close to parents and relatives	Helping other people in community	Working to correct social and economic inequalities	Living close to parents and relatives	Helping other people in community	Working to correct social and economic inequalities	Living close to parents and relatives
Sex									
Male	29.9	18.7	28.0	29.9	18.7	28.0	#*	#	#
Female	42.6	20.0	31.3	42.6	20.0	31.3	#	#	#
Socioeconomic status									
Lowest quarter	38.3	25.5	35.6	38.7	25.2	35.2	0.4	-0.3	-0.3
Middle quarters	35.0	17.9	29.4	35.0	18.2	29.4	#	0.3	0.1
Highest quarter	36.9	16.0	24.3	36.6	16.0	24.8	-0.3	-0.1	0.5
Composite achievement test score									
Lowest quarter	41.6	28.6	40.5	41.9	28.7	40.7	0.3	0.1	0.2
Second quarter	35.3	19.5	31.5	36.7	20.5	31.8	1.3*	1.0*	0.3
Third quarter	32.6	14.9	27.1	33.7	15.3	27.0	1.1*	0.4	-0.2
Highest quarter	32.4	13.1	19.9	33.3	13.5	20.0	0.9*	0.4*	0.1

Rounds to zero.
* Denotes statistical significance at *p* < .05.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-34B. Standard errors for table C-34A estimates (percentage of high school sophomores who report that various life values related to community are very important to them, by selected student characteristics): 2002

Characteristic	Unimputed			Imputed		
	Helping other people in community	Working to correct social and economic inequalities	Living close to parents and relatives	Helping other people in community	Working to correct social and economic inequalities	Living close to parents and relatives
Sex						
Male	0.63	0.60	0.69	0.63	0.60	0.69
Female	0.70	0.65	0.70	0.70	0.65	0.70
Socioeconomic status						
Lowest quarter	0.93	1.00	0.95	0.93	0.97	0.98
Middle quarters	0.71	0.60	0.69	0.71	0.61	0.67
Highest quarter	0.87	0.69	0.88	0.87	0.69	0.89
Composite achievement test score						
Lowest quarter	1.03	0.97	1.07	1.02	0.96	1.05
Second quarter	1.01	0.86	0.96	0.99	0.85	0.91
Third quarter	0.97	0.76	0.95	0.92	0.75	0.91
Highest quarter	0.88	0.64	0.86	0.88	0.64	0.84

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-35A. Percentage of high school sophomores who expect to attain various levels of education, by selected student characteristics: 2002

Characteristic	Unimputed				Imputed				Difference			
	High school diploma or less	Two years or less of college or vocational school	College graduate	Graduate/ professional degree	High school diploma or less	Two years or less of college or vocational school	College graduate	Graduate/ professional degree	High school diploma or less	Two years or less of college or vocational school	College graduate	Graduate/ professional degree
Sex												
Male	11.9	13.3	41.7	33.2	12.5	13.2	41.5	32.8	0.6*	-0.1	-0.2	-0.4*
Female	5.6	9.7	38.0	46.7	5.8	9.7	37.8	46.6	0.2*	#	-0.1	-0.1
Socioeconomic status												
Lowest quarter	17.4	17.7	37.3	27.6	16.8	17.0	38.2	28.0	-0.6	-0.8	0.9	0.4
Middle quarters	8.1	12.1	42.2	37.6	8.9	12.4	41.5	37.2	0.8*	0.3	-0.7	-0.4
Highest quarter	2.0	4.5	37.4	56.1	2.5	4.6	37.6	55.2	0.5	0.1	0.2	-0.8
Composite achievement test score												
Lowest quarter	23.2	20.7	35.2	20.9	24.1	20.1	35.3	20.5	0.9*	-0.6*	0.1	-0.3
Second quarter	8.3	15.7	44.6	31.4	9.1	15.3	44.9	30.8	0.7*	-0.5	0.3	-0.6
Third quarter	3.5	7.8	43.1	45.5	3.7	8.0	43.1	45.2	0.2	0.1	#	-0.3
Highest quarter	1.0	3.4	35.7	59.9	1.0	3.4	35.5	60.1	0.1	#	-0.2	0.2

Rounds to zero.
* Denotes statistical significance at *p* < .05.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-35B. Standard errors for table C-35A estimates (percentage of high school sophomores who expect to attain various levels of education, by selected student characteristics): 2002

Characteristic	Unimputed				Imputed			
	High school diploma or less	Two years or less of college or vocational school	College graduate	Graduate/ professional degree	High school diploma or less	Two years or less of college or vocational school	College graduate	Graduate/ professional degree
Sex								
Male	0.53	0.53	0.74	0.73	0.52	0.52	0.71	0.72
Female	0.37	0.47	0.70	0.80	0.38	0.47	0.70	0.80
Socioeconomic status								
Lowest quarter	0.89	0.81	1.09	1.00	0.82	0.75	0.99	0.99
Middle quarters	0.41	0.47	0.74	0.78	0.43	0.48	0.77	0.77
Highest quarter	0.32	0.42	0.96	0.98	0.35	0.42	0.95	0.95
Composite achievement test score								
Lowest quarter	1.04	0.91	1.04	1.00	0.98	0.87	0.99	0.94
Second quarter	0.58	0.92	1.15	1.10	0.60	0.85	1.11	1.06
Third quarter	0.40	0.57	1.04	1.07	0.39	0.55	0.97	1.00
Highest quarter	0.20	0.39	1.00	1.07	0.20	0.38	0.96	1.02

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-36A. Percentage of high school sophomores who report various intentions with regard to entering college after high school graduation, by selected student characteristics: 2002

Characteristic	Unimputed				Imputed				Difference			
	Right after high school	After a year	After more than a year	No/don't know	Right after high school	After a year	After more than a year	No/don't know	Right after high school	After a year	After more than a year	No/don't know
Sex												
Male	71.7	16.6	3.2	8.5	71.7	16.6	3.2	8.6	#	#	#	#
Female	78.8	14.3	0.8	6.1	78.8	14.3	0.8	6.1	#	#	#	#
Socioeconomic status												
Lowest quarter	66.9	20.2	2.5	10.4	67.2	20.1	2.6	10.2	0.3	-0.2	#	-0.2
Middle quarters	73.6	16.9	1.9	7.6	73.3	17.2	1.8	7.7	-0.3	0.3	-0.1	0.1
Highest quarter	85.4	9.0	1.4	4.3	85.7	8.7	1.4	4.2	0.4	-0.3	0.1	-0.1
Composite achievement test score												
Lowest quarter	67.9	20.4	3.1	8.6	67.9	20.4	3.1	8.6	0.1	#	#	#
Second quarter	68.7	21.4	1.8	8.1	68.7	21.4	1.8	8.1	#	-0.1	#	#
Third quarter	76.4	14.7	1.7	7.2	76.4	14.7	1.7	7.2	#	-0.1	#	#
Highest quarter	85.3	7.9	1.3	5.5	85.3	7.8	1.3	5.5	#	#	#	#

Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-36B. Standard errors for table C-36A estimates (percentage of high school sophomores who report various intentions with regard to entering college after high school graduation, by selected student characteristics): 2002

Characteristic	Unimputed				Imputed			
	Right after high school	After a year	After more than a year	No/don't know	Right after high school	After a year	After more than a year	No/don't know
Sex								
Male	0.75	0.60	0.31	0.49	0.75	0.60	0.31	0.49
Female	0.67	0.57	0.13	0.35	0.67	0.57	0.13	0.35
Socioeconomic status								
Lowest quarter	1.16	1.05	0.35	0.78	1.21	1.05	0.37	0.72
Middle quarters	0.75	0.63	0.21	0.45	0.79	0.67	0.21	0.46
Highest quarter	0.74	0.61	0.28	0.44	0.70	0.58	0.28	0.44
Composite achievement test score								
Lowest quarter	1.24	1.06	0.46	0.72	1.23	1.04	0.45	0.72
Second quarter	1.08	0.97	0.28	0.63	1.07	0.96	0.27	0.62
Third quarter	1.02	0.82	0.26	0.57	1.00	0.81	0.26	0.57
Highest quarter	0.80	0.58	0.28	0.53	0.80	0.57	0.28	0.53

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-37A. Percentage of high school sophomores who report that fathers, mothers, school counselors, and teachers think college is the most important thing for them to do right after high school, by selected student characteristics: 2002

Characteristic	Unimputed				Imputed				Difference			
	Father	Mother	School counselor	Teacher or favorite teacher	Father	Mother	School counselor	Teacher or favorite teacher	Father	Mother	School counselor	Teacher or favorite teacher
Sex												
Male	67.5	72.4	60.7	61.3	67.5	72.4	60.7	61.3	#	#	#	#
Female	74.2	78.6	68.8	70.4	74.2	78.5	68.8	70.5	#	#	#	#
Socioeconomic status												
Lowest quarter	61.1	68.6	59.9	62.9	60.8	67.9	59.7	63.0	-0.3	-0.7	-0.2	0.2
Middle quarters	69.3	74.4	63.8	64.2	69.5	74.9	63.8	64.0	0.2	0.5	#	-0.2
Highest quarter	82.5	83.7	71.6	72.5	82.3	83.5	71.6	72.6	-0.2	-0.2	#	0.1
Composite achievement test score												
Lowest quarter	58.7	65.4	57.5	58.4	58.6	65.2	57.4	58.2	-0.1	-0.1	-0.1	-0.2
Second quarter	67.6	73.4	65.4	64.4	67.6	73.5	65.4	64.5	#	#	0.1	0.1
Third quarter	76.1	79.9	67.5	68.8	76.0	79.7	67.5	68.7	-0.1	-0.2	#	-0.1
Highest quarter	79.1	81.9	68.1	71.2	79.1	81.9	68.1	71.2	#	#	#	#

Rounds to zero.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-37B. Standard errors for table C-37A estimates (percentage of high school sophomores who report that fathers, mothers, school counselors, and teachers think college is the most important thing for them to do right after high school, by selected student characteristics): 2002

Characteristic	Unimputed				Imputed			
	Father	Mother	School counselor	Teacher or favorite teacher	Father	Mother	School counselor	Teacher or favorite teacher
Sex								
Male	0.80	0.74	0.83	0.76	0.80	0.74	0.83	0.76
Female	0.68	0.67	0.72	0.63	0.68	0.67	0.72	0.63
Socioeconomic status								
Lowest quarter	1.13	1.09	1.08	1.06	1.08	1.08	1.14	1.09
Middle quarters	0.70	0.67	0.79	0.70	0.68	0.65	0.78	0.70
Highest quarter	0.81	0.86	1.02	0.95	0.80	0.88	1.05	0.98
Composite achievement test score								
Lowest quarter	1.28	1.18	1.23	1.13	1.28	1.17	1.22	1.12
Second quarter	1.04	1.01	1.03	1.04	1.02	0.99	1.01	1.03
Third quarter	0.92	0.83	1.03	1.02	0.92	0.82	1.03	1.01
Highest quarter	0.86	0.90	1.03	1.01	0.85	0.89	1.03	1.00

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-38A. Percentage of high school sophomores' expected occupation at age 30, by sex: 2002

Occupation	Unimputed		Imputed		Difference	
	Male	Female	Male	Female	Male	Female
Clerical	0.1	0.4	0.1	0.4	#	#
Craftsman	4.6	0.8	4.6	0.8	#	#
Farmer, farm manager	0.2	#	0.2	#	#	#
Homemaker	#	0.2	#	0.2	#	#
Laborer	0.7	#	0.7	#	#	#
Manager, administrator	2.2	1.7	2.2	1.7	#	#
Military	1.7	0.2	1.7	0.2	#	#
Operative	1.1	0.1	1.1	0.1	#	#
Professional (1)	25.5	23.9	25.5	23.9	#	#
Professional (2)	11.6	28.5	11.6	28.5	#	#
Proprietor or owner	2.6	1.6	2.6	1.6	#	#
Protective service	3.3	1.2	3.3	1.2	#	#
Sales	0.8	0.3	0.8	0.3	#	#
School teacher	0.6	2.6	0.6	2.6	#	#
Service	0.4	4.6	0.4	4.6	#	#
Technical	4.5	2.2	4.5	2.2	#	#
Plan not to work	0.5	0.5	0.5	0.5	#	#
Other	1.1	0.9	1.1	0.9	#	#
Don't know	38.4	30.3	38.4	30.3	#	#

Rounds to zero.

NOTE: The occupational list given to sophomores was as follows: Clerical such as bank teller, bookkeeper, secretary, typist, mail carrier, ticket agent; Craftsman such as baker, automobile mechanic, machinist, painter, plumber, telephone installer, carpenter; Farmer, farm manager; Homemaker or housewife only; Laborer such as construction worker, car washer, sanitary worker, farm laborer; Manager, administrator such as sales manager, office manager, school administrator, buyer, restaurant manager, government official; Military such as career officer, enlisted man or woman in the Armed Forces; Operative such as meat cutter, assembly worker, machine operator, welder, taxicab, bus or truck driver; Professional (1) such as accountant, artist, registered nurse, engineer, librarian, writer, social worker, actor, actress, athlete, politician, but not including school teacher; Professional (2) such as clergyman, dentist, physician, lawyer, scientist, college teacher; Proprietor or owner such as owner of small business, contractor, restaurant owner; Protective service such as detective, police officer or guard, sheriff, fire fighter; Sales such as salesperson, advertising or insurance agent, real estate broker; School teacher such as elementary or secondary; Service such as barber, beautician, practical nurse, private household worker, janitor, waiter; Technical such as draftsman, medical or dental technician, computer programmer; Plan not to work; and Other.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-38B. Standard errors for table C-38A estimates (percentage of high school sophomores'
expected occupation at age 30, by sex): 2002

Occupation	Unimputed		Imputed	
	Male	Female	Male	Female
Clerical	0.04	0.10	0.04	0.10
Craftsman	0.32	0.13	0.32	0.13
Farmer, farm manager	0.06	0.03	0.06	0.03
Homemaker	0.01	0.06	0.01	0.06
Laborer	0.12	#	0.12	#
Manager, administrator	0.22	0.19	0.22	0.19
Military	0.19	0.08	0.19	0.08
Operative	0.19	0.04	0.19	0.04
Professional (1)	0.70	0.61	0.70	0.61
Professional (2)	0.49	0.61	0.49	0.61
Proprietor or owner	0.23	0.19	0.23	0.19
Protective service	0.32	0.15	0.32	0.15
Sales	0.14	0.08	0.14	0.08
School teacher	0.12	0.24	0.12	0.24
Service	0.09	0.33	0.09	0.33
Technical	0.32	0.22	0.32	0.22
Plan not to work	0.11	0.10	0.11	0.10
Other	0.14	0.16	0.14	0.16
Don't know	0.73	0.68	0.73	0.68

Rounds to zero.

NOTE: The occupational list given to sophomores was as follows: Clerical such as bank teller, bookkeeper, secretary, typist, mail carrier, ticket agent; Craftsman such as baker, automobile mechanic, machinist, painter, plumber, telephone installer, carpenter; Farmer, farm manager; Homemaker or housewife only; Laborer such as construction worker, car washer, sanitary worker, farm laborer; Manager, administrator such as sales manager, office manager, school administrator, buyer, restaurant manager, government official; Military such as career officer, enlisted man or woman in the Armed Forces; Operative such as meat cutter, assembly worker, machine operator, welder, taxicab, bus or truck driver; Professional (1) such as accountant, artist, registered nurse, engineer, librarian, writer, social worker, actor, actress, athlete, politician, but not including school teacher; Professional (2) such as clergyman, dentist, physician, lawyer, scientist, college teacher; Proprietor or owner such as owner of small business, contractor, restaurant owner; Protective service such as detective, police officer or guard, sheriff, fire fighter; Sales such as salesperson, advertising or insurance agent, real estate broker; School teacher such as elementary or secondary; Service such as barber, beautician, practical nurse, private household worker, janitor, waiter; Technical such as draftsman, medical or dental technician, computer programmer; Plan not to work; and Other.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002."

Table C-39A. Comparison of estimates between ELS:2002 imputed and unimputed data, NELS:88 data, and HS&B data, by selected student characteristics: 1980, 1990, and 2002

Variable	ELS:2002 Unimputed	ELS:2002 Imputed	NELS:88	HS&B	ELS:2002 unimputed –NELS:88	ELS:2002 imputed– NELS:88	Change in significance?	ELS:2002 unimputed –HS&B	ELS:2002 imputed– HS&B	Change in significance?
Father's education (composite)										
Did not finish high school	13.6	13.9	15.2	22.6	-1.6	-1.3	No	-9.0*	-8.7*	No
Graduated from high school or GED	29.9	30.1	25.8	31.1	4.1*	4.3*	No	-1.2	-1.0	No
Some postsecondary education (PSE)	27.7	27.4	33.3	23.5	-5.6*	-5.9*	No	4.2*	3.9*	No
Graduated from college	16.9	16.7	14.2	12.3	2.7*	2.5*	No	4.6*	4.4*	No
Completed master's or equivalent	7.5	7.4	6.5	6.2	1.0	0.9	No	1.3*	1.2*	No
Completed Ph.D., M.D., or other advanced degree	4.5	4.4	5.0	4.3	-0.5	-0.6	No	0.2	0.1	No
Mother's education (composite)										
Did not finish high school	12.9	13.2	13.0	17.8	-0.1	0.2	No	-4.9*	-4.6*	No
Graduated from high school or GED	27.8	27.9	30.8	46.5	-3.0*	-2.9*	No	-18.7*	-18.6*	No
Some postsecondary education (PSE)	34.8	34.6	39.0	21.9	-4.2*	-4.4*	No	12.9*	12.7*	No
Graduated from college	16.7	16.6	11.9	9.1	4.8*	4.7*	No	7.6*	7.5*	No
Completed master's or equivalent	6.0	6.0	4.5	3.4	1.5*	1.5*	No	2.6*	2.6*	No
Completed Ph.D., M.D., or other advanced degree	1.7	1.7	0.7	1.3	1.0*	1.0*	No	0.4	0.4	No
Native language[1]										
English	86.2	86.0	90.2	94.6	-4.0*	-4.2*	No	-8.4*	-8.6*	No
Non-English	13.8	14.0	9.8	5.4	4.0*	4.2*	No	8.4*	8.6*	No
IRT-estimated number-right score in mathematics	37.2	37.2	36.5	32.8	0.7*	0.7*	No	4.4*	4.4*	No
Probability of proficiency in reading[2]										
Level 1	89.0	89.4	91.1	†	-2.1*	-1.7*	No	†	†	†
Level 2	46.0	46.2	49.9	†	-3.9*	-3.7*	No	†	†	†
Level 3	8.5	8.3	12.7	†	-4.2*	-4.4*	No	†	†	†

See notes at end of table.

Table C-39A. Comparison of estimates between ELS:2002 imputed and unimputed data, NELS:88 data, and HS&B data, by selected student characteristics: 1980, 1990, and 2002—Continued

Variable	ELS:2002 Unimputed	Imputed	NELS:88	HS&B	ELS:2002 unimputed –NELS:88	ELS:2002 imputed– NELS:88	Change in significance?	ELS:2002 unimputed –HS&B	ELS:2002 imputed– HS&B	Change in significance?
Probability of proficiency in mathematics[3]										
Level 1	91.4	91.7	90.7	†	0.7	1.0*	Yes	†	†	†
Level 2	66.6	67.1	63.0	†	3.6*	4.1*	No	†	†	†
Level 3	46.4	46.4	43.5	†	2.9*	2.9*	No	†	†	†
Level 4	20.8	20.4	19.0	†	1.8*	1.4*	No	†	†	†
Level 5	1.0	1.0	0.4	†	0.6*	0.6*	No	†	†	†
Family composition										
Mother and father	57.4	56.8	67.2	70.2	-9.8*	-10.4*	No	-12.8*	-13.4*	No
Mother and guardian	13.3	13.4	11.2	6.9	2.1*	2.2*	No	6.4*	6.5*	No
Father and guardian	3.1	3.2	2.7	2.1	0.4	0.5	No	1.0*	1.1*	No
Mother only	18.9	19.0	13.9	15.5	5.0*	5.1*	No	3.4*	3.5*	No
Father only	3.2	3.2	2.5	3.1	0.7	0.7	No	0.1	0.1	No
Other relative or nonrelative	4.1	4.3	2.5	2.2	1.6*	1.8*	No	1.9*	2.1*	No
Student's educational expectations										
High school or less	8.7	9.2	10.2	26.5	-1.5*	-1.0	Yes	-17.8*	-17.3*	No
Some college	11.5	11.5	30.3	32.9	-18.8*	-18.8*	No	-21.4*	-21.4*	No
College graduation	39.8	39.7	32.1	22.7	7.7*	7.6*	No	17.1*	17.0*	No
Graduate or professional degree	40.0	39.7	27.4	17.9	12.6*	12.3*	No	22.1*	21.8*	No
High school program										
General	38.4	38.6	49.6	46.0	-11.2*	-11.0*	No	-7.6*	-7.4*	No
Academic/college preparatory	50.9	50.7	39.3	33.1	11.6*	11.4*	No	17.8*	17.6*	No
Vocational	10.8	10.8	11.1	21.0	-0.3	-0.3	No	-10.2*	-10.2*	No

† Not applicable.

* Denotes statistical significance at *p* < .05.

[1] The first language students learned to speak when they were children.

[2] Level 1 = simple comprehension; level 2 = simple inference; level 3 = complex inference.

[3] Level 1 = simple arithmetic operations on whole numbers; level 2 = simple operations with decimals, fractions, powers, and roots; level 3 = simple problem solving, requiring the understanding of low-level mathematical concepts; level 4 = understanding of intermediate-level mathematical concepts and/or having the ability to formulate multistep solutions to word problems; level 5 = proficiency in solving complex multistep word problems and/or the ability to demonstrate knowledge of mathematics material found in advanced mathematics courses.

NOTE: IRT = Item Response Theory.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002); National Education Longitudinal Study of 1988 (NELS:88); High School and Beyond (HS&B).

Table C-39B. Standard errors for table C-39A estimates (comparison of estimates between ELS:2002 imputed and unimputed data, NELS:88 data, and HS&B data, by selected student characteristics): 1980, 1990, and 2002

Variable	ELS:2002		NELS:88	HS&B
	Unimputed	Imputed		
Father's education (composite)				
Did not finish high school	0.57	0.54	0.62	0.53
Graduated from high school or GED	0.59	0.53	0.61	0.49
Some postsecondary education (PSE)	0.52	0.48	0.63	0.40
Graduated from college	0.46	0.43	0.49	0.38
Completed master's or equivalent	0.33	0.30	0.41	0.25
Completed Ph.D., M.D., or other advanced degree	0.28	0.26	0.38	0.26
Mother's education (composite)				
Did not finish high school	0.53	0.54	0.54	1.14
Graduated from high school or GED	0.50	0.49	0.64	1.28
Some postsecondary education (PSE)	0.54	0.53	0.68	1.00
Graduated from college	0.48	0.46	0.46	0.75
Completed master's or equivalent	0.28	0.27	0.25	0.44
Completed Ph.D., M.D., or other advanced degree	0.15	0.15	0.08	0.30
Native language[1]				
English	0.60	0.60	0.68	0.31
Non-English	0.60	0.60	0.68	0.31
IRT-estimated number-right score in mathematics	0.23	0.23	0.21	0.22
Probability of proficiency in reading[2]				
Level 1	0.40	0.39	0.40	†
Level 2	0.72	0.70	0.70	†
Level 3	0.29	0.28	0.50	†
Probability of proficiency in mathematics[3]				
Level 1	0.31	0.30	0.30	†
Level 2	0.77	0.77	0.80	†
Level 3	0.82	0.81	0.80	†
Level 4	0.56	0.54	0.50	†
Level 5	0.08	0.08	#	†
Family composition				
Mother and father	0.58	0.57	0.72	0.49
Mother and guardian	0.37	0.36	0.45	0.29
Father and guardian	0.18	0.16	0.32	0.10
Mother only	0.46	0.44	0.48	0.37
Father only	0.21	0.20	0.31	0.12
Other relative or nonrelative	0.22	0.21	0.22	0.12

See notes at end of table.

Table C-39B. **Standard errors for table C-39A estimates (comparison of estimates between ELS:2002 imputed and unimputed data, NELS:88 data, and HS&B data, by selected student characteristics): 1980, 1990, and 2002—Continued**

Variable	ELS:2002		NELS:88	HS&B
	Unimputed	Imputed		
Student's educational expectations				
High school or less	0.36	0.36	0.42	0.50
Some college	0.38	0.37	0.65	0.39
College graduation	0.50	0.50	0.59	0.38
Graduate or professional degree	0.62	0.60	0.64	0.40
High school program				
General	0.63	0.63	0.95	0.71
Academic/college preparatory	0.68	0.68	0.96	0.74
Vocational	0.46	0.46	0.37	0.61

† Not applicable.

Rounds to zero.

[1] The first language students learned to speak when they were children.

[2] Level 1 = simple comprehension; level 2 = simple inference; level 3 = complex inference.

[3] Level 1 = simple arithmetic operations on whole numbers; level 2 = simple operations with decimals, fractions, powers, and roots; level 3 = simple problem solving, requiring the understanding of low-level mathematical concepts; level 4 = understanding of intermediate-level mathematical concepts and/or having the ability to formulate multistep solutions to word problems; level 5 = proficiency in solving complex multistep word problems and/or the ability to demonstrate knowledge of mathematics material found in advanced mathematics courses.

NOTE: IRT = Item Response Theory.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002); National Education Longitudinal Study of 1988 (NELS:88); High School and Beyond (HS&B).

Appendix D
Public-Use Masked/Suppressed Variables
Available on Restricted Files for Licensed Users

Appendix D
Public-Use Masked/Suppressed Variables Available on Restricted Files for Licensed Users

The restricted-use electronic codebook (ECB) files contain all variables on the public-use file. However, to protect confidentiality, versions may differ in the amount of available detail (e.g., a given variable may appear in categorical form in the public-use file but appear in continuous form in the restricted-use file, or it may include additional breakouts of collapsed categories, such as a restricted-use breakout for Native Hawaiians). In addition, a number of variables appear on the restricted file that have no counterpart on the public-use files (e.g., various geocode variables below the level of the four U.S. Census regions reported on the public-use file). The list provided in table D-1 follows the variable position order on the ECB.

Table D-1. Restricted-use unique variables in base-year to first follow-up student-level and school-level megafiles: 2004

Student-level restricted-use only variables

F1UNIVR1	Sample member status in BY and F1 rounds (restricted)
F1UNIVR2	How sample member entered study
BYEXPWT	Student expanded sample weight
BYRACE_R	Student's race/ethnicity—composite (restricted)
BYRACE2	Student's race/ethnicity—64 category
BYSARACE	Student's race/ethnicity—school roster
BYRACE_1	Student is White—composite
BYRACE_2	Student is Black or African American—composite
BYRACE_3	Student is Asian—composite
BYRACE_4	Student is Native Hawaiian/Pacific Islander—composite
BYRACE_5	Student is American Indian/Alaska Native—composite
BYHISPAN	Student's Hispanic subgroup—composite
BYASIAN	Student's Asian subgroup—composite
BYDOB_R	Student's date of birth: Year-month-day
BYPARACR	Parent's race/ethnicity—composite (restricted)
BYQXDATR	Date of base-year student questionnaire administration
PISARFLG	Whether included in PISA reading score concordance sample
PISAMFLG	Whether included in PISA math score concordance sample
BYIEPTYP	Federal disability category for base-year IEPs
BYACCTYP	Base-year questionnaire/test accommodations
BYTXMTH	Math test theta T score
BYTXMTI1	Math theta T score—multiple imputation value 1 of 5
BYTXMTI2	Math theta T score—multiple imputation value 2 of 5
BYTXMTI3	Math theta T score—multiple imputation value 3 of 5
BYTXMTI4	Math theta T score—multiple imputation value 4 of 5
BYTXMTI5	Math theta T score—multiple imputation value 5 of 5
BYTXRTH	Reading test theta T score
BYTXRTI1	Reading theta T score—multiple imputation value 1 of 5
BYTXRTI2	Reading theta T score—multiple imputation value 2 of 5
BYTXRTI3	Reading theta T score—multiple imputation value 3 of 5

See note at end of table.

Table D-1. Restricted-use unique variables in base-year to first follow-up student-level and school-level megafiles: 2004—Continued

Student-level restricted-use only variables—Continued

BYTXRTI4	Reading theta T score—multiple imputation value 4 of 5
BYTXRTI5	Reading theta T score—multiple imputation value 5 of 5
BYRESZIP	Residential zip code for student/family
BYSF1R_R	1st friend's race (restricted)
BYSF2R_R	2nd friend's race (restricted)
BYSF3R_R	3rd friend's race (restricted)
BYERAC_R	English teacher's race/ethnicity—composite (restricted)
BYMRAC_R	Math teacher's race/ethnicity—composite (restricted)
BYG10ER	Grade 10 enrollment—2001–02 school roster
BYCENDIV	Census division of school locale
BYSTATE	State code for school locale
BYCOUNTY	County code for school locale
BYSCHZIP	School zip code
BYHISPIM	Imputation flag—HISPANIC
BYASNIM	Imputation flag—ASIAN
F1EXPWT	F1 expanded sample weight
F1XPNLWT	F1 expanded sample panel weight
F1DOB_R	F1 student's date of birth: Year-month-day
F1ESSTAT	F1 expanded sample status
F1EXPFLG	F1 expanded sample member dropout
F1DOFLG	F1 dropout status in spring term 2004
F1RDSTAT	F1 dropout status (restricted)
F1SEPS03	Date separated from BY school—spring 2003
F1SEPF03	Date separated from BY school—fall 2003
F1SEPS04	Date separated from BY school—spring 2004
F1TXMTH	F1 math theta T score (restricted)
F1TXMTI1	F1 math theta T score—multiple imputation value 1 of 5
F1TXMTI2	F1 math theta T score—multiple imputation value 2 of 5
F1TXMTI3	F1 math theta T score—multiple imputation value 3 of 5
F1TXMTI4	F1 math theta T score—multiple imputation value 4 of 5
F1TXMTI5	F1 math theta T score—multiple imputation value 5 of 5
F1RESZIP	F1 residential zip code for student/family
F1TRSZIP	F1 zip code of the spring 2004 destination schools of transfer students
F1QXDATR	Date completed interview
F1HISPIM	Imputation flag—F1HISPAN
F1ASNIM	Imputation flag—F1ASIAN
BYS16	Student's Hispanic subgroup
BYS17A	Student is White
BYS17B	Student is Black/African American
BYS17C	Student is Asian
BYS17D	Student is Native Hawaiian/Pacific Islander
BYS17E	Student is American Indian/Alaska Native
BYS18	Student's Asian subgroup
BYS25CAA	1st friend is White
BYS25CAB	1st friend is Black/African American
BYS25CAC	1st friend is Asian

See note at end of table.

Table D-1. Restricted-use unique variables in base-year to first follow-up student-level and school-level megafiles: 2004—Continued

Student-level restricted-use only variables—Continued

BYS25CAD	1st friend is Native Hawaiian/Pacific Islander
BYS25CAE	1st friend is American Indian/Alaska Native
BYS25CBA	2nd friend is White
BYS25CBB	2nd friend is Black/African American
BYS25CBC	2nd friend is Asian
BYS25CBD	2nd friend is Native Hawaiian/Pacific Islander
BYS25CBE	2nd friend is American Indian/Alaska Native
BYS25CCA	3rd friend is White
BYS25CCB	3rd friend is Black/African American
BYS25CCC	3rd friend is Asian
BYS25CCD	3rd friend is Native Hawaiian/Pacific Islander
BYS25CCE	3rd friend is American Indian/Alaska Native
BYS63	Occupation expects to have after high school—verbatim
BYS64	Occupation expects to have at age 30—verbatim
BYS68	Student's native language
BYS81A	Mother/female guardian's occupation—verbatim
BYS81B	Mother/female guardian's main job duties—verbatim
BYS82A	Father/male guardian's occupation—verbatim
BYS82B	Father/male guardian's main job duties—verbatim
F1N14A	Mother/female guardian's occupation—verbatim
F1N14B	Mother/female guardian's main job duties—verbatim
F1N15A	Father/male guardian's occupation—-verbatim
F1N15B	Father/male guardian's main job duties—verbatim
F1S51A	1st postsecondary school applied to
F1S51B	City of 1st postsecondary school applied to
F1S51D	2nd postsecondary school applied to
F1S51E	City of 2nd postsecondary school applied to
F1S56	Occupation expects to have after high school—verbatim
F1S57	Occupation expects to have at age 30—verbatim
F1T16EA	Other reasons for transferring
F1E24A	Other way in which GED was earned (EG)
F1E50	Current/most recent job or occupation (EG)
F1D42	Program in which GED was earned (DO)
F1D42A	Other way in which GED was earned (DO)
F1D60	Current/most recent job or occupation (DO)
F1D66	Occupation expects to have at age 30—verbatim (DO)
BYP14	Parent's Hispanic subgroup
BYP15A	Parent is White
BYP15B	Parent is Black or African American
BYP15C	Parent is Asian
BYP15D	Parent is Native Hawaiian/Pacific Islander
BYP15E	Parent is American Indian/Alaska Native
BYP16	Parent's Asian subgroup
BYP19A	Mother's occupation before coming to US
BYP19B	Mother's main job duties outside US
BYP22A	Father's occupation before coming to US
BYP22B	Father's job main duties outside US
BYP29	Native language of parent respondent

See note at end of table.

Table D-1. Restricted-use unique variables in base-year to first follow-up student-level and school-level megafiles: 2004—Continued

Student-level restricted-use only variables—Continued

BYP39A	Parent's current/most recent job for pay in US
BYP39B	Parent's main job duties
BYP43A	Spouse/partner's current/most recent job for pay in US
BYP43B	Spouse/partner's main job duties
BYTE24A	Teacher is White (English)
BYTE24B	Teacher is Black/African American (English)
BYTE24C	Teacher is Asian (English)
BYTE24D	Teacher is Native Hawaiian/Pacific Islander (English)
BYTE24E	Teacher is American Indian/Alaska Native (English)
BYTM24A	Teacher is White (math)
BYTM24B	Teacher is Black/African American (math)
BYTM24C	Teacher is Asian (math)
BYTM24D	Teacher is Native Hawaiian/Pacific Islander (math)
BYTM24E	Teacher is American Indian/Alaska Native (math)

School-level restricted-use only variables

BYSCMDST	Base-year library media center questionnaire status
BYG10ER	Grade 10 enrollment—2001–02 school roster
BYCENDIV	Census division of school locale
BYSTATE	State code for school locale
BYCOUNTY	County code for school locale
BYSCHZIP	School zip code
BYNCESDI	NCES school district ID number
BYNCESSI	School identification number from CCD or PSS
BYA01	Total student enrollment as of October 2001
BYA02A	School has prekindergarten
BYA02B	School has kindergarten
BYA02C	School has 1st grade
BYA02D	School has 2nd grade
BYA02E	School has 3rd grade
BYA02F	School has 4th grade
BYA02G	School has 5th grade
BYA02H	School has 6th grade
BYA02I	School has 7th grade
BYA02J	School has 8th grade
BYA02K	School has 9th grade
BYA02L	School has 10th grade
BYA02M	School has 11th grade
BYA02N	School has 12th grade
BYA02O	School has 13th grade or higher
BYA03A	Comprehensive public school
BYA03B	Public magnet school
BYA03C	Public magnet school with theme
BYA03D	Public school of choice
BYA03E	Year-round school
BYA03F	Area vocational school/center
BYA03G	Full-time technical/vocational school
BYA03H	Other technical or vocational school
BYA03I	Catholic diocesan school

See note at end of table.

Table D-1. Restricted-use unique variables in base-year to first follow-up student-level and school-level megafiles: 2004—Continued

School-level restricted-use only variables—Continued

BYA03J	Catholic parish
BYA03K	Catholic religious order
BYA03L	Catholic independent school
BYA03M	Other private school with religious affiliation
BYA03N	Private school without religious affiliation
BYA03O	Boarding school
BYA03P	Indian reservation school
BYA03Q	Military academy
BYA03R	Alternative/dropout prevention/continuation school
BYA03S	Charter school
BYA21	% 10th-graders receive free/reduced-price lunch
BYA22A	# of full-time teachers

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, 2002" and "First Follow-up, 2004."

Appendix E
Glossary of Terms

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Glossary of Terms

Accommodations (testing): In ELS:2002, certain accommodations were offered to students with barriers to participation, such as students with disabilities or English-language learners with limited English proficiency. An accommodation is a change in how a test is presented, in how a test is administered, or in how the test taker is allowed to respond. This term generally refers to changes that do not substantially alter what the test measures. The proper use of accommodations does not substantially change academic level or performance criteria. Appropriate accommodations are made to provide equal opportunity to demonstrate knowledge. Examples of test accommodations include allowing extra time, use of a large-print version of a test, or conveying instructions in sign language. Cases in which accommodations were implemented in ELS:2002 are specially flagged (the indicators are BYTXACC and F1TXACC).

Adaptive testing: In the ELS:2002 base year, multiple test forms of varying levels of difficulty were assigned based on the examinee's score on a routing test. Thus, the specific sequence of questions that each student answered was tailored to that student's ability level. An advantage of adaptive tests is that reliability per unit of testing time is greater than in a nonadaptive test. Adaptive procedures help to minimize floor and ceiling effects (see "Ceiling effect" and "Floor effect"). ELS:2002 adaptive testing relies on Item Response Theory (see "IRT") assumptions to place students who have taken different test forms on the same vertical score scale. In the first follow-up, each student's test form was assigned on the basis of base-year test performance.

American Indian or Alaska Native: An American Indian or Alaska Native is a person who has origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.

Asian: An Asian is a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Base weights: See "Design weights."

Bias: Bias is the difference between the reported value and the true value. Thus, the bias of an estimate is the difference between the expected value of a sample estimate and the corresponding true value for the population. Response bias is the difference between respondent reports and their behavior or characteristics. Nonresponse bias is the difference that occurs when respondents differ as a group from nonrespondents on a characteristic being studied. Sample bias is the unequal selection or the omission of members of the population, without appropriate weighting. Relatedly, undercoverage bias arises because some portion of the potential sampling frame is missed or excluded, or there are duplicate units. For example, if the school list from which a school sample is drawn is incomplete or inaccurate (owing, for example, to the birth of new schools subsequent to the time the list was drawn up), school undercoverage may occur. (See also "Nonresponse bias" and "Bias analysis.")

Bias analysis: Nonresponse bias analysis compares the characteristics of respondents and nonrespondents. Both unit nonresponse (school, student) and item nonresponse on

questionnaires were subject to bias analyses in ELS:2002. For example, certain key data items were obtained for both responding and nonresponding schools, so that a school nonresponse analysis could be conducted and bias in school-level estimates quantified.

Black or African American: A person having origins in any of the Black racial groups of Africa.

Burden: Formally, burden is the aggregate hours realistically required for data providers to participate in a data collection. Burden also has a subjective or psychological dimension: the degree to which providing information is regarded as onerous may depend on the salience to the respondent of the questions that are being posed and on other factors, such as competing time demands.

Carnegie unit: A standard of measurement used for secondary education that represents the completion of a course that meets one period per day for 1 year.

CAPI: Computer-assisted personal interviewing, in which the questionnaire is loaded into a field interviewer's laptop computer.

CATI: Computer-assisted telephone interviewing.

CCD: Common Core of Data. Data annually collected from all public schools in the United States by NCES. Data from the CCD supplied the public school sampling frame for the ELS:2002 base year.

CD-ROM: ELS:2002 data are distributed primarily in an optical laser disc medium, specifically, CD-ROM (Compact Disc Read-Only Memory). A CD-ROM is a computer storage disc in the same physical form as an audio CD; it can store approximately 650 megabytes of digital data.

Ceiling effect: The result of a test having insufficient numbers of the more difficult items. In a longitudinal study, ceiling effects in the follow-up can cause change scores to be artificially constrained for high-ability examinees. The measurement problems related to floor and ceiling effects in combination with regression effects found at the extreme score ranges seriously hamper the accuracy of change measures in longitudinal studies. More information (i.e., smaller error of measurement) is obtained with respect to ability level if high-ability individuals receive relatively harder items (and if low-ability individuals receive proportionately easier items). The matching of item difficulty to a person's ability level yields increased reliability at the extremes of the score distribution, where it is most needed for studies of longitudinal change. A strategy employed in ELS:2002 to minimize ceiling (and floor) effects is to employ test forms that are "adaptive" to the ability level of the examinee. Multilevel tests—with second stage test assignment that is based on the first stage (routing test) performance work—minimize the possibility that ceiling effects might bias the estimates of the score gains. (See also "Floor effect" and "Adaptive testing.")

Classical test theory: Classical test theory postulates that a test score can be decomposed into two parts—a true score and an error component; that the error component is random with a mean

of zero and is uncorrelated with true scores; and that true scores, observed scores, and error components are linearly related.

Closed-ended: A type of question in which the data provider's responses are limited to given alternatives (as opposed to an open-ended question). (See also "Open-ended.")

Clustering: A sample selection method in which small geographical areas such as schools (as is the case in ELS:2002), school districts, counties, or residential blocks are selected as an initial stage, with individuals selected in a subsequent step. (See also "Primary sampling unit.")

Cluster size: The number of ELS:2002 sample members attending a particular high school.

Codebook: Documentation of each variable being measured, including variable name, columns occupied by each variable in the data matrix, values used to define each variable, unweighted frequencies, unweighted percents, and weighted valid percents. (See "Electronic codebook.")

Coefficient of variation: The ratio of the standard deviation of an estimate to the value of the estimate.

Cognitive test battery: One of the two parts of the student survey (the second part being the student questionnaire). Two achievement areas (mathematics and reading) were measured in the base year. Mathematics achievement will be measured again in the first follow-up.

Cohort: A group of individuals who have a statistical factor in common—for example, year of birth, grade in school, or year of high school graduation. ELS:2002 is a sophomore-grade cohort based on the spring term of the 2001–02 school year. It also contains, however, a nationally representative sample of high school seniors in the spring term of the 2003–04 school year (see "Freshening"). In contrast, the Program for International Student Assessment (PISA) is an age cohort, based on students who were 15.25 years of age in April of 2000 or 2003.

Composite variable: A composite variable is one that is either constructed through the combination of two or more variables (socioeconomic status, for example, combines mother's education, father's education, mother's occupation, father's occupation, and family income) or calculated through the application of a mathematical function or transformation to a variable (e.g., conversion of raw test scores to percentile ranks). Also called a derived variable, created variable, or constructed variable.

Concordance: Concordance is a weaker form of test linkage than equating in that the link is based on population distributions rather than the equivalence of interchangeable scores. Implementation of PISA scale scores in ELS:2002 was through a method of concordance. (See also "Equating" and "Equated test score.")

Confidence interval: A sample-based estimate expressed as an interval or range of values within which the true population value is expected to be located (with a specified degree of confidence).

Confidentiality protections: NCES is required by law to protect individually identifiable data from unauthorized disclosure. To this end, the ELS:2002 data have been subject to a disclosure

risk analysis to determine which records require masking to produce the public-use data file from the restricted-use data file. Disclosure coarsening techniques (such as recoding of continuous variables into categorical, top and bottom coding, and so on) and data perturbation techniques (e.g., data swapping) have been used to provide disclosure protection to the ELS:2002 data. (See also "Data swapping" and "Disclosure risk analysis.")

Consent, active (explicit): One variety of informed consent is called active or explicit consent. Typically, in active consent, a signed agreement to participate in a study must be obtained. In ELS:2002, permission of parents was required before students could be surveyed. Some schools required active parental consent (i.e., that a signed permission form be obtained).

Consent, passive (implied): Another variety of informed consent is called passive or implied consent. In passive consent, a permission form is sent to the relevant party (in ELS:2002, normally the parent or guardian of the sampled student), who has the opportunity to return the form to indicate denial of permission. If the form is not returned, it is assumed that the individual has no objection to survey participation. In ELS:2002, most schools allowed passive parental consent for their child's participation in the study.

Constructed response item: In the ELS:2002 assessment battery in the base year, a non-multiple-choice item that required some type of written response.

Contextual data: In ELS:2002, the primary unit of analysis is the student, and information from the other study components, referred to as contextual data, should be viewed as extensions of the student data. For example, observations made in school administrator, teacher, librarian, and parent reports on the student's school learning environment or home situation would be considered contextual data.

Coverage rate: In ELS:2002 base-year contextual samples, the proportion of the responding student sample with a report from a given contextual source (e.g., the parent survey, the teacher survey, or the school administrator survey). For the teacher survey, the student coverage rate can be calculated as either the percentage of participating students with two teacher reports or the percentage with at least one teacher report. The teacher and parent surveys in ELS:2002 are purely contextual. The base-year school-level surveys (school administrator, library media center, facilities checklist) can be used contextually (with the student as the unit of analysis) or in standalone fashion (with the school as the unit of analysis). (See "Response rate.") Finally, test completions (reading assessments, mathematics assessments) are also calculated on a base of the student questionnaire completers (in the first follow-up, for the in-school student sample only), rather than on the entire sample, and thus express a coverage rate. "Coverage" can also refer to the issue of missed target population units on the sampling frame (undercoverage), or duplicated or erroneously enumerated units (overcoverage) (see "Bias" for discussion of undercoverage bias).

Cross-sectional analysis: A cross-sectional design represents events and statuses at a single point in time. For example, a cross-sectional survey may measure the cumulative educational attainment (achievements, attitudes, statuses) of students at a particular stage of schooling, such as 10th or 12th grade. In contrast, a longitudinal survey (or repeated measurement of the same sample units) measures the change or growth in educational attainment that occurs over a

particular period of schooling. The longitudinal design of ELS:2002 generates two representative cross sections (high school sophomores in 2002 and, through sample freshening, seniors in 2004). It also permits analysis of individual-level change over time through longitudinal analysis and of group-level and intercohort change through the cross-sectional comparisons to past studies of similarly defined grade cohorts. (See also "Longitudinal or panel survey" and "Cross-cohort analysis.")

Cross-cohort (or intercohort) analysis: The ELS:2002 base-year and first follow-up surveys contained many data elements that were comparable to items from prior studies. These repeated items will supply a basis for comparison with earlier sophomore cohorts (such as 1980 sophomores in the High School and Beyond [HS&B] longitudinal study and 1990 sophomores in the National Education Longitudinal Study of 1988 [NELS:88]). With a freshened senior sample, the ELS:2002 first follow-up supports comparisons to 1972 (National Longitudinal Study of the High School Class of 1972 [NLS-72]), 1980 (HS&B), and 1992 (NELS:88). The first follow-up academic transcript component will offer a further opportunity for cross-cohort comparisons with the high school transcript studies of HS&B, NELS:88, and the National Assessment of Educational Progress (NAEP). With three or more timepoints, *trend analyses* are possible. With ELS:2002, this condition has now been met for both the sophomore and senior cohorts. Essentially, three kinds of intercohort comparison are possible. First, cohorts can be compared on an *intergenerational or cross-cohort time-lag basis*. Both cross-sectional and longitudinal time-lag comparisons may be made. An example of a cross-sectional time-lag comparison would be looking at the status of HS&B (1980), NELS:88 (1990), and ELS:2002 (2002) sophomores to see how the situation of sophomores has changed over time. An example of longitudinal time-lag comparison would be an examination of the magnitude and correlates of achievement gain of HS&B, NELS:88, and ELS:2002 sophomores over the last 2 years of high school. Second, *fixed-time comparisons* are also possible, in which groups within each study are compared at different ages but the same point in time (e.g., the NLS-72, HS&B senior, and HS&B sophomore cohorts all could be looked at in 1986, some 14, 6, and 4 years after each respective cohort graduated from high school). Such a perspective would permit one to compare, for example, employment rates for 22-, 24-, and 32-year-old high school graduates. Finally, *longitudinal comparative analysis* of the cohorts can be performed by modeling the history of the grade cohorts.

Data element: The most basic unit of information. In data processing, it is the fundamental data structure. It is defined by its size (in characters) and data type (e.g., alphanumeric, numeric only, true/false, date) and may include a specific set of values or range of values.

Data swapping: Data swapping is defined in the *NCES Statistical Standards* (Seastrom 2003) as a perturbation disclosure limitation technique that results in a confidentiality edit. An example of data swapping would be to assume a data file has two potential individual identifying variables, for example, sex and age. If a sample case needs disclosure protection, it is paired with another sampled case so that each element of the pair has the same age, but different sexes. The data on these two records are then swapped. After the swapping, anyone thinking they have identified either one of the paired cases gets the data of the other case, so they have not made an accurate match and the data have been protected. (See also "Confidentiality protections.")

Design effect: A measure of sample efficiency. The design effect (DEFF) is the variance of an estimate divided by the variance of the estimate that would have occurred if a sample of the same size had been selected using simple random sampling. Sometimes it is more useful to work with standard errors than with variances. The root design effect (DEFT) expresses the relation between the actual standard error of an estimate and the standard error of the corresponding estimates from a simple random sample. (See also "Effective sample size.")

Design weights: Design weights compensate for unequal probabilities of selection. More specifically, the design weight is the inverse of the probability of selection. Design weights are also called raw weights, base weights, unadjusted weights, or sampling weights. Design weights may be contrasted to adjusted weights (adjusted to compensate for nonresponse, and also called final weights or analysis weights). Roughly, the design weight is calculated as the inverse of the probability of selection, taking into account all stages of the sample selection process. More precisely, design weights are the inverses of the expected frequencies with which population units appear in conceptually repeated samples selected using the sampling design developed for the study. Unlike the final weights, design weights are generated for all sample members, respondents and nonrespondents alike. Design weights do not appear on the ELS:2002 public-use files. (See also "Final weights" and "Sampling weights.")

Differential Item Functioning (DIF): DIF exists when examinees of equal ability differ on an item solely because of their membership in a particular group (e.g., if an item favors males over females, or one racial or ethnic group over another, and cannot be explained by relevant factors such as differential coursetaking). DIF for ELS:2002 items was examined in the base-year and first follow-up field tests. Items with DIF problems were revised or deleted.

Disability: A disability is a physical or mental impairment that substantially limits one or more of the major life activities (Title 42 U.S.C. Section 12102).

Disclosure risk analysis: Investigation of study data to evaluate and minimize the risk of identification of individual sample units to preserve the confidentiality of the data. ELS:2002 data have been subjected to a disclosure risk analysis to protect confidential information about individual respondents (see "Public-use data file"). For a more detailed account of disclosure risk analysis, and of means of altering data (including masking, data perturbation, and data swapping) to prevent disclosure, see the *NCES Statistical Standards* (Seastrom 2003).

Domain: A domain refers to a defined universe of knowledge, skills, abilities, attitudes, interests, or other human characteristics.

Dropouts: A dropout was defined as a sophomore cohort member who, during spring term 2004, had not been in school for 4 consecutive weeks or more and was not absent due to accident or illness. Also surveyed as a dropout were students who, at the time of their school's survey day, had been back in school less than 2 weeks after a period in which the student had missed school for 4 or more consecutive weeks not due to accident or illness. (See also "Not currently in school questionnaire [NCSQ].")

Early graduate questionnaire (EGQ): This first follow-up questionnaire was administered to individuals who had graduated or received high school equivalency certification (e.g., the GED) prior to March 15, 2004.

Effective sample size: Effective sample size may be defined as the ratio of the raw sample size divided by the design effect. (For example, the sampling variance of a mean standard score is equal to the reciprocal of the effective sample size, not the reciprocal of the raw sample size.) In essence, then, effective sample size is the sample size under a simple random sample design that is equivalent to the actual sample under the complex sample design, wherein the actual sample size is determined by multiplying the effective sample size by the anticipated design effect. (See also "Design effect.")

Electronic codebook (ECB): While hardcopy codebooks with item stems, response categories, associated response frequency distributions, unweighted percents, and weighted valid percents are contained within the ELS:2002 base-year user's manual, ELS:2002 data are also available on CD-ROM in an electronic codebook (ECB) format. Electronic codebooks are menu-driven systems that allow users to perform functions such as the following: (a) search a list of database variables based upon key words or variable names/labels, (b) display unweighted percentages for each variable in the database, (c) display question text for each variable in the database, (d) select or tag variables for subsequent analysis, (e) generate SAS-PC or SPSS-PC+ program code/command statements for subsequently constructing a system file of the selected variables, and (f) generate a codebook of the selected variables.

Equating: Equating of two tests is established when examinees of every ability level and from every population group can be indifferent about which of two tests they take. Not only should they have the same expected mean score on each test, but they should also have the same errors of measurement. In contrast, test *linkage* results from placing two or more tests on the same scale, so that scores can be used interchangeably. (See also "Equated test score" and "Concordance.")

Equated test score: Test equating takes place in two distinct contexts in ELS:2002. One context is *vertical equating* of forms for use in successive grades, such that the achievement growth of individual ELS:2002 sample members over time can be accurately measured. Another context is *cross-sectional equating* and *linking*, as to other tests (e.g., placing ELS:2002 sophomores and HS&B or NELS:88 sophomores on an equivalent scale).

ETS: Educational Testing Service. RTI's subcontractor for ELS:2002 cognitive test development, scoring, and scaling.

Expanded sample: Although no sophomores were excluded from ELS:2002, those who could not validly be assessed or could not validly complete the student questionnaire (e.g., students with a severe disability or limitation in their knowledge of the English language) were not eligible for these components. Contextual data (parent, teacher, school administrator) reports were collected for this group. Later in the study, their transcripts will be collected. The base-year expanded sample comprises all ELS:2002 sophomores, that is, both those who were eligible to complete the student questionnaire and test and those who were not. The first follow-up expanded sample also includes freshened cases. Some students who were eligible for

questionnaire completion in 2002 suffered an impairment that led to their reclassification as ineligible in 2004. With greater frequency, some 2002 sophomores who were not capable of questionnaire completion became eligible in 2004, as their status changed. The expanded sample comprises all sample members regardless of eligibility for questionnaire completion.

Facilities checklist: Completed by the RTI survey administrator in the base year of the study, the facilities checklist is designed to extend the information available about the school by providing data on the school buildings and grounds that will help researchers understand the adequacy and appearance of the school's physical plant, its safety and security features, and its role as a constituent of the school's general environment.

File: Refers to a data file containing a set of related computerized records.

Final weights: Final weights are sometimes called nonresponse-adjusted weights, adjusted weights, or analysis weights. Building on the design (raw) weight, they compensate for nonresponse. (See "Design weights.")

Floor effect: The result of a cognitive test being too difficult for a large number of the examinees, causing the low-ability examinees to receive chance scores on the first testing, and on subsequent testings if the test remains too difficult. Floor effects result in an inability to discriminate among low-ability individuals at time one or time two and, thus, no reliable discrimination among examinees with respect to amounts of change. A possible solution, used in ELS:2002, is to develop test forms that are "adaptive" to the ability level of the examinee, which tends to minimize the possibility of floor effects biasing the estimates of the score gains. (See also "Ceiling effect" and "Adaptive testing.")

Frame: A list of all the sampling units that represent the population. The Common Core of Data (CCD) and Private School Survey (PSS) were drawn upon for the ELS:2002 school frame. For an implicit list of the nation's high school sophomores as of spring term 2002, school rosters from participating schools listing their sophomore class were relied on.

Frame population: The set of elements (e.g., schools) that can be enumerated prior to the selection of a survey sample.

Freshening: A freshened sample includes cases from the longitudinal sample of a dataset, plus new cases added to produce cross-sectional estimates of the population at the time of a subsequent wave of a longitudinal data collection. In the ELS:2002 first follow-up, freshening was the means by which high school seniors were added in who had not been in the 10th grade in the United States 2 years before. A similar freshening procedure was implemented in NELS:88. (See also "Half-open interval.")

Half-open interval: A technique used to increase coverage. It is usually applied to a new list that includes cases that were covered in a previous frame, as well as new in-scope units not included in the previous frame. In this technique, new in-scope units between unit A on the previous frame up to, but not including, unit B (the next unit on the previous frame) are associated with unit A. These new units have the same selection probability as do unit As. This process is repeated for every unit on the previous frame. The new units associated with the actual sample cases are now included in the sample with their respective selection probabilities

(freshening). Student sample freshening in the NELS:88 first and second follow-ups, and the freshening conducted in the ELS:2002 first follow-up, relied on such a procedure. The half-open interval procedure was also used for ELS:2002 base-year sample updating prior to survey day. (See also "Freshening" and "Sample updating or *refreshing*.")

Hispanic or Latino: A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. The term "Spanish origin" can be used in addition to "Hispanic or Latino."

Homeschool student questionnaire (HSQ): In the first follow-up, this questionnaire was administered to sophomore cohort members who were in a homeschool situation as of the spring term of the 2003–04 school year.

HS&B: High School and Beyond. The second in the series of longitudinal high school cohort studies sponsored by NCES. The HS&B base-year study surveyed sophomore and senior students in 1980. The sophomore cohort was last interviewed in 1992 and their postsecondary transcripts collected in 1993. The senior cohort was last interviewed in 1986.

Imputation: Imputation involves substituting values for missing or inconsistent data in a dataset. Prediction of a missing value is typically based on a procedure that uses a mathematical model in combination with available information. Missing data for key items in ELS:2002 have been imputed.

Individualized Education Program (IEP): A written statement or plan for each individual with a disability that is developed, reviewed, and revised in accordance with Title 42 U.S.C. Section 1414(d).

Individually identifiable data: Data from any record, response form, completed survey, or aggregation about an individual or individuals from which information about particular individuals may be revealed.

Instrument: An evaluative device that includes tests, scales, and inventories to measure a domain using standardized procedures.

IRT: Item Response Theory. A method of estimating achievement level by considering the pattern of right, wrong, and omitted responses on all items administered to an individual student. IRT postulates that the probability of correct responses to a set of test questions is a function of true proficiency and of one or more parameters specific to each test question. Rather than merely counting right and wrong responses, the IRT procedure also considers characteristics of each of the test items, such as their difficulty and the likelihood that they could be guessed correctly by low-ability individuals. IRT scores are less likely than simple number-right or formula scores to be distorted by correct guesses on difficult items if a student's response vector also contains incorrect answers to easier questions. Another attribute of IRT that makes it useful for ELS:2002 is the calibration of item parameters for all items administered to all students. This makes it possible to obtain scores on the same scale for students who took harder or easier forms of the test. IRT also was used to vertically scale across ELS:2002 rounds, that is, between the two grade levels (10th grade in 2002, 12th grade in 2004). (See, in contrast, "Classical test theory.")

Item nonresponse: The amount of missing information when a valid response to an item or variable was expected. (See also "Unit nonresponse" and "Bias analysis.")

LEP: Limited English proficient. A concept developed to assist in identifying those language-minority students (individuals from non-English language backgrounds) who need language assistance services, in their own language or in English, in the schools. (See also "NEP" and "LM.") An LEP student is one who meets one or more of the following conditions:

    a. the student was born outside of the United States or the student's native language is not English,

    b. the student comes from an environment in which a language other than English is dominant, or

    c. the student is an American Indian or Alaska Native and comes from an environment in which a language other than English has had a significant impact on his/her level of English language proficiency,

and who has such difficulty speaking, reading, writing, or understanding the English language as to deny him or her the opportunity to learn successfully in English-only classrooms.

LM: Language Minority. A non-, limited-, or fully English-proficient student in whose home a non-English language is typically spoken.

Library media center questionnaire: This base-year instrument supplies information about library/media center organization and staffing, technology resources, extent of library and media holdings, student access to and use of the library/media center, and its role in supporting the school's curriculum.

Longitudinal or panel survey: In a longitudinal design, similar measurements—of the same sample of individuals, institutions, households, or of some other defined unit—are taken at multiple timepoints. ELS:2002 employs a longitudinal design that follows the same individuals over time and permits the analysis of individual-level change. (See also "Cross-sectional analysis.")

Machine editing: Also called forced data cleaning or logical editing. Uses computerized instructions (including logical or deductive imputation) in the data cleaning program that ensure common sense consistency within and across the responses from a data provider.

Microdata (microrecords): Observations of individual sample members, such as those contained on the ELS:2002 data files.

MPR Associates: An RTI subcontractor for the ELS:2002 base-year and first follow-up studies.

NAEP: The National Assessment of Educational Progress. NAEP is a cross-sectional assessment program that measures achievement at the group level for students in 4th, 8th, and 12th grades and provides a time series for measuring trends in academic progress of 9-, 13-, and 17-year-olds. ELS:2002 tests differ from but complement those of NAEP by providing a basis

for measuring individual-level achievement growth between 10th and 12th grades in mathematics and relating cognitive gains in this subject to the individual, school, and family factors and processes that are measured in the various ELS:2002 questionnaires and school records (transcript) studies.

Native Hawaiian or Other Pacific Islander: Any person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

NCES: The National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. This governmental agency is the sponsor of ELS:2002 and is also the sponsoring agency for (among other studies) the National Assessment of Educational Progress (NAEP), the U.S. component of the Program for International Student Assessment (PISA), the National Education Longitudinal Study of 1988 (NELS:88), the High School and Beyond (HS&B) longitudinal study, and the National Longitudinal Study of the High School Class of 1972 (NLS-72).

NELS:88: The National Education Longitudinal Study of 1988. Third in the series of longitudinal high school cohort studies sponsored by NCES. The study represents three cohorts: the eighth-grade class of 1988, the sophomore class of 1990, and the senior class of 1992. The study collected questionnaire and test data in 1988, 1990, and 1992 on students' school experiences, as well as background information from school administrators, teachers, parents (in the base year and second follow-up only), and school records. Data on postsecondary and out-of-school experiences were collected in interviews conducted in 1994 and 2000 and through a postsecondary education transcripts study in 2000–01.

NEP: No English proficiency. A student who does not speak English. (See also "LEP.")

New participant student questionnaire (NPSQ): This first follow-up questionnaire was administered to students in the base-year schools 2 years later. The NPSQ elicited responses from two distinct groups: sophomore cohort members who had been base-year nonparticipants, and students brought in through sample freshening. (A small number of students whose eligibility status had changed between rounds completed a NPSQ.) The questionnaire comprised both base-year items (the standard classification variables) and first follow-up items pertaining to students' current school experience.

New participant supplement (NPS): Base-year nonrespondents who responded in the first follow-up but were not enrolled in the base-year schools (e.g., transfers, dropouts, early graduates) completed this supplement in addition to an appropriate questionnaire. The supplement consists wholly of items from the base year, so that the standard classification variables could be captured for all sample members.

Noncoverage: Units of the target population that are missing from the frame population. Includes the problems of incomplete frames and missing units.

Nonresponse: See "Item nonresponse," "Unit nonresponse," "Bias analysis," and "Nonresponse bias."

Nonresponse bias: Nonresponse bias may occur as a result of not obtaining 100 percent response from the selected cases. More specifically, nonresponse bias occurs when the expected observed value deviates from the population parameter. The potential magnitude of nonresponse bias is estimated as the product of the nonresponse rate and the difference in values of a characteristic between respondents and nonrespondents. (See also "Bias" and "Bias analysis.")

NLS-72: The National Longitudinal Study of the High School Class of 1972. This project was the first in the series of longitudinal high school cohort studies sponsored by NCES. The final round of data collection took place in 1986.

Nonsampling error: An error in sample estimates that cannot be attributed to sampling fluctuations. Such errors may arise from many sources, including imperfect implementation of sampling procedures, differential unit or item nonresponse across subgroups, bias in estimation, or errors in observation and recording.

Not currently in school questionnaire (NCSQ): This first follow-up questionnaire was administered to sophomore cohort dropouts. It includes questions both on present circumstances and retrospective items on schooling experience and school disengagement behaviors. (See also "Dropouts.")

OMB: The Office of Management and Budget, U.S. Executive Branch. OMB is a federal agency with the responsibility for reviewing all studies funded by executive branch agencies. OMB reviewed, commented on, and approved the ELS:2002 questionnaires, as indicated by their approval number and its expiration date in the top right corner of the questionnaire covers.

Open-ended: A type of question in which the data provider's responses are not limited to given alternatives.

Optical disc: A disc that is read optically (e.g., by laser technology), rather than magnetically. (See also "CD-ROM.")

Optical scanning: A system of recording responses that transfers responses into machine-readable data through optical mark reading. Data from base-year and first follow-up in-school survey sessions (and indeed all non-CATI operations across components) were optically scanned.

Oversampling: Deliberately sampling a portion of the population at a higher rate than the remainder of the population. For example, in ELS:2002, private schools have been oversampled. Within schools, Asians have been oversampled.

Parent/guardian questionnaire: The ELS:2002 base-year parent component sought to collect information from parents of all base-year student sample members. The parent or guardian who knew most about his or her child's educational experience was asked to complete the questionnaire.

PISA: The Program for International Student Assessment. PISA assesses 15-year-olds in reading, mathematics, and science. In 2000, the primary focus of the assessment was reading. The United States and 31 other nations participated, under the aegis of the Organization for

Economic Cooperation and Development (OECD). In 2003, the primary focus was mathematics, and in 2006, the primary focus will be science. A crosswalk (or concordance) has been developed between the ELS:2002 reading test and the PISA reading test, so that the PISA scale can be implemented in ELS:2002. A similar scale linkage will be effected between the ELS:2002 mathematics test (2002) and the PISA math test (2003).

Population: All individuals in the group to which conclusions from a data collection activity are to be applied. Weighted results of ELS:2002 data provide estimates for populations and subgroups.

Population variance: A measure of dispersion defined as the average of the squared deviations between the observed values of the elements of a population or sample and the population mean of those values.

Postsecondary education: The provision of formal instructional programs with a curriculum designed primarily for students who have completed the requirements for a high school diploma or equivalent. This includes programs of an academic, vocational, and continuing professional education purpose and excludes vocational and adult basic education programs.

Poststratification adjustment: A weight adjustment that forces survey estimates to match independent population totals within selected poststrata (adjustment cells).

Practical significance: With large sample sizes, as in ELS:2002 and its predecessor studies, even tiny differences, of little or no substantive or practical import, can be statistically significant. Therefore, measures of practical significance, such as the effect size (expressed in standard deviation units), are sometimes also used. (See the *NCES Statistical Standards*, Seastrom 2003, Guideline 5-1-4F). (Compare "Statistical significance.")

Precision: The difference between a sample-based estimate and its expected value. Precision is measured in terms of the sampling error (or standard error) of an estimate.

Primary sampling unit (PSU): Unit chosen at the first stage of a cluster sample. In ELS:2002, the PSU is the school; in other studies, geographical units such as a county or metropolitan statistical area (MSA) may serve as the PSU.

Probability sample: A sample selected by a method such that each unit has a fixed and determined probability of selection—that is, each population unit has a known, nonzero chance of being included.

Proficiency score: Proficiency scores (or criterion-referenced mastery scores) are based on clusters of items within each test that are of similar content and difficulty. Both normative (e.g., achievement quartiles) and proficiency scores are available from the ELS:2002 database.

PSS: Private School Survey. An NCES universe survey encompassing the nation's private schools. PSS was the private school sampling frame for the ELS:2002 base year.

Public-use data file: A public-use file that includes a subset of data that have been coded, aggregated, or otherwise altered to mask individually identifiable information; it thus is available

to all external users. Unique identifiers, geographic detail, and other variables that cannot be suitably altered are not included in public-use data files. Public-use edits are based on an assumption that external users have access to both individual respondent records and secondary data sources that include data that could be used to identify respondents. For this reason, the editing process is relatively extensive. When determining an appropriate masking process, the public-use edit takes into account and guards against matches on common variables from all known files that could be matched to the public-use file. The analysis used to determine which records require masking is called a disclosure risk analysis**.**

Range check: A determination of whether responses fall within a predetermined set of acceptable values.

Record format: The layout of the information contained in a data record (includes the name, type, and size of each field in the record).

Records: A logical grouping of data elements within a file upon which a computer program acts.

Refreshed student: See "Sample updating or *refreshing.*"

Relative bias: Relative bias is the bias of the estimate divided by the estimate. It provides an indication of the order of magnitude of the bias with respect to the estimate.

Reliability: The consistency in results of a test or measurement including the tendency of the test or measurement to produce the same results when applied twice to some entity or attribute believed not to have changed in the interval between measurements.

Reserve code (or **reserved code**): Certain codes have been reserved to represent various situations in which missing data occur in response frequencies. In ELS:2002, the reserve code conventions are as follows: -1 = "Don't know;" -2 = "Refuse;" -3 = "Legitimate skip/NA;" -4 = "Nonrespondent;" -5 = "Out of range;" -6 = "Multiple response;" -7 = "Partial interview— breakoff;" -8 = "Item not applicable to sample member;" and -9 = "Missing."

Response rate: In general, unit response rates are calculated as the ratio of the weighted number of completed instruments to the weighted number of in-scope cases, using the sample base weight (the inverse of the probability of selection). In multistage samples, such as the base year of ELS:2002, overall response is the product of both stages (though for many purposes, the stages are reported separately). Item response rates are calculated as the ratio of the number of respondents for whom an in-scope response was obtained to the number of respondents who are asked to answer a given item. Calculation of unit and item response rates can be a complex matter, and additional considerations arise in reporting in follow-up waves of longitudinal studies, for composite (constructed) variables, and for other cases. More detailed information can be found by consulting NCES Standard 1-3 in the NCES 2002 Statistical Standards document (available at http://nces.ed.gov/statprog/2002/stdtoc.asp). Bias analyses conducted when response rates are below targets help to assess any possible limitations to the generalizability of survey estimates. (See "Bias analysis.")

Restricted-use data file: A restricted-use file includes individually identifiable information that is confidential and protected by law. The file contains all public-use data, as well as additional data. Use of the restricted data requires the researcher to obtain a special license from NCES.

RTI International (RTI): A nonprofit university-affiliated research organization with headquarters at Research Triangle Park, North Carolina, that conducted the base year and first follow-up of ELS:2002 and is currently conducting the second follow-up of the study on behalf of NCES. RTI International is a trade name of Research Triangle Institute.

Sample: Subgroup selected, by a probability method, from the entire population, in order to represent it.

Sample updating or *refreshing***:** Because students can transfer into or out of a school after sampling, the base-year student sample in ELS:2002 (as in HS&B and NELS:88) was updated to remove students who had transferred out and to give sophomores who had transferred in since sampling a chance of selection. The half-open interval procedure was employed for sample updating prior to survey day, using the school 10th-grade enrollment lists.

Sampling error: The part of the difference between a value for an entire population and an estimate of that value derived from a probability sample that results from observing only a sample of values.

Sampling frame. See "Frame" or "Frame population."

Sampling variance: A measure of dispersion of values of a statistic that would occur if the survey were repeated a large number of times using the same sample design, instrument, and data collection methodology. The square root of the sampling variance is the standard error.

Sampling weight: A multiplicative factor equal to the reciprocal of the probability of a respondent being selected for the study, with adjustment for nonresponse. The sum of the weights provides an estimate of the number of persons in the population represented by a respondent in the sample.

Scaling: Scaling refers to the process of assigning a scale score based on the pattern of responses. (See also "Equated test score" and "IRT.")

School administrator questionnaire: This questionnaire was administered in both the base year and, with changes, the first follow-up. The questionnaires sought basic information about school policies, curriculum and program offerings, and student and teacher characteristics.

School climate: The social system and ethos or culture of the school, including the organizational structure of the school and values and expectations within it.

School coordinator: A person designated in each school to act as a contact person between the school and RTI. This person assisted with establishing a survey day in the school and preparing for the survey.

Selection probability: The chance that a particular sampling unit has of being selected in the sample.

Simple random sampling (SRS): SRS uses equal probability sampling with no strata or clusters. The ELS:2002 sample is stratified and clustered. Most statistical analysis software assumes SRS and independently distributed errors. For studies such as ELS:2002, special variance estimation software (such as SUDAAN, WesVar, AM, or Stata) is required to compute the standard error of estimates.

Standard deviation: The most widely used measure of dispersion of a frequency distribution. It is equal to the positive square root of the population variance.

Standard error: The positive square root of the sampling variance. It is a measure of the dispersion of the sampling distribution of a statistic. Standard errors are used to establish confidence intervals for the statistics being analyzed.

Statistical significance: The finding (based on a derived probability, rather than a certitude) that two or more estimates are truly different from one another and not a merely apparent difference reflecting chance variation. (See also "Practical significance.")

Stratification: The division of a population into parts, or strata. In a stratified sample, the total population is divided into strata or subgroups. Strata are created by partitioning the frame and are generally defined to include relatively homogeneous units within strata. Stratification is used to reduce sampling error. In ELS:2002, the sampling frame was sorted to create strata or subgroups of schools, and schools were selected independently within each stratum. Schools were stratified by superstrata (combinations of school type or sector and geographic region) and substrata (urban, suburban, rural).

Student questionnaire: One of the two parts of the ELS:2002 base-year and first follow-up student survey (the other part being the assessment). In both rounds, this instrument contained a locator section for tracing sample members for future waves of ELS:2002 and a series of questions about school and home environments, time use, attitudes, values, and aspirations. In the first follow-up, this questionnaire was administered only to participating base-year students who remained in the same school 2 years later. In some instances, an abbreviated version of the student questionnaire was administered (usually in CATI, but sometimes in a hardcopy version).

Survey administrator: A member of RTI's field staff in charge of conducting in-school data collection sessions (see "Survey day"). The individual in this role was called a team leader in NELS:88 and a survey representative in HS&B.

Survey day: A day chosen by the school during the data collection period when an RTI survey administrator and assistant administered the survey to the school's sample of students. The survey day session lasted about 2 hours in the base year and 90 minutes in the first follow-up. Two make-up days were normally offered for students who missed the survey day.

Target population: The finite set of observable or measurable elements that will be studied, or the conceptual population of analytic units for which data are collected and estimates are made.

In the ELS:2002 base year, the target population was spring term 2002 sophomores in all regular public and private schools with 10th grades in the 50 states and the District of Columbia.

Teacher questionnaire: In the base year, mathematics and English teachers of ELS:2002 sophomore participants were asked to complete a teacher questionnaire, which collected data on school and teacher characteristics (including teacher qualifications and experience) and evaluations of student performance.

Teacher sample: In the ELS:2002 base year, two teacher reports were sought for each student: one from the student's mathematics teacher and one from the student's English teacher.

Technical review panel (TRP): A TRP is a specially appointed, independent group of substantive, methodological, and technical experts who offer advice to the study's contractor on issues of study design and content. TRP members are nominated by the contractor and approved by NCES. Typically, TRPs are convened at least once a year within the life of a contract.

Transfer student questionnaire (TSQ): This first follow-up questionnaire was administered to students who moved from their base-year school to a new school between spring 2002 and spring 2004. It collected data both on students' school experience and their reason for transferring to a new school.

Trimming: A process by which extreme weights are reduced (trimmed) to diminish the effect of extreme values on estimates and estimated variances.

Unit nonresponse: Failure of a survey unit (e.g., at the institutional level, a school, or at the individual level, a respondent, such as a student or a teacher) to cooperate or complete a survey instrument. *Overall unit nonresponse* reflects a combination of unit nonresponse across two or more levels of data collection, where participation at the second stage of data collection is conditional upon participation in the first stage of data collection. In ELS:2002, overall nonresponse is the product of school-level nonresponse times student nonresponse. *Total nonresponse* reflects a combination of the overall unit nonresponse and item nonresponse. (See also "Item nonresponse" and "Nonresponse bias.")

Urbanicity (or metropolitan status): The ELS:2002 school sample was stratified by metropolitan status or urbanicity, in accordance with the following three locale codes: (1) Urban: the school is in a large or mid-size central city; (2) Suburban: the school is in a large or small town or is on the urban fringe of a large or mid-size city; and (3) Rural: the school is in a rural area. Locale indicators were taken from the Common Core of Data (CCD) for public schools and the Private School Survey (PSS) for private schools.

Validity: The capacity of an item or instrument to measure what it was designed to measure, stated most often in terms of the correlation between scores in the instrument and measures of performance on some external criterion. It is the extent to which a test or set of operations measures what it is supposed to measure. Reliability, on the other hand, refers to consistency of measurement over time. (See "Reliability.")

Variance: The average of the squared deviations of a random variable from the expected value of the variable. The variance of an estimate is the squared standard error of the estimate. (See also "Population variance" and "Sampling variance.")

Wave: A wave is a round of data collection in a longitudinal survey (e.g., the base year and each successive follow-up are each waves of data collection).

Weighted response rates: Unit response rates are calculated as the ratio of the weighted number of completed interviews to the weighted number of in-scope sample cases. Unit response rates are calculated using the sample base weights (inverse of the probability of selection).

Weighted estimates: Weighted estimates (as in the ELS:2002 codebook) are survey estimates in which the sample data are statistically weighted (multiplied) by factors reflecting the sample design. The general purpose of weighting is to compensate for unequal probabilities of selection into the sample and to adjust for the fact that not all schools or individuals selected into the sample actually participated. The design weights (also known as base weights, and typically equal to the reciprocals of the overall selection probabilities) are multiplied by a nonresponse or poststratification adjustment for a final weight. Thus, for example, in ELS:2002, the 752 participating schools in the base year represent a national population of 24,795 schools. Individual schools may "represent" anywhere from a minimum of 1 school to a maximum of 96 schools. To take an ELS:2002 base-year student-level example, 7,613 base-year questionnaire respondents reported themselves to be male, and 7,688 reported themselves to be female. When these cases are multiplied by the nonresponse-adjusted student weights to yield a weighted percent that reflects the national population of high school sophomores, the estimate for males is 50.5 percent of the 2002 tenth-grade cohort, while females are estimated to comprise 49.5 percent of the nation's 2002 tenth-graders.

White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Appendix E Reference

Seastrom, M. (2003). *NCES Statistical Standards* (NCES 2003–601). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Available: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2003601.

Appendix F
Student Questionnaire Critical Items

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Student Questionnaire Critical Items

Critical items are data elements deemed to be of special importance (for future locating of the respondent, for research, or as a data quality check on whether skip patterns are being followed correctly). These items were therefore subject to edit and retrieval in the course of the in-school survey session (see tables F-1 and F-2).

Table F-1. ELS:2002 first follow-up student questionnaire critical items: 2004

Variable	Variable description
F1S01	Name, address, phone number[1]
F1S02	Mother's name[1]
F1S03	Is her address and telephone number the same as respondent's?[1]
F1S04	Mother's address and home telephone number[1]
F1S05	Mother's work telephone number[1]
F1S06	Father's name[1]
F1S07	Is his address and telephone number same as respondent's?[1]
F1S08	Father's address and home telephone number[1]
F1S09	Father's work telephone number[1]
F1S10	Name, address, and telephone number of relative or close friend[1]
F1S12	Social security number[1]
F1S13	Interview date[1]
F1S14	Grade level
F1S15	Expected graduation/certification status
F1S45	Educational plans immediately after high school
F1S47	Educational plans for the future
F1S53	Plan to work right after high school

[1] Variable not included in any release file.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, 2004."

Table F-2. ELS:2002 first follow-up new participant student questionnaire additional critical items (base-year classification variables): 2004

Variable	Variable description
F1N01	Date of birth
F1N02	Sex
F1N03	Hispanic ethnicity, yes or no
F1N04	Hispanic subgroup
F1N05	Race
F1N06	Asian subgroup
F1N07	Native language = English, yes or no
F1N08	Native language
F1N09	English language competency
F1N10	In 10th grade in spring term 2002, yes or no
F1N11	Ever held back a grade
F1N12	Grade repeated
F1N13	Household composition
F1N14	Mother's occupation
F1N15	Father's occupation
F1N16(A-B)	Mother's and father's educational attainment
F1N17(A-J)	Household items

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, 2004."

Appendix G
Base-Year to First Follow-up
Electronic Codebook

Appendix G
Base-Year to First Follow-up Electronic Codebook

A web-published version of the base-year to first follow-up electronic codebook is available as a PDF file at http://nces.ed.gov/surveys/els2002/.

Appendix H
Cross-Cohort Comparisons

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Cross-Cohort Comparisons

H.1   Cross-Cohort Comparison Crosswalks

The Education Longitudinal Study of 2002 (ELS:2002) first follow-up (2004) data can be used in cross-cohort (intercohort) comparisons with the senior cohorts of the National Longitudinal Study of the High School Class of 1972 (NLS-72), the High School and Beyond (HS&B) longitudinal study in 1980, and the National Education Longitudinal Study of 1988 (NELS:88) in 1992. The ELS:2002 first follow-up data can also be used in comparisons to HS&B and NELS:88 of the sophomore cohort "2 years later"—including comparisons of sophomore cohort dropouts. This appendix contains crosswalks designed to identify ELS:2002 variables that also appear on the NLS-72 (1972), HS&B (1980) senior cohort,[1] or NELS:88 (1992) datasets. Some items identified in the crosswalks are only approximate matches, and for these, analysts should judge whether they are sufficiently comparable for the analysis at hand. In other cases, question stems and response options correspond exactly across questionnaires. All NLS-72 1972 and HS&B senior cohort 1980 participants are by definition 12th-graders. However, for NELS:88 and ELS:2002, the subset of participants who were seniors at the time must be invoked through use of the senior cohort flag.

Although the four studies have been designed to produce comparable results, there are also differences between them that may affect the comparability as well as the precision of estimates. Analysts should be aware of and take account of these several factors. In particular, there are differences in sample eligibility and sampling rates, differences in response rates, and some differences in key classification variables, such as race/Hispanic ethnicity. Other differences (and possible threats to comparability) are imputation of missing data, differences in test content and reliabilities, differences in questionnaire content, potential mode effects in data collection, and possible questionnaire context and order effects.

H.1.1 Eligibility

Quite similar definitions were used in deciding issues of school eligibility across the studies. Differences in student sampling eligibility, however, are more problematic. Although the target population is highly similar[2] across the studies (all seniors who can validly be assessed or at minimum meaningfully respond to the questionnaire), exclusion rules and their

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[1] There were two cohorts in HS&B: a senior cohort and a sophomore cohort. In 1982, most members of the sophomore cohort were seniors. However, the sophomore cohort sample was not freshened in 1982. This means that the sophomore cohort in 1982 does not fully represent high school seniors of that year, since no 1982 seniors who were not 1980 sophomores are included. Therefore, the 1982 seniors should not be compared with the 1972, 1980, 1992, and 2004 seniors, unless some adjustment is made for the "missing" seniors. Although some of the "missing" seniors were out of the country in 1980, most were held back a year or more, making them a very different group from the sophomore cohort members who remained in modal grade sequence. By and large, these missing cases would more closely resemble the HS&B sophomore cohort members who fell behind their classmates and did not become 1982 seniors.

[2] "Similar" seems a more accurate description than "the same" because of differences in emphasis, such as between the importance of test completion and the importance of questionnaire completion. HS&B, for example, regarded impediments to assessment as of overriding importance for determining eligibility, whereas ELS:2002 included students who could not be tested but could complete the questionnaire (in either self- or interviewer-administered interviews).

implementation have varied somewhat, and exclusion rates are known to differ where they are known at all.

Not all students are able to meaningfully respond to research instruments such as the assessments and questionnaires administered in the four studies. Some English language learners are too limited in their English proficiency to do so, whereas others may be precluded from participation by a severe physical or mental disability. HS&B excluded as ineligible students with such barriers to participation, although an overall exclusion rate has not been documented. In NELS:88, 5.3 percent of the base-year 8th-grade sample was excluded for such reasons (this figure is similar to the exclusion rate for 8th grade in the National Assessment of Educational Progress [NAEP] in similar subjects in the same period). However, a sample of the NELS:88 ineligible students was followed over time, and some students whose status changed were incorporated into the first and second follow-ups, from which the NELS:88 sophomore and senior cohorts are drawn. In ELS:2002, no students were classified as ineligible as such, although some were exempted from completing the questionnaire (and others also a test); still others were tested under circumstances in which they were provided with special accommodations. The overall rate of instrument-exempted sophomores in ELS:2002 is quite low, below 1 percent in the ELS:2002 base year. Base-year students incapable of completing a questionnaire were reevaluated in the first follow-up. Although not all were seniors, and the eligibility status of many remained unchanged, others became capable of questionnaire completion, particularly students who had been excluded for language reasons. (Note that the questionnaire-incapable students are considered to be part of the study but do not appear on the ELS:2002 public-use file.)

The fact that a larger proportion of the student population was included in ELS:2002 (99 percent of the potential cohort in ELS:2002 as contrasted to 95 percent in NELS:88) may affect cross-cohort estimates of change. This is the case because the excluded students in NELS:88 tended to be quite different from the included students.[3] At the same time, there are ways to make the samples somewhat more comparable. Thus, while for optimal cross-sectional estimation, all the ELS:2002 cases might be used for comparison of achievement results across cohorts, the ELS:2002 cases that reflect testing accommodations should be dropped.[4]

H.1.2 Sample Design Differences

Differences in sampling rates, sample sizes, and design effects across the studies also affect precision of estimation and comparability. Asian students, for example, were oversampled in NELS:88 and ELS:2002, but not in NLS-72 or HS&B, where their numbers were quite small. Also, although Catholic schools were oversampled in three of the four studies, HS&B had few (only 38) private non-Catholic schools, and NLS-72 had few nonpublic schools of any kind. The base-year (1980) participating sample in HS&B numbered 30,030 sophomores. In contrast,

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[3] For example (Ingels 1996), though just 5 percent of the population, inclusion of the ineligible students changes the cohort dropout rate between 1988 and 1990 from 6 percent to 7 percent. Only 62 percent of the base-year ineligibles were still in high school 4 years later, compared with 83 percent of the total sample. Of this 62 percent, 58 percent were in modal grade sequence, and 42 percent were not (80 percent of the overall in-school sample was in modal grade sequence, i.e., seniors 4 years later).

[4] In the same way, adjustments are commonly made to render the HS&B and NELS:88 transcript studies comparable to the NAEP high school transcripts. Specifically, only the subset of the HS&B or NELS:88 senior cohort that in fact graduated is included, while graduates on the NAEP file with special education diplomas are excluded from analysis.

15,362 sophomores participated in the base year of ELS:2002. Cluster sizes within school were much larger for HS&B (on average, 30 sophomores per school) than for ELS:2002 (just over 20 sophomores per school; larger cluster sizes are better for school effects research but carry a penalty in greater sample inefficiency). Mean design effect (a measure of sample efficiency[5]) also is quite variable across the studies: for example, for 10th grade, 2.9 for HS&B and 3.9 for NELS:88 (reflecting high subsampling after the 8th-grade base year), with the most favorable design effect, 2.4, for the ELS:2002 base year. Other possible sources of difference between the cohorts that may impair change measurement are different levels of sample attrition over time and changes in the population of nonrespondents.

H.1.3 Participation Rates

Response rates also differ somewhat across the studies, although nonresponse-adjusted weights were generated for each of the cohorts. At the school level, response rates were somewhat higher in HS&B and NELS:88 (unweighted, around 70 percent) than in ELS:2002 (unweighted, 62 percent). School nonresponse bias analyses were performed for each study and may be found in the study documentation. At the student level, there is even more variation in response rates. In HS&B, 80.7 percent of 1980 senior cohort members completed a questionnaire (Zahs et al. 1995, p. 67). In the NELS:88 second follow-up, 92.5 percent of students participated (Ingels et al. 1994), and in ELS:2002, 93.6 percent of the in-school sample was surveyed in the first follow-up (all response rates are unweighted).

H.1.4 Changing Race Definitions

In some cases, federal race definitions or preferences for the means by which ethnicity and race data are to be collected have changed. In HS&B and NELS:88, students were asked to mark one race only. Based on revised race-reporting guidelines issued by the Office of Management and Budget (OMB), ELS:2002 added a new race category, and, more important, students are now allowed to mark all that apply, thus generating a further category, Multiracial/More than one race.

The new race category is Native Hawaiian or Other Pacific Islander. For purposes of cross-cohort comparisons, cases identified in ELS:2002 as Native Hawaiian or Other Pacific Islander should be combined with the Asian category to achieve comparability with earlier studies.

However, for students who considered themselves to be multiracial and marked more than one race, there is no ready means to map them back into a one-race scheme. With 5 race categories and with values based on a single race reported, none reported, the 10 possible combinations of 2 races, the 10 possible combinations of 3 races, the 5 possible combinations of 4 races, and the possibility of a combination of all 5 races, there are 32 separate race categories. When race is crossed by ethnicity (race by Hispanic or not Hispanic), there are 64 possible race/Hispanic ethnicity combinations. It is impossible to know, for example, whether a student who marked White and Black in ELS:2002 would have marked White or Black in NELS:88, in

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[5] Effective sample size can be quite different from the nominal sample size; effective sample size is more meaningful than raw sample size in terms of statistical analysis—for example, the sampling variance of a mean standard score is equal to the reciprocal of the effective sample size, not the reciprocal of the raw sample size. Effective sample size may be defined as the raw sample size divided by the design effect.

which only one race was allowed. There are over 700 non-Hispanic multiracial sophomores recorded in the ELS:2002 base-year dataset, but the distorting effect on cross-cohort estimation is likely to be greatest for small population subgroups with many claimants to multiple race, such as the American Indian category. Analysts should be cautious, then, about conclusions concerning racial subgroup trends between the seniors of 1972, 1980, 1992, and 2004.

H.1.5 Other Classification Variables

Other key classification variables have been constructed *to the extent possible* in the same way in ELS:2002 as in the prior studies, although in many cases (in ELS:2002 only) there are imputed versions of the variable as well as the original version with the various types of missing data categorized by reserve code. The socioeconomic status (SES) variable offers a good example of the subtle differences that may exist between the same variable in different studies, despite efforts to maximize cross-cohort consistency of measures. Continuities and differences in SES constituents and construction in the three prior studies are summarized below in table H-1. Table H-2 summarizes the elements comprising the SES measure in ELS:2002.

Table H-1. Elements of the socioeconomic composite, by study: Selected years, 1972–2002

NLS-72, HS&B (student reported)	NELS:88 (parent reported)	NELS:88 student survey substitutions
Father's occupation	Father's occupation	Father's occupation
	Mother's occupation	Mother's occupation
Father's education	Father's education	Father's education
Mother's education	Mother's education	Mother's education
Family income	Family income	Household items
Household items	—	—

— Not available.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002); National Longitudinal Study of the High School Class of 1972 (NLS-72); High School and Beyond (HS&B) Longitudinal Study (1980); and National Education Longitudinal Study of 1988 (NELS:88).

Table H-2. Elements of socioeconomic composite, by source: 2002

Preferred source (parent reported)	Student report substitution if missing from parent	Imputed if still missing
Father's occupation	Father's occupation	Father's occupation
Mother's occupation	Mother's occupation	Mother's occupation
Father's education	Father's education	Father's education
Mother's education	Mother's education	Mother's education
Family income	—	Family income

— Not available.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002).

ELS:2002 largely follows the NELS:88 model above. In both studies, the composite is based on five equally weighted, standardized components: father's education, mother's education, family income, father's occupation, and mother's occupation. Parent data are used to construct this variable. Student data are substituted where parent data are missing. However, for parent education and occupation, where both parent and student reports are missing, ELS:2002

education and occupation values are imputed. Family income was not asked of students. While in NELS:88 a student-provided household item index, which served as an income proxy, was substituted when income data were missing, a different procedure was followed in ELS:2002. When parent data on income were missing, income was statistically imputed.

Some differences across the studies are based on differences in design. The studies had different starting points. NLS-72 student respondents were high school seniors, HS&B base-year respondents were sophomores or seniors, and NELS:88 base-year respondents were 8th-graders. ELS:2002 base-year respondents were sophomores. A parent interview was sought for all NELS:88 and ELS:2002 base-year student respondents. HS&B had a parent survey, but it only encompassed a subsample of student respondents. NLS-72 had no parent survey at all. Because the quality of reporting on parental occupation and education increases with student age or grade, it may be of concern whether reports were gathered at grade 8, 10, or 12. However, since parent reports are markedly superior to student reports in these matters, it may be of concern that only in NELS:88 and ELS:2002 are the data primarily parent reported. Likewise, students are poor reporters of family income, but the income question was asked of students in NLS-72 and HS&B and of parents alone in NELS:88 and ELS:2002.

Some differences reflect changing social circumstances over time. For example, many fewer mothers worked in 1972 than in recent years. The importance of gathering information about maternal occupation increased with the passage of time and the increasing labor market participation of American females. The household items list has been revised for each survey. For NLS-72, owning a color television discriminated between people of various income levels. by the time of HS&B, 8 years later, this was no longer so. By 2002, HS&B items such as ownership of a typewriter had ceased to function as good proxies for family income, while other items, such as access to the Internet or having a digital video disc player, did.[6] Although items differ across the index over time, in each case the items are those that are needed to provide a measure that has a reasonable correlation with income. Another area where change over time is possible is in occupations and their relative prestige. To accommodate this factor, two sets of prestige scores were drawn upon in NELS:88: the 1961 Duncan socioeconomic indicator measure that had been employed in NLS-72 and HS&B, as well as a 1989 revision by Nakao and Treas (1992). The same strategy has been employed in ELS:2002.

H.1.6 Imputation of Missing Data for ELS:2002 Key Variables

One difference between the SES variable in ELS:2002 and in prior studies arises from the use of imputation in ELS:2002. Because all the constituents of SES are subject to imputation, it has been possible to create an SES composite with no missing data for ELS:2002. For the HS&B sophomores, SES was missing for around 9 percent of the participants, and for NELS:88 (in 1990) just under 10 percent. The availability of imputed variables (including both key classification variables and achievement test scores) also poses a novel question for analysts interested in intercohort comparisons. Because imputed values are flagged, it is the analyst's choice whether or not to employ them. If the imputed variables are used, they should have the effect of improving cross-sectional estimation. On the other hand, since imputation was not used in the prior studies, it is also possible that use of ELS:2002 imputed values might decrease

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[6] The household items were asked in ELS:2002, but the index was not used in the creation of SES, since missing income data were imputed.

comparability of results across studies. To explore the issue of the magnitude of the effect of imputation on comparative bivariate and multivariate analysis, appendix C compares imputed and unimputed ELS:2002 estimates, including estimates based on an SES composite using the household items index substitution and an SES composite based on parent data with missings imputed.

H.1.7 Differences of Test Content and Reliabilities

The test battery has evolved over time. Only one school subject—mathematics—has been tested at all timepoints, and the early mathematics tests were limited to quantitative comparison items. The NLS-72 and HS&B 1980 senior tests also were administered in vocabulary and in reading, as well as in a number of ability domains not closely linked to the school curriculum (a picture number test gauged associative memory, a mosaic comparisons test measured perceptual speed and accuracy, and another test measured visualization in three dimensions). The HS&B sophomore tests—because they were to be repeated after 2 years of additional schooling—took a different tack. Arguably more curriculum sensitive, they measured knowledge in six areas: vocabulary, reading, mathematics, science, writing, and civics. The test battery in NELS:88 comprised assessments in reading, mathematics, science, and social studies (history, geography, and civics). In ELS:2002, reading and mathematics assessments were administered in the base year, and mathematics again in the first follow-up.

Although different tests have been equated, the linkage does not carry through uninterruptedly from NLS-72 to ELS:2002. The NLS-72 and HS&B senior tests were equated (Rock et al. 1985), and the NELS:88 and ELS:2002 12th-grade tests have been equated (as documented in this report). (For sophomores, a link has been effected from the HS&B sophomore cohort in 1980 to the NELS:88 scale in 1990 and the ELS:2002 in 2002 [Ingels et al. 2004]). However, certain kinds of test score analyses, using effect sizes, are possible across the various senior cohorts (see Green, Dugoni, and Ingels 1995).

In addition, starting in NELS:88, the tests were made at least moderately adaptive (in 1990, 1992, and 2004, through using the prior round's ability estimate to assign a specific test form; in 2002, through a two-stage test in which performance on a routing test determined assignment of the second-stage form). In consequence, test reliabilities are higher for the later assessment batteries (for example, in mathematics, 0.85–0.86 for NLS-72 and HS&B; 0.92–0.94 for NELS:88 and ELS:2002).

H.1.8 Differences of Questionnaire Content

Readers are referred to the crosswalk in section H.2 to identify comparable items.

H.1.9 Mode Effects in Data Collection, Context Effects

Survey responses can be influenced by the mode of questionnaire administration (Tourangeau, Rips, and Rasinski 2000). There are some mode of administration differences across the studies (such differences will grow greater with future rounds—for example, ELS:2002 will collect 2006 data via self-administration on the Web, as well as computer-assisted telephone interviews and computer-assisted personal interviews, as contrasted to paper-and-pencil mail surveys in the NLS-72 and HS&B era). Order and context effects are also possible (questions have been added, dropped, and reordered, over time). Though possible threats to

comparability of data over time, little methodological work has been done on mode or context effects within this longitudinal studies series.

The crosswalk in section H.2 links ELS:2002 base-year student questionnaire items with similar items from three previous NCES high school senior cohort questionnaires: the NELS:88 second follow-up questionnaire (1992), the HS&B base-year senior cohort questionnaire (1980), and the NLS-72 base-year questionnaire (1972). This crosswalk will facilitate analyses of trends among high school seniors, spanning a 32-year period. Linked questions may be identical in content and format or may differ in one or more ways: the question, item, or response wording; the order in which response options were presented; the manner in which the data were collected (e.g., categorical response option versus open-ended response fields, instructions to mark one versus mark all that apply); and the population to which the question applies. Therefore, it is strongly recommended that analysts review documentation (including facsimiles of the questionnaires) to determine if linked questions are appropriate for their purpose.

H.2 Cross-Cohort Item Crosswalk

Table H-3 lists the contents of the ELS:2002 first follow-up questionnaires, with the exception of the locator section, which has not been made a part of the data release. In the first column, an abbreviated stem is provided for each item. In the second column, the item's ELS:2002 status is indicated, that is, the variable name for each ELS:2002 first follow-up questionnaire (for brevity, the prefix "F1" has been dropped). For example, math coursework carries an entry for all five first follow-up questionnaires (student, transfer student, homeschooled student, early graduate, dropout). In the third column, the corresponding NELS:88 second follow-up item (if any) is indicated. The fourth and fifth columns supply linkage from the NELS:88 second follow-up item (if any) to the relevant HS&B senior questionnaire variable, and the sixth column to the base year of the NLS-72.

H.3 Appendix H References

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Table H-3. Cross-cohort item crosswalk for longitudinal studies, by item: Selected years, 1972–2002

Question	ELS:2002 first follow-up questionnaires	NELS:88 second follow-up questionnaires	HS&B 1982 seniors	HS&B 1980 seniors	NLS-72 seniors
Grade level	S14, T18, H14	S6A			
Diploma or certificate most likely to receive	S15, T19, H15, E19	S6B			
Science coursework	S16, T20, H16, E29, D27				
Math coursework	S17, T21, H17, E30, D28				
Confidence in math	S18				
Calculators/computers in math	S19	S19B			
Computer use in math classes	S20				
College entrance tests	S21, T22, H18	S44	8	9	
How studied for college tests	S22	S45			
Participated in college preparation program for disadvantaged	S23	S14A	11cd	14cd	6de3
Yrs participated in Talent Search, etc.	S24	S14B		14cd	6de3
Victimization	S25	S8			
Extracurricular activities	S26, T23, H20, E31	S30A, S30B	38	32	10
Hours/week spent on extracurricular activities	S27, T24, H21, E32	S31			
School has library media/resource center	S28, T25				
How often uses school library	S29, T26				
How often uses public library	S30, T27, H22, E33, D49				
Hours/week spent on homework both in and out of school	S31, T28, H23	S25f	15	15	7
Hours on math homework	S32	S25a			
Hours/week spent reading outside of school	S33, T29, H24, E34, D50	S32	60b	47b	
Hours watching television	S34, T30, H25, E35, D51	S35	61	48	
Hours playing video games	S35, T31, H26, E36, D52	S34			
Computer use for schoolwork/other	S36, T32, H27, E37, D53				
Computer use at various locations	S37, T33, H28, E38, D54				
Computer use for fun, school, learn things	S38				
Activities outside of school	S39, T34, H29, E39, D55	S33, D35	60	47	
Life values	S40, T35, H30, E40, D56	S40, D36	73	57	20
How will spend summer	S41	S46			

See notes at end of table.

Table H-3. Cross-cohort item crosswalk for longitudinal studies, by item: Selected years, 1972–2002—Continued

Question	ELS:2002 first follow-up questionnaires	NELS:88 second follow-up questionnaires	HS&B 1982 seniors	HS&B 1980 seniors	NLS-72 seniors
How far in school respondent thinks will get	S42, T36, H31, E41, D57	S43, D38	80	65	29
How far mother and father wants to go	S43, T37, H32, E42, D58	S42, D37	81	66	91
Most important thing right after high school	S44, T38, H33	S41	63	50	
Plans to go on to school right after high school	S45, T39, H34	S49	87h		
Reasons decided not to go right after high school	S46, T40, H35	S50			37, 42, 49
Plans to continue education some time in future	S47, T41, H36, E44	S56	122	115	
Where went for info on college entrance	S48				
Type of school plans to attend	S49, T42, H37, E45	S61	115	107	70
Number of school applied to	S50, T43, H38, E46	S60A	124	117	66
Importance of school characteristics	S52, T45, H40, E48	S59	123	116	68
Plans to work right after high school	S53, T46, H41	S51	87a	72a	32
Has regular full-time job lined up	S54, T47, H42	S52	88	73	33
Who helped select jobs	S55	S53			
Occupation expects to have after high school—verbatim (restricted)	S56, T48, H43	S64	77a	62	25
Occupation expects to have at age 30—verbatim (restricted)	S57, T49, H44, E56, D66	S64, D40A	77a	62	25
How much education respondent thinks will be needed for job at age 30	S58, T50, H45, E57, D67	S65			
Ever worked for pay not around house	S59, T51, H46	S86A	24		
How many hours usually works a week during school year	S60, T52, H47	S88	25	22	8
How many hours works on the weekend during school year	S61	S89			
Performed unpaid volunteer/community service work	S62, T53, H48, E58, D68	S37			
Types of volunteer organizations	S63	S39			
How often discuss with parents	S64, T54, H49	S99			
Friends' plans for after high school	S65, T55, H50, E59, D69	S69, D59			

See notes at end of table.

Table H-3. Cross-cohort item crosswalk for longitudinal studies, by item: Selected years, 1972–2002—Continued

Question	ELS:2002 first follow-up questionnaires	NELS:88 second follow-up questionnaires	HS&B 1982 seniors	HS&B 1980 seniors	NLS-72 seniors
When began going to transfer school	T15				
Reasons for transferring	T16				
Agreement w/ statements re school/teachers	T17	S7	66, 67	53, 59	18
Month and year last attended school	E20, D19	D6			
Grade when last attended school	E21, D20	D7			
How earned GED	E24, D42				
Why decided to complete GED	E25, D43				
State where GED/equivalency was earned—restricted	E26, D44				
Month and year graduated/received equivalency from high school	E27, D45	E114, D32	G1		
Why decided to graduate/complete early	E28	E115	G2		
Enrolled in an educational institution since high school	E43	E127A, D23	G13A2		
Number of jobs held since left high school	E49, D59	D44A			
Current/most recent job or occupation—restricted	E50, D60	E121A, E121B, D45A, D45B	G10.1		
Month and year started working at this job	E51, D61	E122, D45E	G10.5		
Still have this job	E52, D62	E123, D45F	G10.6		
Month and year left most recent job	E53, D63	E123, D45G	G10.6		
Current/most recent pay per hour	E54, D64	D45K			
Number of hours/week usually worked at this job	E55, D65	D45L			
Whether passed last grade attended	D21	D8			
Left school for more than a month before last left	D22	D10A			
Month and year first left school for more than a month	D23	D10B			
Month and year returned to school	D24	D11			
Attended school during 2002–03 school year	D25	D14A			

See notes at end of table.

Table H-3. Cross-cohort item crosswalk for longitudinal studies, by item: Selected years, 1972–2002—Continued

Question	ELS:2002 first follow-up questionnaires	NELS:88 second follow-up questionnaires	HS&B 1982 seniors	HS&B 1980 seniors	NLS-72 seniors
Number of school days missed during 2002–03 school year	D26	D14B			
Reasons for leaving school	E22, D29	D9A			
Feels that leaving school was a good decision	E23, D30	D17A			
What people at school did	D31	D21			
What parents did	D32	D22			
Things that happened in past 2 years	D33	D24			
Participated in an alternative program	D34	D25			
Month and year entered most recent alternative program	D35	D26A			
Still enrolled in alternative program	D36	D26B			
Month and year left/completed most recent alternative program	D37	D26C			
Who referred to alternative program	D38	D27			
Services received from alternative program	D39	D29			
Number of alternative programs participated in	D40	D30			
Plan to get GED or high school diploma	D41	D31			
Currently taking class to prepare for GED examination	D46	D33A			
Plan to go back to high school/take GED class	D47	D33B			
Month and year expects to receive high school diploma/GED	D48	D34			
Sex	N2	N2			
Student is Hispanic	N3	N17			
Student's Hispanic subdivision	N4	N19			
Race	N5	N17			
Student's Asian subdivision	N6	N18			
English is student's native language	N7	S107			
Student's native language (restricted)	N8	N20			
English skills	N9	S109			

See notes at end of table.

Table H-3. Cross-cohort item crosswalk for longitudinal studies, by item: Selected years, 1972–2002—Continued

Question	ELS:2002 first follow-up questionnaires	NELS:88 second follow-up questionnaires	HS&B 1982 seniors	HS&B 1980 seniors	NLS-72 seniors
Ever held back a grade	N11	N16			
Grades repeated	N12	N16			
Lives in household at least half of time	N13				
Mother/female guardian's work	N14	N5			
Father/male guardian's work	N15	N7			
Parents' education	N16	N8			
Family has items in home	N17	N12			

NOTE: This crosswalk was constructed by linking ELS:2002 first follow-up items with the NELS:88 second follow-up items from the Intercohort Student Questionnaire Crosswalk in appendix E of the NELS:88 Second Follow-up: Student Component Data File User's Manual (94–374). S = Student, T = Transfer, H = Homeschool, E = Early Graduate, D = Dropout (Not Currently in School), N = New Participant Supplement.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002); National Longitudinal Study of the High School Class of 1972 (NLS-72); High School and Beyond (HS&B) Longitudinal Study (1980); and National Education Longitudinal Study of 1988 (NELS:88).

Appendix I
Standard Errors and Design Effects

Table I-1. Student design effects, by item using first follow-up questionnaire weight—All: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.8	0.47	0.28	14238	2.78	1.67
Most likely to receive a GED	F1S15 = 5	2.1	0.15	0.12	14238	1.66	1.29
Already took the SAT or ACT	F1S21C = 3	63.9	0.77	0.41	13555	3.50	1.87
Already took an AP test	F1S21D = 3	14.7	0.56	0.31	13177	3.33	1.82
Had something stolen at school at least once	F1S25A = 2,3	25.8	0.56	0.43	10375	1.71	1.31
Was offered drugs at school at least once	F1S25B = 2,3	20.8	0.58	0.40	10374	2.14	1.46
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.5	0.39	0.30	14095	1.74	1.32
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	15.0	0.46	0.30	14092	2.37	1.54
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.5	0.60	0.43	9824	1.89	1.38
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	55.5	0.56	0.41	14691	1.86	1.37
Uses the computer at home once or twice a week	F1S37A = 4	25.0	0.49	0.35	14892	1.93	1.39
Rarely or never performs community service	F1S39C = 1	60.9	0.57	0.40	14766	2.05	1.43
Being successful in line of work is very important	F1S40A = 3	90.7	0.32	0.24	14895	1.83	1.35
Marrying the right person is very important	F1S40B = 3	80.3	0.44	0.33	14885	1.84	1.36
Having lots of money is very important	F1S40C = 3	35.7	0.57	0.39	14891	2.08	1.44
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.4	0.48	0.38	14898	1.62	1.27
Mother expects student to graduate from college, nothing more	F1S43A = 6	38.1	0.53	0.40	14460	1.74	1.32
Plans to continue education right after high school	F1S47 = 2	77.7	0.55	0.35	13802	2.42	1.55
Plans to hold a part-time job right after school	F1S53 = 2	49.6	0.57	0.43	13685	1.79	1.34
Volunteered with a youth organization	F1S63A = 1	27.8	0.80	0.55	6677	2.12	1.45
Often discusses grades with parents	F1S64D = 3	52.5	0.56	0.43	13506	1.67	1.29
Lives with mother only	F1FCOMP = 5	18.7	0.44	0.32	14989	1.93	1.39
Native language is Spanish	F1HOMLNG = 2	8.4	0.62	0.23	14623	7.30	2.70
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.9	0.17	0.14	14569	1.43	1.19
At age 30 expects to be in the military	F1OCC30 = 7	1.0	0.11	0.08	14569	1.60	1.26
At age 30 expects to be an operative	F1OCC30 = 8	0.6	0.09	0.07	14569	1.84	1.36
At age 30 expects to be a professional (group b)	F1OCC30 = 10	13.6	0.36	0.28	14569	1.60	1.26
At age 30 expects to be in a technical field	F1OCC30 = 16	4.9	0.23	0.18	14569	1.65	1.28
At age 30 doesn't know what expects to be	F1OCC30 = -1	30.1	0.46	0.38	14569	1.47	1.21
Mathematics test score	F1TXM1IR = 0-85	48.3	0.28	0.13	13702	4.84	2.20
Summary statistics							
Mean						2.26	1.47
Minimum						1.43	1.19
Median						1.85	1.36
Maximum						7.30	2.70
Standard deviation						1.19	0.32

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-2. Student design effects, by item using first follow-up questionnaire weight—Male: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	10.6	0.53	0.37	7061	2.12	1.46
Most likely to receive a GED	F1S15 = 5	2.5	0.25	0.18	7061	1.80	1.34
Already took the SAT or ACT	F1S21C = 3	59.1	0.92	0.60	6710	2.34	1.53
Already took an AP test	F1S21D = 3	14.1	0.66	0.43	6484	2.33	1.53
Had something stolen at school at least once	F1S25A = 2,3	29.7	0.82	0.64	5123	1.64	1.28
Was offered drugs at school at least once	F1S25B = 2,3	27.3	0.86	0.62	5126	1.92	1.39
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	18.0	0.60	0.46	6977	1.71	1.31
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	10.9	0.51	0.37	6976	1.89	1.38
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.1	0.82	0.61	4849	1.76	1.33
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	56.9	0.76	0.58	7338	1.73	1.32
Uses the computer at home once or twice a week	F1S37A = 4	23.0	0.65	0.49	7431	1.78	1.33
Rarely or never performs community service	F1S39C = 1	66.5	0.73	0.55	7364	1.75	1.32
Being successful in line of work is very important	F1S40A = 3	89.2	0.48	0.36	7426	1.82	1.35
Marrying the right person is very important	F1S40B = 3	79.5	0.60	0.47	7421	1.66	1.29
Having lots of money is very important	F1S40C = 3	43.3	0.75	0.58	7422	1.71	1.31
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.9	0.68	0.54	7431	1.60	1.27
Mother expects student to graduate from college, nothing more	F1S43A = 6	40.1	0.70	0.58	7178	1.46	1.21
Plans to continue education right after high school	F1S47 = 2	72.3	0.78	0.54	6841	2.10	1.45
Plans to hold a part-time job right after school	F1S53 = 2	46.3	0.81	0.61	6784	1.77	1.33
Volunteered with a youth organization	F1S63A = 1	33.7	1.25	0.88	2891	2.01	1.42
Often discusses grades with parents	F1S64D = 3	48.0	0.85	0.61	6659	1.94	1.39
Lives with mother only	F1FCOMP = 5	17.9	0.57	0.44	7486	1.68	1.30
Native language is Spanish	F1HOMLNG = 2	7.8	0.60	0.31	7274	3.67	1.92
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.3	0.24	0.21	7221	1.27	1.13
At age 30 expects to be in the military	F1OCC30 = 7	1.7	0.20	0.15	7221	1.65	1.28
At age 30 expects to be an operative	F1OCC30 = 8	1.2	0.17	0.13	7221	1.82	1.35
At age 30 expects to be a professional (group b)	F1OCC30 = 10	9.4	0.45	0.34	7221	1.73	1.32
At age 30 expects to be in a technical field	F1OCC30 = 16	6.0	0.37	0.28	7221	1.75	1.32
At age 30 doesn't know what expects to be	F1OCC30 = -1	32.8	0.69	0.55	7221	1.54	1.24
Mathematics test score	F1TXM1IR = 0-85	49.3	0.32	0.19	6800	2.96	1.72
Summary statistics							
Mean						1.90	1.37
Minimum						1.27	1.13
Median						1.77	1.33
Maximum						3.67	1.92
Standard deviation						0.46	0.15

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-3. Student design effects, by item using first follow-up questionnaire weight—Female: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	14.9	0.64	0.42	7177	2.29	1.51
Most likely to receive a GED	F1S15 = 5	1.7	0.20	0.15	7177	1.71	1.31
Already took the SAT or ACT	F1S21C = 3	68.7	0.91	0.56	6845	2.64	1.62
Already took an AP test	F1S21D = 3	15.4	0.71	0.44	6693	2.58	1.61
Had something stolen at school at least once	F1S25A = 2,3	21.9	0.73	0.57	5252	1.63	1.28
Was offered drugs at school at least once	F1S25B = 2,3	14.5	0.67	0.49	5248	1.90	1.38
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	11.1	0.46	0.37	7118	1.55	1.25
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	19.2	0.66	0.47	7116	1.97	1.40
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.9	0.83	0.61	4975	1.84	1.36
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	54.0	0.66	0.58	7353	1.29	1.14
Uses the computer at home once or twice a week	F1S37A = 4	27.0	0.68	0.51	7461	1.77	1.33
Rarely or never performs community service	F1S39C = 1	55.2	0.79	0.58	7402	1.89	1.37
Being successful in line of work is very important	F1S40A = 3	92.1	0.42	0.31	7469	1.80	1.34
Marrying the right person is very important	F1S40B = 3	81.1	0.65	0.45	7464	2.06	1.43
Having lots of money is very important	F1S40C = 3	28.1	0.69	0.52	7469	1.74	1.32
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.0	0.64	0.54	7467	1.45	1.20
Mother expects student to graduate from college, nothing more	F1S43A = 6	36.0	0.73	0.56	7282	1.71	1.31
Plans to continue education right after high school	F1S47 = 2	83.1	0.61	0.45	6961	1.84	1.36
Plans to hold a part-time job right after school	F1S53 = 2	53.0	0.75	0.60	6901	1.54	1.24
Volunteered with a youth organization	F1S63A = 1	23.4	0.92	0.69	3786	1.78	1.33
Often discusses grades with parents	F1S64D = 3	57.0	0.70	0.60	6847	1.37	1.17
Lives with mother only	F1FCOMP = 5	19.5	0.62	0.46	7503	1.85	1.36
Native language is Spanish	F1HOMLNG = 2	9.0	0.79	0.33	7349	5.55	2.36
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.6	0.22	0.19	7348	1.44	1.20
At age 30 expects to be in the military	F1OCC30 = 7	0.4	0.08	0.07	7348	1.38	1.17
At age 30 expects to be an operative	F1OCC30 = 8	0.1	0.06	0.04	7348	1.83	1.35
At age 30 expects to be a professional (group b)	F1OCC30 = 10	17.8	0.56	0.45	7348	1.59	1.26
At age 30 expects to be in a technical field	F1OCC30 = 16	3.8	0.26	0.22	7348	1.38	1.18
At age 30 doesn't know what expects to be	F1OCC30 = -1	27.5	0.61	0.52	7348	1.39	1.18
Mathematics test score	F1TXM1IR = 0-85	47.3	0.32	0.18	6902	3.42	1.85
Summary statistics							
Mean						1.94	1.37
Minimum						1.29	1.14
Median						1.77	1.33
Maximum						5.55	2.36
Standard deviation						0.81	0.24

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-4. Student design effects, by item using first follow-up questionnaire weight—American Indian or Alaska Native: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	4.4	2.05	1.88	119	1.19	1.09
Most likely to receive a GED	F1S15 = 5	5.5	2.63	2.10	119	1.56	1.25
Already took the SAT or ACT	F1S21C = 3	38.4	6.06	4.68	109	1.68	1.30
Already took an AP test	F1S21D = 3	7.6	3.35	2.55	108	1.72	1.31
Had something stolen at school at least once	F1S25A = 2,3	33.9	6.59	5.47	76	1.45	1.21
Was offered drugs at school at least once	F1S25B = 2,3	31.1	6.59	5.31	77	1.54	1.24
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	13.8	4.30	3.22	116	1.78	1.34
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	12.6	3.93	3.11	115	1.60	1.26
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	28.2	8.81	5.50	68	2.57	1.60
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	69.3	4.37	4.17	123	1.09	1.05
Uses the computer at home once or twice a week	F1S37A = 4	28.7	5.33	4.11	122	1.68	1.30
Rarely or never performs community service	F1S39C = 1	69.2	5.29	4.22	121	1.57	1.25
Being successful in line of work is very important	F1S40A = 3	90.4	3.63	2.68	122	1.84	1.36
Marrying the right person is very important	F1S40B = 3	69.9	6.73	4.17	122	2.61	1.61
Having lots of money is very important	F1S40C = 3	40.3	4.98	4.46	122	1.25	1.12
Expects to earn a 4-year degree, nothing more	F1S42 = 6	26.3	5.50	4.00	122	1.89	1.37
Mother expects student to graduate from college, nothing more	F1S43A = 6	34.2	4.46	4.40	117	1.02	1.01
Plans to continue education right after high school	F1S47 = 2	61.4	5.63	4.58	114	1.51	1.23
Plans to hold a part-time job right after school	F1S53 = 2	52.7	4.95	4.76	111	1.08	1.04
Volunteered with a youth organization	F1S63A = 1	39.8	8.31	8.94	31	0.87	0.93
Often discusses grades with parents	F1S64D = 3	48.0	6.75	4.79	110	1.99	1.41
Lives with mother only	F1FCOMP = 5	24.2	3.70	3.84	125	0.93	0.96
Native language is Spanish	F1HOMLNG = 2	#	#	#	119	†	†
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.9	1.43	1.56	118	0.84	0.91
At age 30 expects to be in the military	F1OCC30 = 7	2.0	1.50	1.30	118	1.34	1.16
At age 30 expects to be an operative	F1OCC30 = 8	0.8	0.76	0.80	118	0.91	0.95
At age 30 expects to be a professional (group b)	F1OCC30 = 10	9.5	3.38	2.71	118	1.55	1.25
At age 30 expects to be in a technical field	F1OCC30 = 16	4.1	2.30	1.83	118	1.58	1.26
At age 30 doesn't know what expects to be	F1OCC30 = -1	41.3	5.15	4.55	118	1.28	1.13
Mathematics test score	F1TXM1IR = 0-85	41.3	1.66	1.23	110	1.83	1.35
Summary statistics							
Mean						1.51	1.22
Minimum						0.84	0.91
Median						1.55	1.25
Maximum						2.61	1.61
Standard deviation						0.44	0.18

† Not applicable.
# Rounds to zero.
NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-5. Student design effects, by item using first follow-up questionnaire weight—Asian: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.9	1.26	0.87	1476	2.09	1.45
Most likely to receive a GED	F1S15 = 5	0.7	0.21	0.22	1476	0.90	0.95
Already took the SAT or ACT	F1S21C = 3	75.9	1.92	1.13	1424	2.86	1.69
Already took an AP test	F1S21D = 3	29.4	2.54	1.22	1392	4.33	2.08
Had something stolen at school at least once	F1S25A = 2,3	27.4	2.10	1.40	1022	2.26	1.50
Was offered drugs at school at least once	F1S25B = 2,3	13.3	1.80	1.06	1023	2.88	1.70
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	13.3	1.27	0.89	1464	2.04	1.43
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	13.7	1.34	0.90	1470	2.24	1.50
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	29.4	1.88	1.45	992	1.69	1.30
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	51.2	1.95	1.29	1504	2.28	1.51
Uses the computer at home once or twice a week	F1S37A = 4	19.1	1.48	1.01	1517	2.15	1.47
Rarely or never performs community service	F1S39C = 1	51.8	1.93	1.29	1505	2.23	1.49
Being successful in line of work is very important	F1S40A = 3	88.6	1.01	0.82	1521	1.52	1.23
Marrying the right person is very important	F1S40B = 3	79.7	1.31	1.03	1520	1.62	1.27
Having lots of money is very important	F1S40C = 3	42.6	1.85	1.27	1519	2.12	1.45
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.9	1.56	1.20	1519	1.71	1.31
Mother expects student to graduate from college, nothing more	F1S43A = 6	30.9	1.49	1.21	1468	1.52	1.23
Plans to continue education right after high school	F1S47 = 2	89.6	1.28	0.81	1436	2.52	1.59
Plans to hold a part-time job right after school	F1S53 = 2	52.1	1.89	1.32	1433	2.04	1.43
Volunteered with a youth organization	F1S63A = 1	17.6	1.71	1.43	712	1.44	1.20
Often discusses grades with parents	F1S64D = 3	45.9	1.91	1.33	1409	2.07	1.44
Lives with mother only	F1FCOMP = 5	9.9	0.89	0.77	1526	1.35	1.16
Native language is Spanish	F1HOMLNG = 2	0.4	0.28	0.16	1480	2.94	1.72
At age 30 expects to be a manager, administrator	F1OCC30 = 6	4.0	0.94	0.51	1479	3.45	1.86
At age 30 expects to be in the military	F1OCC30 = 7	0.5	0.20	0.19	1479	1.09	1.04
At age 30 expects to be an operative	F1OCC30 = 8	#	0.04	0.05	1479	0.54	0.74
At age 30 expects to be a professional (group b)	F1OCC30 = 10	20.4	1.43	1.05	1479	1.86	1.36
At age 30 expects to be in a technical field	F1OCC30 = 16	5.1	0.82	0.57	1479	2.07	1.44
At age 30 doesn't know what expects to be	F1OCC30 = -1	36.6	1.73	1.25	1479	1.91	1.38
Mathematics test score	F1TXM1IR = 0-85	54.1	0.90	0.42	1439	4.58	2.14
Summary statistics							
Mean						2.14	1.44
Minimum						0.54	0.74
Median						2.07	1.44
Maximum						4.58	2.14
Standard deviation						0.88	0.29

\# Rounds to zero.
NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-6. Student design effects, by item using first follow-up questionnaire weight—Black or African American: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	9.42	0.93	0.68	1826	1.84	1.36
Most likely to receive a GED	F1S15 = 5	2.94	0.44	0.40	1826	1.25	1.12
Already took the SAT or ACT	F1S21C = 3	55.23	1.50	1.20	1709	1.56	1.25
Already took an AP test	F1S21D = 3	5.15	0.59	0.54	1664	1.19	1.09
Had something stolen at school at least once	F1S25A = 2,3	32.83	1.61	1.36	1200	1.40	1.18
Was offered drugs at school at least once	F1S25B = 2,3	20.58	1.48	1.17	1199	1.60	1.27
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	17.78	0.98	0.90	1800	1.18	1.09
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	17.28	1.23	0.89	1798	1.89	1.38
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	25.19	1.41	1.33	1072	1.12	1.06
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	73.27	1.20	1.01	1906	1.41	1.19
Uses the computer at home once or twice a week	F1S37A = 4	26.94	0.97	1.00	1963	0.93	0.97
Rarely or never performs community service	F1S39C = 1	64.49	1.36	1.09	1943	1.57	1.25
Being successful in line of work is very important	F1S40A = 3	93.77	0.64	0.55	1966	1.39	1.18
Marrying the right person is very important	F1S40B = 3	75.59	1.15	0.97	1964	1.41	1.19
Having lots of money is very important	F1S40C = 3	55.70	1.30	1.12	1964	1.34	1.16
Expects to earn a 4-year degree, nothing more	F1S42 = 6	29.67	1.21	1.03	1966	1.38	1.17
Mother expects student to graduate from college, nothing more	F1S43A = 6	32.80	1.17	1.07	1912	1.19	1.09
Plans to continue education right after high school	F1S47 = 2	78.34	1.24	0.99	1732	1.57	1.25
Plans to hold a part-time job right after school	F1S53 = 2	46.48	1.39	1.20	1724	1.33	1.15
Volunteered with a youth organization	F1S63A = 1	25.38	2.17	1.66	686	1.71	1.31
Often discusses grades with parents	F1S64D = 3	59.47	1.55	1.20	1687	1.68	1.29
Lives with mother only	F1FCOMP = 5	37.81	1.32	1.09	1984	1.47	1.21
Native language is Spanish	F1HOMLNG = 2	0.59	0.22	0.18	1888	1.62	1.27
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.96	0.45	0.39	1898	1.33	1.16
At age 30 expects to be in the military	F1OCC30 = 7	0.69	0.26	0.19	1898	1.83	1.35
At age 30 expects to be an operative	F1OCC30 = 8	0.84	0.26	0.21	1898	1.52	1.23
At age 30 expects to be a professional (group b)	F1OCC30 = 10	15.21	0.93	0.82	1898	1.28	1.13
At age 30 expects to be in a technical field	F1OCC30 = 16	5.39	0.68	0.52	1898	1.70	1.30
At age 30 doesn't know what expects to be	F1OCC30 = -1	26.13	1.27	1.01	1898	1.59	1.26
Mathematics test score	F1TXM1IR = 0-85	38.79	0.45	0.29	1729	2.36	1.54
Summary statistics							
Mean						1.49	1.21
Minimum						0.93	0.97
Median						1.44	1.20
Maximum						2.36	1.54
Standard deviation						0.28	0.11

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-7. Student design effects, by item using first follow-up questionnaire weight—Hispanic or Latino: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	8.5	0.85	0.62	2022	1.88	1.37
Most likely to receive a GED	F1S15 = 5	3.2	0.48	0.39	2022	1.50	1.22
Already took the SAT or ACT	F1S21C = 3	44.2	1.66	1.14	1885	2.10	1.45
Already took an AP test	F1S21D = 3	13.3	1.07	0.79	1836	1.83	1.35
Had something stolen at school at least once	F1S25A = 2,3	26.7	1.60	1.23	1300	1.71	1.31
Was offered drugs at school at least once	F1S25B = 2,3	23.3	1.51	1.17	1297	1.65	1.28
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	12.5	0.81	0.74	2000	1.19	1.09
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	11.1	0.78	0.70	2002	1.24	1.11
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.1	1.48	1.24	1197	1.42	1.19
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	60.6	1.26	1.06	2137	1.43	1.20
Uses the computer at home once or twice a week	F1S37A = 4	28.4	1.28	0.96	2194	1.76	1.33
Rarely or never performs community service	F1S39C = 1	69.8	1.08	0.98	2180	1.21	1.10
Being successful in line of work is very important	F1S40A = 3	89.3	0.94	0.66	2195	2.01	1.42
Marrying the right person is very important	F1S40B = 3	77.3	1.14	0.89	2194	1.63	1.28
Having lots of money is very important	F1S40C = 3	41.2	1.26	1.05	2198	1.44	1.20
Expects to earn a 4-year degree, nothing more	F1S42 = 6	26.2	1.23	0.94	2200	1.72	1.31
Mother expects student to graduate from college, nothing more	F1S43A = 6	33.0	1.03	1.02	2136	1.03	1.02
Plans to continue education right after high school	F1S47 = 2	72.3	1.44	1.02	1924	1.98	1.41
Plans to hold a part-time job right after school	F1S53 = 2	55.7	1.36	1.14	1905	1.43	1.20
Volunteered with a youth organization	F1S63A = 1	21.9	1.84	1.55	715	1.41	1.19
Often discusses grades with parents	F1S64D = 3	54.2	1.24	1.15	1863	1.15	1.07
Lives with mother only	F1FCOMP = 5	19.9	1.14	0.85	2218	1.79	1.34
Native language is Spanish	F1HOMLNG = 2	50.8	1.99	1.08	2125	3.37	1.83
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.4	0.36	0.34	2126	1.18	1.09
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.26	0.22	2126	1.36	1.16
At age 30 expects to be an operative	F1OCC30 = 8	0.5	0.19	0.15	2126	1.57	1.25
At age 30 expects to be a professional (group b)	F1OCC30 = 10	12.9	0.81	0.73	2126	1.23	1.11
At age 30 expects to be in a technical field	F1OCC30 = 16	5.4	0.56	0.49	2126	1.32	1.15
At age 30 doesn't know what expects to be	F1OCC30 = -1	32.1	1.02	1.01	2126	1.02	1.01
Mathematics test score	F1TXM1IR = 0-85	41.2	0.47	0.31	1915	2.26	1.50
Summary statistics							
Mean						1.59	1.25
Minimum						1.02	1.01
Median						1.47	1.21
Maximum						3.37	1.83
Standard deviation						0.46	0.17

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-8. Student design effects, by item using first follow-up questionnaire weight—More than one race: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	10.4	1.45	1.21	635	1.43	1.19
Most likely to receive a GED	F1S15 = 5	2.7	0.99	0.64	635	2.40	1.55
Already took the SAT or ACT	F1S21C = 3	60.3	2.67	1.99	604	1.80	1.34
Already took an AP test	F1S21D = 3	13.2	1.81	1.39	596	1.71	1.31
Had something stolen at school at least once	F1S25A = 2,3	31.6	2.83	2.17	459	1.69	1.30
Was offered drugs at school at least once	F1S25B = 2,3	23.4	2.81	1.98	459	2.03	1.42
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.2	1.76	1.39	631	1.60	1.26
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	18.0	1.86	1.53	630	1.47	1.21
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	22.0	2.64	1.99	435	1.76	1.33
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	59.9	2.55	1.90	663	1.79	1.34
Uses the computer at home once or twice a week	F1S37A = 4	24.3	2.17	1.65	674	1.73	1.31
Rarely or never performs community service	F1S39C = 1	59.8	2.46	1.90	668	1.68	1.30
Being successful in line of work is very important	F1S40A = 3	87.3	1.72	1.29	671	1.79	1.34
Marrying the right person is very important	F1S40B = 3	79.1	1.88	1.57	671	1.44	1.20
Having lots of money is very important	F1S40C = 3	36.2	2.37	1.85	673	1.64	1.28
Expects to earn a 4-year degree, nothing more	F1S42 = 6	34.1	2.31	1.83	673	1.59	1.26
Mother expects student to graduate from college, nothing more	F1S43A = 6	38.4	2.55	1.92	643	1.77	1.33
Plans to continue education right after high school	F1S47 = 2	71.8	2.56	1.81	618	1.99	1.41
Plans to hold a part-time job right after school	F1S53 = 2	47.0	2.53	2.02	609	1.56	1.25
Volunteered with a youth organization	F1S63A = 1	29.5	3.75	2.62	305	2.05	1.43
Often discusses grades with parents	F1S64D = 3	54.9	2.81	2.03	602	1.91	1.38
Lives with mother only	F1FCOMP = 5	21.9	1.91	1.59	678	1.44	1.20
Native language is Spanish	F1HOMLNG = 2	0.7	0.42	0.33	661	1.66	1.29
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.77	0.64	663	1.45	1.21
At age 30 expects to be in the military	F1OCC30 = 7	2.2	0.87	0.57	663	2.27	1.51
At age 30 expects to be an operative	F1OCC30 = 8	0.2	0.18	0.16	663	1.18	1.08
At age 30 expects to be a professional (group b)	F1OCC30 = 10	10.3	1.39	1.18	663	1.39	1.18
At age 30 expects to be in a technical field	F1OCC30 = 16	4.4	1.00	0.80	663	1.58	1.26
At age 30 doesn't know what expects to be	F1OCC30 = -1	30.2	2.35	1.78	663	1.74	1.32
Mathematics test score	F1TXM1IR = 0-85	47.5	0.81	0.60	611	1.81	1.34
Summary statistics							
Mean						1.71	1.30
Minimum						1.18	1.08
Median						1.70	1.30
Maximum						2.40	1.55
Standard deviation						0.26	0.10

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-9. Student design effects, by item using first follow-up questionnaire weight—White: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	14.9	0.63	0.39	8160	2.52	1.59
Most likely to receive a GED	F1S15 = 5	1.6	0.18	0.14	8160	1.62	1.27
Already took the SAT or ACT	F1S21C = 3	70.5	0.84	0.52	7824	2.65	1.63
Already took an AP test	F1S21D = 3	16.3	0.69	0.42	7581	2.65	1.63
Had something stolen at school at least once	F1S25A = 2,3	23.7	0.67	0.53	6318	1.56	1.25
Was offered drugs at school at least once	F1S25B = 2,3	20.6	0.70	0.51	6319	1.90	1.38
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.5	0.50	0.39	8084	1.66	1.29
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	15.5	0.59	0.40	8077	2.14	1.46
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.3	0.75	0.55	6060	1.86	1.36
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	49.8	0.69	0.55	8358	1.58	1.26
Uses the computer at home once or twice a week	F1S37A = 4	24.0	0.63	0.47	8422	1.83	1.35
Rarely or never performs community service	F1S39C = 1	58.2	0.75	0.54	8349	1.92	1.39
Being successful in line of work is very important	F1S40A = 3	90.7	0.41	0.32	8420	1.70	1.30
Marrying the right person is very important	F1S40B = 3	82.5	0.53	0.41	8414	1.65	1.28
Having lots of money is very important	F1S40C = 3	28.9	0.66	0.49	8415	1.79	1.34
Expects to earn a 4-year degree, nothing more	F1S42 = 6	33.2	0.60	0.51	8418	1.38	1.18
Mother expects student to graduate from college, nothing more	F1S43A = 6	41.2	0.69	0.54	8184	1.61	1.27
Plans to continue education right after high school	F1S47 = 2	78.7	0.65	0.46	7978	2.01	1.42
Plans to hold a part-time job right after school	F1S53 = 2	48.7	0.72	0.56	7903	1.64	1.28
Volunteered with a youth organization	F1S63A = 1	29.6	1.03	0.70	4228	2.16	1.47
Often discusses grades with parents	F1S64D = 3	51.0	0.68	0.56	7835	1.44	1.20
Lives with mother only	F1FCOMP = 5	14.1	0.50	0.38	8458	1.72	1.31
Native language is Spanish	F1HOMLNG = 2	0.1	0.05	0.04	8350	1.97	1.40
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.0	0.21	0.19	8285	1.31	1.15
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.14	0.11	8285	1.51	1.23
At age 30 expects to be an operative	F1OCC30 = 8	0.7	0.11	0.09	8285	1.51	1.23
At age 30 expects to be a professional (group b)	F1OCC30 = 10	13.3	0.46	0.37	8285	1.55	1.25
At age 30 expects to be in a technical field	F1OCC30 = 16	4.7	0.31	0.23	8285	1.73	1.31
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.9	0.61	0.50	8285	1.47	1.21
Mathematics test score	F1TXM1IR = 0-85	51.9	0.28	0.16	7898	3.11	1.76
Summary statistics							
Mean						1.84	1.35
Minimum						1.31	1.15
Median						1.71	1.31
Maximum						3.11	1.76
Standard deviation						0.42	0.15

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-10. Student design effects, by item using first follow-up questionnaire weight—Public: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.7	0.50	0.32	11014	2.46	1.57
Most likely to receive a GED	F1S15 = 5	2.2	0.17	0.14	11014	1.42	1.19
Already took the SAT or ACT	F1S21C = 3	61.6	0.83	0.48	10378	3.02	1.74
Already took an AP test	F1S21D = 3	14.0	0.59	0.34	10129	2.94	1.71
Had something stolen at school at least once	F1S25A = 2,3	25.8	0.60	0.49	7830	1.48	1.21
Was offered drugs at school at least once	F1S25B = 2,3	21.5	0.63	0.46	7829	1.83	1.35
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	13.9	0.41	0.33	10887	1.51	1.23
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	14.6	0.48	0.34	10889	2.03	1.43
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	23.5	0.63	0.49	7358	1.65	1.28
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	56.2	0.59	0.46	11454	1.62	1.27
Uses the computer at home once or twice a week	F1S37A = 4	25.5	0.52	0.40	11640	1.68	1.29
Rarely or never performs community service	F1S39C = 1	62.1	0.60	0.45	11536	1.78	1.34
Being successful in line of work is very important	F1S40A = 3	90.7	0.34	0.27	11640	1.64	1.28
Marrying the right person is very important	F1S40B = 3	79.7	0.48	0.37	11634	1.62	1.27
Having lots of money is very important	F1S40C = 3	36.4	0.60	0.45	11639	1.83	1.35
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.1	0.52	0.43	11647	1.45	1.20
Mother expects student to graduate from college, nothing more	F1S43A = 6	37.7	0.57	0.46	11294	1.55	1.25
Plans to continue education right after high school	F1S47 = 2	76.4	0.60	0.41	10613	2.09	1.45
Plans to hold a part-time job right after school	F1S53 = 2	49.5	0.61	0.49	10500	1.57	1.25
Volunteered with a youth organization	F1S63A = 1	27.7	0.89	0.66	4610	1.81	1.34
Often discusses grades with parents	F1S64D = 3	52.3	0.60	0.49	10339	1.48	1.22
Lives with mother only	F1FCOMP = 5	19.2	0.47	0.36	11724	1.71	1.31
Native language is Spanish	F1HOMLNG = 2	8.8	0.67	0.27	11415	6.27	2.50
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.9	0.18	0.16	11360	1.28	1.13
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.11	0.10	11360	1.40	1.19
At age 30 expects to be an operative	F1OCC30 = 8	0.7	0.10	0.08	11360	1.56	1.25
At age 30 expects to be a professional (group b)	F1OCC30 = 10	13.1	0.38	0.32	11360	1.42	1.19
At age 30 expects to be in a technical field	F1OCC30 = 16	5.1	0.25	0.21	11360	1.44	1.20
At age 30 doesn't know what expects to be	F1OCC30 = -1	30.0	0.49	0.43	11360	1.31	1.14
Mathematics test score	F1TXM1IR = 0-85	47.6	0.30	0.15	10518	4.28	2.07
Summary statistics							
Mean						1.97	1.37
Minimum						1.28	1.13
Median						1.63	1.28
Maximum						6.27	2.50
Standard deviation						1.02	0.29

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-11. Student design effects, by item using first follow-up questionnaire weight—Catholic: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.5	1.38	0.76	1885	3.29	1.81
Most likely to receive a GED	F1S15 = 5	0.5	0.16	0.16	1885	1.01	1.01
Already took the SAT or ACT	F1S21C = 3	91.4	1.15	0.65	1874	3.14	1.77
Already took an AP test	F1S21D = 3	22.4	2.05	0.99	1793	4.31	2.08
Had something stolen at school at least once	F1S25A = 2,3	26.0	1.79	1.12	1541	2.57	1.60
Was offered drugs at school at least once	F1S25B = 2,3	17.7	1.35	0.97	1543	1.93	1.39
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	22.1	1.66	0.96	1877	2.99	1.73
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	15.3	1.34	0.83	1878	2.60	1.61
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	36.0	1.98	1.24	1500	2.56	1.60
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	52.4	2.10	1.15	1882	3.32	1.82
Uses the computer at home once or twice a week	F1S37A = 4	16.8	1.06	0.86	1893	1.51	1.23
Rarely or never performs community service	F1S39C = 1	43.2	1.80	1.14	1875	2.46	1.57
Being successful in line of work is very important	F1S40A = 3	90.9	0.66	0.66	1891	1.00	1.00
Marrying the right person is very important	F1S40B = 3	87.1	0.93	0.77	1891	1.44	1.20
Having lots of money is very important	F1S40C = 3	29.2	1.62	1.05	1889	2.41	1.55
Expects to earn a 4-year degree, nothing more	F1S42 = 6	37.9	1.34	1.12	1890	1.44	1.20
Mother expects student to graduate from college, nothing more	F1S43A = 6	42.6	1.62	1.15	1841	1.97	1.40
Plans to continue education right after high school	F1S47 = 2	94.0	0.77	0.55	1875	1.95	1.40
Plans to hold a part-time job right after school	F1S53 = 2	51.2	1.69	1.15	1876	2.15	1.47
Volunteered with a youth organization	F1S63A = 1	31.8	1.88	1.30	1289	2.09	1.45
Often discusses grades with parents	F1S64D = 3	56.7	1.28	1.15	1866	1.24	1.11
Lives with mother only	F1FCOMP = 5	12.4	0.75	0.76	1899	0.97	0.99
Native language is Spanish	F1HOMLNG = 2	3.0	0.95	0.39	1879	5.80	2.41
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.3	0.35	0.41	1877	0.72	0.85
At age 30 expects to be in the military	F1OCC30 = 7	0.8	0.26	0.20	1877	1.61	1.27
At age 30 expects to be an operative	F1OCC30 = 8	#	#	#	1877	†	†
At age 30 expects to be a professional (group b)	F1OCC30 = 10	17.4	1.23	0.88	1877	1.97	1.40
At age 30 expects to be in a technical field	F1OCC30 = 16	3.6	0.51	0.43	1877	1.45	1.20
At age 30 doesn't know what expects to be	F1OCC30 = -1	30.9	1.13	1.07	1877	1.13	1.06
Mathematics test score	F1TXM1IR = 0-85	55.9	0.61	0.29	1880	4.30	2.07
Summary statistics							
Mean						2.25	1.46
Minimum						0.72	0.85
Median						1.97	1.40
Maximum						5.80	2.41
Standard deviation						1.16	0.37

† Not applicable.
# Rounds to zero.
NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-12. Student design effects, by item using first follow-up questionnaire weight—Other private: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	15.1	1.66	0.98	1339	2.87	1.69
Most likely to receive a GED	F1S15 = 5	0.6	0.16	0.20	1339	0.61	0.78
Already took the SAT or ACT	F1S21C = 3	85.7	2.47	0.97	1303	6.48	2.54
Already took an AP test	F1S21D = 3	24.7	3.11	1.22	1255	6.50	2.55
Had something stolen at school at least once	F1S25A = 2,3	24.2	2.20	1.35	1004	2.66	1.63
Was offered drugs at school at least once	F1S25B = 2,3	7.9	1.05	0.85	1002	1.50	1.23
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	20.9	2.40	1.11	1331	4.62	2.15
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	26.7	3.24	1.22	1325	7.07	2.66
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	32.7	2.27	1.51	966	2.26	1.50
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	39.4	2.37	1.33	1355	3.20	1.79
Uses the computer at home once or twice a week	F1S37A = 4	20.3	2.21	1.09	1359	4.12	2.03
Rarely or never performs community service	F1S39C = 1	50.2	2.82	1.36	1355	4.29	2.07
Being successful in line of work is very important	F1S40A = 3	89.5	1.06	0.83	1364	1.64	1.28
Marrying the right person is very important	F1S40B = 3	86.8	1.04	0.92	1360	1.30	1.14
Having lots of money is very important	F1S40C = 3	26.4	1.68	1.19	1363	1.99	1.41
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.7	1.72	1.26	1361	1.87	1.37
Mother expects student to graduate from college, nothing more	F1S43A = 6	41.4	1.77	1.35	1325	1.71	1.31
Plans to continue education right after high school	F1S47 = 2	90.5	1.58	0.81	1314	3.79	1.95
Plans to hold a part-time job right after school	F1S53 = 2	49.6	2.18	1.38	1309	2.48	1.58
Volunteered with a youth organization	F1S63A = 1	22.6	1.59	1.50	778	1.13	1.06
Often discusses grades with parents	F1S64D = 3	53.0	1.90	1.38	1301	1.89	1.38
Lives with mother only	F1FCOMP = 5	12.9	1.27	0.91	1366	1.95	1.40
Native language is Spanish	F1HOMLNG = 2	2.8	1.29	0.45	1329	8.15	2.85
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.0	0.65	0.47	1332	1.93	1.39
At age 30 expects to be in the military	F1OCC30 = 7	0.8	0.26	0.24	1332	1.21	1.10
At age 30 expects to be an operative	F1OCC30 = 8	0.2	0.18	0.12	1332	2.41	1.55
At age 30 expects to be a professional (group b)	F1OCC30 = 10	21.7	1.70	1.13	1332	2.27	1.51
At age 30 expects to be in a technical field	F1OCC30 = 16	2.8	0.48	0.45	1332	1.14	1.07
At age 30 doesn't know what expects to be	F1OCC30 = -1	33.9	1.69	1.30	1332	1.70	1.30
Mathematics test score	F1TXM1IR = 0-85	57.3	0.92	0.38	1304	5.92	2.43
Summary statistics							
Mean						3.02	1.66
Minimum						0.61	0.78
Median						2.26	1.50
Maximum						8.15	2.85
Standard deviation						2.00	0.54

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-13. Student design effects, by item using first follow-up questionnaire weight—Low socioeconomic status (SES): 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	7.0	0.55	0.46	3145	1.45	1.20
Most likely to receive a GED	F1S15 = 5	3.4	0.40	0.33	3145	1.48	1.22
Already took the SAT or ACT	F1S21C = 3	41.6	1.28	0.91	2916	1.96	1.40
Already took an AP test	F1S21D = 3	7.3	0.67	0.49	2839	1.86	1.36
Had something stolen at school at least once	F1S25A = 2,3	26.5	1.17	0.97	2085	1.46	1.21
Was offered drugs at school at least once	F1S25B = 2,3	19.0	1.11	0.86	2083	1.66	1.29
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	12.5	0.74	0.60	3087	1.53	1.24
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	13.6	0.72	0.62	3092	1.35	1.16
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	21.1	1.18	0.93	1912	1.60	1.26
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	62.9	1.03	0.83	3405	1.53	1.24
Uses the computer at home once or twice a week	F1S37A = 4	25.5	0.90	0.74	3473	1.48	1.22
Rarely or never performs community service	F1S39C = 1	70.2	0.91	0.78	3442	1.35	1.16
Being successful in line of work is very important	F1S40A = 3	89.1	0.64	0.53	3477	1.47	1.21
Marrying the right person is very important	F1S40B = 3	77.3	0.90	0.71	3476	1.62	1.27
Having lots of money is very important	F1S40C = 3	41.5	0.97	0.84	3477	1.35	1.16
Expects to earn a 4-year degree, nothing more	F1S42 = 6	25.6	0.89	0.74	3483	1.46	1.21
Mother expects student to graduate from college, nothing more	F1S43A = 6	32.8	0.93	0.81	3353	1.32	1.15
Plans to continue education right after high school	F1S47 = 2	66.1	1.15	0.87	2990	1.76	1.33
Plans to hold a part-time job right after school	F1S53 = 2	48.1	1.14	0.92	2952	1.54	1.24
Volunteered with a youth organization	F1S63A = 1	23.8	1.62	1.35	997	1.43	1.20
Often discusses grades with parents	F1S64D = 3	51.7	1.09	0.93	2882	1.38	1.17
Lives with mother only	F1FCOMP = 5	26.8	1.00	0.75	3514	1.78	1.33
Native language is Spanish	F1HOMLNG = 2	22.3	1.71	0.71	3391	5.69	2.39
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.3	0.27	0.26	3372	1.12	1.06
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.20	0.18	3372	1.30	1.14
At age 30 expects to be an operative	F1OCC30 = 8	1.4	0.27	0.20	3372	1.79	1.34
At age 30 expects to be a professional (group b)	F1OCC30 = 10	11.5	0.61	0.55	3372	1.21	1.10
At age 30 expects to be in a technical field	F1OCC30 = 16	5.4	0.44	0.39	3372	1.30	1.14
At age 30 doesn't know what expects to be	F1OCC30 = -1	31.8	0.94	0.80	3372	1.37	1.17
Mathematics test score	F1TXM1IR = 0-85	40.1	0.36	0.24	2960	2.21	1.49
Summary statistics							
Mean						1.66	1.27
Minimum						1.12	1.06
Median						1.47	1.21
Maximum						5.69	2.39
Standard deviation						0.80	0.23

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-14. Student design effects, by item using first follow-up questionnaire weight—Middle socioeconomic status (SES): 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	11.3	0.54	0.38	6861	1.96	1.40
Most likely to receive a GED	F1S15 = 5	2.0	0.21	0.17	6861	1.56	1.25
Already took the SAT or ACT	F1S21C = 3	61.9	0.88	0.60	6524	2.15	1.47
Already took an AP test	F1S21D = 3	11.1	0.54	0.39	6357	1.88	1.37
Had something stolen at school at least once	F1S25A = 2,3	25.9	0.71	0.62	5016	1.32	1.15
Was offered drugs at school at least once	F1S25B = 2,3	22.2	0.83	0.59	5016	1.99	1.41
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	15.0	0.53	0.43	6805	1.51	1.23
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	14.9	0.60	0.43	6802	1.96	1.40
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	22.8	0.82	0.61	4733	1.79	1.34
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	56.7	0.76	0.59	7048	1.67	1.29
Uses the computer at home once or twice a week	F1S37A = 4	27.0	0.63	0.53	7145	1.42	1.19
Rarely or never performs community service	F1S39C = 1	63.4	0.74	0.57	7073	1.69	1.30
Being successful in line of work is very important	F1S40A = 3	91.1	0.45	0.34	7141	1.76	1.33
Marrying the right person is very important	F1S40B = 3	80.3	0.63	0.47	7136	1.76	1.33
Having lots of money is very important	F1S40C = 3	35.8	0.77	0.57	7140	1.84	1.36
Expects to earn a 4-year degree, nothing more	F1S42 = 6	33.4	0.64	0.56	7142	1.31	1.15
Mother expects student to graduate from college, nothing more	F1S43A = 6	39.2	0.75	0.59	6922	1.64	1.28
Plans to continue education right after high school	F1S47 = 2	76.4	0.69	0.52	6660	1.73	1.32
Plans to hold a part-time job right after school	F1S53 = 2	51.0	0.76	0.62	6594	1.53	1.24
Volunteered with a youth organization	F1S63A = 1	27.5	1.09	0.81	3040	1.82	1.35
Often discusses grades with parents	F1S64D = 3	53.0	0.79	0.62	6509	1.61	1.27
Lives with mother only	F1FCOMP = 5	19.0	0.58	0.46	7184	1.59	1.26
Native language is Spanish	F1HOMLNG = 2	4.7	0.35	0.25	7005	1.92	1.38
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.23	0.20	6983	1.37	1.17
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.16	0.12	6983	1.57	1.25
At age 30 expects to be an operative	F1OCC30 = 8	0.6	0.11	0.09	6983	1.59	1.26
At age 30 expects to be a professional (group b)	F1OCC30 = 10	11.7	0.43	0.38	6983	1.27	1.13
At age 30 expects to be in a technical field	F1OCC30 = 16	5.5	0.33	0.27	6983	1.47	1.21
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.6	0.62	0.55	6983	1.28	1.13
Mathematics test score	F1TXM1IR = 0-85	47.2	0.27	0.18	6605	2.43	1.56
Summary statistics							
Mean						1.68	1.29
Minimum						1.27	1.13
Median						1.66	1.29
Maximum						2.43	1.56
Standard deviation						0.27	0.10

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-15. Student design effects, by item using first follow-up questionnaire weight—High socioeconomic status (SES): 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	20.5	0.94	0.62	4232	2.30	1.52
Most likely to receive a GED	F1S15 = 5	1.1	0.23	0.16	4232	2.05	1.43
Already took the SAT or ACT	F1S21C = 3	86.3	0.78	0.54	4115	2.13	1.46
Already took an AP test	F1S21D = 3	27.8	1.20	0.71	3981	2.86	1.69
Had something stolen at school at least once	F1S25A = 2,3	24.9	1.06	0.76	3274	1.98	1.41
Was offered drugs at school at least once	F1S25B = 2,3	19.7	0.94	0.70	3275	1.85	1.36
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	15.4	0.74	0.56	4203	1.76	1.33
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	16.6	0.82	0.57	4198	2.05	1.43
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	29.9	1.05	0.81	3179	1.69	1.30
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	45.7	1.08	0.77	4238	1.99	1.41
Uses the computer at home once or twice a week	F1S37A = 4	20.5	0.94	0.62	4274	2.32	1.52
Rarely or never performs community service	F1S39C = 1	46.7	0.95	0.77	4251	1.55	1.25
Being successful in line of work is very important	F1S40A = 3	91.3	0.51	0.43	4277	1.40	1.18
Marrying the right person is very important	F1S40B = 3	83.3	0.75	0.57	4273	1.75	1.32
Having lots of money is very important	F1S40C = 3	29.9	0.98	0.70	4274	1.95	1.40
Expects to earn a 4-year degree, nothing more	F1S42 = 6	33.3	0.94	0.72	4273	1.71	1.31
Mother expects student to graduate from college, nothing more	F1S43A = 6	41.0	0.96	0.76	4185	1.60	1.26
Plans to continue education right after high school	F1S47 = 2	90.1	0.67	0.46	4152	2.10	1.45
Plans to hold a part-time job right after school	F1S53 = 2	48.3	0.97	0.78	4139	1.54	1.24
Volunteered with a youth organization	F1S63A = 1	29.8	1.30	0.89	2640	2.13	1.46
Often discusses grades with parents	F1S64D = 3	52.4	1.09	0.78	4115	1.94	1.39
Lives with mother only	F1FCOMP = 5	9.8	0.61	0.45	4291	1.83	1.35
Native language is Spanish	F1HOMLNG = 2	2.1	0.31	0.22	4227	1.91	1.38
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.8	0.40	0.29	4214	1.82	1.35
At age 30 expects to be in the military	F1OCC30 = 7	0.9	0.20	0.15	4214	1.81	1.35
At age 30 expects to be an operative	F1OCC30 = 8	0.1	0.05	0.04	4214	1.51	1.23
At age 30 expects to be a professional (group b)	F1OCC30 = 10	19.4	0.75	0.61	4214	1.50	1.23
At age 30 expects to be in a technical field	F1OCC30 = 16	3.3	0.36	0.28	4214	1.66	1.29
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.7	0.95	0.70	4214	1.83	1.35
Mathematics test score	F1TXM1IR = 0-85	57.2	0.35	0.21	4137	2.75	1.66
Summary statistics							
Mean						1.91	1.38
Minimum						1.40	1.18
Median						1.84	1.36
Maximum						2.86	1.69
Standard deviation						0.34	0.12

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-16. Student design effects, by item using first follow-up questionnaire weight—Urban: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.5	0.89	0.48	4756	3.46	1.86
Most likely to receive a GED	F1S15 = 5	2.3	0.30	0.22	4756	1.96	1.40
Already took the SAT or ACT	F1S21C = 3	63.7	1.60	0.72	4517	5.01	2.24
Already took an AP test	F1S21D = 3	18.2	1.24	0.58	4394	4.56	2.14
Had something stolen at school at least once	F1S25A = 2,3	27.5	1.10	0.77	3347	2.04	1.43
Was offered drugs at school at least once	F1S25B = 2,3	21.9	1.13	0.72	3349	2.48	1.58
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.0	0.76	0.51	4710	2.29	1.51
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	14.7	0.84	0.52	4710	2.64	1.62
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	27.7	1.17	0.79	3172	2.19	1.48
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	59.2	1.06	0.70	4937	2.29	1.51
Uses the computer at home once or twice a week	F1S37A = 4	24.0	0.96	0.60	5008	2.52	1.59
Rarely or never performs community service	F1S39C = 1	61.1	1.10	0.69	4967	2.51	1.58
Being successful in line of work is very important	F1S40A = 3	90.5	0.60	0.41	5014	2.11	1.45
Marrying the right person is very important	F1S40B = 3	78.6	0.85	0.58	5015	2.16	1.47
Having lots of money is very important	F1S40C = 3	39.1	1.01	0.69	5015	2.15	1.47
Expects to earn a 4-year degree, nothing more	F1S42 = 6	30.7	0.93	0.65	5010	2.05	1.43
Mother expects student to graduate from college, nothing more	F1S43A = 6	36.0	0.91	0.69	4846	1.74	1.32
Plans to continue education right after high school	F1S47 = 2	79.0	0.94	0.60	4594	2.43	1.56
Plans to hold a part-time job right after school	F1S53 = 2	50.9	1.10	0.74	4543	2.19	1.48
Volunteered with a youth organization	F1S63A = 1	26.6	1.62	0.91	2333	3.15	1.77
Often discusses grades with parents	F1S64D = 3	54.8	1.03	0.74	4477	1.93	1.39
Lives with mother only	F1FCOMP = 5	22.6	0.97	0.59	5051	2.71	1.65
Native language is Spanish	F1HOMLNG = 2	14.4	1.57	0.50	4896	9.83	3.14
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.30	0.23	4893	1.68	1.30
At age 30 expects to be in the military	F1OCC30 = 7	0.9	0.16	0.13	4893	1.38	1.17
At age 30 expects to be an operative	F1OCC30 = 8	0.5	0.19	0.10	4893	3.38	1.84
At age 30 expects to be a professional (group b)	F1OCC30 = 10	16.3	0.70	0.53	4893	1.77	1.33
At age 30 expects to be in a technical field	F1OCC30 = 16	4.7	0.45	0.30	4893	2.17	1.47
At age 30 doesn't know what expects to be	F1OCC30 = -1	30.1	0.78	0.66	4893	1.42	1.19
Mathematics test score	F1TXM1IR = 0-85	46.8	0.62	0.23	4559	7.27	2.70
Summary statistics							
Mean						2.85	1.64
Minimum						1.38	1.17
Median						2.24	1.50
Maximum						9.83	3.14
Standard deviation						1.78	0.42

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-17. Student design effects, by item using first follow-up questionnaire weight—Suburban: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.4	0.66	0.40	6881	2.73	1.65
Most likely to receive a GED	F1S15 = 5	2.0	0.21	0.17	6881	1.61	1.27
Already took the SAT or ACT	F1S21C = 3	65.0	1.04	0.59	6563	3.14	1.77
Already took an AP test	F1S21D = 3	14.1	0.77	0.44	6370	3.12	1.77
Had something stolen at school at least once	F1S25A = 2,3	25.6	0.80	0.61	5092	1.70	1.30
Was offered drugs at school at least once	F1S25B = 2,3	21.3	0.81	0.57	5091	2.01	1.42
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	15.3	0.54	0.44	6815	1.53	1.24
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	14.6	0.61	0.43	6815	2.03	1.43
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.2	0.81	0.62	4825	1.72	1.31
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	53.7	0.77	0.59	7056	1.67	1.29
Uses the computer at home once or twice a week	F1S37A = 4	24.9	0.67	0.51	7153	1.74	1.32
Rarely or never performs community service	F1S39C = 1	60.7	0.74	0.58	7089	1.65	1.28
Being successful in line of work is very important	F1S40A = 3	90.8	0.42	0.34	7155	1.54	1.24
Marrying the right person is very important	F1S40B = 3	81.1	0.62	0.46	7144	1.77	1.33
Having lots of money is very important	F1S40C = 3	35.1	0.84	0.56	7149	2.19	1.48
Expects to earn a 4-year degree, nothing more	F1S42 = 6	32.2	0.69	0.55	7163	1.58	1.26
Mother expects student to graduate from college, nothing more	F1S43A = 6	39.1	0.77	0.58	6980	1.74	1.32
Plans to continue education right after high school	F1S47 = 2	78.0	0.79	0.51	6683	2.42	1.56
Plans to hold a part-time job right after school	F1S53 = 2	49.3	0.79	0.61	6633	1.66	1.29
Volunteered with a youth organization	F1S63A = 1	27.8	1.04	0.79	3213	1.73	1.31
Often discusses grades with parents	F1S64D = 3	51.7	0.80	0.62	6558	1.69	1.30
Lives with mother only	F1FCOMP = 5	17.1	0.56	0.44	7197	1.59	1.26
Native language is Spanish	F1HOMLNG = 2	6.7	0.73	0.30	7038	6.08	2.46
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.1	0.24	0.21	7017	1.34	1.16
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.17	0.13	7017	1.76	1.33
At age 30 expects to be an operative	F1OCC30 = 8	0.6	0.11	0.09	7017	1.39	1.18
At age 30 expects to be a professional (group b)	F1OCC30 = 10	12.6	0.50	0.40	7017	1.59	1.26
At age 30 expects to be in a technical field	F1OCC30 = 16	4.8	0.32	0.26	7017	1.59	1.26
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.7	0.70	0.55	7017	1.64	1.28
Mathematics test score	F1TXM1IR = 0-85	49.1	0.39	0.19	6637	4.46	2.11
Summary statistics							
Mean						2.08	1.41
Minimum						1.34	1.16
Median						1.71	1.31
Maximum						6.08	2.46
Standard deviation						1.00	0.29

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-18. Student design effects, by item using first follow-up questionnaire weight—Rural: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	14.1	0.97	0.68	2601	2.04	1.43
Most likely to receive a GED	F1S15 = 5	2.2	0.33	0.29	2601	1.36	1.17
Already took the SAT or ACT	F1S21C = 3	61.5	1.57	0.98	2475	2.59	1.61
Already took an AP test	F1S21D = 3	11.3	0.90	0.65	2413	1.96	1.40
Had something stolen at school at least once	F1S25A = 2,3	23.8	1.12	0.97	1936	1.34	1.16
Was offered drugs at school at least once	F1S25B = 2,3	18.3	1.24	0.88	1934	1.98	1.41
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	13.5	0.84	0.67	2570	1.53	1.24
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	16.7	1.20	0.74	2567	2.67	1.63
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	21.2	1.36	0.96	1827	2.02	1.42
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	54.3	1.20	0.96	2698	1.57	1.25
Uses the computer at home once or twice a week	F1S37A = 4	26.7	1.08	0.85	2731	1.63	1.28
Rarely or never performs community service	F1S39C = 1	61.0	1.45	0.94	2710	2.41	1.55
Being successful in line of work is very important	F1S40A = 3	90.5	0.82	0.56	2726	2.11	1.45
Marrying the right person is very important	F1S40B = 3	80.9	0.96	0.75	2726	1.64	1.28
Having lots of money is very important	F1S40C = 3	32.2	1.12	0.90	2727	1.57	1.25
Expects to earn a 4-year degree, nothing more	F1S42 = 6	30.6	0.94	0.88	2725	1.14	1.07
Mother expects student to graduate from college, nothing more	F1S43A = 6	38.5	1.19	0.95	2634	1.56	1.25
Plans to continue education right after high school	F1S47 = 2	75.1	1.34	0.86	2525	2.41	1.55
Plans to hold a part-time job right after school	F1S53 = 2	48.6	1.26	1.00	2509	1.59	1.26
Volunteered with a youth organization	F1S63A = 1	29.4	1.80	1.35	1131	1.77	1.33
Often discusses grades with parents	F1S64D = 3	51.3	1.13	1.01	2471	1.26	1.12
Lives with mother only	F1FCOMP = 5	16.7	0.95	0.71	2741	1.77	1.33
Native language is Spanish	F1HOMLNG = 2	3.5	0.38	0.36	2689	1.11	1.06
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.36	0.32	2659	1.28	1.13
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.23	0.20	2659	1.34	1.16
At age 30 expects to be an operative	F1OCC30 = 8	0.9	0.22	0.19	2659	1.45	1.21
At age 30 expects to be a professional (group b)	F1OCC30 = 10	11.9	0.74	0.63	2659	1.39	1.18
At age 30 expects to be in a technical field	F1OCC30 = 16	5.5	0.48	0.44	2659	1.16	1.08
At age 30 doesn't know what expects to be	F1OCC30 = -1	31.2	0.92	0.90	2659	1.05	1.02
Mathematics test score	F1TXM1IR = 0-85	48.4	0.45	0.29	2506	2.45	1.57
Summary statistics							
Mean						1.71	1.29
Minimum						1.05	1.02
Median						1.58	1.26
Maximum						2.67	1.63
Standard deviation						0.46	0.17

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-19. Student design effects, by item using base-year to first follow-up panel weight—All: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.9	0.47	0.28	13984	2.78	1.67
Most likely to receive a GED	F1S15 = 5	2.1	0.16	0.12	13984	1.75	1.32
Already took the SAT or ACT	F1S21C = 3	64.6	0.76	0.41	13317	3.40	1.84
Already took an AP test	F1S21D = 3	14.9	0.57	0.31	12954	3.34	1.83
Had something stolen at school at least once	F1S25A = 2,3	25.7	0.56	0.43	10355	1.73	1.31
Was offered drugs at school at least once	F1S25B = 2,3	20.8	0.58	0.40	10354	2.13	1.46
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.7	0.40	0.30	13843	1.78	1.33
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	15.0	0.47	0.30	13842	2.35	1.53
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.5	0.60	0.43	9805	1.89	1.37
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	55.5	0.56	0.41	14449	1.83	1.35
Uses the computer at home once or twice a week	F1S37A = 4	25.1	0.50	0.36	14629	1.96	1.40
Rarely or never performs community service	F1S39C = 1	60.8	0.58	0.41	14506	2.07	1.44
Being successful in line of work is very important	F1S40A = 3	90.8	0.32	0.24	14631	1.80	1.34
Marrying the right person is very important	F1S40B = 3	80.3	0.45	0.33	14620	1.88	1.37
Having lots of money is very important	F1S40C = 3	35.5	0.57	0.40	14625	2.05	1.43
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.6	0.49	0.38	14637	1.63	1.28
Mother expects student to graduate from college, nothing more	F1S43A = 6	38.4	0.54	0.41	14210	1.74	1.32
Plans to continue education right after high school	F1S47 = 2	77.9	0.55	0.36	13560	2.38	1.54
Plans to hold a part-time job right after school	F1S53 = 2	49.8	0.57	0.43	13434	1.74	1.32
Volunteered with a youth organization	F1S63A = 1	27.8	0.80	0.55	6664	2.11	1.45
Often discusses grades with parents	F1S64D = 3	52.6	0.56	0.43	13272	1.66	1.29
Lives with mother only	F1FCOMP = 5	18.7	0.45	0.32	14713	1.97	1.40
Native language is Spanish	F1HOMLNG = 2	8.0	0.58	0.23	14362	6.59	2.57
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.0	0.17	0.14	14322	1.43	1.20
At age 30 expects to be in the military	F1OCC30 = 7	1.0	0.11	0.08	14322	1.56	1.25
At age 30 expects to be an operative	F1OCC30 = 8	0.6	0.09	0.07	14322	1.85	1.36
At age 30 expects to be a professional (group b)	F1OCC30 = 10	13.7	0.36	0.29	14322	1.60	1.26
At age 30 expects to be in a technical field	F1OCC30 = 16	4.9	0.23	0.18	14322	1.62	1.27
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.9	0.46	0.38	14322	1.47	1.21
Mathematics test score	F1TXM1IR = 0-85	48.5	0.28	0.13	13448	4.72	2.17
Summary statistics							
Mean						2.23	1.46
Minimum						1.43	1.20
Median						1.86	1.37
Maximum						6.59	2.57
Standard deviation						1.07	0.30

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-20. Student design effects, by item using base-year to first follow-up panel weight—Male: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	10.8	0.54	0.37	6917	2.12	1.46
Most likely to receive a GED	F1S15 = 5	2.5	0.25	0.19	6917	1.80	1.34
Already took the SAT or ACT	F1S21C = 3	59.9	0.92	0.60	6570	2.33	1.53
Already took an AP test	F1S21D = 3	14.2	0.67	0.44	6353	2.33	1.53
Had something stolen at school at least once	F1S25A = 2,3	29.6	0.82	0.64	5112	1.64	1.28
Was offered drugs at school at least once	F1S25B = 2,3	27.3	0.86	0.62	5115	1.92	1.39
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	18.2	0.62	0.47	6833	1.74	1.32
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	10.9	0.51	0.38	6833	1.82	1.35
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.2	0.81	0.62	4838	1.75	1.32
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	57.2	0.78	0.58	7198	1.78	1.33
Uses the computer at home once or twice a week	F1S37A = 4	23.1	0.66	0.49	7281	1.79	1.34
Rarely or never performs community service	F1S39C = 1	66.5	0.75	0.56	7216	1.80	1.34
Being successful in line of work is very important	F1S40A = 3	89.3	0.49	0.36	7276	1.80	1.34
Marrying the right person is very important	F1S40B = 3	79.6	0.62	0.47	7270	1.69	1.30
Having lots of money is very important	F1S40C = 3	43.1	0.76	0.58	7271	1.71	1.31
Expects to earn a 4-year degree, nothing more	F1S42 = 6	32.2	0.71	0.55	7283	1.66	1.29
Mother expects student to graduate from college, nothing more	F1S43A = 6	40.7	0.71	0.59	7034	1.45	1.21
Plans to continue education right after high school	F1S47 = 2	72.6	0.78	0.54	6702	2.07	1.44
Plans to hold a part-time job right after school	F1S53 = 2	46.5	0.81	0.61	6641	1.76	1.33
Volunteered with a youth organization	F1S63A = 1	33.7	1.24	0.88	2885	2.00	1.41
Often discusses grades with parents	F1S64D = 3	48.1	0.86	0.62	6525	1.93	1.39
Lives with mother only	F1FCOMP = 5	17.9	0.59	0.45	7328	1.73	1.31
Native language is Spanish	F1HOMLNG = 2	7.3	0.56	0.31	7122	3.31	1.82
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.3	0.24	0.21	7084	1.28	1.13
At age 30 expects to be in the military	F1OCC30 = 7	1.7	0.19	0.15	7084	1.61	1.27
At age 30 expects to be an operative	F1OCC30 = 8	1.2	0.17	0.13	7084	1.82	1.35
At age 30 expects to be a professional (group b)	F1OCC30 = 10	9.4	0.46	0.35	7084	1.73	1.32
At age 30 expects to be in a technical field	F1OCC30 = 16	5.9	0.37	0.28	7084	1.71	1.31
At age 30 doesn't know what expects to be	F1OCC30 = -1	32.8	0.68	0.56	7084	1.50	1.22
Mathematics test score	F1TXM1IR = 0-85	49.5	0.32	0.19	6655	2.88	1.70
Summary statistics							
Mean						1.88	1.37
Minimum						1.28	1.13
Median						1.79	1.34
Maximum						3.31	1.82
Standard deviation						0.40	0.14

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-21. Student design effects, by item using base-year to first follow-up panel weight—Female: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	15.1	0.65	0.43	7067	2.31	1.52
Most likely to receive a GED	F1S15 = 5	1.7	0.20	0.15	7067	1.66	1.29
Already took the SAT or ACT	F1S21C = 3	69.3	0.90	0.56	6747	2.56	1.60
Already took an AP test	F1S21D = 3	15.6	0.72	0.45	6601	2.58	1.61
Had something stolen at school at least once	F1S25A = 2,3	22.0	0.73	0.57	5243	1.64	1.28
Was offered drugs at school at least once	F1S25B = 2,3	14.4	0.67	0.49	5239	1.88	1.37
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	11.2	0.47	0.38	7010	1.57	1.25
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	19.2	0.66	0.47	7009	1.96	1.40
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.8	0.83	0.61	4967	1.84	1.36
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	53.8	0.66	0.59	7251	1.26	1.12
Uses the computer at home once or twice a week	F1S37A = 4	27.1	0.70	0.52	7348	1.82	1.35
Rarely or never performs community service	F1S39C = 1	55.1	0.80	0.58	7290	1.89	1.37
Being successful in line of work is very important	F1S40A = 3	92.3	0.41	0.31	7355	1.74	1.32
Marrying the right person is very important	F1S40B = 3	81.1	0.65	0.46	7350	2.01	1.42
Having lots of money is very important	F1S40C = 3	27.8	0.68	0.52	7354	1.67	1.29
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.1	0.65	0.54	7354	1.45	1.20
Mother expects student to graduate from college, nothing more	F1S43A = 6	36.2	0.74	0.57	7176	1.69	1.30
Plans to continue education right after high school	F1S47 = 2	83.2	0.61	0.45	6858	1.86	1.36
Plans to hold a part-time job right after school	F1S53 = 2	53.1	0.76	0.61	6793	1.56	1.25
Volunteered with a youth organization	F1S63A = 1	23.5	0.92	0.69	3779	1.80	1.34
Often discusses grades with parents	F1S64D = 3	57.0	0.71	0.60	6747	1.37	1.17
Lives with mother only	F1FCOMP = 5	19.6	0.63	0.46	7385	1.85	1.36
Native language is Spanish	F1HOMLNG = 2	8.7	0.76	0.33	7240	5.26	2.29
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.6	0.23	0.19	7238	1.46	1.21
At age 30 expects to be in the military	F1OCC30 = 7	0.4	0.08	0.07	7238	1.37	1.17
At age 30 expects to be an operative	F1OCC30 = 8	0.1	0.06	0.04	7238	2.04	1.43
At age 30 expects to be a professional (group b)	F1OCC30 = 10	17.9	0.57	0.45	7238	1.57	1.25
At age 30 expects to be in a technical field	F1OCC30 = 16	3.9	0.27	0.23	7238	1.38	1.18
At age 30 doesn't know what expects to be	F1OCC30 = -1	27.0	0.61	0.52	7238	1.39	1.18
Mathematics test score	F1TXM1IR = 0-85	47.5	0.33	0.18	6793	3.42	1.85
Summary statistics							
Mean						1.93	1.37
Minimum						1.26	1.12
Median						1.77	1.33
Maximum						5.26	2.29
Standard deviation						0.77	0.23

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-22. Student design effects, by item using base-year to first follow-up panel weight—American Indian or Alaska Native: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	4.4	2.04	1.91	116	1.14	1.07
Most likely to receive a GED	F1S15 = 5	6.0	2.83	2.21	116	1.64	1.28
Already took the SAT or ACT	F1S21C = 3	39.4	6.15	4.77	106	1.67	1.29
Already took an AP test	F1S21D = 3	7.7	3.41	2.62	105	1.70	1.30
Had something stolen at school at least once	F1S25A = 2,3	33.7	6.54	5.46	76	1.44	1.20
Was offered drugs at school at least once	F1S25B = 2,3	31.0	6.53	5.30	77	1.52	1.23
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.0	4.32	3.28	113	1.73	1.31
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	12.0	3.91	3.09	112	1.60	1.27
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	28.2	8.79	5.50	68	2.55	1.60
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	69.4	4.37	4.22	120	1.07	1.03
Uses the computer at home once or twice a week	F1S37A = 4	28.0	5.25	4.12	120	1.63	1.28
Rarely or never performs community service	F1S39C = 1	68.8	5.29	4.26	119	1.54	1.24
Being successful in line of work is very important	F1S40A = 3	90.1	3.70	2.74	120	1.83	1.35
Marrying the right person is very important	F1S40B = 3	71.2	6.74	4.15	120	2.64	1.62
Having lots of money is very important	F1S40C = 3	39.3	4.94	4.48	120	1.22	1.10
Expects to earn a 4-year degree, nothing more	F1S42 = 6	26.7	5.56	4.06	120	1.88	1.37
Mother expects student to graduate from college, nothing more	F1S43A = 6	34.4	4.48	4.47	114	1.00	1.00
Plans to continue education right after high school	F1S47 = 2	61.6	5.52	4.64	111	1.42	1.19
Plans to hold a part-time job right after school	F1S53 = 2	52.9	4.91	4.83	108	1.04	1.02
Volunteered with a youth organization	F1S63A = 1	39.4	8.28	8.92	31	0.86	0.93
Often discusses grades with parents	F1S64D = 3	47.4	6.75	4.85	107	1.94	1.39
Lives with mother only	F1FCOMP = 5	23.7	3.75	3.87	122	0.94	0.97
Native language is Spanish	F1HOMLNG = 2	#	#	#	116	†	†
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.0	1.48	1.61	115	0.85	0.92
At age 30 expects to be in the military	F1OCC30 = 7	2.1	1.57	1.35	115	1.37	1.17
At age 30 expects to be an operative	F1OCC30 = 8	0.8	0.79	0.82	115	0.92	0.96
At age 30 expects to be a professional (group b)	F1OCC30 = 10	9.6	3.42	2.77	115	1.53	1.24
At age 30 expects to be in a technical field	F1OCC30 = 16	4.2	2.34	1.87	115	1.57	1.25
At age 30 doesn't know what expects to be	F1OCC30 = -1	41.1	5.18	4.61	115	1.26	1.12
Mathematics test score	F1TXM1IR = 0-85	41.5	1.74	1.24	107	1.97	1.40
Summary statistics							
Mean						1.50	1.21
Minimum						0.85	0.92
Median						1.53	1.24
Maximum						2.64	1.62
Standard deviation						0.45	0.18

† Not applicable.
# Rounds to zero.
NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-23. Student design effects, by item using base-year to first follow-up panel weight—Asian: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	13.0	1.28	0.89	1422	2.06	1.44
Most likely to receive a GED	F1S15 = 5	0.7	0.21	0.22	1422	0.92	0.96
Already took the SAT or ACT	F1S21C = 3	77.3	1.95	1.13	1372	2.99	1.73
Already took an AP test	F1S21D = 3	30.2	2.64	1.25	1341	4.44	2.11
Had something stolen at school at least once	F1S25A = 2,3	27.3	2.10	1.40	1017	2.26	1.50
Was offered drugs at school at least once	F1S25B = 2,3	13.3	1.82	1.06	1018	2.91	1.71
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	13.5	1.29	0.91	1408	2.02	1.42
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	13.9	1.39	0.92	1414	2.29	1.51
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	29.4	1.89	1.45	988	1.69	1.30
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	51.3	1.95	1.31	1450	2.21	1.49
Uses the computer at home once or twice a week	F1S37A = 4	19.5	1.54	1.04	1459	2.21	1.49
Rarely or never performs community service	F1S39C = 1	51.4	1.96	1.31	1450	2.23	1.49
Being successful in line of work is very important	F1S40A = 3	89.1	1.05	0.81	1463	1.65	1.28
Marrying the right person is very important	F1S40B = 3	79.9	1.30	1.05	1462	1.54	1.24
Having lots of money is very important	F1S40C = 3	41.9	1.85	1.29	1461	2.04	1.43
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.5	1.59	1.22	1461	1.70	1.31
Mother expects student to graduate from college, nothing more	F1S43A = 6	31.1	1.58	1.23	1412	1.64	1.28
Plans to continue education right after high school	F1S47 = 2	90.1	1.24	0.80	1383	2.37	1.54
Plans to hold a part-time job right after school	F1S53 = 2	52.7	1.92	1.35	1378	2.04	1.43
Volunteered with a youth organization	F1S63A = 1	17.6	1.72	1.43	710	1.45	1.20
Often discusses grades with parents	F1S64D = 3	45.4	1.95	1.35	1358	2.08	1.44
Lives with mother only	F1FCOMP = 5	10.1	0.91	0.79	1467	1.35	1.16
Native language is Spanish	F1HOMLNG = 2	0.4	0.29	0.17	1424	2.99	1.73
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.9	0.99	0.51	1424	3.74	1.93
At age 30 expects to be in the military	F1OCC30 = 7	0.5	0.20	0.19	1424	1.13	1.06
At age 30 expects to be an operative	F1OCC30 = 8	#	0.04	0.05	1424	0.55	0.74
At age 30 expects to be a professional (group b)	F1OCC30 = 10	20.7	1.47	1.07	1424	1.88	1.37
At age 30 expects to be in a technical field	F1OCC30 = 16	5.3	0.85	0.59	1424	2.05	1.43
At age 30 doesn't know what expects to be	F1OCC30 = -1	36.2	1.77	1.27	1424	1.93	1.39
Mathematics test score	F1TXM1IR = 0-85	54.3	0.91	0.42	1384	4.63	2.15
Summary statistics							
Mean						2.17	1.44
Minimum						0.55	0.74
Median						2.05	1.43
Maximum						4.63	2.15
Standard deviation						0.90	0.30

Rounds to zero.
NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-24. Student design effects, by item using base-year to first follow-up panel weight—Black or African American: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	9.40	0.92	0.69	1796	1.80	1.34
Most likely to receive a GED	F1S15 = 5	2.94	0.45	0.40	1796	1.26	1.12
Already took the SAT or ACT	F1S21C = 3	55.73	1.51	1.21	1681	1.56	1.25
Already took an AP test	F1S21D = 3	5.17	0.60	0.55	1640	1.19	1.09
Had something stolen at school at least once	F1S25A = 2,3	32.95	1.63	1.36	1199	1.45	1.20
Was offered drugs at school at least once	F1S25B = 2,3	20.64	1.50	1.17	1198	1.65	1.28
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	17.97	1.00	0.91	1770	1.19	1.09
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	17.29	1.21	0.90	1769	1.80	1.34
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.92	1.46	1.32	1071	1.22	1.11
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	73.43	1.16	1.02	1879	1.28	1.13
Uses the computer at home once or twice a week	F1S37A = 4	27.05	0.98	1.01	1932	0.94	0.97
Rarely or never performs community service	F1S39C = 1	64.72	1.38	1.09	1912	1.60	1.26
Being successful in line of work is very important	F1S40A = 3	93.80	0.65	0.55	1935	1.40	1.18
Marrying the right person is very important	F1S40B = 3	75.51	1.17	0.98	1933	1.42	1.19
Having lots of money is very important	F1S40C = 3	55.42	1.30	1.13	1933	1.32	1.15
Expects to earn a 4-year degree, nothing more	F1S42 = 6	29.96	1.21	1.04	1937	1.35	1.16
Mother expects student to graduate from college, nothing more	F1S43A = 6	33.22	1.18	1.09	1883	1.18	1.09
Plans to continue education right after high school	F1S47 = 2	78.15	1.26	1.00	1705	1.58	1.26
Plans to hold a part-time job right after school	F1S53 = 2	46.40	1.43	1.21	1694	1.38	1.18
Volunteered with a youth organization	F1S63A = 1	25.52	2.23	1.67	685	1.78	1.34
Often discusses grades with parents	F1S64D = 3	59.43	1.54	1.21	1659	1.63	1.28
Lives with mother only	F1FCOMP = 5	38.09	1.33	1.10	1951	1.45	1.20
Native language is Spanish	F1HOMLNG = 2	0.59	0.22	0.18	1860	1.60	1.26
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.02	0.46	0.40	1869	1.32	1.15
At age 30 expects to be in the military	F1OCC30 = 7	0.71	0.26	0.19	1869	1.84	1.36
At age 30 expects to be an operative	F1OCC30 = 8	0.81	0.26	0.21	1869	1.55	1.25
At age 30 expects to be a professional (group b)	F1OCC30 = 10	15.19	0.94	0.83	1869	1.28	1.13
At age 30 expects to be in a technical field	F1OCC30 = 16	5.50	0.69	0.53	1869	1.72	1.31
At age 30 doesn't know what expects to be	F1OCC30 = -1	25.69	1.28	1.01	1869	1.61	1.27
Mathematics test score	F1TXM1IR = 0-85	38.86	0.47	0.30	1699	2.47	1.57
Summary statistics							
Mean						1.49	1.22
Minimum						0.94	0.97
Median						1.45	1.20
Maximum						2.47	1.57
Standard deviation						0.29	0.11

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-25. Student design effects, by item using base-year to first follow-up panel weight—Hispanic or Latino: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	8.7	0.88	0.64	1957	1.90	1.38
Most likely to receive a GED	F1S15 = 5	3.1	0.51	0.39	1957	1.69	1.30
Already took the SAT or ACT	F1S21C = 3	45.4	1.67	1.17	1825	2.05	1.43
Already took an AP test	F1S21D = 3	13.9	1.11	0.82	1780	1.85	1.36
Had something stolen at school at least once	F1S25A = 2,3	26.2	1.58	1.22	1294	1.68	1.30
Was offered drugs at school at least once	F1S25B = 2,3	23.1	1.50	1.17	1291	1.64	1.28
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	12.9	0.84	0.76	1935	1.22	1.10
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	11.0	0.78	0.71	1937	1.20	1.10
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.1	1.49	1.24	1191	1.45	1.20
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	60.5	1.30	1.07	2078	1.48	1.22
Uses the computer at home once or twice a week	F1S37A = 4	28.3	1.32	0.98	2126	1.83	1.35
Rarely or never performs community service	F1S39C = 1	69.4	1.11	1.00	2111	1.22	1.11
Being successful in line of work is very important	F1S40A = 3	89.4	0.95	0.67	2126	2.01	1.42
Marrying the right person is very important	F1S40B = 3	77.3	1.19	0.91	2126	1.71	1.31
Having lots of money is very important	F1S40C = 3	40.9	1.33	1.07	2129	1.55	1.24
Expects to earn a 4-year degree, nothing more	F1S42 = 6	26.3	1.26	0.95	2132	1.75	1.32
Mother expects student to graduate from college, nothing more	F1S43A = 6	33.6	1.06	1.04	2071	1.05	1.02
Plans to continue education right after high school	F1S47 = 2	72.7	1.46	1.03	1863	2.00	1.41
Plans to hold a part-time job right after school	F1S53 = 2	56.1	1.38	1.16	1843	1.43	1.20
Volunteered with a youth organization	F1S63A = 1	21.7	1.81	1.54	712	1.38	1.17
Often discusses grades with parents	F1S64D = 3	53.9	1.25	1.17	1803	1.14	1.07
Lives with mother only	F1FCOMP = 5	20.2	1.18	0.87	2147	1.86	1.36
Native language is Spanish	F1HOMLNG = 2	49.4	1.95	1.10	2056	3.13	1.77
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.5	0.38	0.34	2064	1.20	1.09
At age 30 expects to be in the military	F1OCC30 = 7	1.0	0.26	0.22	2064	1.36	1.17
At age 30 expects to be an operative	F1OCC30 = 8	0.5	0.19	0.16	2064	1.55	1.24
At age 30 expects to be a professional (group b)	F1OCC30 = 10	12.8	0.78	0.74	2064	1.14	1.07
At age 30 expects to be in a technical field	F1OCC30 = 16	5.3	0.54	0.49	2064	1.19	1.09
At age 30 doesn't know what expects to be	F1OCC30 = -1	32.0	1.05	1.03	2064	1.04	1.02
Mathematics test score	F1TXM1IR = 0-85	41.4	0.48	0.32	1850	2.27	1.51
Summary statistics							
Mean						1.60	1.25
Minimum						1.04	1.02
Median						1.55	1.24
Maximum						3.13	1.77
Standard deviation						0.44	0.17

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-26. Student design effects, by item using base-year to first follow-up panel weight—More than one race: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	10.5	1.47	1.23	627	1.44	1.20
Most likely to receive a GED	F1S15 = 5	2.0	0.84	0.56	627	2.30	1.52
Already took the SAT or ACT	F1S21C = 3	61.1	2.68	2.00	596	1.80	1.34
Already took an AP test	F1S21D = 3	13.5	1.86	1.41	588	1.74	1.32
Had something stolen at school at least once	F1S25A = 2,3	31.6	2.83	2.17	459	1.70	1.30
Was offered drugs at school at least once	F1S25B = 2,3	23.3	2.81	1.97	459	2.02	1.42
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.2	1.79	1.40	623	1.63	1.28
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	17.8	1.83	1.53	622	1.42	1.19
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	21.9	2.64	1.98	435	1.77	1.33
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	60.2	2.50	1.91	658	1.71	1.31
Uses the computer at home once or twice a week	F1S37A = 4	24.6	2.21	1.67	666	1.75	1.32
Rarely or never performs community service	F1S39C = 1	59.8	2.50	1.91	661	1.72	1.31
Being successful in line of work is very important	F1S40A = 3	87.3	1.73	1.29	664	1.78	1.34
Marrying the right person is very important	F1S40B = 3	79.3	1.88	1.57	664	1.42	1.19
Having lots of money is very important	F1S40C = 3	35.6	2.37	1.86	666	1.63	1.28
Expects to earn a 4-year degree, nothing more	F1S42 = 6	33.9	2.28	1.83	667	1.55	1.24
Mother expects student to graduate from college, nothing more	F1S43A = 6	38.7	2.55	1.93	638	1.75	1.32
Plans to continue education right after high school	F1S47 = 2	71.9	2.54	1.82	610	1.94	1.39
Plans to hold a part-time job right after school	F1S53 = 2	46.9	2.56	2.04	601	1.58	1.26
Volunteered with a youth organization	F1S63A = 1	29.8	3.78	2.62	305	2.08	1.44
Often discusses grades with parents	F1S64D = 3	55.1	2.82	2.04	596	1.91	1.38
Lives with mother only	F1FCOMP = 5	22.0	1.95	1.60	670	1.49	1.22
Native language is Spanish	F1HOMLNG = 2	0.7	0.42	0.33	653	1.65	1.28
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.78	0.65	657	1.46	1.21
At age 30 expects to be in the military	F1OCC30 = 7	2.2	0.85	0.57	657	2.17	1.47
At age 30 expects to be an operative	F1OCC30 = 8	0.2	0.18	0.17	657	1.20	1.09
At age 30 expects to be a professional (group b)	F1OCC30 = 10	10.5	1.42	1.20	657	1.41	1.19
At age 30 expects to be in a technical field	F1OCC30 = 16	4.5	1.02	0.81	657	1.60	1.26
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.9	2.35	1.79	657	1.73	1.32
Mathematics test score	F1TXM1IR = 0-85	47.9	0.79	0.60	603	1.75	1.32
Summary statistics							
Mean						1.70	1.30
Minimum						1.20	1.09
Median						1.72	1.31
Maximum						2.30	1.52
Standard deviation						0.24	0.09

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-27. Student design effects, by item using base-year to first follow-up panel weight—White: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	15.1	0.63	0.40	8066	2.54	1.59
Most likely to receive a GED	F1S15 = 5	1.6	0.18	0.14	8066	1.68	1.30
Already took the SAT or ACT	F1S21C = 3	70.9	0.83	0.52	7737	2.57	1.60
Already took an AP test	F1S21D = 3	16.4	0.70	0.43	7500	2.71	1.65
Had something stolen at school at least once	F1S25A = 2,3	23.7	0.67	0.54	6310	1.56	1.25
Was offered drugs at school at least once	F1S25B = 2,3	20.5	0.70	0.51	6311	1.90	1.38
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.5	0.52	0.39	7994	1.71	1.31
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	15.5	0.59	0.40	7988	2.16	1.47
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.3	0.75	0.55	6052	1.85	1.36
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	49.9	0.69	0.55	8264	1.58	1.26
Uses the computer at home once or twice a week	F1S37A = 4	24.1	0.64	0.47	8326	1.84	1.35
Rarely or never performs community service	F1S39C = 1	58.2	0.76	0.54	8253	1.94	1.39
Being successful in line of work is very important	F1S40A = 3	90.8	0.41	0.32	8323	1.72	1.31
Marrying the right person is very important	F1S40B = 3	82.5	0.54	0.42	8315	1.68	1.30
Having lots of money is very important	F1S40C = 3	28.8	0.65	0.50	8316	1.73	1.31
Expects to earn a 4-year degree, nothing more	F1S42 = 6	33.4	0.61	0.52	8320	1.38	1.17
Mother expects student to graduate from college, nothing more	F1S43A = 6	41.5	0.70	0.55	8092	1.62	1.27
Plans to continue education right after high school	F1S47 = 2	78.9	0.64	0.46	7888	1.93	1.39
Plans to hold a part-time job right after school	F1S53 = 2	48.9	0.71	0.57	7810	1.57	1.25
Volunteered with a youth organization	F1S63A = 1	29.6	1.03	0.70	4221	2.16	1.47
Often discusses grades with parents	F1S64D = 3	51.2	0.68	0.57	7749	1.45	1.20
Lives with mother only	F1FCOMP = 5	14.0	0.50	0.38	8356	1.72	1.31
Native language is Spanish	F1HOMLNG = 2	0.1	0.05	0.04	8253	2.07	1.44
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.0	0.22	0.19	8193	1.32	1.15
At age 30 expects to be in the military	F1OCC30 = 7	1.0	0.13	0.11	8193	1.46	1.21
At age 30 expects to be an operative	F1OCC30 = 8	0.7	0.11	0.09	8193	1.52	1.23
At age 30 expects to be a professional (group b)	F1OCC30 = 10	13.4	0.46	0.38	8193	1.53	1.24
At age 30 expects to be in a technical field	F1OCC30 = 16	4.7	0.30	0.23	8193	1.66	1.29
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.7	0.62	0.50	8193	1.50	1.22
Mathematics test score	F1TXM1IR = 0-85	52.0	0.28	0.16	7805	2.91	1.71
Summary statistics							
Mean						1.83	1.35
Minimum						1.32	1.15
Median						1.72	1.31
Maximum						2.91	1.71
Standard deviation						0.40	0.14

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-28. Student design effects, by item using base-year to first follow-up panel weight—Public: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.9	0.51	0.32	10788	2.46	1.57
Most likely to receive a GED	F1S15 = 5	2.2	0.17	0.14	10788	1.49	1.22
Already took the SAT or ACT	F1S21C = 3	62.3	0.82	0.48	10167	2.93	1.71
Already took an AP test	F1S21D = 3	14.1	0.60	0.35	9933	2.95	1.72
Had something stolen at school at least once	F1S25A = 2,3	25.8	0.60	0.49	7812	1.49	1.22
Was offered drugs at school at least once	F1S25B = 2,3	21.5	0.63	0.46	7811	1.82	1.35
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.1	0.42	0.34	10664	1.54	1.24
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	14.6	0.49	0.34	10667	2.03	1.42
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	23.5	0.63	0.49	7341	1.64	1.28
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	56.3	0.59	0.47	11239	1.59	1.26
Uses the computer at home once or twice a week	F1S37A = 4	25.7	0.53	0.41	11402	1.71	1.31
Rarely or never performs community service	F1S39C = 1	62.0	0.61	0.46	11305	1.80	1.34
Being successful in line of work is very important	F1S40A = 3	90.8	0.34	0.27	11405	1.61	1.27
Marrying the right person is very important	F1S40B = 3	79.8	0.48	0.38	11398	1.66	1.29
Having lots of money is very important	F1S40C = 3	36.1	0.60	0.45	11402	1.81	1.34
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.4	0.52	0.43	11414	1.46	1.21
Mother expects student to graduate from college, nothing more	F1S43A = 6	38.1	0.58	0.46	11072	1.55	1.25
Plans to continue education right after high school	F1S47 = 2	76.6	0.60	0.42	10399	2.06	1.44
Plans to hold a part-time job right after school	F1S53 = 2	49.7	0.61	0.49	10277	1.52	1.23
Volunteered with a youth organization	F1S63A = 1	27.8	0.89	0.66	4599	1.81	1.34
Often discusses grades with parents	F1S64D = 3	52.4	0.60	0.50	10131	1.47	1.21
Lives with mother only	F1FCOMP = 5	19.2	0.48	0.37	11477	1.74	1.32
Native language is Spanish	F1HOMLNG = 2	8.4	0.62	0.26	11182	5.65	2.38
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.0	0.18	0.16	11140	1.28	1.13
At age 30 expects to be in the military	F1OCC30 = 7	1.0	0.11	0.10	11140	1.37	1.17
At age 30 expects to be an operative	F1OCC30 = 8	0.7	0.10	0.08	11140	1.57	1.25
At age 30 expects to be a professional (group b)	F1OCC30 = 10	13.2	0.38	0.32	11140	1.41	1.19
At age 30 expects to be in a technical field	F1OCC30 = 16	5.0	0.25	0.21	11140	1.42	1.19
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.7	0.50	0.43	11140	1.32	1.15
Mathematics test score	F1TXM1IR = 0-85	47.8	0.30	0.15	10292	4.16	2.04
Summary statistics							
Mean						1.94	1.37
Minimum						1.28	1.13
Median						1.63	1.28
Maximum						5.65	2.38
Standard deviation						0.92	0.27

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-29. Student design effects, by item using base-year to first follow-up panel weight—Catholic: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.5	1.38	0.76	1884	3.27	1.81
Most likely to receive a GED	F1S15 = 5	0.5	0.16	0.16	1884	1.04	1.02
Already took the SAT or ACT	F1S21C = 3	91.4	1.15	0.65	1873	3.14	1.77
Already took an AP test	F1S21D = 3	22.5	2.05	0.99	1792	4.31	2.08
Had something stolen at school at least once	F1S25A = 2,3	26.0	1.79	1.12	1541	2.56	1.60
Was offered drugs at school at least once	F1S25B = 2,3	17.7	1.35	0.97	1543	1.93	1.39
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	22.1	1.66	0.96	1876	2.99	1.73
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	15.3	1.34	0.83	1877	2.60	1.61
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	36.0	1.98	1.24	1500	2.55	1.60
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	52.3	2.11	1.15	1881	3.34	1.83
Uses the computer at home once or twice a week	F1S37A = 4	16.8	1.06	0.86	1892	1.51	1.23
Rarely or never performs community service	F1S39C = 1	43.2	1.79	1.14	1874	2.45	1.56
Being successful in line of work is very important	F1S40A = 3	90.9	0.66	0.66	1890	1.00	1.00
Marrying the right person is very important	F1S40B = 3	87.1	0.93	0.77	1890	1.45	1.20
Having lots of money is very important	F1S40C = 3	29.2	1.63	1.05	1888	2.41	1.55
Expects to earn a 4-year degree, nothing more	F1S42 = 6	37.9	1.34	1.12	1889	1.44	1.20
Mother expects student to graduate from college, nothing more	F1S43A = 6	42.6	1.62	1.15	1840	1.97	1.40
Plans to continue education right after high school	F1S47 = 2	93.9	0.77	0.55	1874	1.97	1.40
Plans to hold a part-time job right after school	F1S53 = 2	51.2	1.69	1.15	1875	2.14	1.46
Volunteered with a youth organization	F1S63A = 1	31.8	1.88	1.30	1289	2.10	1.45
Often discusses grades with parents	F1S64D = 3	56.6	1.28	1.15	1865	1.24	1.11
Lives with mother only	F1FCOMP = 5	12.4	0.75	0.76	1898	0.97	0.99
Native language is Spanish	F1HOMLNG = 2	3.0	0.94	0.39	1878	5.77	2.40
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.2	0.34	0.41	1876	0.71	0.84
At age 30 expects to be in the military	F1OCC30 = 7	0.8	0.26	0.20	1876	1.60	1.27
At age 30 expects to be an operative	F1OCC30 = 8	#	#	#	1876	†	†
At age 30 expects to be a professional (group b)	F1OCC30 = 10	17.5	1.23	0.88	1876	1.98	1.41
At age 30 expects to be in a technical field	F1OCC30 = 16	3.6	0.52	0.43	1876	1.45	1.21
At age 30 doesn't know what expects to be	F1OCC30 = -1	31.0	1.13	1.07	1876	1.12	1.06
Mathematics test score	F1TXM1IR = 0-85	55.9	0.60	0.29	1879	4.29	2.07
Summary statistics							
Mean						2.25	1.46
Minimum						0.71	0.84
Median						1.98	1.41
Maximum						5.77	2.40
Standard deviation						1.15	0.37

† Not applicable.
# Rounds to zero.
NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-30. Student design effects, by item using base-year to first follow-up panel weight—Other private: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	15.5	1.70	1.00	1312	2.89	1.70
Most likely to receive a GED	F1S15 = 5	0.6	0.16	0.21	1312	0.61	0.78
Already took the SAT or ACT	F1S21C = 3	86.2	2.48	0.97	1277	6.58	2.57
Already took an AP test	F1S21D = 3	25.1	3.11	1.24	1229	6.32	2.51
Had something stolen at school at least once	F1S25A = 2,3	24.2	2.19	1.35	1002	2.62	1.62
Was offered drugs at school at least once	F1S25B = 2,3	7.9	1.04	0.85	1000	1.47	1.21
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	20.7	2.48	1.12	1303	4.88	2.21
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	26.3	3.11	1.22	1298	6.47	2.54
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	32.6	2.28	1.51	964	2.28	1.51
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	39.3	2.38	1.34	1329	3.16	1.78
Uses the computer at home once or twice a week	F1S37A = 4	20.3	2.18	1.10	1335	3.93	1.98
Rarely or never performs community service	F1S39C = 1	50.1	2.94	1.37	1327	4.58	2.14
Being successful in line of work is very important	F1S40A = 3	89.3	1.10	0.84	1336	1.71	1.31
Marrying the right person is very important	F1S40B = 3	86.8	1.04	0.93	1332	1.26	1.12
Having lots of money is very important	F1S40C = 3	26.4	1.69	1.21	1335	1.97	1.40
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.7	1.72	1.27	1334	1.82	1.35
Mother expects student to graduate from college, nothing more	F1S43A = 6	41.6	1.79	1.37	1298	1.71	1.31
Plans to continue education right after high school	F1S47 = 2	90.4	1.61	0.82	1287	3.83	1.96
Plans to hold a part-time job right after school	F1S53 = 2	49.8	2.15	1.40	1282	2.36	1.54
Volunteered with a youth organization	F1S63A = 1	22.7	1.63	1.50	776	1.17	1.08
Often discusses grades with parents	F1S64D = 3	52.5	1.89	1.40	1276	1.83	1.35
Lives with mother only	F1FCOMP = 5	13.3	1.28	0.93	1338	1.90	1.38
Native language is Spanish	F1HOMLNG = 2	2.5	1.22	0.43	1302	7.82	2.80
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.1	0.68	0.48	1306	2.04	1.43
At age 30 expects to be in the military	F1OCC30 = 7	0.8	0.27	0.24	1306	1.20	1.09
At age 30 expects to be an operative	F1OCC30 = 8	0.2	0.19	0.12	1306	2.45	1.56
At age 30 expects to be a professional (group b)	F1OCC30 = 10	22.0	1.73	1.15	1306	2.27	1.51
At age 30 expects to be in a technical field	F1OCC30 = 16	2.7	0.48	0.45	1306	1.18	1.09
At age 30 doesn't know what expects to be	F1OCC30 = -1	34.3	1.63	1.31	1306	1.53	1.24
Mathematics test score	F1TXM1IR = 0-85	57.5	0.96	0.38	1277	6.23	2.50
Summary statistics							
Mean						3.00	1.65
Minimum						0.61	0.78
Median						2.28	1.51
Maximum						7.82	2.80
Standard deviation						1.96	0.53

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-31. Student design effects, by item using base-year to first follow-up panel weight—Low socioeconomic status (SES): 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	7.3	0.57	0.47	3054	1.46	1.21
Most likely to receive a GED	F1S15 = 5	3.4	0.42	0.33	3054	1.66	1.29
Already took the SAT or ACT	F1S21C = 3	42.7	1.31	0.93	2831	1.98	1.41
Already took an AP test	F1S21D = 3	7.6	0.69	0.50	2761	1.90	1.38
Had something stolen at school at least once	F1S25A = 2,3	26.4	1.17	0.97	2083	1.46	1.21
Was offered drugs at school at least once	F1S25B = 2,3	19.0	1.11	0.86	2081	1.66	1.29
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	12.8	0.75	0.61	2996	1.51	1.23
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	13.6	0.72	0.63	3001	1.33	1.15
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	21.1	1.18	0.93	1910	1.60	1.27
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	63.3	1.05	0.84	3317	1.57	1.25
Uses the computer at home once or twice a week	F1S37A = 4	25.8	0.92	0.75	3371	1.48	1.22
Rarely or never performs community service	F1S39C = 1	70.2	0.93	0.79	3342	1.37	1.17
Being successful in line of work is very important	F1S40A = 3	89.3	0.64	0.53	3377	1.44	1.20
Marrying the right person is very important	F1S40B = 3	77.4	0.92	0.72	3376	1.63	1.28
Having lots of money is very important	F1S40C = 3	41.2	0.99	0.85	3376	1.36	1.17
Expects to earn a 4-year degree, nothing more	F1S42 = 6	25.8	0.92	0.75	3383	1.50	1.22
Mother expects student to graduate from college, nothing more	F1S43A = 6	33.2	0.95	0.83	3259	1.32	1.15
Plans to continue education right after high school	F1S47 = 2	66.4	1.15	0.88	2905	1.73	1.31
Plans to hold a part-time job right after school	F1S53 = 2	48.2	1.14	0.93	2865	1.50	1.22
Volunteered with a youth organization	F1S63A = 1	23.8	1.62	1.35	996	1.44	1.20
Often discusses grades with parents	F1S64D = 3	51.6	1.11	0.94	2800	1.37	1.17
Lives with mother only	F1FCOMP = 5	27.0	1.00	0.76	3409	1.73	1.32
Native language is Spanish	F1HOMLNG = 2	21.4	1.60	0.72	3289	4.99	2.23
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.3	0.28	0.26	3279	1.12	1.06
At age 30 expects to be in the military	F1OCC30 = 7	0.9	0.18	0.17	3279	1.13	1.06
At age 30 expects to be an operative	F1OCC30 = 8	1.4	0.27	0.20	3279	1.81	1.34
At age 30 expects to be a professional (group b)	F1OCC30 = 10	11.6	0.62	0.56	3279	1.22	1.10
At age 30 expects to be in a technical field	F1OCC30 = 16	5.5	0.45	0.40	3279	1.28	1.13
At age 30 doesn't know what expects to be	F1OCC30 = -1	31.5	0.95	0.81	3279	1.37	1.17
Mathematics test score	F1TXM1IR = 0-85	40.2	0.36	0.24	2870	2.20	1.48
Summary statistics							
Mean						1.64	1.26
Minimum						1.12	1.06
Median						1.49	1.22
Maximum						4.99	2.23
Standard deviation						0.68	0.21

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-32. Student design effects, by item using base-year to first follow-up panel weight—Middle socioeconomic status (SES): 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	11.4	0.55	0.39	6765	1.99	1.41
Most likely to receive a GED	F1S15 = 5	2.0	0.22	0.17	6765	1.63	1.28
Already took the SAT or ACT	F1S21C = 3	62.4	0.87	0.60	6436	2.09	1.44
Already took an AP test	F1S21D = 3	11.1	0.54	0.40	6274	1.84	1.36
Had something stolen at school at least once	F1S25A = 2,3	25.9	0.71	0.62	5008	1.32	1.15
Was offered drugs at school at least once	F1S25B = 2,3	22.2	0.83	0.59	5008	1.99	1.41
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	15.1	0.54	0.44	6713	1.53	1.24
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	15.0	0.61	0.44	6711	1.97	1.40
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	22.8	0.81	0.61	4726	1.78	1.33
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	56.6	0.77	0.59	6961	1.66	1.29
Uses the computer at home once or twice a week	F1S37A = 4	27.1	0.63	0.53	7051	1.41	1.19
Rarely or never performs community service	F1S39C = 1	63.3	0.76	0.58	6982	1.72	1.31
Being successful in line of work is very important	F1S40A = 3	91.2	0.45	0.34	7047	1.74	1.32
Marrying the right person is very important	F1S40B = 3	80.2	0.63	0.47	7041	1.78	1.33
Having lots of money is very important	F1S40C = 3	35.7	0.76	0.57	7045	1.80	1.34
Expects to earn a 4-year degree, nothing more	F1S42 = 6	33.6	0.64	0.56	7049	1.29	1.14
Mother expects student to graduate from college, nothing more	F1S43A = 6	39.5	0.76	0.59	6833	1.66	1.29
Plans to continue education right after high school	F1S47 = 2	76.6	0.68	0.52	6568	1.69	1.30
Plans to hold a part-time job right after school	F1S53 = 2	51.3	0.76	0.62	6498	1.51	1.23
Volunteered with a youth organization	F1S63A = 1	27.6	1.09	0.81	3034	1.80	1.34
Often discusses grades with parents	F1S64D = 3	53.0	0.80	0.62	6422	1.64	1.28
Lives with mother only	F1FCOMP = 5	19.1	0.59	0.47	7083	1.62	1.27
Native language is Spanish	F1HOMLNG = 2	4.5	0.34	0.25	6912	1.85	1.36
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.23	0.20	6896	1.37	1.17
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.16	0.13	6896	1.56	1.25
At age 30 expects to be an operative	F1OCC30 = 8	0.6	0.12	0.09	6896	1.59	1.26
At age 30 expects to be a professional (group b)	F1OCC30 = 10	11.8	0.44	0.39	6896	1.31	1.14
At age 30 expects to be in a technical field	F1OCC30 = 16	5.5	0.32	0.27	6896	1.40	1.18
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.4	0.62	0.55	6896	1.29	1.14
Mathematics test score	F1TXM1IR = 0-85	47.5	0.27	0.18	6509	2.37	1.54
Summary statistics							
Mean						1.67	1.29
Minimum						1.29	1.14
Median						1.66	1.29
Maximum						2.37	1.54
Standard deviation						0.26	0.10

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-33. Student design effects, by item using base-year to first follow-up panel weight—High socioeconomic status (SES): 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	20.7	0.96	0.63	4165	2.34	1.53
Most likely to receive a GED	F1S15 = 5	1.1	0.23	0.16	4165	2.06	1.43
Already took the SAT or ACT	F1S21C = 3	86.8	0.78	0.53	4050	2.15	1.46
Already took an AP test	F1S21D = 3	28.1	1.21	0.72	3919	2.86	1.69
Had something stolen at school at least once	F1S25A = 2,3	24.9	1.07	0.76	3264	2.00	1.42
Was offered drugs at school at least once	F1S25B = 2,3	19.7	0.95	0.70	3265	1.85	1.36
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	15.4	0.76	0.56	4134	1.84	1.36
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	16.3	0.81	0.57	4130	1.99	1.41
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	29.8	1.07	0.81	3169	1.72	1.31
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	45.8	1.07	0.77	4171	1.93	1.39
Uses the computer at home once or twice a week	F1S37A = 4	20.4	0.95	0.62	4207	2.32	1.52
Rarely or never performs community service	F1S39C = 1	46.8	0.98	0.77	4182	1.62	1.27
Being successful in line of work is very important	F1S40A = 3	91.5	0.51	0.43	4207	1.38	1.18
Marrying the right person is very important	F1S40B = 3	83.3	0.77	0.57	4203	1.78	1.33
Having lots of money is very important	F1S40C = 3	29.5	0.95	0.70	4204	1.83	1.35
Expects to earn a 4-year degree, nothing more	F1S42 = 6	33.5	0.94	0.73	4205	1.66	1.29
Mother expects student to graduate from college, nothing more	F1S43A = 6	41.4	0.98	0.77	4118	1.61	1.27
Plans to continue education right after high school	F1S47 = 2	90.2	0.69	0.46	4087	2.21	1.49
Plans to hold a part-time job right after school	F1S53 = 2	48.4	0.97	0.78	4071	1.55	1.24
Volunteered with a youth organization	F1S63A = 1	29.8	1.30	0.89	2634	2.13	1.46
Often discusses grades with parents	F1S64D = 3	52.6	1.08	0.78	4050	1.89	1.38
Lives with mother only	F1FCOMP = 5	9.8	0.62	0.46	4221	1.84	1.36
Native language is Spanish	F1HOMLNG = 2	2.0	0.31	0.22	4161	1.98	1.41
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.8	0.41	0.30	4147	1.85	1.36
At age 30 expects to be in the military	F1OCC30 = 7	0.9	0.20	0.15	4147	1.85	1.36
At age 30 expects to be an operative	F1OCC30 = 8	0.1	0.05	0.04	4147	1.53	1.24
At age 30 expects to be a professional (group b)	F1OCC30 = 10	19.5	0.74	0.62	4147	1.46	1.21
At age 30 expects to be in a technical field	F1OCC30 = 16	3.2	0.35	0.27	4147	1.67	1.29
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.4	1.00	0.71	4147	1.98	1.41
Mathematics test score	F1TXM1IR = 0-85	57.3	0.35	0.21	4069	2.75	1.66
Summary statistics							
Mean						1.92	1.38
Minimum						1.38	1.18
Median						1.85	1.36
Maximum						2.86	1.69
Standard deviation						0.34	0.12

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-34. Student design effects, by item using base-year to first follow-up panel weight—Urban: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.8	0.91	0.49	4664	3.44	1.85
Most likely to receive a GED	F1S15 = 5	2.3	0.31	0.22	4664	2.05	1.43
Already took the SAT or ACT	F1S21C = 3	65.0	1.56	0.72	4430	4.73	2.18
Already took an AP test	F1S21D = 3	18.5	1.28	0.59	4313	4.68	2.16
Had something stolen at school at least once	F1S25A = 2,3	27.4	1.11	0.77	3340	2.08	1.44
Was offered drugs at school at least once	F1S25B = 2,3	21.9	1.12	0.72	3342	2.46	1.57
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	14.1	0.79	0.51	4618	2.40	1.55
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	14.6	0.86	0.52	4619	2.72	1.65
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	27.6	1.18	0.79	3165	2.20	1.48
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	59.4	1.06	0.71	4846	2.27	1.51
Uses the computer at home once or twice a week	F1S37A = 4	24.1	0.98	0.61	4913	2.56	1.60
Rarely or never performs community service	F1S39C = 1	61.0	1.10	0.70	4871	2.48	1.57
Being successful in line of work is very important	F1S40A = 3	90.7	0.57	0.41	4918	1.92	1.39
Marrying the right person is very important	F1S40B = 3	78.6	0.87	0.58	4919	2.19	1.48
Having lots of money is very important	F1S40C = 3	39.0	0.99	0.70	4918	2.04	1.43
Expects to earn a 4-year degree, nothing more	F1S42 = 6	31.0	0.95	0.66	4915	2.06	1.43
Mother expects student to graduate from college, nothing more	F1S43A = 6	36.5	0.92	0.70	4755	1.73	1.32
Plans to continue education right after high school	F1S47 = 2	79.4	0.91	0.60	4508	2.26	1.50
Plans to hold a part-time job right after school	F1S53 = 2	51.2	1.10	0.75	4452	2.16	1.47
Volunteered with a youth organization	F1S63A = 1	26.6	1.62	0.92	2327	3.12	1.77
Often discusses grades with parents	F1S64D = 3	55.0	1.05	0.75	4393	1.96	1.40
Lives with mother only	F1FCOMP = 5	23.0	1.01	0.60	4950	2.87	1.69
Native language is Spanish	F1HOMLNG = 2	13.8	1.43	0.50	4800	8.28	2.88
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.31	0.24	4806	1.66	1.29
At age 30 expects to be in the military	F1OCC30 = 7	0.8	0.15	0.13	4806	1.41	1.19
At age 30 expects to be an operative	F1OCC30 = 8	0.5	0.19	0.10	4806	3.33	1.82
At age 30 expects to be a professional (group b)	F1OCC30 = 10	16.4	0.71	0.53	4806	1.77	1.33
At age 30 expects to be in a technical field	F1OCC30 = 16	4.7	0.46	0.31	4806	2.23	1.49
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.8	0.80	0.66	4806	1.47	1.21
Mathematics test score	F1TXM1IR = 0-85	47.0	0.62	0.23	4468	7.35	2.71
Summary statistics							
Mean						2.80	1.63
Minimum						1.41	1.19
Median						2.25	1.50
Maximum						8.28	2.88
Standard deviation						1.58	0.39

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-35. Student design effects, by item using base-year to first follow-up panel weight—Suburban: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	12.5	0.67	0.40	6758	2.77	1.66
Most likely to receive a GED	F1S15 = 5	1.9	0.22	0.17	6758	1.73	1.32
Already took the SAT or ACT	F1S21C = 3	65.4	1.05	0.59	6449	3.11	1.76
Already took an AP test	F1S21D = 3	14.2	0.78	0.44	6262	3.09	1.76
Had something stolen at school at least once	F1S25A = 2,3	25.6	0.80	0.61	5082	1.70	1.30
Was offered drugs at school at least once	F1S25B = 2,3	21.2	0.81	0.57	5081	2.00	1.42
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	15.4	0.55	0.44	6693	1.56	1.25
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	14.7	0.62	0.43	6694	2.04	1.43
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	24.3	0.80	0.62	4816	1.70	1.30
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	53.8	0.77	0.60	6941	1.64	1.28
Uses the computer at home once or twice a week	F1S37A = 4	25.0	0.69	0.52	7026	1.81	1.34
Rarely or never performs community service	F1S39C = 1	60.7	0.76	0.59	6965	1.70	1.31
Being successful in line of work is very important	F1S40A = 3	91.0	0.43	0.34	7027	1.58	1.26
Marrying the right person is very important	F1S40B = 3	81.1	0.64	0.47	7016	1.85	1.36
Having lots of money is very important	F1S40C = 3	34.8	0.84	0.57	7021	2.18	1.48
Expects to earn a 4-year degree, nothing more	F1S42 = 6	32.3	0.71	0.56	7037	1.60	1.27
Mother expects student to graduate from college, nothing more	F1S43A = 6	39.5	0.78	0.59	6857	1.73	1.32
Plans to continue education right after high school	F1S47 = 2	78.2	0.79	0.51	6562	2.43	1.56
Plans to hold a part-time job right after school	F1S53 = 2	49.4	0.79	0.62	6512	1.62	1.27
Volunteered with a youth organization	F1S63A = 1	27.9	1.04	0.79	3207	1.73	1.32
Often discusses grades with parents	F1S64D = 3	51.6	0.79	0.62	6446	1.63	1.28
Lives with mother only	F1FCOMP = 5	17.0	0.56	0.45	7063	1.56	1.25
Native language is Spanish	F1HOMLNG = 2	6.4	0.73	0.29	6914	6.22	2.49
At age 30 expects to be a manager, administrator	F1OCC30 = 6	3.1	0.24	0.21	6896	1.35	1.16
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.16	0.13	6896	1.68	1.29
At age 30 expects to be an operative	F1OCC30 = 8	0.6	0.11	0.09	6896	1.42	1.19
At age 30 expects to be a professional (group b)	F1OCC30 = 10	12.7	0.51	0.40	6896	1.59	1.26
At age 30 expects to be in a technical field	F1OCC30 = 16	4.8	0.32	0.26	6896	1.51	1.23
At age 30 doesn't know what expects to be	F1OCC30 = -1	29.6	0.70	0.55	6896	1.63	1.28
Mathematics test score	F1TXM1IR = 0-85	49.3	0.38	0.19	6513	4.24	2.06
Summary statistics							
Mean						2.08	1.42
Minimum						1.35	1.16
Median						1.70	1.30
Maximum						6.22	2.49
Standard deviation						1.00	0.28

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-36. Student design effects, by item using base-year to first follow-up panel weight—Rural: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
Most likely to receive an honors diploma from high school	F1S15 = 2	14.3	0.98	0.69	2562	2.01	1.42
Most likely to receive a GED	F1S15 = 5	2.2	0.34	0.29	2562	1.39	1.18
Already took the SAT or ACT	F1S21C = 3	62.0	1.58	0.98	2438	2.59	1.61
Already took an AP test	F1S21D = 3	11.5	0.92	0.65	2379	1.97	1.40
Had something stolen at school at least once	F1S25A = 2,3	23.9	1.13	0.97	1933	1.35	1.16
Was offered drugs at school at least once	F1S25B = 2,3	18.3	1.24	0.88	1931	1.98	1.41
Participated in intramural sports at school (not as an officer/leader/captain)	F1S26A = 2	13.6	0.84	0.68	2532	1.51	1.23
Participated in school band (not as an officer/leader/captain)	F1S26C = 2	16.6	1.17	0.74	2529	2.51	1.59
Spends 1-3 hours a week on math homework outside of school	F1S32B = 4	21.2	1.37	0.96	1824	2.04	1.43
Watches TV/DVD 2-3 hours a day on weekdays	F1S34A = 4,5,6	54.2	1.21	0.97	2662	1.56	1.25
Uses the computer at home once or twice a week	F1S37A = 4	26.8	1.09	0.85	2690	1.61	1.27
Rarely or never performs community service	F1S39C = 1	60.8	1.47	0.94	2670	2.42	1.56
Being successful in line of work is very important	F1S40A = 3	90.5	0.82	0.57	2686	2.10	1.45
Marrying the right person is very important	F1S40B = 3	81.0	0.95	0.76	2685	1.58	1.26
Having lots of money is very important	F1S40C = 3	31.8	1.14	0.90	2686	1.62	1.27
Expects to earn a 4-year degree, nothing more	F1S42 = 6	30.9	0.96	0.89	2685	1.16	1.08
Mother expects student to graduate from college, nothing more	F1S43A = 6	38.8	1.21	0.96	2598	1.59	1.26
Plans to continue education right after high school	F1S47 = 2	75.2	1.34	0.87	2490	2.41	1.55
Plans to hold a part-time job right after school	F1S53 = 2	48.8	1.22	1.01	2470	1.47	1.21
Volunteered with a youth organization	F1S63A = 1	29.4	1.81	1.36	1130	1.79	1.34
Often discusses grades with parents	F1S64D = 3	51.6	1.16	1.01	2433	1.31	1.14
Lives with mother only	F1FCOMP = 5	16.6	0.97	0.72	2700	1.83	1.35
Native language is Spanish	F1HOMLNG = 2	3.3	0.39	0.35	2648	1.25	1.12
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.37	0.32	2620	1.30	1.14
At age 30 expects to be in the military	F1OCC30 = 7	1.1	0.24	0.20	2620	1.35	1.16
At age 30 expects to be an operative	F1OCC30 = 8	0.9	0.23	0.19	2620	1.47	1.21
At age 30 expects to be a professional (group b)	F1OCC30 = 10	12.1	0.76	0.64	2620	1.43	1.19
At age 30 expects to be in a technical field	F1OCC30 = 16	5.5	0.48	0.45	2620	1.15	1.07
At age 30 doesn't know what expects to be	F1OCC30 = -1	31.0	0.92	0.90	2620	1.04	1.02
Mathematics test score	F1TXM1IR = 0-85	48.5	0.45	0.29	2467	2.39	1.55
Summary statistics							
Mean						1.71	1.30
Minimum						1.04	1.02
Median						1.59	1.26
Maximum						2.59	1.61
Standard deviation						0.44	0.17

NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-37. Dropout design effects, by item using first follow-up questionnaire weight—All: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
11th grade was the last grade attended in school	F1D20 = 2	49.3	2.13	1.94	668	1.21	1.10
Left school for a job	F1D29A = 1	27.9	2.04	1.72	679	1.41	1.19
Left school because they did not like it	F1D29B = 1	36.4	2.21	1.85	680	1.43	1.19
Left school because they could not get along with teachers	F1D29C = 1	24.9	2.10	1.66	681	1.60	1.27
Left school because they were pregnant	F1D29E = 1	28.6	2.93	2.63	296	1.24	1.11
Left school because they did not feel safe	F1D29I = 1	9.9	1.42	1.15	677	1.53	1.24
Left school because they were expelled	F1D29K = 1	10.2	1.38	1.16	679	1.41	1.19
Left school because they had no feeling of belonging	F1D29L = 1	19.6	1.87	1.52	679	1.51	1.23
Left school because they were getting poor grades/failing	F1D29N = 1	38.0	2.14	1.86	680	1.31	1.15
Left school because getting a GED was easier	F1D29T = 1	40.1	2.29	1.88	678	1.48	1.22
Plans to get GED or high school diploma	F1D41 = 2	87.0	1.47	1.29	677	1.28	1.13
Currently taking class to prepare for the GED	F1D46 = 1	20.5	1.92	1.67	586	1.32	1.15
Watches TV/DVD 2-3 hours a day on weekdays	F1D51A = 4	18.7	1.66	1.51	666	1.21	1.10
Uses the computer at home once or twice a week	F1D54A = 4	22.4	1.77	1.60	678	1.22	1.10
Being successful in line of work is very important	F1D56A = 3	84.0	1.59	1.41	674	1.28	1.13
Marrying the right person is very important	F1D56B = 3	75.1	1.98	1.66	677	1.42	1.19
Having lots of money is very important	F1D56C = 3	43.8	2.25	1.91	677	1.39	1.18
Having strong friendships is very important	F1D56D = 3	74.6	1.88	1.68	674	1.25	1.12
Being able to find steady work is very important	F1D56E = 3	87.3	1.36	1.28	676	1.12	1.06
Lives with mother only	F1FCOMP = 5	26.2	1.86	1.68	686	1.22	1.10
Native language is Spanish	F1HOMLNG = 2	16.1	2.06	1.44	650	2.04	1.43
At age 30 expects to be a farmer, farm manager	F1OCC30 = 3	#	#	#	662	†	†
At age 30 expects to be a homemaker	F1OCC30 = 4	0.1	0.12	0.13	662	0.76	0.87
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.66	0.65	662	1.04	1.02
At age 30 expects to be in the military	F1OCC30 = 7	0.3	0.19	0.22	662	0.74	0.86
At age 30 expects to be an operative	F1OCC30 = 8	1.7	0.55	0.50	662	1.22	1.10
At age 30 expects to be a professional (group b)	F1OCC30 = 10	5.9	1.07	0.92	662	1.36	1.17
At age 30 expects to be a school teacher	F1OCC30 = 14	0.6	0.31	0.29	662	1.10	1.05
At age 30 expects to be in a technical field	F1OCC30 = 16	3.6	0.85	0.72	662	1.39	1.18
At age 30 doesn't know what expects to be	F1OCC30 = -1	36.8	2.27	1.88	662	1.47	1.21
Summary statistics							
Mean						1.31	1.14
Minimum						0.74	0.86
Median						1.31	1.15
Maximum						2.04	1.43
Standard deviation						0.24	0.11

† Not applicable.
# Rounds to zero.
NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Table I-38. Dropout design effects, by item using base-year to first follow-up panel weight—All: 2004

Survey item (or composite variable)	Variable	Estimate	Design standard error	Simple random sample standard error	N	DEFF	DEFT
11th grade was the last grade attended in school	F1D20 = 2	49.8	2.15	1.96	651	1.20	1.09
Left school for a job	F1D29A = 1	27.8	2.07	1.74	662	1.42	1.19
Left school because they did not like it	F1D29B = 1	36.6	2.27	1.87	663	1.47	1.21
Left school because they could not get along with teachers	F1D29C = 1	25.0	2.15	1.68	664	1.64	1.28
Left school because they were pregnant	F1D29E = 1	27.8	2.91	2.64	289	1.21	1.10
Left school because they did not feel safe	F1D29I = 1	10.0	1.45	1.17	660	1.54	1.24
Left school because they were expelled	F1D29K = 1	9.9	1.37	1.16	662	1.41	1.19
Left school because they had no feeling of belonging	F1D29L = 1	19.9	1.96	1.55	662	1.59	1.26
Left school because they were getting poor grades/failing	F1D29N = 1	38.0	2.16	1.89	663	1.31	1.15
Left school because getting a GED was easier	F1D29T = 1	40.5	2.33	1.91	661	1.49	1.22
Plans to get GED or high school diploma	F1D41 = 2	86.8	1.51	1.32	660	1.32	1.15
Currently taking class to prepare for the GED	F1D46 = 1	20.7	1.96	1.70	571	1.33	1.15
Watches TV/DVD 2-3 hours a day on weekdays	F1D51A = 4	18.1	1.66	1.51	649	1.21	1.10
Uses the computer at home once or twice a week	F1D54A = 4	21.9	1.74	1.61	661	1.17	1.08
Being successful in line of work is very important	F1D56A = 3	84.1	1.61	1.42	659	1.27	1.13
Marrying the right person is very important	F1D56B = 3	75.2	2.01	1.68	661	1.43	1.20
Having lots of money is very important	F1D56C = 3	43.5	2.27	1.93	661	1.39	1.18
Having strong friendships is very important	F1D56D = 3	74.5	1.92	1.70	658	1.27	1.13
Being able to find steady work is very important	F1D56E = 3	87.2	1.38	1.30	660	1.12	1.06
Lives with mother only	F1FCOMP = 5	26.2	1.89	1.70	669	1.23	1.11
Native language is Spanish	F1HOMLNG = 2	15.9	2.06	1.45	634	2.01	1.42
At age 30 expects to be a farmer, farm manager	F1OCC30 = 3	#	#	#	646	†	†
At age 30 expects to be a homemaker	F1OCC30 = 4	0.1	0.11	0.13	646	0.70	0.84
At age 30 expects to be a manager, administrator	F1OCC30 = 6	2.8	0.65	0.65	646	0.99	0.99
At age 30 expects to be in the military	F1OCC30 = 7	0.3	0.20	0.23	646	0.75	0.87
At age 30 expects to be an operative	F1OCC30 = 8	1.7	0.55	0.51	646	1.19	1.09
At age 30 expects to be a professional (group b)	F1OCC30 = 10	6.1	1.11	0.94	646	1.40	1.18
At age 30 expects to be a school teacher	F1OCC30 = 14	0.6	0.31	0.30	646	1.08	1.04
At age 30 expects to be in a technical field	F1OCC30 = 16	3.6	0.85	0.73	646	1.35	1.16
At age 30 doesn't know what expects to be	F1OCC30 = -1	36.7	2.31	1.90	646	1.48	1.22
Summary statistics							
Mean						1.31	1.14
Minimum						0.70	0.84
Median						1.32	1.15
Maximum						2.01	1.42
Standard deviation						0.25	0.11

† Not applicable.
# Rounds to zero.
NOTE: DEFF = design effect; DEFT = root design effect; N = sample size.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Public-Use Data File, 2004."

Appendix J
Synopsis of the ELS:2002 First Follow-up
Field Test (2003)

Appendix J
Synopsis of the ELS:2002 First Follow-up Field Test (2003)

J.1   Overview of the First Follow-up Field Test

The overall purpose of the Education Longitudinal Study of 2002 (ELS:2002) first follow-up field test was to provide a trial and evaluation of the instruments, forms, sampling, data collection, and processing procedures to be used in the main study 1 year later. The field test also provided a basis for evaluating the adequacy of the study design as manifested in a follow-up round of data collection. A major product of the field test was recommendations for how main study instruments and procedures can be improved. Data generated in the field test have been used both to guide the final choice of test and questionnaire items and to support specific recommendations for the revision of questionnaire and test items and survey procedures.

The overall design for the field test included testing the process of gaining cooperation once again from base-year field test schools (and associated districts) and implementing the five main data-gathering components of the study:

- an in-school student survey and assessment;

- a dropout survey;

- an out-of-school survey of transfer and homeschooled students and early graduates;

- a survey of school administrators; and

- a school records component (collection of academic transcripts).

Special procedures to be evaluated in the field test included the following:

- examination of the impact of monetary incentives on in-school student participation;

- freshening of the cohort to make it representative of high school seniors;

- tracing of students who have left their base-year school;

- identification of both regular and augmented dropouts; and

- receipt of school, parent, and student permission for the transcript component.

In addition, the field test served to evaluate the various survey instruments: the questionnaire and mathematics test for students in the core ELS school sample, the transfer student questionnaire, the early graduate questionnaire, the questionnaire for homeschooled students, the dropout questionnaire, and the school administrator questionnaire.

Instruments were evaluated in a number of ways. For the questionnaires, analyses included evaluation of item nonresponse, test-retest reliabilities, scale reliabilities, and correlations between theoretically related measures. For the achievement tests in mathematics, item parameters were estimated and both classical and Item Response Theory (IRT) techniques employed to determine the most appropriate items for inclusion in the first follow-up math test. In addition, items were tested for differential item functioning (DIF) to see if they had different

meaning for different subgroups such that a given item could put a subgroup at an unjustified disadvantage in terms of assessment results.

The school sample for the field test comprised over 50 public and private schools in the five field test states. The states—New York, North Carolina, Texas, Illinois, and Florida—were chosen in the base year on the basis of their demographic heterogeneity and represent various regions of the United States.

This synopsis of 2003 field test results focuses on several areas of key importance for planning and implementing the 2004 full-scale study. One such area is that of formulating and testing plans for sample freshening, to ensure that a nationally representative senior cohort could be identified and surveyed in the first follow-up. A second area of concern was designing and testing a program of student incentives that could be used to help achieve outstandingly high in-school response rates. A third area of critical importance was use of the field test to refine the design for the ELS:2002 mathematics assessment.

J.2   Sample Freshening

Because part of the target population consisted of those students who were enrolled in the 12th grade in the 2002–03 school year (or for the main study, 2003–04), the first follow-up field test included students at the base-year sample school who were enrolled in the 12th grade but were not in the 10th grade in the United States during the 2000–01 school year, at the time of the base-year survey. During this time, such students may have been out of the country or enrolled in school in the United States in a grade other than 10th (either at the sampled school or at another school). In addition, some students may have reenrolled, although they were temporarily out of school during the 2000–01 school year because of illness, injury, being institutionalized, being homeschooled, or having dropped out of school.

Student freshening was limited to the base-year sample schools because all sample students were identified at these schools regardless of their status and could be linked to potential freshened students. However, the freshening process was also performed at a handful of new schools that had effectively replaced base-year schools. These schools received base-year students in an en masse transfer because the base-year school had either closed or did not offer a 12th grade. Some small amount of bias may arise from the fact that some students eligible for freshening did not have a chance of selection if they attended a new school (one that came into existence subsequent to the base year), since, owing to cost and logistical constraints, freshening was not conducted in schools to which base-year sample members transferred (other than in the case of en masse transfer).

The freshening process differed somewhat from the procedures used in the National Education Longitudinal Study of 1988 (NELS:88). In both studies, students on the 12th-grade list following 10th-grade sample students were identified. In NELS:88, the school was asked about all of those identified students, but in the ELS:2002 field test, the school was asked only about those students not on the 10th-grade list. The latter method places less burden on the school and may identify more students eligible to be included in the sample.

List collection was the basis for identification of the freshened sample. If both the original and new enrollment lists were electronic, they were sorted alphabetically within stratum (as the original list was sorted for sample selection) to facilitate the comparison of the original

and new lists. If one of the lists was electronic and one was hard copy, then the electronic list was sorted alphabetically within stratum and printed for the freshening process. If both lists were hard copy, then they were used as is in the freshening process.

The freshening process began by identifying the base-year sample students on the new list. If the student immediately following each sampled base-year student within the race/ethnicity strata on the new list was not on the original list, then that student was selected as a potential addition to the sample. Whenever a potential new sample student was identified, the next student on the list was examined to determine whether that student was on the original list. If this next student was not on the original list, then the student was also a potential addition to the sample. This process was continued until reaching a student who was on the original list. Then, this process was repeated with the next base-year sample student on the list.[1]

Next, the school was contacted to determine the eligibility of the freshened students. Any student identified as eligible by the school was selected into the sample. Some 275 high school seniors were identified as potential candidates for the first follow-up freshening sample. Of these 275 students, 57 (22 percent) were found to be eligible for inclusion in the study, 205 students were found to be ineligible, and 13 students' eligibility was undetermined. The high ineligibility rate was expected since the freshening procedure selected 12th-grade students who were not on the 10th-grade list without information on their status in the 10th grade. Many of these sampled students were 10th-graders who transferred in from another school, which contributed to the high ineligibility rate. The expected number of freshened students was about 1 per school. The actual number of freshened students was approximately 1.2 students per school (57 students out of 46 schools that sent 12th-grade enrollment lists).

J.3   Maximizing In-School Response Rates Through the Use of Incentives

A major concern for the first follow-up was achieving a high in-school student response rate, given that spring term of senior year is a time when many students are disengaging from high school, and response propensities are historically low, particularly for low-stakes/high-burden assessments and surveys. An incentive experiment was therefore undertaken.

J.3.1 Incentive Experiment

To explore means to obtain the needed high response rates in the ELS:2002 first follow-up, a test of student-level incentives was implemented in the 2003 field test. The key hypothesis to be tested was that providing a $20 cash incentive would prove more effective than a token incentive in eliciting high levels of student participation.

J.3.1.1 Incentives Experiment: Design

Schools in the 2003 first follow-up field test were essentially the same schools that had participated in the base-year field test in 2001. A listing of the schools was sorted by school sector (private vs. public), state, region (urban, suburban, and rural), and consent type (active vs. passive). After sorting, systematic sampling was used to divide the field test schools into two

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[1] This process is also known as the half-open interval rule. For further information on half-open interval procedures, see Kish (1965, p. 56) or Groves (1989, p. 127).

groups: one receiving monetary incentives and one not receiving monetary incentives. In this example of systematic sampling (an analogue of random sampling), a sample selection flag (0 vs. 1) was assigned to each school alternating between 0 and 1 until all schools had an assignment. After the incentive assignments were made, distributions of the sorting variables were examined to check the distributions across the control variables.

After sampling had been completed, coordinators at schools selected for the incentive treatment were contacted by telephone to advise them of the availability of cash incentives for participating students and to confirm that it was permissible to offer a cash incentive to the students. Some schools preferred a noncash monetary incentive (such as gift certificates); these and other arrangements were allowed (further detail appears below). In schools where incentives of any kind were approved, the type of incentive and amount were stated in the parent consent letter. A flyer mentioning the incentive was also included in the parent consent mailing for the parent to share with the selected student. The flyer invited the student to participate in the study and announced the incentive treatment that participating students at the school were to receive ($20 cash, $20 gift certificate, or, in one case, a pizza party). Additionally, it was requested that the school coordinator reinforce awareness of the incentive by mentioning it to sampled students prior to the scheduled survey day.

Survey administrators presented cash/gift certificates to each participating student immediately following completion of the questionnaire and test. At schools that were not selected for monetary incentives, the survey administrator presented each participating student with a token incentive of relatively small monetary value (a "Class of 2003" key ring) after completing the questionnaire and test. In both cases, participating students received the incentive whether they participated on Survey Day or a Makeup Day.

J.3.1.2 Incentives Experiment: Results

Results of the experiment were as follows. Of the 27 schools selected to receive monetary incentives, 16 allowed the students to be paid in cash, 9 allowed each participating student to be given an equivalent amount ($20) in a bookstore gift certificate, and 1 used the incentive money for a pizza party for the participating students. One school refused any incentive of any kind. This school and the pizza party school were not included in the analysis.

Of the remaining schools, 19 were not offered incentives, and 4 schools, which were not statistically sampled and were not included in the experiment, were offered incentives on a special case basis.[2]

To test the hypothesis that cash incentives would have a positive effect on participation, chi-squared tests were performed. A respondent was defined as an eligible student who participated in the in-school survey by completing at least the student questionnaire.

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[2] These four schools were offered an incentive due to the extra burden of either not administering the survey during the regular school day or mailing parental consent forms for student participation. Of these four schools, two allowed cash incentives, one allowed a gift certificate, and one refused the incentive. Again, these schools were not included in the analysis of results of the experiment.

As shown in table J-1, for both active and passive consent schools combined, there was a significant difference ($p = 0.036$) in the response rates for students who received a monetary incentive of either cash or a gift certificate and those students who did not receive any incentive. When the two incentive types were examined separately, students who received cash incentives were more likely to respond than those who did not receive any incentive ($p = 0.032$). However, when students were offered only gift certificates as incentives, there was no significant difference ($p = 0.307$) in student response rates.

Table J-1. Response rate comparisons, by school consent type and incentive type: 2003

Characteristic	Total students	Response rate (percent)	P value
Respondent status for all students	742	88.41	
Cash and gift certificate incentive	415	90.60	
Token incentive	327	85.63	0.036
Cash incentive	285	91.23	
Token incentive	327	85.63	0.032
Gift certificate incentive	130	89.23	
Token incentive	327	85.63	0.307
Respondent status for students in passive schools	607	90.94	
Cash and gift certificate incentive	304	93.09	
Token incentive	303	88.78	0.064
Cash incentive	174	95.98	
Token incentive	303	88.78	0.007
Gift certificate incentive	130	89.23	
Token incentive	303	88.78	0.891
Respondent status for students in active schools	135	77.04	
Cash and gift certificate incentive	111	83.78	
Token incentive	24	45.83	0.000
Cash incentive	111	83.78	
Token incentive	24	45.83	0.000
Gift certificate incentive	0		
Token incentive	24	45.83	†

† Not applicable.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

In passive consent schools, the response rates were significantly different at .10 ($p = 0.064$) among students who received either a cash incentive or gift certificate and those who did not. Similar results were found for those students receiving a cash incentive ($p = 0.007$). However, when students in passive consent schools were offered only gift certificates as incentives, there was no significant difference ($p = 0.891$) in student response rates.

For the two active consent schools, one school received an incentive in the form of cash and one received no incentive. Therefore, only a significance test for differences in response rates based on cash incentive could be performed. Thus, for active consent schools, the data showed that students receiving cash incentives were more likely to respond ($p = 0.000$) than those students not receiving any incentive.

In addition to the issue of participation, a further issue was quality or completeness of participation, that is, whether respondents completed both the questionnaire and the test. Overall, 94.2 percent of questionnaire completers were also test completers, with very little variation between treatment groups.

Given the positive outcome of the incentives experiment, a cash incentive was adopted for the main study in-school survey. Of course, incentives to participate are an issue for the out-of-school sample as well, and perhaps particularly for high school dropouts. Although no formal experiment took place with the out-of-school group, an incentive was also implemented for the full-scale out-of-school sample.

As a postscript to the discussion of the 2003 field test experiment, it may be of interest to examine results of the 2004 main study, in terms of the possible effects of the incentives designed in the field test. There is no basis for conclusively attributing the success of the main study—a 91.2 percent unweighted or 89.0 percent weighted student in-school response rate,[3] a higher response rate than achieved for sophomores 2 years before—specifically to a cash incentive. Nevertheless, the results are at least consistent with such a relationship and are especially suggestive given the success of the incentives experiment in the field test. Table J-2 provides a concise summary of main study ELS:2002 first follow-up completion rates by type of incentive received.

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[3] Although this response rate is predicated upon questionnaire completion, it should be noted that the assessment was was completed by 99.1 percent (weighted and unweighted) of the in-school questionnaire completers. By qualitative measures, such as number of omitted items or strength of coefficient alpha reliabilities, the tests were taken with seriousness by the test takers, as seriously at least as the low-stakes tests in prior studies, such as NELS:88, which did not give the test takers a cash incentive.

Table J-2. ELS:2002 in-school unweighted completion rate, by school consent type and incentive type: Spring term 2004

Characteristic	Number of students	Number of respondents	Response rate (percent)
Total	12,048	11,276	93.59
Active consent	941	804	85.44
Cash	685	605	88.32
Gift certificate	209	157	75.12
Other	47	42	89.36
Passive consent	11,107	10,472	94.28
Cash	7,955	7,605	95.60
Gift certificate	2,356	2,146	91.09
Other	444	401	90.32
None	352	320	90.91

NOTE: Because this is a methodological table, it contains some cases that were not included in other ELS:2002 first follow-up tables; therefore, respondent totals may not wholly agree with other tables in this data file documentation (NCES 2006–344). For purposes of reporting the in-school incentive results, cases were included from so-called convenience schools (see chapter 4), as well as all freshening cases, regardless of whether they were included on the data file.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, 2004."

J.4   Assessment Design Issues and Recommendations

The field test was designed to help provide information to successfully deal with a number of testing issues:

- About 90 percent of base-year mathematics questions were presented in multiple-choice format. The 10 percent of items that were open ended were scored as right or wrong, with no partial credit awarded. Results of the 10th-grade testing were used to recast the selected open-ended items in multiple-choice format. This was intended not only to save time and expense in scoring but to increase scoring accuracy and reduce administration time.

- The 2001 base-year field test results suggested that additional difficult mathematics questions would be required to avoid ceiling effects in the high-difficulty first follow-up test form. Several of the most difficult NELS:88 items were added to the 2003 first follow-up field test forms.

- Two test forms of approximately parallel difficulty and content were employed in the first follow-up field test, with a total of 63 test items. Booklet covers and answer sheets were color coded to avoid confusion.

- Some first follow-up participants were not tested in mathematics in 10th grade and thus lacked the base-year ability estimate required for test form assignment. A broadband form was therefore developed for administration to freshened sample students and others who lacked base-year mathematics scores. This form was designed to provide an approximately rectangular distribution of item difficulties that would make it suitable for a wide range of achievement levels.

Each of the 63 field test items was selected to serve a particular purpose:

- to evaluate the performance of items that were reformatted from open-ended to multiple-choice presentation (10 items);

- to obtain statistics on a set of items with higher difficulty levels than most of those used in 10th grade, to avoid a ceiling effect in the first follow-up (8 items); and

- to provide a link to grade 10 main study score scales (45 items).

The 45 grade 10 items used in the first follow-up field test were selected for one or more of the following reasons:

- 15 items: Items that were administered to all 10th-grade main study participants are valuable for targeting the level of difficulty required for the first follow-up test forms. The same 15-item routing test was administered to all students in the base year. This routing test included the items that defined the middle three mathematics proficiency levels (levels 2, 3, and 4) in the NELS:88 survey. (One additional item, counted below, appeared in all three base-year second-stage forms.)

- 8 items: The lowest and highest NELS:88 mathematics proficiency levels (levels 1 and 5), consisting of 4 items each, appeared in the ELS:2002 base-year low and high second-stage forms, respectively. Percentage correct for students who received these items in the base year was compared with percentage correct for the low and high quartile of 2003 field test participants. The first follow-up main study plan called for selecting a test form for each student based on his or her performance in 10th grade. Analysis of grade 10 main study versus grade 12 field test performance on these items supplemented the information available from the 15 routing test items for estimating growth trajectories for the low and high quartiles of the base-year sample.

- 12 items: The first follow-up field test contained 12 of the items that showed the biggest grade 10 versus grade 12 differences in the base-year field test. These items were considered prime candidates for selection for first follow-up main study forms because they were likely to be strongly curriculum related. (They included the one item mentioned above that was used in all three grade 10 second-stage forms.)

- 3 items: Some of the 10th-grade mathematics items consisted of several questions based on the same stem or premise and increasing in difficulty. Three of the field test items that might not otherwise have been selected were included because they were part of item sets, and statistics for other items in the sets might have been affected if the context had been changed.

- 7 items: After the 38 items above had been selected for the reasons described, there were some large gaps in the estimated difficulty ranges of the field test forms. Seven additional items were selected to fill these gaps.

Tables J-3 and J-4 list the 63 first follow-up field test items: 32 in form A and 31 in form B. The column labeled "ELS:2002 grade 10 form" shows the item usage in the base year, if any. Form W is the routing test, and forms X, Y, and Z are the low, middle, and high second-stage forms, respectively. The reasons for selection are listed for each item. "Estimated B" is

the item difficulty, in a metric corresponding to the estimates that were used for matching test forms to students' ability. Difficulty estimates for items not previously used in ELS:2002 tests (the new NELS:88 items and the open-ended items reformatted to multiple choice) were derived from whatever information was available from other uses or other versions of the items. Other columns show the original source of each item (prior to any revisions that may have been implemented) and the content and process categories used for modeling the ELS:2002 test on NELS:88 test specifications.

Table J-3. Field test items, form A, "Yellow Form," by usage: 2003

2003 field test form, #	ELS:2002 grade 10 form	Reason for selection	Est. B	Original source	Content	Process
A1	X	Prof lev 1	-2.19	NELS	Arithmetic	Skill/knowledge
A2	X	Prof lev 1	-2.21	NELS	Arithmetic	Skill/knowledge
A3	X	Prof lev 1	-0.76	NELS	Arithmetic	Skill/knowledge
A4	W	Gr10 routing	-0.33	NELS	Algebra	Understanding/comprehension
A5	W	Gr10 routing	0.12	NELS	Geometry	Understanding/comprehension
A6	W	Gr10 routing	-0.19	NELS	Algebra	Skill/knowledge
A7	W	Gr10 routing	-0.46	NELS	Algebra	Understanding/comprehension
A8	X	Fill gap	-1.28	NELS	Arithmetic	Skill/knowledge
A9	W	Gr10 routing	-1.19	NELS	Data/probability	Understanding/comprehension
A10	XY	Biggest gain	-0.42	NELS	Arithmetic	Problem solving
A11	Y	Biggest gain	0.00	NAEP	Geometry	Understanding/comprehension
A12	XY	Reformat	-0.30	PISA	Arithmetic	Understanding/comprehension
A13	W	Gr10 routing	1.26	NELS	Algebra	Problem solving
A14	Y	Fill gap	0.33	NELS	Advanced topics	Problem solving
A15	Z	Fill gap	2.01	NELS	Arithmetic	Problem solving
A16	XY	Biggest gain	0.00	PISA	Data/probability	Skill/knowledge
A17	XY	Part of set	-1.48	PISA	Data/probability	Skill/knowledge
A18	XY	Part of set	-1.18	PISA	Data/probability	Skill/knowledge
A19	Y	Biggest gain	1.30	PISA	Data/probability	Problem solving
A20	YZ	Biggest gain	0.08	NAEP	Data/probability	Understanding/comprehension
A21	W	Gr10 routing	0.85	NELS	Algebra	Problem solving
A22	Z	Biggest gain	2.11	NELS	Geometry	Problem solving
A23		New NELS	1.41	NELS	Geometry	Problem solving
A24		New NELS	1.15	NELS	Advanced topics	Skill/knowledge
A25		New NELS	2.13	NELS	Geometry	Understanding/comprehension
A26		New NELS	2.27	NELS	Data/probability	Understanding/comprehension
A27		New NELS	2.78	NELS	Geometry	Problem solving
A28	Z	Reformat	2.60	PISA	Geometry	Problem solving
A29	Z	Part of set	0.00	PISA	Geometry	Problem solving
A30	Z	Reformat	2.30	PISA	Geometry	Problem solving
A31abcd	Z	Biggest gain	2.70	PISA	Geometry	Problem solving
A32	Z	Prof lev 5	2.92	NELS	Advanced topics	Understanding/comprehension

NOTE: NELS = National Education Longitudinal Study; NAEP = National Assessment of Educational Progress; PISA = Program for International Student Assessment.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

Table J-4. Field test items, form B, "Blue Form," by usage: 2003

2003 field test form, #	ELS:2002 grade 10 form	Reason for selection	Est. B	Original source	Content	Process
B1	X	Fill gap	-1.30	NELS	Arithmetic	Skill/knowledge
B2	W	Gr10 routing	-0.54	NELS	Arithmetic	Skill/knowledge
B3	W	Gr10 routing	-0.60	NELS	Arithmetic	Skill/knowledge
B4	Y	Biggest gain	0.05	NELS	Arithmetic	Understanding/comprehension
B5	W	Gr10 routing	-0.26	NELS	Arithmetic	Skill/knowledge
B6	XY	Biggest gain	-0.50	NAEP	Algebra	Skill/knowledge
B7	X	Prof lev 1	-2.26	NELS	Arithmetic	Understanding/comprehension
B8	W	Gr10 routing	0.06	NELS	Algebra	Understanding/comprehension
B9	W	Gr10 routing	0.02	NELS	Arithmetic	Understanding/comprehension
B10	XY	Reformat	0.00	NAEP	Advanced topics	Understanding/comprehension
B11	YZ	Reformat	0.00	PISA	Advanced topics	Understanding/comprehension
B12	YZ	Reformat	2.80	PISA	Advanced topics	Understanding/comprehension
B13	YZ	Reformat	1.60	PISA	Advanced topics	Understanding/comprehension
B14	W	Gr10 routing	1.02	NELS	Geometry	Problem solving
B15	W	Gr10 routing	0.14	NELS	Geometry	Problem solving
B16ab	XYZ	Reformat	0.50	PISA	Geometry	Problem solving
B17	XYZ	Biggest gain	1.07	NELS	Advanced topics	Understanding/comprehension
B18	YZ	Biggest gain	1.29	NELS	Geometry	Understanding/comprehension
B19	W	Gr10 routing	1.02	NELS	Algebra	Understanding/comprehension
B20	YZ	Fill gap	0.40	NAEP	Geometry	Skill/knowledge
B21	YZ	Fill gap	1.60	NELS	Algebra	Understanding/comprehension
B22	Y	Fill gap	1.35	NELS	Geometry	Problem solving
B23	Z	Biggest gain	1.70	NAEP	Algebra	Understanding/comprehension
B24	Z	Reformat	1.80	NAEP	Algebra	Skill/knowledge
B25		New NELS	2.42	NELS	Data/probability	Skill/knowledge
B26		New NELS	2.26	NELS	Algebra	Understanding/comprehension
B27		New NELS	1.27	NELS	Algebra	Understanding/comprehension
B28	YZ	Reformat	1.90	PISA	Geometry	Problem solving
B29	Z	Prof lev 5	2.67	NELS	Data/probability	Problem solving
B30	Z	Prof lev 5	2.78	NELS	Geometry	Problem solving
B31	Z	Prof lev 5	2.56	NELS	Algebra	Problem solving

NOTE: NELS = National Education Longitudinal Study; NAEP = National Assessment of Educational Progress; PISA = Program for International Student Assessment.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

J.4.1 Field Test Assessment Sample

Approximately 1,070 students in 52 schools took sets of mathematics items in the spring 2003 field test (see table J-5). Students were randomly assigned to one of the two field test booklets. There were slightly more females than males, with enough participants that DIF could be evaluated by gender. Sample sizes and response rates for racial/ethnic minority groups allowed evaluation of DIF for Hispanic compared with White students for about half of the field test items, and for Black compared with White students for about one-quarter of the items. About two-thirds of test takers also participated in other field test activities; the remaining one-third were "test augmentation cases" added to the regular field test sample for the purpose of collecting enough test data for evaluation of items. The test augmentation cases were primarily

12th-graders, with grades 9, 10, and 11 also represented, to reflect that not all main study 10th-graders progressed to 12th grade 2 years later.

Table J-5. Field test sample counts, selected characteristics: 2003

Characteristic	Form A, "Yellow Form"	Form B, "Blue Form"
Total	543	523
Male	265	250
Female	279	273
All other races/unknown	42	44
Black or African American	119	108
Hispanic or Latino	133	137
White	250	234
Public	520	497
Catholic	12	12
Other private	12	14
Test augmentation cases	184	171
Grade 9	6	3
Grade 10	9	7
Grade 11	49	49
Grade 12	120	112

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

J.4.2 Assessment Timing and Completion Rates

Completion rates indicated that the 26 minutes allotted for the first follow-up mathematics field tests were sufficient for most of the field test students (see table J-6). Not all students answered the last question, which could have been due to running out of time or discontinuing the test for some other reason. Nearly everyone got at least as far as question 24, about three-quarters of the way through the test form. On average, students answered all but one or two of the items in each form. The high proportion of students who answered most of the test questions, as well as the consistency of results (see later section on reliability), suggests that most of the students were motivated to take the test seriously.

Table J-6. Test form, by timing, number of items, and completion rates: 2003

Characteristic	Form A, "Yellow Form"	Form B, "Blue Form"
Time (minutes)	26	26
Number of questions	32	31
Completion rates		
Average number of items answered	29.8	30.0
Percentage reaching end of test	74%	85%
Percentage reaching item 24 (¾ of test)	95%	99%

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

Ten of the mathematics items were included in the first follow-up field test because they had been reformatted from open-ended presentation in the base year to multiple choice for the first follow-up. Although the primary reason for the reformatting was to increase scoring accuracy and reduce scoring complexity and expense, the change to multiple-choice format had a beneficial effect on response rates as well.

Results observed in the ELS:2002 base year and in the National Assessment of Educational Progress (NAEP) suggest that, in a low-stakes test, students are more likely to omit open-ended than multiple-choice questions. Score statistics show that this is not necessarily due to their inability to answer the questions but is probably influenced by their unwillingness to extend the extra effort required to produce an open-ended response. This effect is noted not only for questions that require an extended response, such as solving a problem or writing an equation, but also for questions that simply require making a choice, such as picking one of several alternative diagrams and writing in a letter code.

Table J-7 shows the percentage of omitted responses for the 10 questions that were open ended in the base-year field test and main study and for the same questions converted to multiple choice in the first follow-up field test. Omits are defined as unanswered questions followed by at least one question that was answered. The largest reductions in omit rates observed for the reformatted items tend to be for the most difficult questions.

Table J-7. Percentage of omitted responses for reformatted items, by study stage: 2003

Item	Base-year field test (open ended)	Base-year main study (open ended)	First follow-up field test (multiple choice)
A12	11	7	4
A28	11	8	3
A30	26	15	7
B10	8	9	7
B11	13	4-5	2
B12	14	5-6	2
B13	13	4-6	2
B16	8	3-7	0
B24	30	31-33	2
B28	9	6	2

NOTE: A range of percentages is reported in the table for items that appeared in more than one base-year second-stage form: omit rates were calculated separately by form. Omit rates are not reported when the item was the last item in the test, because failure to respond could be due to running out of time or discontinuing the test for some other reason.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "Base Year, Field Test, 2001," "Base Year, Main Study, 2002," and "First Follow-up, Field Test, 2003."

J.4.3 Item and Test Performance

This section describes the psychometric characteristics of the first follow-up mathematics field test item pool. The specific goals—reformatting open-ended items, adding difficult items to the pool to avoid a ceiling effect in grade 12, and establishing a basis for selection of items for grade 12 forms—are evaluated. Tables J-8 and J-9 present item statistics for the yellow and blue field test forms.

Two different methodologies were used to evaluate item performance: classical item analysis and IRT estimation. The two methods reinforce each other in that both generate estimates of item difficulty and discrimination. In addition, each supplies a unique perspective on some aspect of the items that is not provided by the other tool.

J.4.3.1 Classical Item Analysis

Classical item analysis provides information on the total test, descriptive statistics for each test item, and the correlation of each item with the total test score. The number and percentage of test takers choosing each response option were computed, along with the average total test score for each of the response-option groups. The same statistics were computed for students who omitted each item but answered subsequent item(s) in the test and for those who omitted the item and did not answer any subsequent items ("not reached"). Item analysis tables also show "P+" (the percentage of correct responses) and R-biserials (adjusted correlations of item score with total test score). These statistics were reviewed to identify possible flaws in individual items, such as the following:

- An incorrect response option that is selected by very few test takers may need to be replaced by a more plausible choice.

- An item omitted by an unusually large number of test takers may have something unclear or offensive in the presentation.

- For each item, the mean total test score for students choosing the correct response should be substantially higher than the score means for each of the incorrect groups. If this is not the case, it is possible that the question stem, the keyed correct response, or one or more of the incorrect response options may be ambiguous or incorrect.

- Items that are much too easy (very high P+), with nearly all test takers able to answer correctly, may not be serving a useful purpose on the test.

- Very difficult items (such as a four-choice item with a P+ of 0.25 or below, which could result from random guessing) may or may not be serving a useful purpose. Examination of the mean scores for those answering right and wrong can suggest whether a test item is helping to make distinctions among students at the highest achievement levels or is merely being guessed at random.

The R-biserial statistic is a measure of discrimination, or how well each test item relates to the skill being measured by the test as a whole. Low R-biserials (below about 0.40) generally indicate items that are not strong measures of the overall construct.

Table J-8 summarizes the classical item statistics for the field test forms. The difficulty of the items was appropriate for the field test sample. The distribution of number right on each form was approximately rectangular, with no perfect scores on either form and only a small percentage of below-chance scores. Only two items were so easy that more than 90 percent of the test takers got them right, whereas seven items were answered correctly by less than 25 percent of students. When test forms were assembled for the first follow-up main study, additional easy items were needed for the easiest test form. These items were selected from among base-year items that were not field tested in 2003.

R-biserials were generally high, falling below 0.40 for 11 of the 63 items. Two of the low R-biserial items were questions that had been reformatted from open ended to multiple choice; three others were difficult NELS:88 items that had not previously been used in ELS:2002 test forms.

Response options were reviewed for the 10 base-year items that had been converted to multiple-choice format. The response options had been selected to represent the most popular incorrect answers (as well as the correct answer) obtained when the items were administered in open-ended format in the base year. Ideally, students who do not know the correct answer to a test question should be able to do no better than guessing at random among the response options. If the question is strongly related to the construct being measured, this would result in similar mean total test scores for the group choosing each incorrect option and a much higher mean for those choosing the correct answer. Each incorrect option should be selected by a substantial number of test takers: there should be no "throwaway" options that virtually all test takers could eliminate from consideration. Review of the item statistics for the 10 reformatted items showed no need for revisions. That is, each incorrect response option was selected by a satisfactory number of test takers, and total score means for all incorrect options were substantially lower than the means for the correct response.

Table J-8. Summary of classical item analysis statistics, by test form: 2003

Test measures	Form A, "Yellow Form"	Form B, "Blue Form"
Perfect scores (Form A: 32; Form B: 31)	0	0
More than 28 items correct	4%	1%
Chance scores (< 7 correct)	3%	5%
Mean number right (standard deviation)	17.2 (6.1)	15.6 (6.2)
Mean percentage correct (P+) for items	0.55	0.51
Mean R-biserial	0.57	0.59

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

J.4.3.2 Item Response Theory (IRT)

IRT provides an alternative way of measuring item difficulty and discrimination. The Parscale program uses a three-parameter IRT model to estimate item characteristics and test-taker ability. The IRT "a" parameter is an estimate of the discriminating ability of a test item, or how well it serves to distinguish between adjacent levels of ability. This is somewhat analogous to the R-biserial but applies to a certain point on the ability continuum rather than an overall correlation. Items with "a" parameters of about 1.0 or higher are doing a good job of discriminating levels of ability. The "b" parameter is a difficulty estimate, analogous to the percentage correct but compensating for the possibility of guessing. Items with a range of difficulty that matches the estimated ability range of the test takers will be selected. The guessing parameter, "c," estimates the probability of a very low-skilled person answering the item correctly. It is important in obtaining estimates of probabilities of correct answers but was less important for the purpose of the field test, that is, for selecting items for the first follow-up main study forms. The Parscale program uses the scored-item responses to compute these item parameter estimates and ability estimates by iterating on the data until the system converges to within a predetermined tolerance.

Table J-9 summarizes item and student performance in terms of the IRT metrics. IRT scaling was carried out for the two field test forms combined, so that parameter estimates could be evaluated on the same scale.

Table J-9. Summary of Item Response Theory (IRT) estimates: 2003

IRT measure	Forms A and B combined
Average item "a" parameter (discrimination)	1.16
Average item "b" parameter (difficulty)	-0.13
Average theta (student ability)	-0.42
Standard deviation	1.01

SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

The "b" parameters for the field test items represent the item difficulty, corresponding to the ability level at which 50 percent of students would answer an item correctly, after compensating for guessing. Satisfactory parameters were obtained for items ranging from about 1.2 standard deviations below the mean ability of first follow-up participants to about 2 standard deviations above the mean. There were no large gaps in item difficulty, that is, no ability level within the expected first follow-up range that could not be matched to items of appropriate difficulty. As noted above, it was necessary to select base-year items that were not used in the field test for the main study first follow-up low difficulty test form.

Twenty of the 63 field test items had "a" parameters below 1.0, meaning that the ability of the item to discriminate between closely adjacent levels of ability was somewhat weak. Only 5 of the items had "a" parameters so low (below 0.70) that they were not likely to be selected for main study forms. The rest of the relatively weak items were chosen only if they were needed to fill difficulty gaps or to meet content specifications.

The IRT system also provides for both statistical and graphical approaches to evaluating how well the IRT model is doing in representing the actual data. Graphs of item response functions were reviewed for each of the field test items to determine how well the estimates fit the field test data. The graphs also show whether the fit is satisfactory at all ability levels or only within a limited range. Fit statistics provide a numerical way to evaluate the success of the IRT model for estimating performance on each item. Fit of data to the IRT model was satisfactory for virtually all field test items.

These two methodologies, classical item analysis and IRT, reinforce and complement each other by providing overlapping as well as unique information for evaluating item performance. Both offer measures of item difficulty and discrimination. In addition, classical item statistics supply information on performance of distractors (incorrect response options) and omit rates. IRT offers fit statistics and information on where along the ability continuum the item performs best. This was particularly useful in selecting items for the first follow-up main study test forms, where the ability range in which the item must perform was dictated by its assignment to a test form to be matched to each student's expected achievement level. Combining information from the two methodologies provided a good idea of how well an item performed, whether any revisions were desirable, and whether the item was appropriate for all students or within a restricted range of ability.

J.4.4 Reliability

Reliabilities for the two mathematics forms were high (see table J-10). Coefficient alpha measures the internal consistency of the test, that is, the extent to which variance in performance

on individual items is related to variance in performance on the whole test. The reliability of the IRT ability estimate is derived from a comparison of within-student variance to between-student variance. The field test reliability statistics are quite high for a test of 31 or 32 items. By coincidence alone, the alpha coefficients and reliability of the IRT ability estimate are identical for each test form. A consequence of the plan to select test forms to match students' ability levels in the main study was to expect a low alpha coefficient for each form but raise the reliability of the IRT-based ability estimates. Restricting the ability range of the students taking each form means that the variance of total scores on the form was expected to be lower than the randomly assigned field tests, and thus the alpha coefficient would be smaller. Conversely, a better match of items to each student's ability level than was the case for the broad range of items in the field test would result in better measurement for each student, that is, a higher reliability for the ability estimate.

Table J-10. Reliabilities, by test form: 2003

Reliability measure	Form A, "Yellow Form"	Form B, "Blue Form"
Alpha coefficient	0.86	0.87
Reliability of IRT theta (ability estimate)	0.86	0.87

NOTE: IRT = Item Response Theory.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

J.4.5 Differential Item Functioning (DIF)

Cognitive test items were checked for DIF for males compared with females, and for Black and Hispanic students compared with White students, to the extent that sample sizes permitted. It is not necessarily expected that different subgroups of students will have the same average performance on a set of items. But when students from different groups are matched on overall ability, performance on each test item for the matched groups should be about the same. There should be no relative advantage or disadvantage based on the student's gender or racial/ethnic group alone.

The DIF procedure carries out comparisons of subgroup performance for a focal group (e.g., females) compared with a reference group (e.g., males) matched on a criterion (e.g., number right on the whole test). It is based on the Mantel-Haenszel odds ratio and its associated chi-square. Items are classified as "A," "B," or "C" depending on the statistical significance of subgroup differences as well as effect sizes. Items identified as having "C"-level DIF have detectable differences that are both sizeable and statistically significant. A finding of differential functioning, however, does not automatically mean that the difference in performance is unfairly related to subgroup membership. A judgment that these items are unfair to particular population groups requires not only the measure of DIF but also a determination that the difference in performance is not related to the construct being measured. In other words, different population subgroups may have differential exposure or skill in solving test items relating to a topic that is to be measured. If so, the finding of differential performance may be an important and valid measure of the targeted skill.

Analysis of the mathematics field test, using total number right score as the matching criterion, showed four items with C-level DIF, one favoring females and three favoring males. One of the items favoring males had already been identified in the base-year main study data and

deleted from base-year scoring procedures. The remaining DIF items were reviewed and, if necessary, deleted from consideration for first follow-up forms.

A minimum of 100 matched-ability students in each subgroup is required for the DIF procedure to be carried out for each test item. Small sample sizes may result in spurious findings of DIF where none exists. The numbers of Black and Hispanic students responding to each test question were sufficient for evaluation of DIF for only about one-quarter of the questions for the Black versus White contrast and about half of the questions for Hispanic versus White.

J.4.6 Field Test Conclusions

J.4.6.1 Reformatted Items

Of the 10 items changed from open-ended to multiple-choice format, 7 had psychometric characteristics suitable for consideration for first follow-up main study forms. Table J-11 shows that the reformatting improved the R-biserial for the majority of the potentially useful items (relative to at least one of the base-year forms) and improved the IRT "a" parameter for all but one. The 2 items that had weak statistics in the multiple-choice versions had been weak in their original open-ended versions as well. In addition to maintaining or improving the psychometric characteristics of the items, the reformatting resulted in lower omit rates, as noted above, and was expected to reduce costs.

Table J-11. Summary statistics for reformatted items, by item type: 2003

	R-biserial		IRT "a" parameter		
Item	Base year (open ended)	Field test (multiple choice)	Base year (open ended)	Field test (multiple choice)	Notes
A12	0.54–0.66	0.62	0.98	1.01	
A28	0.46	0.34	0.71	0.91	
A30	0.44	0.41	0.69	0.51	Low "a," R-biserial
B10	0.50–0.64	0.68	0.98	1.02	
B11	0.46–0.55	0.65	1.07	1.17	
B12	0.43–0.55	0.45	0.82	1.50	
B13	0.30–0.51	0.60	0.92	1.08	DIF
B16	0.36–0.41	0.35	0.41	0.32	Low "a," R-biserial
B24	0.61	0.55	1.28	1.08	
B28	0.50	0.63	0.66	0.92	

NOTE: A range of R-biserials is reported in the table for items that appeared in more than one base-year second-stage form. R-biserials were calculated separately by form. DIF = differential item functioning; IRT = Item Response Theory.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

J.4.6.2 Difficult Items

Table J-12 shows summary statistics for the most difficult items in the test, sorted in ascending order of the IRT difficulty parameter, "b." This is a more useful measure of difficulty than P+ (percentage correct), because the "b" parameter compensates for guessing while P+ does not. The table shows that there were sufficient numbers of items suitable for testing students whose ability level fell in the top quarter of field test participants (theta > 0.27, same metric as "b" parameter). Seven of the eight NELS items that were added to the ELS:2002 item pool have

difficulty parameters in this high range, and two of these items were among the three most difficult items field tested.

Table J-12. Summary statistics for difficult items: 2003

Item	IRT parameters			Item statistics	
	a	b	c	P+	R-biserial
A24 (new NELS item)	1.54	0.13	0.16	0.43	0.72
B20	1.22	0.21	0.07	0.36	0.77
A13	0.99	0.22	0.17	0.44	0.61
B18	1.76	0.22	0.37	0.56	0.56
A23 (new NELS item)	1.70	0.31	0.22	0.43	0.63
B28	0.92	0.38	0.12	0.38	0.63
A22	1.60	0.41	0.13	0.31	0.71
B19	1.27	0.41	0.20	0.40	0.58
B22	1.08	0.41	0.16	0.39	0.64
A14	1.27	0.43	0.41	0.56	0.41
B21	1.07	0.52	0.11	0.33	0.65
B13	1.08	0.55	0.15	0.36	0.60
B26 (new NELS item)	1.46	0.63	0.24	0.39	0.52
A30	0.51	0.64	0.17	0.42	0.41
A19	1.26	0.76	0.12	0.28	0.60
A25 (new NELS item)	1.72	0.91	0.19	0.28	0.49
B27 (new NELS item)	0.81	0.97	0.13	0.29	0.50
A15	1.31	1.01	0.27	0.35	0.36
A26 (new NELS item)	0.77	1.09	0.26	0.40	0.36
B12	1.50	1.21	0.14	0.21	0.45
B23	0.97	1.23	0.23	0.33	0.36
B31	1.12	1.26	0.10	0.19	0.47
A28	0.91	1.30	0.24	0.34	0.34
A31	0.57	1.41	0.00	0.19	0.53
B29	1.89	1.53	0.10	0.14	0.30
B30	1.02	1.62	0.19	0.25	0.31
B25 (new NELS item)	0.78	1.73	0.18	0.25	0.34
A27 (new NELS item)	1.25	2.02	0.12	0.13	0.19
A32	0.90	2.04	0.14	0.19	0.25

NOTE: IRT = Item Response Theory; NELS = National Education Longitudinal Study; P+ = percentage correct.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002), "First Follow-up, Field Test, 2003."

Although two of the difficult items had "a" parameters that fell below the desired standard of 1.0, numerous high-quality items remained from which to select the first follow-up main study high form. For the most difficult items, the "a" parameter is a more useful measure of discrimination than the R-biserial, because the item may discriminate well only in the ability range close to its difficulty level but not at lower levels. Items with high "a" parameters and low R-biserials (such as A27) are suitable for a test form to be administered to high-ability students but not for easier forms.

J.4.6.3 Timing

The 26 minutes allotted was sufficient for most of the participants to complete the 31 or 32 items in the field test forms. With first follow-up main study forms selected according to the anticipated achievement level of the test takers, it should be possible to administer 30 to 35 test

items in the same amount of time. This number of items are expected to result in a satisfactory level of reliability.

J.4.6.4 Grade 12 Item Pool

The 2003 mathematics field test resulted in a satisfactory item pool from which to assemble first follow-up main study test forms. Items of acceptable quality (high R-biserials and "a" parameters) were available for the full range of achievement levels encountered in the field test sample, without gaps in estimated difficulty. The item pool from which the main study forms were selected included all base-year main study items, with parameters calibrated on a common scale to facilitate comparisons. Review of item analysis statistics for response options showed no need for further revisions of items.

J.5   Appendix J References

Groves, R.M. (1989). *Survey Errors and Survey Costs.* New York: Wiley.

Kish, L.A. (1965).   *Survey Sampling.* New York: Wiley.